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PAEDIATRIC INFECTIOUS
DISEASES**

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ESPID 2021 ABSTRACT BOOK

COST IMPACT OF PROCALCITONIN-GUIDED DECISION MAKING FOR DURATION OF ANTIBIOTIC THERAPY FOR SUSPECTED EARLY-ONSET SEPSIS IN NEONATES

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 01: NEONATAL SEPSIS

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Background: A large, international, randomized controlled trial (the NeoPInS trial) showed that procalcitonin (PCT) guided decision making in comparison to standard care resulted in reducing antibiotic therapy and reduction of duration of hospitalization in neonates suspected of early onset sepsis (EOS) with unchanged outcome. This current study performed a cost-minimization study of the NeoPInS trial, comparing health care costs of standard care and PCT-guided decision making based on the NeoPInS algorithm, and to analyze subgroups based on country and risk category.

Methods: Data from the NeoPInS trial in neonates born after 34 weeks of gestational age with suspected EOS in the first 72h of life requiring antibiotic therapy was used. We performed a cost-minimization study of health care costs comparing standard care to PCT-guided decision making.

Results: In total, 1408 neonates were included in the study, of which 745 were treated according to PCT-guided decision making and 663 received standard care. Mean health care costs of PCT-guided decision making were significantly lower than costs of standard care (€2351 vs. €2587), mainly due to reduced length of hospitalization. Considering subgroups, we found a significant reduction in health care costs for all countries, and for low risk categories. However, cost reductions were affected by the price of PCT tests and the local situation.

Conclusions: Health care costs of PCT-guided decision making of term and late-preterm neonates with suspected early onset sepsis are significantly lower than costs of standard care, and are affected by the local situation.

Clinical Trial Registration: Original study is registered under NCT00854932

CLINICAL AND MICROBIOLOGICAL FEATURES AND FOLLOW-UP OF A COHORT OF NEONATES BORN TO MOTHERS WITH SARS-COV-2 INFECTION

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 01: NEONATAL SEPSIS

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Background: Literature evaluating the effect of SARS-CoV-2 infection in exposed neonates during pregnancy is still scarce. Even a 3% rate of perinatal transmission has been described, there is not enough evidence of viral transmission in biological samples through microbiological techniques. Our aim is to describe perinatal transmission in newborns exposed to SARS-CoV-2 during pregnancy and their follow up.

Methods: Multicentre, prospective, and observational study (GESNEO-COVID cohort). Exposed newborns to SARS-CoV-2 infected mothers from March 15 to November 30, 2020 were included at 13 hospitals in Spain. Demographic and clinical follow-up during 6 months were collected. Biological samples including nasopharyngeal swab, urine and meconium from newborns and blood placenta, and breast milk from mothers were collected for RT-PCR analysis.

Results: 282 exposed to SARS-CoV-2 neonates were analysed. Among this population, prematurity birth-rate was 16%. Overall, eleven newborns were positive for RT-PCR in nasopharyngeal swab, eight of them during the first 24-48 hours of life but not immediately after birth. Three of them presented viral load in urine sample and another three in meconium sample. Only one RT-PCR was positive in maternal blood samples (1/115) and placenta (1/81). Blood sample from newborns collected at delivery were negative for RT-PCR (0/70). There was no viral load either in breast milk samples (0/79). Placental immuno-histochemistry showed no virus (0/16).

Conclusions: Intrauterine transmission seems unlikely, describing a 3.9% rate of neonatal infection after delivery. A high rate of prematurity is described, mostly during the first wave. SARS-CoV-2 can be detected in urine and meconium of positive newborns by RT-PCR. The detection in maternal blood and placenta is anecdotal and it is not detected in newborn blood neither in breast milk samples. Except for the complications derived from prematurity, exposed newborns evolution is satisfactory.

A NEW INTEGRATED TOOL TO AID DIAGNOSIS OF FEVER WITHOUT SOURCE IN CHILDREN AT PEDIATRIC EMERGENCY DEPARTMENTS

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 02 : DIGITAL TOOLS FOR PAEDIATRIC INFECTIOUS DISEASES

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Background: Management of febrile children presenting to the Emergency Department is challenging, as accurate tests that identify children with bacterial infection requiring antimicrobial therapy are not available. Diagnostic tests that identify pathogens have limitations for which host transcriptomic biomarkers may provide a promising complementary solution.

Methods: We developed a host response panel on Filmarray® platform that discriminates between viral and bacterial infection in less than 1 hour. We selected 7 bacterial, 5 viral markers and 3 housekeeping genes. We tested the panel on pediatric PAXgene blood samples prospectively collected from two independent cohorts, (1) 467 febrile patients recruited to a French multi-center study and (2) 339 febrile patients recruited in the European PERFORM study. A training set, test-set and a validation set were employed to optimally build a classifier and assess its clinical performance. The classification was compared to that of the C Reactive Protein (CRP).

Results: Using these 12 genes, we constructed a classifier for bacterial infection. We identified one third of the samples as very likely bacterial with a specificity of 97% and one third of the samples as very likely viral with a sensitivity at 99%. Two other classes were defined to classify the rest of the samples as likely bacterial and likely viral with a specificity at 84% and a sensitivity at 82% respectively. The performance obtained was better than that of CRP.

Conclusions: Our data highlight a new promising multiplex qPCR tool for a rapid discrimination between bacterial and viral infection in children with fever without source. This approach is currently being validated on the whole PERFORM cohort including more than 5,000 samples.

Clinical Trial Registration: Clinical trial registration: ANTOINE study: NCT03163628 and PERFORM study: NCT03502993

USE OF DIGITAL DEVICES TO ASSESS VACCINE HESITANCY AND PROMOTE PERTUSSIS VACCINATION AMONG PREGNANT WOMEN

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 02 : DIGITAL TOOLS FOR PAEDIATRIC INFECTIOUS DISEASES

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Background: Vaccination against pertussis in pregnancy is the main strategy to prevent the disease in the first trimester of life. An effective communication is essential to successfully engage pregnant women. The use of digital devices within the outpatient setting may be helpful to engage patients before and during the consultation. The aim of this study was to develop and pilot test an e-health tool to assess vaccine hesitancy and to deliver tailored information and education interventions to raise awareness and promote vaccine acceptance.

Methods: One-hundred-and-five participants were recruited in 4 gynaecological outpatients. Participants were invited to complete a self-administered psychometric questionnaire to assess vaccine hesitancy, disease beliefs and self-efficacy perception on health behaviours on a tablet. Participants were randomly allocated to three communication-format types providing equivalent content: 1) a single video simulating a patient-doctor conversation on the topic; 2) an interactive platform with five infographics videos; 3) a paper leaflet followed by a brief consultation with the physician. The intention to get vaccinated during pregnancy was assessed through a specific question before and after the intervention.

Results: In the pre-intervention phase there was no difference observed between groups in terms of the variable "intention" to get vaccinated. After the intervention, participants of groups 1 and 3 showed a higher intention to get vaccinated than group 2 at the Kruskal-Wallis test ($H(2)=6.008$, $p<0.05$). Post-intervention intention to vaccinate correlated with Individual Self-Efficacy ($rs(105)=0.30$, $p<0.001$) and was inversely associated with vaccine hesitancy ($rs(105)=0.34$, $p<0.001$).

Conclusions: We implemented and assessed the impact of different communication strategies to promote vaccine uptake among pregnant women. Our results suggest comparable effect may be obtained using simulated versus live patient-physician communication.

DEEPBREATH: THE POTENTIAL FOR INTELLIGENT LUNG AUSCULTATION IN PEDIATRIC TRIAGE

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 02 : DIGITAL TOOLS FOR PAEDIATRIC INFECTIOUS DISEASES

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Background: In children, respiratory disease is the leading cause of preventable deaths and also the primary context for antibiotic misuse. Lung auscultation is an established clinical exam in the assessment of respiratory disease, but interpretation is subjective with considerable inter-user bias and poor accuracy. Deep learning has the potential to provide more objective interpretation to improve predictive performance of this fundamental clinical exam.

Methods: We present *DeepBreath*: a series of deep learning models able to discriminate key clinical and diagnostic signatures from digital lung sounds for incorporation into a novel multi-parameter intelligent stethoscope, named *Pneumoscope*. Algorithms are derived from systematically collected digital lung auscultations on 133 pediatric (1-16 years) outpatients with acute respiratory disease (asthma n=51, pneumonia n=33, bronchiolitis/bronchitis n=40) and 101 healthy controls in Brazil and Geneva. For each patient, 30-second audio clips were recorded at 8 thoracic sites (apical and basal positions in anteroposterior and lateral planes) amounting to over 11 hours of sounds accompanied by clinical data on signs, symptoms, paraclinical tests, diagnoses and (for asthma) clinical outcomes during a 30-day follow-up.

Results: Among several interesting findings, we show that deep learning can detect dyspnea, reliably calculate respiratory rate, and has over 80% sensitivity and specificity in automatically discriminating pathological from healthy lung sounds as well as correctly identifying asthma. These models match or outperform human expert analyses and we explore the potential of this work to better standardise the evaluation of pediatric respiratory disease to guide clinical care, improve antibiotic stewardship and even automate analyses for remote patient-led monitoring of chronic conditions like asthma.

Conclusions: Artificial intelligence has the potential to better standardize and improve the interpretation of digital lung auscultation.

Clinical Trial Registration: ClinicalTrials.gov Identifier: NCT04528342

POPULATION PHARMACOKINETICS OF INTRAVENOUS COLISTIN ADMINISTERED IN CRITICALLY ILL PEDIATRIC PATIENTS AT HIGHER THAN RECOMMENDED DOSES

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 03: MULTIDRUG-RESISTANT BACTERIA AND BIOFILMS

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Background: A limited amount of pharmacokinetic (PK) data suggest that currently recommended pediatric dosages of colistimethate sodium (CMS) by the Food and Drug Administration and European Medicines Agency [75,000-150,000 IU/kg/day, equivalent to ~2.5-5 mg/kg/day of colistin base activity (CBA)] may lead to suboptimal exposure, resulting in plasma colistin concentrations frequently <2 mg/L.

Methods: We conducted a population PK study in critically ill patients 1 month-14 years old, who received CMS for infections caused by carbapenem-resistant Gram-negative bacteria. CMS was dosed at 200,000 IU/kg/day (6.6 mg CBA/kg/day), 300,000 IU/kg/day (9.9 mg CBA/kg/day) or 350,000 IU/kg/day (11.6 mg CBA/kg/day), according to patient age and severity of infection. Plasma colistin concentrations were determined using ultra-performance liquid chromatography combined with electrospray ionization tandem mass spectrometry. Patients were closely monitored for adverse events.

Results: A total of 17 patients, 3 months-13.75 years (median 3.3 years) old, were studied. Colistin PK was described by a one-compartment disposition model including creatinine clearance, body weight and the presence or absence of systemic inflammatory response syndrome (SIRS) as covariates. The average colistin plasma steady-state concentration ($C_{ss,avg}$) ranged from 1.11-8.47 mg/L (median 2.92 mg/L). Ten patients had $C_{ss,avg} \geq 2$ mg/L. The presence of SIRS was associated with decreased apparent clearance of colistin (47.8% of that without SIRS). The relationship between the mg/day of CBA to achieve each 1 mg/L of plasma colistin $C_{ss,avg}$ and creatinine clearance (mL/min) was described by linear regression with different slopes for patients with and without SIRS. Nephrotoxicity, probably colistin-unrelated, was observed in one patient.

Conclusions: Administration of CMS at the above doses improved exposure and was well tolerated. Apparent clearance of colistin was influenced by creatinine clearance and the presence or absence of SIRS.

Clinical Trial Registration: This study does not report the results of a controlled trial.

CARBAPENEM RESISTANT PSEUDOMONAS AERUGINOSA BACTEREMIA IN CHILDREN: CLINICAL PROFILE AND RISK FACTORS ASSOCIATED WITH MORTALITY

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 03: MULTIDRUG-RESISTANT BACTERIA AND BIOFILMS

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Background: *Pseudomonas aeruginosa* bacteremia (PB) is an important cause of mortality, mainly in immunocompromised hosts. Its treatment is challenging, due to different resistance patterns and increasing carbapenem resistant (CR) isolates. CR-PB in children has been barely studied. Our objective is to describe the characteristics, evolution and risk factors for mortality among hospitalized children diagnosed with CR-PB, in a tertiary Hospital in Madrid, Spain.

Methods: Observational retrospective study (September 2010-October 2020) including children <18 years with a first episode of CR-P bacteriemia. Clinical characteristics, including underlying disease, previous antibiotic exposure and colonization, as well as antimicrobial therapy and outcome were collected from medical records.

Results: Twenty-two cases were registered during the study period (11 VIM-metallo- β -lactamases). The median age was 29,7 months (IQR 1,7-185). Sixty-one percent had received carbapenems in the previous 6 months. Extremely drug-resistant *Pseudomonas* were isolated in 19 cases (86%). The resistance rates to aminoglycosides, ciprofloxacin, aztreonam, and colistin were 72%, 63%, 41% and 9% respectively. Sixty-eight percent required intensive care (ICU) admission and 30-day mortality was 50%. Risk factors associated with mortality were ICU admission, sepsis and meropenem MIC > 8 ug/ml (Table). Survival was related to absence of previous *P. aeruginosa* colonization or infection other than bacteremia (OR 0.074; 95%CI, 0.007-0.83; $p=0.019$).

RISK FACTORS ASSOCIATED WITH MORTALITY IN CARBAPENEM RESISTANT PSEUDOMONAS AERUGINOSA BACTEREMIA	
ICU admission	OR 2; 95%CI, 1-3.7; $p=0.01$
Sepsis	OR 2.2; 95%CI, 1.02-4.9; $p=0.019$
Meropenem MIC > 8 ug/ml	OR 3; 95%CI, 1.5-5.7; $p=0.015$

Conclusions: CR-PB mortality is high and seems to be related with sepsis at presentation, ICU admission and high meropenem MIC, being the absence of previous *P. aeruginosa* colonization or infection a protective factor. Previous carbapenems exposure was frequent, supporting antibiotic stewardship intervention.

FIRST WAVE COMMUNITY SEROPREVALENCE OF SARS-COV-2 IN ENGLISH CHILDREN AND TEENAGERS IN THE COMMUNITY

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 04: SARS-COV-2 PREVENTION OF SPREAD

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Background: Understanding community SARS-CoV-2 seroprevalence in children is vital in helping understand the epidemiology of the virus and informing COVID-19 public health policy.

Methods: An ongoing community-based repeat cross-sectional seroprevalence study recruited participants aged 0-24 year between October 2019 and August 2020 across 8 regions in England. Participants were predominantly recruited by mail-out to postcodes with Index of Material Deprivation (IMD) distribution representative of the region. Serum samples, demographics and symptom data were obtained, and samples processed analysed by Abbott nucleocapsid and a Public Health England in-house Receptor Binding Domain (RBD) assays to determine the presence of antibodies against SARS-CoV-2. Combined adjusted seroprevalence estimates were calculated incorporating both RBD or Abbott (sensitivity 96.9%, specificity 96.9%).

Results: Of the 1145 participants recruited, 54 (4.7%) were seropositive by Abbott and 56 (4.9%) by RBD. Between June and August 2020 adjusted seroprevalence in 0-4 year olds was 1% (N= 54, CI 0-8) compared with 12.6% (N=114, CI 6.3-20.4) in 20-24 year olds. A logistic regression analysis demonstrated Black and Minority Ethnic (BAME) participants had higher risk of SARS-CoV-2 infection than white participants (multivariate analysis OR 2.9, CI 1.28-6.57, p = 0.011). Risk was inversely related to deprivation (p = 0.003 across IMD quintiles, OR 0.16 for lowest compared to the highest IMD quintile). 16/34 antibody positive participants reported no flu-like symptoms.

Conclusions: A small but significant minority of children had evidence of infection, and this was higher in BAME participants, although co-morbid risk factors such as obesity and type 2 diabetes are less likely in this paediatric population compared with adult cohorts. Ongoing sampling through the second wave of COVID-19 in England, with enhanced BAME recruitment, will further interrogate this association. Funded by National Institute for Health Research (NIHR)

Clinical Trial Registration: ClinicalTrials.gov Identifier: NCT04061382

SALIVA SARS-COV-2 ANTIBODY PREVALENCE IN CHILDREN - COVID KIDS STUDY

PARALLEL SESSION

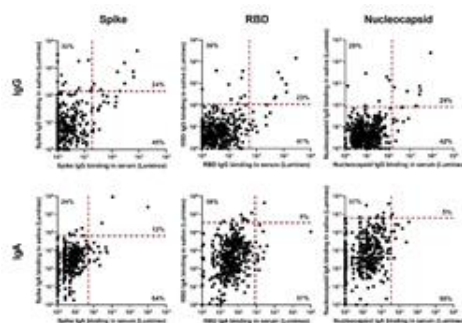
PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 04: SARS-COV-2 PREVENTION OF SPREAD

Maya Keuning¹, Marloes Grobbee², Anne-Elise De Groen³, Eveline Berman- De Jong¹, Merijn Bijlsma¹, Sophie Cohen¹, Marit Van Gils², Mariet Felderhof⁴, Femke De Groof⁵, Daniel Molanus⁶, Nadia Oeij⁶, Melissa Oomen², Maarten Rijpert⁷, Theo Rispens⁸, Maurice Steenhuis⁸, Frans Plötz^{1,3}, Dasja Pajkrt¹
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Background: Patients infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) produce both mucosal and systemic antibodies. Recent cohort studies have shown that in some mild or asymptomatic SARS-CoV-2 cases, serum antibodies may be transient whereas mucosal antibodies were still measurable. Nonetheless, humoral immunity is often only measured in serum while little attention has been paid to saliva. We aimed to assess the serum and saliva SARS-CoV-2 antibody prevalence in children in the Netherlands.

Methods: This prospective cross-sectional multicenter study included children attending medical services and requiring venipuncture at one of the seven participating secondary and tertiary care hospitals located in the North-West of the Netherlands during 24 consecutive weeks (April to October 2020). Prevalence of specific IgG and IgA antibodies against SARS-CoV-2 spike, receptor binding domain of spike (RBD) and nucleocapsid proteins were evaluated in serum with the WANTAI RBD total antibody assay and in serum and saliva with a Luminex assay.

Results: In our sample of 517 children, we found a prevalence of SARS-CoV-2 RBD IgG of 3.7% (CI 2.1 – 5.9) in saliva and 3.3% (CI 1.9 – 5.3) in serum. 56% (9/16) of children with RBD IgG antibodies in saliva were negative in serum. While prevalence of RBD IgG in serum was 3.3% in the WANTAI assay, the antibody prevalence in either serum or saliva was between 6.1% and 19.6% in the combined multi-isotype (IgG/IgA) multi-antigen assays (spike, RBD or nucleocapsid protein).



Conclusions: Prevalence of humoral immunity to SARS-CoV-2 increases if measured in multi-antigen, multi-isotype assays in both serum and saliva. When antibody prevalence is measured only in serum, more than 50% of patients with measurable SARS-CoV-2 antibodies in saliva will not be detected.

Clinical Trial Registration: Netherlands Trial Register, Trial NL8531, URL: <https://www.trialregister.nl/trial/8531>

HOUSEHOLD SARS-COV-2 TRANSMISSION AND CHILDREN: A NETWORK PROSPECTIVE STUDY

PARALLEL SESSION

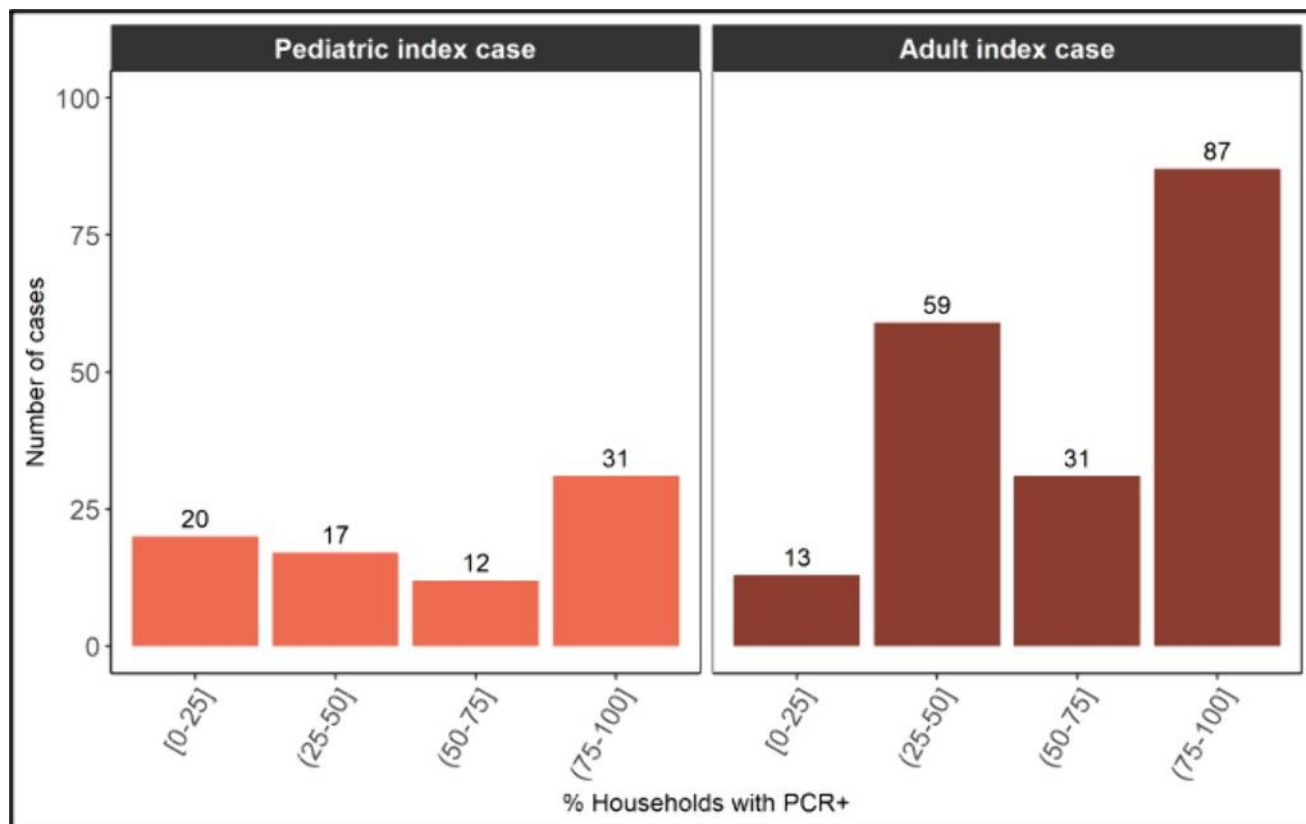
PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 04: SARS-COV-2 PREVENTION OF SPREAD

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Background: The role of children in household transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) remains uncertain. The COPEDI-CAT project, with more than 120 pediatricians from 71 primary health centers and public and private hospitals, was launched at the end of the first COVID-19 pandemic wave aiming to describe the epidemiological and clinical characteristics of children with COVID-19 in Catalonia (Spain) and investigate the dynamics of household transmission.

Methods: Prospective, observational, multicenter study performed during summer and school periods (1 July-31 October, 2020), in which epidemiological and clinical features, and viral transmission dynamics were analyzed in COVID-19 patients <16 years. A pediatric index case was established when a child was the first individual infected within a household. Secondary cases were defined when another household member tested positive for SARS-CoV-2 before the child. The secondary attack rate (SAR) was calculated, and logistic regression was used to assess associations between transmission risk factors and SARS-CoV-2 infections.

Results: The study included 1040 COVID-19 patients <16 years. Almost half (47.2%) were asymptomatic, 10.8% had comorbidities, and 2.6% required hospitalization. No deaths were reported. Viral transmission was common among household members (62.3%). More than 70% (756/1040) of pediatric cases were secondary to an adult, whereas 7.7% (80/1040) were index cases. The SAR was significantly lower in households with COVID-19 pediatric index cases during the school period relative to summer ($p=0.02$), and when compared to adults ($p=0.006$) (figure). No individual or environmental risk factors associated with the SAR were identified.



Conclusions: Children are unlikely to cause household COVID-19 clusters or be major drivers of the pandemic even if attending school. Interventions aimed at children are expected to have a small impact on reducing SARS-CoV-2 transmission.

Clinical Trial Registration: no clinical trial registration

EARLY ACQUISITION AND CARRIAGE OF GENETICALLY DIVERSE MULTI-DRUG RESISTANT ENTEROBACTERIACEAE IN PRETERM HOSPITALISED GAMBIAN NEONATES

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 06 : THE SPREAD OF ANTIMICROBIAL RESISTANCE

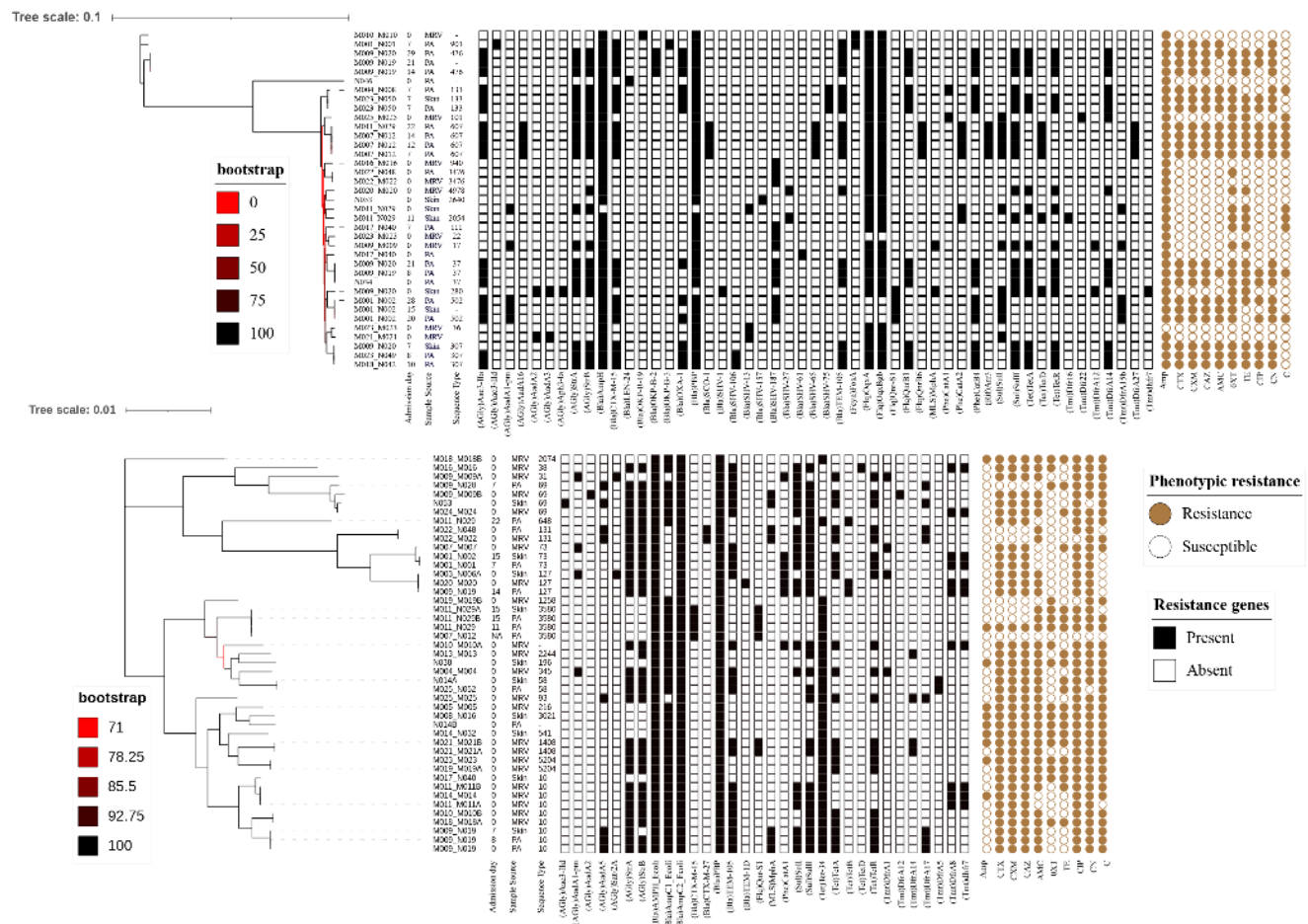
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Background: Infections due to multi-drug resistant *Enterobacteriaceae* (MDR-E) are a global challenge, especially on low resource setting (LRS) neonatal units with high mortality in preterm neonates. Maternal MDR-E carriage is a risk-factor for neonatal carriage in HIC but the contribution towards acquisition in LRS is unknown. We aimed to characterise neonatal MDR-E carriage and explore associations with maternal carriage via detailed clinical, microbiological and genomic analyses.

Methods: This cross-sectional study at the Gambian teaching hospital involved weekly collection of skin/peri-anal swabs from neonates <2000g and <24h, with maternal recto-vaginal swabs. We conducted conventional microbiology for *Enterobacteriaceae* and isolates were whole genome sequenced (Illumina platform) to identify sequence types. Antibiotic resistance gene carriage was determined using abriccate with MDR diagnosed if genes coded for resistance to ≥ 3 antimicrobial classes. Maximum likelihood phylogenetic trees were generated from core aligned SNPs using RAxML

Results: 137 swabs from 34 neonates and 23 mothers, (21 dyads) yielded 135 *Enterobacteriaceae*. 82% of isolates had genotypic MDR, mostly *K pneumoniae* (98%, 43/44) and *E coli* (84%, 42/50). 22%(17/34) of neonates carried ≥ 1 MDR-E at admission rising to 85% (11/13) by 7d. *K pneumoniae* and *E coli* strains were heterogeneous with no evidence of clonal outbreaks. Paired *E coli* (6 dyads) and *K pneumoniae* (5 dyads) were unrelated on SNP-distance analysis. Two or more antibiotic resistance genes were identified in all *K pneumoniae* (median 13.5 genes) and *E coli* (median 7.5 genes) with wide diversity of ESBL, AMP-C, fluoroquinolone and septrin resistant genes. *Fig1. Phylogeny trees for K.pneumoniae (top) and Escherichia coli (bottom) isolates*



Conclusions: Our results suggest rapid acquisition of MDR-E during hospitalization without genomic evidence of maternal transmission. Environmental surveillance is required for insights to guide infection prevention strategies.

Clinical Trial Registration: Not applicable as no clinical trial is involved

TRANSITION FROM OPEN BAY TO SINGLE ROOM DESIGN NICU HAS NO EFFECT ON MDRO COLONIZATION RATES

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 06 : THE SPREAD OF ANTIMICROBIAL RESISTANCE

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Background: The influence of the neonatal intensive care unit (NICU) design on the acquisition of multidrug resistant organisms (MDRO) has not been well-documented. The aim of this study was to examine the effect of open bay unit (OBU) versus single room unit (SRU) design on the incidence of colonization and infection with MDRO and third generation cephalosporin resistant bacteria (3G-CRB) as well as the number of possible transmission events in infants admitted to the NICU.

Methods: All infants admitted to the NICU two years prior to and two years following transition from OBU to SRU were identified. Incidence of colonization, infection and possible transmission events of MDRO were compared between OBU and SRU periods.

Results: Analysis was performed in 1293 NICU infants, which identified 3.2% MDRO carriers including 2.3% extended-spectrum β -lactamase producing Enterobacterales carriers and 18.6% 3G-CRB carriers. No difference was found in the incidence density per 1,000 patient-days (1.56 OBU, 2.63 SRU, *n.s.*) between the historic open ward and the new single room units. The MDRO infection rate was low (0.12%) and not found to be different between OBU and SRU infants. We did not find a decrease in possible transmission events per 1,000 patient-days after transition (0.62 OBU, 0.81 SRU, *n.s.*).

Conclusions: Transition from an open bay to a single room unit NICU was not associated with a reduction in colonization and infection rates or possible transmission events with MDRO in our hospital.

ARTIFICIAL INTELLIGENCE CAN PREDICT THE INDIVIDUAL RISK OF FEBRILE URINARY TRACT INFECTIONS IN CHILDREN

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 07: DIGITALISATION AND MACHINE LEARNING IN CLINICAL MICROBIOLOGY

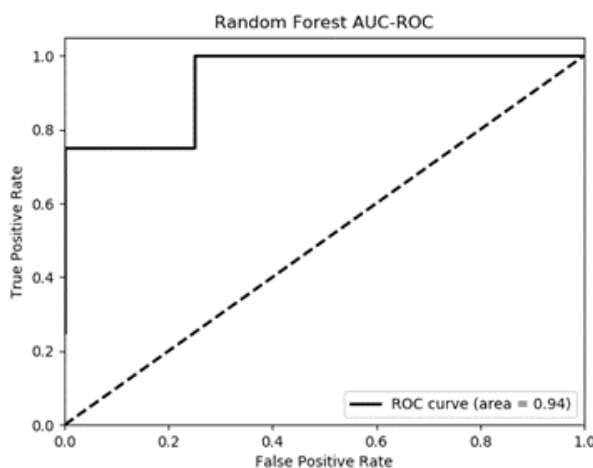
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Background: Urinary tract infections (UTI) are common in children. Timely diagnosis of pediatric UTI is necessary, as under-diagnosed UTI increase infectious morbidity, whereas over-treatment of UTI is responsible for an increase in antibiotic resistance and health costs. However, confirmed UTI diagnosis requires validated urine cultures, which can take up to 3 days. Here we propose to use artificial intelligence algorithms to predict the risk of UTI in febrile children, using simple markers available within the first hours of medical care.

Methods: We performed a retrospective study of medical and laboratory files of 37 pediatric patients with a suspected diagnosis of febrile UTI. Based on the results of urine cultures, patients were allocated to the UTI or non-UTI groups. All patients were then randomly split into training and testing batches, used by a Random Forest machine learning algorithm to predict the individual risk of UTI, using blood (CRP, PCT, white blood cell and neutrophil counts) and urine (red and white blood cell counts) parameters.

Results: Patients demographic and clinical characteristics were comparable between groups. Random Forest algorithm mean performance metrics were: accuracy 87.5% [75-99%], sensitivity 99% [95-100%], specificity 75% [70-80%], positive predictive value 80% [70-85%], negative predictive value 99% [95-100%]; AUC-ROC curve is shown in Figure 1. Predictions performed with a Support Vector Machine algorithm obtained comparable performance metrics.



Conclusions: Timely diagnosis of pediatric UTI is necessary to minimize infectious morbidity, antibiotic resistance and health costs; however, it requires validated urine cultures, which can take several days. Here we showed that machine learning algorithms can accurately predict the individual risk of UTI in pediatric patients within the first hours of medical care, helping pediatricians in daily clinical decision making.

AUTOMATED DATA ANALYSIS FOR AN ANTIMICROBIAL STEWARDSHIP PROGRAMME IN BRISTOL CHILDREN'S HOSPITAL USING A SHINY APPLICATION BUILT IN R

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 07: DIGITALISATION AND MACHINE LEARNING IN CLINICAL MICROBIOLOGY

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Background: Antimicrobial stewardship programmes (ASPs) are crucial for rationalising and reducing antimicrobial use. Point prevalence survey (PPS) data may be a suitable alternative for ASPs where e-prescribing data is not available. Here we have developed a web application in the R package Shiny, which performs automated cleaning and analysis of data from a PPS-based antimicrobial stewardship programme at Bristol Children's Hospital.

Methods: PPS data is recorded using a REDCap survey. Data can be downloaded and subsequently uploaded to the application. The application presents a platform for interactive viewing of analysed tabular data and customised downloadable reports. Customisation options allow the user to choose the timeframe that they are interested in, calculate averages across the timeframe, or compare the timeframe to that of the previous year. These options can also be combined. Reports include data such as the number of patients and prescriptions reviewed, stewardship interventions and the number of bed days saved.

Results: This web application allows for medical professionals to quickly view up to date information about the antimicrobial stewardship programme and reports can be produced for stakeholders in a timely manner.

Conclusions: This application improves the reliability of and time needed for data analysis in antimicrobial stewardship programmes using point prevalence survey data where e-prescription data is unavailable. This could be further developed to interact directly with the REDCap database to provide real-time analysis and interactive data visualisation tools.

KAWASAKI DISEASE PATIENT STRATIFICATION AND PATHWAY ANALYSIS BASED ON HOST TRANSCRIPTOMIC AND PROTEOMIC PROFILES

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 07: DIGITALISATION AND MACHINE LEARNING IN CLINICAL MICROBIOLOGY

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Background: The aetiology of Kawasaki Disease (KD), an acute inflammatory disorder of childhood, remains unknown despite various triggers of KD having been proposed. Host RNA and protein profiles from patients' blood can offer insights into the host response during infection and/or inflammation. The interrogation of both 'omic levels in parallel has the potential to provide a more comprehensive picture.

Methods: We used differential abundance analysis, pathway analysis, clustering and classification techniques to explore whether the host response in KD is more similar to the response to bacterial or viral infection at the transcriptomic and proteomic levels through comparison of blood 'omic profiles from children with KD to those with bacterial and viral infections.

Results: Pathways activated in patients with KD included those involved in anti-viral and anti-bacterial responses. Unsupervised clustering showed that the majority of KD patients clustered with bacterial patients on both 'omic levels, whilst application of diagnostic signatures specific for bacterial and viral infections revealed that many transcriptomic KD samples had low probabilities of having bacterial or viral infections, suggesting that KD may be triggered by a different process not typical of either common bacterial or viral infections. Clustering based on the transcriptomic and proteomic responses during KD revealed three clusters of KD patients on both 'omic levels, suggesting heterogeneity within the inflammatory response during KD.

Conclusions: The observed heterogeneity may reflect differences in the host response to a common trigger, or variation dependent on different triggers of the condition.

Clinical Trial Registration: not applicable

PROFESSIONALS' KNOWLEDGE AND CLINICAL PRACTICES RELATED TO PETS IN TRANSPLANTED CHILDREN. RESULTS FROM AN INTERNATIONAL SURVEY

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 08: INFECTIONS IN TRANSPLANT MEDICINE

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Background: Pets have a positive impact on patients' health, although zoonoses have been reported in transplanted children owning pets.

Methods: A questionnaire was launched among professionals treating transplanted children through international medical societies and research networks.

Results: 151 professionals participated (87 centers; 80% European). Most managed solid organ transplants (38%), HSCT 30%, and 25% were infectious diseases specialist. Up to 63% had over 10 years of experience; 48% worked in units attending >100 transplanted children. Although in 62% there were no specific recommendations regarding pets, in 43% of cases there are initiatives to bring pets to hospitals. A 58% of participants thinks there is not enough evidence regarding pets' ownership, or he/she is not aware; 30% has previously treated a zoonosis; 68% recognized not to know the rate of patients with pets, 27% would recommend against buying a pet, but 78% would advise to keep it if already at home. Dogs were considered low-risk pets (70%), while birds, turtles and reptiles were considered high-risk (59, 49 and 45%). 52% of pathogens causing zoonoses were identified as related to animals by ≥70% of infectious diseases professionals, while 13% were identified by ≥70% of other professionals (p=0.004); 72% of infectious disease professionals screened for pets in transplanted patients compared to 32% of other professionals (p<0.001). For most pathogens, 20-25% of participants were not able to establish the risk. Pet owner professionals more frequently advised to have them, while not having owned pets was associated with advising against having one (p=0.058). Having treated zoonoses was associated with changes in clinical practice (p=0.03).

Conclusions: Experienced professionals in pediatric transplant show a lack of knowledge regarding zoonoses, observing significant variability in their clinical practices. Training strategies are urgently needed.

Clinical Trial Registration: Clinical trial registration: PI-4534

IMPACT OF CENTER-SPECIFIC ANTIMICROBIAL STEWARDSHIP PROGRAM ON CARBAPENEM CONSUMPTION IN PEDIATRIC CRITICALLY ILL PATIENTS

PARALLEL SESSION

PRE-RECORDED + LIVE: PARALLEL SYMPOSIUM 08: INFECTIONS IN TRANSPLANT MEDICINE

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Background: Antimicrobial stewardship programs (ASPs) aim to improve antibiotic utilization. Intensive care unit (ICU) setting encountered a high volume of broad-spectrum antibiotic consumption, particularly carbapenems. The computer-assisted post-prescription authorization has been used to authorize carbapenem prescription in Ramathibodi Hospital, Thailand, since 2011, without systematic evaluation. Handshake stewardship is a distinctive approach, focusing on direct communication and a follow-up review of prescribed antibiotics without antibiotic restriction. We aimed to evaluate the impact and acceptability of center-specific ASP, which integrated handshake stewardship to the current computer-assisted post-prescription authorization, in pediatric critically ill patients.

Methods: We performed a pre-and post-implementation study of center-specific ASP, from July 2017 to December 2018, and April 2019 to September 2020, respectively. The primary outcome was the carbapenem consumption rate, measured by days of therapy (DOT) per 1000 patients-ICU days (DOT/1000-ICU days). Secondary outcomes included length of critical care stay (LOCS), 30-day infection-related mortality, carbapenem resistance rate, and acceptability of ASP recommendations.

Results: Two-hundreds and twelve events (163 patients) and 174 events (110 patients) of carbapenem prescription were enrolled in the pre-and post-implementation group, respectively. Carbapenem consumption rate significantly decreased by 45.4% ($p < 0.005$) (from 667 to 364 DOT/1000-ICU days) (-303 days, 95% Confidence Interval -201.9, -72.6). LOCS, 30-day infection-related mortality, and carbapenem-resistance rate were not significantly different after implementation of ASP. The acceptability of ASP recommendations was 95.4%. Scheduled duration (55.2%) and de-escalation (31.6%) were the two most common ASP recommendations.

Conclusions: Our center-specific ASP, which integrated handshake stewardship and the current computer-assisted post-prescription authorization, significantly reduced carbapenem consumption in pediatric critically ill patients with a high acceptability rate without a negative impact on patients' clinical outcomes.

EFFECTS OF A NUDGE-BASED ANTIMICROBIAL STEWARDSHIP PROGRAM IN A PEDIATRIC PRIMARY EMERGENCY MEDICAL CENTER

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 09 (JOINT SESSION WITH ANZPID): ANTIBIOTIC TREATMENT REVISITED

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Background: Outpatient medical facilities tend to have high antimicrobial prescription rates, and are therefore major targets for antimicrobial stewardship programs. Previous studies have shown high rates of unnecessary antimicrobial prescriptions in outpatient settings (e.g., emergency departments, urgent care clinics, retail clinics, and medical centers). Pediatric primary emergency medical centers in Japan have difficulties in implementing conventional antimicrobial stewardship programs due to the low continuity of stewardship. Accordingly, there is a need to develop effective antimicrobial stewardship program models for these facilities.

Methods: We conducted a single-center, quasi-experimental study to evaluate the effects of a nudge-based antimicrobial stewardship program in reducing unnecessary third-generation cephalosporin prescriptions in a pediatric primary emergency care center. The implemented antimicrobial stewardship program utilizes monthly newsletters that report current antimicrobial use patterns and prescribing targets. We compared the monthly third-generation cephalosporin prescription numbers and proportions of unnecessary prescriptions before and after the program was implemented. The trends in third-generation cephalosporin prescriptions were examined using an interrupted time-series analysis.

Results: The numbers of patients before and after program implementation were 129,156 and 28,834, respectively. The number of unnecessary third-generation cephalosporin prescriptions decreased by 67.2% in the year after program implementation. The interrupted time-series analysis showed that the program was significantly associated with a reduction in third-generation cephalosporin prescriptions (regression coefficient: -0.58, $P < 0.001$).

Conclusions: The nudge-based antimicrobial stewardship program was effective in reducing third-generation cephalosporin use in a Japanese pediatric primary emergency care center. This simple and inexpensive approach may have applications in other outpatient facilities.

A HOST-BASED ASSAY COMPRISING TRAIL, IP-10 AND CRP CAN IMPROVE ANTIBIOTIC TREATMENT DECISIONS FOR VIRAL PCR POSITIVE CHILDREN BY ACCURATELY RULING OUT CO-INFECTION

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 09 (JOINT SESSION WITH ANZPID): ANTIBIOTIC TREATMENT REVISITED

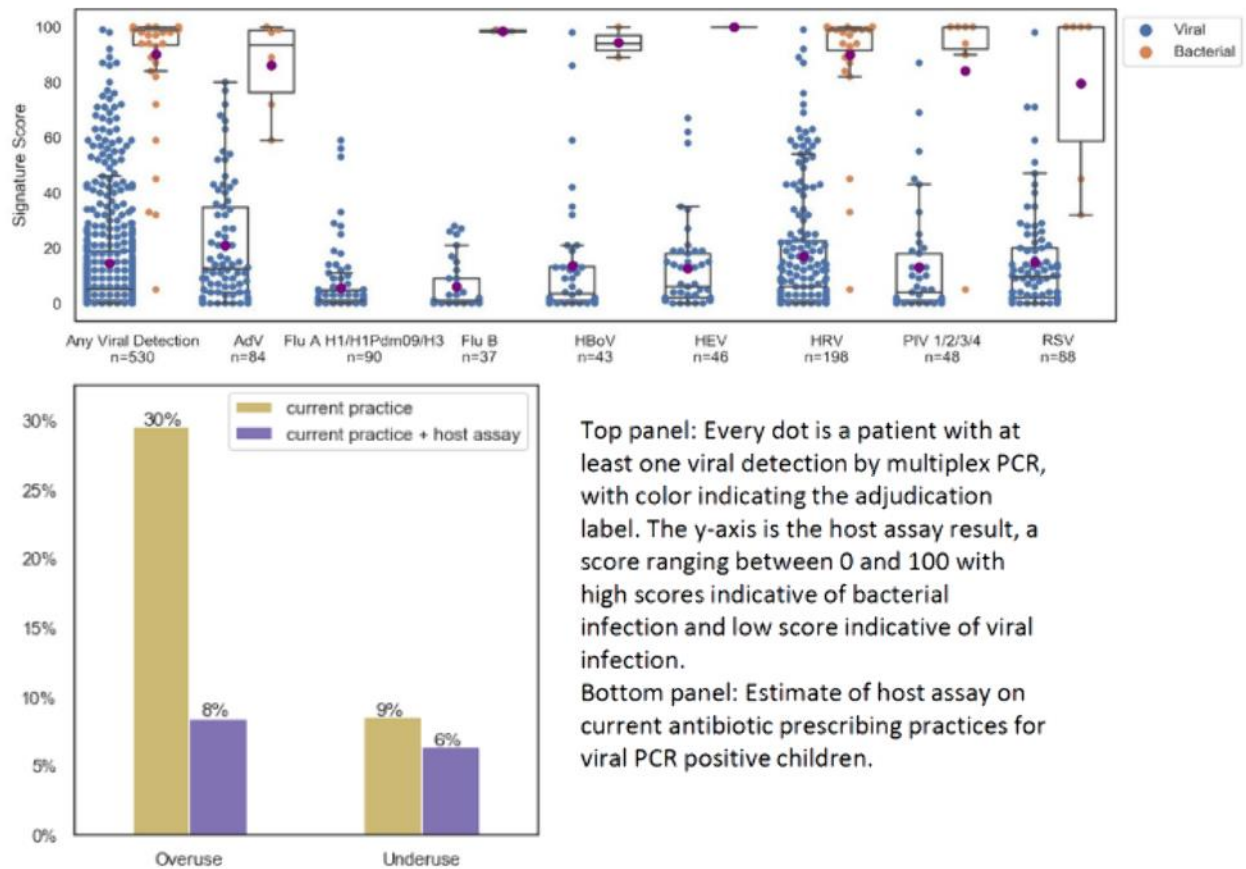
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Background: Identifying infectious disease etiology is essential for appropriate patient management, including antibiotic use. A known limitation of viral detection is that it does not rule out bacterial co-infection. Previous studies showed that a host assay comprising TNF-related apoptosis induced ligand (TRAIL), interferon gamma induced protein-10 (IP-10) and C-reactive protein (CRP) accurately differentiates bacterial from viral infections with negative predictive value >98%.

Methods: Children aged >90 days with fever without source or respiratory tract infection were prospectively recruited at pediatric emergency departments in Germany and Italy (AutoPilot-Dx; grant #701088; NCT03052088). Infection etiology was adjudicated by three independent experts based on clinical, laboratory, radiological and follow-up data. Viruses were detected using multiplex PCR on nasopharyngeal swabs. The host assay was conducted, giving three possible outcomes: viral, bacterial or equivocal.

Results: Out of 1,140 children recruited, 530 met inclusion criteria and had at least one viral detection. 483 of the viral PCR positive children were adjudicated as viral (blue circle) and 47 as bacterial (red dot). Children with bacterial infections were older (mean 3.9 years (SD 2.3) vs. 2.9 (3.0); $p<0.001$), had higher fever (mean 39.6°C (SD 0.7) vs. 39.2 (0.8); $p=0.001$), and were more likely to be admitted (93.6%) vs. 70.2%; $p<0.001$). To estimate the assay's impact on antibiotic misuse, the observed treatment was considered the current practice, and a contraindicative assay result was assumed to trigger a change in practice, with current practice occurring in cases of equivocal results. In this model, the host assay potentially reduces antibiotic treatment of viral infections 3.75-fold (from 143 to 38 children; $p<0.001$), while also slightly reducing underuse ($p=0.5$).



Top panel: Every dot is a patient with at least one viral detection by multiplex PCR, with color indicating the adjudication label. The y-axis is the host assay result, a score ranging between 0 and 100 with high scores indicative of bacterial infection and low score indicative of viral infection.

Bottom panel: Estimate of host assay on current antibiotic prescribing practices for viral PCR positive children.

Conclusions: The TRAIL/IP-10/CRP assay has the potential to improve antibiotic stewardship practices.

Clinical Trial Registration: Clinical trial registration: ClinicalTrials.gov NCT03052088

ANTIBIOTIC CONSUMPTION IN THE PAEDIATRIC INTENSIVE CARE UNIT: THE IMPACT OF 5 YEARS OF PAEDIATRIC ANTIBIOTIC STEWARDSHIP PROGRAM

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 09 (JOINT SESSION WITH ANZPID): ANTIBIOTIC TREATMENT REVISITED

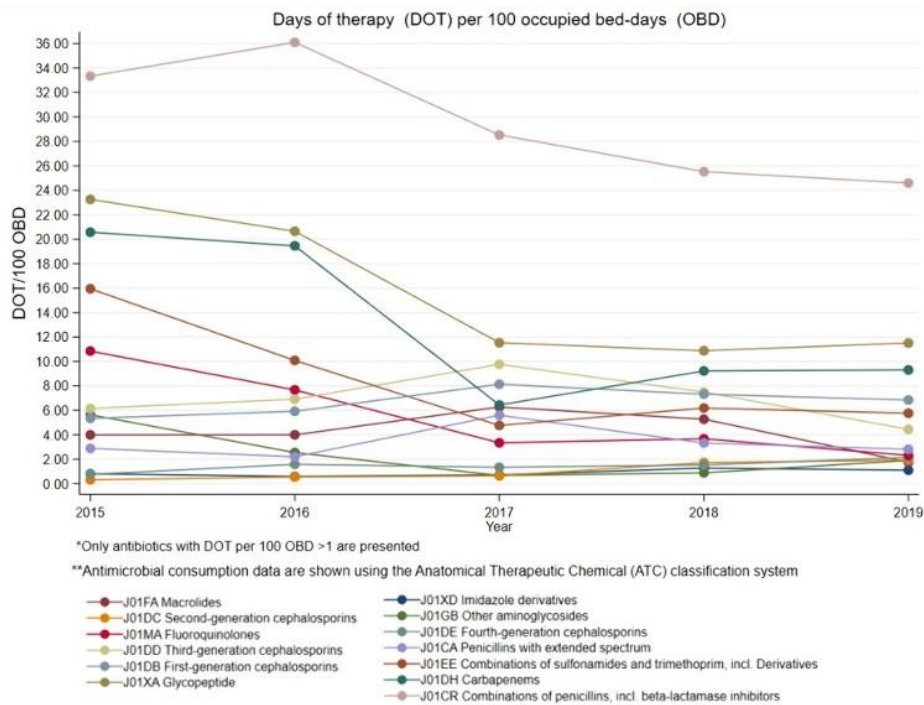
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Background: Paediatric intensive care units (PICU) are challenging settings for paediatric Antibiotic Stewardship Programs (p-ASP), in relation with critically ill patients, multidrug-resistant (MDR) microorganisms and healthcare-acquired infections. Since 2015, our non-restrictive p-ASP performs biweekly audits, guidelines development and MDR monitoring in our hospital's PICU. Our aim was to describe the evolution of antibiotic consumption in PICU from the pASP outset.

Methods: Antibiotic prescription data was collected retrospectively from the electronic prescription program (Centricity Care®), January 2015 to December 2019. Antibiotic consumption was defined as Days of therapy (DOT) per 100 occupied bed-days (OBD). Proportion of broad-spectrum antibiotics (glycopeptides, 3rd-and 4th-generation cephalosporins, monobactams, carbapenems, fluoroquinolones, polymyxins, piperacillin-tazobactam, oxazolidinones, daptomycin) was also assessed. Statistical significance of antibiotic consumption trends was evaluated using linear regression.

Results: Overall consumption of antibacterials significantly decreased from 132.19 to 64.11 DOT/100 OBD from 2015 to 2019. The most frequently used antibacterials were combinations of penicillins incl. beta-lactamase inhibitors (29%), glycopeptides (15.3%) and carbapenems (12.8%). A statistically significant decrease was observed for overall broad-spectrum antibacterials, combinations of penicillins incl. beta-lactamase inhibitors, glycopeptides and fluoroquinolones. Carbapenems, aminoglycosides and 3rd-generation cephalosporins showed a non-significant decrease (figure 1). Due to a greater decrease of overall use of antibacterials than in those with broader spectrum, a non-significant increase in the proportion of the latter was observed.



Conclusions: After pASP implementation, significant changes in antibiotic consumption occurred in PICU. Changes were consistent with pASP actions, that aimed to reduce the length and the spectrum of empiric antibiotics. An extra effort is needed to consolidate the decrease in carbapenems and aminoglycosides due to their usefulness in the treatment of MDR microorganisms in critically ill patients.

AN ANALYSIS OF IN-VIVO HOST AND PATHOGEN TRANSCRIPTOMIC SIGNATURES ASSOCIATED WITH SEVERE OUTCOMES IN PEDIATRIC INFLUENZA-STAPHYLOCOCCUS AUREUS PNEUMONIA

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 10 (JOINT SESSION WITH FIND): MODERN APPROACHES TO DIAGNOSING LUNG INFECTIONS

Carl Britto^{1,2}, Irina Mohorianu³, Tanya Novak¹, Adrienne Randolph⁴, Kristi Moffitt⁵

¹Boston Children's Hospital, Pediatrics, Boston, United States of America, ²St. John's Research Institute, Infectious Disease, Bengaluru, India, ³University of Cambridge, Wellcome-mrc Cambridge Stem Cell Institute, Cambridge, United Kingdom, ⁴Boston Children's Hospital, Critical Care, Boston, United States of America, ⁵Boston Children's Hospital, Infectious Disease, Boston, United States of America

Background: *S.aureus* pneumonia complicating influenza infection is an important cause of PICU related child-mortality. Delineating pathogen-related and host immune predictors of severe outcomes will aid in prioritising targeted interventions and indentifying at-risk children.

Methods: mRNA was extracted from endotracheal aspirates from 34 previously healthy children requiring intubation for influenza infection. Ten each had confirmed respiratory coinfection with MRSA and MSSA, and 14 children with influenza alone served as controls. mRNA expression of 200 *S.aureus* and 600 human immune genes were analysed to identify relevant gene signatures and pathways associated with survival and death/prolonged multiple organ dysfunction syndrome (pMODS).

Results: More host genes were differentially expressed in the MRSA group than in the MSSA group. Down-regulation of host genes such as CXCL10 and CXCL11 were associated with death/pMODS (**Figure1**). Forty-four significant genes in the MRSA group and 17 genes in the MSSA group satisfied criteria for biological plausibility and were involved in programmed cell death, complement, cytokine signalling and expression of C-type lecithin receptors. Among those infected with *S.aureus* in the died/pMODS group [n=10] 65 significant genes met biological criteria while 16 genes met similar criteria in the group who survived [n=10]. Interferon-alpha, -beta and -gamma as well as interleukin signalling – IL-1, -36, -38, -10, -4, -13, -21 were the most significant pathways down-regulated in the died/pMODS group. Upregulation of interleukin signalling – IL-6, -10, -27, -4,-13 were the most significant pathways in the survivors. The *mecA* gene was the only significantly differentially expressed pathogen gene between MRSA and MSSA groups.

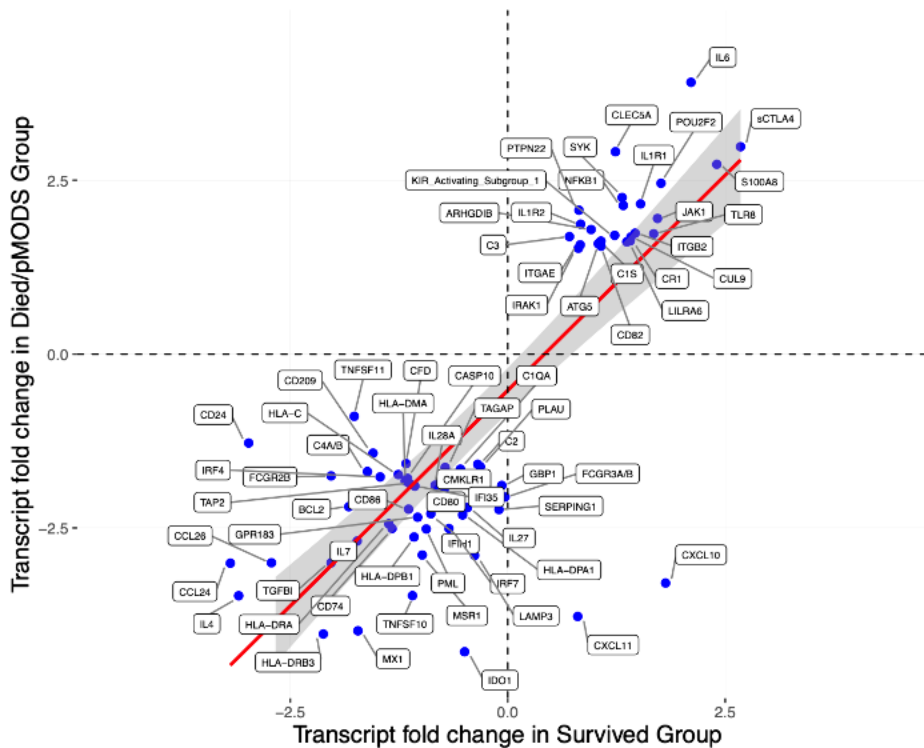


Figure 1. Significantly differentially expressed genes among the Survived Group and Died/pMODS group. CXCL10 and CXCL11 are the only two genes upregulated in the Survived group but down regulated in the Died/pMODS group. The redline represents correlation of 1 (significantly expressed in both Died/pMODS and survived groups), the grey area represents the upper and lower bound of the confidence intervals. Genes further away from the red line are likely to be more important in differentiating died/pMODS and survived groups.

Conclusions: Early in the course of severe influenza-*S.aureus* pneumonia, airway host gene expression profiles delineate adverse outcomes, unlike pathogen genes. Innate immune pathways, involving CXCL10 and CXCL11, drive host responses that may impact outcome.

Clinical Trial Registration: Clinical trial registration: N/A

MYCOPLASMA PNEUMONIAE CARRIAGE EVADES INDUCTION OF PROTECTIVE MUCOSAL ANTIBODIES

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 10 (JOINT SESSION WITH FIND): MODERN APPROACHES TO DIAGNOSING LUNG INFECTIONS

Ruben De Groot¹, Silvia Estevão¹, Patrick M. Meyer Sauter², Aditya Perkasa¹, Theo Hoogenboezem¹, Emiel Spuesens³, Lilly Verhagen⁴, Wendy Unger¹, Annemarie Van Rossum¹

¹Erasmus MC - Sophia Children's hospital, Paediatrics, Rotterdam, Netherlands, ²University Children's Hospital Zurich, Division Of Infectious Diseases And Hospital Epidemiology, Zurich, Switzerland, ³Van Weel - Bethesda Hospital, Paediatrics, Dirksland, Netherlands, ⁴Wilhelmina Children's Hospital, University Medical Centre Utrecht, Paediatrics, Immunology And Infectious Diseases, Utrecht, Netherlands

Background: *Mycoplasma pneumoniae* is the most common bacterial cause of pneumonia in children hospitalized for community-acquired pneumonia. Prevention of infection by vaccines may be an important strategy in the presence of emerging macrolide resistant *M. pneumoniae*. However, knowledge of immune responses to *M. pneumoniae* is limited, complicating vaccine design. We therefore studied the antibody response during *M. pneumoniae* infection and asymptomatic carriage.

Methods: We measured mucosal and systemic antibody levels to *M. pneumoniae* in nasal lavage and serum samples from *M. pneumoniae* pneumonia patients, non-*M. pneumoniae* pneumonia patients, asymptomatic *M. pneumoniae* carriers and non-carriers in two independent cohorts. We used an *in vitro* assay to measure the ability of antibodies to block adhesion of *M. pneumoniae* to respiratory epithelium.

Results: In a nested case-control study (n=80) of *M. pneumoniae* carriers and matched controls we observed that carriage by *M. pneumoniae* does not lead to a rise in either mucosal or systemic *M. pneumoniae*-specific antibodies, even after months of persistent carriage. We replicated this finding in a second cohort (n=69) and also found that during *M. pneumoniae* community-acquired pneumonia, mucosal levels of *M. pneumoniae*-specific IgA and IgG did increase significantly. *In vitro* adhesion assays revealed that high levels of *M. pneumoniae*-specific antibodies in nasal secretions of pediatric patients prevented the adhesion of *M. pneumoniae* to respiratory epithelial cells.

Conclusions: In conclusion, our study demonstrates that *M. pneumoniae*-specific mucosal antibodies protect against bacterial adhesion to respiratory epithelial cells and are induced only during *M. pneumoniae* infection and not during asymptomatic carriage. This is strikingly different from carriage with bacteria such as *Streptococcus pneumoniae* where mucosal antibodies are induced by bacterial carriage.

Clinical Trial Registration: Medical Ethics Review Board of the Erasmus MC NL20418.078.08

“PREDICTING MORTALITY AMONG CHILDREN ADMITTED WITH PNEUMONIA TO A DISTRICT HOSPITAL IN MANHIÇA, MOZAMBIQUE”

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 10 (JOINT SESSION WITH FIND): MODERN APPROACHES TO DIAGNOSING LUNG INFECTIONS

Lucia Carratala Castro¹, Simon Cousens², Inacio Mandomando³, Tacilta Nhampossa³, Rosauero Varo¹, Lola Madrid-Castillo², Pio Vitorino³, Justina Bramugy³, Antonio Siteo³, Quique Bassat¹

¹ISGlobal, Hospital Clínic - Universitat de Barcelona, Isglobal, Barcelona, Spain, ²London School of Hygiene and Tropical Medicine, Department Of Infectious Disease Epidemiology, London, United Kingdom, ³Centro de Investigação em Saúde de Manhiça, Centro De Investigação Em Saúde De Manhiça, Manhiça, Mozambique

Background: Pneumonia is the single largest infectious cause of death in children worldwide. In low- and middle-income countries the in-hospital management of child pneumonia remains a challenge in part due to lack of specificity in the diagnosis. The goal of this study is to identify how to better predict mortality in children under 5 years of age with suspected pneumonia in Manhiça's District Hospital (Mozambique), a malaria endemic setting.

Methods: In this study we analysed the records of 835 children admitted from September 2006 to September 2007 with suspected pneumonia. Primary outcome was mortality during hospital admission and up to 21 days post-discharge. The pre-defined list of candidate predictors of mortality included both clinical variables and complementary test results on admission. We developed 2 models using automated stepwise regression with backward elimination. We calculated Area Under the Curve (AUC) for both models as well as for the Lambaréné Organ Disfunction score (LOD score).

Results: We reported 102 deaths. We identified 11 predictors for the comprehensive model including: age, sex, WAZ, history of seizures, deep breathing, nasal flaring, prostration, hyperpyrexia, wheezing, HIV status and parasitaemia. In the absence of complementary test variables (pragmatic model), cyanosis was found to be a predictor, and deep breathing and hyperpyrexia were dropped from the model. Pragmatic and comprehensive models presented AUC of 0.9 and 0.92 respectively and the LOD score AUC was 0.81 in the same sample.

Conclusions: Both models demonstrated an outstanding discrimination performance in the same sample, but further analysis needs to be carried out before this model can be used in a clinical setting. The LOD score still constitutes a very good predictive score for mortality in this group, similar to what has been previously reported.

WHICH LOW URGENT TRIAGED FEBRILE CHILDREN CAN BE REFERRED TO A FAST TRACK UNIT? A EUROPEAN MULTICENTRE OBSERVATIONAL STUDY

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 11: MANAGING “TRIVIAL” INFECTIONS (YOUNG ESPID)

Chantal Tan¹, Dace Zavadska², Clementien Vermont³, Ian Maconochie⁴, Ruud Nijman⁵, Federico Martín-Torres⁶, Jethro Herberg⁴, Enitan Carrol⁷, Marieke Emonts⁸, Emma Lim⁸, Maria Tsolia⁹, Ronald De Groot¹⁰, Michiel Van Der Flier¹¹, Werner Zenz¹², Benno Kohlmaier¹³, Marko Pokorn¹⁴, Irene Rivero Calle¹⁵, Ulrich Von Both¹⁶, Michael Levin¹⁷, Henriëtte Moll¹⁸

¹Erasmus MC - Sophia Children's Hospital, General Pediatrics, Rotterdam, Netherlands, ²Rīgas Stradina Universitāte, Children Clinical University Hospital, Department Of Pediatrics, Riga, Latvia, ³Erasmus MC - Sophia Children's Hospital, Pediatric Infectious Diseases And Immunology, Rotterdam, Netherlands, ⁴Imperial College London, Section Of Paediatrics, London, United Kingdom, ⁵Imperial College of Science, Technology and Medicine, Section Of Paediatric Infectious Diseases, London, United Kingdom, ⁶Genetics, Vaccines, Infectious Diseases and Pediatrics research group (GENVIP), Instituto De Investigación Sanitaria De Santiago De Compostela, Santiago de Compostela, Spain, ⁷University of Liverpool, Institute Of Infection, Veterinary And Ecological Sciences, Liverpool, United Kingdom, ⁸Great North Children's Hospital, Paediatric Immunology, Infectious Diseases, And Allergy Department, Newcastle upon Tyne, United Kingdom, ⁹National and Kapodistrian University of Athens, Second University Department Of Pediatrics, 'p. And A. Kyriakou' Children's Hospital, Athens, Greece, ¹⁰Radboud University Medical Center, ., Nijmegen, Netherlands, ¹¹Radboud University Medical Center, Pediatric Infectious Diseases And Immunology, Amalia Children's Hospital, Nijmegen, Netherlands, ¹²Medical University of Graz, Department Of Pediatrics And Adolescent Medicine, Division Of General Pediatrics, Graz, Austria, ¹³Medical University of Graz, General Paediatrics, Graz, Austria, ¹⁴University Medical Centre Ljubljana, Univerzitetni Klinični Center, Department Of Infectious Diseases, Ljubljana, Slovenia, ¹⁵Hospital Clínico Universitario de Santiago de Compostela, Translational Pediatrics And Infectious Diseases, Santiago de Compostela, Spain, ¹⁶Hauner Children's Hospital, University Hospital, Ludwig Maximilians University, Division Paediatric Infectious Diseases, Munich, Germany, ¹⁷Imperial College of Science, Technology and Medicine, Section Of Paediatric Infectious Diseases, London, United Kingdom, ¹⁸Erasmus MC-Sophia Children's Hospital, Department Of General Paediatrics, Rotterdam, Netherlands

Background: The number of paediatric patients visiting the Emergency Department (ED) with non-urgent problems is increasing, which contributes to poor patient flow and ED crowding. Implementation of a fast track can address this problem. We aimed to identify which low urgent triaged children are suitable for a fast track.

Methods: This study is part of the MOFICHE study (Management and Outcome of Febrile children in Europe), an observational study including routine data of febrile children (0-18 years) attending European EDs. Children triaged as low urgent by the Manchester Triage System in nine EDs were included. Children are suitable for a fast track, defined as a lower level of care, if they have minimal resource use and are discharged home. Multivariable logistic regression analyses regarding presenting symptom and management (blood tests, imaging and admission) were performed. Covariates included patient characteristics, referral, previous medical care or antibiotic use, visit hours and ED. Presenting symptoms were categorized into: neurological, (n=234) respiratory (n=8376), gastrointestinal (n=1943) and others (n=3430, reference category).

Results: We included 13,983 children (median age 2.7, IQR 1.3-5.2). The majority was self-referred (68%), had respiratory symptoms (60%) and 31% received antibiotics. The neurological group underwent imaging more often (aOR 1.8, 95%CI 1.1-2.9) and were admitted more frequently (aOR 1.9, 95%CI 1.4-2.6). The respiratory group had less blood tests performed (aOR 0.6, 95%CI 0.6-0.7), more imaging (aOR 1.8, 95%CI 1.6-2.0) and were less frequently admitted (aOR 0.6, 95%CI 0.5-0.7). The gastro-intestinal group had more blood tests performed (aOR 1.2, 95%CI 1.1-1.4) and were admitted more frequently

(aOR 1.4, 95%CI 1.2-1.6).

Conclusions: Our study shows that children with respiratory symptoms are most suitable for a fast track, in contrast to the neurological group who underwent more extensive management.

Clinical Trial Registration: This study is not a Clinical Trial.

ANTIBIOTIC USE IN DEFINITE VIRAL AND DEFINITE BACTERIAL PHENOTYPES FROM THE PERFORM BIVA-STUDY ACROSS EUROPE

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 11: MANAGING “TRIVIAL” INFECTIONS (YOUNG ESPID)

Aakash Khanijau^{1,2}, Laura Kolberg³, Fabian Van Der Velden^{4,5}, Jethro Herberg⁶, Taco Kuijpers⁷, Federico Martín-Torres⁸, Henriëtte Moll⁹, Marko Pokorn¹⁰, Andrew Pollard¹¹, Luregn Schlapbach¹², Maria Tsolia¹³, Shunmay Yeung¹⁴, Dace Zavadska¹⁵, Werner Zenz¹⁶, Michiel Van Der Flier¹⁷, Michael Levin⁶, Enitan Carrol^{1,2}, Marieke Emonts^{4,5}, Ulrich Von Both³, On Behalf Of Perform Consortium⁶

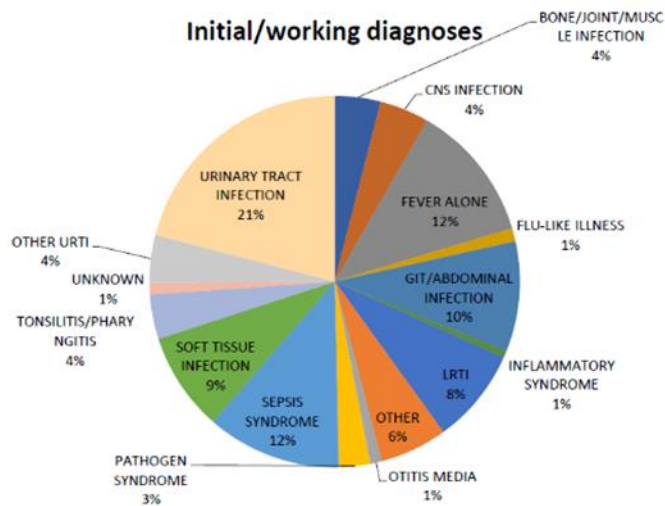
¹Alder Hey Children's Hospital, Department Of Infectious Diseases, Liverpool, United Kingdom, ²University of Liverpool, Institute Of Infection, Veterinary And Ecological Sciences, Liverpool, United Kingdom, ³Hauner Children's Hospital, University Hospital, Ludwig Maximilians University, Division Paediatric Infectious Diseases, Munich, Germany, ⁴Great North Children's Hospital, Paediatric Immunology, Infectious Diseases & Allergy Department, Newcastle upon Tyne, United Kingdom, ⁵Newcastle University, Translational And Clinical Research Institute, Newcastle upon Tyne, United Kingdom, ⁶Imperial College London, Section Of Paediatrics, London, United Kingdom, ⁷Amsterdam University Medical Center, location Academic Medical Center, University of Amsterdam, Department Of Pediatric Immunology, Rheumatology And Infectious Diseases, Amsterdam, Netherlands, ⁸Hospital Clínico Universitario de Santiago de Compostela, Translational Pediatrics And Infectious Diseases, Santiago de Compostela, Spain, ⁹Erasmus MC-Sophia Children's Hospital, Department Of General Paediatrics, Rotterdam, Netherlands, ¹⁰University Medical Centre Ljubljana, Univerzitetni Klinični Center, Department Of Infectious Diseases, Ljubljana, Slovenia, ¹¹Oxford Vaccine Group, Department Of Paediatrics Organization University Of Oxford, And The Nih Oxford Biomedical Research Centre, Oxford, United Kingdom, ¹²Children's Research Center, University Children's Hospital Zurich, University of Zurich, Neonatal And Pediatric Intensive Care Unit, Zurich, Switzerland, ¹³National and Kapodistrian University of Athens, Second Department Of Pediatrics, Children's Hospital 'p. And A. Kyriakou', Athens, Greece, ¹⁴London School of Hygiene and Tropical Medicine, Clinical Research Department, London, United Kingdom, ¹⁵Rīgas Stradiņa Universitāte, Children Clinical University Hospital, Department Of Pediatrics, Riga, Latvia, ¹⁶Medical University of Graz, Department Of Pediatrics And Adolescent Medicine, Division Of General Pediatrics, Graz, Austria, ¹⁷Radboud University Medical Center, Pediatric Infectious Diseases And Immunology, Amalia Children's Hospital, Nijmegen, Netherlands

Background: Over prescription of antibiotics in paediatric Emergency Departments (EDs) leads to increased antimicrobial resistance. Optimisation of antibiotic prescription is a critical goal for antimicrobial stewardship initiatives.

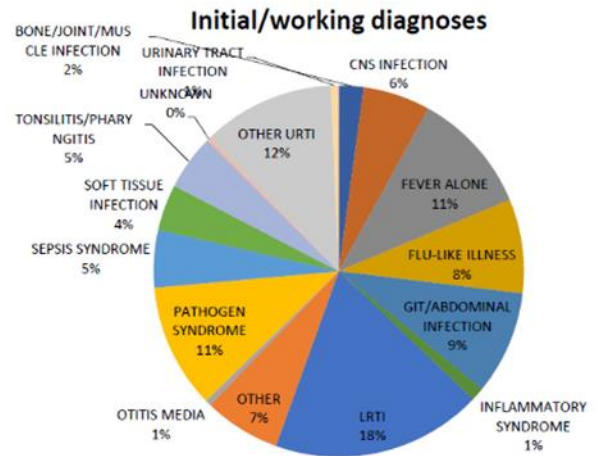
Methods: Using the European PERFORM (www.perform2020.org) BIVA-database of febrile children attending the ED who had blood tests performed, cases were phenotyped using the PERFORM bacterial/viral probability algorithm. We determined empiric antibiotic use in children in view of the individual's final phenotype of definite bacterial (DB) or definite viral (DV) infection. Antibiotics prescribed were classified according to WHO AWaRe (Access, Watch, Reserve).

Results: Of 1080 febrile children with a definite final diagnosis, 582 were assigned a DB and 498 a DV final phenotype. Of note, initial working diagnoses were largely similar between DB and DV phenotypes, except urinary tract infection and respiratory tract infection.

Definite bacterial



Definite viral



A total of 542 (93.1%) DB and 281 (57.0%) DV were prescribed empiric antibiotics during admission. In the DB group, 55 (10.2%) children received oral and 487 (89.9%) intravenous/intramuscular (IV/IM) antibiotics. In comparison, 67 (23.8%) children with a DV phenotype received oral and 214 (76.2%) IV/IM antibiotics ($p < 0.00001$). The top 3 antibiotics were third-generation cephalosporins, penicillins and penicillin/beta-lactamase inhibitor combinations in both DB and DV. A total of 408 (75.3%) DB and 212 (75.4%) DV had ≥ 1 WHO Watch antibiotics prescribed.

Conclusions: Differentiating bacterial/viral aetiology of febrile illness is difficult on initial presentation to the ED. A significant proportion of children with a final DV phenotype received antibiotics during admission, predominantly classified as WHO Watch. Rapid and accurate point-of-care tests in the ED differentiating between DB and DV could significantly reduce antibiotic prescribing, thereby improving antimicrobial stewardship. **Acknowledgements** This project received funding from the European Union's Horizon2020 programme under grant agreement 668303.

Clinical Trial Registration: Not applicable.

ANTIBIOTICS OVERPRESCRIBING PATTERNS IN PEDIATRIC PRIMARY CARE IN ITALY: FINDINGS FROM 2012-2018

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 11: MANAGING “TRIVIAL” INFECTIONS (YOUNG ESPID)

Elisa Barbieri¹, Costanza Di Chiara¹, Anna Cantarutti², Paola Costenaro¹, Carlo Giaquinto¹, Daniele Dona¹

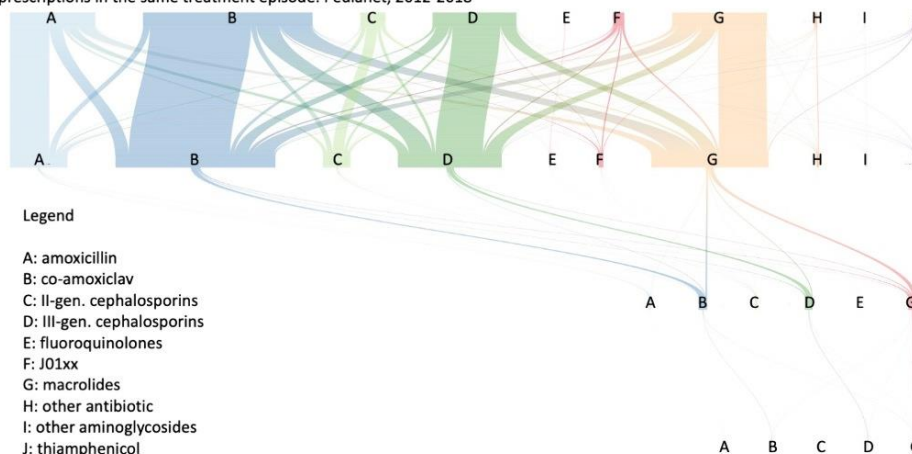
¹University of Padova, Department Of Women And Children's Health, Padua, Italy, ²University of Milano-Bicocca, Department Of Statistics And Quantitative Methods, Milan, Italy

Background: Lack of diagnosis information in the claims databases poses a limit in the assessment of prescribing appropriateness in Italian primary care. We aimed to establish a baseline of the current antibiotic prescription patterns over the years by age and diagnosis. Secondly, we want to describe the switching/prolongation patterns between different types of antibiotics.

Methods: This retrospective cohort study assesses antibiotic prescriptions retrieved from Pedianet, a paediatric primary-care database, from 1st January 2012 to 31st December 2018. Descriptive diagnoses were manually classified, according to ICD-9CM code or free text, and then linked to the specific PI. Descriptive analysis was performed and then stratified by diagnosis class, calendar year, and by age class. Prevalence of prescription index (PI), antibiotic index (AI) and treatment switch and prolongation were the outcomes considered. Mann-Kendall Test and Poisson regression were used to assess trend quantification.

Results: In total 611,352 AI were included. From 2012 to 2018 the AI rate decreased significantly (MK test; $p=0.004$) from 1.67 AI/person-years (95% CI: 1.66-1.68) in 2012 to 1.22 AI/ person-years (95% CI: 1.21- 1.23) in 2018 by 6% yearly (RR: 0.94; 95% CI 0.93-0.94). PIs were associated with an upper respiratory tract infection diagnosis in 23% of cases followed by pharyngitis (21%), bronchitis and bronchiolitis (12%), and acute otitis media (12%). In total, 8% of treatment episodes were prolonged or switched in class (mainly co-amoxiclav, macrolides, and III-gen cephalosporins, Figure1).

Figure 1. Riverplot of switch and treatment prolongation of antibiotic classes. The rows of letters represent the prescription classes in time order from the upper part to the bottom part, and the colored lines the connection with the following prescriptions in the same treatment episode. Pedianet, 2012-2018



Conclusions: To our knowledge, this is the first study assessing antibiotic prescribing practices in pediatric primary care in Italy by years, children's age, and diagnosis. Our study confirmed that broad-spectrum antibiotics prescriptions remain high in Italian primary-care setting. Estimating the drivers for antibiotic prescriptions allows defining the area of intervention for antibiotic stewardship policies in primary care.

PRIMARY CARE CASE MANAGEMENT OF FEBRILE CHILDREN: INSIGHTS FROM THE EPOCT ROUTINE CARE COHORT IN DAR ES SALAAM, TANZANIA

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 12 (JOINT SESSION WITH MSF): PEDIATRIC INFECTIOUS DISEASES CHALLENGES IN HUMANITARIAN SETTINGS

Josephine Van De Maat¹, Olga De Santis², Lameck Luwanda³, Rainer Tan², Kristina Keitel⁴

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Background: More granular data on the quality of care for febrile children in low-resource settings are needed. This study aims to provide insight in the primary healthcare (PHC) case management of febrile children under-five in Dar es Salaam, and to identify areas for improving quality of care.

Methods: We used data of the routine care arm of the ePOCT trial, including children aged 2-59 months who presented with an acute febrile illness to two health centers in Dar es Salaam (2014-2016). For all children research staff performed malaria rapid diagnostic testing and collected presenting complaint, anthropometrics, vital signs, as well as tests performed and routine clinician diagnosis and treatment. We used descriptive statistics to analyze the frequencies of diagnoses, adherence to diagnostics and prescribed treatments.

Results: We included 547 children (47% male, median age 14 months). Most diagnoses were viral: upper respiratory tract infection (60%) and/or gastro-enteritis (18%). Vital signs and anthropometric measurements taken by research staff and urinary testing failed to influence treatment decisions. In total, 518/547 (95%) children received antibiotics, while 119/547 (22%) had an indication for antibiotics based on local guidelines. Antibiotic dosing was frequently out of range. Non-recommended treatments were common (29%), most often cough syrup and vitamins.

Conclusions: Our study points to challenges in using diagnostic test results, concerns regarding quality of antibiotic prescriptions, and frequent use of non-evidence-based complementary medicines in PHC in Tanzania. Larger studies on diagnostic and treatments processes in PHC in Tanzania are needed to inform effective solutions to support PHC workers in case management of children.

Clinical Trial Registration: NCT02225769

PERFORMANCE OF HOST BLOOD TRANSCRIPTOMIC SIGNATURES FOR DIAGNOSIS OF PAEDIATRIC TUBERCULOSIS A SOUTH AFRICAN CASE-CONTROL STUDY.

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 12 (JOINT SESSION WITH MSF): PEDIATRIC INFECTIOUS DISEASES CHALLENGES IN HUMANITARIAN SETTINGS

Ashleigh Cheyne¹, Dominic Habgood-Coote², Ortensia Vito², Lesley Workman³, Giselle D'Souza², Victoria Wright², Sandra M. Newton², Mark P Nicol⁴, Heather Zar³, Myrsini Kaforou², Michael Levin²

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Background: The lack of an accurate diagnostic tests for paediatric tuberculosis (TB) is a major contributing factor to the burden of TB in children. Host blood transcriptomic signatures have shown potential for being used as diagnostic tests. However, most of these signatures were discovered in adult datasets, but their performance has not been assessed in paediatric studies. Here, we perform a comparison of published transcriptomic signatures to assess their potential in distinguishing TB from other diseases (OD) in children.

Methods: 117 children with TB and OD were recruited in South Africa between 2009 and 2013 and whole blood RNA-sequencing was performed. After reviewing the literature, we identified 26 transcriptomic signatures that fulfilled our selection criteria on derivation, which were then assessed both using the models described in their original publication and were also refitted to assess their full potential in classifying the patients in our dataset.

Results: Out of the 26 signatures tested using the previously described models, none achieved the optimum WHO Target Product Profile guidelines for sensitivity (>85%) and specificity (>92%) of a novel non-sputum based diagnostic test. However, when we constructed optimised models, 3/26 signatures met the optimal criteria for distinguishing active TB from OD. We observed a relationship between signature size and performance.

Conclusions: Our results highlight that robust and generalisable models for diagnostic transcriptomic signatures are needed to exploit the full potential of gene expression signals measured in blood, accelerating their development into clinically usable diagnostic tests.

Clinical Trial Registration: Not applicable

EVALUATION OF THE PERFORMANCE OF A DENGUE IGG RAPID DIAGNOSTIC TEST FOR THE DETERMINATION OF DENGUE SEROSTATUS AS PART OF PRE-VACCINATION SCREENING

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 13 : CONTROLLING ARTHROPOD TROPICAL INFECTIONS

Vasco Liberal¹, Remi Forrat², Cong Zhang³, Charles Pan¹, Matthew Bonaparte⁴, Wushan Yin³, Lingyi Zheng⁵, Valeria Viscardi¹, Yukun Wu⁵, Yasemin Ataman-Önal⁶, Stephen Savarino⁷, Catherine Chen¹
¹CTK Biotech, R&d, Poway, United States of America, ²Sanofi Pasteur, Global Clinical Development, Marcy l'etoile, France, ³Beijing Genesee Biotech, R&d, Beijing, China, ⁴Sanofi Pasteur, Global Clinical Immunology, Swiftwater, United States of America, ⁵Sanofi Pasteur, Global Statistics, Swiftwater, United States of America, ⁶Sanofi Pasteur, Translational Sciences And Biomarkers, Marcy l'etoile, France, ⁷Sanofi Pasteur, Translational Sciences And Biomarkers, Swiftwater, United States of America

Background: To determine the eligibility of receiving the tetravalent CYD-TDV dengue vaccine, indicated only in previously dengue virus (DV)-infected individuals, a highly specific and sensitive, point-of-care (POC) test is necessary. The clinical performance of the *OnSite™* Dengue IgG Rapid Diagnostic Test (RDT), a new lateral flow immunoassay specifically designed to determine prior DV infection status, was evaluated.

Methods: Archived pre-vaccination sera from 6-16 year-old participants of phase III trials in Asia (NCT01373281) and Latin America (NCT01374516) who consented to future research use were used. DV reference serostatus was determined by dengue PRNT90, PRNT50 and anti-NS1 IgG ELISA. Samples from seropositives with PRNT90 titer \geq 10 to only 1 serotype were subclassified as DV monotypic immune. Sensitivity was estimated using a random subset of DV seropositives (n=233); specificity using all available seronegative samples (n=346). Flavivirus (FV) cross-reactivity was assessed in DV seronegative samples with prior FV exposure documented by neutralization test, IgG ELISA, or known prior vaccination.

Results: The RDT displayed a specificity of 98.0% (95%CI: 95.9, 99.2) and a sensitivity of 95.3% (95%CI: 91.7, 97.6) in identifying prior DV infection status. Exploratory analysis showed 88.1% (52/59) sensitivity among DV monotypic immune samples. No RDT cross-reactivity was observed with samples positive for prior Zika (0/35) and WNV (0/32), with nominal cross-reactivity to YF (2.4%; 1/42) and JEV (2.8%; 1/36).

Conclusions: The *OnSite™* Dengue IgG RDT was highly specific and sensitive in determining prior dengue infection status with minimal to no FV cross-reactivity. These findings support the use of this first-in-class POC test to determine dengue serostatus and eligibility to CYD-TDV vaccination.

PARASITES UNDER THE RADAR: ASYMPTOMATIC INFECTION WITH PLASMODIUM FALCIPARUM ELICITS NO TRANSCRIPTOMIC HOST-RESPONSE

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 13 : CONTROLLING ARTHROPOD TROPICAL INFECTIONS

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Background: Naturally acquired immunity to malaria, which follows many previous infections, eventually allows individuals in endemic countries to tolerate infection without symptoms. However, asymptomatic infections do act as an undetected reservoir sustaining malaria transmission. Therefore, understanding the mechanisms enabling the asymptomatic state, and identifying biomarkers of asymptomatic infection could contribute to malaria elimination. This study analysed whole blood transcriptomes of Ghanaian children without malaria, with asymptomatic *Plasmodium falciparum* infection, and with symptomatic *P. falciparum* malaria to investigate the host response.

Methods: Children (n=37) were recruited in Obom, a high transmission peri-urban region in Ghana, frequency-matched for age and sex between groups. Illumina RNA-sequencing was undertaken from Paxgene whole blood samples. Differential gene expression analysis was conducted using DESeq2, with adjustment for variation in major leukocyte populations measured by flow-cytometry analysis (false discovery rate $\leq 5\%$).

Results: Comparison of symptomatic (n=9) vs uninfected (n=7) children revealed 735 differentially expressed genes, enriched in immune response pathways. In contrast, comparison of asymptomatic (n=21) vs uninfected (n=7) children showed no differentially expressed genes. We replicated these results by reanalysis of a published microarray dataset (Gene Expression Omnibus database ID: GSE1124).

Conclusions: These findings suggest that the asymptomatic state in *P. falciparum* infection is not the result of a suppressive response acting on-, or orchestrated by circulating blood cells. Parasites instead appear to be “under the radar”, not triggering any immune response at all. This suggests that host-response biomarkers of asymptomatic infection will not be successful and alternative mechanisms enabling and maintaining the asymptomatic state, including epigenetic modifications, should be investigated.

Clinical Trial Registration: My trial/study does not report the results of a controlled trial.

MALARIA ANTIGEN SHEDDING IN BREASTMILK OF MOTHERS FROM A REGION WITH ENDEMIC MALARIA

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 13 : CONTROLLING ARTHROPOD TROPICAL INFECTIONS

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Background: More than 200 million cases of malaria occur yearly, with children under 5 years accounting for two thirds of all malaria deaths. Foreign antigens in breastmilk can elicit strong immune responses in breastfed offspring. We propose that malaria antigens in breastmilk may stimulate antimalarial immune defences. As a first step to address this, we investigated whether *Plasmodium falciparum* histidine-rich protein 2 (pHRP-2) and lactate dehydrogenase (pLDH) are detectable in breastmilk.

Methods: Asymptomatic malaria was diagnosed in blood of lactating Ugandan mothers (n=324) without clinical signs of malaria by an ultrasensitive pHRP-2-based rapid diagnostic test. The presence of malaria antigens in breastmilk was investigated by pHRP-2 and pLDH ELISA.

Results: Eighty-eight mothers (27%) harboured asymptomatic malaria. Among the breastmilk samples from these mothers, 7 had detectable pHRP-2 (7.9 %) with a median (interquartile range) level of 45.0 (2.0 pg/ml-180.2) pg/ml and 10 had detectable pLDH (11.3 %; 6.6 (5.6 AU/ml-9.9) AU/ml). Overall, 14 samples (15.9%) were positive for either pLDH or pHRP-2 and 3 (3.4%) were positive for both pLDH and pHRP-2. Forty-four milk samples from malaria-negative mothers were used as controls and none of these showed detectable pHRP-2 or pLDH antigens. Our preliminary data also indicated that blood levels of malaria antigens determine their levels in breastmilk.

Conclusions: This study shows for the first time that 15% of breastmilk samples from mothers with asymptomatic malaria contain malaria antigens. This may have important implications for child susceptibility to malaria, since malaria antigens in breastmilk may strongly influence the immune response in children who are breastfed.

Clinical Trial Registration: Clinical trial registration: N/A

A PHASE 1, RANDOMIZED, OBSERVER-BLIND, PLACEBO-CONTROLLED, DOSE-RANGING STUDY TO EVALUATE THE SAFETY, REACTOGENICITY, AND IMMUNOGENICITY OF A MESSENGER RNA VACCINE AGAINST CYTOMEGALOVIRUS INFECTION

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 14 (JOINT SESSION WITH PIDS): NEW FRONTIERS FOR PREVENTION OF CONGENITAL CMV

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Background: Cytomegalovirus is the most common congenital viral infection, with birth prevalence ranging 0.2-6.1% worldwide. We will present final safety and immunogenicity data from the Phase 1 trial of mRNA-1647, an mRNA-based vaccine encoding CMV pentamer complex (PC) and glycoprotein B (gB) antigens.

Methods: This Phase 1, first-in-human, randomized, placebo-controlled, dose-ranging study evaluated safety and immunogenicity of 30, 90, 180, or 300 ug of mRNA-1647 or placebo administered on a 0, 2, 6-month schedule through 12 months post 3rd vaccination in 154 healthy CMV-seronegative and CMV-seropositive adults 18-49 years old.

Results: A planned interim analysis at Month 12 (6 months post 3rd vaccination) indicated injection site pain (54-100%) as the most common solicited local adverse reaction (AR) over the 3-dose schedule across mRNA groups, and the most common solicited systemic ARs were headache (6-89%), fatigue (12-82%), myalgia (0-78%) and chills (6-82%). Antigen-specific antibody geometric mean titers (GMTs) increased with dose in both CMV-seronegative and CMV-seropositive groups. In the CMV-seronegative 30, 90, and 180 µg treatment groups, neutralizing antibody (nAb) GMTs against epithelial cell infection were ≥3.6-fold over the CMV-seropositive baseline GMT in the 90 µg and 180 µg treatment groups, and nAb GMTs against fibroblast infection approximated the CMV-seropositive baseline GMT in the 90 µg and 180 µg treatment groups. In CMV-seropositive treatment groups, nAb geometric mean ratios over baseline ranged between 14 and 31 against epithelial cell infection and between 6 and 8 against fibroblast infection.

Conclusions: This Phase 1 study showed mRNA-1647 to be generally well-tolerated. Vaccination with mRNA-1647 induced antigen-specific immune responses in CMV-seronegative participants and boosted immune responses in CMV-seropositive participants. This first-in-human trial demonstrates the potential of a mRNA vaccine to prevent CMV infection and supports its further development.

Clinical Trial Registration: ClinicalTrials.gov Identifier: NCT03382405

RECURRENCE OF HERPES SIMPLEX VIRUS IN NEONATES, AFTER DISCONTINUATION OF PROPHYLAXIS: A RETROSPECTIVE REVIEW

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 14 (JOINT SESSION WITH PIDS): NEW FRONTIERS FOR PREVENTION OF CONGENITAL CMV

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Background: Neonatal Herpes Simplex Virus (HSV) infection may cause severe morbidity and mortality. With cases increasing, optimising short and long-term management for infants is important to minimise complications. Aciclovir prophylaxis reduces recurrence of central nervous system (CNS) disease, which may occur in up to 8% of cases. Daily prophylaxis over a 6-month period has been shown to improve neurodevelopmental outcomes. We present outcomes and recurrence rates for this treatment course.

Methods: We reviewed neonates under the care of three tertiary centres with HSV disease, who presented at less than 90 days of age. Demographics, including neonatal history, clinical presentation, initial investigations and treatment were reviewed (Table 1). Follow-up, including recurrence rate on and after prophylactic aciclovir or valaciclovir and management were recorded.

Results: Of 21 patients, six (28%) had HSV-1, 14 (66%) HSV-2 and one unknown. 13 infants were born at term, eight preterm (<37 weeks). 57% presented with central nervous system (CNS) disease. Seven (33%) had recurrences on prophylaxis, despite good adherence to treatment, and 13 (61%) after stopping prophylaxis. All recurrences were skin eruptions. Premature babies were more likely to have recurrences than term babies. 50% of preterms versus 23% of term babies had recurrences on prophylaxis. After discontinuing prophylaxis, 75% of preterms versus 53% term babies had recurrences.

Table 1: Demographics of Neonates with HSV Disease.

Gestation	Male (M)/Female (F)	Age at presentation	Type of HSV	Type of HSV disease	Recurrence on prophylaxis Yes (Y), No (N)	Recurrence post prophylaxis Yes (Y), No (N)
29+1	F	10 days	HSV2	SEM*	Y	N/A**
29+3	F	7 days	HSV2	SEM	Y	Y
29+4	M	9 days	HSV1	CNS	N	N
31+3	M	Birth	HSV2	Disseminated	Y	Y
32+5	F	6 days	HSV1	CNS	N	Y
32+5	M	6 days	HSV2	CNS	Y	Y
33+0	M	9 days	HSV2	Disseminated	N	Y
35+6	M	3 days	HSV2	CNS	N	Y
Term	F	4 days	HSV2	CNS	N	N
Term	M	16 days	HSV2	CNS	N	N
Term	M	21 days	HSV2	CNS	Y	Y
Term	M	4 days	HSV1	CNS	N	N
Term	F	8 days	HSV1	CNS	N	Y
Term	M	2 days	Unknown	SEM	N	N
Term	M	8 days	HSV2	CNS	Y	N
Term	F	5 days	HSV1	SEM	N	Y
Term	M	24 days	HSV2	CNS	N	N
Term	M	6 days	HSV1	Disseminated	N	Y
Term	M	10 days	HSV2	Disseminated	N	Y
Term	M	4 days	HSV2	Disseminated	Y	Y
Term	F	4 days	HSV2	CNS	N	Y

*SEM - Skin, Eye, Mouth

**N/A – Not Applicable

Conclusions: In this small cohort of infants with neonatal HSV disease, after a course of prophylaxis there was still frequent recurrence of skin lesions, but reassuringly there was no CNS recurrence. Of note, recurrence appeared more common in babies born prematurely, implying a less effective immune response to HSV. Further research is needed to investigate the ontogeny of the immune response to HSV in infants of different gestations.

A CUSTOMIZED SEROLOGICAL FOLLOW UP FOR NEONATES EXPOSED TO TOXOPLASMA GONDII IN UTERO

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 14 (JOINT SESSION WITH PIDS): NEW FRONTIERS FOR PREVENTION OF CONGENITAL CMV

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Background: Toxoplasma Gondii is a parasite with a transplacental passage. Evaluation of newborns exposed to Toxoplasmosis in pregnancy includes ophthalmologic and auditory tests, neurologic examination at birth and serological evaluation until 12 months, to assess the possibility of congenital infection. The aim of this study is to evaluate serological testing timeline in neonates exposed to Toxoplasmosis in pregnancy.

Methods: This is a single center, population-based cohort study of neonates referred for prenatal exposure to Toxoplasmosis from 2014 to 2019. Neonates underwent clinical, laboratory and instrumental investigation for at least 12 months as recommended by national guidelines. A total of 670 neonates were referred to the Perinatal Infection Unit of the University Federico II of Naples. Six hundred thirty-six (95%) completed the serological follow up until twelve months.

Results: Specific IgG antibodies negativization occurred in 628 (98.7%) within 5 months. At 9 and 12 months, all neonates had negative IgG. Initial neonatal IgG antibody titer ≥ 300 UI/ml was associated with time to negativization (241.5 ± 38.2 days when above threshold vs. 137.1 ± 42.6 days when below it; $p < 0.0001$). Initial maternal IgG antibody titer ≥ 300 UI/ml was also associated to time to negativization in the infant (196.1 ± 35.7 days above the cut off vs 135.4 ± 42.6 days below it; $p < 0.0001$). Specific antibody negativization was irreversible in all patients.

Conclusions: Initial maternal and neonatal anti Toxoplasma IgG titers are significantly associated with the time to antibody negativization. These biomarkers can be useful to customize the follow up duration and avoid unnecessary blood drawing.

NEUROLOGICAL MANIFESTATIONS OF COVID-19 INFECTION IN CHILDREN: RESULTS OF A NATIONAL BRITISH SURVEILLANCE STUDY

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 15: COVID-19 CLINICAL AND TREATMENT

Stephen Ray¹, Omar Abdel-Mannan², Mario Sa³, Charlotte Fuller⁴, Karen Psyden⁴, Michael Yoong⁵, Sithara Ramas⁶, Helen Mccullagh⁴, Naomi Thomas⁷, Mike Taylor⁴, Brigitte Vollmer⁸, Marjorie Illingworth⁸, Nadine Mccrea⁶, Victoria Davies⁹, William Whitehouse⁹, Sameer Zuberi¹⁰, Keira Guthrie¹⁰, Evangeline Wassmer¹¹, Nikit Shah¹¹, Mark Baker¹², Christina Petropoulos¹³, Victoria Vlachou¹⁴, Maria Kinali¹⁴, Jeen Tan¹⁵, Uma Varma¹⁵, Dipak Ram¹⁵, Shivaram Avula¹⁶, Ming Lim³, Yael Hacoheh², Tom Solomon¹, Sarah Pett¹⁷, Ian Galea¹⁸, Rhys Thomas¹², Benedict Michael¹, Rachel Kneen¹

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Background: Neurological complications associated with COVID-19 are reported in adults. We undertook an observational study to examine the neurological manifestations of COVID-19 infection in children across the United Kingdom

Methods: The CoroNerve Study Group (www.coronerve.com) developed an online network of secure rapid-response notification portals via major UK neuroscience & psychiatry bodies. Cases were included if they met the case definitions and reported prospectively onto a standardised online case report form.

Results: Fifty two cases were included: 25 (48%) had PIMS-TS; the remaining 27 (52%) were termed the COVID neurology group. The median age was 9 years (range 1-17); the majority were non-caucasian [36 (69%)]. In the COVID neurology group, 14 had encephalopathy: 6 encephalitis (4 ADEM, 2 encephalitis), 7 status epilepticus and 1 encephalopathy; 5 had Guillain-Barré syndrome, three demyelinating disorders; two acute psychosis, two chorea, one TIA. The PIMS-TS group had overlapping neurological manifestations including 21 (84%) with encephalopathy [two strokes] and nine (36%) with peripheral nervous system involvement (table 1). Twenty-eight had CSF analysis; 8 (29%) had a pleocytosis (median 20 white cell count/mm, range 6-6075). All had negative molecular screening (including 3 tested for SARS-CoV-2). Central nervous system imaging was abnormal in 24/46 (52%). Patients in the PIMS-TS group were more likely to be admitted to ICU [20/25 (80%) vs 8/27 (30%)] and require immunomodulation [22/25 (88%) vs 6/27 (22%)]. Thirty-five children (67%) had apparent full recovery (Modified Rankin Score 0-1) and one child (2%) died (PIMS-TS stroke).

Table 1: Comparison of clinical and laboratory features, treatments and outcome between PIMS-TS and COVID neurology group

	PIMS-TS (n=25)	COVID Neurology (n=27)
Age [years] (range)	10 (1-17)	9(1-16)
Gender (Female: Male)	12:13	8:19
Ethnicity (White:Black:Asian)	3:14:8	13:8:6
SARS-CoV-2 PCR positive (%)	11 (44)	21 (78)
SARS-CoV2- IgG positive (%)	19 (76s)	12 (44)
Respiratory involvement at presentation (%)	7 (28)	6 (22)
Neurological comorbidities	2 (8)	9 (33)
Other comorbidities	3 (12)	0 (0)
PICU admission	20 (80)	8 (30)
Inotropic support	13 (52)	0 (0)
IV steroids	18 (72)	6 (22)
Immunomodulation	22 (88)	6 (22)
Raised LDH, D-Dimers, Ferritin	25 (100)	5 (19)
Median CRP (range)	290 (80-556)	1 (1-161)
WCC (range)	20 (3-44.4)	9.9 (4-27.3)
CSF WCC > 5 (%)	2 (8)	8 (30)
Abnormal MRI (%)	16/22 (72%)	11/22 (50%)
Disability	7 (28)	9 (33)
Death	1 (4)	0 (0)

Conclusions: Neurological manifestations associated with COVID-19 infection in children are uncommon but include a wide spectrum of phenotypes (often overlapping in PIMS-TS). Stroke and psychiatric presentations are less common than in adults and short-term outcome appears good.

Clinical Trial Registration: 00000000000000

PRELIMINARY EVIDENCE OF LONG COVID IN CHILDREN

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 15: COVID-19 CLINICAL AND TREATMENT

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Background: There is increasing evidence that adult patients diagnosed with acute COVID-19 suffer from persisting symptoms (defined as Long Covid). To date, there is no data about Long Covid in children. We assessed persistent symptoms in pediatric patients with a previous diagnosis of COVID-19.

Methods: We did an ambidirectional cohort study of children diagnosed with microbiologically-confirmed COVID-19 in our Institution between March and November, 2020. All caregiver's were interviewed about their child's health with a questionnaire developed by an international panel of experts of the Long Covid ISARIC study group, for evaluation of persisting symptoms. Children aged 12 years or more were actively involved in the interview with their caregivers. Participants were categorised into groups according to severity of COVID-19 (symptomatic/asymptomatic and hospitalized/not-hospitalized) and length of follow-up (<60, 60-120, > 120 days).

Results: 129 children were enrolled (mean age 11 years, 48.1% female), assessed a mean of 162.5 (SD, 113.7) days after COVID-19 diagnosis. 41.8% completely recovered, 35.7% had 1 or 2 symptoms and 22.5% had 3 or more. 52.7% had at least one symptom 120 days or more after diagnosis. Fatigue, nasal congestion, muscle and joint pain, respiratory symptoms, palpitations, sleep/concentration problems, weight loss and skin rashes were the most frequently reported symptoms. Symptoms were described also in asymptomatics. 42.6% children assessed > 120 days from diagnosis were still distressed by these symptoms.

Conclusions: This study provides the first providing evidence of Long Covid in children, half of them reporting at least one symptom more than 120 days after COVID-19, 42.6% of them being impaired by these symptoms during daily activities.

IMMUNOGLOBULINS PLUS CORTICOSTEROIDS VS IMMUNOGLOBULINS ALONE IN MIS-C ASSOCIATED WITH SARS-COV-2: A QUASI-EXPERIMENTAL PROPENSITY SCORE MATCHING ANALYSIS BASED ON A FRENCH NATIONAL SURVEILLANCE SYSTEM

PARALLEL SESSION

PRE-RECORDED +LIVE: PARALLEL SYMPOSIUM 15: COVID-19 CLINICAL AND TREATMENT

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Background: Multisystem Inflammatory Syndrome in Children (MIS-C) is the most severe pediatric disease associated with SARS-CoV-2 infection, potentially life threatening, but optimal therapeutic strategy remains unknown. We aimed to compare the efficacy of intravenous immunoglobulins (IVIG) plus methylprednisolone versus IVIG alone as first-line therapy.

Methods: We conducted a quasi-randomized propensity score analysis, using a 1:2 matching algorithm, based on a national surveillance system. All cases with suspected MIS-C were reported to the French National Public Health Agency. Confirmed MIS-C cases fulfilling the WHO definition were included. The primary outcome was the persistence of fever 2 days after the introduction of first-line therapy or recrudescence of fever within 7 days after the first-line therapy, which defined treatment failure. Secondary outcomes included a requirement for second-line therapy, hemodynamic support, and acute left ventricular dysfunction after first-line therapy.

Results: Among 181 children with suspected MIS-C, 111 fulfilled WHO definition. 37/72 (51%) children in the IVIG alone group and 3/34 (9%) in the IVIG+methylprednisolone group showed treatment failure. In the propensity-score analysis, treatment failure was significantly reduced in the IVIG+methylprednisolone versus IVIG alone group (OR 0.25, 95% CI 0.09 to 0.70], p=0.009). Second-line therapy, hemodynamic support and acute left-ventricular dysfunction occurring after first-line therapy were also significantly reduced in the IVIG+methylprednisolone group (OR 0.19, 95%CI [0.06; 0.61]; OR 0.21, 95%CI [0.06; 0.76]; and OR 0.20, 95%CI [0.06; 0.66], respectively).

Conclusions: IVIG plus methylprednisolone was superior to IVIG alone as first-line therapy in MIS-C.

LONG-TERM MORTALITY RISK AFTER COMMUNITY-ACQUIRED BACTERIAL MENINGITIS IN THE FIRST YEAR OF LIFE IN THE NETHERLANDS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: Survey: Bacterial meningitis is a global health issue in children. We examined the long-term mortality risk of bacterial meningitis in infants.

Methods: Infants <1 year with bacterial meningitis defined as a positive cerebrospinal fluid culture, identified from the records of the Netherlands Reference Laboratory for Bacterial Meningitis, were included in the study. Each meningitis patient was frequency matched to 10 unexposed children by sex and year/month of birth. Mortality data were obtained from the Municipal Personal Records database, provided by Statistics Netherlands. We plotted survival curves using the Kaplan-Meier technique and calculated mortality risks at 1, 5 and 10 years after meningitis onset.

Results: We identified 1,646 patients with bacterial meningitis between 01/1995 and 01/2019 and matched them to 16,427 unexposed comparison cohort members. Overall mortality risks for exposed children were 6.2% (95% CI 5.0-7.3) one year after onset and 10.1% (95% CI 8.2-11.4) ten years after onset. Ten years after disease onset, pathogen specific mortality risks were: 17.6 (95% CI 11.8-21.8) for *Streptococcus agalactiae*, 11.3 (95% CI 6.1-18.5) for *Escherichia coli*, 10.6 (95% CI 7.6-13.3) for *Streptococcus pneumoniae*, 6.2 (95% CI 4.1-8.7) for *Neisseria meningitidis* and 4.4 (95% CI 1.4-12.9) for *Haemophilus influenzae*.

Table 1. Mortality risks of children with bacterial meningitis and unexposed cohort members, stratified by time after disease onset and per pathogen.

	<1 year after onset		<10 years after onset	
	Exposed	Unexposed	Exposed	Unexposed
	Mortality risk (95% CI)	Mortality risk (95% CI)	Mortality risk (95% CI)	Mortality risk (95% CI)
All pathogens	6.2 (5.0-7.3)	0.2 (0.1-0.2)	10.1 (8.2-11.4)	0.4 (0.3-0.5)
<i>Streptococcus agalactiae</i>	8.7 (5.8-11.9)	0.3 (0.2-0.5)	17.6 (11.8-21.8)	0.7 (0.4-1.2)
<i>Escherichia coli</i>	5.4 (3.3-11.5)	0.3 (0.1-0.7)	11.3 (5.1-18.5)	0.7 (0.3-1.5)
<i>Streptococcus pneumoniae</i>	5.7 (3.9-7.8)	0.1 (0.06-0.3)	10.6 (7.6-13.3)	0.3 (0.1-0.5)
<i>Neisseria meningitidis</i>	4.9 (3.2-7.2)	0.01 (0.01-0.2)	6.2 (4.1-8.7)	0.4 (0.2-0.6)
<i>Haemophilus influenzae</i>	3.4 (1.1-10.1)	N.A.	4.4 (1.4-12.9)	0.15 (0.02-1.1)

Conclusions: Infants with bacterial meningitis had a higher mortality than unexposed children, even after surviving the first year after onset of disease. Mortality risk ten years after onset was highest for *S. agalactiae*, followed by *E. coli* and *S. pneumoniae*.

RECURRENT INVASIVE PNEUMOCOCCAL DISEASE IN CHILDREN LESS THAN 15 YEARS OLD IN ENGLAND, 2006-2018

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: *Streptococcus pneumoniae* is a major cause of bacterial meningitis, septicemia, and pneumonia. It is responsible for almost a million childhood deaths worldwide and for 11% of all deaths occurring in children <5 years of age. Recurrent invasive pneumococcal disease (IPD) is rare (2.3% to 4.4% of IPD cases) and more than half (52% to 92%) have an underlying comorbidity. This observational cohort study aimed to describe the clinical profile of children with recurrent IPD in England and associated risk factors.

Methods: As part of national enhanced surveillance for IPD conducted by Public Health England (PHE), general practitioners (GPs) are asked to complete a surveillance questionnaire. Using surveillance data, we compared recurrent IPD episodes in under 15-year-olds between 2006/07-2017/18 against single IPD episodes and described the serotype distribution and clinical characteristics of patients with recurrent IPD. We used logistic regression models, adjusting for age and epidemiological year to assess for associations. Non-serotyped single episodes and patients with recurrent episodes where none of the episodes were serotyped, were excluded (479, 9.3%).

Results: There were 4,680 IPD episodes, of which 229 were recurrent. 106/4,557 (2.3%) children had recurrent episodes; most had two episodes (91/106, 85.9%). Compared to children with a single IPD episode due to PCV7-serotypes (569/601), PCV13-serotypes were less common in recurrent episodes (33/1,710; OR 0.28; 95%CI 0.2-0.5). Recurrent episodes were more likely to occur in patients with comorbidities (6.24% (56/897) vs 0.92% (22/2,395), OR 5.25 95%CI 3.1-8.9; p<0.0001). 30-day case-fatality rates did not differ significantly in cases with recurrent episodes 2.8% (3/106) vs cases with single episodes 4.6% (204/4,451; P=0.28).

Conclusions: Recurrent IPD in children is rare and more prevalent in those with underlying diseases.

MYCOPLASMA PNEUMONIAE GENOTYPES AND CLINICAL OUTCOME IN CHILDREN

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: *Mycoplasma pneumoniae* (*Mp*) is a frequent cause of community-acquired pneumonia (CAP) in children. In addition, *Mp* can cause extrapulmonary disease, including mucocutaneous manifestations, or can be carried in the respiratory tract without causing any symptoms. Factors leading to the wide range of clinical outcomes associated with *Mp* infection are unclear. We investigated whether a specific genotype is associated with *Mp* virulence.

Methods: This is a prospective cohort study of *Mp* polymerase chain reaction-positive children, 3–18 years of age, with CAP ($n=25$), *Mp*-induced mucocutaneous disease ($n=8$), and without symptoms (carriers, $n=6$) from 2016–2017, from which respiratory specimens and/or *Mp* DNA extracts were available for extensive molecular characterization. In addition, *Mp* strains of their family members with respiratory tract infection ($n=8$) from 2016–2017, and children with *Mp*-induced mucocutaneous disease ($n=7$) during 2017–2020 were analyzed. Genotyping was performed using macrolide resistance determination, P1 subtyping, multilocus variable-number tandem-repeat analysis (MLVA), and multilocus sequence typing (MLST). Categorical and continuous variables were compared with the Fisher exact test and Mann-Whitney *U* test or pairwise Wilcoxon rank sum test with corrections for multiple testing, as appropriate.

Results: During the 2016–2017 study period, P1 subtype 1 (ST1) and 2 (ST2) were equally detected, but ST2 dominated in the first 6 months ($n=20/26$, 76.9%) and ST1 in the second 6 months ($n=16/18$, 88.9%) ($P=0.00003$). DNA levels did not differ between patients with specific outcomes. Macrolide resistance was detected in 1 (1.9%) strain (A2058G mutation). MLVA types included 3–5–6–2 ($n=21/45$, 46.7%), 3–6–6–2 ($n=2/45$, 4.4%), 4–5–7–2 ($n=14/45$, 31.1%), and 4–5–7–3 ($n=8/45$, 17.8%), and they correlated with P1 subtypes and MLST types. *Mp* strains were almost identical within families, but varied over geographic location. MLVA types were not associated with specific clinical outcomes, and differed in patients with mucocutaneous disease between 2016–2017 (3–5–6–2, $n=5/8$, 62.5%) and 2017–2020 (4–5–7–2, $n=5/7$, 71.4%) ($P=0.02$).

Conclusions: Our results show that *Mp* genotypes may not determine specific clinical outcomes, such as pneumonia, extrapulmonary manifestations, or carriage.

Clinical Trial Registration: NCT03613636

MYCOPLASMA PNEUMONIAE CARRIAGE DOES NOT INSTIGATE RECRUITMENT OF INNATE IMMUNE CELLS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: *Mycoplasma pneumoniae* (*Mp*) is the most common cause of bacterial pneumonia in children under 5. Most children, however, only experience asymptomatic carriage of *Mp*. *Mp* carriage can last from weeks to months. In stark contrast to other respiratory pathogens such as *Streptococcus pneumoniae* and *Haemophilus influenzae*, *Mp* carriage induces neither a systemic nor a mucosal humoral response. We hypothesized that *Mp* carriage prevents induction of humoral immunity by tolerizing innate immune cells. We thus set out to characterize the innate immune response to *Mp* carriage using our murine model.

Methods: Mice were intranasally inoculated with 10⁶ CFU or 10⁹ CFU *Mp* to achieve nasal carriage or pneumonia respectively. Mice were sacrificed 1, 3 or 7 days later and nasal and broncho-alveolar lavage were collected for *Mp* culture. Lung and nasal-associated lymphoid tissue, peripheral blood and lymph nodes were analysed by immunohistochemistry and/or flow cytometry.

Results: *Mp* carriage was confirmed by exclusive presence of *Mp* in nasal lavages. In *Mp* carriage mice, no influx of myeloid cells in NALT nor an increase or significant changes in myeloid cell subsets in nose-draining lymph nodes was detected over time. By contrast, *Mp* infection instigated recruitment of myeloid cells to lungs and NALT, and the number of total leukocytes and myeloid cells in lung- and nose-draining lymph nodes and peripheral blood was significantly increased at days 3 and 7 p.i.

Conclusions: The innate immune response to *Mp* carriage is ostensibly different from the response to carriage with other respiratory pathogens. We speculate that this results from qualitatively different host-pathogen interactions at the epithelial level, which leads to either immune evasion or tolerance induction by *Mp*. This could be beneficial for *Mp* survival and transmission to other hosts.

Clinical Trial Registration: Not applicable.

STREPTOCOCCAL SEPSIS WITH RECURRENCE AND IN MULTIPLES: LEARNING FROM ERRORS IN NEONATAL HOST-COMMENSAL ADAPTATION

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: Group B Streptococcus (GBS) is a common intestinal coloniser during the neonatal period but also may cause late-onset sepsis or meningitis in up to 0.5% of otherwise healthy colonised infants after day 3 of life. Transmission routes and risk factors of this late-onset form of GBS disease are not fully understood.

Methods: Cases of invasive GBS disease (iGBS) with recurrence (n = 25) and those occurring in parallel in twins/triplets (n = 32) from the UK and Ireland (national surveillance study 2014/15) and from Germany and Switzerland (retrospective case collection) were analysed to unravel shared (in affected multiples) or fixed (in recurrent disease) risk factors for GBS disease.

Results: The risk of iGBS among infants from multiple births was high (17%) if one infant had already developed GBS disease. The interval of onset of iGBS between siblings was significantly shorter compared to recurrent cases (4.5 vs 12.5 days, $P = 0.01$) indicating differences in mode of infection and pathogenesis. Disturbances of the individual microbiome, including the persistence of infectious foci, are suggested, e.g. by high usage of perinatal antibiotics in mothers of affected multiples, and by the association of an increased risk of recurrence with a short term of antibiotics (OR 4.2 (1.3-14.2), $P = 0.02$). Identical GBS strains in both recurrent infections and concurrently infected multiples might indicate a failed microbiome integration of GBS strains that are generally regarded as commensals in healthy infants.

Conclusions: The dynamics of recurrent GBS infections or concurrent infections in multiples suggest individual patterns of exposure and fluctuations in host immunity, causing failure of natural niche occupation.

Clinical Trial Registration: Not applicable

PROGRESSION FROM VTEC ENTERITIS TO HAEMOLYTIC URAEMIC SYNDROME (HUS) AMONG PAEDIATRIC CASES IN THE REPUBLIC OF IRELAND: A RETROSPECTIVE CASE/CASE STUDY

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: Ireland currently has the highest VTEC notification rate in Europe, progressing to haemolytic uraemic syndrome (HUS) in approximately 5-10% of cases and most frequently among paediatric cases. To date the effect of “place” as it relates to VTEC serotype, source, pathway and receptor have received little attention.

Methods: All confirmed cases of paediatric (≤ 5 years) VTEC enteritis notified from January 1st 2013 to December 31st 2017 were geo-coded to one of ~19,000 Census Small Areas, and binary coded (Y/N) for HUS progression. Several national datasets were geo-referenced to the case dataset including socioeconomic profile, hydrogeological setting, landuse, and infrastructure, with penalised classification models employed to account for statistical “rarity”. Chi-square Automatic Interaction Detector (CHAID) trees were used to identify attribute “breakpoints”.

Results: Overall, 63 cases of paediatric HUS (63/1,102; 5.7%) were analysed, with a classification accuracy of approximately 96% (60% of HUS cases accurately classified). Case age (breakpoint ≤ 3 years), case type (hospital inpatient), and VTEC serotype (O157, O26) were significantly predictive. Socioeconomic components (female unemployment rate $\leq 13\%$, rented accommodation $>20\%$) and groundwater vulnerability classification (breakpoint: high/extreme) were also predictive. Local spatial attributes (deprivation, groundwater) were more significant than regional variables.

Conclusions: Developed models could be used as an “early-warning” system for HUS progression among paediatric VTEC cases. While VTEC progression appears to be both case- and therapy-related (i.e., severity), there is also a level of spatiotemporality. The association with groundwater vulnerability indicates a waterborne mode of transmission, with elevated groundwater vulnerability in parallel with higher rates of progression potentially due to higher VTEC contamination rates (i.e., dose). Higher levels of affluence associated with HUS progression may potentially serve as a proxy for exposure i.e. international travel, dietary variation and/or healthcare access.

ANTIBIOTICS AND ADVERSE HEALTH OUTCOMES IN CHILDREN - A SYSTEMATIC REVIEW AND META-ANALYSIS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: Antibiotics are the most commonly used drugs in children. In addition to inducing antibiotic resistance, antibiotic exposure has been associated with long-term adverse health outcomes.

Methods: To determine reported associations between antibiotic exposure and adverse health outcomes in children a systematic search to identify original studies was done using PRISMA guidelines.

Results: We identified 94 studies investigating 19 health outcomes in 5,907,591 children. Antibiotic exposure was associated with an increased risk of atopic dermatitis (odds ratio (OR) 1.35, 95%CI 1.09-1.67, $p<0.01$), allergic sensitisation (OR 1.20, 95%CI 1.03-1.39, $p=0.02$), allergies (OR 1.69, 95%CI 1.56-1.82, $p<0.01$), asthma (OR 1.67, 95%CI 1.20-2.33, $p<0.01$), abdominal pain (OR 4.26, 95%CI 3.15-5.76, $p<0.01$), overweight (OR 1.26, 95%CI 1.02-1.14, $p=0.03$), obesity (OR 1.08, 95%CI 1.02-1.14, $p=0.01$), arthritis (OR 1.68, 95%CI 1.06-2.67, $p=0.03$), psoriasis (OR 7.06, 95%CI 5.01-9.94, $p<0.01$) and autism spectrum disorders (OR 1.08, 95%CI 1.01-1.16, $p=0.03$). Antibiotic exposure was not associated with an altered risk of food allergies, allergic rhinoconjunctivitis, wheezing, infantile colic, infantile hypertrophic pyloric stenosis, inflammatory bowel disease, celiac disease, fluorosis and type 1 diabetes.

Conclusions: Although a causal association cannot be determined from these studies, the results support the meticulous application of sound antibiotic stewardship to avoid potential adverse long-term health outcomes.

Systematic Review Registration: N/A

PERINATAL ANTIBIOTIC PROPHYLAXIS AND NEONATAL SEPSIS: A PROSPECTIVE COHORT STUDY

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

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Background: While antibiotic prophylaxis has become a common practice to prevent maternal and early neonatal infection, sepsis remains a top cause of neonatal morbidity and mortality. A better understanding of the changing neonatal sepsis epidemiology in the era of widespread use of perinatal antibiotic prophylaxis is needed. This study aimed to assess the impact of perinatal antibiotic prophylaxis exposure on neonatal sepsis incidence and prevention.

Methods: We conducted a prospective cohort study in two referral hospitals in Indonesia. 845 mother-viable newborns admitted for delivery were enrolled. Newborns were followed up until the age of 28 days or until sepsis is observed. Social demographics, clinical indicators, and risk factors were collected at enrollment and during follow-up. For statistical analysis, series of logistic regressions were performed.

Results: The neonatal sepsis incidence is 9.1 per 100 live-birth. Prematurity (aOR 3.01, 95%CI 1.48-6.11), PROM > 18-hours (aOR 3.46, 95%CI 1.34-8.95), foul-smelling amniotic fluid (aOR 3.17, 95%CI 1.58-6.36), low birth-weight (aOR 2.61, 95%CI 1.15-5.89), formula feeding (aOR 6.82, 95%CI 1.59-29.34), and nothing-per-mouth over 24-hours (aOR 16.51, 95%CI 6.44-42.33) were strong predictors of sepsis. Newborns exposed to perinatal antibiotics prophylaxis were more likely to have sepsis than those who were unexposed (aOR 3.62, 95%CI 1.25-10.52). Such association is stronger for newborns' exposure alone or with maternal exposure (aOR 8.45 95%CI, 2.84-25.09, and aOR 3.9, 95%CI 1.21-12.6).

Conclusions: Our study indicates that neonatal sepsis is associated with a high rate of perinatal antibiotic prophylaxis use even adjusted for other sepsis risk factors. Further studies are needed to revisit the risks and benefits of perinatal antibiotic prophylaxis to improve its efficacy.

BLOODSTREAM INFECTIONS IN CHILDREN WITH EPIDERMOLYSIS BULLOSA

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 01: BACTERIAL INFECTION

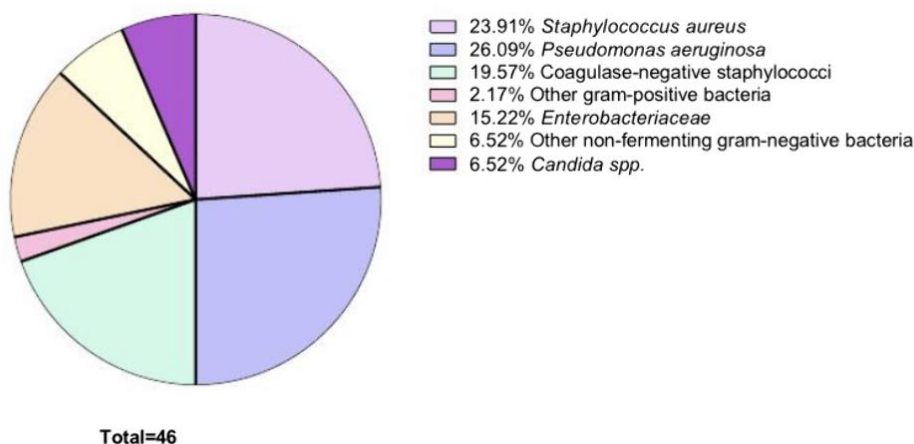
Laura García Espinosa¹, Raúl De Lucas², Rocio Maseda², Fernando Baquero Artigao³, Cristina Calvo⁴, Carlos Grasa⁵, Javier Aracil Santos⁵, Lucia Quintana², Alonso Luis⁵, Ana Mendez-Echevarria⁴, Nathalia Gerig Rodriguez⁶, Javier Nogueira López⁵, Isabel Pérez Conde⁷, Iker Falces Romero⁸, Teresa Del Rosal Rabes⁴

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Background: Epidermolysis bullosa (EB) is an inherited skin disorder with blister formation after minimal trauma. Our aim is to describe bloodstream infections (BSI; bacteremia and candidemia) in EB patients.

Methods: Retrospective descriptive study of BSI in children with EB in a referral centre in Spain (2015-20). We included BSI in children with diagnosis of EB, including patients with recessive dystrophic EB (RDEB), EB simplex (EBS), dominant dystrophic EB (DDEB), and junctional EB (JEB).

Results: Among 126 children (75 RDEB, 30 EBS, 10 DDEB, 8 JEB, 3 others) we identified 37 BSI episodes in 15 patients (13 RDEB, 1 JEB, 1 others; Figure). Five *P.aeruginosa* (41.6%) were ceftazidime-resistant, 4 (33.3%) meropenem-resistant and 4 quinolones-resistant. Three *S.aureus* were clindamycin-resistant (27.2%) and four MRSA (36%). Prior skin cultures were available in 67% episodes, with 52% concordance with blood cultures. Median hospital stay was 20.7 days (IQR: 7.33-76.2). 16 patients (43%) required ICU admission and one died. Global all-cause mortality was 9.5%. In patients with RDEB/JEB, BSI was associated with higher mortality (OR 7.75, 95%CI 2.01-29.9).



Conclusions: BSI is an important cause of morbidity and mortality in children with severe forms of EB. The most frequent microorganisms are *P. aeruginosa* and *S. aureus*, with high rates of antimicrobial resistance.

PREVALENCE AND CLINICAL CHARACTERISTICS OF SARS-COV-2 CONFIRMED AND NEGATIVE KAWASAKI DISEASE PATIENTS DURING THE PANDEMIC IN SPAIN.

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: In April 2020 some children presented with signs of multisystem inflammation with clinical signs overlapping with Kawasaki disease (KD), most of them requiring admission to the pediatric intensive care unit (PICU).

Methods: Medical data of KD patients from 1st January 2018 until 30th May 2020 was collected from the KAWA-RACE study group. We compared the KD cases diagnosed during the COVID-19 period (1st March-30th May 2020) that were either SARS-CoV-2 confirmed (CoV+) or negative (CoV-) to those from the same period during 2018 and 2019 (PreCoV).

Results: One hundred and twenty-four cases were collected. There was a significant increase in cases and PICU admissions in 2020 (P-trend = 0.001 and 0.0004 respectively). We found that 56% of KD patients presenting during the pandemic had confirmed SARS-COV-2 infection. Twenty-three (88.5%) of the CoV+ patients fulfilled both PIMS-TC and MIS-C criteria; from CoV- cohort, 45% of patients fulfilled the criteria for MIS-C, and 40% for PIMS-TS. CoV+ patients were significantly older (7.5 vs 2.5yr), mainly non-Caucasian (64 vs 29%), had incomplete KD presentation (73 vs 32%), lower leucocyte (9.5 vs 15.5x10⁹) and platelet count (174 vs 423x10⁹/L), higher inflammatory markers (C-Reactive Protein 18.5 vs 10.9 mg/dl) and terminal segment of the natriuretic atrial peptide (4766 vs 505 pg/ml), less aneurysm development (3.8 vs 11.1%) and more myocardial dysfunction (30.8 vs 1.6%) than PreCoV patients. Respiratory symptoms were not increased during the COVID-19 period (Table 1).

Table 1. Microbiological SARS-CoV-2 and blood test results of patients with Kawasaki disease (2018-2019) vs 2020 (CoV+) and (CoV-)

	2018-2019 N=63	2020 (CoV+) n=26	p-value	2020 (CoV-) N=20	p-value ^a
Microbiological Results					
Positive result (non-SARS-CoV-2)	17 (27%)	3 (15%)	0.227	4 (20.0%)	0.659
Coronavirus PCR performed	-	26 (100%)	.	20 (100%)	.
Positive	-	11 (42.3%)	.	0 (0.00%)	.
Coronavirus Serology performed	-	21 (80.8%)	.	20 (100%)	.
Positive	-	21 (100%)*	.	0 (0.00%)	.
PCR+ and Serology+	-	6 (28.6%)	.	0 (0.00%)	.
Blood tests					
Hemoglobin (g/dL)	11.6 [10.6;12.2]	12.2 [11.0;13.3]	0.018	10.9 [10.3;11.9]	0.547
Leucocytes x 10 ⁹ /L	15.5 [11.9;20.1]	9.50 [7.40;12.8]	<0.001	13.8 [8.98;21.7]	0.434
Platelets at admission	423 [301;538]	174 [118;250]	<0.001	294 [232;423]	0.024
Platelets (min)	371 [284;446]	174 [118;250]	<0.001	290 [193;423]	0.125
Platelets (max)	605 [530;735]	542 [394;703]	0.064	599 [299;711]	0.225
ESR (mm/h)	67.0 [56.5;86.5]	46.0 [11.5;61.0]	0.010	56.0 [33.2;72.0]	0.113
C-reactive protein (mg/dl)	10.9 [6.81;18.2]	18.5 [11.4;24.2]	0.004	14.2 [9.08;16.8]	0.450
Procalcitonin (ng/mL)	0.85 [0.39;2.87]	4.54 [2.56;7.63]	0.003	0.48 [0.28;3.33]	0.640
Albumin (g/L)	3.50 [3.27;4.00]	3.40 [3.00;3.80]	0.153	3.65 [3.30;3.92]	0.779
ALT (IU/L)	50.0 [16.0;103]	24.0 [18.0;44.0]	0.061	34.0 [20.0;69.0]	0.662
AST (IU/L)	40.0 [27.0;60.0]	34.0 [26.0;56.0]	0.351	35.0 [23.0;46.0]	0.170
GGT (IU/L)	42.0 [20.8;114]	20.5 [15.0;46.8]	0.031	15.0 [13.5;66.8]	0.137
Nt proBNP	503 [356;1475]	4766 [3046;13596]	<0.001	776 [268;1260]	0.849
IL_6	-	185 [75.4;310]	.	82.4 [51.7;84.6]	.
D-dimer	1883 [671;3185]	2461 [1041;3960]	0.591	625 [287;5478]	0.705
Fibrinogen	597 [534;680]	810 [518;930]	0.289	591 [523;619]	0.605
Ferritin	185 [128;247]	476 [358;966]	<0.001	153 [116;588]	0.479
^a This p-value compares 2018-2019 with 2020 (CoV-). *Not tested in 5 patients. Abbreviations: CoV+: SARS-CoV-2 positive patients, CoV-: SARS-CoV-2 negative patients. ESR: Erythrocyte sedimentation rate, ALT: Alanine transaminase, AST: aspartate aminotransferase, GGT: gamma-glutamyl transpeptidase, NT-proBNP: N-terminal pro b-type natriuretic peptide, IL-6: Interleukin 6.					

Conclusions: The KD CoV+ patients mostly meet PIMS-TC and MIS-C criteria. Around half of the KD patients presenting during the pandemic had confirmed SARS-COV-2 infection. Whether this is a novel entity or the same disease on different ends of the spectrum is yet to be clarified.

Clinical Trial Registration: Clinical trial registration: N/A

PAEDIATRIC SARS-COV2 INFECTIONS IN SWITZERLAND

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: COVID-19 manifests distinctively across different age groups. Robust, population-based data from active surveillance is necessary to understand and optimally handle this new infection in children. This prospective nationwide study summarises key data on infants, children and adolescents with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections in Switzerland.

Methods: Data were collected through the Swiss Paediatric Surveillance Unit (SPSU) from children with laboratory-confirmed SARS-CoV-2 infection presenting to 33 paediatric hospitals in Switzerland from March to October 2020 (during both epidemic peaks). All children aged less than 18 years old cared for at a Swiss hospital (ambulatory and hospitalised) were included.

Results: In total, 678 children were included. The median age was 12.2 (IQR 5.0-14.6) years, 316 (47%) were female and 106 (16%) had comorbidities. 126 (19%) children were hospitalised, 16 (2%) admitted to ICU. In children aged < 2 years, fever, cough and rhinorrhoea were the most common symptoms and in adolescents fever, cough and headache. Hospitalised children more often presented with fever (96 [76%] vs 209 [38%], p-value<0.01) and rash (16 [1%] vs 6 [1%], p-value<0.01). Anosmia/dysgeusia was more prevalent in ambulatory children (73 [13.3%] vs 3 [2.4%], p-value<0.01). 15 (2%) were treated with corticosteroids, nine (1%) with immunoglobulins and nine (1%) with inotropes. 28 (4%) children experienced complications, cardiovascular complications were the most frequent (11 [2%]). A positive household-member was identified in 45% and community-acquired infection in 13%.

Conclusions: This study confirms that COVID-19 is mostly a mild disease in children and usually does not require specific treatment. However, children can present critically ill. With case numbers still rising, continuous observation is necessary to further understand the disease in children, guide therapy and evaluate the necessity for vaccination in children.

Clinical Trial Registration: The study has received ethical approval by the Ethikkommission Nordwest-und Zentralschweiz (EKNZ 2020-01130).

EXPERIENCE OF 1,517 COVID-19 PEDIATRIC CASES IN ARGENTINA: MULTICENTER STUDY

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: Since COVID-19 pandemic started, preliminary evidence suggests that children are as likely as adults to get infected, but most of them have asymptomatic infection or mild disease. Pediatric multisystem inflammatory syndrome (PIMS) is a novel condition that emerged during this pandemic. The aim of this study was to describe clinical and epidemiological aspects of pediatric COVID-19 infection in 10 centers in Argentina.

Methods: Prospective, multicenter, observational and analytical cohort study. Confirmed cases between 0 to 18 years of age were included consecutively according to the case definition of the Argentina MOH, March to December 2020. Detection of SARS CoV-2 was confirmed by RT-PCR in nasopharyngeal aspirate/swab.

Results: A total of 1,517 COVID-19 confirmed cases were included, 90% between May-October (winter/spring). Median age: 5.3 years (interquartile range-IQR: 1.1-10.9 years), 23.4% <1 year; 49.8% male. Cases classification: asymptomatic 24.3%, mild 64.4%, moderate 5.6%, severe 5%, critical 0.7%. Almost 70% (n=1,044) were hospitalized: median length of stay 7 days (IQR: 3-9). Cases characteristics in table 1. There were 3 fatal cases (0.2%) with underlying diseases (chronic kidney disease, myasthenia gravis). PIMS was diagnosed in 32 cases, median age 5.5 years (IQR: 3-9), 78% received intravenous gamma-globulin, 62% systemic corticosteroids and 47% required intensive care.

Confirmed COVID-19 cases characteristics (n= 1,517)	(%)
Comorbidities	25.6
History of contact with acute respiratory infections and/or contact with COVID-19	97.3
Living in crowded conditions	37.2
Diagnosis at admission in hospitalized cases (n=1,044)	
Asymptomatic	24.4
Upper respiratory symptoms	47.5
Bronchiolitis	2.0
Pneumonia	2.5
Others (isolated symptoms, gastroenteritis, anosmia/ageusia, asthmatic crisis)	23.7
Severity in hospitalized cases (n=1,044)	
Hypoxemia	8.3
Required intensive care	2.5
Required mechanical ventilation	1.5

Conclusions: In our study most cases were mild, had history of close contact with COVID-19 cases, PIMS was reported in 2% and COVID-19 lethality was 0.2%.

CAN LABORATORY FINDINGS PREDICT PULMONARY INVOLVEMENT IN CHILDREN WITH COVID-19 INFECTION?

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: It has been understood from worldwide reports that Coronavirus Disease 2019 (COVID-19) is a disease with a different course in children than adults. Studies investigating clinical and imaging findings of COVID-19 pneumonia and predictors for lung injury mostly focus on adults, and limited data are available for children. In this study, we aimed to evaluate the role of laboratory findings in predicting lung involvement in children with COVID-19.

Methods: Between March 11, 2020, and December 25, 2020, a total of 101 pediatric COVID-19 patients confirmed by RT-PCR or antibody test and who underwent chest CT scans were reviewed retrospectively. On admission absolute neutrophil count (ANC), absolute lymphocyte count (ALC), ANC/ALC ratio, platelet count, D-dimer, fibrinogen, ferritin, procalcitonin, CRP and lactate dehydrogenase levels were compared in patients with normal and abnormal CT scans.

Results: Among the patients, 68 (67.3%) had normal CT scans, and 33 (32.7%) had pulmonary involvement. The median CRP, ferritin and fibrinogen levels were significantly higher in children with abnormal CT findings. The model of binary logistic regression based on the presence of cough, shortness of breath, fibrinogen, ferritin, and CRP levels showed that the possibility of having abnormal CT was 1.021 times likely to happen for every additional increase of fibrinogen levels.

Conclusions: In conclusion, while CRP, fibrinogen, and ferritin levels differ significantly in patients with pulmonary injury, ALC, ANC, LDH, D-dimer, PLT, procalcitonin, and ANC / ALC ratio were similar compared to the patients with no pulmonary findings. Only fibrinogen levels were found to be an independent risk factor for pulmonary involvement. Restricting radiological imaging to patients with significant symptoms and high fibrinogen levels might be rational in children with COVID-19 infections.

MIS-C IN CHILDREN WITH COMPLETE AND INCOMPLETE KAWASAKI DISEASE CRITERIA IN SPAIN: CLINICAL AND MICROBIOLOGICAL OUTCOMES.

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: Since April 2020, clusters of children with multisystem inflammatory syndrome (MIS-C) linked to SARS-CoV-2 infection have been described in Europe. The syndrome shares features with Kawasaki Disease (KD), toxic shock syndrome and macrophage activation syndrome. We aimed to describe and compare the epidemiologic, clinical and diagnostic findings, the therapeutic approach and the outcomes on MIS-C patients in our cohort.

Methods: Case series of children (0-18 years old) with MIS-C associated with SARS-CoV-2 enrolled from the 1st March to the 31th of December 2020 in the Epidemiological Study of COVID-19 in Children (EPICO-AEP), a multicentre (49 hospitals) prospective registry cohort of children with SARS-CoV-2 infection in Spain. We describe different groups inside MIS-C spectrum: Kawasaki Disease (KD) or incomplete KD (IKD) were defined according the 2017 American Heart Association definition. For MIS-C definition, WHO's was used.

Results: 85 hospitalized children were diagnosed with MIS-C by WHO criterial. 97% had microbiological or serological evidence of SARS-CoV-2 infection: 36/85 (42.3%) positive RT-PCR, 23/68 (33.2%) positive IgM and 60/68 (88%) positive IgG. 16/85 children (18.8%) fulfilled complete KD definition and 41/85 (48.2%) IKD, while 28/85 (32.9%) did not meet either. Clinical and microbiological aspects of these groups are summarized in table 1.

	All patients MIS-C (n=85)	Fulfills criteria for complete Kawasaki disease (n:16)	Incomplete KD (n: 41)	Other undefined inflammatory presentation (n: 28)	P<0.05
Sex (Male)	54/85 (63.5%)	13/16 (81%)	25/41 (61%)	16/28 (57.1%)	0.24
Age years	8.2 y	6.8 y	7.6y	10.12y	0.05
Comorbidities	15/85 (17.6%)	0/16 (0%)	10/41 (24%)	5/28 (17.8%)	0.02
Mucocutaneous	68/85 (80%)	16/16 (100%)	39/41 (96.1%)	13/28 (52%)	0.02
NRL symptoms	37/85 (43.5%)	6/16 (37.5%)	20/41 (48.7%)	11/28 (39.2%)	0.612
RESP symptoms	32/85 (37.4%)	2/16 (12.5%)	15/41 (36%)	15/28 (53.57%)	0.02
GI symptoms	73/85 (85.8%)	12/16 (75%)	38/41 (92.7%)	23/28 (82.1%)	0.17
Cardiological symptoms	48/85 (56.4%)	6/16 (37.5%)	26/41 (63.4%)	15/28 (53.6%)	0.377
Myocarditis	30/85 (35.3%)	1/16 (6.3%)	15/41 (36.6%)	14/28 (50%)	0.01
NT-proBNP	12.105	7.932	14.209	10.974	0.58
Admission PICU	53/85 (62.3%)	6/16 (37.5%)	26/41 (63.4%)	22/28 (78.6%)	0.02
Shock	46/85 (54%)	5/16 (31.2%)	24/41 (59.3%)	17/28 (60.7%)	0.09
MV	12/85 (14.1%)	0/16 (0%)	5/41 (12%)	7/28 (25%)	0.89
Corticosteroids	65/85 (76.5%)	13/16 (81.2%)	29/41 (70.7%)	23/28 (82.1%)	0.48
IGIV	62/85 (72%)	16/16 (100%)	35/41 (85.4%)	3/28 (10.7%)	0.04
Toxilizumab/ Anakinra	11/85 (12.9%)	0/16 (0%)	5/41 (12.1%)	6/28 (21.4%)	0.03
Median duration of admission	11.2 days	7.7	11.5	12.5	0.01
PCR SARS-CoV-2	36/85 (42.3%)	7/16 (43.7%)	18/41 (43.9%)	11/28 (39.3%)	0.92
IgM SARS-CoV-2	23/68 (33.2%)	4/13 (30.7%)	11/32 (34.3%)	8/23 (34.8%)	0.92
IgG SARS-CoV-2	60/68 (88%)	13/13 (100%)	29/32 (90.6%)	19/23 (82.6%)	0.10
Haemoglobin g/dl	10.4	11.2	10	10.5	0.56
Platelets <150.000/mm3	42/85 (49.4%)	9/16 (56.2%)	17/41 (41.5%)	14/28 (50%)	0.45
Lymphocytes <1.000/mm3	50/85 (58.8%)	9/16 (56.2%)	22/41 (53.6%)	18/28 (64.3%)	0.73
CPR mg/L	198.84	199.06	194.8	204.42	0.93
PCT ng/ml	10.68	6.5	11.21	12.41	0.57
Ferritin ng/ml	2.661	840.3	4.185	1.436	0.64
LDH U/L	713	508	576.6	1.033	0.31
IL-6 pg/ml	290	381.5	344.88	196.36	0.33
D-dimer ng/ml	6.293	5.780	8.076	3.879	0.26
Serum sodium mEq/L	134	132	134	134	0.35
Albumin g/dl	3	2.9	2.93	3.1	0.66
ALT U/L	82	67	63.2	119.3	0.19

Conclusions: MIS-C clinical and biomarker profile overlaps with KD and difficult its diagnosis and classification. MIS-C cases not fulfilling KD criteria differ in several characteristics as compared with KD SARS-CoV-2 related: patients are older, present more often with respiratory, gastrointestinal and neurological symptoms, and develop a more severe disease in terms of cardiovascular involvement (myocarditis and higher pro-BNP). Higher rates of leukopenia, lymphopenia and thrombocytopenia, as well as increased inflammation have been reported but were not statistically significant. Why a small fraction of SARS-CoV-2-infected children develop MIS-C remains unclear.

**DISTINGUISHING MIS-C FROM OTHER CAUSES OF INFLAMMATORY OR INFECTIOUS DISEASE:
AN INTERNATIONAL COLLABORATION FROM THE MULTI-CENTRE DIAMONDS STUDY**

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

Sophie Rhys-Evans¹, Jethro Herberg², Myrsini Kaforou³, Claire Broderick³, Elizabeth Whittaker⁴, Andrew Mcardle³, Harsita Patel³, Priyen Shah³, Ortensia Vito³, Eleanor Seaby³, Michael Levin⁵

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Background: One of the challenges in the management of Multisystem Inflammatory Syndrome in Children (MIS-C) is early diagnosis, as symptoms are non-specific and clinical features overlap with those of other infectious and inflammatory diseases. In order to establish how well the WHO criteria for a MIS-C diagnosis can distinguish the disorder from other febrile conditions, we compared patients fulfilling the diagnostic criteria for MIS-C to other febrile or inflammatory conditions, including bacterial and viral infections, and previously recognised inflammatory disorders.

Methods: Non-identifiable data was collected as part of the DIAMONDS study, an international consortium recruiting patients with fever and inflammation across 13 countries. Comparative analysis was performed on over 1000 children recruited from 2020 to 2021.

Results: Patients recruited to DIAMONDS were twice as likely to have an inflammatory diagnosis (6.2%) as those in PERFORM (2.8%), a study with similar inclusion and exclusion criteria that recruited children prior to the COVID-19 pandemic. More than half of patients (53%) with inflammatory conditions in DIAMONDS had a history of SARS-CoV-2 infection or exposure. Bacterial infections were identified in some patients fulfilling MIS-C criteria. A wide spectrum of SARS-CoV-2-related inflammation was observed, including patients who did not meet the WHO definition for MIS-C. Further analysis of this data is ongoing.

Conclusions: Early analysis of the DIAMONDS data has shown the impact of the COVID-19 pandemic on the burden of inflammatory conditions in children. There appears to be a wider spectrum of inflammatory diseases associated with SARS-CoV-2 than what has been identified by the current WHO diagnostic criteria. Further analysis of this data will help understand the impact of SARS-CoV-2 exposure on inflammatory disorders, as well as its impact on secondary infections.

IMMUNOMODULATORY TREATMENT EFFECTIVENESS IN A LARGE INTERNATIONAL COHORT OF MIS-C/PIMS-TS PATIENTS FROM THE BEST AVAILABLE TREATMENT STUDY (BATS)

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: From April 2020, clinicians in multiple countries reported a novel and unusual inflammatory syndrome sharing features with Kawasaki Disease (KD), though occurring more in school-aged children, and with shock and abdominal symptoms common. Treatment has been inspired by KD, with use of steroids and IVIg common. Randomised trials are underway, but there is an urgent need to understand treatment efficacy.

Methods: In May 2020 we commenced the BATS study (bestavailabletreatmentstudy.co.uk), collecting data from paediatric units around the world on children presenting with PIMS-TS/MIS-C. Data is collected in Redcap on demographics, presentation, exposure history, microbiological/serological results, outcomes and complications, with timecourse data on inflammatory markers, level of care, cardiological findings and treatments. Exported data undergoes post-processing and QC. Patients are categorised by criteria for PIMS-TS/MIS-C and descriptive data on demographics, severity and treatment patterns is produced. Propensity-score based methods will be used to compare effectiveness of initial treatments.

Results: At time of submission, 394 patient entries with admission/discharge dates are available from 49 hospitals in 25 countries. The majority (61%) of admissions come from the UK, Russia, Panama and USA. Of 347 records where patients were previously untreated, initial immunomodulator treatment (two-day window) was steroids in 49 (14%), IVIG in 99 (29%) and both in 157 (45%). 15 (4%) had other treatment combinations and 27 (8%) received no immunomodulator. Comparative analysis by treatment is underway.

Conclusions: Whilst randomised trials reduce bias, a low proportion of children globally are being recruited into trials. Low recruitment may lead to imprecise estimates of efficacy and uncertainty. The depth, growing size and global reach of our study potentially offers the best available evidence of efficacy of primary treatments, as well as insight into treatment patterns, outcomes and complications.

AGE RELATED DIFFERENCES IN CLINICAL FEATURES OF PEDIATRIC POST-ACUTE COVID-19 IN LATVIA: A DESCRIPTIVE RETROSPECTIVE COHORT STUDY

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection causes a spectrum of characteristics that range from asymptomatic seroconversion to severe cases, sometimes with prolonged symptoms. Only limited data are available about long-term consequences in pediatric population. Objective of this research was to identify and compare long-term post-acute Covid-19 symptoms and sequelae in children after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in various age groups.

Methods: This was a retrospective cohort study. From March 2020 to December 2020 ninety-two paediatric Covid-19 patients (age ≤ 18 years) and their parents were enrolled in the study. To identify the long-term consequences of SARS-CoV-2 infection, we defined post-acute covid-19 as extending beyond three weeks from onset of first symptoms. All patients were evaluated in a face-to-face visit according to specially designed post-COVID-19 symptom assessment protocol 1 to 3 months after COVID-19 onset. Descriptive statistics were used to present the data.

Results: During the first follow up visit 49% of all patients were asymptomatic and had returned to their previous level of health, but 51% had persistent symptoms after SARS-CoV-2 infection. From all the symptomatic children 19% had 1 symptom, 10% two, and 22% had 3 or more. Most often the complaints about long-term post-Covid-19 symptoms were seen among adolescents (age 15-18)-62%. In this age group the most common long-term symptoms were fatigue-31% and tiredness after good night sleep-31%, as well as headaches-15%, cognitive disturbances-12% and persistent loss of taste and/or smell-12%.

Conclusions: The long-term symptoms of SARS-CoV-2 infection are evident in paediatric population and affect children's physical and emotional health. According to our data, the most common post-acute COVID-19 clinical features were noted in children from 15 to 18 years.

COVID-19 IN IMMUNOCOMPROMISED CHILDREN: DATA FROM THE SPANISH EPIDEMIOLOGICAL STUDY OF CORONAVIRUS IN CHILDREN (EPICO-AEP)

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: Data on the clinical impact of immunocompromised children suffering from SARS-CoV-2 are limited. The aim of this study is to describe the characteristics of children with primary (PID) or secondary Immunodeficiencies (SID) from a Spanish multicenter study.

Methods: EPICO-AEP is a multicenter cohort study conducted in Spain to assess the characteristics of children with COVID-19. In total, 75 hospitals are collecting data since the beginning of the epidemic in Spain in March 2020. This analysis includes children with PID and SID aged 0 to 18 years attending any of the participating hospitals between 12/03/20 to 23/01/2021, with a microbiologically confirmed SARS-CoV-2 infection.

Results: 96 children were included (10% of patients recruited): 9 with PID and 87 with SID (42 secondary to immunosuppressive therapy and 42 to malignancy), 53(55.2%) males and a median age of 10.8 years (IQR:5-14.3years). Children with PID were younger compared to those with SID (34.7vs132.2 months, $p=0.023$). The most common diagnosis related to SARS-CoV-2 was pneumonia (24%), followed by upper respiratory tract infection (21.9%) and fever without a source (14.6%). Data related to laboratory findings, management and mortality is summarized in Table1; there were no statistically differences between PID and SID.

Table 1. Demographic and clinical data on children with PID and SID during admission

	Total N=96	Primary ID N=9	Secondary ID N=87	p-value
Sex (male)	53/96 (55.2%)	4/9 (44.4%)	49/87 (56.3%)	0.50
Age (months)	130.5 (61.7-172.1)	34.7 (6.8-125.8)	132.3 (79.4-172.8)	0.023
Admission	72/96 (75.0%)	8/9 (88.9%)	64/87 (73.6%)	0.31
Leukocytes	5050.0 (2060.0-7900.0)	4950.0 (3630.0-7520.0)	5150.0 (2060.0-7900.0)	0.53
Neutrophils	2220.0 (790.0-5010.0)	2200.0 (1130.0-4430.0)	2315.0 (745.0-5305.0)	0.87
Lymphocytes	970.0 (410.0-1780.0)	1220.0 (730.0-1400.0)	860.0 (335.0-1785.0)	0.24
C-reactive protein	16.0 (5.0-71.6)	11.0 (5.9-32.2)	16.6 (4.7-78.3)	0.87
Procalcitonin	0.2 (0.1-0.4)	0.1 (0.1-0.6)	0.2 (0.1-0.4)	0.92
Dimer-D	380.0 (180.0-1638.0)	728.5 (243.0-1433.0)	375.0 (174.0-1670.0)	0.57
Oxygen therapy	20/96 (20.8%)	3/9 (33.3%)	17/87 (19.5%)	0.33
Admission to PICU	13/96 (13.5%)	1/9 (11.1%)	12/87 (13.8%)	0.82
Mechanical ventilation	6/96 (6.2%)	1/9 (11.1%)	5/87 (5.7%)	0.53
ECMO	1/96 (1.0%)	0/9 (0.0%)	1/87 (1.1%)	0.75
Inotropes/vasopressors	1/96 (1.0%)	0/9 (0.0%)	1/87 (1.1%)	0.75
Mortality	4/96 (4.2%)	0/9 (0.0%)	4/87 (4.6%)	0.51

Conclusions: Of note, 4 (4.2%) died, all with SID, which represents 80% (4/5) of patients who died from the entire EPICO-AEP cohort. In our cohort, patients with PID suffering from SARS-CoV-2 were younger and suffered from lower mortality compared to those with SID. Data from larger cohorts is needed to better stratify risk groups and their management.

CHARACTERISTIC OF PEDIATRIC PATIENTS WITH COVID-19 AND OTHER RESPIRATORY VIRUSES IN BRAZIL: A SINGLE CENTER STUDY

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 02: COVID CLINICAL AND EPIDEMIOLOGY

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Background: In December 2019, a new coronavirus was identified and named SARS-CoV2. COVID-19 is a multisystemic disease caused by SARS-CoV-2. Pediatric patients represent only approximately 1% of total cases and usually present with less severe symptoms. As of December 8, 2020, 6.623.911 cases were detected in Brazil and 177.317 deaths occurred. This study describes the characteristic of children with COVID-19 and other respiratory viruses during the 2020 pandemic.

Methods: We analyzed clinical and laboratory data of patients aged 0-17 seeking care in the emergency department submitted to Real Time Reverse Transcriptase Polymerase Chain Reaction (RT-PCT) for SARS-CoV-2. This was a single center study conducted in a private hospital in São Paulo, Brazil from February 25th to May 21st of 2020. Laboratory results and clinical data were collected through patients' files. Viral testing was conducted by the hospital's laboratory independently from the research. Disease severity and Multisystem Inflammatory Syndrome (MIS-C) were defined according to World Health Organization criteria.

Results: We identified 885 patients submitted to RT-PCR for SARS-CoV-2, with 4.1% positive. 124 patients were included in the study, eight of them positive for SARS-CoV-2 and 38 positive for other respiratory pathogens. Cough (n=7, 87.5%) and fever (n=6, 75%) were the most common symptoms. Headache was significantly more common in children with COVID-19 (50%, p=0.03). No cases of MIS-C and no deaths were identified. No patients needed mechanical ventilation. There was one co-detection (SARS-CoV-2, Influenza B and HCoV-NL63). Disease severity was similar in children with COVID-19 and other respiratory viruses.

Table: Comparison of SARS-CoV-2 patients with patients positive for other respiratory pathogens			
	SARS-CoV-2 Positive (n=8)	Other Pathogens Positive (n= 38)	p-value
Age in years (Range; SD)	6.7 (0.3-13.6; 4.1)	6.1 (0.3-16; 4.4)	0.87
Gender (Female: Male)	2: 6	21: 17	0.24
Comorbidities	1 (12.5%)	14 (36.8%)	0.24
Days of Symptoms at visit (range)	7.9 (1-15)	3.4 (0-15)	0.06
Clinical Manifestations			
Asymptomatic	1 (12.5%)	0	0.17
Coryza	3 (37.5%)	19 (50%)	0.69
Nasal congestion	4 (50%)	14 (36.8%)	0.69
Cough	7 (87.5%)	33 (86.8%)	>0.99
Dyspnea	1 (12.5%)	11 (29%)	0.66
Sore throat	1 (12.5%)	7 (18.4%)	>0.99
Otalgia	0	2 (5.3%)	>0.99
Skin rash	0	1 (2.6%)	>0.99
Myalgia	1 (12.5%)	3 (7.9%)	0.55
Headache	4 (50%)	1 (2.6%)	0.002
Fever	6 (75%)	24 (63.2%)	0.69
Vomiting	1 (12.5%)	1 (2.6%)	0.32
Diarrhea	1 (12.5%)	2 (5.3%)	0.44
Oliguria	1 (12.5%)	0	0.17
Wheezing	0	7 (18.4%)	0.32
Abdominal Pain	0	0	1
Retro orbital pain	0	1 (2.6%)	1
Fatigue	1 (12.5%)	3 (7.9%)	0.55
Physical Examination			
Dehydration	1 (12.5%)	1 (2.6%)	0.32
Tachypnea	2 (25%)	12 (31.6%)	1
Crackles	0	7 (18.4%)	0.32
Wheezing	0	8 (21%)	0.32
Hypoxemia	0	6	0.57
Follow up			
Hospital Admittance	2 (25%)	9 (23.7%)	>0.99
ICU admittance	2 (25%)	9 (23.7%)	>0.99
Treatment			
Beta Lactams	1	10	0.66
Macrolides	3 (37.5%)	6 (15.8%)	0.18
Oseltamivir	1 (12.5%)	9 (23.7%)	0.66
Hydroxychloroquine	1 (12.5%)	0	0.17
Systemic corticosteroids	0	6 (15.8%)	0.57
Short Acting Beta Agonists	1 (12.5%)	10 (26.3%)	0.66
Comorbidities: asthma (n=4), wheezing (n=10), cardiac disease (n=1). ICU: intensive care unit; SD: standard deviation			

Conclusions: COVID-19 cannot be distinguished from other viral illnesses in the pediatric population. Other respiratory viruses were more frequent in children during the pandemic. Level of suspicion must always be high even in asymptomatic patients.

ELEVATED LIPOPROTEIN(A) LEVELS IN EFFECTIVELY TREATED PERINATALLY HIV-INFECTED CHILDREN AND ADOLESCENTS OVER TIME

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

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Background: The incidence of cardiovascular disease (CVD) is higher in people living with HIV compared to the general population. Perinatally HIV-infected (PHIV+) children potentially have a greater CVD risk at older age, as their life expectancy normalized due to effective therapy. Lipoprotein(a) (Lp(a)) is an independent risk factor for CVD. We reported on higher Lp(a) levels in PHIV+ children compared to healthy matched controls in a previous cross-sectional study. To gain further insight in Lp(a) level trends and thus the potential CVD risk for PHIV+ children, we determined Lp(a) levels over time.

Methods: We determined Lp(a) levels of PHIV+ children from the Amsterdam UMC in the Netherlands on at least two occasions between September 2012 and September 2020, using the Architect c8000 Abbott (Lake Forest, IL, USA) with a reference value of < 300 mg/L. We assessed intra- and interindividual trends of Lp(a) and its determinants using mixed models.

Results: We included 36 PHIV+ children – of which 24 (67%) boys – with a median age (interquartile range) of 8.0 years (5.7-10.8) and a median Lp(a) level of 391 mg/L (IQR: 194-774). We found a positive association between Lp(a) and BMI, total cholesterol, low density lipoprotein and non-nucleoside reverse-transcriptase inhibitors (NNRTI). The intra-individual variability of Lp(a) was 33% (95%CI: 30-35).

Conclusions: We found importantly elevated and highly fluctuating Lp(a) levels over a period of eight years in PHIV+ children suggesting a higher CVD risk. The association between Lp(a) and NNRTI suggests it would be of interest to assess Lp(a) levels when switching therapy. Studies investigating CVD risk for PHIV+ children at older age could lead to strategies reducing their CVD risk including the development of therapies lowering Lp(a) levels.

ASSESSMENT OF SPECIFIC IMMUNOLOGICAL RESPONSE AFTER ADMINISTRATION OF ANTI-MENINGOCOCCAL QUADRIVALENT CONJUGATE VACCINE MENVEO® IN A POPULATION WITH VERTICALLY-TRANSMITTED HIV INFECTION

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

Claudia Vanetti¹, Claudio Fenizia¹, Federica Da Pozzo², Laura Paradiso³, Lucia Barcellini⁴, Mario Clerici¹, Gian Vincenzo Zuccotti⁵, Daria Trabattoni², Vania Giacometti³

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Background: In HIV-infected patients, high incidence of invasive meningococcal disease is reported. Moreover, HIV subjects, because of immune abnormalities, may undergo impaired vaccine response. Our study aims to assess the immune response after a booster dose of quadrivalent meningococcal conjugate vaccine Menveo® (MenACWY-CRM, GlaxoSmithKline Vaccines) in HIV-infected youth.

Methods: We carried out a controlled, non-randomized, observational and prospectively study, involving 27 HIV-infected patients aged 9–30 years, reporting vertically-transmitted HIV infection and followed at the Paediatric Infectious Disease Unit of ASST FBF-Sacco, Milan, Italy. All patients enrolled were on HAART, and 25 out of 27 presented optimal immunological and viral response. Each subject received a booster dose of vaccine Menveo® (0,5 ml i.m.). MenACWY-specific Ab titer, viral load and CD4+ T cells count were measured at baseline (T0), T3, T6 and T12 months post vaccination. In 14 patients, MenACWY-specific cell-mediated immune responses were evaluated at the same time points.

Results: The booster dose induced seroconversion in all subjects except one. We divided our cohort in different subgroups: Responders (R), reporting seroconversion at T3, Highly-Responders (HR) with a high Ab titer at T0, and Non-Responders (NR). The booster dose induced MenACWY-specific cell-mediated immunity at T12 mainly in HRs (Effector Memory CD4+T cells). MenACWY-specific IL2-secreting CD4+ and CD8+ T cells were slightly increased in both HRs and Rs. In the NR group, terminally-differentiated CD4+ and CD8+ T cells were the only parameters modified at all time points.

Conclusions: The booster dose of Menveo® vaccine, considering both R and HR subgroups, induced a valid antibody-mediated protection. Moreover, we observed the development of a stable T cell-mediated immune memory that lasted robustly up to one year since vaccination. Alternate immunization schedules need to be considered in NR.

Clinical Trial Registration: Not applicable

BRAIN MRI AND NEUROCOGNITIVE CHARACTERISTICS OF CHILDREN WITH PERINATAL HIV INFECTION IN RUSSIA: A CROSS-SECTIONAL STUDY.

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

Manuela Martin-Bejarano Garcia¹, Liubov Okhonskaya², Yevgeny Voronin², Vladimir Rozenberg², Мария Титова^{2,3}, Tatyana Kovalenko⁴, Anna Turkova⁵, Jeannie Collins⁵, Siobhan Crichton⁵, Carlos Velo Higuera⁶, María Isabel González Tomé⁷, Jose Tomas Ramos Amador⁸, Ana Martinez De Aragón⁷, O. Eppic/reach Team⁹, Elena Álvarez⁶

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Background: Russia has the largest HIV epidemic in the Eastern Europe and Central Asia (EECA) region. This study describes the neurocognitive and neuroradiological characteristics of children and adolescents with perinatal HIV (CAPIV) attending a tertiary paediatric HIV clinic in Russia.

Methods: A cross-sectional pilot study was conducted in the Republican Hospital for Infectious Diseases (RHID) in Saint Petersburg from September 2013 to July 2015. 39 consecutive children/carers in routine follow up were approached to undergo MRI imaging (1.5 T MRI with T1-weighted, T2-weighted and fluid-attenuated inversion recovery (FLAIR) sequences) and cognitive function assessment using the Russian version of the Weschler Intelligence Scale for Children (WISC-III). The average range was defined as 90 to 110 for IQ indexes (verbal, performance and full-scale) and 8 to 12 for cognitive subtest scores.

Results: 32 children completed the study (56.3% were female, median age[IQR] at HIV diagnosis 21.5[8.5-35.5]months, age at ART start 5.9[2.3-7.8]years). At study entry, median age was 10[8-11.75]years, all were on protease inhibitor-based ART, CDC immunological category was 1 in 18(56.3%) children, 2 in 4(12.5%) and 3 in 10(31.3%). Nine(28.1%) participants had ≥ 1 focal supratentorial white matter (WM) lesions, 4(12.5%) diffuse WM hyperdensity lesions on T2/FLAIR, 5(15.6%) mild global atrophy. Mean(SD) WISC-III IQ and subtests scores were within the average range on all but two subtests: vocabulary 7(5.1) and digit-span 7.9(2.5).

Conclusions: Over a quarter of children had neuroradiological abnormalities but most had IQ scores within the average range except for few subtests scores. These assessments may help identify children in need of development support and ART optimisation.

SCAR FORMATION FOLLOWING INFANT IMMUNISATION WITH BACILLE CALMETTE-GUÉRIN IS ASSOCIATED WITH ENHANCED MYCOBACTERIUM-SPECIFIC T-CELL RESPONSES

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

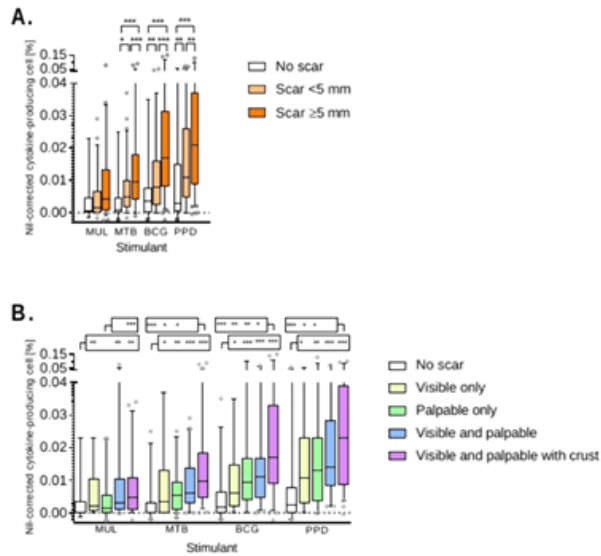
Laure Pittet^{1,2,3,4}, Nora Fritsch^{5,6}, Marc Tebruegge^{4,7,8}, Binita Dutta⁹, Susan Donath^{4,10}, Nicole Messina^{3,4}, Dan Casalaz¹¹, Willem Hanekom¹², Warwick Britton¹³, Roy Robins-Browne^{3,14}, Nigel Curtis^{2,3,4}, Nicole Ritz^{4,5,6}

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Background: Limited evidence suggests that scar formation after bacille Calmette-Guérin (BCG) immunisation is associated with lower all-cause mortality but does not correlate with protection against tuberculosis. The aim of this post-hoc analysis was to evaluate the association between BCG scar characteristics and the mycobacterial-specific immune response.

Methods: 208 infants in Australia were randomised to receive one of three BCG vaccine strains at birth (BCG-Denmark, n=53; BCG-Japan, n=55; or BCG-Russia, n=56) or at 2 months of age (BCG-Denmark, n=44). The size and characteristics of BCG scars were assessed 10 weeks after immunisation. At the same time point, intracellular cytokine secretion (IFN γ , IL-2 and TNF) in whole blood assays following in-vitro stimulation with *M. tuberculosis*, *M. ulcerans*, PPD and BCG was determined using multi-colour flow cytometry. The relationship between BCG scar characteristics and immunological responses was analysed.

Results: Proportions of single, double, and triple antigen-specific cytokine-producing CD4⁺ T-cells were significantly higher in children who developed a BCG scar compared to those without a scar. The magnitude of the immune response correlated with the size and characteristic of the BCG scar (Figure), even after adjusting for BCG vaccine strain and timing of immunisation in a mixed model analysis.



Conclusions: BCG scar formation is associated with higher mycobacteria-specific T-cell responses. As T-cell responses are important in the immune response against TB, the relationship between BCG scar formation and protection against TB should be explored further.

Clinical Trial Registration: Australian clinical trials registration number: ACTRN12608000227392

GETTING THE DIAGNOSIS RIGHT IN CHILDHOOD TB: FIRST RESULTS ON NEW TEST PERFORMANCES FROM “RAPAE-TB”

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

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Background: The diagnosis of tuberculosis (TB) in children remains challenging: current detection methods neither perform reliably nor are sampling methods child-friendly.

Methods: RaPaed-TB is a diagnostic validation study currently conducted in South Africa, Mozambique, Malawi, Tanzania, and India. Enrolment of children ≤14years was initiated in 01/2019. Clinical and laboratory workup is standardized across sites, and diagnostic classification follows the current NIH-consensus statement. New tests conducted on site include: blood-based T-cell activation-marker for TB (TAM-TB); urine-based lateral-flow assay Fuji SILVAMP-TB LAM (FujiLAM); and Stool Processing Kit (SPK) for MTB-DNA detection. Recruitment, data entry and analysis are underway; presented data are preliminary and totals differ dependent on data-entry status.

Results: As of mid-January 2021, 733 participants were enrolled. The median age was 4.8 years (IQR 1.8;8.8 years), with 14% of children being ≤1-year (100/701), and 52% <5years (361/701). Overall, 17% (115/694) are HIV -infected, while 15% (107/694) were HIV-exposed uninfected. Microbiological confirmation rate (PCR/culture) was 24% (178/733). New tests conducted on site include TAM-TB, with a sensitivity of 56% and specificity of 91%. FujiLAM had a sensitivity of 42% and a specificity of 86%, while SPK was 40% sensitive and 93% specific. Sensitivity of all tests was significantly improved when excluding children confirmed solely by “trace” results. Subgroup analysis showed promising performances in the children <1year.

Conclusions: The RaPaed-TB cohort allows large-scale evaluation of new tests. Presented data indicate a promising performance of TAM-TB, while FujiLAM and SPK alone had modest sensitivity. All three tests show promising performances in the very young and malnourished, showing their potential to aid diagnosis in these particularly vulnerable groups. Ongoing comprehensive new testing encompasses pathogen detection, host-immune response, biomarker-assays, and biobanking; further results to be presented.

Clinical Trial Registration: NCT03734172

CHALLENGES IN PAEDIATRIC RADIOLOGICAL DIAGNOSIS OF PULMONARY TUBERCULOSIS FOLLOWING AN OUTBREAK IN A NURSERY SCHOOL

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

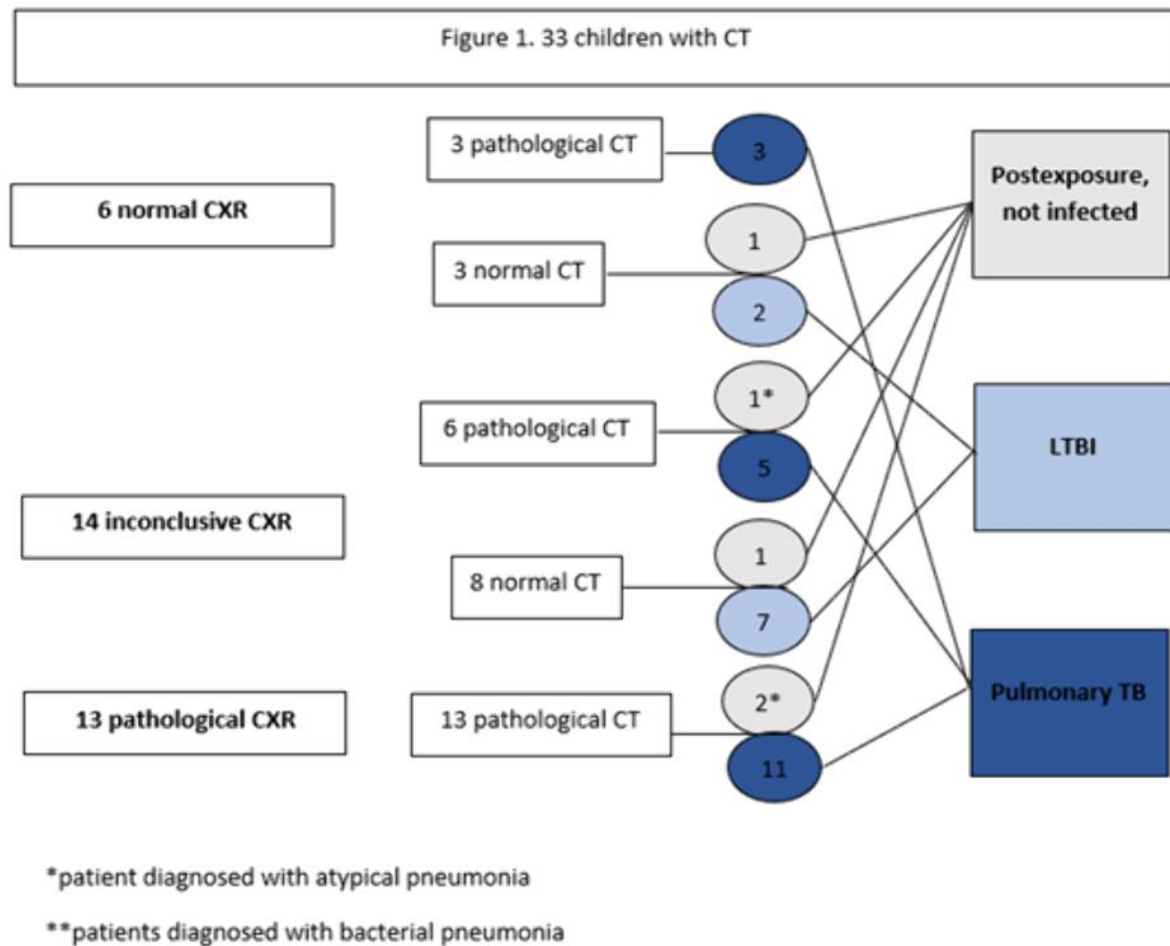
Alicia Hernanz Lobo¹, Begoña Santiago García¹, María Luisa Navarro Gómez¹, Jesus Saavedra Lozano¹, Elena Rincón¹, David Aguilera-Alonso², Angel Lancharro³, Isabel Gordillo³, Teresa Hernández-Sampelayo¹, Mar Santos²

¹Hospital General Universitario Gregorio Marañón, Infectología Pediátrica, Madrid, Spain, ²Hospital Gregorio Marañón, Pediatric Infectious Diseases, Madrid, Spain, ³Hospital General Universitario Gregorio Marañón, Radiology, Madrid, Spain

Background: Tuberculosis (TB) outbreaks often occur among people who share a closed space for long periods, such as schools, nursing homes or hospitals. Chest radiography (CXR) is one of the cornerstones for evaluating TB outbreaks, but it has several limitations, especially in young infants. Computed tomography (CT) provides assessment in challenging cases. This study aimed to analyze CT's contribution to paediatric TB diagnosis during an outbreak in a nursery school that involved children <6 years.

Methods: 472 children evaluated during a TB outbreak underwent a Tuberculin Skin Test (TST). Children with positive TST and those presenting signs or symptoms suggestive of TB were referred to our tertiary hospital in Madrid, Spain. A CT scan was performed in children with doubtful findings on CXR, or with compatible symptomatology but normal CXR.

Results:



Seventy-eight patients were evaluated at hospital [median age 5.1 years (IQR: 3.7-5.5)]; 37.2% were girls. Of the 78 CXR performed, 32 (41.0%) showed no abnormalities, 14 (17.9%) were inconclusive, and 32 (41.0%) compatible with pulmonary TB. Among 33 children with inconclusive diagnosis after CXR, CT helped rule out TB in 14 patients (42.4%), and confirm TB in 19 (57.6%) (Figure 1). The final diagnosis was pulmonary TB in 35 cases (8 microbiologically confirmed TB and 27 probable TB), latent TB in 24 (30.8%), and non-TB in 19 (24.4%).

Conclusions: In this study, 7.4% of the 472 exposed children to an outbreak were diagnosed of pulmonary TB. CXR was unable to detect early TB-related radiological abnormalities in approximately half of the patients. CT can detect pathological findings not seen on CXR, and is useful in helping to decide on antibiotic treatment.

NEONATAL BCG VACCINATION REDUCES THE RISK OF ECZEMA IN PREDISPOSED INFANTS – RESULTS FROM THE MIS BAIR RANDOMISED CONTROLLED TRIAL

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

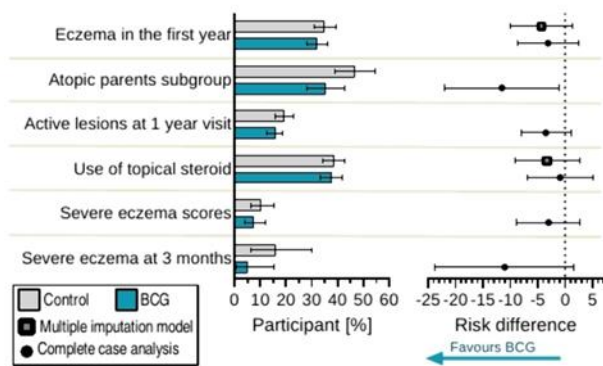
Laure Pittet^{1,2,3,4}, Nicole Messina^{2,3}, Bridget Freyne^{3,5,6}, Kaya Gardiner², Veronica Abruzzo², Kate Francis⁷, Clare Morrison², Christel Zufferey², Peter Vuillermin^{1,8,9}, Katie Allen¹⁰, Anne-Louise Ponsonby^{3,11}, Roy Robins-Browne^{1,2,12}, Frank Shann³, Katie Flanagan^{13,14,15}, Rod Phillips^{3,16}, Susan Donath^{3,17}, Dan Casalez¹⁸, Nigel Curtis^{1,2,3}

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Background: Bacille Calmette-Guérin (BCG) vaccine could play a role in counteracting the rising prevalence of atopic diseases through its beneficial off-target effects. One aim of the MIS BAIR trial was to determine whether neonatal BCG vaccination reduces the incidence of eczema in the first year of life.

Methods: In this randomised controlled trial, the incidence and severity of eczema in the first 12 months of life was determined with 3-monthly questionnaires using the UK diagnostic tool and POEM score, respectively. Eczema was also assessed at a 12-month clinic visit using SCORAD.

Results: 1272 infants were randomised to receive BCG-Denmark (median 1.5 days of life; IQR 0.9 to 2.5) or no BCG. The incidence of eczema in the first 12 months of life was lower in the BCG group (32.2%) compared with controls (36.6%) (risk difference (RD) -4.3%, 95%CI -9.9% to 1.3%; multiple imputation model), resulting in a number needed to treat (NNT) of 23. Compared with controls, infants in the BCG group were less likely to have active eczema lesions at the 12-month visit (15.7% vs. 19.2%; RD -3.5%, 95%CI -8.0% to 1.0%), to use topical steroids (35.7% vs. 39.0%; RD -3.3%, 95%CI -9.2 to 2.7), and to have severe eczema scores (7.3% vs. 10.2%; RD -3.0%, 95%CI -8.8% to 2.7%), especially in the 3-month questionnaire (4.9% vs. 15.9%; RD -11.0%, 95%CI -23.7% to 1.6%). In high-risk infants (two atopic parents, n=344), the incidence of eczema was lower in the BCG group (35.3%) compared with controls (46.8%) (RD -11.5%, 95%CI -21.9% to -1.2%) with a NNT of 8.7 (95%CI 4.6 to 83.3).



Conclusions: A single dose of BCG-Denmark soon after birth reduced the incidence of eczema, especially in infants with two atopic parents. There is insufficient evidence to recommend neonatal BCG vaccination for the general prevention of eczema.

Clinical Trial Registration: ClinicalTrial.gov: NCT01906853.

DIAGNOSTIC PERFORMANCE OF A FIVE-MARKER TRANSCRIPTOMIC SIGNATURE FOR DIAGNOSIS OF CHILDHOOD TUBERCULOSIS IN AN AFRICAN MULTI-COUNTRY COHORT

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

Ortensia Vito¹, Ashleigh Cheyne², Dominic Habgood-Coote¹, Lesley Workman³, Giselle D'Souza¹, Sara Hourmat¹, Sam Nichols¹, Suzanne T. Anderson^{4,5}, Andrew Brent^{6,7}, Brian Eley^{8,9}, Mark P Nicol^{10,11}, Gerhard Walzl¹², Victoria Wright¹, Sandra M. Newton¹, Beate Kampmann^{13,14}, Myrsini Kaforou¹, Michael Levin¹, On Behalf Of The Nih Tb Paediatric Consortium¹

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Background: Each year approximately 1.2 million children develop active tuberculosis (TB) disease, with 230,000 deaths. Microbiological diagnosis of TB remains challenging. Gene expression signatures in blood may offer a non-sputum diagnostic test. However, gene expression signatures discovered in adult populations underperform in children, while the few paediatric studies focus discovery on specific countries. We undertook a multi-country gene expression signature discovery study, to identify an accurate signature for paediatric TB.

Methods: Whole blood was collected from 571 children (<15 years of age), 264 (48%) with microbiologically confirmed TB and 307 (52%) with other diseases (OD), presenting to hospitals in South Africa, Malawi, Kenya or The Gambia with suspected TB between 2008 and 2018. Cases included those with pulmonary or extra-pulmonary TB, with or without HIV-infection. RNA extraction and RNA-sequencing were done on blood samples collected at enrolment. Quality control, differential expression and feature selection analysis was conducted in R; data were batch-corrected and normalised.

Results: Differential expression analysis accounting for age and site identified 208 candidate biomarker genes. A feature selection algorithm with cross-validation (randomly selecting 80% of the data as training set and 20% as test set), run on the 208 genes, selected a 5-gene signature to distinguish TB from ODs with an AUC of 91.30%, sensitivity of 84.85% and a specificity of 83.06% when maximising the Youden index. When sensitivity was fixed at 72.00%, which is the minimum WHO requirement of a non-sputum test for TB in children, specificity was 92.51%, meeting the optimal WHO requirement for specificity.

Conclusions: A 5-gene transcriptomic signature met the minimum WHO Target Product Profile criteria for a non-sputum-based test for TB in children. Further cross-sample, cross-platform validation using targeted methods (i.e. RT-PCR) will follow.

Clinical Trial Registration: Not applicable

PNEUMOCYSTIS - STILL AN OPPORTUNISTIC AGENT TO KEEP IN MIND

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 03: TB AND HIV

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Background: *Pneumocystis* pneumonia (PCP) is a potentially life-threatening infection that occurs in immunocompromised individuals. HIV-infected patients with a low CD4 count are at the highest risk of PCP. Although the use of routine prophylaxis in HIV-infected patients led to reduced rates of PCP in that population, it remains a significant cause of pneumonia in patients with other types of immunodeficiencies, such as severe combined immunodeficiency (SCID). The aim of this study is to characterize the patients with a diagnosis of PCP admitted in our paediatric unit at a tertiary hospital.

Methods: Retrospective, observational and descriptive study. Literature review and sample characterization by consulting the patients' health records with descriptive statistical analysis of the data.

Results: Six PCP cases were reviewed, two HIV infected-patients with high viral load and four SCID patients. 75% diagnosed in the first 6 months of life. 75% of SCID cases were male. All but one required O2 supplementation, with two of the SCID patients needing mechanical ventilation for more than 1 week. All exhibited oral candidiasis and poor weight progression on admission. 50% hepatomegaly and/or BCGitis. All SCID patients had hypogammaglobulinemia and T-cell lymphopenia (average total lymphocyte count 1630 mm³, CD4+ 24 mm³ and CD8+ 4 mm³).

Conclusions: *Pneumocystis* remains a relevant opportunistic pathogen. It can present with insidious respiratory failure associated dry cough and progressive hypoxemia and is a life-threatening infection. HIV infection should always be investigated. A defect in cell-mediated immunity, specially SCID, must be considered when a pneumonia has a radiographic pattern of diffuse, bilateral, interstitial infiltrates that does not respond to empiric therapy in non-HIV patients. Failure to thrive combined with recurrent oral candidiasis as well as lymphopenia and absent thymic shadow are other alarm signs.

DEVELOPING A “SPACE-TIME RECURRENCE INDEX” FOR INFECTION IN THE REPUBLIC OF IRELAND, 2008-2017 – A SIMPLE TOOL FOR IDENTIFYING SPATIOTEMPORAL PATTERNS OF PAEDIATRIC CRYPTOSPORIDIOSIS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

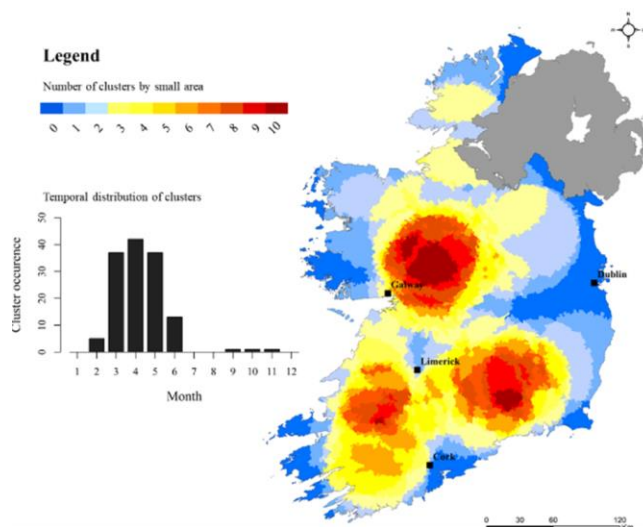
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¹Technological University Dublin, Environmental Health Institute, Dublin, Ireland, ²Dublin 7, Environmental Health Institute, Dublin, Ireland, ³University College Cork, Bess, Cork, Ireland

Background: Cryptosporidiosis is an acute gastro-intestinal disease leading to acute dehydration and death in severe cases, particularly among immuno-compromised individuals, including children ≤5 years. Ireland reports the highest Crude Incidence Rates in the EU, with approximately 60% of annual cases attributed to children, however, the spatiotemporal patterns of domestically acquired (sporadic and outbreak-related) cases have not been fully elucidated.

Methods: SaTScan v9.6 was used to undertake space-time scanning of confirmed cases of paediatric cryptosporidiosis notified in Ireland from January 1st 2008 to December 31st 2017 (2,672 cases). Cases were geo-coded to one of ~19,000 Census Small Areas (SAs), with discrete Poisson modelling employed for scanning at high spatial resolution. All significant space-time clusters ($p < 0.05$) were mapped, with binary cluster location summed at SA scale. Final maps provide a “cluster recurrence” index (0 to 10) for the study period.

Results: Three high recurrence “hotspots” were identified, including a large area north-east of Galway City, and two areas south-west and south-east of Limerick City (Figure 1). Identified clusters largely mirrored annual peaks of infection (late spring/early summer). Notably, no space-time clusters were found in major urban conurbations over the study period (i.e., “cold-spots”).



Conclusions: The space-time recurrence index offers a simple approach to identify spatiotemporal patterns of infection, with presented analyses detecting three spatial clusters omitted from routine surveillance. The spatiotemporal epidemiology of cryptosporidiosis reflects the diverse population and geography of the country, with a markedly higher rate of occurrence in rural areas, likely due to the ubiquity of *Cryptosporidium* spp. sources (e.g., cattle) and pathways (e.g., karstic limestone bedrocks). The elevated burden among children ≤5-years is likely related to immunological status and specific routes of exposure, warranting further study.

HAEMOPHILUS INFLUENZAE CLINICAL FEATURES AND OUTCOMES IN CHILDREN IN CANADA, 2007 TO 2018

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

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Background: Routine vaccination against *H. influenzae* type b (Hib) has dramatically reduced Hib disease burden worldwide. There has been a rise in invasive serotype a (Hia) disease in children, particularly of Indigenous ethnicity. The aim of this study was to describe the age-specific epidemiology of invasive childhood *H. influenzae* disease in Canada during 2007-2018.

Methods: National data on clinical features and outcomes of children with invasive *H. influenzae* disease are captured by the Canadian Immunization Monitoring Program, ACTive (IMPACT). Patients aged ≤16 years treated as outpatients or admitted to 12 pediatric tertiary-care hospitals across Canada between 2007-2018 with laboratory-confirmed invasive *H. influenzae* disease were included. Data were collected using standardized case report forms and isolates were tested at the national referral laboratory.

Results: Overall 528 children were identified and 504 (96%) were hospitalized. Median age was 1.2 years (interquartile range [IQR], 0.6-4.0); 236 children (45%) were <1 year old. Overall, meningitis was the most common disease manifestation (n=183, 35%), followed by pneumonia (n=167, 32%) and bacteremia (n=95, 18%). Median length-of-stay amongst hospitalized children was 14 days (IQR, 6-17). ICU admission was required for 184 children (35%); median ICU length-of-stay was 5 days (IQR, 2-11). Death occurred in 25 children (5%). Among those with known ethnicity, 150/326 (46%) were Indigenous; of whom 85/150 (57%) had Hia disease.

Conclusions: Invasive *H. influenzae* disease continues to cause significant morbidity and mortality, particularly among Indigenous populations across Canada. Strategies to improve prevention and treatment of these infections are required.

WHOLE GENOME SEQUENCING OF STREPTOCOCCUS PNEUMONIAE FROM CHILDREN WITH PNEUMONIA IN CANADA BETWEEN 1991 AND 2016 FROM THE CANADIAN IMMUNIZATION MONITORING PROGRAM ACTIVE (IMPACT)

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

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Background: In children, *Streptococcus pneumoniae* causes up to 78% of bacterial lobar pneumonia, which may be further complicated by pleural effusion or empyema. We aimed to 1) characterize pediatric pneumonia-causing *S. pneumoniae* over 25 years in Canada before and after use of pneumococcal conjugate vaccines and 2) correlate bacterial genomic data with clinical features in cases.

Methods: Whole genome sequencing was performed on 297 *S. pneumoniae* isolates from pneumonia cases in 12 pediatric tertiary care hospitals in Canada between 1991 and 2016 from the pre-vaccine, PCV7/10 and PCV13 eras. Isolates and clinical data were obtained from the Canadian Immunization Monitoring Program ACTive (IMPACT). Genome wide associations were assessed using TreeWAS, incorporating phylogenetic data (i.e., evolutionary history) to identify associations between bacterial genomes and outcomes.

Results: Pan-genome analysis identified 4,305 genes including 1,324 which were shared by all isolates. We detected 37 Global Pneumococcal Sequence Clusters (GPSCs) including GPSCs which increased (4 and 119) and decreased (3 and 19) across vaccine eras. Genome wide association studies revealed several non-synonymous nucleotide polymorphisms or gene associations that were statistically significant in association with empyema (3 polymorphisms and 1 gene) and ICU admission >2 days (6 polymorphisms and 1 gene). One complex polymorphism (translating to a 3 amino acid change at position 207) in the gene *cbpD*, encoding the major pneumococcal virulence factor choline binding protein D, was significantly associated with both empyema and prolonged ICU admission.

Conclusions: The molecular epidemiology of *S. pneumoniae* has changed in the conjugate vaccine era in terms of GPSCs causing pediatric pneumonia. We have identified both genes and non-synonymous polymorphisms that are associated with empyema and ICU admission providing a starting point for validation studies of their role in pneumococcal pneumonia.

Clinical Trial Registration: This study does not report on the results of a controlled clinical trial

SCREENING FOR IMMUNODEFICIENCIES IN CHILDREN WITH INVASIVE PNEUMOCOCCAL INFECTION: SIX-YEAR EXPERIENCE FROM A UK CHILDREN'S HOSPITAL

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

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Background: Previous studies showed that comprehensive investigation of children with invasive pneumococcal disease (IPD), revealed an immunodeficiency in up to 10% of cases. Following this report, we implemented a protocol to investigate children presenting with IPD, to assess the proportion with an immunodeficiency in our setting.

Methods: We retrospectively identified patients with IPD by searching the microbiological and immunological databases of the Oxford Children's Hospital, UK, from January 2015 – November 2020, and collected clinical and laboratory data from the medical records. The following immunological investigations were performed: complement C3 and C4 levels, classical and alternative pathway complement function, IgG, IgA and IgM levels, specific IgG levels (*H. influenza* B, tetanus, and pneumococcal serotypes), lymphocyte subsets, and CD62L in selected cases. Analysis of vaccine responses is ongoing.

Results: Immunological investigations were performed in 51 children with IPD. Four children (7.8%) had abnormal findings that were deemed of clinical significance; two children were diagnosed with complement deficiencies (Factor I and C2 deficiency), one child had persistently low anti-pneumococcal antibodies, and another child had low IgM, low NK-cells and poor persistence of pneumococcal antibodies. In an additional thirteen children with IPD, no immunological investigations were performed. Of these children, four died and four had possible explanations for the infection (sickle cell disease, tocilizumab treatment, leukaemia treatment and skull base fracture).

Conclusions: We identified clinically relevant abnormal immunological findings in 7.8% of children with IPD. This result might be an underestimation, since children who died were not tested. Our results support the recommendation to perform immunological investigations in children with IPD, since this might reveal underlying immunodeficiencies at an early stage, allowing for necessary preventive measures and close follow-up.

PREMATURE BIRTH IS ASSOCIATED WITH PRIMARY ANTIBODY DEFICIENCY IN YOUNG CHILDREN WITH RECURRENT RESPIRATORY TRACT INFECTIONS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

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Background: Recurrent respiratory tract infections (rRTI) affect around 10-15% of children aged 0-5 years. Some children with rRTI suffer from an underlying immunological defect, such as a primary antibody deficiency (PAD). We investigated the prevalence of and epidemiological risk factors associated with PAD in children with rRTI and linked this to disease severity.

Methods: Children <7 years of age with rRTI undergoing immunological screening in a secondary and tertiary hospital in The Netherlands were included in a prospective cohort study. In a subgroup of children, parent-reported RTI symptoms were monitored during the winter season with a daily diary mobile phone application. Patient characteristics associated with PAD were identified using multivariable logistic regression analysis with model selection.

Results: Between 2016 and 2019 we included 147 children with rRTI with a median age of 3.4 years (interquartile range 2.1-5.2 years). Although major immune deficiencies were rarely observed, a high percentage of children (55%) showed mild antibody deficiencies. Most prevalent were complete/partial IgA deficiency (23%), IgG4-subclass deficiency (12%) and combined IgA and total IgG deficiency (9%). Prematurity was significantly associated with PAD in multivariate analysis (see Table). In 80 children daily RTI symptoms were monitored during a winter season; the prevalence and duration of RTI symptoms did not differ significantly between children with and without PAD.

Patient characteristics	Primary antibody deficiency	No immunological defect	Odds Ratio in univariate analysis [95% CI]	Odds Ratio in multivariate analysis [95% CI]
Prematurity (gestational age <37 weeks)	21/74 (28%)	4/59 (7%)	5.45 [1.75-16.93]	5.61 [1.51-20.84]*
Age in years at inclusion (median, 25%-75%)	3.9 (2.7-5.2)	2.6 (1.7-5.2)	1.19 [0.99-1.43]	1.02 [0.99-1.03]
Maternal smoking during pregnancy	6/72 (8%)	1/55 (2%)	4.91 [0.57-42.03]	5.61 [0.35-50.99]
Daycare attendance	69/74 (93%)	48/56 (86%)	2.30 [0.71-7.46]	2.13 [0.61-7.42]
Caesarean delivery	8/76 (11%)	11/60 (18%)	0.52 [0.20-1.40]	0.63 [0.20-1.95]
Family history of rRTI	14/58 (81%)	37/57 (65%)	2.24 [1.01-4.97]	
Smoking in the residence	6/71 (9%)	3/55 (6%)	1.60 [0.38-6.71]	
>2 physician-diagnosed pneumonia in life	13/80 (16%)	12/64 (19%)	0.84 [0.35-2.00]	
Female gender	37/81 (46%)	29/66 (44%)	1.07 [0.56-2.06]	

Conclusions: The prevalence of PAD in a Dutch cohort of young children with rRTI was remarkably high compared to older pediatric cohorts. Prematurity was associated with PAD, underlining that immune maturation lies at the basis of mild PAD commonly found in the first years of life. Interestingly, RTI symptoms did not differ between children with and without PAD, which suggests that more factors than PAD alone contribute to disease severity.

Clinical Trial Registration: Not applicable

ANTIFUNGAL USE IN NEONATAL UNITS IN EUROPE: A 12-WEEK MULTICENTER MODIFIED POINT PREVALENCE STUDY (CALYPSO)

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

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Background: Knowledge of antifungal prescribing in neonatal units is extremely important. However, data on antifungal use in neonatal inpatients across Europe are limited. There is need to collect standardized multi-center data. We organized a European 12-wk modified point-prevalence study (mPPS) to record antifungal consumption in neonates and infants.

Methods: All patients hospitalized in neonatal units (NUs) and receiving systemic antifungals of 17 hospitals across Europe were included. Information about ward demographics was collected once at the beginning; weekly ward and patient data were collected prospectively for the 12-wk study period and entered in REDCap database. Results: 26 NUs (4 Level 1, 4 Level 2, 18 Level 3) from 17 hospitals, located in 8 European countries with a median capacity of 21 beds participated in the study.

Results: The median percentage of neonates receiving antifungal agents per mPPS week across all NUs Level 3 was 9.6% (range 7.5-11.4). A total of 167 patients were included in the study; 156 patients aged ≤90d (median age=7 days, Q1=3, Q3=20.5d) and 11 aged 3-60 months (median age=4 months, Q1=3, Q3=5.5mo). Prematurity was most common underlying condition among patients ≤90d (86%), whereas chronic respiratory disease (64%) and history of surgery (36%) were among patients 3-60 months. Indication for antifungal prescribing at inclusion was prophylaxis in 77% and treatment in 23%.

Conclusions: Fluconazole was the most frequently prescribed agent both for prophylaxis (98%, N=129) and treatment (39%, N=38). The most common reasons for prophylaxis were prematurity, birth weight <1000g and central venous catheters; whereas for empirical treatment, it was late onset sepsis. Conclusions: The majority of antifungal prescriptions across European NUs is for prophylaxis. Results from this multicenter study can be a first step to guide a European antifungal stewardship program.

EPIDEMIOLOGY OF IMPORTED DISEASES AND SEROPREVALENCE OF VACCINE PREVENTABLE DISEASES IN UNACCOMPANIED MINORS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 04: EPIDEMIOLOGY

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Background: Unaccompanied minors (UM) are a high-risk group for acquiring infectious diseases and data on their vaccination status is scarce. Different approaches are used to screen newly arrived minors in Europe. The aim of this study is to describe their demographic characteristics, as well as their health status and serological protection against different vaccine preventable diseases in order to homogenize screening protocols.

Methods: Retrospective study of all UM that were visited at a reference centre for International Health in Barcelona from January 2017 to February 2020. After ethical approval, data were obtained from electronic medical records and SPSS v20 was used to undertake the statistical analysis. The screening strategy was adjusted by symptoms and area of origin. Chi-square test was used to compare the distribution of categorical variables.

Results: Among 289 minors (89% males, mean age:16) 74% were asymptomatic and 73% completed follow-up. Most of them (60%) were from Sub-Saharan Africa followed by Maghreb and Asia and mean time to first visit since arrival was 5 months (IQR:1-5). At least 1 diagnosis was made in 127 minors. From those, 70% were asymptomatic. We found a high prevalence of latent tuberculosis infection(23%), intestinal parasites(21%) and hepatitis B infection(6%) even in asymptomatic minors, and especially among those from Sub-Saharan Africa. Protection against hepatitis B virus (36%) and measles (80%) were sub-optimal.

Conclusions: These results highlight the importance of screening and immunization programs for UM arriving to Europe, especially in border European countries. The geographic origin determines the prevalence of diseases, thus efforts in elaborating efficient protocols for screening and immunizing newly arrived migrants should be based on this information. These programs are a Public Health priority and should not be forgotten during the current pandemic.

**DECREASE OF PEDIATRIC EMERGENCY VISITS FOR VIRAL AND NONVIRAL INFECTIONS
PEDIATRIC AIRBORNE DISEASES DURING NATIONAL LOCKDOWN**

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 05: COVID COLLATERAL

David Dawei Yang^{1,2}, Naim Ouldali^{3,4,5}, Alexis Rybak^{5,6}, Vincent Gajdos^{7,8}, Romain Guedj^{9,10}, Valerie Soussan-Banini¹¹, Alain Lefevre-Utile^{12,13}, Romain Basmaci^{14,15}, Cecile Schrimpf¹, Loganayagi Vasante^{16,17}, David Skurnik^{18,19,20}, François Angoulvant^{1,2}

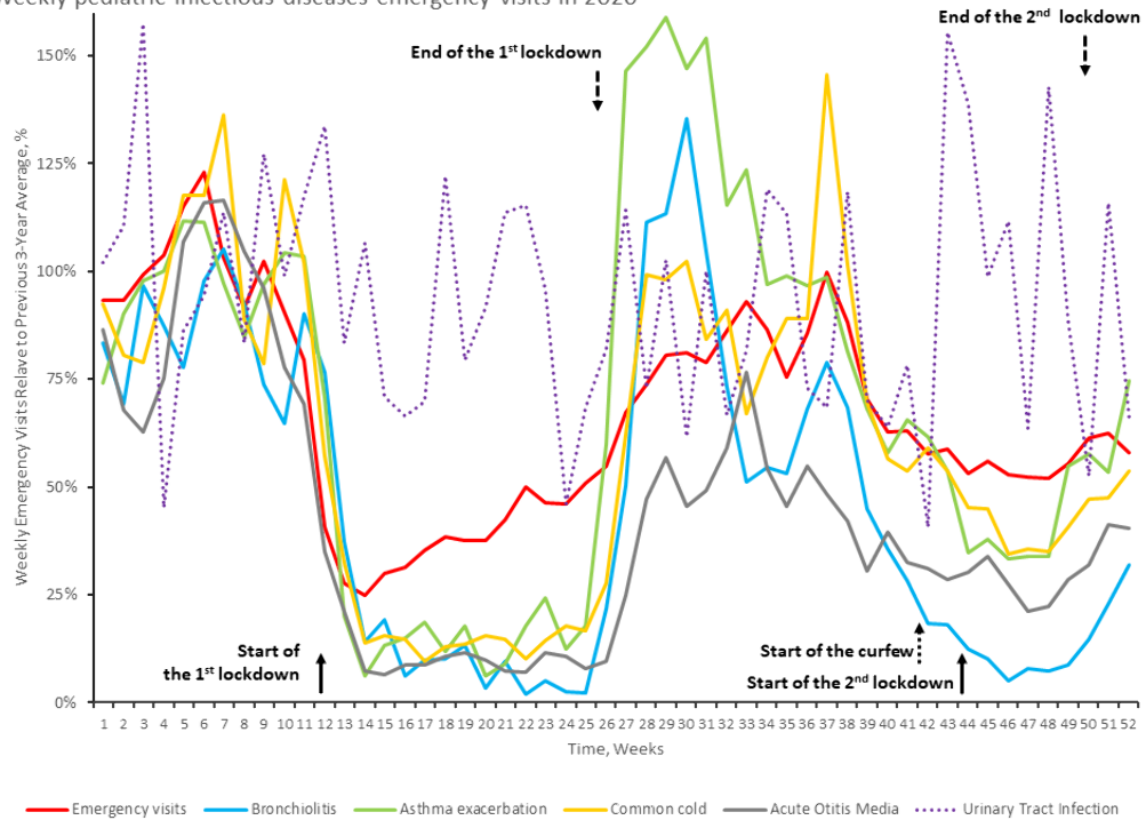
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Background: The COVID-19 pandemic had led to several national lockdowns in France. We hypothesized that these unique measures would be associated with a decrease in pediatric airborne diseases that usually disseminate through social contacts

Methods: We conducted a study based on a multicenter prospective French surveillance database, which include all the pediatric emergency department (PED) visits of 6 academic hospital located in Paris region from 1st January 2017 to 31st December 2020. The evolution of diseases usually correlated with airborne dissemination such as common cold, bronchiolitis, acute otitis media (AOM), acute asthma exacerbation (AAE) were investigated. Urinary tract infections (UTI), which are not reported to be correlated with contacts in children, were used as a negative control outcome.

Results: A total of 982519 visits were included. As shown in Figure1, we found a decrease in PED visits, bronchiolitis, common cold, AAE and AOM during first (March 2020) and second (October 2020) lockdown compared to previous years. The seasonal bronchiolitis outbreak was not observed. In parallel, the social distancing and the national mandatory facial mask associated with the curfew seemed to have an effect on AAE and the common cold, effect that was emphasized and extended after the start of the second lockdown. By contrast, UTI were not impacted by lockdowns.

Weekly pediatric infectious diseases emergency visits in 2020



Conclusions: The low rates of bronchiolitis, AOM, common cold, AAE, pneumonia, and PED visit found in our study suggest low respiratory viruses transmission in children in France during lockdown.

THE IMPACT OF THE SARS-COV-2 PANDEMIC ON COMMUNITY-ACQUIRED ALVEOLAR PNEUMONIA (CAAP) IN YOUNG CHILDREN IN ISRAEL

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 05: COVID COLLATERAL

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¹Ben-Gurion University of the Negev, Faculty Of Health Sciences, Beer-Sheva, Israel, ²Soroka University Medical Center, Pediatric Infectious Disease Unit, Beer-Sheva, Israel

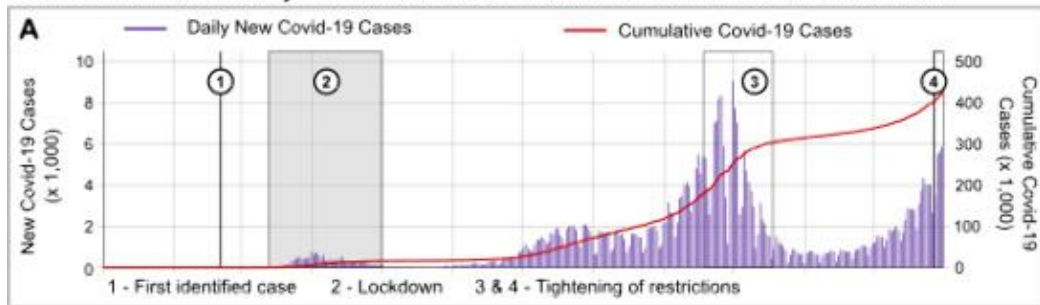
Background: CAAP is most often a bacterial disease, predominantly pneumococcal. However, RSV and influenza viruses (A+B) may play a major role in its pathogenesis. We evaluated the potential role of SARS-CoV-2 2020 pandemic on CAAP rates, in relationship to RSV and influenza viruses.

Methods: Data from ongoing, prospective surveillance programs on visits for respiratory infections and viral detection were used to determine hospital service utilization in children <5y in southern Israel. CAAP was defined as previously described (Ben-Shimol, CID, 71(1):177, 2020). Viral detection was determined by nasopharyngeal PCR. We compared rates of hospital visits for CAAP in relation to RSV/influenza activities during 4 pre-pandemic years (Jan-2016-Dec-2019 [expected rates] vs. 2020 [observed rates]). These were also compared to non-RSV/influenza respiratory viruses (non-RSV/influenza-RV: parainfluenza/hMPV/adenovirus/rhinovirus).

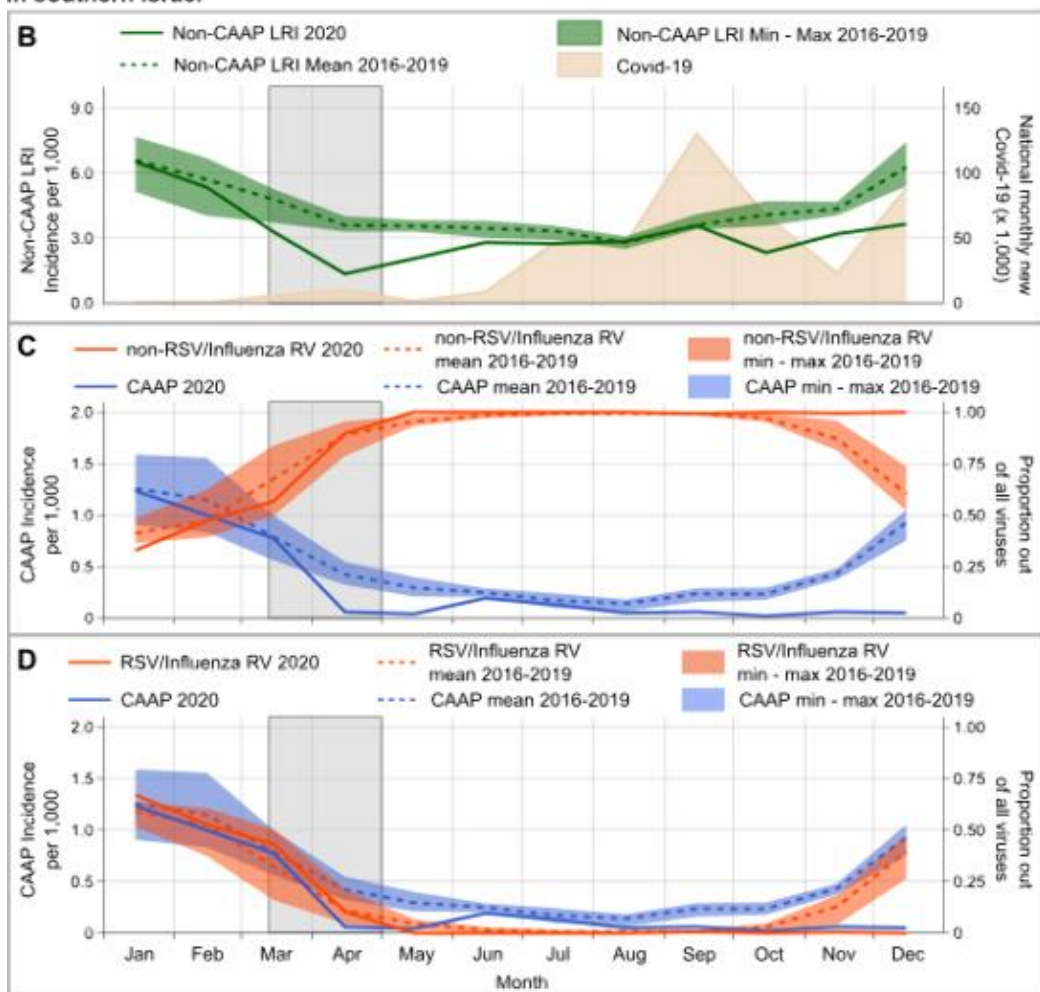
Results: First SARS-CoV-2 cases appeared in February 2020 resulting in a full 4-week lockdown followed by multiple partial restrictions throughout 2020 (Figure-1A). During lockdown (Figure-1A-period 2), all visits for all-cause lower respiratory infections (LRIs) sharply declined. However, while those for non-CAAP LRIs and non-RSV/influenza-RV rapidly regained close-to-expected rates (Figure-1B,C), CAAP was only rarely seen, with no RSV/influenza activity throughout December 2020 ($P < 0.01$ paired t-test vs. pre-pandemic period). Figure 1-C, D demonstrates the complete identical dynamics between CAAP visits and RSV/influenza activity, but not non-RSV/influenza-RV activity, in both pre-pandemic and pandemic periods.

Figure 1

COVID 19 number of daily new cases and cumulative number of cases in Israel 2020



Outcomes monthly rates 2020 vs. mean rates 2016-19 in children <5 years in southern Israel



Conclusions: 1) The SARS-CoV-2 2020 pandemic resulted in unprecedented extremely low CAAP rates, in conjunction with no activity of RSV/influenza viruses throughout 2020, but in the presence of non-RSV/influenza-RV activity; 2) Although CAAP is mostly bacterial (predominantly pneumococcal), the striking similarity of its dynamics with RSV and influenza both during regular years and in 2020 strongly suggests their major role in the pathogenesis of pediatric CAAP.

COVID-19 PEDIATRIC HOME-CARE – NEW RESPONSES FOR AN EMERGENT DISEASE

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 05: COVID COLLATERAL

Luis Salazar, Carolina Curto, Marta Novo, Alexandre Fernandes, Carla Teixeira, Alberto Afonso, Laura Marques

Centro Materno-Infantil do Norte, Centro Hospitalar e Universitário do Porto, Pediatric Infectious Diseases And Immunodeficiencies Unit, Department Of Pediatrics, Porto, Portugal

Background: COVID-19 pandemic management resulted in major challenges for health care. In the pediatric population, the disease burden appears to be less significant than in adults, both in severity and mortality. In this study we aimed to evaluate a new form of care for pediatric patients with SARS-CoV-2 infection, which consisted of daily medical phone follow-up during isolation period, with hospital clinical evaluation when necessary.

Methods: A prospective cohort study was performed from March to December 2020, in children with a positive SARS-CoV-2 PCR test (nasopharyngeal swab) that had presented at our tertiary pediatric center and were then followed on a home-care basis. Cases of multisystem inflammatory syndrome in children (MIS-C) were excluded.

Results: A total of 124 patients were included, and the demographic characteristics of the sample are displayed in table 1. 103 patients (83.1%) were symptomatic at presentation, and 16 patients (12.9%) were initially hospitalized. After discharge, 2 were readmitted. From the non-initially hospitalized, 10 (9.3%) needed emergency referrals, with 7 requiring hospitalization. The median duration of symptoms was 5 days (IQR 1-8); median follow-up was 11.5 days (IQR 10-20). 21 patients (16.9%) remained asymptomatic, 94 (75.8%) had mild symptoms and 9 (7.3%) had moderate disease.

Table 1: Demographic characteristics of the sample

N	124
Age, years, median (IQR)	4.8 (0.9-11.5)
- Infants, n (%)	39 (31.5)
- ≥ 10 years, n (%)	39 (31.5)
Gender	
- Male, n (%)	65 (52.4)
Chronic disease, n (%)	37 (29.8)
- Immunosuppressed, n (%)	4 (3.2)
Prior contact, n (%)	98 (79.0)
- In family, n (%)	80 (64.5)
- In school, n (%)	10 (8.1)
- Both, n (%)	8 (6.5)

Conclusions: This new approach of home-care in the pediatric population proved to be a valid and safe option, since COVID-19 generally presented with mild symptoms in children, even in those with chronic conditions. It enabled a better understanding of this new disease and minimization of unnecessary emergency department visits and hospitalizations, while maintaining a close follow-up of these patients.

O044 / #949

COVID-19 AND DIABETES: A BIDIRECTIONAL LINK?

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 05: COVID COLLATERAL

Gian Paolo Ciccarelli, Luca Pierri, Enza Mozzillo, Eugenia Bruzzese, Alfredo Guarino, Andrea Lo Vecchio
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Naples, Italy

Title of Case(s): COVID-19 and diabetes: a bidirectional link?

Background: During COVID-19 pandemic, Type 1 diabetes mellitus (T1DM) has shown an increase in incidence and severity, similarly to what happened during SARS-CoV-1 epidemic. In both epidemics, hyperglycemia has been recognized as a risk factor for morbidity and mortality in adults. Viral infections have been identified as possible trigger for autoimmunity. However, the link between COVID-19 and hyperglycemia in pediatric populations has been poorly investigated.

Case Presentation Summary: From November 6th to December 2nd, 2020, 5 patients (median age 9 years, range 2-17) were admitted to our department for hyperglycemia and concomitant SARS-CoV-2 infection. Although, SARS-CoV-2 infection was confirmed by RT-PCR on nasopharyngeal swab, 4 out 5 cases showed positive SARS-CoV-2 antibodies. T1DM onset was characterized by polyuria, polydipsia, asthenia and weight loss in 4 cases (80%), and 3 children (60%) received a diagnosis of ketoacidosis requiring intravenous insulin therapy. Diagnosis was confirmed by the presence of T1DM-specific autoantibodies (anti-GAD 100%; anti-IA2 and anti-ZnT8 40%) and c-peptide below normal limits. During the first days after diagnosis, the management was complicated by a high request of insulin to obtain a satisfactory glycemic control (75% needing greater than 1.25 IU/kg/day) and by the contemporary SARS-CoV-2 infection.

Learning Points/Discussion: Our data suggest an increased incidence of T1DM during SARS-CoV-2 infection and underline a complex patients' management. Most patients arrived late to the Emergency Department and showed severe clinical features with ketoacidosis; this delay was probably due to the fear of SARS-CoV2 transmission in hospital settings. The requirement of high insulin doses could be attributable either to SARS-CoV-2-related inflammation or to the ketoacidosis status. It is important to provide adequate follow-up to clarify the mid- and long-term evolution of these new DM1 diagnoses.

IMPACT OF COVID-19 ON IMMUNIZATION SERVICES FOR MATERNAL AND INFANT VACCINES: RESULTS OF A SURVEY CONDUCTED BY IMPRINT—THE IMMUNISING PREGNANT WOMEN AND INFANTS NETWORK

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 05: COVID COLLATERAL

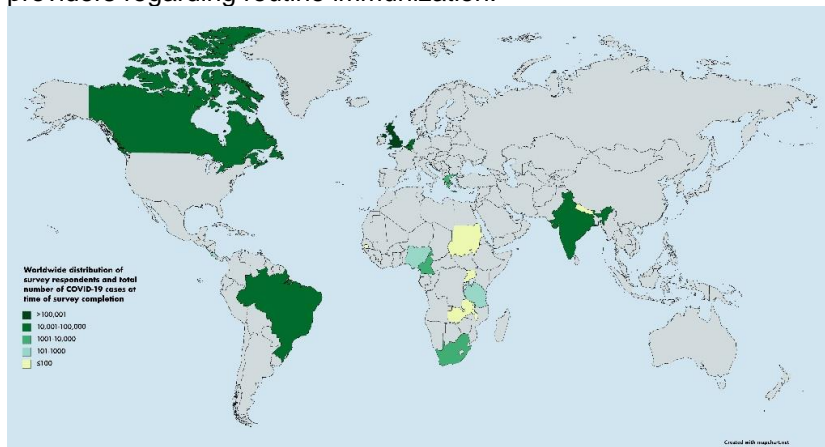
Anja Saso^{1,2}, Helen Skirrow³, Beate Kampmann^{1,2}

¹MRC Unit The Gambia at LSHTM, Vaccines & Immunity Theme, Banjul, Gambia, ²London School of Hygiene and Tropical Medicine, The Vaccine Centre, Faculty Of Infectious And Tropical Diseases, London, United Kingdom, ³Imperial College London, Primary Care And Public Health, London, United Kingdom

Background: The COVID-19 pandemic response has caused disruption to healthcare services globally, including to routine immunizations. To understand immunization service interruptions specifically for maternal, neonatal and infant vaccines, we captured the local experiences of members of the Immunising Pregnant Women and Infants Network (IMPRINT), a global network of clinicians and scientists working in maternal and neonatal vaccinology.

Methods: We conducted an online survey over 2-weeks in April 2020 consisting of five short sections. Each section included discrete questions to quantify the extent of disruption; sections 4 and 5 also included free-text options to explore the reasons behind reported disruptions. Responses were analysed using both quantitative and qualitative (traditional content analytical approach) methods.

Results: Of the 48 responses received, the majority (75%) were from low-and-middle-income countries (LMICs) [Fig.1]. Of all respondents, 50% or more reported issues with vaccine delivery within their country. Thematic analysis identified three key themes behind immunization disruption: “access” issues, e.g. logistical barriers; “provider” issues, e.g. staff shortages; and “user concern” about attending immunization appointments due to COVID-19 fear. Access and provider issues were more commonly reported by LMIC respondents. Overall, participants reported uncertainty among parents and healthcare providers regarding routine immunization.



Conclusions: Our survey provides a snapshot of the impact of COVID-19 on maternal and infant immunization services at the grassroots level of vaccine delivery, within a global context. Our findings reinforce concerns from healthcare professionals and organisations worldwide about the significant “collateral” implications of the pandemic on health outcomes of pregnant women and children. Further quantification of vaccination disruption is needed, alongside health service prioritization, logistical support and targeted communication strategies to reinforce routine immunizations during the COVID-19 response. We have developed an “at-a-glance” visual summary of key recommendations for stakeholders.

O046 / #1631

SIX-MONTH MULTIDISCIPLINARY FOLLOW-UP AND OUTCOMES OF PAEDIATRIC INFLAMMATORY MULTISYSTEM SYNDROME (PIMS-TS) PATIENTS AT A UK TERTIARY PAEDIATRIC CENTRE

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 05: COVID COLLATERAL

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Background: Paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS), a new, rare post-infectious complication of SARS-CoV-2, was first defined by the Royal College of Paediatrics and Child Health in April 2020. The natural history of PIMS-TS is unknown.

Methods: Children (<18 years old) meeting diagnostic criteria for PIMS-TS were followed up by a multidisciplinary team of specialists at regular intervals over 6 months after their acute admission.

Results: 46 children were identified. Echocardiograms were normal in 96% at six months. Objective gastrointestinal, renal, haematology, and otolaryngology findings resolved by six months. Whilst minor abnormalities on neurological exam were identified in 52.2% and 39.1% at six weeks and six months, we found no functional impairment by Expanded Disability Status Scale. Physiotherapy assessment revealed persisting poor exercise tolerance. Despite improvement in median manual-muscle-test-8 scores from 53/80 during hospitalisation to 80/80, 45% demonstrated six-minute-walk-test results <3rd centile for age/sex at six months. Parental (19%) and self-report (22%) revealed severe emotional difficulties.

Conclusions: Despite initial severe illness, by six months few organ-specific sequelae were observed. Ongoing concerns requiring physical re-conditioning and mental health support remained. Longer-term follow-up will help define the extended natural history of PIMS-TS.

TIME TO NEGATIVIZATION OF RT-PCR FOR SARS-COV-2 IN CHILDREN AND RELATIONSHIP TO CT AT DIAGNOSIS

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

Teresa De Jesús Reinoso¹, Cristina Calvo², Rut Del Valle Pérez³, Juan Mesa Guzman¹, Paula Vidal-Lana⁴, Antoni Soriano-Arandes⁵, Cristina Epalza⁶, Silvia Simó⁷, Mar Satnos⁸, María Penín⁹, Nerea Gallego-Mingo¹⁰, Francisco José Sanz Santaefemia¹¹, Amanda Bermejo¹², Itziar Astigarraga¹³, María Uretavizcaya-Martínez¹⁴, Fátima Ara¹⁵, Manuel Oltra Benavent¹⁶, Lola Falcón-Neyra¹⁷, Beatriz Soto¹⁸, Yolanda Ruiz-Prado¹⁹, Carmen Vázquez²⁰, María Sánchez-Códez²¹, Pilar Galán²², Marta Pareja-León²³, Angustias Ocaña²⁴, Mercedes García²⁵, Ana Reyes-Domínguez²⁶, Pedro Alcalá Minagorre²⁷, Neus Rius²⁸, María José Pérez²⁹, Mari Luz García³⁰, Beatriz Ruiz Saez³¹, Ana I. Menasalvas³², Isabel Romero³³, Ana Vivanco³⁴, Beatriz Jiménez Montero³⁵, Natividad Pons³⁶, Arantxa Berzosa Sanchez³⁷, Ana Belen Jimenez Jimenez³⁸, Laura Martín³⁹, Gloria Caro⁴⁰, Elena Montesinos⁴¹, Margarita Rodríguez⁴², Zulema Lobato⁴³, Cinta Moraleta^{44,45}, Alfredo Tagarro¹

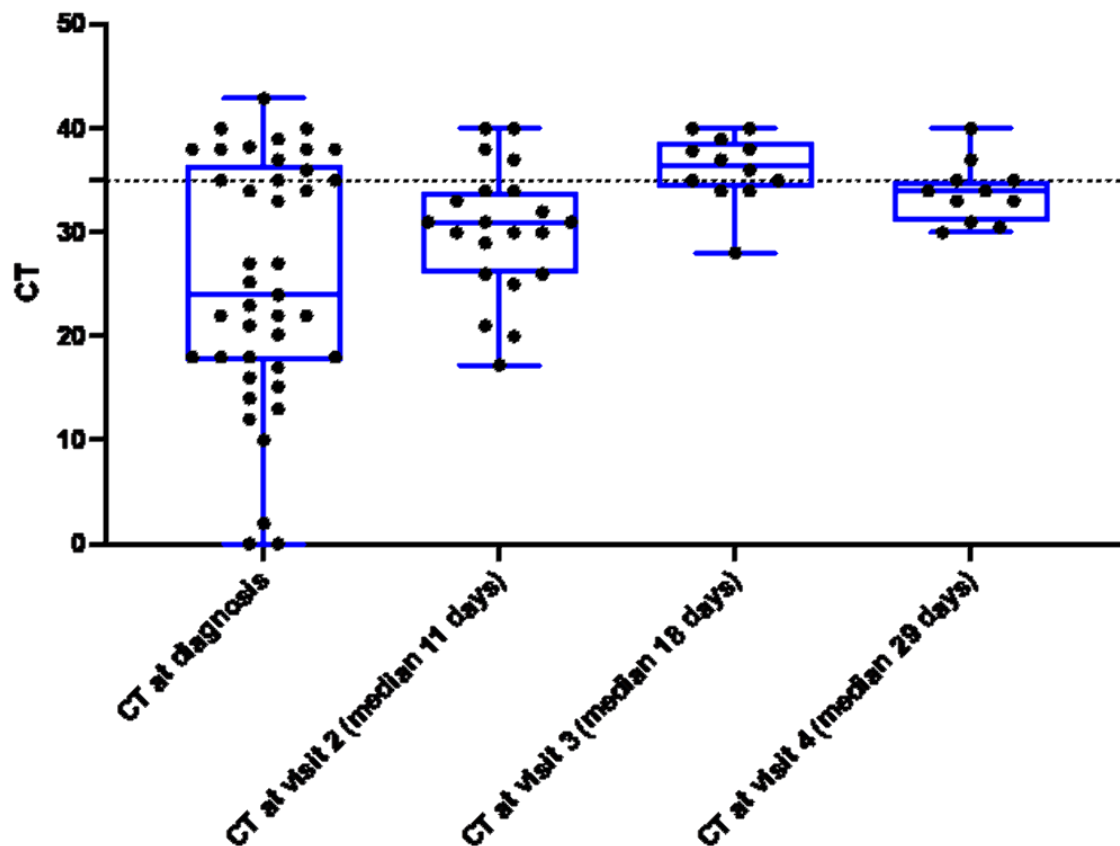
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Background: The time that RT-PCR remains positive in children with SARS-CoV-2 remains unclear. The objectives of this study were: - To determine the time between diagnosis and reverse transcription polymerase chain reaction (RT-PCR) negativization in children with COVID-19. - To establish the relationship between cycle threshold (CT) at diagnosis (CTd) and time to negativization (TN) of PCR.

Methods: The Epidemiological Study of Coronavirus in Children (EPICO-AEP) is a multicentre cohort

study conducted in Spain to assess the characteristics of children with COVID-19 from the beginning of the epidemic in Spain. This is a substudy focused on RT-PCR time to negativization. After a confirmed diagnosis with RT-PCR, follow-up was performed at week 2, 3 and 4. Nasopharyngeal swab sampling for molecular detection of SARS-CoV-2 by RT-PCR was performed weekly until negativization or until 4 weeks after diagnosis. Data were analysed using Microsoft Excel® and GraphPrism®.

Results: Data from 294 patients were analysed. The median (IQR) TN was 18 days (8-29). Two weeks after diagnosis, 45.4% of patients remained RT-PCR positive; 21.6% did at week three and 9.4% at week four. CTd value was available for 33 patients. Median CTd was 24 (IQR, 18-36). One-third (34.1%) had $CTd \geq 35$. When $CTd \geq 35$, TN was 9.5 days (8-20), while in $CTd < 35$, TN was 17 days (8.5-24). Difference between $CTd < 35$ and $CTd \geq 35$ subgroups was statistically significant (U-Mann-Whitney $p < 0.05$). However, CTd and TN did not correlate well (r Spearman: $r = -0.34$, $p = 0.053$).



Conclusions: RT-PCR remains positive in children for a median of 18 days and remains positive 4 weeks later in 10% of children. This should be considered when testing children with symptoms consistent with COVID-19 and other diseases. Time to negativization did not correlate well with CT at diagnosis

NON-TRANSMISSION OF SARS-COV-2 FROM INFECTED CHILDREN TO PARENTS: A PILOT STUDY IN A HOSPITAL SETTING

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

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Background: Although transmission from asymptomatic children to adults has been demonstrated conclusive data about the transmission of SARS-CoV-2 from children to their caregivers are not available. We investigated the occurrence of SARS-CoV-2 infection spreading from infected young children to caregivers when admitted to Pediatric Infectious Disease ward during pandemic.

Methods: In each isolation room (17 m²), the caregiver and the child were in close contact. Both, children and their caregivers were swab tested at admission and every 3 to 5 days. Swab test was performed to caregivers also 14 days after the last exposure to their positive child. Cycle threshold (C_t) from real-time (quantitative) PCR was obtained. IgG assay electrochemiluminescence (ECL) anti-SARS-CoV-2 was performed at the time of hospital admission and 14-21 days after exposure. Overall exposure to SARS-CoV-2, was accurately investigated through clinical anamnestic interview.

Results: Ninety-two nasopharyngeal swab (RT-PCR) SARS-CoV-2 positive children (mean age 3,5 ± 4.8) attended by their caregivers were hospitalized in single room. When admitted to the hospital 8/92 (8,7%) caregivers were RT-PCR and IgG negative. Features of the eight discordant pairs (positive patient /negative caregiver) are shown in the *table*. The mean duration of overall exposure from index case was 19±11,7 days. Pt. #1,6,8, showed low C_t values (high viral load). In spite of the prolonged hospitalization and low C_t, none of the 8 infected children transmitted SARS-CoV-2 to his caregiver.

Figure. Clinical, serological, and epidemic features of the eight couples of patients and caregivers

	Patient / Caregiver							
	#1	#2	#3	#4	#5	#6	#7	#8
Age (years)	0.2 / 17	5 / 37	4 / 30	0.9 / 37	2 / 39	2 / 35	12 / 37	0.15 / 25
Gender	F / F	F / M	F / F	M / F	M / F	F / F	M / F	F / F
Sars-CoV-2 RT-PCR	+ / -	+ / -	+ / -	+ / -	+ / -	+ / -	+ / -	+ / -
Ct value	-	32	-	24	20	9	36	6
Sars-CoV-2 IgG	+ / -	+ / -	+ / -	+ / -	+ / -	- / -	+ / -	- / -
Mask wearing	no/yes	yes /yes	no/yes	no/yes	no/yes	no/yes	yes /yes	no/yes
Clinical classification	Asymptomatic	Mild	Mild	Severe	Mild	Mild	Mild	Mild
Clinical symptoms	None	Fever, headache, dysgeusia, skin rash	Skin rash	Diarrhea, sepsis	Rhinovirus co-infection	Fever	Abdominal pain, renal colic	Fever
Days of hospitalization	6	22	3	23	17	9	4	3
Overall exposure	7	38	20	29	18	11	25	17

Conclusions: Our report described a unique setting where the child is the only possible source of infection. This data show that children are not a source of SARS-CoV-2 infection even if they live in close contact with adults.

SARS-COV-2 TRANSMISSION AMONG CHILDREN AND CARE STAFF IN DAYCARE CENTRES DURING LOCKDOWN: A CROSS-SECTIONAL, MULTICENTRE SEROPREVALENCE STUDY IN FRANCE.

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

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¹Jean Verdier Hospital - APHP, Pédiatrie, Bondy, France, ²Hôpital Robert Debré, APHP, Service De Pédiatrie Générale, Paris, France, ³Hôpital Armand Trousseau, APHP, Service De Pédiatrie, Paris, France, ⁴Hôpital Louis Mourier, APHP, Service De Pédiatrie-urgences, Colombes, France, ⁵Hôpital Annecy Genevois, Service De Pédiatrie, Annecy, France, ⁶Hôpital André Mignot, Service De Pédiatrie, Versailles, France, ⁷CHU de Rouen, Service De Pédiatrie Néonatale Et Réanimation,, Rouen, France, ⁸Conseil Départemental de Seine Saint Denis, Service De La Protection Maternelle Et Infantile, Bobigny, France, ⁹Ville de Paris, Service De La Protection Maternelle Et Infantile, Paris, France, ¹⁰CHI Créteil, Centre De Recherche Clinique-centre De Ressources Biologiques, Créteil, France, ¹¹Groupe de Pathologies infectieuses, Association clinique et thérapeutique infantile du Val-de-Marne, Activ, Saint-Maur des Fossés, France, ¹²Hôpital Avicenne, APHP, Unité De Prévention Du Risque Infectieux, Laboratoire De Microbiologie Clinique, Bobigny, France, ¹³Hôpital Avicenne, Laboratoire De Virologie, Bobigny, France, ¹⁴Sorbonne Université, Hôpital Saint-Antoine, AP-HP, Institut Pierre Louis D'Épidémiologie Et De Santé Publique, Paris, France, ¹⁵Hôpital Avicenne, AP-HP, Urc-crc Ghps; Inserm U1163/cnrs Erl 8254, Bobigny, France, ¹⁶Jean Verdier Hospital - APHP, Sau Pédiatriques (paediatric Emergency Department), Bondy, France, ¹⁷Inserm, U1138, Équipe 22, Centre De Recherche Des Cordeliers, Sorbonne Université, Paris, France

Background: It is not known whether very young children contribute to the transmission of COVID-19. Determining the seroprevalence of antibodies against SARS-CoV-2 in daycare centres that remained open for key workers' children during a period of lockdown might provide data in this respect.

Methods: Between June 4th and July 3rd, 2020, children and staff having attended one of 22 daycare centres during France's nationwide lockdown (from March 15th to May 9th, 2020) were prospectively included. Hospital staff not occupationally exposed to patients and/or children were enrolled in a comparator group. The presence of anti-SARS-CoV-2 antibodies in capillary whole blood was determined using a rapid chromatographic immunoassay. We computed the raw prevalence as the percentage of individuals with a positive IgG or IgM test, and used Bayesian smoothing to account for imperfect assay sensitivity and specificity.

Results: We enrolled 327 children (mean \pm standard deviation age: 1.9 ± 0.9 years), 197 daycare staff, and 164 adults in the comparator group. Positive serological tests were observed for 14 children (raw prevalence [95% confidence interval] = 4.3% [2.6, 7.1]) and 14 daycare staff (7.7% [4.2, 11.6]). After accounting for imperfect assay sensitivity and specificity, we estimated that 3.7% (95% credible interval [1.3, 6.8]) of the children and 6.8% [3.2, 11.6] of the staff had been infected with SARS-CoV-2. The comparator group fared similarly to the daycare staff with 5.5% [2.9, 10.1] testing positive leading to 5.0% [1.6, 9.8] infection rate after accounting for assay characteristics ($p=0.53$). An exploratory analysis suggested that seropositive children were more likely than seronegative children to have been exposed to an adult household member with confirmed COVID-19 infection (43% vs. 6%, respectively, $RR=7.1$ [2.2, 22.4]).

Conclusions: According to serological test results, the proportion of infected children was low. Intrafamily transmission seemed more plausible than transmission within daycare centres.

Clinical Trial Registration: ClinicalTrials.gov 04413968

AGE-DEPENDENT SEROPREVALENCE OF SARS-COV-2 ANTIBODIES IN SCHOOL-AGED CHILDREN FROM AREAS WITH LOW AND HIGH COMMUNITY TRANSMISSION

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

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¹Leuven University Vaccinology Center, KU Leuven, Public Health And Primary Care, Leuven, Belgium,

²McGill University, Department Of Epidemiology, Biostatistics And Occupational Health, Montreal, Canada, ³Hasselt University, I-biostat, Data Science Institute, Hasselt, Belgium, ⁴Sciensano, Infectious Diseases In Humans, Brussels, Belgium, ⁵Sciensano, Epidemiology And Public Health, Brussels, Belgium

Background: It is not yet clear to what extent SARS-COV-2 infection rates in children reflect community transmission, nor whether infection rates differ between primary schoolchildren and young teenagers.

Methods: A cross-sectional serosurvey compared the SARS-CoV2 attack-rate in a sample of 362 children recruited from September 21 to October 6, 2020 in primary (ages 6-12) or lower secondary school (ages 12-15) in a municipality with low community transmission (Pelt) to a municipality with high community transmission (Alken) in Belgium. Children were equally distributed over grades and regions. Blood samples were tested for the presence of antibodies to SARS-CoV-2 with an enzyme-linked immunosorbent assay.

Results: We found anti-SARS-CoV-2 antibodies in 4.4% of children in the low transmission region and in 14.4% of children in the high transmission region. None of the primary schoolchildren were seropositive in the low transmission region, whereas the seroprevalence among primary and secondary schoolchildren did not differ significantly in the high transmission region. None of the seropositive children suffered from severe disease. Children who were in contact with a confirmed case (RR: 3.8; 95%CI: 1.7 – 8.3), who participated in extracurricular activities (RR: 5.6; 95%CI: 1.2 – 25.3) or whose caregiver is a healthcare worker who had contact with COVID-19 patients (RR: 2.2; 95%CI: 1.0 – 4.6), were at higher risk of seropositivity.

Conclusions: If SARS-CoV2 circulation in the community is high, this will be reflected in the pediatric population with similar infection rates in children aged 6-12 years and 12-15 years.

Clinical Trial Registration: Not applicable

BREASTMILK INHIBITS ENVELOPED VIRUS INFECTION, INCLUDING SARS-COV-2, IN A GUT ENTEROID MODEL

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

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Background: Viral transmission from mother to child through infected breastmilk is well established for viral infections such as human immunodeficiency virus (HIV) and cytomegalovirus (CMV) known to cause perinatal disease. Similarly, in the case of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), it has been suggested that breastfeeding could potentially be a mechanism for transmission during the acute phase of disease.

Methods: The 3D human fetal intestinal organoids are an "inside out" representation of human physiology with the basal side on the outside facing the environment and the apical side facing the inwards. During culture, the organoids are "opened up" and cultured as a monolayer on transwell inserts to evaluate the protective ability of breastmilk against SARS-CoV-2. The monolayers were apically exposed to SARS-CoV-2 and breastmilk mix. Samples were collected on different time points for different analysis.

Results: In the current study, we evaluated the protective ability of breastmilk against SARS-CoV-2 infection in a human fetal primary intestinal organoids model. We find that human breastmilk blocks SARS-CoV-2 replication, irrespective of the presence of SARS-CoV-2 specific antibodies, in this model. Furthermore, complete inhibition of both enveloped Middle East Respiratory Syndrome Coronavirus and Respiratory Syncytial Virus infections while no inhibition of non-enveloped Enterovirus A71 infection was observed.

Conclusions: Our data indicate that breastmilk has potent antiviral activity against some enveloped viruses and identification of the potential mechanism will be of value in antiviral treatment.

Clinical Trial Registration: Not applicable

PERFORMANCE OF RT-PCR ON SALIVA SPECIMENS COMPARED TO NASOPHARYNGEAL SWABS FOR THE DETECTION OF SARS-COV-2 IN CHILDREN: A PROSPECTIVE COMPARATIVE CLINICAL TRIAL

PARALLEL SESSION

PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

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Background: Saliva RT-PCR has already been reported as an attractive alternative for the detection of SARS-CoV-2 in adults. Pediatric evidence remains weak with discordant reported sensitivities.

Methods: Children and adolescents with symptoms suggestive of COVID-19 were prospectively enrolled in a comparative clinical trial of saliva and nasopharyngeal (NP) RT-PCR between November and December 2020 from two outpatient clinics. Detection rates and sensitivities of saliva and NP RT-PCR were compared. Participants with discordant NP and saliva RT-PCR results were also compared as well as viral load (VL) from paired NP-Saliva swabs.

Results: Out of 405 patients enrolled, 397 patients had two tests performed. Mean age was 12.7 years (range 1.2-18) and 192 (48.3%) were female. Detection rates were 22.9% (95% CI 18.8-27.1%) by saliva RT-PCR, 25.4% (21.2-29.7%) by NP RT-PCR, and 26.7% (22.4-31.1%) by any test. Sensitivity of saliva compared to NP RT-PCR was 85.2% (78.2-92.1%) and 94.5% (89.8-99.2%) for NP compared to saliva PCR. For a NP RT-PCR VL threshold of $\geq 10^3$ and $\geq 10^4$ copies/ml, sensitivity of saliva increases to 88.7% and 95.2% respectively. The 15 patients who had an isolated positive NP RT-PCR were significantly younger ($p=0.034$), had a lower VL ($p<0.001$), and were not able to drool saliva at the end of the sampling ($p=0.002$). VLs were significantly lower with saliva PCR than with NP RT-PCR (median $8.7 \text{ cp/ml} \times 10^4$; IQR 1.2×10^4 - 5.2×10^5 ; vs median $4.0 \times 10^7 \text{ cp/ml}$; IQR 8.6×10^5 - $1. \times 10^8$; $p<0.001$, 95CI: -4.5×10^2 to -7.7×10^1).

Conclusions: Saliva PCR shows diagnostic performances close to NP RT-PCR for SARS-CoV2 detection in most symptomatic outpatient children and adolescents.

Clinical Trial Registration: NCT04613310

SEROLOGICAL RESPONSE AND IMPACT ON PERINATAL INFECTION IN CHILDREN BORN TO COVID-19 INFECTED MOTHERS

PARALLEL SESSION

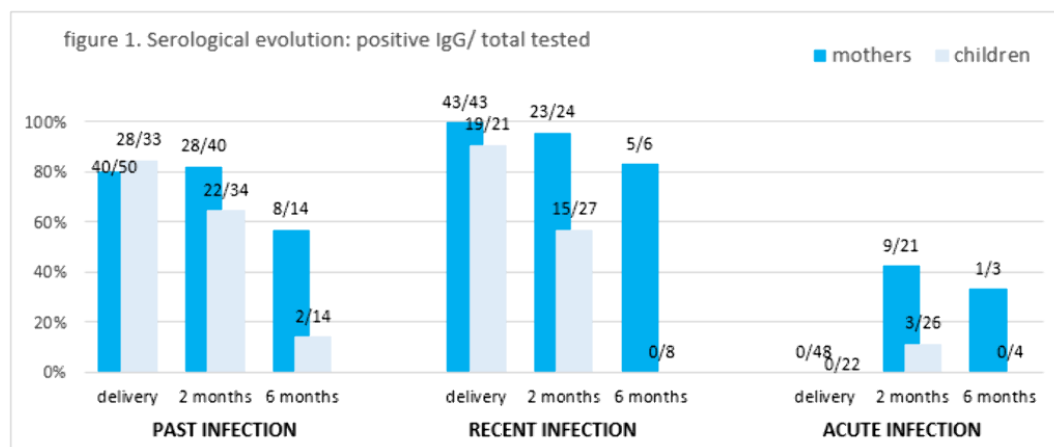
PRE-RECORDED + LIVE: ORAL PRESENTATIONS 06: COVID TRANSMISSION

Ángela Manzanares¹, Alicia Hernanz Lobo¹, Sara Vigil Vázquez², Itziar Carrasco García¹, Beatriz Pérez Seoane³, Andrea Martínez Lozano⁴, Roberto Alonso⁴, Olga Sanz⁵, Alba Pérez Pérez², Mar Muñoz-Chapulí⁶, Jesus Saavedra Lozano¹, Manuel Sánchez Luna², Mar Santos¹, María Luisa Navarro Gómez¹
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Background: Serological data on mothers with COVID-19 infection during pregnancy and delivery and on their babies are scarce. Neonatal SARS CoV2 infection has been reported to be low. The aim of our study was to describe serological response in mothers with COVID-19 infection and in their children at delivery and in the next 6 months. We also aimed to investigate the effect of maternal antibodies on neonatal infection.

Methods: Multicentre prospective study from March-October 2020. Mothers diagnosed with COVID-19 during pregnancy or delivery from the Spanish national cohort GESNEO were included. Serologic test was anti-nucleocapsid IgG. Participants were divided into three groups according to SARS-CoV-2 tests at delivery: acute infection (positive PCR, negative IgG), recent infection (positive PCR, positive IgG), past infection (negative PCR, positive IgG/ confirmed infection during pregnancy).

Results: 141 women (mean age 33 years; Interquartile range 29-36) were included. 48(34%) with acute infection, 43(30.5%) with recent infection and 50(35.5%) with past infection. Positive IgG in mothers and children are shown in figure 1.



IgG in cord blood was more likely to be positive in children if their mothers had been symptomatic (75.8% vs 51.1%; $p=0.03$) or had been admitted to the hospital due to COVID-19 infection (90% vs 57.6%; $p=0.08$). Four children had a positive SARS-CoV-2 PCR in the first 15 days of life. All neonatal infections were in children born to mothers with acute infection (8.3% vs 0%; $p=0.01$).

Conclusions: Transplacental passage of maternal antibodies was very high in mothers with recent or past infection at delivery. These antibodies were lost during the first months of life in infants, and were uncommon at 6 months of age. Neonatal SARS-CoV-2 infection was exceptional, as in previous reports. Maternal antibodies may have a protective effect in transmission of SARS-CoV-2 to newborns.

SEASONAL RESPIRATORY SYNCYTIAL VIRUS MEDICALLY-ATTENDED REINFECTIONS AMONG INFANTS AND YOUNG CHILDREN

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 07: RSV CLINICAL AND VACCINES

Sabina Nduaguba^{1,2}, Phuong Tran^{1,2}, Diaby Vakaramoko^{1,2}, Yoonyoung Choi³, Almut Winterstein^{1,2}

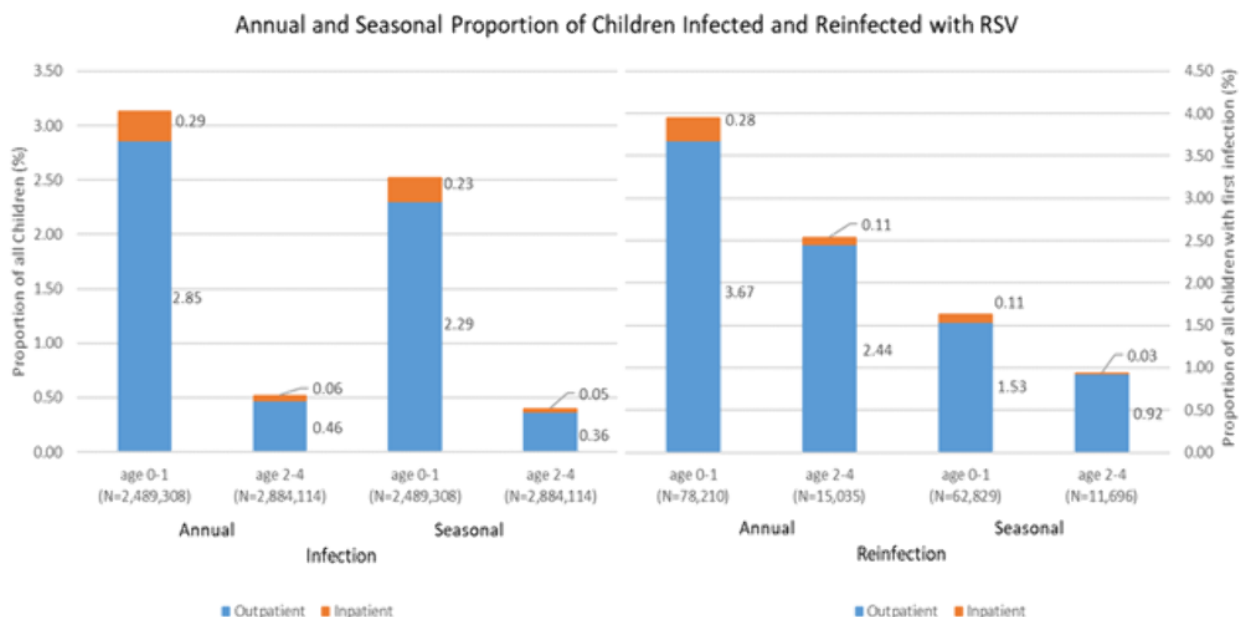
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²University of Florida College of Pharmacy, Pharmaceutical Outcomes And Policy, Gainesville, United States of America, ³Merck & Co., Inc, Center For Observational And Real-world Evidence, Kenilworth, United States of America

Background: Data on the incidence of RSV reinfection are scarce. We estimated medically-attended reinfection rates within each RSV year and season from 2011-2019.

Methods: Using claims data from private insurance enrollees, we established cohorts of children <5 years who were followed to ascertain annual (July 1-June 30) and seasonal (November - February) RSV recurrence estimates. Unique RSV episodes included inpatient encounters with RSV diagnosis with ≥30 days gap between hospitalization, and outpatient encounters ≥30 days apart from each other as well as from inpatient encounters. The risk of annual and seasonal re-infection was calculated as the proportion of children with a subsequent RSV episode in the same RSV year/season.

Results:



Over the 8 assessed study years/seasons, the total annual number of initial RSV episodes ranged from 10,049 – 14,077 (inpatient = 964-1,402), representing 1.59 – 1.82% of children. The number of annual reinfections was 325 – 791 (inpatient = 22-49), ranging from 0 – 5 per initial RSV episode. The annual proportion of children re-infected ranged from 2.61% (95% CI=2.31%-2.93%) to 4.76% (4.41%-5.12%), mostly requiring outpatient care (2.44% (2.15%-2.75%) to 4.45% (4.12%-4.81%) rather than inpatient care (0.20% (0.12%-0.30%) to 0.35% (0.26%-0.46%)). The proportion of children with reinfections declined with age.

Conclusions: A small proportion of young children experience RSV reinfections that require medical attendance.

O057 / #1212

RESPIRATORY SYNCYTIAL VIRUS RELATED PAEDIATRIC INTENSIVE CARE UNIT ADMISSIONS IN IRELAND: 2010-2020

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 07: RSV CLINICAL AND VACCINES

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Children's Health Ireland, Paediatric Infectious Diseases, Dublin, Ireland

Background: In 2006, the American Academy of Paediatrics (AAP) published a clinical practice guideline recommending that infants born less than 32-weeks gestation receive Palivizumab if aged less than twelve months at the start of the RSV season. An updated guideline in 2014 advised that only infants less than 29-weeks should receive Palivizumab in the absence of other indications. The aim of this study was to determine the impact of changing guidelines on RSV-related hospital admissions, management and outcome among infants born <32 weeks in Ireland.

Methods: Data was collected prospectively for all patients admitted with RSV bronchiolitis from 2010-2020 to paediatric intensive care units (PICU) in Ireland. The two groups of interest were infants born <32 weeks gestation admitted from 2010-2014 and from 2015-2020. Data included demographic variables, background, management and outcome. Categorical variables were analysed using Chi-squared test. Continuous variables were analysed using Mann-Whitney test.

Results: There were 823 RSV-related PICU admissions in Ireland between 2010 and 2020, 99 (12%) of which were among infants born <32 weeks gestation. The total number of Palivizumab prescriptions decreased nationally from a median of 1335 doses/year in 2010-2015 to 1055 from 2015-2020.

Significantly fewer infants in the 29-32 week gestation group were receiving Palivizumab at admission post 2015, 18.8% vs 66.7%, $p=0.03$. The average length of PICU admission, requirement for mechanical ventilation or duration of mechanical ventilation was not significantly different between groups. No infants in either group died.

Conclusions: Adoption of the 2014 updated AAP-guideline on Palivizumab use was associated with reduced prescription in the 29-32 week gestation group in Ireland. This change was not associated with an increased frequency of PICU admission, mechanical ventilation or worse outcome among infants <32 weeks gestation.

INCREASED RISK OF RSV HOSPITALIZATIONS IN INFANTS EXPOSED TO HIV IN UTERO AND UNINFECTED

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 07: RSV CLINICAL AND VACCINES

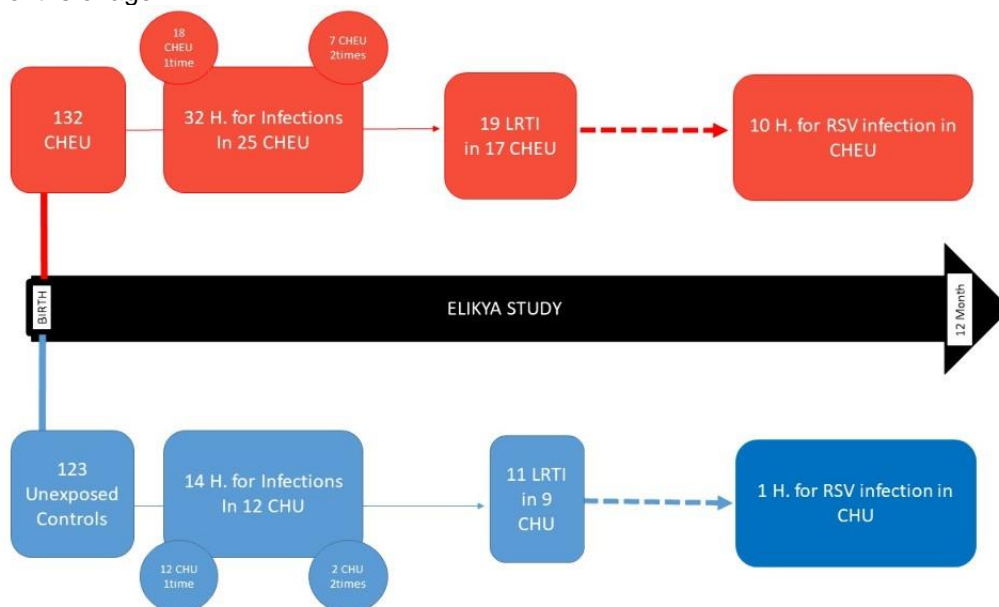
Catherine Adler¹, Pedro Piedra², Trevor McBride³, Arnaud Marchant⁴, Jack Levy¹, Tessa Goetghebuer¹

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Background: Respiratory syncytial virus (RSV) is the most common cause of respiratory viral infections in children worldwide. The risk factors for severe RSV infections are young age, premature birth, cardiac and pulmonary diseases and immunodeficiency. Children who are HIV exposed and uninfected (CHEU) are known to be susceptible to infections in early life. The burden of RSV in this population has been demonstrated in developing countries but poorly studied in high-income countries. The aim of our study is to evaluate the incidence of hospitalizations linked to RSV in CHEU born in Belgium.

Methods: Between December 2010 and November 2013, as part of the ELIKYA study, 130 HIV-affected and 120 uninfected pregnant women were recruited at Saint-Pierre Hospital, Brussels. Their children were followed up until the age of 1 year. Levels of RSV antibodies were measured at 6 months of age to define rates of natural infections.

Results: During the first year of life, 46 hospitalizations for infections have occurred including 11 admissions for RSV infections. Despite similar rate of seroconversion for RSV at 6 months of life, the RSV hospitalizations' incidence was 8.5 times higher in CHEU compared to CHU (IR= 7.7 per 100 person-years in CHEU vs 0.9 per 100 person-years in unexposed controls). Among CHEU, initiation of maternal ARV therapy before pregnancy was a protective factor. All hospitalizations occurred before the age of 6 months of age.



Conclusions: Our study demonstrates that despite similar exposure to RSV, CHEU born in a high-income country show excess hospitalizations linked to RSV infection. Because of their vulnerability to severe RSV infection among others infections, CHEU should be closely followed up and targeted for preventative measures including immunization.

AN INVESTIGATIONAL RESPIRATORY SYNCYTIAL VIRUS VACCINE (RSVPREF3) BOOSTS IMMUNE RESPONSE IN MOTHERS WITH SUCCESSFUL ANTIBODY TRANSFER TO FETUS

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 07: RSV CLINICAL AND VACCINES

Anu Kantele¹, Robert Jeanfreau², Osvaldo Reyes³, Marta García Sánchez⁴, Peyman Banooni⁵, Joanne M Langley⁶, Maria Begoña Encinas Pardilla⁷, José Luis Bartha Rasero⁸, Elisabeth Botelho-Nevers⁹, Jim Buttery¹⁰, Thorsten Stanley¹¹, Adrián Martín García¹², Hui Qian¹³, Magali De Heusch¹⁴, Ilse Dieussaert¹³, Zourab Bebia¹³, Ouzama Henry¹³

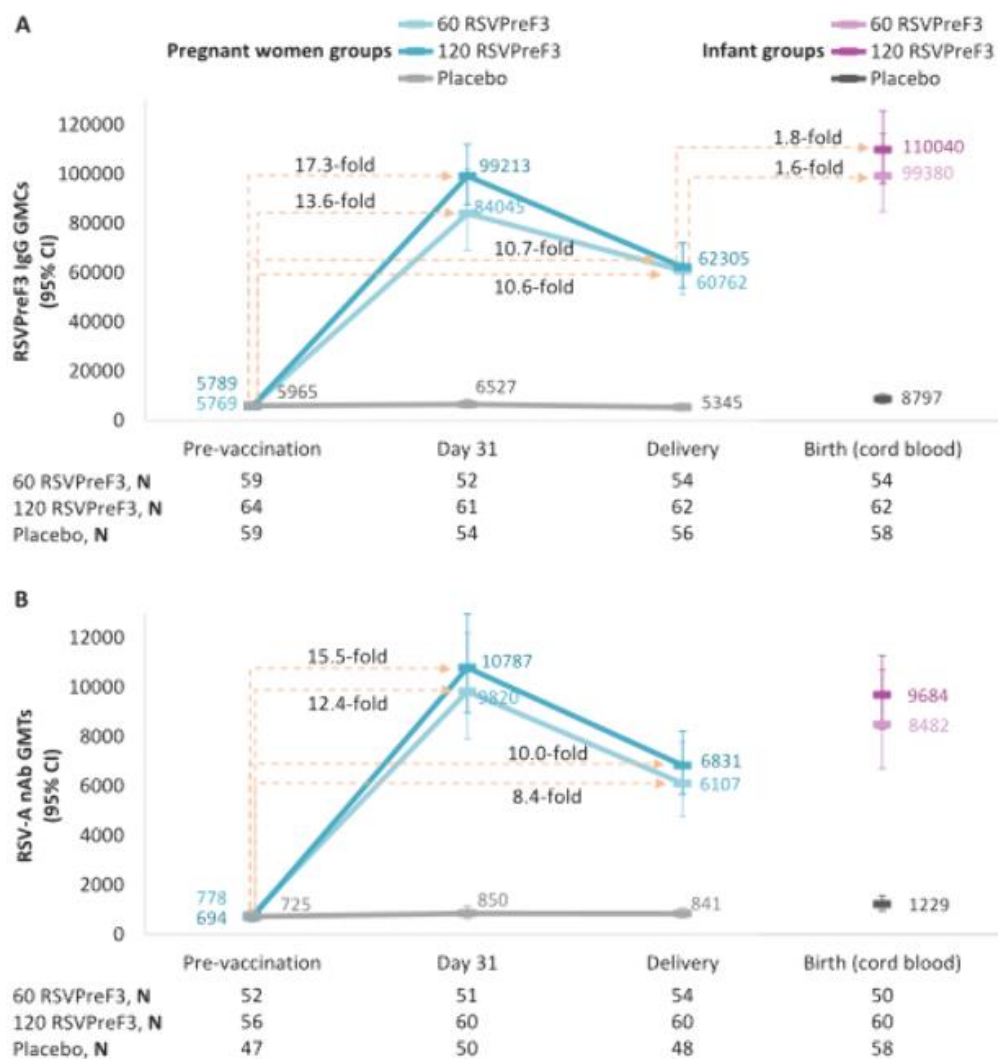
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Background: RSV vaccines are under development to allow prevention of RSV disease in infants through passive immunity with maternal antibodies. We assessed immunogenicity of the investigational RSVPreF3 vaccine in mothers and placental transfer of maternal antibodies to fetus.

Methods: In this ongoing phase II, observer-blind, placebo-controlled, multi-country trial, 213 healthy pregnant women aged 18-40 years were randomised 1:1:1 and received a single 60 or 120 µg dose of RSVPreF3 (60 or 120 RSVPreF3 group) or placebo between 28^{0/7}-33^{6/7} weeks of gestation. Levels of maternal anti-RSVPreF3 IgG-specific antibodies and RSV-A neutralising antibodies (nAb) measured pre-vaccination, on day 31 and at delivery, including cord blood levels, are shown here.

Results: On day 31, the maternal anti-RSVPreF3 IgG antibody geometric mean concentrations (GMCs) increased 13.6-fold in the 60 RSVPreF3 group and 17.3-fold in the 120 RSVPreF3 group (placebo: 1.0-fold) compared to baseline; at delivery a 10.6- and 10.7-fold increase versus baseline, respectively, was observed (placebo: 0.9-fold) (Figure 1A). On day 31, RSV-A nAb geometric mean titres (GMTs) were 12.4-fold and 15.5-fold higher in the 60 and 120 RSVPreF3 groups, respectively (placebo: 1.2-fold); at delivery, the fold-increase was 8.4 in the 60 RSVPreF3 group and 10.0 in the 120 RSVPreF3 group (placebo: 1.2-fold) (Figure 1B). RSVPreF3 IgG GMCs and RSV-A nAb GMTs were higher in infants of RSVPreF3-vaccinees than in those of placebo recipients (Figure 1A and 1B). At delivery, the GM of placental transfer ratio of RSVPreF3 IgG antibodies was 1.6 and 1.8 in the 60 and 120 RSVPreF3 groups, respectively (Figure 1A).

Figure 1. RSVPreF3 IgG antibody GMCs (enzyme-linked immunosorbent assay [EU/mL]; panel A) and RSV-A nAb GMTs (neutralization assay [ED60]; panel B) until delivery among pregnant women and in the cord blood of their infants



Abbreviations: RSV-A, respiratory syncytial virus type A; N, number of women with available results; CI, confidence interval; ED60, serum dilution inducing 60% inhibition in plaque-forming units; EU, laboratory units of enzyme-linked immunosorbent assay.

Conclusions: The investigational RSVPreF3 vaccine induced a robust immune response in pregnant women at all timepoints that is efficiently transferred to fetuses, leading to high neutralising cord blood titres. **Funding:** GlaxoSmithKline Biologicals SA
Clinical Trial Registration: NCT04126213

CHAD155-VECTORED RESPIRATORY SYNCYTIAL VIRUS (RSV) INVESTIGATIONAL VACCINE (CHAD155-RSV) IS IMMUNOGENIC WHEN ADMINISTERED AT DIFFERENT DOSE LEVELS IN INFANTS AGED 6–7 MONTHS

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 07: RSV CLINICAL AND VACCINES

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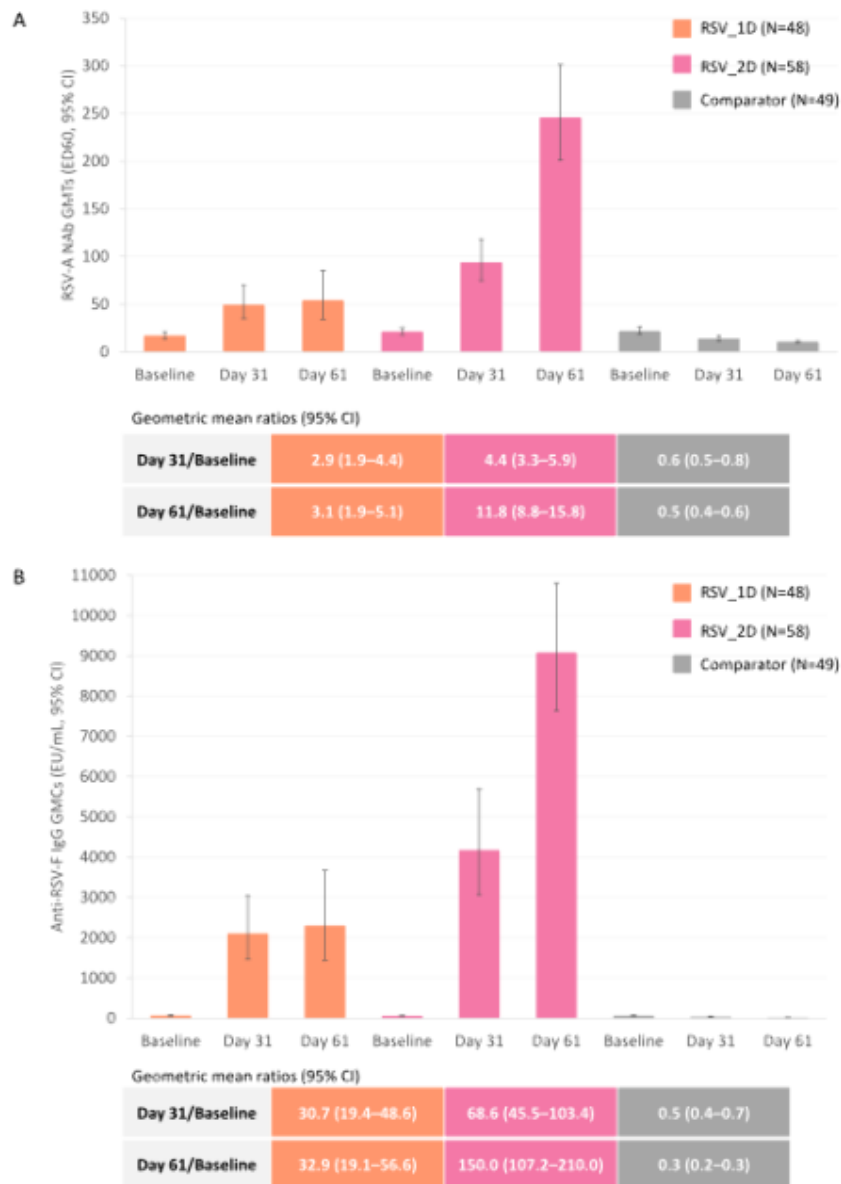
Background: Currently there are no licensed RSV vaccines available. We report immunogenicity results in infants vaccinated with 2 different regimens and dose levels of ChAd155-RSV, a chimpanzee

adenovirus-vectored vaccine encoding RSV proteins F, N and M2-1.

Methods: In this phase I/II observer-blind, controlled study conducted in 13 countries, infants aged 6-7 months were randomized (1:1:1) to receive either 1 dose of ChAd155-RSV 1.5×10^{10} viral particles (vp) and 1 placebo dose (RSV_1D group), 2 doses of ChAd155-RSV 5×10^{10} vp (RSV_2D group) or 2 comparator doses (placebo or vaccine [meningococcal or pneumococcal]) on days 1 and 31. We evaluated RSV-A neutralizing antibody (NAb) geometric mean titers (GMTs; ED60) and anti-RSV F IgG geometric mean antibody concentrations (GMCs; EU/mL). We present results from RSV unexposed infants (seronaïve) as assessed by serologic testing of RSV-A NAb at baseline.

Results: Of 201 infants enrolled, 155 were seronaïve and analyzed for immunogenicity up to day 61. At days 31 and 61, RSV-A NAb GMTs were significantly higher in RSV groups compared to baseline and comparator group (Figure A). The high dose vaccine (RSV_2D) induced greater RSV-A NAb response as compared to low dose (RSV_1D) from baseline to day 31 (4.4-fold vs 2.9-fold increase, respectively). The second RSV vaccine dose (RSV_2D) induced a further increase of >2.6-fold in RSV-A NAb GMTs at day 61. In total, an 11.8-fold increase from baseline (GMT:21.2) to day 61 (GMT:246.0) was observed. Anti-RSV-F IgG followed similar trends, with increases at day 61 of 32.9-fold (GMC:2300.0; RSV_1D) and 150.0-fold (GMC:9082.3; RSV_2D) (Figure B).

Figure. A. RSV-A NAb titers and B. Anti-RSV F IgG antibody concentrations of ChAd155-RSV dose levels until day 61 post-vaccination (seronaive infants, per protocol set for immunogenicity)



N, maximum number of infants with available results; CI, confidence interval; EU/mL, enzyme-linked immunosorbent assay units/milliliter; ED60, serum dilution inducing 60% inhibition in plaque forming units.

Note: Comparator group received either 2 placebo doses, either 4-component meningococcal serogroup B vaccine (4CMenB), meningococcal serogroup ACWY-tetanus toxoid conjugate vaccine (MenACWY-TT), quadrivalent meningococcal ACWY-CRM conjugate vaccine (MenACWY-CRM) or pneumococcal non-typeable *Haemophilus influenzae* protein D-conjugate vaccine (PHID-CV) according to each vaccine label and 1 placebo dose.

Conclusions: In RSV seronaive infants, ChAd155-RSV vaccine induced a significant binding and neutralizing RSV antibody responses which were greater at the higher dose level and increased after the second dose. **Funding:** GlaxoSmithKline Biologicals SA
Clinical Trial Registration: ClinicalTrials.gov 03636906

PHASE 1/2A SAFETY AND IMMUNOGENICITY STUDY OF AN RSV VACCINE ADENOVIRUS 26 VECTOR ENCODING PREFUSION F (AD26.RSV.PREF) IN SEROPOSITIVE TODDLERS AGED 12–24 MONTHS

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 07: RSV CLINICAL AND VACCINES

Matthew D Snape¹, Miia Virta², Kristi Williams³, Saul Faust⁴, Ilkka Seppa², Robyn Hartvickson⁵, Edmund Omoruyi⁶, Arangassery Rosemary Bastian³, Wouter Haazen³, Nadine Salisch³, Efi Gymnopolou⁶, Benoit Callendret³, Esther Heijnen³

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Background: Despite the significant burden respiratory syncytial virus (RSV) causes in children, there is no approved vaccine for RSV disease. We evaluated the safety and immunogenicity of the experimental vaccine Ad26.RSV.preF, a replication-incompetent adenovirus 26 vector encoding the F protein stabilised in the pre-fusion conformation.

Methods: In this phase 1/2a double-blind study, RSV-seropositive toddlers aged 12–24 months were randomised 2:1 to receive 2 doses of Ad26.RSV.preF (5×10^{10} viral particles) or placebo intramuscularly, with approximately 28 days between doses. Safety, immunogenicity and RSV infections were assessed for up to one-year post-Dose 1.

Results: In total, 24 participants received Ad26.RSV.preF and 12 received placebo. No vaccine-related serious adverse events occurred within 28 days post-vaccination with Ad26.RSV.preF. Solicited (local or systemic) adverse events (AEs) commonly occurring in Ad26.RSV.preF and placebo recipients were injection site pain/tenderness (66.7% and 50.0%) and irritability/crying (91.7% for both groups). Fever ($\geq 38.0^\circ\text{C}$) was observed in 58.3% of Ad26.RSV.preF recipients and 25.0% of placebo recipients; the majority of events resolved within 2 days. Geometric mean titers (GMT) of neutralizing antibodies to RSV A2 increased in Ad26.RSV.preF recipients from 121 (95% CI:76;191) at baseline to 1,608 (95% CI:730;3,544) at 28 days post-Dose 1 and 2,235 (95% CI:1,586;3,150) post-Dose 2 at Day 57 and remained stable in placebo recipients. Pre- and post-F-specific antibodies increased substantially from baseline post-vaccination with Ad26.RSV.preF. CD4+ and CD8+ T cell responses were elicited in the Ad26.RSV.preF group, with a predominant Th1-skewed phenotype. RSV infection was PCR-confirmed in one (4.2%) Ad26.RSV.preF recipient compared with five (41.7%) placebo recipients.

Conclusions: Ad26.RSV.preF was well tolerated, elicited humoral and cellular immune responses. Further studies evaluating the immunogenicity and reactogenicity of Ad26.RSV.preF are ongoing in RSV-seronegative toddlers aged 12–24 months.

Clinical Trial Registration: Protocol number: VAC18194RSV2001 Clinical trial number: NCT03303625 EudraCT Number: 2017-001345-27 Clinical Registry number: CR108371

A PLASMA PROTEOMICS APPROACH TO UNDERSTANDING THE ACUTE PHASE RESPONSE TO VACCINES IN INFANTS: INSIGHTS FROM A CLINICAL TRIAL OF THE REACTOGENIC MULTICOMPONENT CAPSULAR GROUP B MENINGOCOCCUS (4CMENB) VACCINE.

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

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⁴University of Oxford, Nuffield Department Of Medicine, Oxford, United Kingdom

Background: In 2015, 4CMenB (Bexsero®) was added to the UK infant vaccination schedule to protect infants against invasive meningococcal disease with capsular group B meningococcus. 4CMenB is efficacious but reactogenic, and has led to an increase in infant hospital admissions for infection screens due to vaccine related fever. This study investigated the innate immune response to vaccination in infants and its relationship to the increased reactogenicity of the current 4CMenB containing schedule.

Methods: 4-month-old infants were randomised to receive pre-2015 vaccinations alone or alongside 4CMenB (current schedule). Plasma protein expression was profiled using mass spectrometry (LC-MS/MS) and Luminex® multiplex bead-based immunoassays to measure high and low abundance proteins respectively. Plasma from thirty infants was profiled at baseline and 4-hours (n=13) or 24-hours (n=17) post vaccination. Foldchanges were determined using paired Wilcoxon-tests (Luminex data) and linear models (mass-spectrometry data). Results with FDR<0.05 were deemed significant.

Results: Compared with baseline samples, 4 and 29 proteins were differentially expressed at 4-hours and 24-hours after vaccination respectively. Eight proteins correlated with neutrophil counts and/or post-vaccine temperature. Differentially expressed proteins were enriched in 30 REACTOME pathways; enriched terms included neutrophil degranulation, haemostasis, retinoid metabolism and lipid metabolism. Seven proteins were more highly expressed at 4-hours (Apolipoprotein-A1, Apolipoprotein-A2, and Apolipoprotein-C1) and 24-hours (CRP, serum amyloid-A2, G-CSF and IL-6) post vaccination in the 4CMenB group, potentially reflecting the increased reactogenicity of the current vaccine schedule. Proteomic and transcriptomic data were integrated to create networks summarising the innate immune response to vaccination.

Conclusions: This is the first study investigating the effect of vaccination on the plasma proteome. These findings provide new insights into the immune response to vaccination and vaccine reactogenicity, potentially informing the design of less reactogenic vaccines and vaccine schedules.

Clinical Trial Registration: EudraCT number 2014-000126-38

DYNAMICS OF INVASIVE PNEUMOCOCCAL DISEASE IN ISRAEL IN CHILDREN AND ADULTS IN THE PCV13 ERA; A NATIONWIDE PROSPECTIVE SURVEILLANCE

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

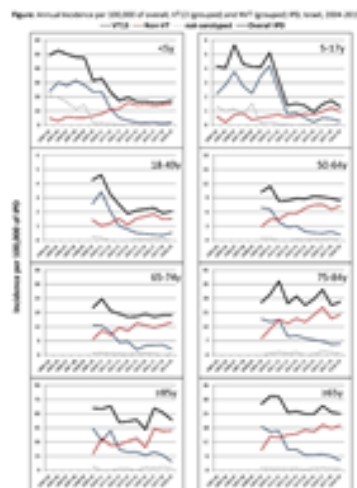
Shalom Ben-Shimol^{1,2}, Gili Regev-Yochay^{3,4}, Noga Givon-Lavi^{1,2}, Bart Adriaan Van Der Beek¹, Tal Brosh-Nissimov⁵, Avi Peretz⁶, Orli Megged⁷

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Background: Following the 13-valent pneumococcal conjugate vaccine (PCV13) implementation in infants worldwide, overall and vaccine-type invasive pneumococcal disease (IPD) rates declined in children, with variable indirect impact on IPD rates in adults.

Methods: A population-based, prospective, nationwide active surveillance of overall 8,614 IPD cases in Israel, during 2004-2019 (for adults, 2009-2019). PCV7/PCV13 were implemented in July 2009/November 2010, respectively, with >90% uptake in children <2 years. The 23-valent pneumococcal polysaccharide vaccine uptake among >65 years was ~75%. Overall, PCV13 serotypes (VT13) and non-VT13 serotypes (NVT) incidence rates ratios were calculated, comparing the pre-PCV (2004-2008 for children; 2009-2011 for adults) and late-PCV13 (2016-2019) periods, for different age groups. For pre-PCV episodes in which serotypes were missing, extrapolation was conducted.

Results: IPD rates declined by 67% in children <5 and 5-17 years. For adults, rates significantly declined only in the 18-44 years (by 53%) (**Fig.**). VT13 rates significantly declined; range 94% in <5 years to 60% in ≥85 years. NVT rates significantly increased in <5, 50-64 and ≥65 years; VT13 serotypes 3, 14 and 19A, and NVT serotypes 8 and 12F were predominant in 2016-2019. During 2016-2019, VT13, PCV15 additional serotypes (22F, 33F) and PCV20 additional serotypes (8, 10A, 11A, 12F, 15B/C, 22F, 33F) caused 19.2%, 7.4% and 39.2% of IPD.



Conclusions: Continuous monitoring of circulating serotypes in all age groups is essential for the development of new vaccination strategies.

STAPHYLOCOCCUS AUREUS COMMUNITY-ACQUIRED PNEUMONIA IN CHILDREN AFTER PNEUMOCOCCAL 13-VALENT VACCINATION (2008-2018): COMPARISON WITH STREPTOCOCCUS PNEUMONIAE (NACSAPED STUDY)

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

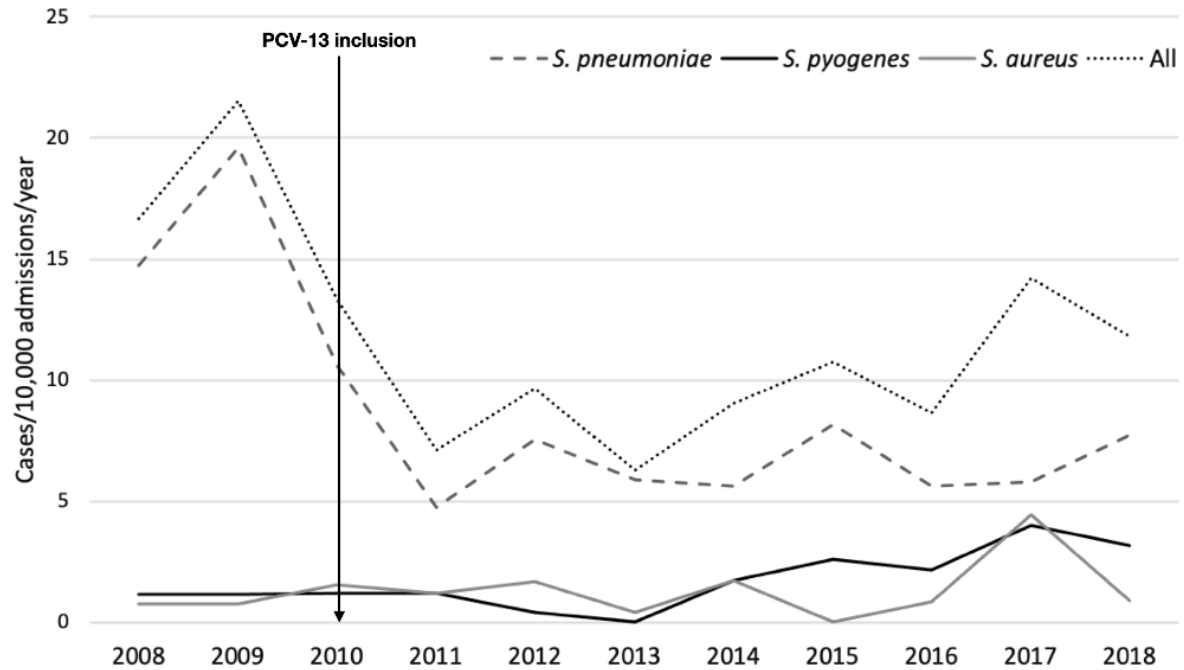
David Aguilera-Alonso¹, Fatima Ara Montojo², Silke Bianca Kirchschräger Nieto³, Francisco José Sanz Santaefemia⁴, Beatriz Soto⁵, Maria Belen Caminoa⁶, Arantxa Berzosa Sanchez⁷, Luis Manuel Prieto Tato⁸, Ignacio Callejas Caballero⁹, David Molina⁵, Alfredo Tagarro¹⁰, Mercedes Alonso Sanz¹¹, María Romero Gómez¹², Fernando Chaves Sánchez¹³, Emilia Cercenado¹⁴, Jesus Saavedra Lozano¹⁵, Fernando Baquero Artigao¹⁶

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Background: After introducing pneumococcal vaccination, the epidemiology of community-acquired pneumonia (CAP) in children has changed. Thus, the prevalence of non-pneumococcal bacteria, such as *Staphylococcus aureus*, may be increasing. Pneumococcal 13-valent vaccination was implemented in the Regional Immunization program of Madrid in 2010. We aimed to describe the epidemiology of pediatric *S. aureus* CAP (SA-CAP) in recent years and to compare them with the characteristics of *Streptococcus pneumoniae* CAP (SP-CAP).

Methods: Retrospective multicenter study including patients <17 years with bacterial CAP (*S. aureus*, *S. pneumoniae*, and *Streptococcus pyogenes*) admitted in 5 tertiary hospitals in Madrid (Spain) during 2008-18. For comparisons, *S. pneumoniae* CAP (SP-CAP) were randomly selected with a ratio 2:1 SA-CAP, comparing 34 SA-CAP with 68 SP-CAP. The annual rate of cases/10,000 admissions/year was analyzed.

Results: 236/313(75.4%) bacterial pneumonia were SP-CAP, and 34/313(10.9%) SA-CAP. The annual rate of SP-CAP decreased from 14.7/10,000 admissions (2008) to 7.7/10,000 admissions (2018)($p<0.001$), whereas the annual rate of SA-CAP remained stable(Figure). SP-CAP median age was higher (2.9[IQR: 1.7-4.6]years) than SA-CAP (0.7[IQR: 0.5-2.6]years)($p<0.001$). Initial empiric treatment was more frequently inadequate in SA-CAP (50% vs. 1.5%, $p<0.001$). Viral coinfections were more commonly detected among SA-CAP(26.5% vs. 7.4%, $p=0.008$). A higher percentage of patients with SA-CAP required respiratory support. However, lung complications were more common among SP-CAP: pleural effusion(64.7 vs. 47.1%, $p=0.088$), $p=0.088$) and lung necrosis(32.4% vs. 5.9%, $p=0.003$).



Conclusions: The prevalence of SP-CAP in children decreased from 2008 to 2018, whereas *S. pyogenes* CAP prevalence slightly increased. Interestingly, in this population, unlike other studies, admitted SP-CAP had a higher severity than SA-CAP. Indeed, two patients with SP-CAP (2.9%) died vs. none SA-CAP.

IMPACT OF UNIVERSAL VARICELLA VACCINATION ON THE USE OF ANTIBIOTIC AND ANTIVIRAL FOR VARICELLA MANAGEMENT IN THE UNITED STATES

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

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Background: To investigate the impact of universal varicella vaccination (UVV) on potential exposure to antibiotics and antivirals and associated costs for the treatment of varicella among US children.

Methods: A decision tree model of vaccination, varicella infections and treatment decisions was developed. 10 million replications were run using probabilistic sampling. Results were extrapolated to the 2017 population of 73.5 million US children ≤18 years in cross-section of one year. Parameters (vaccination and complications rates, treatment costs) were populated from literature. Expert opinion helped determine correct treatment for each vignette. Treatment decision likelihood were estimated using online survey results where 153 Health care professionals made treatment recommendations for 8 patient varicella vignettes.

Results: In a scenario with no UVV, our model estimated 1,053,087 antibiotic and 1,705,841 antiviral prescriptions would be dispensed annually to treat varicella. Under existing UVV in US, antibiotic and antiviral prescriptions were reduced by 95% and 93% respectively leading to \$87 million annual cost-savings. Treatment in unvaccinated children (4%) under UVV accounted for 61% of antibiotic and antiviral prescriptions costing **\$18 million** annually. While vaccination offers significant protection, breakthrough cases of varicella result in **16,961** antibiotic and **50,824** antiviral prescriptions annually.

Conclusions: Our model estimated substantial reduction in antibiotic and antiviral use among US children for treatment of varicella due to UVV. Antibiotics and antivirals are frequently used for managing varicella infection among unvaccinated children, sometimes inappropriately. Strategies to improve vaccination coverage and education to improve management of cases may further reduce clinical and economic burden of varicella in U.S.

PNEUMOCOCCAL NASOPHARYNGEAL CARRIAGE OF FULLY VACCINATED 6-12 MONTH OLD CHILDREN IN ENGLAND, PRIOR TO A REDUCTION IN INFANT PCV13 DOSES IN THE UK IMMUNISATION SCHEDULE.

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

Helen Ratcliffe¹, Karen Tiley¹, Kimberley Jefferies¹, Jaclyn Bowman¹, Thomas Hart¹, Rama Kandasamy¹, Jason Hinds², Kate Gould², Guy Berbers³, Rachel Colin-Jones¹, Merryn Voysey¹, David Smith¹, Melanie Carr¹, Hannah Robinson¹, Parvinder Aley¹, Matthew D Snape¹

¹Oxford Vaccine Group Centre for Clinical Vaccinology and Tropical Medicine (CCVTM), Paediatrics, Oxford, United Kingdom, ²St George's University of London, Infection And Immunity Research Institute, London, United Kingdom, ³National Institute for Public Health and the Environment (RIVM), Centre For Infectious Disease Control, Bilthoven, Netherlands

Background: Pneumococcal conjugate vaccine (7 valent, PCV7) was first introduced in the UK in 2006 as a 2+1 (2, 4 and 12 months) schedule. A 13 valent vaccine (PCV13) replaced PCV7 in 2010. Recently the schedule changed to a 1+1 (3, 12 months) schedule for children born 1st January 2020 onwards. We present baseline data from a cross-sectional pneumococcal carriage study in 6-12 month olds in the Thames Valley region.

Methods: Nasopharyngeal swabs were taken from healthy 6-12 month olds in 2017/20 who had received a full primary course (two doses) of PCV13. A subset of participants provided a blood sample (finger or heel-prick). Molecular serotyping by microarray analysis was performed on 'sweeps' of selective culture plates from swabs with pneumococcal-presumptive growth, based on optochin susceptibility and bile solubility. Serum concentrations of total anti-capsular immunoglobulin G (IgG) for PCV13 serotypes were identified by luminescent microsphere.

Results: In total 615 children were swabbed, 274 (44.6%, 95% CI 40.6-48.6) of whom were carrying pneumococcus. PCV13 serotypes 3 (5, 0.8%), 19A(6, 1.0%), and 19F (3, 0.5%) were detected however, the majority (95.6%) of detected isolates (comprising >30 different serotypes) were non-vaccine types, most commonly 23B (34, 5.5%), 11A (31, 5.0%), 21 (31, 5.0%), 15B (28, 4.6%), and 10A (23, 3.7%). A subset of 249 children provided a blood sample. Geometric mean antibody concentrations against PCV13 serotypes ranged from 0.26µg/ml (95% CI 0.22-0.31) (6B) to 2.31µg/ml (95% CI 2.08-2.56) (7F). The proportion of samples with IgG ≥0.35µg/ml ranged from 38.6% (23F) to 97.2% (7F).

Conclusions: Following a two-dose priming schedule there is a low prevalence of vaccine serotype carriage. These data provide an important baseline for comparison with carriage and seroprevalence data after a single priming dose. Funded by Pfizer Ltd.

Clinical Trial Registration: Clinicaltrials.gov identifier NCT03102840 ClinicalTrials.gov Identifier: NCT01996007

VACCINE HISTORIES AND SEROTYPES OF STREPTOCOCCUS PNEUMONIAE-ASSOCIATED HEMOLYTIC UREMIC SYNDROME IN CANADIAN CHILDREN: IMMUNIZATION MONITORING PROGRAM ACTIVE (IMPACT)

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

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Background: Hemolytic uremic syndrome (HUS) is typically a complication of enterocolitis from Shiga toxin-producing *Escherichia coli*. *Streptococcus pneumoniae*-associated HUS (SP-HUS) is less frequent, accounting for ~5% of HUS cases in children. This study describes the epidemiology of pediatric SP-HUS in Canada.

Methods: The Canadian Immunization Monitoring Program, ACTive (IMPACT) is a national, sentinel surveillance network for vaccine-preventable diseases. It includes 12 pediatric hospitals and ~90% of tertiary care pediatric beds across Canada. All IMPACT invasive pneumococcal disease (IPD) cases from 1991-2019 were retrospectively analyzed to describe SP-HUS occurrence according to pneumococcal conjugate vaccine (PCV13) history and SP serotype. Fisher's Exact Test compared serotype prevalence among SP-HUS and non-HUS IPD cases.

Results: From total 6,757 IPD cases, 30 SP-HUS cases (0.44%) were identified. Among SP-HUS patients with known serotypes (25/30), serotypes 3 (9/25, 36%) and 19A (32%) were more prevalent in SP-HUS cases than in non-HUS IPD cases ($p < 0.01$). PCV13 serotypes occurred in 88% (22/25) of SP-HUS cases, of which 77% (17/22) occurred pre-PCV13 availability. Among the 5 SP-HUS cases occurring post-PCV13, 1 was not immunized and became ill with a vaccine preventable serotype, 1 had unknown vaccine history, and 3 were vaccine failures including serotypes 3 ($n=2$) and 19A ($n=1$).

Conclusions: Two PCV13 serotypes (3, 19A) were significantly more prevalent in SP-HUS cases compared to non-HUS IPD and were identified in all vaccine failure SP-HUS cases. Future study will examine if serotypes 3 and 19A are also more prevalent among SP-HUS cases in other geographic regions and if PCV13 is less effective against these serotypes. Further research will also identify vaccine failures in non-HUS IPD cases and compare them to those of SP-HUS.

SUBOPTIMAL 2-DOSE COMPLETION RATES FOR MENINGOCOCCAL B VACCINE SERIES AND POTENTIAL MISSED OPPORTUNITIES FOR SERIES COMPLETION: ANALYSIS OF UNITED STATES INSURANCE CLAIMS DATA

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 08: VACCINES (NON-RSV)

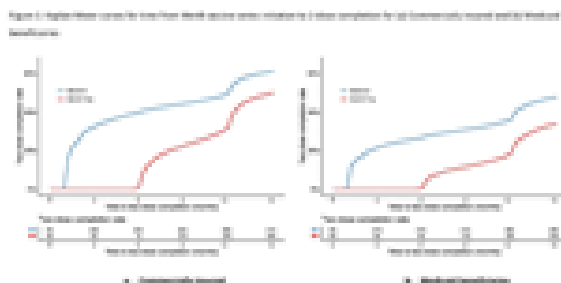
Elizabeth Packnett¹, Gilwan Kim², Nicole Zimmerman¹, Patricia Novy³, Nnenna Chime³, Laura Morgan¹, Parinaz Ghaswalla⁴

¹IBM Watson Health, Life Sciences, Outcomes Research, Cambridge, United States of America, ²IBM Watson Health, Life Sciences, Custom Data Analytics, Cambridge, United States of America, ³GSK, Us Medical Affairs, Philadelphia, United States of America, ⁴GSK, Us Health Outcomes And Epidemiology, Philadelphia, United States of America

Background: In the United States, persons 16-23 years-of-age are recommended to receive serogroup B meningococcal (MenB) vaccine series. We estimated series completion rates for the two licensed MenB vaccines that have different dosing schedules: MenB-4C (2-doses administered at least one month apart) and MenB-FHbp (2-doses administered at 0 and 6 months).

Methods: This retrospective analysis of insurance claims data, included 16-23 year-olds who received a MenB vaccination (index date) on/after 01/01/2017 in the MarketScan Commercial Claims Encounters (through 11/30/2018) Multi-State Medicaid Databases (9/30/2018), and were continuously enrolled for 6 months prior and 15 months post-index date. Kaplan-Meier curves estimated time to 2-dose completion and chi-squared tests assessed statistical significance. For individuals who did not complete their series, potential missed opportunities for series completion were identified as preventive care or vaccine administrative office visits during 15-months follow-up.

Results: Among 156,080 eligible commercially insured individuals, 61% of those who initiated MenB-4C and 50% of those who initiated MenB-FHbp completed the 2-dose series within 15 months (p-value <0.0001) (Fig 1a). For 57,082 eligible Medicaid beneficiaries, completion rates were 48% and 34% for MenB-4C and MenB-FHbp, respectively (p-value <0.0001) (Fig 1b). For both vaccines combined, completion rates were 57% and 45% for Commercial and Medicaid, respectively. Of the 67,523 commercially insured individuals who did not complete their series, 40% had at least one missed opportunity for series completion (35% for Medicaid).



Conclusions: While 2-dose completion rates are higher among those who initiate MenB-4C compared to MenB-FHbp, overall MenB vaccine completion rates are suboptimal. To ensure full benefits of MenB vaccination, it is critical to improve completion rates and reduce potential missed opportunities.

ACKNOWLEDGEMENTS: Business & Decision Life Sciences (Coordinator: Quentin Rayée).

IS ELEVATED CEREBROSPINAL FLUID (CSF) - CXCL13 A HELPFUL MARKER FOR THE EARLY DIAGNOSIS OF NEUROBORRELIOSIS IN CHILDREN?

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 09: CNS

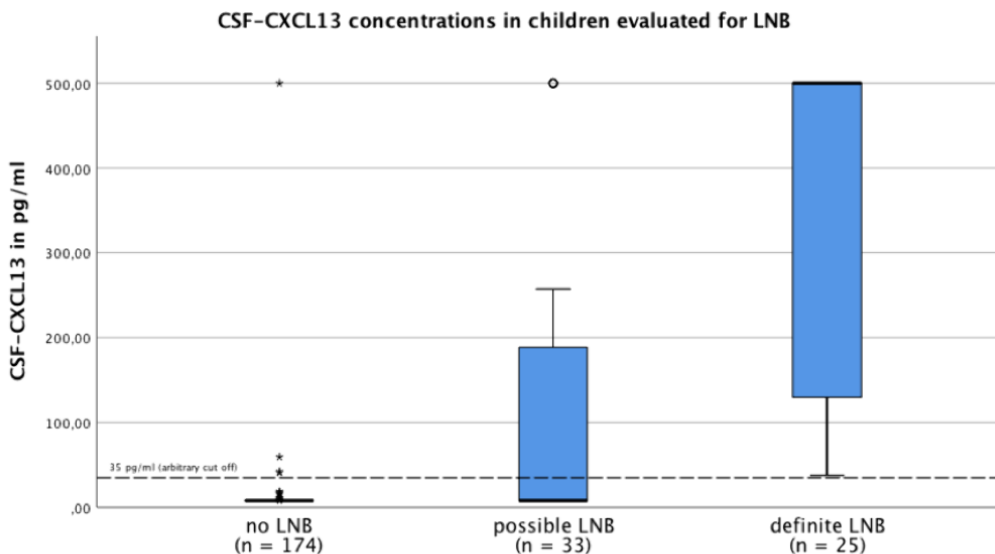
Lisa Jung¹, Thien-Tri Lam², Simone Kenntner¹, Andrea Streng¹, Volker Fingerle³, Johannes Liese¹

¹Department of Pediatrics, University Hospital of Würzburg, Pediatric Immunology And Infectiology, Würzburg, Germany, ²University of Würzburg, Institute Of Hygiene And Microbiology, Würzburg, Germany, ³Bavarian Health and Food Safety Authority (LGL), National Reference Center For Borrelia, Oberschleißheim, Germany

Background: Diagnosis of Lyme neuroborreliosis (LNB) in children can be challenging, especially in early stages of the disease. Elevated CSF concentrations of the chemokine CXCL13, measured before therapy, have shown a high specificity and sensitivity for LNB in adults. We investigated the value of CSF-CXCL13 for the diagnosis of early LNB in children in a retrospective study.

Methods: Residual CSF samples of 232 patients <18 years of age hospitalized with suspected LNB were analyzed for CXCL13 using the Human CXCL13/BLC/BCA ELISA (R&D Quantikine Systems, assay range: 7.8 – 500 pg/ml). According to EFNS guidelines (Mygland et al. 2010) patients were retrospectively classified as no LNB (nLNB), possible LNB (pLNB) and definite LNB (dLNB) and their CSF-CXCL13 levels were compared.

Results: In the group of nLNB (n = 174) patients had median CXCL13 concentrations of 7.8 pg/ml (range: 7.8 - 500 pg/ml) and 93.1% (162) showed concentrations below 7.8 pg/ml. 25 patients with dLNB had a median value of 500 pg/ml (range: 37.90 - 500 pg/ml). Using an arbitrary cut off at 35 pg/ml, CXCL13 shows a specificity of 97.7% and sensitivity of 100% to differentiate between nLNB and dLNB. 33.3% of pLNB patients (n = 33, median: 7.8 pg/ml, range 7.8 – 500 pg/ml) showed CXCL13 concentrations above 35 pg/ml.



Conclusions: CXCL13 may increase the diagnostic specificity of CSF diagnosis in children with suspected LNB. As an additional parameter it may especially be helpful to exclude early LNB in children. Thus, unnecessary concerns and therapies, as e.g. systemic antibiotic treatment could be reduced.

NEURODEVELOPMENTAL OUTCOMES IN THE FIRST 3 YEARS OF LIFE FOLLOWING EARLY LIFE HPEV INFECTION IN A COHORT OF AUSTRALIAN CHILDREN

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 09: CNS

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Background: Human parechovirus (HPeV) is an increasingly recognised cause of severe illness and meningoencephalitis in early life. Medium to long term neurodevelopmental outcomes post HPeV infection remain unknown. Few studies have examined outcomes beyond 12 months of age, with development beyond 1 year of age reported in only 164 children worldwide. This prospective cohort study examines the neurodevelopmental outcomes for children hospitalised as infants with HPeV infection in their second and third years of life.

Methods: All children (n=64) who were hospitalised with HPeV in Brisbane, Queensland, Australia during the 2017/2018 outbreak were followed for 3 years to assess neurodevelopmental outcomes. Serial application of a standardised developmental questionnaire (Ages and Stages Questionnaire (ASQ)) was used in combination with data from paediatric clinical follow-up, audiology assessments and neuroradiology.

Results: Response rate to the survey was 73.4%. In the second year of life, 63% children (n=29) showed some or significant concerns for developmental delay. These delays, however, had largely been ameliorated by the third year of life, when only 30% (n=14) showed developmental concerns. Developmental concerns were associated with a history of prematurity and apnoeas during the critical illness; no associations were found between other markers of severity such as ICU admission, detection of HPeV in cerebrospinal fluid nor abnormal brain imaging. The most common domain of concern was communication.

Conclusions: HPeV infection in early life was associated with high rates of developmental concerns in the second year of life; for many children these had normalised by 36 months of age. This may reflect a potential developmental plateau post infection, which then recovers. Further long-term investigation into outcomes including more subtle neurological impairments in later childhood is still required.

DIFFERENTIAL GENE EXPRESSION ANALYSIS IN PATIENTS WITH PERIPHERAL FACIAL PALSY

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 09: CNS

Nina Schweintzger¹, Lena Pölz¹, Susanne Hösele¹, Irina Grigorow², Christoph Zurl¹, Harald Haidl¹, Manfred Sagmeister¹, Benno Kohlmaier¹, Werner Zenz¹, O.B.O Euclids Consortium³

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Background: Peripheral facial palsy (PFP) results from a dysfunction of the cranial nerve VII and has two major causes in Central European children: PFP with unknown pathogenesis (idiopathic PFP or Bell's palsy), accounting for up to 70% of cases and neuroborreliosis caused by *Borrelia burgdorferi*. As diagnosis of idiopathic PFP is exclusionary and guidelines for diagnostic tools are inconsistent, we investigated the pathomechanisms of PFP by RNA-sequencing.

Methods: PAX gene tubes of 68 children and adolescents with PFP (mean age 11 years, range 3-17) were sampled at time of diagnosis. Based on blood and liquor findings (i.e. pleocytosis, antibody index, cerebrospinal fluid protein), patients were assigned into a neuroborreliosis (n = 22) and an idiopathic PFP group (n = 46). Differential gene expression and functional enrichment analysis were conducted by using DESeq2, WebGestalt and STRING.

Results: By comparing the transcription profiles between the two groups, 95 genes were significantly up- and 74 downregulated ($p \leq 0.05$, \log_2 fold change > 0.5) in the neuroborreliosis group. IFI44L was found to be the top gene in patients suffering of neuroborreliosis and overrepresentation analysis revealed that the upregulation of type I interferon responses was the most prominent biological process (enrichment ratio: 12.6, False Discovery Rate: 0.00019). The involvement of interferon was getting more pronounced upon limiting the analysis to neuroborreliosis patients with a liquor cell count of > 100 cells/ μ l as also type I interferon production and response to interferon-beta were enriched in the pathway analyses.

Conclusions: This preliminary work uncovered previously unknown genes and pathways that might prove useful for diagnostic biomarkers of PFP. A larger number of patients is required to validate these findings and to determine the etiology of idiopathic PFP.

Clinical Trial Registration: Not applicable

HEALTH-RELATED QUALITY OF LIFE AND DAILY FUNCTIONING IN ADOLESCENT AND YOUNG ADULT SURVIVORS OF CHILDHOOD BACTERIAL MENINGITIS '

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 09: CNS

Omaima El Tahir¹, Marceline Van Furth²

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Background: Childhood bacterial meningitis is a severe infection of the central nervous system that may result in persisting sequelae during adolescence and adulthood. Nevertheless, the impact of childhood bacterial meningitis and associated sequelae during adolescence and adulthood is largely unknown. Therefore, this study investigated health-related quality of life (HRQL) and daily functioning survivors of childhood bacterial meningitis.

Methods: In this cross-sectional study online versions of the PROMIS Global Health 10, PROMIS-29 V2.0 profile, PROMIS V2.0 Satisfaction with Social Roles and Activities Short Form 4a and Weiss Functional Impairment Rating Scale-Self Report (WFIRS-S) questionnaires were administered to 483 survivors of childhood BM. Scores of PROMIS questionnaires were compared to age-adjusted norm group scores and mean WFIRS-S scores were calculated.

Results: Overall survivors of childhood BM scored significantly better on all PROMIS items than the age-adjusted norm group and specifically reported normal daily functioning. However, within the group of childhood BM survivors nearly two third of survivors reported poorer health ($p=0.001$), scored significantly lower on overall quality of life ($p=0.001$) and daily functioning ($p=0.001$), had a significantly lower level of education ($p=0.001$) and were significantly more unemployed ($p=0.001$) than the rest of childhood BM survivors.

Conclusions: Long-term HRQOL and daily functioning outcome of childhood BM survivors is heterogeneous. A substantial part of adolescent and adult survivors report poorer HRQOL, poorer educational attainment and decrement in daily functioning compared to survivors with good outcome. Clinicians should be aware of children at risk of poor HRQOL in the very long-term after BM, especially in case of academic limitations.

BACTERIAL MENINGITIS IN PORTUGUESE CHILDREN: A 10 YEARS MULTICENTRE RETROSPECTIVE STUDY

PARALLEL SESSION

PRE-RECORDED +LIVE: ORAL PRESENTATIONS 09: CNS

Madalena Nisa¹, Ana Barbosa Rodrigues², Clara Vieira³, Manuela Alves⁴, Isabel Azevedo⁵, Beatriz Sá⁶, Zakhar Shchomak⁷, Biana Moreira⁸, Mariana Pedro⁹, Vanessa Albino¹⁰, Filipa Sutre¹¹, Adriana Costa¹², Mónica Braz¹³, Joana Gaspar¹⁴, Joana Vieira De Melo¹⁵, Sara Dias¹⁶, Alexandra Andrade¹⁷, Margarida Serôdio¹⁸, Sara Oliveira¹⁹, Joana Jonet²⁰, Sofia Reis¹, José Gonçalo Marques^{2,21}

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Background: Bacterial meningitis is a medical emergency and empiric antibiotic treatment is mandatory as soon as the diagnosis is made. Therefore, the knowledge of the epidemiology and antibiotic susceptibility patterns are of foremost importance.

Methods: Multicentre Portuguese Study on Invasive Bacterial Disease (BID) Study 2010-2019 in children older than one month, with 21 participating hospitals. A subgroup analysis was performed on children with meningitis. Children with peritoneal ventricular shunt were excluded.

Results: Of 2039 children with BID, 271 (13.3%) had meningitis; 50.6% were boys; 67.6% 1-35 months, 23.6% 3-9 years-old 8.9% ≥10 years-old; and 22.5% had a risk factor. Bacteria were isolated in cerebrospinal fluid (52.9%), blood (45.3%) or both (27.3%). *Neisseria meningitidis*(NM) (35.8%), *Streptococcus pneumoniae*(SP) (33.9%), *Streptococcus agalactiae* (5.8%), *Haemophilus influenzae* (4.8%), *Streptococcus pyogenes* (2.7%), 26 other different species (17%). Resistance to penicillin: 14% for NM and 9.7% for SP strains. Resistance to third-generation cephalosporins 2.8% for SP. Cure was achieved in 97.4%, with sequelae reported in 30.6%; 2.6% died.

Conclusions: Bacterial meningitis is still a significant cause of morbidity and mortality in previously healthy children. A wide range of bacteria was found as a cause of meningitis but NM and SP are still the leading causes of meningitis in an era of widespread use of pneumococcal and NM group C conjugated vaccines. Penicillin is actually not suitable for empirical therapy.

EFFICACY OF ANTIBIOTICS WITH EFFLUX PUMP BLOCKERS ON MULTI-DRUG RESISTANT BACTERIAL STRAINS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

Neha Farid

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Background: The mechanism of multi drug resistant in many microbes has led to the prevalence of several life-threatening diseases. The purpose of this research is to check the effect of various efflux pump inhibitors such as Tamoxifen and Verapamil, when used solo and in combination with different antibiotics such as Amphotericin B, Nalidixic Acid and Chloramphenicol against the microbial strains of Methicillin Resistant Staphylococcus aureus (MRSA).

Methods: MIC and MBC Test were used to analyze the concentrations. Statistical analysis was done using MS Excel Tools. The results were presented as mean \pm standard deviation.

Results: It was found that on the combination of EPI and the antibiotics, the effective concentrations of all the antibiotics used reduced from that observed in solo tests. It was seen that the growth of bacteria was completely inhibited at 8 $\mu\text{g/ml}$ of Chloramphenicol when used solely against all the five strains of MRSA. But when the same antibiotic was given along with the EPI Tamoxifen, the concentration to completely kill the bacteria further reduced to 4 $\mu\text{g/ml}$. Same observations were seen with all the other antibiotics and EPIs used in the study.

Conclusions: The main target responsible for multidrug resistance in the microbe can be identified. The gene responsible for the multidrug resistance in the microbe can be identified. It can open a new field in the drug discovery and development domain for treating microbes. New Efflux Pump Inhibitors from the medicinal plants can be isolated and used in combination with the already available antibiotics. Analysis can be done to find whether the combination of EPI and Antibiotic which is highly effective against a certain microbe, will exhibit the same efficacy against all the other pathogenic microbes or not.

Clinical Trial Registration: It is not applicable

AZITHROMYCIN RESISTANCE IN PAEDIATRIC PROTRACTED BACTERIAL BRONCHITIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: Protracted bacterial bronchitis (PBB) is diagnosed as the cause of chronic preschool cough in 11-41% of children consulting respiratory specialists. It is associated with bacterial infection and neutrophilic inflammation of the airways. Recurrent episodes (>3 a year) are associated with a future diagnosis of bronchiectasis. Those with recurrent episodes are often prescribed long-term azithromycin to reduce exacerbations. We hypothesise that children exposed to long-term azithromycin will develop azithromycin resistant nasopharyngeal bacterial flora.

Methods: We are carrying out a single centre, prospective observation study at Sheffield Children's Hospital. 50 children with PBB were recruited over 2 winter periods 2018-2020. Of these, 25 were about to start long-term azithromycin. The other 25 were not anticipated to require azithromycin and used as a comparison group. Deep nasopharyngeal swabs were collected at baseline and then every 3-4 months over the 12-18 month study period. Swabs are cultured for common respiratory pathogens and azithromycin MICs reported.

Results: To date, 175 deep nasopharyngeal swabs have been collected, with 89 having positive bacterial growth. Of the 135 bacterial isolates, 63% were resistant to azithromycin in the exposed group and 57% in the unexposed group. The most frequently isolated bacteria was *H. influenzae* with 20 of the 52 isolates being resistant. The second commonest pathogen was *S. pneumoniae*. Azithromycin resistance was found in 44 of the 45 *S. pneumoniae* isolates with similar rates found across both groups. Antibiotic prescribing data shows similar pre-study exposure and a reduction in acute courses with prophylaxis.

Conclusions: We have identified alarmingly high nasopharyngeal carriage of azithromycin resistant respiratory pathogens (particularly *S. pneumoniae*) in children with PBB. This is demonstrated in both those exposed to long-term azithromycin and also unexpectedly in unexposed children, including those never prescribed macrolides.

Clinical Trial Registration: N/A

IS THE HIGH DOSE EXTENDED INFUSION OF MEROPENEM USEFUL IN THE TREATMENT OF HIGHLY RESISTANT GRAM NEGATIVE BACTERIA?

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: Multidrug resistant infections present a treatment challenge for clinicians. The data on safety and efficiency of treatment regimens of these infections are limited particularly in children. There has been increasing discussion that high dose extended meropenem infusion may be helpful. We aimed to evaluate the clinical efficacy of high dose extended infusion of meropenem in the treatment of invasive multidrug and extremely drug resistant gram-negative infections in comparison to those who received colistin or tigecycline.

Methods: The study is conducted at Hacettepe University Ihsan Dogramaci Children's Hospital from December 2014 till December 2020. Clinical and demographic data of children diagnosed with invasive multidrug and extremely drug resistant gram-negative infections were studied retrospectively. The findings of patients given high dose extended infusion meropenem were compared with patients who received colistin or tigecycline.

Results: Overall 158 children infected with multidrug and extremely drug resistant gram-negatives were enrolled; 76 treated with high dose extended meropenem infusion; 60 with colistin and 22 with tigecycline (Table 1). The clinical response at the end of the treatment was 81.6% in meropenem group, 83.3% in colistin and 77.3% in tigecycline group ($p=0.821$). Microbiological response at the end of the treatment was 81.1% in meropenem group, 76.4% in colistin group and 72.2% in tigecycline group ($p=0.694$). There was no statistically significant difference between groups about infection-related and overall mortality ($p=0.212$; $p=0.063$).

Conclusions: High dose extended meropenem infusion seems a crucial and robust fighting agent in the treatment of pediatric patients infected with highly-resistant gram-negative bacteria. It may also be useful in preventing the use of the latest fighting tools such as colistin and tigecycline during the antibacterial stewardship process.

ANTIMICROBIAL USE IN A PEDIATRIC REFERRAL CENTER 4 YEARS AFTER THE IMPLEMENTATION OF A NON-RESTRICTIVE ANTIMICROBIAL STEWARDSHIP PROGRAM

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

Eneritz Velasco Arnaiz¹, María Ríos-Barnes¹, Silvia Simo-Nebot¹, Maria Goretti López-Ramos¹, Mireia Urrea-Ayala¹, Iolanda Jordan², Manuel Monsonís³, Daniel Ormazabal-Kirchner⁴, Ricard Casadevall-Llandrich⁵, Claudia Fortuny⁶, Antoni Noguera-Julian⁶

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Background: Antimicrobial stewardship programs (ASP) are of utmost importance to prevent the development of antimicrobial resistance without harming patients. The first 4 years results of an ASP based on postprescription review with feedback (PPRF) in a referral pediatric hospital are presented.

Methods: Quasi-experimental study. Comparison of systemic antibacterial and antifungal use (in days of treatment [DOT] per 100 days-present [DP]) and interrupted time series (ITS) analysis in the inpatient non-PICU area of Hospital Sant Joan de Déu (268 pediatric-beds; Barcelona, Spain) before (2015-16) and after (2017-20) the implementation of a PPRF-based ASP; since 2019, antiviral use and PICU antimicrobial use (AU) were also monitored. The quality of prescriptions was evaluated by means of at least quarterly cross-sectional surveys

Results: Global systemic AU remained stable (**Table**). ITS analysis showed significant slope change for meropenem (-0.095 [0.045], $p=0.004$), azithromycin (-0.105 [0.024], $p=0.002$) and amphotericin-B (0.150 [0.039], $p<0.001$) and level changes for piperacillin-tazobactam (-1.920 [1.013], $p=0.062$), linezolid (-0.353 [0.157], $p=0.028$) and teicoplanin (-0.605 [0.151], $p<0.001$) in non-PICU patients. In PICU both level and slope changes were observed in ceftriaxone (2.849 [0.513], $p<0.001$ and 0.210 [0.071], $p=0.007$). Since ASP implementation, 28 cross-sectional quality surveys were conducted including 2684 prescriptions (66.3% therapeutic, 28.2% prophylactic). The mean (standard deviation) proportion of 'optimal' prescriptions was 83.7% (0.05%); overall, 355 (13.2%) prescriptions were classified as 'non-optimal' because of: non-indication ($n=124, 34.9\%$), non-compliance with local guidelines ($n=91, 25.6\%$), inadequate treatment duration ($n=119, 33.5\%$), antimicrobial spectrum ($n=99, 27.9\%$) or dosage ($n=44, 11.5\%$). The proportion of optimal prescriptions only decreased to pre-ASP levels (73.4%) in one of the surveys in 2020 (74.4%).

Table 1. Systemic antibacterial and antifungal use in days-of-therapy (DOT) per 100 days-present (DP) before (2015-16) and after (2017-20) ASP implementation in non-PICU hospital areas and global systemic PICU AU in 2019 and 2020. Median (m) and 25th and 75th percentile values (P25 and P75, respectively) are shown.

	m	P25	P75	m	P25	P75
Non-PICU hospital areas	2015-16			2017-20		
Antibacterials	63,2	61,0	65,9	56,9	52,9	61,0
Antifungals	4,4	3,6	6,0	7,3	6,0	8,3
Antifungals						
Liposomal amphotericin b	0,9	0,4	1,5	1,3	0,5	2,4
Fluconazole	0,9	0,5	1,4	2,6	1,6	3,4
Itraconazole	0,0	0,0	0,1	0,2	0,0	0,5
Micafungin	0,6	0,1	1,3	0,7	0,2	1,0
Posaconazole	0,1	0,0	0,3	0,8	0,5	1,5
Voriconazole	1,4	1,1	1,9	0,7	0,4	1,2
Broad spectrum antigramnegative antibacterials (main use in healthcare-associated infections)						
Amikacin	0,9	0,8	1,2	0,9	0,6	1,4
Ceftazidime	0,8	0,3	1,2	0,7	0,4	0,9
Ciprofloxacin	1,0	0,7	1,5	1,9	1,2	2,4
Levofloxacin	0,1					
Meropenem	6,4	5,8	7,0	5,0	3,8	5,9
Piperacillin-tazobactam	2,9	2,5	3,6	2,3	1,4	4,5
Broad spectrum antigrampositive antibacterials (main use in healthcare-associated infections)						
Linezolid	0,3	0,2	0,6	0,3	0,2	0,5
Teicoplanin	0,6	0,5	0,7	0,3	0,2	0,5
Vancomycin	4,9	4,3	5,3	4,0	3,6	5,1
Other antibacterials (main use in community acquired infections and surgical prophylaxis)						
Amoxicillin	3,0	1,9	4,3	3,0	1,4	3,9
Amoxicillin-clavulanate	13,4	12,7	14,3	10,6	9,4	12,3
Ampicillin	3,6	3,2	4,0	2,9	2,4	3,5
Azithromycin	1,2	0,9	1,8	1,5	1,1	1,9
Cefazolin	2,9	2,6	3,1	1,8	1,6	2,2
Cefixime	0,1	0,1	0,2	0,3	0,2	0,4
Cefotaxime	2,5	1,9	2,7	1,6	1,3	1,9
Cefoxitin	1,1	0,3	1,5	1,7	1,4	2,0
Ceftriaxone	3,7	3,1	4,3	4,1	3,7	4,9
Clindamycin	1,0	0,8	1,3	0,6	0,4	0,8
Gentamycin	2,2	1,9	2,6	1,4	1,1	1,8
Metronidazole	1,7	1,4	1,9	1,9	1,3	2,4
Route						
Parenteral (IV, IM)	50,3	47,8	53,2	45,0	41,9	48,0
Oral/enteral	22,0	18,6	24,2	24,3	22,0	26,7
PICU	2019			2020		
Antibacterials	86,8	79,4	94,4	88,7	83,8	95,8
Antifungals	3,8	2,6	6,2	10,0	6,6	13,6
Antivirals	6,1	3,5	7,1	5,3	3,6	10,7

Conclusions: In our experience, a PPRF-based ASP led to the reduction of the use of critical antimicrobials and to an improvement in the quality of antimicrobial prescriptions.

Clinical Trial Registration: Not a controlled trial

RETROSPECTIVE REVIEW OF ANTIBIOTIC PRESCRIBING FOR PAEDIATRIC OPEN FRACTURES IN A MAJOR TRAUMA CENTRE (2017-2020)

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: Open fractures are considered orthopaedic emergencies due to the high risk of contamination and therefore infection and morbidity. Around 0.7-2.0% of all paediatric fractures are classified as 'open'. NICE guidance recommends IV antibiotics to be given within one hour of injury.

Objectives To assess the compliance and 'time to receive' antibiotics against the local guideline (Cefuroxime +/- metronidazole within one hour)

Methods: A retrospective search of the Trauma Audit and Research Network (TARN) database containing patients admitted between 1/1/2017 and 1/1/2020, identified 33 patients with open fractures. Six were excluded due to incorrect diagnoses. Local electronic records for the remaining 27 patients were then reviewed.

Results: The 27 patients ranged in age from 6 to 12 years. All patients received antibiotics, however only 1(4%) of these patients received cefuroxime and metronidazole as per the guideline and 22 (81%) received co-amoxiclav instead. The mean time to receiving the antibiotics was 156 minutes (range 4-748 minutes). Only 10 (37%) patients received the antibiotics within an hour.

Conclusions: One (4%) patient received the appropriate antibiotics as per the local open fracture guideline and there were significant delays to the patients receiving antibiotics, with only 10 (37%) patients receiving them within the targeted hour. The results of this audit relating to substandard antibiotic prescribing will be disseminated through the major trauma network. Further interventions will include education around management: through audit and antibiotic infographics, induction, departmental and regional teaching. A new guideline solely on paediatric open fractures will be created. Once these have been implemented, this work will then be re-audited.

SHORT-COURSE VERSUS LONG-COURSE ANTIBIOTIC THERAPY FOR COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN: A SYSTEMATIC REVIEW

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: Data regarding the optimal duration of treatment for community-acquired pneumonia (CAP) in children are controversial. We aimed to systematic review studies comparing the efficacy of short-course versus long-course therapy for CAP in children.

Methods: We performed a literature review among the Cochrane Central Register of Controlled Trials and Pubmed (1996 to December 2020) using key words to find randomized control trials (RCTs) that evaluated the efficacy of short-course (3-7 days) versus long-course (7-14 days) antibiotic therapy for CAP in children (0-16 years old). For data collection and analysis, standard methodological procedures described by Cochrane were used.

Results: Eight RCT trials including 23743 children, fulfilled the inclusion criteria and finally analyzed. The most common antibiotic agent to compare the short versus long course treatment in CAP among children was amoxicillin in 4 trials, followed by cephalosporins in 2 and co-trimoxazole and azithromycin in 1 trial each. No differences were found between the 2 groups regarding clinical success at the end of therapy, clinical success at late follow-up (10-30 days) and mortality. Only in a small percent (0-3%) of the patients, the 3-7 days course was associated with higher rates of treatment failure, relapse and adverse events (respiratory distress in amoxicillin-studying-group, vomiting/diarrhea in azithromycin-studying-group). Non-adherence with treatment contributed to clinical failure in 2 studies using amoxicillin.

Conclusions: Evidence suggests that a 3-7 days course of antibacterial therapy can be effective for treatment of CAP in children without negatively affecting patient care. The potential benefits of a short-course therapy for both individuals and the health care system include reduced antimicrobial resistance, improved adherence, lower healthcare costs and fewer adverse effects.

Systematic Review Registration: N/A

EXPERIENCE WITH MRSA (METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS) IN A CENTRAL LONDON TERTIARY PAEDIATRIC HOSPITAL

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: MRSA sepsis contributes to significant morbidity and mortality. National guidelines (2018) have been adopted by individual NHS trusts to minimise the incidence of MRSA. Currently it is not known whether adherence to MRSA guidelines impacts outcomes in paediatric surgical patients. The aim of the study is to audit the MRSA incidence and adherence to guidelines in paediatric surgical patients.

Methods: A single-centre retrospective audit was conducted from January 2019 to October 2020 in a tertiary paediatric hospital in London, UK. Case notes of in-patients with MRSA colonisation were reviewed. MRSA sepsis incidence, paediatric intensive care unit (PICU) stay, surgery during admission and MRSA guideline adherence were noted. The results were analysed using SPSS statistical package.

Results: Of 47,904 hospital admissions, 161 were MRSA colonised, incidence 0.3%. All underwent topical decontamination. Twelve patients had MRSA sepsis (7.45%). Four of the 12 patients had elective surgery. There was significant increase in incidence of MRSA sepsis in PICU compared to ward admissions, $\chi^2(1, N=161)=6.095$, ($P < 0.05$). There was no significant difference in MRSA sepsis incidence between medical and surgical patients. MRSA pre-surgical antibiotic administration guideline was adhered in 80% and isolation guideline in 11.6%. Median duration stay for MRSA sepsis patients was 9 days and 3 for colonised patients.

Conclusions: MRSA sepsis contributed significantly to longer hospital length-of stay and PICU stay. This underlies importance of quality improvement interventions as this worsens outcomes for patients and incurs greater hospital costs. Changes need to be made to ensure improved compliance with local MRSA guidelines such as adequate isolation measures to reduce spread and appropriate antibiotic therapy.

FIRST LINE ANTIMICROBIALS AMONG CHILDREN WITH COMPLICATED SEVERE ACUTE MALNUTRITION (FLACSAM) – A RANDOMIZED CONTROLLED TRIAL

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: Severely malnourished (SAM) children admitted to hospital in sub-Saharan Africa, usually with severe infections, have an inpatient case fatality between 12% and >20%, and significant further mortality after discharge despite treatment. WHO guidelines recommend empiric IV antibiotics for all children with complicated SAM.

Methods: We conducted a randomised controlled clinical trial to assess the efficacy on mortality of using ceftriaxone as the first line IV antimicrobial rather than penicillin plus gentamicin (current WHO guidelines), and empiric oral metronidazole versus placebo among sick children with SAM in a 2x2 factorial design. Sites were Kilifi County Hospital, Coast General Hospital and Mbagathi Hospital in Kenya, and Mbale Regional Referral Hospital in Uganda. The primary endpoint was mortality. Secondary endpoints included safety, growth and impact on acquisition and faecal carriage of extended spectrum beta-lactamase and carbapenem resistant Enterobacteriaceae.

Results: Between September 2017 and July 2020, 1,872 children aged between 2 months and 13 years inclusive were enrolled. Results will be presented on mortality, growth and antimicrobial resistance carriage.

Conclusions: This trial results will inform empiric antimicrobial recommendations for WHO and national guidelines in relation to effects on outcomes and antimicrobial resistance.

Clinical Trial Registration: Clinical trial registration: ClinicalTrials.gov NCT03174236

CLINICAL IMPLEMENTATION OF A NOVEL MODEL-BASED DOSING GUIDELINE FOR GENTAMICIN IN PRETERM AND TERM NEONATES

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 01: ANTIMICROBIAL

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Background: One of the most commonly used antibiotics at the neonatal intensive care unit (NICU) is gentamicin. A novel gentamicin dosing regimen for preterm and term neonates (Valitalo et al., 2015) based on a previously developed pharmacokinetic model (De Cock et al., 2012) was introduced in our clinic. Here, we report on the target attainment using this novel model-based guideline for gentamicin in neonates.

Methods: This guideline advises a dose of 4.5mg/kg with dosing intervals depending on postnatal age (PNA) and birth weight (BW) (24h-72h). Peak and trough samples were taken, including samples at 48h (for intervals ≥ 60 h) to explore possible shortening of the dosing interval. Target attainment of peak samples (8-12 mg/L) and trough concentrations (≤ 0.5 mg/L) was analysed.

Results: In total, 101 samples (43% peak, 57% trough) from 62 neonates with median (range) gestational age of 30 weeks (24–41), BW of 1.25 kg (0.5–3.87), PNA of 6.5 days (2-28) were available. Upon the novel gentamicin dosing guideline, peak target attainment was 86%. Trough concentrations were ≤ 0.5 mg/L in 86% and were ≤ 1 mg/L in 98%. In the groups dosed every 60-72h, 32 samples were taken at 48h, of which 38% was below 0.5 mg/l and 63% between 0.5 mg/l and 1 mg/l.

Conclusions: For the proposed neonatal gentamicin dosing guideline, 86% of peak and 86% of trough concentrations were in the target range. In neonates with PNA <5 days or BW <1 kg, for which extended dosing intervals of 60h or 72h applies, evaluation of the concentration at 48h is advised in order to decide on the timing of the next dose. Future research will study the area under the curve (AUC) in these neonates.

Clinical Trial Registration: No Clinical Trial registration nr.

IMPACT OF INFLUENZA VIRUS RAPID TEST IN A PAEDIATRIC EMERGENCY DEPARTMENT

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: Influenza virus infections are a frequent cause of paediatric emergency department (PED) visit and are clinically difficult to distinguish from invasive bacterial infections, especially in young children. We aimed at describing the impact of the influenza virus rapid test (IVRT) on the patient's management.

Methods: We performed a retrospective study in a French PED. All children undergoing an IVRT (Sofia® Influenza A+B FIA) between October 2016 and March 2020 were included. Physicians were free to use an IVRT at all time when a positive test would change the patient's management. Data on complementary exams, antibiotic prescription, hospitalization and follow-up during the week after discharge were retrieved from electronic medical records. Patients were compared according to their IVRT result. Variables were compared by chi-square. Study was approved by the local ethics committee.

Results: During the study period, 559 children were included (mean age = 4.3 years, 57% males and 32% with underlying conditions) and 259 had a positive IVRT (46.3%). These children had a lower proportion of antibiotic prescription (16.0% versus 40.7%, $p < 0.0001$), of hospital admission (28.6% versus 47.7%, $p < 0.0001$) and of blood tests (42.0% versus 65.3%, $p < 0.0001$) compared to children with a negative IVRT. Among children with a positive IVRT, 3 (1.1%) had an invasive bacterial infection (2 bacteraemia and 1 bacterial meningitis), of whom 2 being discharged after the PED visit.

Conclusions: Use of IVRT had a significant effect on patient management in a PED by reducing antibiotic prescription, hospital admission and use of blood tests. Clinicians should be aware of the risk of bacterial co-infection.

IMPACT OF A NEW METHOD FOR RAPID DETECTION OF CAMPYLOBACTERS IN STOOLS SAMPLES IN CLINICAL PRATICE AT BORDEAUX PEDIATRIC EMERGENCY DEPARTMENT

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: *Campylobacter spp.* is the leading cause of bacterial diarrhea in children under five years of age. Antibiotic therapy is indicated for severe forms and its interest is higher when it is started within the first three days of diarrhea. The objective of this study is to evaluate the impact of the implementation of a new rapid membrane enzyme immunoassay (EIA) at the Bordeaux pediatric emergency department (ED) on the appropriate antibiotic prescription.

Methods: The EIA was performed systematically on children's stools sent from ED to the laboratory for culture from July 22, 2019. We conducted a retrospective study from July 2018 to July 2020 in the Bordeaux pediatric ED, comparing the appropriate antibiotic prescription one year before and after the implementation of the EIA among children for whom stool culture was performed. The appropriate antibiotic prescription was determined using the French, European and American guidelines. An independent expert panel was used in complex situations.

Results: Of the 272 samples sent to the laboratory, 56 were positive for *Campylobacter spp.*. During the second period 35 EIAs returned positive. The median age of the children was 2.4 years. After implementation of the test, a significant increase in inappropriate antibiotic prescribing was found (27.2% vs. 39.1%, $p = 0.04$) and was mainly related to an increase in antibiotic prescribing for non-severe *Campylobacter spp.* infections.

Conclusions: The implementation of the EIA is associated in our study with an increase in the rate of inappropriate antibiotic prescribing, according to current recommendations. It appears essential to associate the implementation of the EIA with a reminder of the recommendations on the indications of antibiotic therapy and its benefit-risk ratio in order to limit inappropriate antibiotics prescriptions.

EVALUATION OF A NOVEL CULTURE SYSTEM FOR THE RAPID DIAGNOSIS OF GRAM-NEGATIVE SEPSIS IN NEONATES AT A TERTIARY REFERRAL UNIT IN HARARE, ZIMBABWE

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: Neonatal sepsis causes ~800,000 deaths each year, most of which are in low-resource settings. Difficulty accessing diagnostic testing and long turnaround times contribute to delays in sepsis identification and initiation of appropriate treatment. This study evaluates the novel InTrays COLOREX Screen and ESBL for rapid identification of bacterial pathogens causing sepsis and detection of resistance in neonates admitted to a tertiary referral unit in Harare, Zimbabwe.

Methods: Neonates with suspected sepsis admitted to Harare Central Hospital neonatal unit from March-June 2020 were prospectively enrolled. Blood cultures were collected and incubated using the BacT/ALERT automated system. In addition to standard microbiology procedures, positive blood cultures with potential pathogens identified by Gram-stain were inoculated on the InTray COLOREX Screen and ESBL culture plates. InTray plates were read between 5-24 hours from blood culture positivity and results of all significant laboratory tests were notified to clinicians in real-time.

Results: A total of 216 neonates with suspected sepsis were recruited. Pathogens were isolated from blood cultures in 56 (25.9%) neonates of which 54 were *Klebsiella pneumoniae*. All *Klebsiella pneumoniae* were resistant to ceftriaxone and 53 (98%) were resistant to gentamicin. Sensitivity and specificity for ceftriaxone-resistant *Klebsiella pneumoniae* detection using InTrays were 100%. InTrays results were interpretable as early as 5-10 hours (median 7 hours) post blood culture positivity enabling rapid identification and notification of result

Conclusions: This study shows that the implementation of a novel culture method was feasible and reduced turnaround times for results by 70% compared to standard microbiological techniques. Impact on patient outcomes and cost-effectiveness of this method need to be demonstrated.

Clinical Trial Registration: This is not a clinical trial so no registration is available

PERFORMANCE EVALUATION OF GENEXPERT ULTRA IN CHILDREN – FIRST RESULTS FROM THE RAPAED -AIDA-TB COHORT

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: Microbiological culture in children yields poor results. Recently, the novel semi-quantitative Xpert MTB/RIF Ultra (Ultra) has been implemented to diagnose TB at the point of care, however, pediatric data on Ultra are limited.

Methods: RaPaed-AIDA-TB is a prospective multi-country diagnostic validation study conducted in Mozambique, Tanzania, South Africa, Malawi, and India, aiming to enroll 1000 children (<15 years) with presumptive TB. TB microbiological workup includes culture and Ultra on sputum; in addition, nasopharyngeal aspirates (NPA) and stool are evaluated with Ultra. We compared the diagnostic performance of Ultra against culture. Recruitment and data entry is still ongoing, presented results are preliminary and totals differ.

Results: As of mid-January 2021, 733 participants were enrolled. The median age was 4.8 years (IQR 1.8;8.8years). Overall, 17% (115/694) were HIV-infected; following the NIH-consensus statement on diagnostic classification, 27% (158/585) of children were classified as confirmed TB, 38% (223/585) as unconfirmed TB, and 35% (204/585) as unlikely TB. In the per sample analysis, sensitivity & specificity of Ultra was 87.1%(74/85) and 90.9% (500/511) compared to culture, respectively. In the per-patient analysis, sensitivity was 69.0% (69/100) and specificity was 89.8% (419/450). 45 children were confirmed only by Ultra, out of which 33 were confirmed by trace only. Overall, 15.8% (89/560) of children had a positive stool-Ultra, while 5.3% (12/224) tested positive on NPA.

Conclusions: Estimations of diagnostic accuracy with an imperfect reference standard remain challenging. While Ultra® specificity seems to be acceptable, sensitivity in our cohort remains suboptimal. Further analysis on combining sampling methods and analyzing trace results with clinical data is ongoing.

Clinical Trial Registration: Rapid and Accurate Diagnosis of Paediatric TB (RaPaed-AIDA-TB) (RaPaed) ClinicalTrials.gov NCT03734172

STAPHYLOCOCCUS AUREUS CARRIAGE SCREENING, DECOLONIZATION AND ANTIBIOTIC PROPHYLAXIS IN PEDIATRIC CARDIAC SURGERY: PRATICE SURVEY OF EUROPEAN FRENCH-SPEAKING CENTERS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: In pediatric cardiac surgery the rate of surgical site infection is 1-9% and the rate of post-operative infection is higher. These infections are responsible for significant morbidity and mortality. Pediatric recommendations regarding *Staphylococcus aureus* (SA) carriage screening, preoperative decolonization and antibiotic prophylaxis are modelled on adult recommendations. No randomized trials exist to support pediatric recommendations. The objective of this study was to evaluate current practices in European French-speaking pediatric cardiac surgery centers.

Methods: A questionnaire, validated by a multidisciplinary team, asking about the screening for SA carriage, decolonization and antibiotic prophylaxis (type, duration, 1st intention and alternatives, special cases of neonatology and delayed sternal closure), was sent to 13 European French-speaking pediatric cardiac surgery centers.

Results: 12/13 answers were collected. A screening for SA carriage was performed by 8/12 centers. Five of these centers only screened for methicillin-resistant SA. Decolonization was performed by 8/12 centers but only one of them performed it systematically without any screening. The antibiotic used as first-line prophylaxis was a first or second-generation cephalosporin. Six centers used vancomycin as an alternative in cases of proven MRSA colonization. Only three and four centers reported discontinuing antibiotic prophylaxis beyond 48 hours and 24 hours, respectively. Antibiotic was continued up to sternal closure by 10/12 centers. No center reported a specific neonatal protocol.

Conclusions: This survey highlights a heterogeneity of practices. Randomized controlled studies are needed to assess which interventions may decrease the rate of post-operative infections in pediatric cardiac surgery.

SURVEILLANCE OF COLONIZATION AND INFECTION BY MULTIDRUG-RESISTANT ORGANISMS IN CHILDREN ADMITTED TO A PEDIATRIC HEMATOLOGY AND ONCOLOGY UNIT

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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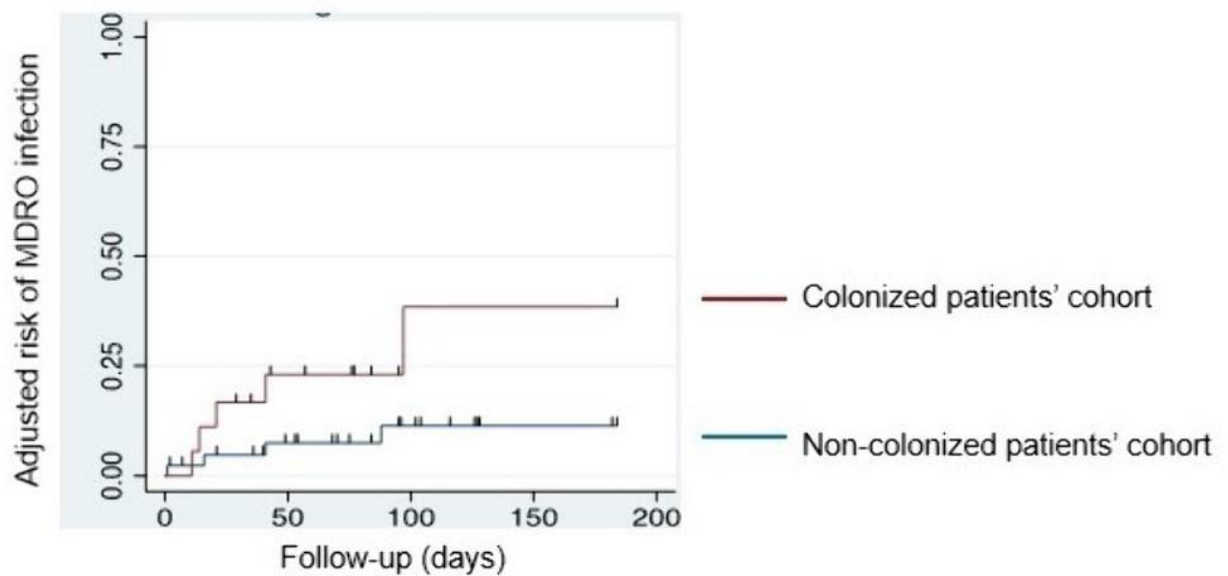
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Background: The increasing number of infections due to multidrug-resistant organisms (MDRO) may have important consequences. A systematic surveillance of MDRO carriage status could lead to a decrease in acquisition of colonization and infection rates. There are scarce data in pediatric hemato-oncologic patients. This study aimed to analyze the colonization rates and the risk of MDRO infection in children admitted to a Pediatric Hematology and Oncology Unit (PHOU).

Methods: Prospective analytical cohort study in patients (up to 18 years) admitted to the PHOU of a tertiary hospital between February-October 2020. Analyses conducted were: 1) MDRO carriage rates (at baseline and acquired during a maximum follow-up of 6 months); 2) risks factors associated with carriage status; 3) risk of developing a confirmed or possible MDRO infection in colonized and non-colonized patients.

Results: Sixty-four patients were recruited (50% males, median age 6.4 years), of whom 17.2% were colonized by a MDRO (10/11 extended-spectrum β -lactamase producing *Enterobacterales*, [ESBL-E]) at baseline and 13.7% acquired a new colonization (4/7 carbapenemase-producing *Enterobacterales*, [CP-E]) within the follow-up. The adjusted risk of acquiring a new colonization at 6 months-time was 43.2%, which was not related to previous days of admission or antibiotic therapy. Patients carrying a MDRO (baseline or acquired) were at higher risk of developing a MDRO infection compared to non-carriers patients (HR 3.4; IC95% 0.9-12.9; p=0.067) (figure).

Figure. Risk of MDRO infection in colonized and non-colonized patients



Conclusions: Surveillance in a PHOU revealed a significant rate of colonization in patients at baseline, mainly by ESBL-E, a concerning risk of acquiring a new colonization, often by CP-E, and an increased risk of developing a MDRO infection in previously colonized patients. A systematic surveillance may allow an individualization of empirical antibiotic therapy and the prevention of intrahospital outbreaks with MDRO.

BAD LUCK OR MISSED OPPORTUNITIES DELAYED DIAGNOSIS OF PEDIATRIC DRUG RESISTANT TUBERCULOSIS IN GERMANY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: Diagnosis and treatment of pediatric tuberculosis resistant to both isoniazid and rifampicin (MDR-TB) remains challenging due to paucibacillary disease, low sensitivity and specificity of diagnostic tools and frequently changing guidelines. This study aimed to describe epidemiology, clinical characteristics and outcome of pediatric MDR-TB in Germany and hypothesized that even with rising numbers of MDR-TB the time to diagnosis is significantly delayed.

Methods: All cases of pediatric MDR-TB registered in Germany from 2010 to 2020 were collected and compared with an adequate sample of children with drug-sensitive TB considered as controls. Data is collected using a secure web-based instrument (REDCap).

Results: 52 MDR-TB-children (24 active MDR-TB, 28 MDR-LTBI) and 56 controls were included. Time to diagnosis was longer in MDR-TB-children (43.3 vs. 7.6 days controls, $p < 0.001$) and did not change during the observational period while time to diagnose drug sensitive TB decreased. Most children with MDR-TB were born in the former Soviet Union (48% vs. 7.4%, $p = 0.000$) and had index-patients with drug-resistant-TB (97.7% vs. 2.8%, $p = 0.000$). Nearly all patients (91/94) recovered, but treatment of MDR-cases was longer and more side effects were documented (32% vs. 11.1%, $p = 0.036$).

Conclusions: For pediatric MDR-TB patients early diagnosis, appropriate treatment and follow-up are essential. Therefore, better cooperation between clinics and public health care is required in Germany. In children with an MDR-TB index or those born in a MDR high-incidence country bacteriological and cultural confirmation including drug-susceptibility testing should always be initiated. The choice of drugs should be adapted according to the patients' or the index' susceptibility testing.

MYXOVIRUS RESISTANCE PROTEIN A (MXA) AS A BIOMARKER OF VIRAL INFECTIONS IN CHILDREN HOSPITALIZED WITH SUSPECTED BACTERIAL INFECTION

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 02: LABORATORY & ANTIMICROBIAL RESISTANCE

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Background: Antibiotic overuse in children is common. Differentiation between viral and bacterial infections could potentially be improved by use of a biomarker for viral infection. Our objective was to examine blood myxovirus resistance protein A (MxA) as a biomarker of viral infections in children hospitalized with a clinical suspicion of serious bacterial infection.

Methods: We conducted a prospective diagnostic study at two paediatric emergency departments in Finland between December 2016 and April 2018. We enrolled 251 children hospitalized with a suspected bacterial infection, determined as a need for blood bacterial culture collection, and a convenience sample of 14 children with a suspected viral infection, all aged between 4 weeks and 16 years. Children were classified according to the viral, bacterial, or other aetiology of their final diagnosis. The ability of MxA to differentiate between viral and bacterial infections was assessed.

Results: The median MxA levels were 467 (interquartile range, 235–812) µg/L in children with a viral infection, 469 (178–827) µg/L in children with viral-bacterial co-infection, 119 (68–227) µg/L in children with bacterial infection, and 150 (101–212) µg/L in children with bacterial infection and an asymptomatic respiratory virus finding ($P < .001$). In a receiver operating characteristic analysis, MxA cutoff level of 256 µg/L differentiated between children with viral and bacterial infections with an area under the curve of 0.81 (95% confidence interval, 0.73–0.90), a sensitivity of 74.4%, and specificity of 80.0%.

Conclusions: MxA protein showed moderate accuracy as a biomarker of symptomatic viral infections in children hospitalized with a suspected bacterial infection. MxA could improve the differential diagnostics of febrile children but the high prevalence of viral-bacterial co-infections supports its use in combination with biomarkers of bacterial infection.

Clinical Trial Registration: N/A (not a clinical trial)

THE IMPACT OF UNIVERSAL VARICELLA VACCINATION ON THE CLINICAL BURDEN OF VARICELLA IN COLOMBIA: A NATIONAL DATABASE ANALYSIS, 2008–2019

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

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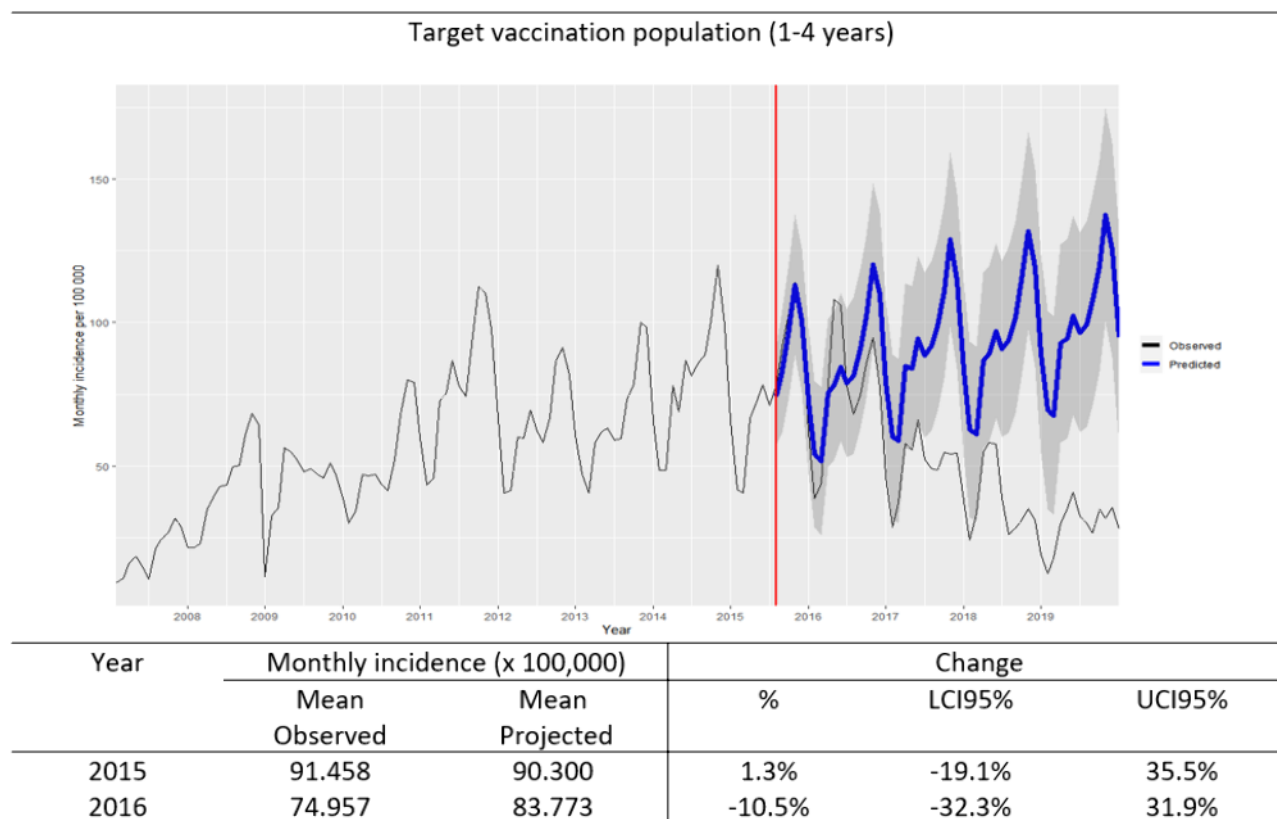
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Background: In Colombia, Universal Varicella Vaccination (UVV) was introduced in July 2015 as a single-dose program for infants aged 12 months and expanded in 2019 to include a second dose recommended at 5 years of age. The objective of this study was to assess the impact of a single-dose varicella vaccine on disease incidence in Colombia.

Methods: A retrospective study was conducted using data from the Epidemiological Surveillance System in Colombia from 2008-2019. We obtained varicella incidence per 100,000 inhabitants monthly and by age group. A univariate time-series analysis based on SARIMA modeling was applied to project varicella incidence in vaccinated (1-4 years) and unvaccinated age groups (<1;5-9;10-14, 15-19, 20-39, 40-59,60+) after UVV introduction. Data from the pre-vaccination period (January 2008-June 2015) was used to forecast projected varicella incidence in the vaccination period from July 2015 to December 2019. Projected values were compared with observed rates.

Results: Between 2015 and 2019, there was a statistically significant reduction in observed varicella incidence compared to projected rates in all age-groups (-32.8%, 95% CI: -48.2%, -4.2%) and in the 1–4 year old age group (-43.1% 95%CI: -57.1% to -15.6%). When analyzing data by year and age group, the effect of vaccination was statistically significant from June 2017 onwards in children 1-4 years old (Fig1). While declining incidence was also observed in older age groups (≥ 5 years old) suggesting indirect effects, the trend was not significant.

Figure 1. Incidence rate of varicella in the target vaccination population (1-4 years old) from January 2008 to December 2019



Conclusions: A significant reduction in varicella incidence was observed in children aged 1-4 years, 2.5 years after single-dose UVV program introduction in Colombia, with annual incremental reductions thereafter. Additional assessments are needed to evaluate long-term vaccination impact as well as the effect of two-dose varicella vaccination.

EVALUATING THE IMPACT OF UNIVERSAL VARICELLA VACCINATION STRATEGIES ON CLINICAL BURDEN OF VARICELLA IN DENMARK

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

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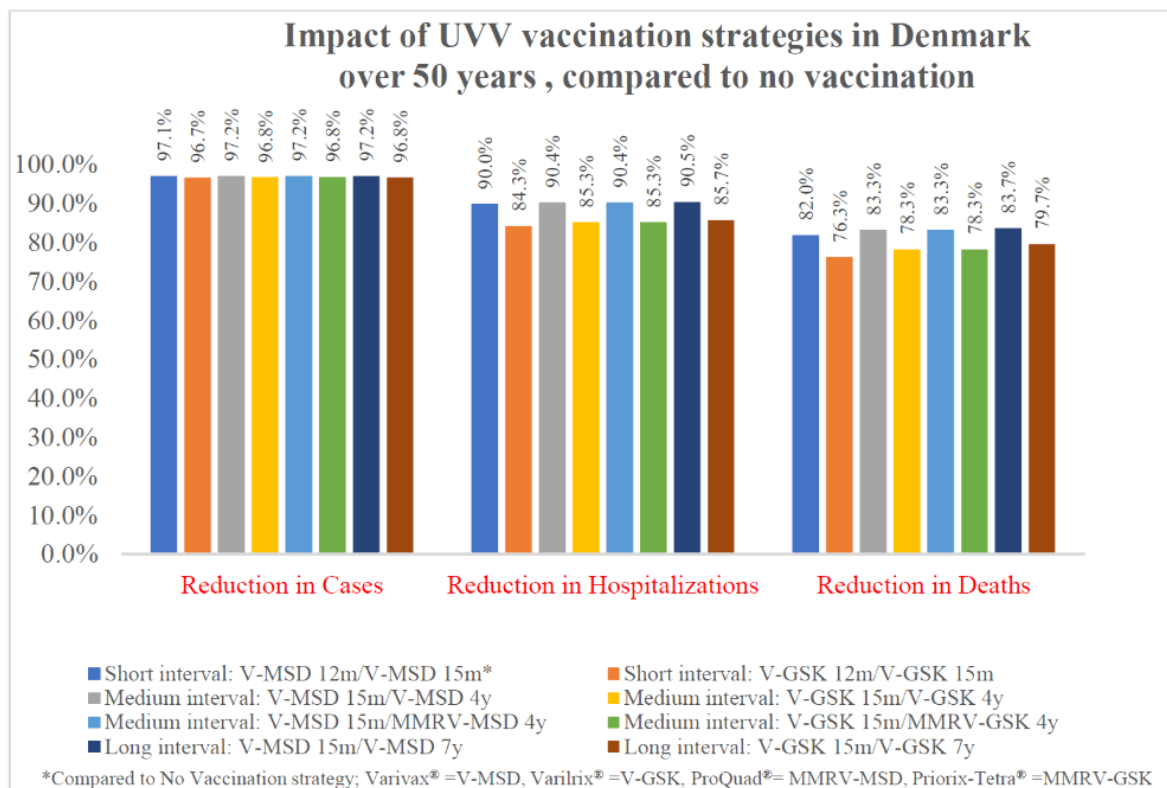
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Background: Varicella is a highly communicable disease. In the absence of universal varicella vaccination (UVV), total annual burden of varicella in Denmark was approximately €7.23 million with 63,557 cases. We estimated long-term clinical impact of 2-dose UVV strategies compared to no vaccination in Denmark. Four vaccines were considered: Varivax® (V-MSD), Varilrix® (V-GSK), ProQuad® (MMRV-MSD), or Priorix-Tetra® (MMRV-GSK).

Methods: An age-structured, deterministic, dynamic transmission model with updated parametrization was adapted to the Danish birth cohort. Eight 2-dose strategies of short (12m/15m), medium (15m/4y) and long vaccination intervals (15m/7y) were compared to no vaccination over a 50-year time horizon. Four varicella containing vaccines were considered [Varivax® (V-MSD), ProQuad® (MMRV-MSD), Varilrix® (V-GSK), and Priorix-Tetra® (MMRV-GSK)], with monovalent vaccines for 1st dose. 94% and 89% of children of recommended age received 1st and 2nd dose respectively with 90% of 2-12 year olds at time of UVV introduction receiving catch-up vaccination.

Results:



All eight 2-dose UVV vaccination strategies were estimated to substantially reduce clinical disease burden vs. no vaccination with substantial reduction in total varicella cases (97%), hospitalizations (84%-90%) and varicella-related deaths (76%-84%) over 50 years (Fig1). V-MSD/ V-MSD long-interval strategy (15m/7y) resulted in the greatest reduction in total number of cases, hospitalizations and varicella-related deaths while lowest reduction was observed with V-GSK/V-GSK short-interval (12m/15m) strategy. Lowest number of breakthrough cases (BV) (n= 31,742) was reported for medium-interval for both V-MSD/V-MSD and V-MSD/MMRV-MSD, and the highest BV cases (n=109,667) for V-GSK/V-GSK long-interval.

Conclusions: All two-dose UVV strategies resulted in significant reduction in clinical burden of varicella including reduction in total incidence, hospitalization and mortality with highest reductions and lowest BV observed with V-MSD strategies. Thus, inclusion of a 2-dose UVV strategy in childhood immunization programs is supported.

IMPACT OF UNIVERSAL VARICELLA VACCINATION STRATEGIES ON BURDEN OF VARICELLA IN SLOVENIA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

Colleen Burgess¹, Matthew Pillsbury¹, Ajda Lapornik², Goran Bencina³, Stephanie Kujawski¹, Ivana Tomljanovic Rudar⁴, Manjiri Pawaskar¹

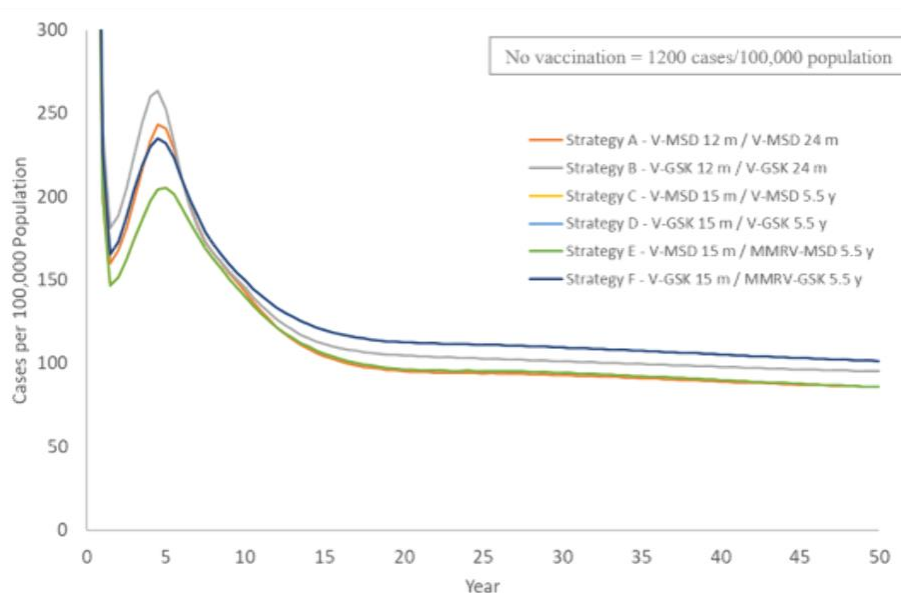
¹Merck & Co., Inc., Center For Observational And Real-world Evidence, Kenilworth, United States of America, ²MSD, Market Access, Ljubljana, Slovenia, ³MSD, Center For Observational And Real-world Evidence, Madrid, Spain, ⁴MSD, Medical Affairs, Zagreb, Croatia

Background: Varicella is a highly infectious disease caused by the varicella zoster virus. In Slovenia, in the absence of universal childhood varicella vaccination (UVV), there were 467 varicella cases per 100,000 population in 2018, with the majority of cases in children <7 years of age. We modeled the long-term clinical impact of implementing 2-dose UVV strategies compared with no vaccination in Slovenia.

Methods: A dynamic transmission model of varicella infection was calibrated to Slovenia, and six 2-dose vaccination strategies were considered over a 50 year time horizon post-vaccination, including 'long-interval' (15 months/5.5 years) and 'short-interval' (12 months/24 months) intervals for Varivax® (V-MSD), ProQuad® (MMRV-MSD), Varilrix® (V-GSK), and Priorix-Tetra® (MMRV-GSK) (Figure 1). Varicella vaccination coverage was assumed to be 90% for first dose (monovalent) and 90% for second dose (monovalent or quadrivalent), with catch-up vaccination (monovalent) at 3–5 years of age (90% coverage).

Results: All strategies were estimated to reduce varicella cases by 89–90%, hospitalizations by 77–85%, and varicella deaths by 39–44% at 50 years post-vaccination. The highest reductions in cases (90%), hospitalizations (85%), and deaths (44%) were observed for V-MSD/V-MSD 'long-interval' and V-MSD/MMRV-MSD 'long-interval'.

Figure 1: Total varicella incidence following the implementation of six 2-dose universal varicella vaccination strategies



Conclusions: Two-dose UVV is projected to substantially reduce the burden of varicella including reduction in morbidity and mortality of varicella in Slovenia compared with no vaccination. Policymakers should consider a UVV strategy to reduce the burden of disease in Slovenia.

THE IMMUNOGENICITY OF AN INVESTIGATIONAL RESPIRATORY SYNCYTIAL VIRUS (RSV) MATERNAL VACCINE (RSVPREF3) (CO-)ADMINISTERED AT DIFFERENT DOSE LEVELS WITH DIPHTHERIA-TETANUS-PERTUSSIS VACCINE (DTPA)

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

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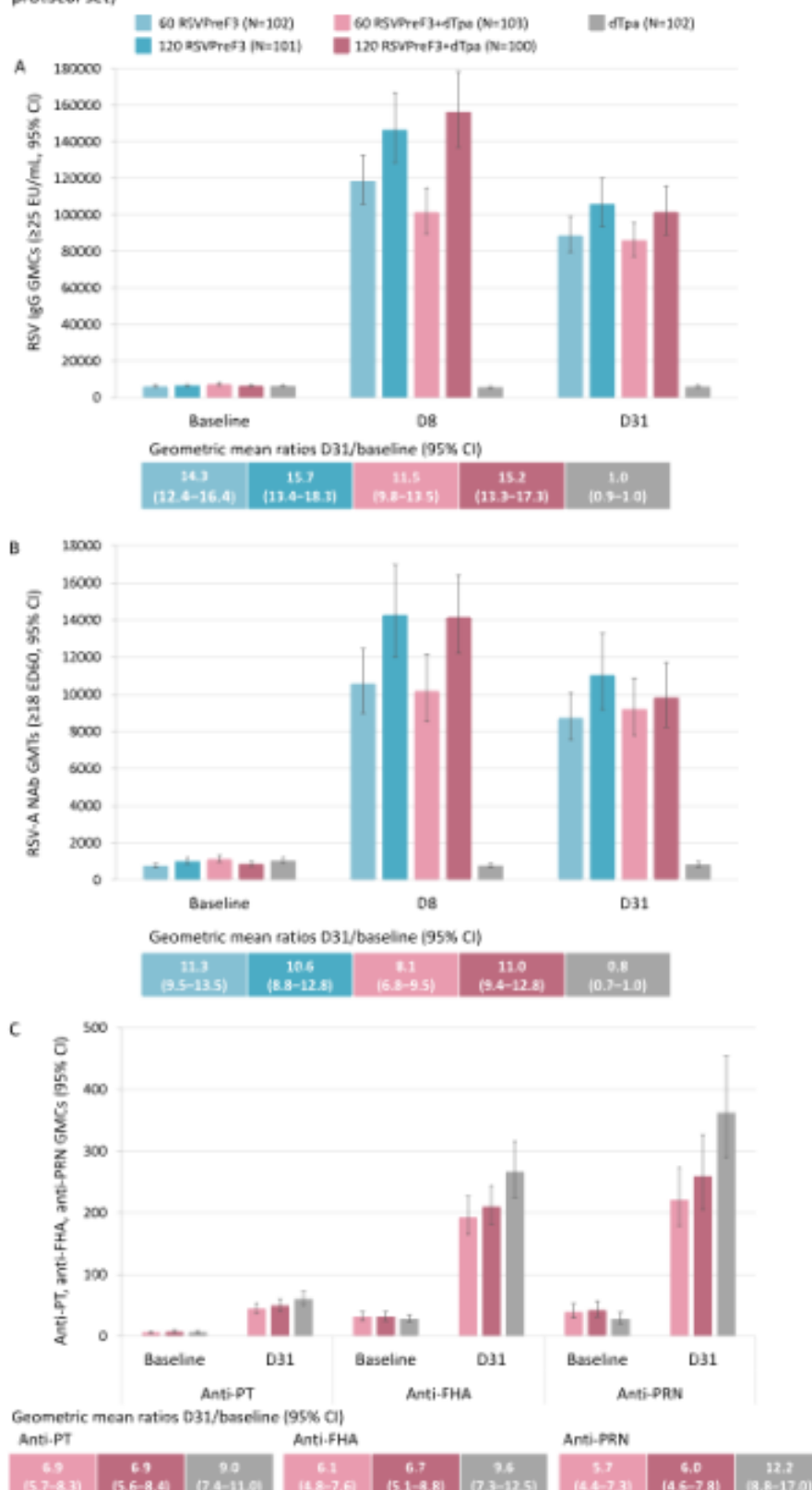
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Background: Maternal immunization is a possible prevention strategy against RSV disease in early infancy. Here we present the immunogenicity results of the RSVPreF3 investigational vaccine (co-)administered with dTpa, until day (D)31 post-vaccination.

Methods: We conducted an observer-blind, placebo-controlled, multicenter study (NCT04138056) in 18–45 years old, healthy, non-pregnant women. Participants were randomized (1:1:1:1) and received 1 of 2 RSVPreF3 dose levels (60 and 120 µg) with placebo (60/120 RSVPreF3) or RSVPreF3 with dTpa (60/120 RSVPreF3+dTpa) or dTpa with placebo (dTpa). We evaluated RSV IgG geometric mean antibody concentrations (GMCs) and RSV-A neutralizing antibody (NAb) geometric mean titers (GMTs) at baseline, D8 and D31, and tetanus, diphtheria, pertussis responses at baseline and D31 post-vaccination.

Results: 509 women were enrolled and 493 were included in per protocol set at D31. At D8 and D31, all RSVPreF3 groups showed a substantial immune response to RSVPreF3. RSV IgG GMCs, RSV-A NAb GMTs and their D31/baseline ratios were similar between 60/120 RSVPreF3 groups and 60/120 RSVPreF3+dTpa groups (Figure). When co-administered with RSVPreF3, dTpa was immunogenic for each antigen at D31, however GMCs were lower when compared with dTpa alone. RSVPreF3 interference on pertussis antibodies is shown below (Figure). Currently, no seroprotective threshold is established for pertussis, therefore, the clinical impact of this finding remains uncertain. Diphtheria and tetanus seroprotection rates were similar in RSVPreF3+dTpa and dTpa groups.

Figure. A. RSV IgG antibody concentrations, **B.** RSV-A NAb titers of the RSVPreF3 dose levels (co-)administered with dTpa and **C.** Pertussis GMCs in RSVPreF3+dTpa and dTpa groups (per protocol set)



IgG, immunoglobulin G; N, maximum number of women with available results; CI, confidence interval; EU/mL, enzyme-linked immunosorbent assay units/milliliter; ED60, serum dilution inducing 60% inhibition in plaque forming units; PT, pertussis toxin; FHA, filamentous hemagglutinin; PRN, pertactin.

Note: dTpa had different aluminum concentrations (300 µg [in the United States] and 500 µg [outside the United States]) but we did not observe any difference in the immune responses between the 2 formulations and here we present the pooled results for both dTpa formulations.

Conclusions: RSVPreF3 (co-)administered with dTpa in non-pregnant women induced a robust immune response, demonstrating no interference of dTpa on RSVPreF3 response. While diphtheria and tetanus seroprotection rates were unaffected by co-administration with RSVPreF3, there was considerable interference with the pertussis immune response. The clinical relevance of the RSVPreF3 interference on the pertussis immune response is still unclear. **Funding:** GlaxoSmithKline Biologicals SA
Clinical Trial Registration: ClinicalTrials.gov 04138056

REACTOGENICITY AND SAFETY OF CHAD155-VECTORED RESPIRATORY SYNCYTIAL VIRUS (RSV) VACCINE (CHAD155-RSV) ADMINISTERED AT DIFFERENT DOSE LEVELS IN INFANTS AGED 6–7 MONTHS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

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Background: We report reactogenicity and safety results in infants vaccinated with ChAd155-RSV, a chimpanzee adenovirus-vectored vaccine encoding RSV proteins F (fusion), N (nucleocapsid) and M2-1 (transcription antitermination factor).

Methods: In this phase I/II observer-blind, controlled, multi-country study, 201 healthy infants aged 6-7 months were randomized (1:1:1) and received 1 ChAd155-RSV 1.5×10^{10} viral particles (vp) dose and 1 placebo dose (RSV_1D group), 2 ChAd155-RSV 5×10^{10} vp doses (RSV_2D group) or comparator (placebo or routine vaccine [control, meningococcal or pneumococcal]) on days 1 and 31. One dose of control vaccine was administered either on day 1 or 31 according to country-specific requirements. Solicited and unsolicited adverse events (AEs) were evaluated until 7 and 30 days post-each dose. Serious AEs (SAEs) are collected up to study end and analyzed here up to day 61. Relative risk of ChAd155-RSV-induced enhanced respiratory disease (ERD) was evaluated at the end of first RSV season in infants considered RSV-seronaïve before vaccination.

Results: Most frequently reported solicited local AEs (per infant) in RSV groups were pain (16.9-20.0%) and erythema (13.8-15.5%), but were reported generally less than after the control vaccine (42.9% and 61.9%, respectively). Solicited systemic AEs were reported in similar proportions across groups, with irritability/fussiness being the most frequent (40.9-64.3%). Fever ($\geq 38.0^{\circ}\text{C}$) per dose in RSV groups (9.5-39.4%, 95% confidence interval [CI]:28.0-51.7%) appeared slightly higher than in the comparator groups (0.0-31.0%, 95% CI:17.6-47.1%) however, CIs overlap. Across all groups, 61.5-77.3% of infants experienced ≥ 1 unsolicited AE with comparable rates, grade and medical attendance (27.9-72.7%). SAEs reported until day 61 appear similar across groups. No safety concerns were found regarding potential ERD in the investigational groups.

Conclusions: Overall, no safety concern was detected with any ChAd155-RSV dose level/schedule.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration: ClinicalTrials.gov 03636906

A DOZEN YEARS OF NATIONAL VACCINE SURVEILLANCE: ANALYSIS OF VACCINE-PREVENTABLE DISEASE OUTCOMES IN CANADA FROM 2007-2018

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

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Background: Vaccines are one of the most successful public health measures. Acquiring longitudinal data on vaccine preventable diseases (VPDs) provides the opportunity to understand the overall impact of vaccines since their introduction. In this study, we summarize the trends in morbidity and mortality associated with *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Neisseria meningitidis*, *Bordetella pertussis*, varicella, and rotavirus across Canada.

Methods: In this study, diseases for which vaccines offer partial or complete coverage are referred to as VPDs. The Canadian Immunization Monitoring Program ACTive (IMPACT) monitors select VPDs in children at 12 hospitals across Canada, encompassing approximately 90% of pediatric tertiary beds nationally. Data are collected using standardized case report forms. A total of 8,366 VPD cases between 2007 and 2018 were analyzed using R. Outcomes included quantifying total hospital and ICU admissions, lengths of stay (LOS), and case-fatality rates.

Results: Over the study period, total annual hospital admissions decreased from 915 to 419 cases (average annual decrease of 50 cases, $p < 0.001$), and annual ICU admissions decreased from 156 to 99 cases (average annual decrease of 4 cases, $p < 0.01$). However, of those admitted to hospital, the proportion of cases admitted to the ICU increased from 17% to 24% (0.8% average annual increase, $p < 0.001$). Additionally, annual hospital and ICU median LOSs increased from 4 to 7 days ($p < 0.01$) and 3 to 5 days ($p < 0.01$), respectively. Case-fatality rates remained unchanged.

Conclusions: Encouragingly, case hospitalization and ICU admission rates associated with the surveyed VPDs decreased significantly over the study period. However, the relatively higher proportion of cases admitted to the ICU and the increased hospital and ICU median LOSs suggest that the morbidity associated with VPDs continues to be a complex issue despite unchanged case-fatality rates.

RECOMBINANT ACELLULAR PERTUSSIS VACCINATION DURING PREGNANCY INDUCES HIGH CORD BLOOD PERTUSSIS ANTIBODIES

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 03: VACCINES 1

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Background: Two genetically inactivated acellular pertussis vaccines, a recombinant pertussis-only vaccine (Pertagen[®], aP_{gen}) and the combined formulation containing aP_{gen}, tetanus and reduced diphtheria toxoids (Boostagen[®], TdaP_{gen}) are licensed in Thailand for booster pertussis immunisation in individuals aged 11 years and older, including pregnant women.

Methods: In a prospective observational cohort study cord bloods were collected from 453 women (18-40 years old) in Bangkok, Thailand, vaccinated during pregnancy with Td vaccine only (n = 54), aP_{gen} vaccine (n = 199) or TdaP_{gen} combination vaccine (n = 200). Cord blood IgG antibodies against pertussis toxin (PT) and filamentous hemagglutinin (FHA) were assessed by ELISA.

Results: Compared to the Td-only group, PT-IgG titers were 31.6-fold (95% CI 18.9-53.0) and 23.5-fold (95% CI 14.0-39.2) higher in cord bloods of maternal aP_{gen} and TdaP_{gen} recipients, respectively, reaching GMCs of 206.1 IU/mL (95% CI 164.3-258.6) (aP_{gen}) and 153.1 IU/mL (95% CI 129.1-181.5) (TdaP_{gen}). Cord FHA-IgG GMCs in the aP_{gen} group (217.2 IU/mL, 95% CI 184.0-256.4) and TdaP_{gen} group (232.0 IU/mL, 95% CI 199.0-270.6) were respectively 17.8-fold (95% CI 11.6-27.3) and 19.0-fold (95% CI 12.4-29.1) higher.

Conclusions: Maternal vaccination with genetically-detoxified Pertussis Toxin (PT_{gen}) containing recombinant pertussis vaccines may provide long-lasting protection against severe pertussis in young infants. In addition, the availability of monovalent aP_{gen} vaccine provides an alternative to Tdap vaccines for maternal pertussis immunization when Td vaccination in pregnant women is not needed.

Clinical Trial Registration: Thai Clinical Trial Registry TCTR20200528006

EPIDEMIOLOGY OF FIRST AND SECOND WAVE OF COVID19 IN HOSPITALIZED CHILDREN IN SPAIN

E-POSTER VIEWING

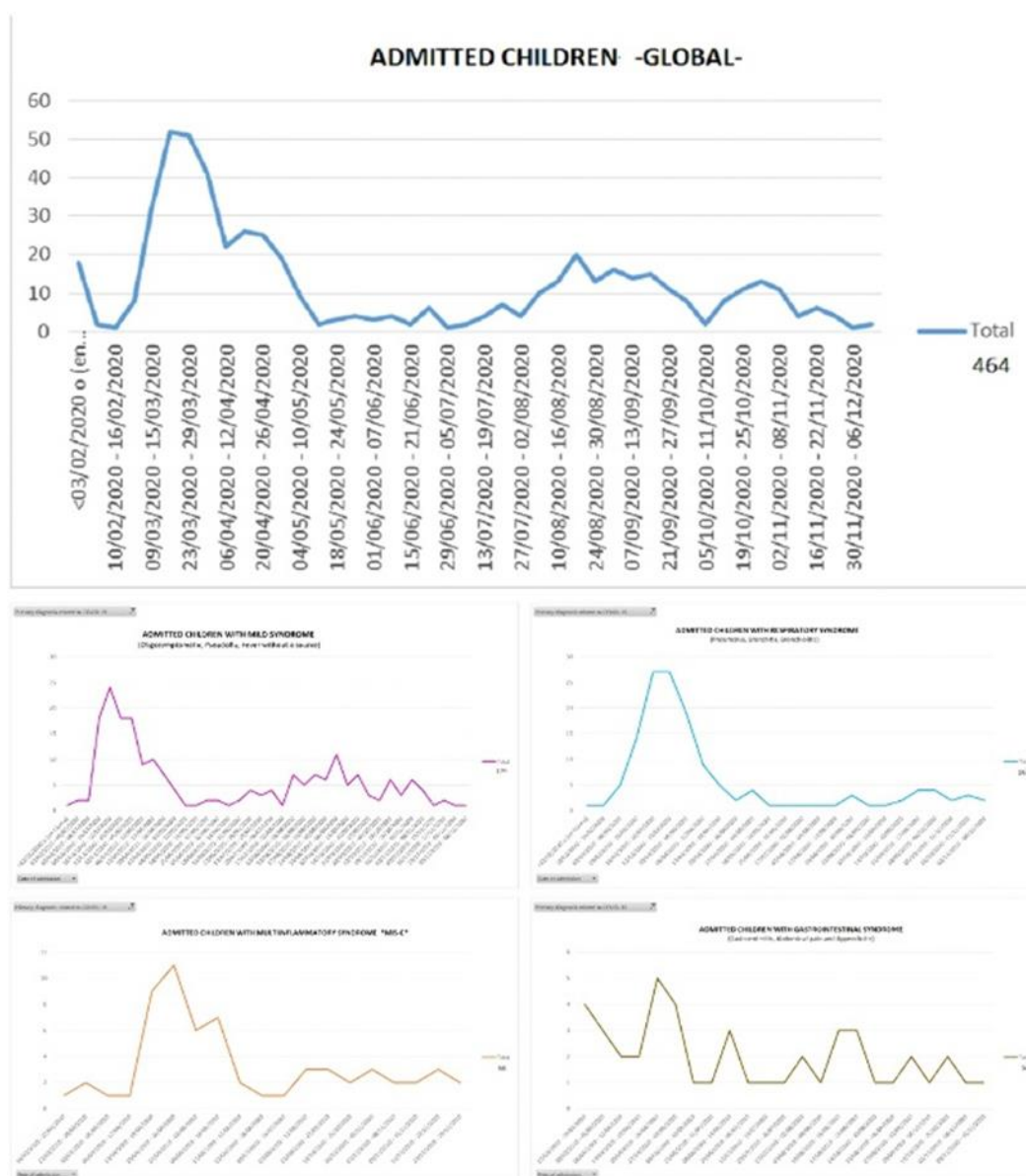
E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

Francisco José Sanz-Santaeufemia¹, Ana Belen Jimenez Jimenez², Carlos Grasa³, Antoni Soriano-Arandes⁴, Juan Mesa Guzman⁵, Paula Vidal-Lana⁶, Rut Del Valle Pérez⁷, Maria Luz Garcia-Garcia⁸, Jose Antonio Alonso Cadenas⁹, Silvia Simo-Nebot¹⁰, Maria Urretavizcaya-Martinez¹¹, Jorge Huerta-Aragones¹², Itziar Astigarraga¹³, Mabel Iglesias Bouza¹⁴, Maria Penin-Anton¹⁵, Isabel Romero¹⁶, Amanda Bermejo¹⁷, Yolanda Ruiz-Prado¹⁸, Manuel Oltra Benavent¹⁹, Nerea Gallego-Mingo²⁰, Elisa Garrote-Llanos²¹, Sara Guillen-Martin²², Catalina Marquez-Vega²³, Santiago Alfayate²⁴, Marta Pareja-León²⁵, Cristina Calvo²⁶, Cinta Moraleda²⁷, Alfredo Tagarro²⁸, On Behalf Of Epico Working Group²⁹

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Background: Spanish children admitted due to SARS-CoV2 infection were included in a registry from March 2020. In this study, we show the epidemiological curves of first and second wave of Covid-19 pandemic in Spain. During the second wave, the schools were open

Methods: EPICO-AEP is a multicentre cohort study conducted in Spain to assess the characteristics of children with COVID-19. 75 hospitals collected data from the beginning of epidemic in Spain - February 25th- until this analysis. Eligible participants were children of 0-18 years hospitalized in any hospital belonging to the network from March to December 2020, with SARS CoV2 confirmed by real-time polymerase chain reaction or fulfilling WHO criteria for MIS-C



Results: 464 children were analysed. In Figure , the two waves of the disease across 2020 can be observed. First one was in March-April and second one from August to October. Second wave was waymilder than first wave, in spite of schools open. The waves reflected the general incidence, in a smaller scale. Different diagnoses were grouped in four main categories according to clinical spectrum (see Figures): mild disease, bronchopulmonary disease, MIS-C and gastrointestinal disease MIS-C delayed 4 weeks after other manifestation, suggesting that this syndrome is a late disease manifestation.

Conclusions: SARS-CoV2 in children is less frequent than adults but presented the same timing than adults. First wave was way more significant than second wave. Oligosymptomatic and respiratory syndrome were the main clinical presentation. MIS-C cases presented 1 month after the first wave peak.

EVALUATION OF FAMILY CLUSTERS OF CHILDREN WITH SARS-COV-2: CHILDREN DO NOT PLAY THE LEADING ROLE

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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Background: The exact role of children in the household transmission of SARS-CoV-2 is not clear. In this audit, we investigated the role of children with COVID-19 in household transmission by identifying the index patient and contact tracing of the household members.

Methods: A total of 103 children with COVID-19 who were admitted to Marmara University Pendik Training and Research Hospital, Istanbul, between 25th March to 27th May 2020 were included in the study. A family cluster was defined as a group of ≥ 2 confirmed cases of SARS-CoV-2 in the same family, and a household contact (HHC) was defined as any person who had stayed in the same residence.

Results: In total, 78 family clusters and 307 HHCs belonging to these clusters were screened. Only in four clusters was the index case determined to be in the pediatric age group (5.1%). Fathers, mothers, grandparents, and adult siblings were identified as the index cases in 37 (47.4%), 18 (23.0%), 8 (10.2%) and 6 (7.7%) clusters, respectively. Of the 307 HHCs, 88 were in the pediatric age group, and 39 were SARS-CoV-2 RT-PCR positive.

Conclusions: Our data showed that SARS-CoV-2 is uncommon in children without any history of contact to a RT-PCR test positive patient. The role of children as the index patient in family clusters is 5.1%, and the actual index case is usually an adult individual who has had an outside contact.

RISK FACTOR FOR SEVERE SARS-COV-2 INFECTION: A FRENCH NATIONAL PROSPECTIVE SURVEILLANCE OF HOSPITALIZED CHILDREN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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Background: SARS-CoV-2 infection is considered less of a threat for children than adults, but severe forms can occur. Wide-scale surveillance is mandatory to describe the clinical spectrum and factors associated with poor evolution. We aimed to analyze the clinical spectrum of hospitalized pediatric SARS-CoV-2 infection, rate of severe disease, predictors of severe disease progression, short-term evolution, and death.

Methods: In this French national prospective surveillance, 66 pediatric departments enrolled children hospitalized with confirmed SARS-CoV-2 infection and/or Multisystem Inflammatory Syndrome in Children (MIS-C) from February 15, 2020 to February 1, 2021. Information about Pediatric Intensive Care Unit (PICU) admission and socio-demographic data were recorded. Information about variants were not collected.

Results: Among the 717 hospitalized children, 309 (43%) were females. Median age was 27 months (IQR: 2 -124). Median length of stay was 4 days (IQR: 2 – 68). Overall, 27% of cases (n=191) were admitted to PICU. Children < 3 months old accounted for 33% of cases (n=221) and only 5% (n=12) required PICU. Children > 5 years accounted for 41% of cases (n=293) and 44% required PICU admission. MIS-C accounted for 23% of the cases and 2/3 required PICU. Seven deaths were recorded including three patients with severe comorbidities.

Conclusions: In this large cohort of children with SARS-CoV-2 infection, toddlers under 3 months rarely showed severe disease. One fourth of children required PICU admission, mostly because of MIS-C, but the case fatality rate was low.

SARS-COV-2 SCREENING RESULTS IN A TERTIARY CHILDREN'S HOSPITAL DURING THE SECOND WAVE OF THE PANDEMIC

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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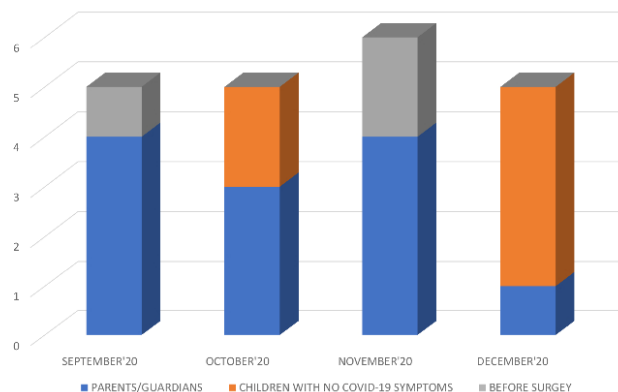
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Background: SARS-CoV-2 testing is used for both diagnostic and screening purposes in hospital settings. We present the prospectively recorded results of the screening strategy implemented in the second largest Children's Hospital in Greece between September, 1st and December, 31st 2020 during the second wave of the pandemic. For screening purposes, SARS-CoV-2 RT-PCR using the cobas ® 8800 system was performed in selected groups.

Methods: Groups screened included a. Asymptomatic parents/guardians of children admitted for any condition considered of high probability to be infected, eg refugees living in camps where local epidemics were in progress. b. Children admitted for any condition with no symptoms suggestive of COVID-19 but belonging to special groups such as oncology patients, children undergoing dialysis, refugee and Roma children. c. Children before elective surgery.

Results: 1374/3148 (43.6%) SARS-CoV-2 PCR tests served screening purposes. Among 105 parents/guardians tested, refugees accounted for 67.6%(71/105); 12/71 (16.9%) were positive while none of the rest 34 was positive. Among 519 children with no symptoms suggestive of COVID-19, positivity rate was 1.2% (6/519); 83.3% (5/6) belonged to refugee or Roma populations, whereas only 42.4% of the screening tests were performed in these groups. The positivity rate for the 750 children tested preoperatively was 0.4%(3/750); 66.7%(2/3) belonged to the above minority groups, whereas these groups accounted for 18% of the screening tests.

Figure 1. Screening positive results per month



PARENTS' POSITIVITY	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
REFUGEES	25% (4/16)	15% (3/20)	20% (4/20)	8% (1/15)	16.9% (12/71)
NOT REFUGEES	0 (0/7)	0 (0/12)	0 (0/8)	0 (0/7)	0 (0/34)

Conclusions: The most effective part of the SARS-CoV-2 screening strategy applied in our hospital was the testing of parents/guardians of children admitted for any condition considered of high probability to be infected. The yield of positive tests among children with no symptoms suggestive COVID-19 in the general population was very low. Current regional epidemiological data are crucial to target specific populations for SARS-CoV-2 screening.

ATTITUDES TOWARDS IMMUNIZATION AGAINST INFLUENZA AND SARS-COV-2 IN PARENTS OF CHILDREN WITH CHRONIC DISEASE AND IN CONTROLS DURING COVID-19 PANDEMIC.

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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Background: The clinical course of Covid-19 in children is similar to influenza and like influenza may be more severe in children with chronic diseases. The latter are therefore regarded as a priority group for immunization against flu and -hopefully in the future- for COVID-19. We compared the attitudes toward influenza and Sars-CoV-2 immunization of parents of children with chronic disease and of healthy children.

Methods: The case control study involved 500 parents of patients with chronic disease (N=278) and of healthy children (N=222). Socio-demographic data and attitude to immunize their children against influenza and potentially against SARS-CoV-2, were obtained through a self-reported questionnaire administered before the launch of influenza vaccine campaign.

Results: Parents of chronic patients had a lower social and educational level and a higher unemployment rate compared with controls ($p = <0.001$). A proportion of parents of children with chronic disease (27%) had vaccinated their child than healthy controls (12%) ($p=<0.001$) the year before Pandemic. In 2019 in chronic patients slight increase in flu immunization acceptance (32%) was observed with no significant difference than healthy children. Moreover lower number of parents of chronic patients would get vaccinated for SARS-CoV-2 compared with controls. The main reason for hesitancy was: "I'm afraid of immunization". (Figure)

Figure. Demographic and vaccination data of parent's of chronic and healthy child during COVID-19 pandemic. The significance level for all analyses was set to $\alpha = .05$.

Variable	N	Healthy children N =278	Chronic disease N = 222	p-value
Gender	500			0.235
Female		234 (84%)	196 (88%)	
Male		44 (16%)	26 (12%)	
Age	500	41±6	40±7	
Education	500			<0.001
Primary school		2 (0.7%)	9 (4.1%)	
Middle school		24 (8.6%)	58 (26%)	
High school		76 (27%)	98 (44%)	
University degree		176 (63%)	57 (26%)	
Occupation	500			<0.001
Unemployed		80 (29%)	121 (55%)	
Employed		198 (71%)	101 (45%)	
Age of child	500	7.9 (3.9)	8.8 (4.2)	
Was your child vaccinated against influenza in 2018?	487			<0.001
No		245 (88%)	153 (73%)	
Yes		33 (12%)	56 (27%)	
Was your child vaccinated against influenza in 2019?	216			0.516
No		72 (62%)	68 (68%)	
I don't know		1 (0.9%)	0 (0%)	
Yes		43 (37%)	32 (32%)	
Are you planning to have your child vaccinated next season?	216			0.531
No		40(33%)	30(32%)	
I don't know yet		39(32%)	26(28%)	
Yes		43(35%)	38(40%)	
Will you immunized for SARS-CoV-2 infection?	216			<0.001
No		3 (2.6%)	19 (19%)	
Yes		98 (84%)	62 (62%)	
I don't know		15 (13%)	19 (19%)	

Conclusions: Parents of children with chronic diseases showed a low acceptance of influenza immunization, similar to healthy children and not different from prepandemic rates. Also attitudes to immunize against SARS-CoV-2 was generally low. Education and employment rates were lower than in healthy controls may be as a consequence of demands linked with chronically sick children. Specific information and motivation campaign need to be designed to improve immunization of children with chronic diseases.

SURVEILLANCE OF RESPIRATORY VIRUSES DURING THE SARS-COV-2 PANDEMIC IN CATALONIA (SPAIN)

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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Background: The implementation of non-pharmaceutical interventions (NPI) to prevent the spread of SARS-CoV-2 has been linked with a sharp decline in the circulation of other respiratory viruses elsewhere. Viral interference and disparity in NPI effectivity due to differences in viral nature could also play an important role. We analyzed viral detection of non-SARS-CoV-2 respiratory viruses in our paediatric population during the initial weeks of winter season 2020-21.

Methods: Respiratory samples from <16-year-old patients that attended a tertiary care children's hospital in Catalonia during epidemiological weeks 40-50/2020 with fever, respiratory or gastrointestinal symptoms and also those that required hospitalization independently of the reason were collected and tested for SARS-CoV-2 and other respiratory viruses. Only samples that tested positive for any respiratory virus other than SARS-CoV-2 were included. Respiratory viruses' laboratory confirmation was performed by a real-time multiplex RT-PCR-based assay (Allplex Respiratory Panel Assay, Seegene, South Korea).

Results: During the study period, 1044/2931 (35.6%) respiratory samples tested positive. Median age was 3 years (IQR 1-5) and 58.4% were male. The most commonly detected viruses were rhinovirus in 928/1044 samples (88.9%, median age 3 years, IQR 1-6) and adenovirus in 167/1044 (16.0%, median age 2 years, IQR 1-3). At lower percentages, bocavirus (19/1044, 1.8%), parainfluenza-3 (14/1044, 1.3%) and enterovirus (11/1044, 1.1%) were detected. There was 1 detection of respiratory syncytial virus (RSV) and none of influenza. Viral coinfections were detected in 104/1044 (10.0%) samples, predominantly by rhinovirus-adenovirus (82/104, 78.8%).

Conclusions: With the implementation of NPI against SARS-CoV-2, detection of RSV and influenza in children has been almost non-existent. Efficacy of NPI may depend on viral nature, which could partially explain the persistence of non-enveloped viruses such as rhinovirus and adenovirus circulation among our paediatric population.

SARS-COV-2 INFECTION AMONG INFANTS DURING THE FIRST AND SECOND WAVES OF THE PANDEMIC IN MONTREAL, CANADA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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Background: While the clinical characteristics of SARS-CoV-2 infection have been well-described in adults, there remains little data on the clinical manifestations of disease among infants, and any changes in the severity and/or the spectrum of disease over time. The objective of this study was to describe the clinical features of SARS-CoV-2 infection among infants, and to compare severity of disease between first and second waves of the pandemic in Montreal, Canada.

Methods: Retrospective review of all cases of SARS-CoV-2 infection among infants less than 12 months of age diagnosed through the emergency department and the COVID-19 clinic at Centre Hospitalier Universitaire Sainte-Justine (CHU-SJ), Montreal between February 13th 2020 and January 11th 2021. Clinical features and severity of disease were compared between younger infants (≤ 3 months) vs. older infants (3-12 months of age), and between first and second waves of the pandemic.

Results: 76 infants were diagnosed with SARS-CoV-2. There was no difference in disease severity between first and second waves, with disease predominantly mild in both periods (90 vs. 86%, $p=0.38$), and no difference in proportion of infants hospitalized (33 vs. 23%, $p=0.33$). The most common symptoms were fever (80%), followed by gastrointestinal (70%); lower respiratory findings were uncommon (27%), with none of infants requiring oxygen therapy. Fever was more common in older vs. younger infants (95 vs. 65%, $p=0.03$), with more decreased feeds symptoms among younger infants (58 vs. 32%, $p=0.02$).

Conclusions: These findings suggest that the pathophysiology of SARS-CoV-2 associated disease is very different in infants vs. adults, with a predominance of gastrointestinal symptoms and little respiratory disease in infants. Reassuringly disease was mild in the majority of infants, with no differences seen between first and second waves of the pandemic.

EPIDEMIOLOGY, SEVERITY AND OUTCOMES OF CHILDREN PRESENTING TO EMERGENCY DEPARTMENTS ACROSS EUROPE DURING THE SARS-COV-2 PANDEMIC' (EPISODES) - STUDY: A MULTINATIONAL OBSERVATIONAL COHORT STUDY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 04: COVID EPIDEMIOLOGY

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Background: This study aimed to describe patterns of children presenting to paediatric emergency departments (PEDs) across Europe during the SARS-CoV-2 pandemic.

Methods: The 'Epidemiology, severity and outcomes of children presenting to PEDs across Europe during the SARS-CoV-2 pandemic' (EPISODES) - study collected data from 39 PEDs in 18 countries. Routine clinical data were extracted from electronic health records for all children aged <16 years from January 2018 – May 2020, and these were uploaded using a standardised data entry form on the validated online REDCap system. Standardised 28-day rates were calculated for PED attendance, hospital admission, and selected diagnoses; interrupted times series were performed. Ethics approval was obtained at all study sites.

Results: Across sites, a reduction in PED attendances (March 2020 vs March 2019) ranged from 29.0% in children aged 5-12 years to 44.8% in children <14 days. No increase was seen for appendicitis (standardised 28-day number of patients: 181 in April 2018 vs 219 in April 2019 vs 182 in April 2020) or diabetic ketoacidosis (27 vs 29 vs 28); reductions were observed for otitis media (1628 vs 1538 vs 214), tonsillitis (3672 vs 3506 vs 776), and mental health issues (329 vs 300 vs 176). Reductions were seen for any type of admission.

Conclusions: This multinational study confirms a dramatic reduction in PED attendances of all levels of severity observed during the first wave of COVID-19 across Europe. We did not find an increase in appendicitis or diabetic ketoacidosis, and a decrease for mental health issues.

PRIMARY CLINICAL MANIFESTATIONS IN 713 CHILDREN DIAGNOSED WITH COVID-19. A REPORT OF THE PEDIATRIC EPICO-AEP REGISTRY IN SPAIN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: SARS-CoV-2 infection in children may be asymptomatic, paucisymptomatic or multisystemic. Clinical presentations are broad and not limited to respiratory system. **Aim:** To identify the syndromes and risk factors causing severe disease in hospitalized children with COVID-19 registered at the Epidemiological Study of Coronavirus in Children (EPICO-AEP).

Methods: In this multicenter cohort study conducted in Spain, 75 hospitals collected data about COVID-19 pediatric patients from February 5th, 2020 till January 5th, 2021. The study analyzed 713 children diagnosed with COVID-19 with initial clinical information. The sex distribution was 398 boys/315 girls and the median age: 77 months (range 0-222,7).

Results: Seventy percent of registered patients (498) were hospitalized. Fifty-two children were asymptomatic. The most frequent clinical presentations were: 125-upper respiratory tract infections, 124-fever without source, 74-multi-inflammatory, 60-flu-like syndrome, 54-acute gastroenteritis, 26 bronchitis, 10-skin/mucosa lesions. Pneumonia was diagnosed in 147 cases. The main syndromes were grouped into: 182-bronco-pulmonary (26%), 74 multi-inflammatory (10%) 65-gastrointestinal (9%), and 392 (55%) mild forms. Comorbidity and chronic diseases were reported in 227 patients: 64-asthma, 40-neurological, 39-malignancy, 39-hematologic, 25-cardiac, 26-obesity, 25-pulmonary, 18-renal, 12-rheumatologic, 8-diabetes. Five patients died (3 pneumonia, 2 inflammatory syndrome), all with comorbidities.

Conclusions: The most frequent primary diagnoses were upper respiratory tract infections, fever without source, multi-inflammatory syndrome and gastroenteritis. Clinical presentations were mild in the majority (55%). The prognosis was good but 5 children diagnosed with COVID-19 and chronic diseases died. Pneumonia and multi-inflammatory syndromes were the main causes of hospital admissions.

PEDIATRIC COVID-19 IN HOSPITALIZED PATIENTS: A NATION-WIDE PROSPECTIVE COHORT STUDY WITH REAL-TIME DATA REPORTING

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: The current COVID-19 pandemic has highlighted the need to bring scientific data to the public, policymakers and clinicians without unnecessary delay. We aimed to describe the clinical course and risk factors of severe manifestations of COVID-19 in children, including MIS-C. Using automated data extraction and analysis, we have been publishing near real-time data on pediatric COVID-19 in the Netherlands on our website www.covidkids.nl since April 2020.

Methods: This is a multicenter, prospective cohort study in 53 hospitals. Children (0-17 years) are included if they present with COVID-19 at the emergency or outpatient department and/or are hospitalized and have at least one positive real-time RT-PCR test on SARS-CoV-2, or fulfill a clinical diagnosis of COVID-19 or MIS-C. Clinical data collected from medical records were noted in an eCRF (Castor EDC). Automated datascripts are used to display graphs and tables on the scientific dashboard of our website.

Results: At time of writing this abstract, 130 subjects are included (with at least 90% of the CRF complete). Median age is 4.2 years (range 0-17.3 years). Most children with fever and/or respiratory symptoms were infants, whereas most children with MIS-C were adolescents. Main presenting symptoms of children presenting in hospital with COVID-19 are upper or lower airway infection, fever and inflammatory syndrome. Most children with MIS-C were admitted to ICU. In children with COVID-19, ICU admission was very rare. Figure 1 displays the current data on our website.

PULMONARY LESIONS ON CHEST RADIOGRAPHY IN PEDIATRIC PATIENTS WITH COVID-19

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: There are currently only scarce and limited data available describing imaging manifestations in children with coronavirus disease 2019 (COVID-19). The aim of this study was to analyze pulmonary lesions on chest radiography (CXR) in pediatric patients infected with SARS-CoV-2. In addition, we compared the CXR results with clinical and laboratory data to identify predictors of pulmonary abnormalities in children with COVID-19.

Methods: In this prospective single center study we included 118 consecutive pediatric patients (0 to <18 years) with COVID-19. CXR was performed in 107 patients. Clinical and laboratory evaluations were performed on the same day as CXR, immediately (0 to 2 days) after the COVID-19 diagnosis had been established. CXR was reviewed by experienced radiologists, blinded to clinical and laboratory data.

Results: Pulmonary lesions were found in 24/107 (23%) of children, including 14/24 (58%) with bilateral abnormalities. Compared to patients with normal CXR, children presenting with pulmonary lesions were significantly younger (7.0 ± 4.5 vs. 9.5 ± 4.5 years, $p = 0.03$) and more commonly presented with an elevated D-dimer level (6/24, 25% vs. 5/81, 7%; $p = 0.008$). Almost half (46%) of children with pulmonary lesions were asymptomatic, and 11/60 (18%) of all asymptomatic patients presented with abnormal CXR.

Conclusions: In conclusion, pulmonary lesions in the course of COVID-19 are more common in younger children and those presenting with an elevated D-dimer level. A significant proportion of asymptomatic COVID-19 patients develop pulmonary abnormalities in CXR. Thus, chest imaging should be considered in all children with SARS-CoV-2 infection, as even asymptomatic patients may benefit from CXR to receive a proper management.

THE CLINICAL FOLLOW-UP AND MANAGEMENT OF COVID-19 IN CHILDREN AND ADOLESCENTS WITH AN IMMUNOCOMPROMISED STATE OR A MALIGNANCY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

Irem Ceren Erbaş, Hatice Karaoglu Asrak, Ayşe Çakıl Güzin, Şilem Alataş, Şefika Akyol, Meral Torun Bayram, Emre Çeçen, Özlem Tüfekçi, Nurşen Belet
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Background: In 2019, newly identified cases of coronavirus were reported and spread rapidly all over the world. Although children are known to be affected by coronavirus disease 2019 (COVID-19) to varying degrees of severity. It is still not known how an immunosuppressive state affects the response to COVID-19 in children and adolescents. The aim of this study was to evaluate clinical characteristics and follow-up results of COVID-19 in the pediatric population with a history of immunocompromise or malignancy.

Methods: Patients with a diagnosis of COVID-19, who were under 18 years of age and had a history of immunosuppressive state, were included in the study. Patients were applied to our outpatient clinic or consulted to our department in a tertiary center between March-December 2020. Relevant data were collected retrospectively from the clinical records of the patients.

Results: We included 15 patients with a median age of 14.9 (0.6 - 17.8) years. Nine patients (60%) were tested because of a symptom and the most common symptom was fever (53.3%, n=8). Seven of the symptomatic patients (46.7%) had a mild disease, the remaining two patients (13.3%) with an end-stage malignancy had critical diseases. One patient, who had Ewing sarcoma, died during the follow-up in the intensive care unit. Lymphocyte (LYM) counts were significantly lower and C-reactive protein (CRP) levels were significantly higher in the patients that needed hospitalization.

Conclusions: We demonstrated that COVID-19 may cause a clinical worsening in those with an end-stage malignancy, therefore, these patients should be protected against this infection carefully and should be monitored closely after the diagnosis. Also, LYM counts and CRP levels can be used as markers to reflect the need for hospitalization in immunocompromised children and adolescents with COVID-19.

ANTIBIOTIC PRESCRIPTIONS IN CHILDREN WITH COVID-19 AND MULTISYSTEM INFLAMMATORY SYNDROME: A MULTINATIONAL EXPERIENCE IN 990 CASES FROM LATIN AMERICA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: To date, there are no comprehensive data on antibiotic use in children with COVID-19 and Multisystem Inflammatory Syndrome (MIS-C).

Methods: Multicenter cohort study from 5 Latin American countries. Children 17 years of age or younger with microbiologically confirmed SARS-CoV-2 infection or fulfilling MIS-C definition were included. Antibiotic prescriptions were collected and factors associated with their use were calculated.

Results: 990 children were included. 7.0% were diagnosed with MIS-C. The prevalence of antibiotic use was 24.5%. MIS-C with (OR = 45.48) or without (OR = 10.35) cardiac involvement, provision of intensive care (OR = 9.60), need for hospital care (OR = 6.87), pneumonia and/or ARDS detected through chest X-rays (OR = 4.40), administration of systemic corticosteroids (OR = 4.39), oxygen support, mechanical ventilation or CPAP (OR = 2.21), pyrexia (OR=1.84), and female sex (OR=1.50) were independently associated with increased antibiotics use. There was variation in antibiotic use across the hospitals.

Conclusions: Our study showed a relatively high rate of antibiotic prescriptions in children with COVID-19 and in particular in those with severe disease or MIS-C. Importantly, we found a significant variation in reasons for prescriptions of antibiotics and type of chosen therapies, as well in hospital practices, highlighting current uncertainties and lack of guidelines for the recognition of bacterial infections in children with COVID-19. Prospective studies are needed to provide better evidence on the recognition and management of bacterial infections in COVID-19 children.

PD038 / #1177

DISTINGUISHING FEATURES BETWEEN PATIENTS WITH MIS-C AND FEBRILE INFECTIOUS DISEASES

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: Multisystem inflammatory syndrome in children (MIS-C) is as a rare complication of SARS-CoV-2 infection in pediatric population. The differential diagnosis is very broad and a wide range of disorders should be excluded before a diagnosis is made. The objective of this survey was to report the distinctions between the MIS-C patients and patients admitted as suspected MIS-C with a different final diagnosis.

Methods: This is a prospective cohort study of consecutive patients admitted as suspected MIS-C until 25th of January 2021 to University Medical Center Ljubljana. The inclusion criteria was suspected MIS-C on referral document. Mann-Whitney test was used to compare continuous data, Chi-square was used to compare categorical data between groups.

Results:

Table 1.

	MIS-C*	Non MIS-C*	P value
Nr of patients	20	13	
Sex: Male;	14 (70)	6 (46)	0,170
Median age at admittance (min;max)	12.4 (4 mo; 17.7 yrs)	7.5 (1.7;17 yrs)	0,017
History of a symptomatic SARS-CoV-2 infection	4 (20)	0 (0)	0,035
Positive serology for SARS-CoV-2 infection at admittance	20 (100)	0 (100)	<0,0001
Performed nasal throat swab PCR for SARS-CoV-2 at admittance.	20 (100)	11 (92)	
Positive result	1 (5.0)	0 (0)	
Fever	20 (100)	12 (92)	0,207
Headache	8 (40)	3 (23)	0,387
Chest pain	6 (30)	1 (8)	0,125
Tachycardia	16 (80)	9 (69)	0,480
Gastrointestinal involvement	19 (95)	11 (85)	0,310
• Abdominal pain	16 (80)	10 (77)	0,832
• Vomiting	11 (55)	8 (62)	0,710
• Diarrhoea	9 (45)	9 (69)	0,172
Cough	7 (35)	1 (8)	0,073
Skin and mucous involvement	14 (70)	6 (46)	0,170
• Rash	12 (60)	5 (38)	0,314
• Palmar/plantar oedema	3 (15)	2 (15)	0,976
• Lip and mouth changes	12 (60)	3 (23)	0,037
• Bilateral conjunctivitis	14 (70)	4 (30)	0,027
Cardiac involvement - myocarditis	19 (95)	0 (0)	<0,0001
Laboratory parameter at admission**			
CRP (mg/L)	140 [29; 341]	137 [28; 231]	0,806
Haemoglobin (g/L)	124 [96; 146]	117 [93; 139]	0,111
Platelets (10 ⁹ /L)	160 [65; 605]	264 [162; 499]	< 0,001
Sodium (mmol/L)	133 [127;141]	137 [132; 143]	0,007
Albumin	39 [29; 48]	41 [26; 48]	0,038
Ferritin	788 [40; 2824]	182 [9; 486]	0,001
N (%) of patients with pathological troponin value	15 (75)	3 (23)	0,0034
Troponin	***820 [126; 4155]	***157 [71; 282]	0,111
Pro-BNP	2943 [12.9; 19224]	548 [10; 1654]	0,034

* n (%) is shown unless stated otherwise **mean value is shown. ***calculated only in patients with positive value

Twenty MIS-C patients and 13 patients, referred as MIS-C and later diagnosed with a different disease were included. Both group characteristics are shown in Table 1. The main differences between the groups in the clinical presentation were older age in the MIS-C group, history of SARS-CoV-2 infection, lip/mouth changes, conjunctivitis and later the presence of myocarditis. The initial inflammatory parameters did not differ between groups, but in the MIS-C group significantly lower values of platelets, sodium and albumins and higher values of troponin, pro-BNP and ferritin were noted at admission.

Conclusions: MIS-C can be a cause of intense inflammation in children with fever. Children with MIS-C had significantly higher frequency of myocardial and mucocutaneous involvement, and among the laboratory features lower platelet count, low sodium and higher ferritin level. Nevertheless, very different diseases can have a similar presentation at onset and attention should be paid to the specifics of the condition.

BRONCHIOLITIS DURING THE SARS COV-2 PANDEMIC

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: Bronchiolitis is a leading hospitalization cause in children <1 year of age, being respiratory syncytial virus (RSV) the main etiology. SARS-CoV-2 bronchiolitis is uncommon. The COVID-19 pandemic has changed bronchiolitis epidemiology with practical disappearance of RSV infections. We intended to characterize bronchiolitis during the pandemic and the role of SARS-CoV-2.

Methods: A prospective study was performed in two pediatric hospitals in Madrid (Spain), from October to December 2020. All bronchiolitis in children <1 year were analyzed. Demographic, epidemiological, clinical and analytical data were collected, and multiple respiratory viruses and SARS-CoV-2 PCR were performed. SARS-CoV-2 bronchiolitis were compared with other etiologies and the incidence of bronchiolitis was analyzed and compared to 2019.

Results: We registered 33 bronchiolitis: 26(78.7%) due to rhinovirus (RV), 5(12.1%) due to SARS-CoV-2 (one coinfection case of both viruses) and 2 of unknown etiology; no cases of RSV were identified. The median age was 99 days (IQR 39-257) and 75.8% were male. SARS-CoV-2 bronchiolitis compared with RV had shorter hospital stay (median 3 days IQR 2.5-3 vs 4 days IQR 2-7; p 0.03). RV bronchiolitis had less fever (OR 0.087; 95%CI, 0.01-0.75; p 0.012) and less diarrhea (OR 0.13; 95%CI, 0.054-0.33; p 0.02). Compared to 2019, there was a significant decrease in bronchiolitis admissions (271 vs 33) with 84.5% being caused by RSV.

Conclusions: The incidence and etiology of bronchiolitis have changed markedly during the SARS-CoV-2 pandemic and deserves further evaluation. Infants with SARS-CoV-2 bronchiolitis have more fever and gastrointestinal symptoms than those with RV, and hospital stay is shorter.

EXCESS BODY WEIGHT ASSOCIATED WITH A NON IMMUNE-INFLAMMATORY PROFILE AND PROLONGED VIRAL SHEDDING IN CHILDREN WITH COVID-19

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 05: COVID CLINICAL

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Background: Excess body weight (EBW) is a highly prevalent condition, identified as a risk factor for severity in viral infections such as influenza, respiratory syncytial virus and, recently, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). We evaluated if children with EBW undergoing SARS-CoV-2 infection had a dysregulated immune response and prolonged viral shedding.

Methods: Observational study conducted in three tertiary hospitals (from April 19, 2020 to December 31, 2020) enrolling hospitalized patients under 19 years old with a positive RT-PCR test for SARS-CoV-2 (n=37). According to the WHO 2006/2007 criteria, patients were classified as EBW (overweight or obesity) or eutrophic. A panel of 18 cytokines and chemokines (pro and anti-inflammatory, and regulatory) were analysed in blood samples at enrolment using Multiplex ELISA. Ten paediatric patients without comorbidities and negative RT-PCR test for SARS-CoV-2 were used as controls. Viral load was measured at diagnosis and RT-PCRs were performed on a weekly basis until the first negative result. Analysis was performed using non-parametric tests. A Spearman's correlation test was employed for clinical and immunological profiles.

Results: Fifteen EBW (40,5%) was related to a higher use of high-flow nasal cannula (P=0.042), but no difference was observed in invasive-mechanical ventilation requirement (P=0.633). No difference was detected in the initial viral load at admission (P=0.622). Prolonged viral shedding was observed in EBW patients, with a median of 13.5 (IQR 9.8-33.0) days, versus a median of 4.0 (IQR 4.0-12.0) days in eutrophic patients (P=0.035). EBW showed an inverse correlation with a pro-inflammatory profile (IL-8, IL-10 and IP-10).

Conclusions: In paediatric SARS-CoV-2 infection, EBW is associated with a prolonged viral shedding and non pro-inflammatory immune profile. This fact might be relevant when determining the optimal quarantine periods.

Clinical Trial Registration: N/A

DEVELOPMENT OF AN ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) FOR ACCURATE AND PROMPT COVID-19 DIAGNOSIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

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Background: There is an urgent need for rapid and accurate COVID-19 diagnosis, to support infection control measures. SARS-CoV-2 contains two main structural antigenic proteins, the spike-(S) and the nucleocapsid-(N) proteins. Virus-cell fusion is mediated by the receptor binding domain-(RBD) on the S1 subunit. Currently, different serological tests for measuring SARS-CoV-2 IgG antibodies use different target antigens, while their sensitivity and specificity remains challenging. Here, we aimed to develop an "in-house" serologic ELISA assay to measure IgG antibodies against SARS-CoV-2 and compare it with currently FDA-approved diagnostic kits.

Methods: Sera (N=45) from patients with confirmed COVID-19, collected 1-14 days from disease onset, were evaluated against SARS-CoV-2 protein antigens using ELISA. Following, mixtures of all potential combinations of protein antigens were evaluated in terms of their antigenicity among patients' sera. Sera from healthy normals, collected before the pandemic, were used as controls. Patients' sera were also evaluated against commercially available IgG ELISA diagnostic kits.

Results: The mixture containing RBD 2.5µg/ml, S2 1µg/ml, N 2.5µg/ml was found the most potent one. Plates were incubated with patients' sera (1/100) and goat anti-human alkaline phosphatase-conjugated IgG antibody (1:3000) was added. The cutoff value for each assay was determined using the mean optical density plus 2 standard deviations of normal controls. The "in-house" ELISA assay displayed 91% sensitivity and 100% specificity, compared to EDI, VIRCELL, NOVALISA and WANTAI IgG ELISA diagnostic kit that displayed 29%, 76%, 49%, 79% and 71%, 83%, 77%, 100% respectively, against the patients' pool tested.

Conclusions: The "in-house" ELISA assay developed here using the mixture of the three SARS-CoV-2 antigens (RBD, S2 and N) as capture antigens displayed comparable and even higher sensitivity and specificity to, otherwise quite reliable, commercially available ELISA diagnostic kits.

REAL-LIFE EVALUATION OF THE PANBIO COVID-19 RAPID ANTIGEN DETECTION TEST IN CHILDREN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

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Background: RT-PCR is considered the gold standard for the diagnosis of COVID-19 and the reference method for the evaluation of SARS-CoV-2 rapid antigen detection tests (RADT). To date, data on children are scarce. We prospectively evaluated the PANBIO COVID-19 Ag RADT(Abbott) using as reference RT-PCR method the cobas®8800 System on nasopharyngeal specimens in children admitted to a tertiary Children's Hospital in Athens during the second pandemic wave.

Methods: The present study was conducted between September, 25th to December, 31st, 2020. On admission, two nasopharyngeal samples were collected, in one nostril each, with a specific swab according to the assay. All RADTs were performed in the next 10 minutes, while the samples used for molecular testing were transferred to one of the National Reference Centres by three daily shipments.

Results: Of the 333 children included 186 (55.9%) were male. Their median age was 4.8 years (0.74-11.1). In total, 31 (9.3%) were PCR (+); 27 (27/31, 87.1%) were symptomatic. The RADT detected 26/31 of the PCR(+) children (sensitivity 83.9%); 96.3% (26/27) of the children with COVID-19 compatible symptoms and 1/4 (25%) of the asymptomatic children. Among PCR (+) children with a negative RAD test two (50%) were asymptomatic. All PCR (-) children had a negative RAD test (specificity 100%). PPV and NPV were 100% and 98.4%, respectively.

	RADT+	RADT-
number of children	26	307
PCR-positive	26	5
✓ COVID-19 symptoms	25	1
✓ Duration of symptoms, median (Q1-Q3)	1 (1-3)	1
PCR-negative	0	302
Ct median (Q1-Q3)	22.1 (16.7-25.8)	32.9 (24.5-35.7)
✓ >34	0	2
✓ 30-34	1	1
✓ 25-29.99	6	1
✓ 20-24.99	8	1
✓ 15-19.99	9	0
✓ <15	2	0

Table 1. COVID-19 symptoms and duration, PCR-positivity and Cycle threshold (Ct) among SARS-CoV-2 RADT positive and negative children

Conclusions: Median duration of symptoms prior to testing was one day (range 0.5-4). and the median PCR Cycle threshold in RADT (+) children was 22.1 (16.7-25.8), while in RADT (-) with positive PCR result was 32.9 (24.5-35.7). Among children with PCR Ct<34, sensitivity was 89.7% (26/29). The RADT of interest is a useful diagnostic tool in symptomatic children with COVID-19 during the first days of the infection.

WHOLE BLOOD HOST RNA-SEQUENCING OFFERS AN IN-DEPTH UNDERSTANDING OF MIS-C AND IDENTIFIES BIOMARKERS WITH DIAGNOSTIC POTENTIAL

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

Heather Jackson¹, Dominic Habgood-Coote¹, Sam Nichols¹, Giselle D'Souza¹, Oliver Powell¹, Enitan Carol², Marieke Emonts³, Ulrich Von Both⁴, Federico Martín-Torres⁵, Pablo Rojo Conejo⁶, Werner Zenz⁷, Maria Tsoia⁸, Katy Fidler⁹, Luregn Schlapbach¹⁰, Michael Carter¹¹, Aubrey Cunningham¹, Victoria Wright¹, Jethro Herberg¹, Jane Burns¹², Myrsini Kaforou¹, Michael Levin¹, On Behalf Of Perform Consortium¹³, On Behalf Of Diamonds Consortium¹

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Background: As the COVID-19 pandemic evolved in early to mid-2020, an increase in cases of children with an unusual febrile illness was observed. This new condition, termed "Multisystem Inflammatory Syndrome in Children" (MIS-C), occurs several weeks after SARS-CoV-2 infection with symptoms including fever, shock and multiorgan failure. Clinical features of MIS-C are overlapping with Kawasaki Disease (KD) in addition to bacterial and viral infections. We aimed to identify the biological differences between MIS-C and other infectious and inflammatory disorders, by comparison of genome wide RNA expression.

Methods: Patients with MIS-C, other inflammatory diseases and bacterial or viral infections were recruited to the EU-funded PERFORM and DIAMONDS studies. Patients were phenotyped using a standardised algorithm. Genome wide RNA sequencing of whole blood was undertaken, and differentially expressed genes identified.

Results: Transcriptomic profiles, generated through RNA sequencing, from 40 children with MIS-C were compared to transcriptomes from patients with definite bacterial and definite viral infections, other inflammatory disorders including Kawasaki disease, and healthy controls. Differential expression analysis and pathway analysis were performed to compare the biological processes upregulated and downregulated in the different conditions. Unsupervised clustering analysis was applied to identify the natural clusters of MIS-C patients in relation to the comparator groups, and to stratify the MIS-C patients into subgroups. A minimal RNA signature with diagnostic potential that differentiated MIS-C from other diseases was identified.

Conclusions: The results from this analysis provide an insight into the pathogenesis of MIS-C and could help to elucidate the reasons for disease manifestation and aid disease diagnosis.

Clinical Trial Registration: Not applicable

TELEMEDICINE IN THE MANAGEMENT OF PEDIATRIC COVID-19: A PILOT STUDY IN COOPERATION BETWEEN A REFERRAL CENTER AND PRIMARY CARE PEDIATRICIANS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

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Background: Hospitals overcrowding, limited personal protective equipment, and transmission between healthcare workers are the main causes of the rapid spread of COVID-19 in hospital settings. Because children have less severe symptoms than adults, we exploited telemedicine (TM) as a main approach to managing subjects younger than 14 years who contacted their primary care pediatrician (PCP).

Methods: We aimed at describing a TM program for the management of suspected pediatric COVID-19 cases in cooperation with PCPs. 269 cases of suspected COVID-19 were discussed through teleconsultation between PCPs and pediatric infectious disease specialists. Those who didn't need hospital assessment were managed at home by PCPs via daily phone- and video-monitoring.

Results: The main reason for teleconsultation from PCPs was case management advice (n=206, 77%). 203 children were tested for COVID-19 and 139 resulted positive (73 males, age 5 years [IQR 1-10]), of which 103 were managed at home via phone-/video-monitoring, 17 received a direct medical visit and discharged at home, and 19 were admitted to the COVID-19 unit. The main symptoms were fever (45%) and cough (25%). 35% were asymptomatic and detected in family clusters. None had severe clinical outcomes.

Conclusions: TM is a reliable tool to limit infection spreading of virus and might reduce the number of unnecessary hospital admissions for COVID-19. With the support of an expert, PCPs can identify at-risk children, select candidates to testing and manage most cases remotely via TM. However standardization of TM approach is needed as well as criteria for hospital admission.

CHARACTERISATION OF THE HOST BLOOD GENE EXPRESSION PROFILES OF CHILDREN WITH COVID-19 AND IDENTIFICATION OF DIAGNOSTIC BIOMARKERS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

Dominic Habgood-Coote¹, Heather Jackson¹, Giselle D'Souza¹, Sam Nichols¹, Oliver Powell¹, Enitan Carrol², Marieke Emonts³, Federico Martín-Torres⁴, Pablo Rojo Conejo⁵, Luregn Schlapbach⁶, Maria Tsolia⁷, Ulrich Von Both⁸, Werner Zenz⁹, Aubrey Cunnington¹, Victoria Wright¹, Jethro Herberg¹, Myrsini Kaforou¹, Michael Levin¹, On Behalf Of Perform Consortium¹, On Behalf Of Diamonds Consortium¹
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Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease-19 (COVID-19), emerged as the cause of a global pandemic in 2019. RNA whole blood profiling of children with COVID-19 can highlight the biological pathways underpinning the host response during disease. In addition, a blood-based host RNA test for the diagnosis of SARS-CoV-2 infection, including asymptomatic and pre-symptomatic cases, capable of distinguishing COVID-19 from clinically similar respiratory infections would be of immense value in managing patients.

Methods: 29 children with COVID-19 were recruited in the DIAMONDS study and underwent whole blood RNA-Sequencing alongside a comparator group of children with definite bacterial (n=48) and non-COVID-19 viral infections (n=44), including other coronaviruses, recruited during the PERFORM study before the COVID-19 pandemic. A further RNA-Seq dataset of 348 patients with definite bacterial infection and 262 with viral infection was employed for the comparison. Raw RNA-Seq data was subjected to quality control, mapping and gene counts were obtained.

Results: Significantly differentially expressed genes that were over- or under-expressed in COVID-19 in relation to phenotypically similar definite bacterial infections and non-COVID19 definite viral infections were identified via models accounting for age and sex. The genes were mapped to biological pathways characterising the host response in COVID-19 disease in children. Feature selection methods were employed to identify a minimal transcriptomic signature, which achieved high sensitivity and specificity in discriminating COVID-19 from other diseases.

Conclusions: The pathways specific to COVID-19 disease elucidate the host response to SARS-CoV-2 infection in children. The minimal gene signature identified could be developed as a diagnostic test exploiting recent significant advances in the field of bio-technology that allow for the development of point-of-need diagnostics.

Clinical Trial Registration: Not applicable

A 5 MINUTES, POWER-FREE, SAMPLE PREPARATION METHOD ENABLING COVID-19 RNA EXTRACTION

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

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Background: The ongoing COVID-19 pandemic highlighted an unprecedented need for rapid diagnostic screening. The gold standard for COVID-19 diagnosis requires a nasopharyngeal swab collection which is subsequently processed with an RNA extraction kit requiring expensive laboratory equipment. Therefore, the diagnosis of COVID-19 in low and middle-income countries (LMIC) is rarely achievable at a point-of-care (POC). To address this need, we developed an innovative method for RNA extraction allowing its use for true POC application.

Methods: The SmartLid™ extraction method utilizes a magnetic lid, designed to work with standard 1.5mL Eppendorf tubes, to transfer magnetic nanoparticles and attached RNA through three sample preparation steps. This is in contrast to all other manual extraction methods which require expensive micropipettes, lab training and electrical power.

Results: A total of six samples spiked with SARS-CoV-2 were analysed by the SmartLid and the gold standard QIAmp Viral RNA. Extraction recovery results showed equivalent performance with an average of 1.4×10^{10} and 3×10^{10} total RNA copies for SmartLid and Qiagen, respectively. Furthermore, nasopharyngeal swab specimens from over 400 patients (ethics 20/HRA/1561; DOCUMAS 20SM5875) were extracted by both methods and tested by the CDC RT-qPCR assays (N1, N2, Rnase P). The SmartLid method achieved 93.9% sensitivity and 99.5% specificity compared to QIAmpViralRNA.

Conclusions: These promising results indicate that the present extraction method can compete very favourably with conventional laboratory-based extraction techniques which require expensive equipment, electricity and incur delays of over 30 minutes. The method so far has received overwhelmingly positive feedback from collaborators, who have tested it in CAT3 laboratory environments, and from visiting clinicians with experience in LMIC diagnostics. Thus, there is a clear interest for implementation both in a domestic clinical/laboratory setting, and LMIC remote POC setting.

LYMPHOPENIA, HIGHER C-REACTIVE PROTEIN AND IMMUNOSUPPRESSION ARE ASSOCIATED WITH COINFECTIONS AND SUPERINFECTIONS IN CHILDREN WITH COVID-19

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

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Background: Coinfections and superinfections may complicate the course of hospitalized patients with COVID-19. We aimed to identify risk factors for these infections in COVID-19, as well as outcomes.

Methods: We recruited paediatric patients <19 years old with COVID-19 from three hospitals (March 2020-February 2021). We sought microbiologically confirmed and clinically significant infections occurring after the confirmation of SARS-CoV-2 infection with reverse transcriptase polymerase chain reaction test. Polymicrobial infections as well as indeterminate PCR and serological tests were excluded. Survival curves were compared using Log-rank test.

Results: 101 inpatients with COVID-19, 26 (25.7%) had other infections. Viral infections were associated with immunodeficiencies ($P=0.015$) and medical complexity ($P=0.045$). Blood infections were associated with immunodeficiencies ($P=0.005$), medical complexity ($P=0.022$) and lymphopenia ($P=0.001$). Rheumatologic conditions were associated with bacterial ($P=0.042$) and fungal ($P=0.039$) infections. A high admission CRP was associated with overall infections ($P=0.004$), particularly bacterial ($P=0.003$) and fungal ($P=0.046$). Overall infections were related to mechanical ventilation and vasoactive drugs, with higher duration of respiratory support ($P=0.048$). Higher mortality was associated with fungal ($P=0.01$), urinary ($P=0.004$) and overall infections ($P=0.016$).

Conclusions: Coinfections and superinfections are related to higher severity in paediatric patients with COVID-19. Previous rheumatologic conditions, immunodeficiencies, medical complexity, as well as lymphopenia and CRP, should be considered as risk factors in clinical practice.

RT-PCR IN ORAL SWABS FOR THE DIAGNOSIS OF COVID-19 IN CHILDREN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 06: COVID DIAGNOSTICS

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Background: Repeated performance of nasopharyngeal swab (NFS) every time a child has COVID-19 compatible symptoms generates anxiety and discomfort in patients and their parents. Although the FNF antigen test is a rapid technique, it is less accurate in children than in adults. RT-PCR in saliva/oral swab has been proposed as an alternative diagnostic procedure. Aims: To evaluate the sensitivity and specificity of 1)RT-PCR in saliva obtained from oral swabs 2)the rapid antigenic test Panbio (Abbott) in NSF for the diagnosis of Covid-19 in children, compared with RT-PCR in NFS.

Methods: Multicenter cross-sectional study carried out in 11 hospitals that includes patients under 16 years of age seen in the emergency room with symptoms compatible with Covid-19 of less than 6 days of evolution. Partial results are reported (50% of the sample). 3 samples were performed in parallel: saliva in a swab and standard culture medium, a swab of the oral mucosa, under the tongue, between the gums and molars and between gums and lips for RT-PCR, FNF for rapid antigenic, and FNF for RT-PCR that were used as "gold standard".

Results: 554 patients were recruited. 8.7% were PCR+ in NFS, and 7.2% in oral swab. The agreement was kappa=0.83. The sensitivity(S) of saliva compared to NFS was 77% and the specificity(SP) was 99%, the positive predictive value (PPV) was 93% and the negative predictive value (NPV) was 98%. For Ct-FNF<35, kappa of oral swab was 0.87. The yield of Ag NFS was: prevalence 5.6, kappa=0.71, S 60%, SP 100%, PPV 94%, NPV 96%. 6/11 patients with NFS+ and saliva- had Ct in NFS ≥ 34 (3/6 IgG +, 3 serology N/A).

Conclusions: RT-PCR in oral smears can be an alternative for the diagnosis of Covid-19.

ANTI-NMDAR RECEPTOR ENCEPHALITIS: IS IT DIFFERENT WHEN POST-INFECTIOUS?

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

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Title of Case(s): ANTI-NMDAR RECEPTOR ENCEPHALITIS: IS IT DIFFERENT WHEN POST-INFECTIOUS?

Background: Anti-NMDAr encephalitis is an immune-mediated disorder. A typical presentation includes acute neuropsychiatric features, abnormal behavior, movement disorder and autonomic instability. Self-antibodies against NMDA receptors in the brain can be created after trigger mechanisms such as infectious agents and tumors. A retrospective study between 2012 and 2020 was conducted. Demographic, clinical, complications data, treatment and outcome were analyzed

Case Presentation Summary: We report 12 cases, nine females and three males, with a median age of 8,7 years (min-17 days, max-16 years). The most common manifestations were behavior changes (8/12), psychiatric disorders (8/12), movement disorders (10/12), insomnia (8/12) and seizures (5/12). NMDA antibody was positive in CSF (12) and serum (10). An infectious agent was identified in 5 cases: HSV1 (2), HSV2 (1), *Mycoplasma pneumoniae* (1), HHV7 (2) and adenovirus (1). In one case, it was identified ovarian teratoma. The other four cases were considered cryptogenic, however, infections were investigated only in two of these cases. MRI and CSF were normal in cryptogenic cases, but in the other cases had abnormalities related to infectious disease. Electroencephalography was abnormal in 9 patients, most of them showing slower activity. Treatment included immunoglobulin in all patients, intravenous methylprednisolone (10), rituximab (9) and plasmapheresis (4). Cyclophosphamide (2) was used with a refractory response to the previous treatment. Sequelae was reported more frequently in post-infection cases (4/7): spastic tetraplegic cerebral palsy, behavioral disorders and learning difficulties.

Learning Points/Discussion: Infectious agents, such as HSV and *Mycoplasma*, should be investigated in all NMDAR encephalitis. It is important to have an early suspicion and recognition of this disease. Presenting this case review, the authors intend to raise the discussion about infection as a trigger to autoimmune response against NMDA receptors in predisposed patients.

VARICELLA ADMISSIONS IN CHILDREN AND ADOLESCENTS IN PORTUGAL

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

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Background: Varicella is a common, usually benign, and auto-limited disease in children, but can lead to severe complications and hospitalization. With this study, we aim to analyze all varicella hospitalizations in order to provide epidemiological information to help outlining preventive policies.

Methods: We assessed all varicella hospitalizations in children from 0 to 17 years of age, from 2000 to 2015, in mainland public Portuguese hospitals, using a Portuguese administrative database. Seasonality, geographic distribution, severity, complications, risk factors and use of diagnostic and treatment procedures were analyzed by age groups.

Results: A total of 5,120 hospitalizations were registered, with an annual rate of 17.3 hospitalizations/100,000 inhabitants. Higher number of hospitalizations occurred during the summer period and in Southern regions. The median length of stay was of four days. We found a high rate of severe complications, mostly dermatological (19.6%), neurological (6.0%) and respiratory (5.1%). Of the total of patients, 0.8% were immunocompromised and 0.1% were pregnant. Total direct hospitalization costs during the 16-year period were estimated to be 7,110,719€, with a mean annual cost of 444,419.92€.

Conclusions: This first national study provides useful epidemiological data to evaluate the relevance of including the varicella-zoster vaccine in our National Vaccination Program.

THE LONG-LASTING IMPACT OF INVASIVE MENINGOCOCCAL DISEASE (IMD) – MAPPING THE COMPREHENSIVE RANGE OF SEQUELAE IN IMD SURVIVORS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

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Background and Objective: Invasive meningococcal disease (IMD), an uncommon severe disease, can cause devastating permanent disability in survivors. While severe, physical/neurological and short-term sequelae are well-recognized, long-term and other wide-ranging forms of IMD sequelae are less well-described. This study aims to 1) map the comprehensive range of IMD sequelae of varying severity; and 2) provide a systematic approach to incorporating sequelae impact relevant to economic evaluation and decision-making.

Methods: Medline/Embase were searched for observational (OS) and health economic (HE) IMD studies (from 2001-2020). Sequelae reported in ≥ 2 OS were compiled in a comprehensive map, while sequelae in ≥ 2 OS and ≥ 2 HE studies were selected for economic evaluation inclusion. As fewer studies report psychological/behavioral sequelae, a lower threshold was used i.e., reported in ≥ 1 OS for map, and ≥ 1 OS plus ≥ 1 HE for economic evaluation selection.

Learning Points/Discussion: We identified 66 OS and 34 HE studies reporting IMD sequelae across 22 industrialized countries, with majority of OS from the Netherlands (27%) and majority of HE from Canada (24%). Among OS/HE studies, respectively, 56% / 85% reported physical, 77% / 82% reported neurological and 30% / 21% reported psychological/behavioral sequelae. Using the pre-defined criteria, 44 sequelae were included in the comprehensive map: 11 physical, 19 neurological and 14 psychological/behavioral (Figure), among which 18 were selected for economic evaluation (4 physical, 10 neurological and 4 psychological/behavioral). This is the first study to systematically characterize all published observed IMD sequelae of varying severity, increasing knowledge of IMD's humanistic burden. The considerable burden on survivors, both short-term and long-term, is often not fully captured, and it is likely that psychological/behavioural sequelae may take longer and more complex to be observed and reported and lead to underestimation of IMD's long term impact.



4CMENB VACCINE IMPACT AND EFFECTIVENESS AGAINST MENINGOCOCCAL DISEASE AND GONORRHOEA IN A WORLD FIRST INFANT, CHILD AND ADOLESCENT PROGRAM IN SOUTH AUSTRALIA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

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Background: In a world-first, a meningococcal B (MenB) immunisation program was introduced in South Australia (SA) for infants, children (6 weeks to < 4 years of age from 01 October 2018) and adolescents (15-20 years of age from 01 February 2019). We aimed to evaluate coverage, vaccine impact on meningococcal B disease, and vaccine effectiveness (VE) against meningococcal disease and gonorrhoea following program introduction.

Methods: Coverage was estimated using the Australian Immunisation Register. Vaccine impact against meningococcal disease was assessed separately for the infant and adolescent program using Poisson regression. Vaccine effectiveness (VE) against MenB disease and gonorrhoea was estimated using both screening and case-control methods.

Results: 4CMenB coverage two-years following program commencement was 91% for two-doses and 79% for three-doses in infants. Coverage one-year following the adolescent program was 74% for one-dose and 66% for two-doses in adolescents. Two-years post infant and one-year post-adolescent program introduction there was a 60% (aIRR=0.40; 95%CI 0.23-0.69) and 61% (aIRR=0.39; 95%CI 0.21-0.74) reduction respectively in meningococcal B disease. VE was 91.5% (screening-method) and 95.7% (case-control) for the childhood program (two-years) and 100% for the adolescent program (one-year). VE against gonorrhoea in adolescents was 29.5% (0-55.9%;p=0.144) at one year.

Conclusions: 4CMenB vaccine shows sustained effectiveness against MenB disease in infants two years post-introduction and one-year post introduction in adolescents. The high VE is likely due to high coverage in the target age groups and the close antigenic match of the disease-associated MenB strain in SA (CC41/44; New Zealand (NZ) epidemic strain) and 4CMenB.

'B PART OF IT' SCHOOL LEAVER STUDY: A REPEAT CROSS-SECTIONAL STUDY TO ASSESS THE IMPACT OF INCREASING POPULATION COVERAGE WITH MENINGOCOCCAL B (4CMENB) VACCINE ON CARRIAGE OF NEISSERIA MENINGITIDIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

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Background: In South Australia, over 28,000 senior school students were vaccinated with 4CMenB during a cluster randomised controlled trial in 2017/18. In February 2019, a state-funded program commenced for 15-20-year-olds. This study aimed to assess the impact of increasing 4CMenB vaccine coverage on carriage prevalence in school leavers (aged 18-19 years), over three years.

Methods: This study was a repeat cross-sectional study assessing carriage prevalence in 2018, 2019, and 2020. An oropharyngeal swab was obtained from each school leaver and a risk factor questionnaire completed. Vaccination history was confirmed for all participants.

Results: The final analysis included 4104 participants in 2018, 2690 in 2019, and 1338 in 2020. 4CMenB vaccination coverage increased from 43% in 2018, to 79% in 2020. Over 2018, 2019, and 2020, disease-associated meningococcal carriage prevalence (groups A, B, C, W, X, or Y) was 5.5%, 5.0%, and 5.1% respectively ([2020 vs 2018], adjusted Odds Ratio [aOR] 0.96 [95% CI, 0.71 to 1.30]). No reduction was seen for meningococcal group B carriage, with prevalence of 2.1% in 2018, 2.4% in 2019, and 3.2% in 2020, (2020 vs 2018, aOR 1.14 [95% CI, 0.69 to 1.89]). In vaccinated versus unvaccinated participants, there was little difference in disease-associated meningococcal carriage prevalence (vaccinated [5.1%, 252/4904], unvaccinated [5.4%, 175/3228], aOR 0.85 [95% CI, 0.69 to 1.05]), or group B carriage (vaccinated [2.4%], unvaccinated [2.3%], aOR 0.91 [95% CI, 0.67 to 1.24]).

Conclusions: Increased 4CMenB uptake in adolescents was not associated with a decline in disease-associated, or group B meningococcal carriage. 4CMenB immunisation programs should focus on direct (individual) protection for the most vulnerable groups.

Clinical Trial Registration: Prospectively registered at ClinicalTrials.gov:NCT03419533 Funding: Supported by GlaxoSmithKline Biologicals SA.

NOVEL GENETIC RECOMBINATIONS IN HUMAN PARECHOVIRUS TYPE 3 IN NEONATES AND YOUNG INFANTS WITH CENTRAL NERVOUS SYSTEM INFECTIONS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

Lamprini Posnakoglou, Elizabeth- Barbara Tatsi, Tania Siahianidou, Vasiliki Syriopoulou, Athanasios Michos

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Background: Limited recent data have been published regarding the molecular epidemiology of Human Parechoviruses (HPeVs) in Europe. 19 different HPeV genotypes have been identified. These genotypes involved in different clinical manifestations ranging from gastroenteritis and respiratory illness to sepsis-like syndrome. HPeV-1, HPeV-2 and HPeV-3 are the most common circulating genotypes. Gastroenteritis and respiratory illness are mainly due to HPeV-1 and HPeV-2 infections, while HPeV-3 is associated with more severe clinical presentation. This study investigates the molecular epidemiology, as well as the genetic evolution of HPeVs involved in pediatric central nervous system infections.

Methods: Cerebrospinal fluid (CSF) from children (0-16 years) with suspected Meningitis/Encephalitis (ME), who were hospitalized during 10/2017-09/2020, was initially tested using a multiplex PCR platform. CSF, pharyngeal swabs, and stools specimens from HPeV positive neonates children for in CSF, were further processed with genotyped employing Sanger sequencing. Phylogenetic and recombination analysis were performed using bioinformatic tools.

Results: A viral pathogen was detected in 92/330 (27.9%) and HPeV was 6/92 (6.5%) of them. The median age of the HPeV positive neonates was 0.6 months (IQR: 0.5-1.6) and 83.3% (5/6) were male. All neonates presented with acute febrile disease, 3/6 presented with sepsis-like illness, 3/6 with rash and 1/6 with seizures. CSF analysis of HPeV positive neonates found absence of pleocytosis (median value: 5 cells/mm³; IQR: 1.5-10.3). In all 15 available specimens, genotyping revealed a HPeV-3 infection. Three novel recombinant HPeV-3 strains were detected. All children recovered without obvious sequelae.

Conclusions: Novel genetic recombinations in the *VP1* gene unveils the continuous evolving dynamic of this virus. Active enhanced surveillance of circulating HPeV genotypes with molecular methods will reveal the real clinical burden of infection, including possible outbreaks.

USE PLASMA-BASED MICROBIAL CELL-FREE DNA SEQUENCING (KARIUS TEST) IN THE DIAGNOSIS OF MENINGITIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 07: CNS DISEASE

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Background and Objective: Leptospirosis is a zoonosis; humans become infected through direct/indirect contact with urine of infected animals. It can cause a wide range of symptoms from flu-like illness to severe disease complicated by bleeding and respiratory symptoms. Weil's disease, the most recognizable form of severe leptospirosis, can progress to liver and kidney failure, carditis and meningoencephalitis. Diagnosis relies on serologic tests with poor sensitivity. Here we describe a case of *Leptospira* meningitis diagnosed by KARIUS TEST which detects microbial cell-free DNA (mcfDNA) of bacteria, viruses, fungi and parasites in the plasma.

Methods: 4-yr-old living in a family-farm with 7-d history: fever, irritability, decreased activity and slurred speech. Two family dogs died the prior week. Patient played in a sandbox closed to a mango-grove. PE significant for ill appearing, tachycardic, tachypneic, febrile, slurred speech. injected conjunctiva, erythematous pharynx. No rash, jaundice, hepatosplenomegaly or meningismus. Laboratory: elevated CRP, transaminitis, sterile pyuria/hematuria, CSF pleocytosis, normal protein and glucose. Started on vancomycin and ceftriaxone. CSF PCRs and cultures were negative. KT detected *Leptospira interrogans* 3230 molecules/ul. Patient completed 10d IV ceftriaxone with complete recovery. *Leptospira* IgM (EIA) was negative.

Learning Points/Discussion: Although there are <150 cases of Leptospirosis annually in the USA, the worldwide incidence is more than 1,000,000 cases with 59,000 deaths. Leptospirosis is likely underdiagnosed. Detection of mcfDNA by the Karius Test is an invaluable non-invasive tool in the diagnosis of infectious diseases. KT could be utilized when seeking diagnosis of CNS, cardiac and osteoarticular infections among others, in which long term antibiotics is required to eradicate the causative pathogen.

TABLE-1 Laboratory results

Blood cell count

WBC 8.3 10k/*ul* (76 % neutrophils, 8 % bands, 16 % monocytes)

Hemoglobin 10.7 gm/dl

Hematocrit 31.9 %

Platelets 147 10k/*ul*

Sedimentation rate 55 mm first hour

Spinal fluid

WBC 260 (22 % segmented, 60 % lymphocytes, 18 % monocytes)

Protein 39 mg/dl

Glucose 43 mg/dl

Gram stain negative

Culture negative

Meningoencephalitis PCR: negative

Respiratory panel PCR negative

Chemistry

Na	135	mmol/L
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K	4.3	mmol/L
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Cl	101	mmol/L
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CO2	23	mmol/L
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BUN	15	mg/dl
-----	----	-------

Cr	0.5	mg/dl
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Glucose	80	mg/dl
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ALT	70	IU/L
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AST	66	IU/L
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CHANGES IN EPIGENETIC PROFILES THROUGHOUT EARLY CHILDHOOD AND THEIR RELATIONSHIP TO THE RESPONSE TO PNEUMOCOCCAL VACCINATION

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 08: PNEUMOCOCCUS

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Background: Pneumococcal infections are one of the major causes of high morbidity and mortality in young children, which often show poor responses to vaccines and are at greatest risk of developing life-threatening disease. Changes in the immune system are thought to increase susceptibility to infection, and emerging evidence suggests a key role for epigenetics in the regulation of the immune system in health and disease. The aim of the study is to investigate epigenetic changes in young children over time and to understand the relationship between the epigenome and the immune response to pneumococcal vaccination.

Methods: DNA samples from 24 healthy children who have received a booster dose of the 13-valent pneumococcal conjugate vaccine (PCV-13) at 12 months of age were collected at 12 and 24 months. The epigenetic profile from these participants was measured at both time-points using the Illumina Methylation 450K assay measuring the methylation state of over than 450K CpGs sites, to assess for differences over time and between high and low vaccine responders

Results: Our analysis revealed 721 significantly differentially methylated positions between 12 and 24 months (FDR < 0.01), with significant enrichment in pathways involved in the regulation of T cell activation and proliferation and cell-cell adhesion. Comparing high and low vaccine responders, we identified differentially methylated CpG sites (P value < 0.01) associated with *HLA-DPB1* and *IL6*.

Conclusions: Overall these data describe epigenetic changes that occur during early childhood, and link epigenetic features to the regulation of the childhood antigen-specific antibody responses to pneumococcal vaccination.

Clinical Trial Registration: Oxfordshire Research Ethics Committee (Reference number 11/SC/0473)

PNEUMOCOCCAL SEROTYPES 19A AND 6C CARRIAGE STABILIZES IN BELGIAN CHILDREN ATTENDING DAY-CARE CENTRES (DCC) 1 YEAR AFTER THE PCV10-TO-PCV13 VACCINE SWITCH

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 08: PNEUMOCOCCUS

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Background: In summer 2019, the Belgian infant pneumococcal conjugate vaccine (PCV) programme switched back to PCV13 after 4 years of PCV10 which is monitored by a nationwide nasopharyngeal (NP) cross-sectional carriage study running since January 2016 in healthy children (6-30 months) attending day-care centres (DCC). This study demonstrated continued increase of pneumococcal serotypes 19A and 6C until the fourth collection period.

Methods: During 5 seasonal collections, a single NP-swab was taken between 760-1100 children. Demographics, clinical characteristics and vaccination status were collected through a questionnaire. *S. pneumoniae* (SP) was cultured, screened for antimicrobial non-susceptibility, and serotyped by Quellung reaction. SP-carriage proportions based on culture-positives between period 4 (P4) and period 5 (P5) are presented.

Results: In P5 (Nov2019-July2020), 1001 children were sampled, 92.5% before the start of the SARS-COV2 pandemic in Belgium. The proportion of children age-appropriately vaccinated exclusively with PCV10 decreased from 93.0%(P4) to 71.5%(p<0.001). 702 randomly selected samples were analysed by culture, 474/702(67.5%; 70.1% in P4) carried SP. PCV13-serotypes were present in 82/474(17.3%; 16.8% in P4) samples. Carriage of the most frequent PCV13-vaccine serotype 19A did not further increase(13.7%; 13.4% in P4); a trend also observed for the most frequent non-vaccine serotypes 6C(16.2%; 16.8% in P4) and 23B(15.2%; 16.2 in P4). Antimicrobial non-susceptibility for penicillin (16.5%; 19.4% in P4), tetracycline(22.4%; 25.8% in P4), erythromycin(25.5%; 26.0% in P4), and non-susceptibility to at least one antibiotic(41.8%; 47.5% in P4) did not change significantly over the two periods. However, non-susceptibility to cotrimoxazole decreased significantly from 20.7%(P4) to 12.9%(p=0.001).

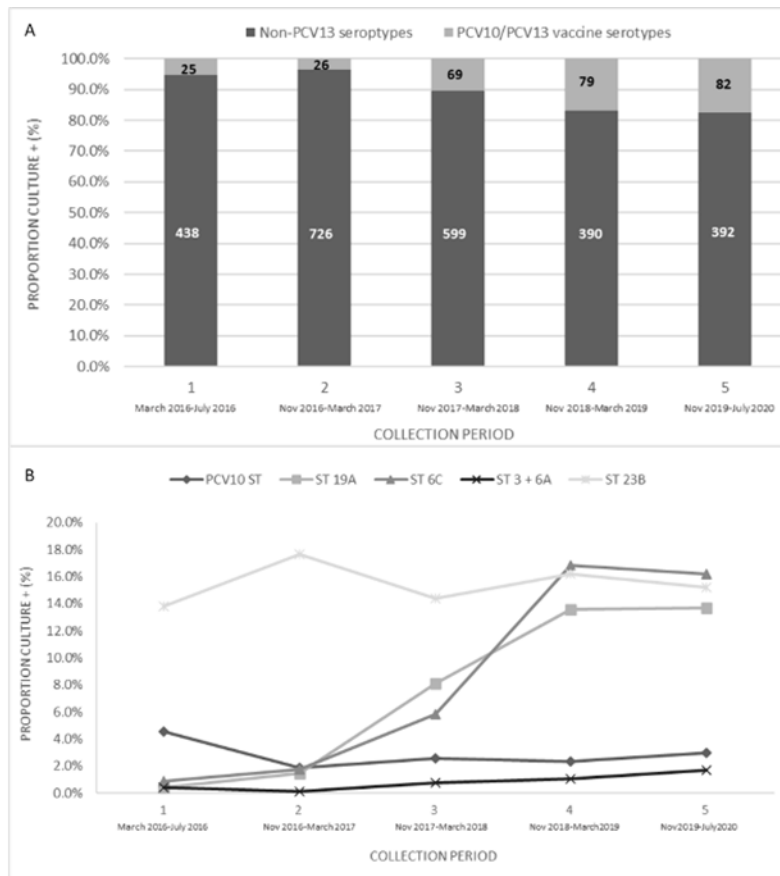


Figure 1. Carriage of *S. pneumoniae* (Sp) among children attending day-care centres in the consecutive collection periods; A – Grey parts on the top: culture-based carriage of PCV10/13 vaccine serotypes, black part on the bottom: culture-based carriage of non-vaccine serotypes; B – Culture-based: carriage of PCV10 serotypes (black with diamond), ST 19A (grey with square), ST 6C (dark grey with triangle), ST 3+6A (black with cross) and ST 23B (light grey with cross).

Conclusions: In Belgian children attending DCC, carriage of pneumococcal serotypes 19A and 6C stabilized at high level after 3 years of increase. Any future trend will need further continuation of this nationwide NP-carriage study to be observed.

Clinical Trial Registration: 0000000000

PREVALENCE OF NASOPHARYNGEAL PNEUMOCOCCAL CARRIAGE IN CHILDREN IN TURKEY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 08: PNEUMOCOCCUS

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Background: Streptococcus pneumoniae is one of the most frequent causes of morbidity and mortality in children. The carriage rate of S. pneumoniae is an important factor for the host and the spread between individuals. Since 2008, pneumococcal conjugate vaccine has been routinely used for children in Turkey (firstly pneumococcal conjugate vaccine-7, switched to pneumococcal conjugate vaccine-13 in 2011). The objective of this study was to determine the age-specific prevalence of S. pneumoniae carriage in children.

Methods: This is a prospective multicenter study performed in 9 different cities of Turkey. The presence of S. pneumoniae from nasopharyngeal samples was detected using the polymerase chain reaction assay.

Results: 1009 children (512 girls, 497 boys) aged between 1 month and 18 years, were enrolled. The overall carriage was 18.1%. The highest carriage was detected in 1-3 years (29.2%) and 4-6 years (26.7%) age groups and was higher than other age groups ($p < 0.01$). The carriage rate was 18.9% below one year, 17.4% in 7-10 years, 15.5% in 11-14 years, and 7.8% in 15-18 years. Previous month antibiotic use reduce the carriage rate (OR: 0.45; 95%CI: 0.26-0.79; $p < 0.05$) and active smoking among adolescents increase the carriage rate (OR: 1.45; 95%CI: 1.03-2.06; $p < 0.05$).

Conclusions: Nasopharyngeal carriage rate was 18% among children in Turkey and higher in children below 5 years of age. Further studies needed to evaluate serogroup distribution of carriage isolates and serotype replacement, if available.

ETIOLOGY OF CLINICAL COMMUNITY-ACQUIRED PNEUMONIA IN SWEDISH CHILDREN AGED 1-59 MONTHS WITH HIGH PNEUMOCOCCAL VACCINE COVERAGE – THE TREND STUDY.

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 08: PNEUMOCOCCUS

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Background: Immunization with pneumococcal conjugate vaccines (PCV) has decreased the burden of community-acquired pneumonia (CAP) in children and led to a shift in CAP etiology. There is a need for new studies on CAP etiology in different settings to improve our understanding of the disease and guide the antimicrobial treatment.

Methods: The Trial of Respiratory infections in children for ENhanced Diagnostics (TREND) etiology study was a prospective observational study at a pediatric hospital in Stockholm, Sweden, enrolling children aged 1-59 months with clinical CAP according to the World Health Organization (WHO) criteria. Children with rhonchi and indrawings received inhalation with a bronchodilator and were then reevaluated. C-reactive protein and nasopharyngeal aspirates for real-time PCR were collected from all children. Etiology was defined according to an a priori defined algorithm based on microbiological, biochemical and radiological findings.

Results: 327 children were included. The most commonly identified pathogens were *Streptococcus pneumoniae* (55%), rhinovirus (48%), *Haemophilus influenzae* (44%) and respiratory syncytial virus (39%). The novel TREND etiology algorithm classified 8 (2%) as bacterial, 19 (6%) as mixed viral-bacterial, 236 (72%) as viral, two (0.6%) as atypical bacterial, 63 (19%) as undetermined. The proportion of bacterial and mixed viral-bacterial etiology were 3% and 7%, when excluding children responding to bronchodilator challenge, which increased to 19% and 39%, when restricting the cohort to children with radiographic determined CAP (n=36).

Conclusions: The TREND algorithm classified the majority of episodes of clinical CAP in children aged 1-59 months as viral etiology, whereas bacterial and atypical bacterial etiologies were uncommon. Defining CAP in children is challenging, and the WHO definition of clinical CAP is not suitable for use in children immunized with PCV as it would result in significant antibiotic over prescription.

Clinical Trial Registration: Clinical trial registration: ClinicalTrials.gov NCT03233516

STAPHYLOCOCCUS AUREUS COMMUNITY-ACQUIRED PNEUMONIA IN CHILDREN AFTER PNEUMOCOCCAL 13-VALENT VACCINATION (2008-2018): EPIDEMIOLOGY, CLINICAL CHARACTERISTICS, AND OUTCOMES (NACSAPED STUDY)

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 08: PNEUMOCOCCUS

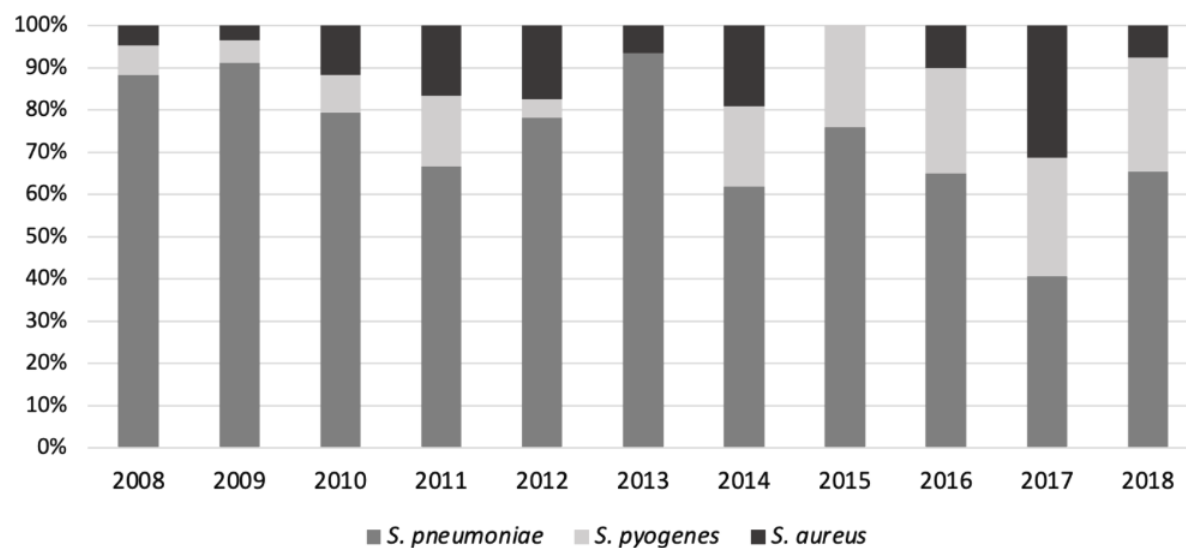
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Background: After introducing pneumococcal vaccination, the epidemiology of community-acquired pneumonia (CAP) in children has changed. Thus, the prevalence of non-pneumococcal bacteria, such as *Staphylococcus aureus*, may be increasing. Pneumococcal 13-valent vaccination was implemented in the Regional Immunization program of Madrid in 2010. We aimed to describe the epidemiology and characteristics of pediatric *S. aureus* CAP (SA-CAP) in recent years.

Methods: Retrospective multicenter study including patients <17 years with bacterial CAP (*S. aureus*, *Streptococcus pneumoniae*, and *Streptococcus pyogenes*) admitted in 5 tertiary hospitals in Madrid (Spain) during 2008-18. The analysis is focused on the characteristics and epidemiology of SA-CAP.

Results: 34/313(10.9%) bacterial pneumonia were SA-CAP. The prevalence of SA-CAP slightly increased($p=0.026$), from 4.7% in 2008 to 7.7% in 2018(Figure). The median age of SA-CAP was 8.6 months. 10/34(29.4%) were methicillin-resistant(MRSA) and 4/32(12.5%) clindamycin non-susceptible. 17(50%) patients developed complications: 16(47.1%) pleural effusion and 2(5.9%) lung necrosis. 21/34 (61.8%) children were admitted to the intensive care unit (PICU). Non-invasive and invasive mechanical ventilation was initiated in 10/34 (29.4%) and 3/34 (8.8%), respectively. Compared to methicillin-susceptible SA-CAP, MRSA-CAP was more common in males (88.9% vs. 48%, $p=0.033$) and patients with underlying diseases (66.7% vs. 20%, $p=0.010$).



Conclusions: The prevalence of SA-CAP in children slightly increased from 2008 to 2018. SA-CAP is severe and affects mainly infants. Almost one of every three SA-CAP was MRSA, with a high prevalence of clindamycin non-susceptibility (12.5%), especially among MRSA (22.2%). In our population, all patients with SA-CAP survived. Ongoing surveillance of CAP's etiology in children seems important to describe changes and adapt antibiotic guidelines if required.

STREPTOCOCCUS PNEUMONIAE INVASIVE INFECTIONS IN CHILDREN WITH SICKLE CELL DISEASE IN THE POST PCV10/13 ERA, THE BACT-SPRING STUDY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 08: PNEUMOCOCCUS

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Background: Sickle Cell Disease (SCD) children are at high risk of invasive bacterial infections (IBI), responsible of high mortality and morbidity. Penicillin prophylaxis, vaccination against *Haemophilus influenza-B* and *Streptococcus pneumoniae* (Sp) have changed its epidemiology. Through the collaborative Sickle Cell Disease Pediatric Research about Infections Group (SPRING), we aimed to describe Sp-IBI in children with SCD in Europe in the post Pneumococcal Conjugated vaccine 10/13 valent era (PCV10/13).

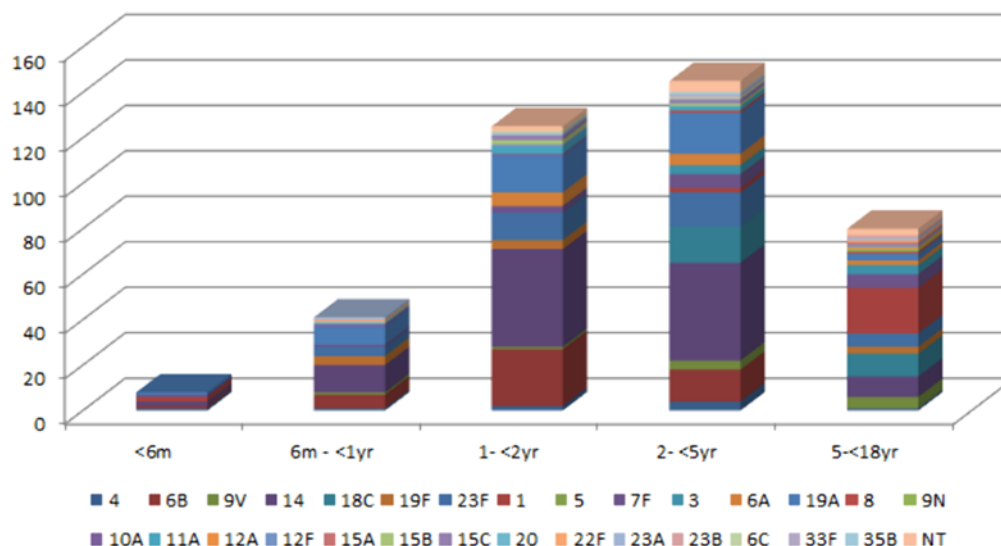
Methods: Twenty-seven centres in 5 European countries (France, Spain, Belgium, UK, Portugal) included SCD patients <18 years with an IBI, defined as positive culture/PCR from a normally sterile fluid (cerebrospinal fluid, blood, joint fluid, pleural fluid, deep surgical specimen), excluding urine tract infections, from 2014 to 2019. Demography, preventive therapies, IBI clinical and microbiological data were collected. Sp-IBI were analysed separately.

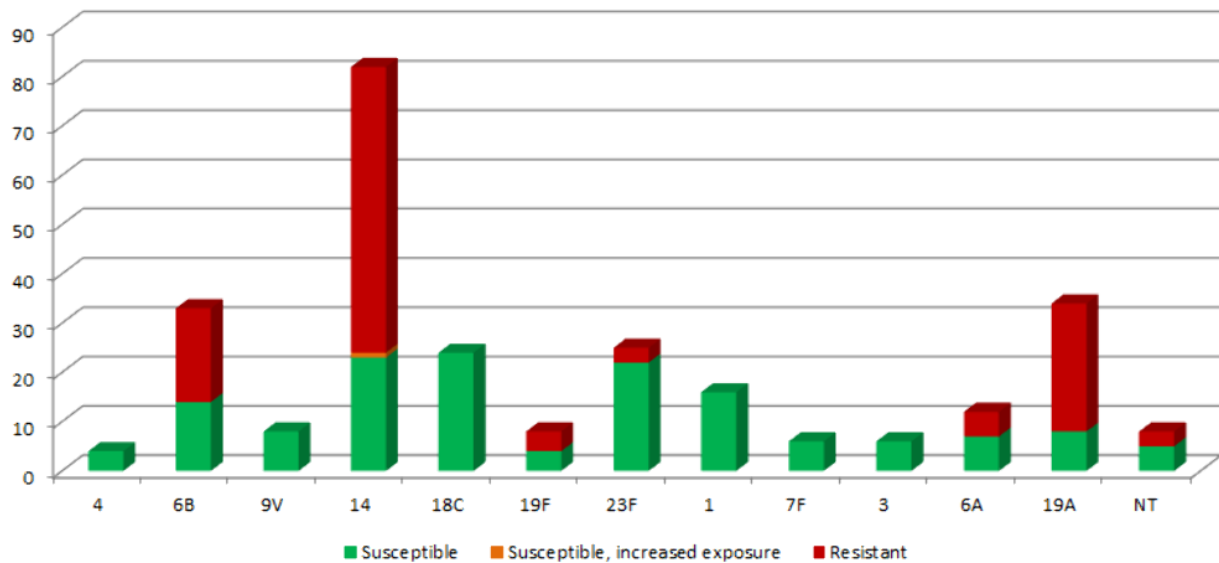
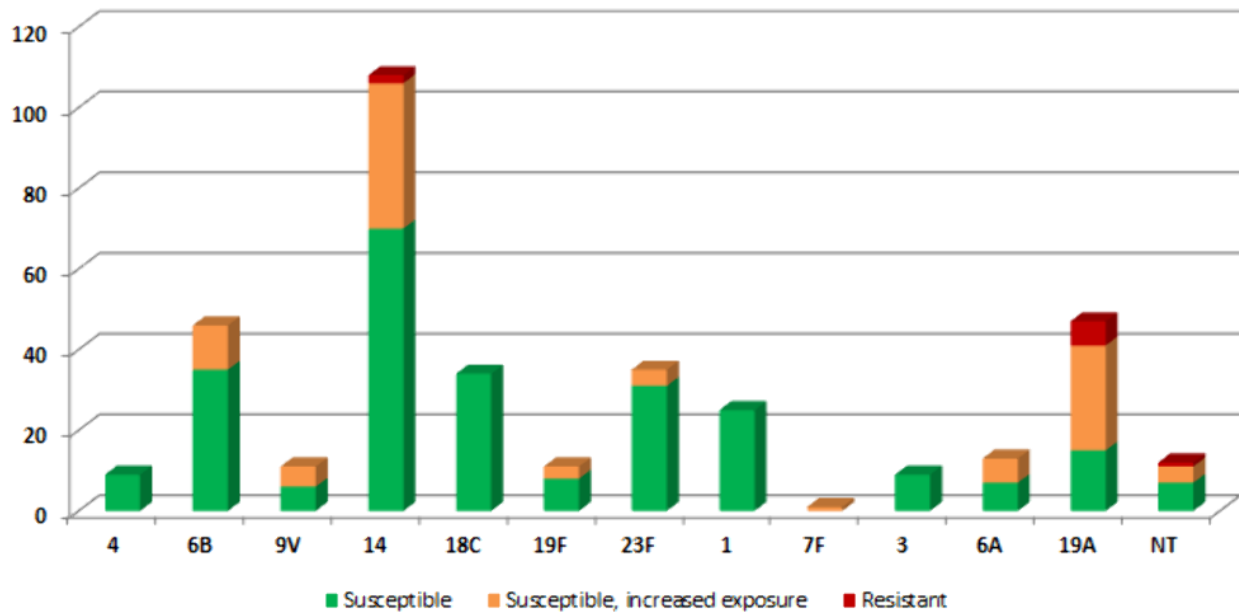
Results: From 219 IBI, 181 were children without hematopoietic-stem-cell transplantation. There were 32/181(17%) Sp-IBI, 2nd etiology after *Salmonella* (44/181(24%)). From 19 available serotypes, 7 were included in vaccines. Sp-IBI led to more severe syndromes. Two children with Sp-IBI died: 7 year-old girl with Sp-23A bacteraemia, whose antibiotic prophylaxis stopped at 5 years-old (national guideline) and 6 year-old boy on antibiotic prophylaxis, with Sp-19F meningitis (included in PCV10/13 and PV23), who had received a single dose of PCV13. Mortality tended to be higher in Sp than other IBI (2/32 vs 1/149, p=0.08, Table 1).

Table 1: *Streptococcus pneumoniae*-IBI compared to other IBI in SCD children

	Strep. pneumoniae IBI n=32	Other IBI n=149	p
Female, n(%)	17 (53,1%)	79 (53,0%)	ns
Median age (y) [IQR]	7,8 [2,7-11,9]	7,8 [2,8-11,9]	ns
Phenotype SS	31 (96,9%)	129 (86,6%)	ns
CLINICAL SYNDROMES			
Meningitis	15 (46,9%)	2 (1,3%)	0,0001
Primary bacteremia	10 (31,3%)	53 (35,6%)	ns
Pneumonia	5 (15,6%)	8 (5,4%)	0,08
Osteomyelitis	1 (3,1%)	54 (36,2%)	0,0001
Others	1 (3,1%)	32 (21,5%)	0,01
EVOLUTION			
Death	2 (6,3%)	1 (0,7%)	0,08
With sequella	5 (15,6%)	23 (15,4%)	ns
Without sequella	25 (78,1%)	125 (83,9%)	ns
Pneumococcal vaccination completed for age at IBI	25 (78,1%)	90 (60,4%)	0,07
With antibioprophylaxis when IBI	27 (84,4%)	111 (74,5%)	ns
Streptococcus pneumoniae serotypes and vaccinal inclusion n=19 (59,4%)	19F (n=1)* 17F (n=3)^ 9N (n=1)^ 12F (n=1)^ 22F (n=1)^ 15A (n=1) 23A (n=1) 23B (n=3) 24F (n=6) 35F (n=1)	N/A	
*in PCV10/13, PV23			
^in PV23			

Conclusions: *Streptococcus pneumoniae* IBI have considerable morbidity and mortality in SCD children, with more severe syndromes and trends to higher mortality than other IBI, even in the PCV10/13 valent era. Reflexion about the best age to stop antibiotic prophylaxis and to assure a complete vaccinal coverage are crucial in *Sp*-IBI prevention. New PCV with more serotypes included could be capital for SCD children.





Conclusions: Incidence of invasive pneumococcal infection is the highest in children < 5 years of age. Penicillin susceptibility, increased exposure and macrolide resistance were mostly associated with serotypes 14 and 19A. Serotype 14 is covered by both vaccines whereas serotype 19A is covered by 13-valent vaccine only.

OPTIMISATION OF METHODS FOR A HUMAN INFECTION MODEL FOR GROUP B STREPTOCOCCUS (THE TIMING STUDY): A PILOT PROSPECTIVE COHORT STUDY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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Background: The development of a controlled human infection model (CHIM) for Group B Streptococcus (GBS) will advance our understanding of host immunity and pathogen interaction, and should increase the feasibility of GBS vaccine efficacy trials. There are a number of areas which require further investigation to optimise GBS CHIM, including how colonisation changes in individuals over time.

Methods: We recruited non-pregnant women of child-bearing age for screening then two-weekly follow-up visits (7 follow-up visits). At each visit, rectal and vaginal swabs were taken. These were cultured for GBS using LIM broth and chromogenic agar, confirmed by MALDI-TOF mass spectrometry. PCR was used to serotype positive isolates.

Results: 70 women were enrolled (median age 26). 21 (30.0%) were GBS positive at screening. The proportion of those positive decreased over the study visits, with only 10 (19.6%) positive at visit 7. Of those with complete follow-up data (n=46), 18 (39.1%) were colonised at least once. 28 (60.9%) were persistent non-carriers, and only 3 women were persistent carriers. 37 of 46 women who completed the study were negative at baseline, of whom 8 became positive at one of the following visits (rate of acquisition 21.6%). Conversely, 9 of 46 women were positive at baseline, of whom 5 became negative at least once during subsequent visits (rate of loss 55.6%). There were 136 isolates identified. The most common serotype across visits was 1a (19.1%), followed by serotype 3 (16.9%) and 2 (12.5%).

Conclusions: The rates of acquisition and loss of GBS serotypes are high in non-pregnant women. Our next steps are to look at GBS antibody concentration at mucosal surfaces, including vaginal secretions, to determine the relationship between colonisation and antibody concentration.

Clinical Trial Registration: Clinical trial registration: ClinicalTrials.gov NCT04059510

ECHINOCOCCOSIS IN CANADIAN CHILDREN: A 32-YEAR RETROSPECTIVE STUDY IN A TERTIARY PAEDIATRIC CENTRE

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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Background: Echinococcosis, caused by the cestode *Echinococcus*, is a zoonotic parasitic infection that affects humans worldwide, with cystic echinococcosis (CE) and alveolar echinococcosis (AE) being the most common forms. The infection is rare in Canada, but changes in wildlife landscape and global migration has seen Canadian infection cases rise

Methods: Patient medical records were retrospectively reviewed in all children diagnosed with echinococcosis, who presented to the Hospital for Sick Children, Toronto, Canada between January 1988 to January 2020

Results: Six children were identified with echinococcosis, all of whom had the cystic form. Median age was 11.5 years (range:-3-17 years). The majority (83%) of cases had either immigrated from, or had significant travel to endemic nations and one patient had never left Canada. The majority (83%) had symptoms at presentation and all had either liver (66%) or pulmonary (34%) disease. Sixty-percent of children who had *Echinococcus* serology performed, were positive. Four patients received both surgical intervention and medication therapy. Duration of antihelminthic medication therapy ranged from 1-4 months (Table 1)

Table 1: Clinical presentation, diagnosis and management of pediatric patients with echinococcosis between 1988-2020

Patient	Symptoms	Cyst Location	Number of cysts	Diameter of cyst(s) (cm)	Serology	Medical therapy	Surgical therapy
1	Fever, cough	Lung	3	3.5	EIA Non-Reactive ^a	ABZ + PZQ	Cystectomy
2	Incidental finding after trauma	Liver	1	10	IHA Reactive (1:2048)	ABZ	PAIR
3	Abdominal pain, fever, diarrhea & vomiting	Liver	1	10	IHA Non-Reactive	ABZ	Unknown ^b
4	Fever, decreased appetite	Lung	1	8	IHA Reactive (1:64)	None ^c	Chest tube drainage
5	Abdominal pain and vomiting	Liver	1	5	N/A (Confirmed on pathology)	ABZ + PZQ	Cystectomy (rupture)
6	Anaphylaxis, abdominal pain, fever, vomiting	Liver	1	7	IHA Reactive (1:1048576)	ABZ + PZQ	Cystectomy (failed medical therapy)

EIA: enzyme immunoassay, IHA: indirect hemagglutination; PAIR: percutaneous aspiration injection re-aspiration; ABZ: albendazole; PZQ: praziquantel

^a Tested for both *E. granulosus* and *E. multilocularis* EIA

^b Transferred to an adult centre

^c Treated as bacterial infection

Conclusions: Echinococcosis remains an uncommon infection in Canadian children and the majority of the cases presenting to our centre are acquired internationally from endemic nations. While most previous Canada acquired CE infection in humans have been in far northern regions of the country, we describe here the first case acquired locally in rural southern Ontario diagnosed in our centre.

RISK FACTORS FOR POTENTIALLY SERIOUS BACTERIAL INFECTION IN CHILDREN > 90 DAYS OF AGE PREVIOUSLY IMMUNOCOMPETENT WITH FEVER AND NEUTROPENIA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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Background: There are few publications describing the risk of potentially serious bacterial infections (PSBI) in immunocompetent paediatric patients with fever and neutropenia. The main objective was to describe clinical or analytical factors determining an independent risk of PSBI in immunocompetent patients older than 90 days, diagnosed with fever and neutropenia. The secondary objective was to describe the prevalence of PSBI in this group of patients.

Methods: Prospective observational multicentre study was carried out in 6 Paediatric Emergency Departments of secondary and tertiary Spanish hospitals for three years (October 2015-September 2018). Epidemiological, clinical and analytical variables of 140 patients with febrile neutropenia were collected.

Results: 94 patients (60.7%) had mild neutropenia. The incidence of PSBI was 15.0% [95%CI:9-21]. An invasive bacterial infection was diagnosed. No differences in neutrophil count were found between patients with PSBI [1000 (800-1200)] and without PSBI [1100 (800-1300)], $p=0.266$. Patients with percentage of neutrophils <20% (OR:4.6; IC95%:1.7-12.7), age <12 months (OR:3.3; IC95%:1.3-8.6), total leucocytes >5,000/ μ L (OR:4.4; IC95%:1.6-12.2) or platelets >180,000/ μ L (OR:3.9; IC95%:1.2-12.3) had higher risk of PSBI. According to multivariate analysis, neutrophils <20% and platelets >180,000/ μ L in patients with leucocytes >5000/ μ L could be associated with higher risk of PSBI (table 1).

Table 1. Multivariate analysis of the risk of potentially serious bacterial infection

	Total leucocytes					
	> 5.000 leucocytes/ μ L			\leq 5.000 leucocytes/ μ L		
	OR	CI 95%	p	OR	CI 95%	p
Neutrophils < 20%	8,2	0,9-71,7	0,056	1	0,1-9,8	0,993
Age < 12 months	1,6	0,4-6,3	0,495	1,9	0,3-12,2	0,477
Platelets > 180.000/ μ L	7,0	0,7-66,2	0,088	1,2	0,2-6,9	0,805

The variables with objective association in the univariate analysis, stratified by the effect modifier factor of the total leukocytes count, are included in an explanatory logistic regression model.

OR: odds ratio. 95% CI: 95% confidence interval.

Conclusions: In our series, total neutrophils are not related to the risk of PSBI in previously healthy children. A neutrophil count <20% in patients with >5,000 leukocytes/ μ L could be an independent risk factor for PSBI. A thorough physical examination and basic complementary tests (urinalysis and chest X-ray) would establish the diagnosis of PSBI in most cases, allowing an outpatient management and a more restricted use of broad-spectrum antibiotics in this group of patients.

PREVALENCE, CLINICAL CHARACTERISTICS AND DIAGNOSTIC FINDINGS IN CHILDREN WITH MINIMAL RESPIRATORY TUBERCULOSIS IN SPAIN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

Alicia Hernanz Lobo¹, Antoni Noguera², Daniel Blázquez-Gamero³, Teresa Del Rosal Rabes⁴, Teresa Hernández-Sampelayo¹, María Ríos-Barnes², Claudia Fortuny⁵, Laura Minguell⁶, Teresa Vallmanyà⁷, Adriana Rubio Páez⁶, Antoni Soriano-Arandes⁸, Maria Espiau⁹, Olaf Neth¹⁰, Lola Falcón-Neyra¹¹, Andrea Martín-Nalda⁹, Natalia Mendoza-Palomar¹², Matilde Bustillo¹³, Carmelo Guerrero¹³, David Torres-Fernandez³, Elena Colino¹⁴, Jesús Poch Paez¹⁴, David Gómez-Pastrana¹⁵, Mc Diaz Colom¹⁵, Manuel Oltra Benavent¹⁶, Anabel Piqueras¹⁶, Fernando Baquero Artigao¹⁷, Beatriz Soto¹⁸, Marta Ruiz Jiménez¹⁸, María Méndez¹⁹, Elena Del Castillo Navío²⁰, Mercedes García Reymundo²¹, María Montero^{22,23}, Estrella Peromingo²², Olga Calavia²⁴, Jose Tomas Ramos Amador²⁵, Cristina Calvo^{4,26}, Zulema Lobato²⁷, Amparo Escribano²⁸, Sonia Rodríguez²⁹, Mercedes Herranz Aguirre³⁰, Marta Dapena³¹, Borja Guarch-Ibáñez³², Enrique Otheo³³, Pilar Galán³⁴, Cristina Álvarez³⁵, Irene Rivero Calle³⁶, Marcelina Algar³⁷, César Gavilán³⁸, Katie Badillo³⁹, Neus Rius⁴⁰, Leticia Martínez⁴¹, María Del Pozo⁴², Jose Antonio Couceiro⁴³, Enrique Villalobos⁴⁴, Elvira Cobo⁴⁵, Alfredo Tagarro⁴⁶, Begoña Carazo⁴⁷, Lourdes Garcia⁴⁸, Ana I. Menasalvas⁴⁹, Jose Javier Korta Murua⁵⁰, María Queralto Soler Campins⁵¹, Elisa Garrote-Llanos⁵², Marta Llorente⁵³, Julia Jensen⁵⁴, Susana Herrero⁵⁵, Jaime Carrasco⁵⁶, Berta Pujol Soler⁵⁷, Adriana Navas⁵⁸, Carlos Perez⁵⁹, María Jesús García Mazario⁶⁰, Mireia Arroyo⁶¹, Begoña Santiago García¹

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Background: In low endemic regions, most children have non-severe forms of tuberculosis (TB). Ongoing trials have shown that treatment for children with non-severe TB can be safely reduced from six to four months. Our objective is to assess the prevalence and characteristics of non-severe respiratory TB among patients in the Spanish Pediatric TB Research Network (pTBred) cohort.

Methods: We conducted an observational study in a cohort of patients aged <18 years with respiratory TB from June 2014 to June 2019 in pTBred. Children with negative smear microscopy and normal chest-X-ray (CXR) or intra-thoracic lymphadenopathies as the only CXR finding were classified as “Minimal-TB”. Children with positive smear microscopy or additional CXR findings were considered “Non-Minimal-TB”. Demographic characteristics, clinical presentation, immunodiagnostic results and microbiological findings were compared.

	Entire cohort	Minimal TB n=283	Non-Minimal TB n=366	p	Odds ratio (CI95) for Minimal TB
BASILINE CHARACTERISTICS					
Age (median, IQR)	5.0 (2.5-10.3)	5.0 (2.8-8.1)	5.1 (2.3-11.7)	0.22	
Age < 1 year	60/649 (9.2)	23/283 (8.1)	37/366 (10.1)	0.38	
Age 1-5 years	261/649 (40.2)	118/283 (41.7)	143/366 (39.1)	0.49	
Age 5-10 years	163/649 (25.1)	90/283 (31.8)	73/366 (19.9)	0.001	1.8 (1.3-2.6)
Age > 10 years	165/649 (25.4)	52/283 (18.4)	113/366 (30.9)	<0.0001	0.5 (0.3-0.7)
Gender (male)	343/649 (52.9)	149/282 (52.7)	194/366 (53.0)	0.92	
Born in Spain	521/646 (80.7)	233/280 (83.2)	288/366 (78.7)	0.14	
Spanish family	284/643 (44.2)	133/279 (47.7)	151/364 (41.5)	0.11	
UNDERLYING DISORDERS					
BCG vaccination	78/608 (12.8)	29/268 (10.8)	49/340 (14.4)	0.18	
Underlying disease	80/640 (12.5)	30/280 (10.7)	50/360 (13.9)	0.22	
Immune compromise	48/649 (7.4)	16/283 (5.8)	32/366 (8.7)	0.17	
CONTACT TRACING STUDY					
Studied in contact tracing study	355/637 (55.7)	198/280 (70.7)	157/357 (44.0)	<0.0001	3.0 (2.2-4.2)
TB contact < 1 month	124/306 (40.5)	79/158 (50.0)	45/148 (30.4)	<0.0001	2.2 (1.4-3.6)
Index case (IC) known	414/623 (66.5)	215/275 (78.2)	199/348 (57.2)	<0.0001	2.6 (1.8-3.8)
IC: cohabitant	319/385 (82.9)	159/206 (77.2)	160/179 (89.4)	0.002	0.4 (0.2-0.7)
IC: close contact, not cohabitant	53/385 (13.8)	37/206 (18.0)	16/179 (8.9)	0.01	2.2 (1.1-4.1)
CLINICAL SIGNS AND SYMPTOMS					
Asymptomatic	232/641 (36.2)	147/278 (52.9)	85/363 (23.4)	<0.0001	1.9 (1.6-2.3)
Fever	273/635 (43.0)	78/272 (28.7)	195/363 (53.7)	<0.0001	0.3 (0.2-0.4)
Cough	295/632 (46.7)	94/272 (34.6)	201/360 (55.8)	<0.0001	0.4 (0.3-0.5)
Respiratory distress	76/631 (12.0)	5/272 (1.8)	71/359 (19.8)	<0.0001	0.5 (0.5-0.6)
Weight loss	101/621 (16.3)	32/271 (11.8)	69/350 (19.7)	0.008	0.5 (0.3-0.8)
Extra-pulmonary TB	77/638 (12.1)	18/280 (6.4)	59/358 (16.5)	<0.0001	0.3 (0.2-0.6)
IMMUNE-BASED TESTS					
PPD (positive)	564/613 (92.0)	258/273 (94.5)	306/340 (90)	0.04	1.9 (1.0-3.5)
PPD (mm; median, IQR)	16 (12-20)	18 (12-20)	15 (11-20)	0.001	1.0 (1.0-1.1)
IGRA (positive)	269/329 (81.8)	121/149 (81.2)	148/180 (82.2)	0.40	
MICROBIOLOGY					
Culture positive	206/649 (31.7)	54/283 (19.1)	152/366 (41.5)	<0.0001	0.3 (0.2-0.4)
PCR positive	126/451 (27.9)	32/190 (16.8)	94/261 (36.0)	<0.0001	0.3 (0.2-0.5)
TREATMENT AND OUTCOME					
Length (median (IQR) [range])	6 (6-6.8) [4-25]	6 (6-6.7) [5-24]	6.5 (6-7) [4-25]	0.003	0.8 (0.8-0.9)
Good adherence	604/625 (96.6)	261/274 (95.3)	343/351 (97.7)	0.09	
Favorable outcome	599/602 (99.5)	331/333 (99.4)	268/269 (99.6)	0.69	

Results: 649 patients with respiratory TB were included (52.9% males, median age 5.0 years [IQR:2.8-8.1]), 283 (43.6%) of whom had Minimal-TB (Table 1). As compared to Non-Minimal-TB, Minimal-TB was less frequent in adolescents (18.4% vs 30.9%; $p<0.0001$), mostly diagnosed in contact tracing (70.7% vs 44.0%, $p<0.0001$) and asymptomatic (52.9% vs 23.4%; $p<0.0001$). There was no difference in IGRA tests performance, but TST positivity rates and mean induration diameters were greater in Minimal-TB cases ($p=0.001$). TB confirmation was less frequent both by culture (19.1% vs 42.5%, $p<0.0001$) and by molecular tests (16.8% vs 36%, $p<0.0001$) in Minimal-TB.

Conclusions: In our cohort, almost half of the children had Minimal-TB. Most of these cases had a benign clinical presentation, negative microbiologic results and excellent outcome after treatment, suggesting low bacillary burden and immune control of the disease. A significant number of children with Minimal-TB in low endemic regions could benefit from shorter treatment regimens, without affecting good outcomes.

BACTERIAL AND VIRAL PATHOGENS IDENTIFIED IN CHILDREN HOSPITALIZED WITH COMMUNITY ACQUIRED PNEUMONIA AND EMPYEMA IN LUANDA (ANGOLA)

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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Background: Community acquired pneumonia (CAP) is one of the most common causes of paediatric hospitalizations and mortality globally. Better understanding the aetiology of the disease will help identify more effective ways to prevent and manage pneumonia in the future. In this project we have analysed the causative pathogens among children hospitalized with CAP or empyema in Hospital Pediátrico David Bernardino, Luanda (Angola). This report is a sub-study including the first 102 patients of an ongoing larger study on transcriptomics in childhood pneumonia.

Methods: Prospective, observational study of pneumonia in a convenience sample of previously healthy children 2 months to 13 years of age (children with sickle cell disease or HIV were not excluded). Microbiology studies included blood and pleural fluid bacterial cultures, performed in the study hospital. Nasopharyngeal swabs were obtained at enrolment and later analysed using a multiplex PCR panel of respiratory viruses in Nationwide Children's Hospital in Columbus (Ohio, USA).

Results: 102 patients were enrolled between September 2019 and March 2020. All 102 patients had a blood culture and 13 pleural culture performed; 62 nasopharyngeal swabs were analysed by PCR for respiratory viruses. Detected pathogens are summarized in table 1. Blood cultures were positive in 17% of patients, a proportion notably higher than usually reported in other studies, and 53% (9/17) were Gram negative bacteria. Viruses were detected in 67% (42) of children tested and Rhinovirus/Enterovirus was the most frequent identified.

BACTERIAL CULTURES	Pneumonia (n=83)		Empyema (n=19)		All (n=102)	
	N	%	N	%	N	%
Blood culture positive	13	15,7	4	21,1	17	16,7
Pleural fluid culture positive	0	0,0	10	52,6	10	9,8
<i>S. aureus</i>	5	6,0	3	15,8	8	7,8
<i>S. pneumoniae</i>	0	0,0	6	31,6	6	5,9
<i>Klebsiella</i>	4	4,8	2	10,5	6	5,9
<i>Pseudomonas</i>	3	3,6	2	10,5	5	4,9
<i>E. coli</i>	1	1,2	0	0,0	1	1
<i>Streptococcus spp.</i>	0	0,0	1	5,3	1	1

NASOPHARYNGEAL PCR	Pneumonia (n=47)		Empyema (n=15)		All (n=62)	
	N	%	N	%	N	%
Positive (≥ 1 pathogen)	34	72,3	8	53,3	42	67,7
Negative	13	27,7	7	46,7	20	32,3
Enterovirus/Rhinovirus	15	31,9	7	46,7	22	35,5
Adenovirus	8	17,0	1	6,7	9	14,5
Parainfluenza-3	7	14,9	1	6,7	8	12,9
Hmpv	5	10,6	1	6,7	6	9,7
Mycoplasma	4	8,5	0	0,0	4	6,5
Coronavirus-HKU1	3	6,4	1	6,7	4	6,5
Influenza B	2	4,3	0	0,0	2	3,2
Influenza A	1	2,1	0	0,0	1	1,6
Coronavirus-229E	1	2,1	0	0,0	1	1,6
≥ 1 Bacterium + ≥ 1 virus					12	19,4

Conclusions: Initial assessment of this Angola pneumonia study demonstrates a significant proportion of bacterial pathogens, with predominance of Gram negative bacteria, as well as a high percentage of respiratory viruses. These findings provide further evidence that viral-bacterial coinfections play a major role in the etiology of pediatric CAP.

STUDY OF CLINICO-LABORATORY PROFILE, ETIOLOGY AND PROGNOSTIC FACTORS OF VIRAL HEPATITIS WITH SPECIAL REFERENCE TO FULMINANT HEPATIC FAILURE FROM CHILDREN IN BIKANER, NORTHWESTERN INDIA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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Background: Viral hepatitis is a major public health burden in children. The clinical spectrum may vary from asymptomatic to fulminant liver failure that is among the leading cause of death in children in India. The present prospective study was aimed to describe the clinico-biochemical profile and etiology of acute viral hepatitis and fulminant hepatic failure.

Methods: This prospective cohort study enrolled 108 children admitted with confirmed viral hepatitis in medical college, Bikaner from July 2019 to June 2020. Fulminant hepatic failure was defined as per WHO criteria. Variables studied included demographics, absence of past history of liver disease or features of chronic liver disease, clinical symptomatology, biochemical profile, serological parameters, and outcome.

Results: Acute viral hepatitis occurred highest in the 5-10 years age group ($p < 0.05$) with boys predominance (54.6%). Hepatitis A infection was the commonest causative agent (51%) followed by Hepatitis E (8.2%) and mixed (HAV+HEV) etiology (7.4%). The highest occurrences of presenting features were jaundice (100%), vomiting (84.3%), and abdominal pain (68.5%). Liver enzymes were elevated at admission in almost all cases. Thirty children (30/108; 27.8%) developed fulminant hepatic failure, one third (10/30; 33.3%) of them expired. Hepatic encephalopathy (80%), multiorgan dysfunction (40%), gastrointestinal bleeding (36.7%), ascites (33.3%), and hypoglycemia (16.7%) were seen as major complications in fulminant hepatic failure. On applying multiple logistic regression analysis, female gender [OR=7.00 (95% CI=1.292-37.910), $p < 0.05$], encephalopathy (grade ≥ 3) [OR=51.00 (95% CI=4.612-563.910), $p < 0.001$], multiorgan failure [OR=7.00 (95% CI=1.292-37.910), $p < 0.05$], hypoglycemia [OR=20.00 (95% CI=1.828-218.803), $p < 0.01$], hyperammonemia (≥ 2 times) [OR=171.00 (95% CI=9.570-305.570), $p < 0.001$] and metabolic alkalosis ($\text{pH} \geq 7.45$) [OR=3.875 (95% CI=1.527-28.242), $p < 0.01$] were found to be predictors of mortality.

Conclusions: Hepatitis A infection was the commonest cause of viral hepatitis having a poor prognosis if associated with various mortality predictors.

Clinical Trial Registration: not applicable

EXCESS RISK OF SUBSEQUENT SEVERE INFECTION IN HOSPITALIZED INFANTS : EVIDENCE FROM A COMMUNITY COHORT STUDY IN CAMBODIA AND MADAGASCAR

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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Background: Infants are particularly vulnerable in the months following a severe event to be treated either in hospital or at primary healthcare centre, but associated factors are not well known. Hospitalized infants may also be repeatedly exposed to a wide variety of environmental stressors which may increase their vulnerability. Therefore, the goals of this study were to identify risk factors associated with a subsequent infection following a severe health event and to disentangle the role played by hospital stay (versus primary care level management).

Methods: This study is an international, multi-center cohort with a systematic recruitment of pregnant women. Infants were closely followed-up and referred to partner health institution when necessary. Firstly, Cox Regression models were conducted to identify risk factors of a subsequent infection. Then, we matched inpatients and outpatients using propensity scores and the full optimal matching method. Specifically, the risk caused by hospitalization was estimated using a Cox regression model in this matched dataset.

Results: Among 1310 infants presenting with a first severe health event, one out of six had a subsequent infection in the following three months, mainly lower respiratory infection. Factors associated included respiratory distress, breastfeeding, antibiotic administration, and being underweight. Hospitalized infants were 2.3 times more likely to develop a subsequent lower respiratory infection than comparable outpatients.

Conclusions: The role played by hospitalization in post-event vulnerability is increasingly recognized, particularly with the recent description of the "post-hospital syndrome". For the first time, our results show the existence of this syndrome in infants in low- and middle-income countries highlighting the importance of avoiding unnecessary referrals to hospital.

STRENGTHENING CORRELATION BETWEEN DECLINING ANTIBIOTIC USE IN INFANCY AND FALLING CHILDHOOD ASTHMA INCIDENCE IN BRITISH COLUMBIA (BC), CANADA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 09: OTHER PERSPECTIVES

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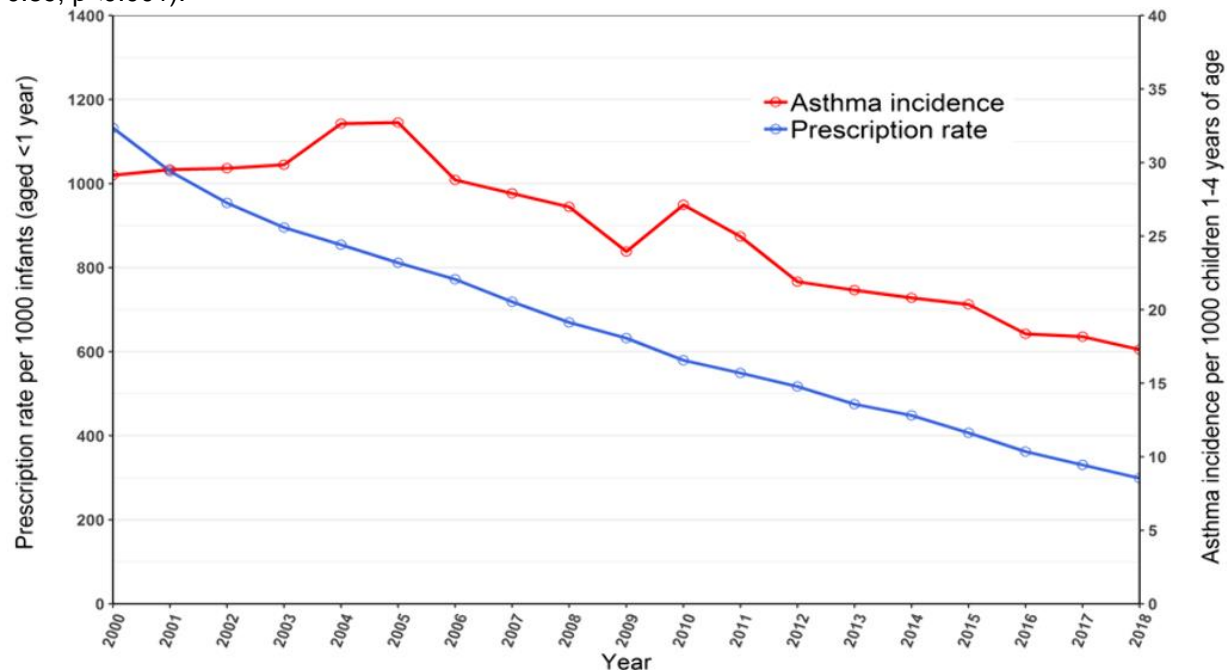
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Background: We've previously published evidence from population, prospective cohort and microbiota studies linking declining antibiotic use in infants to falling asthma incidence in childhood during 2000 to 2014. In this study, we update our observation on the association between the antibiotic dispensation in infancy and asthma incidence in children at age 1–4, 5-9 years of age groups during 2000 to 2018.

Methods: Data from 1996 to 2018 were extracted from BC PharmaNet, a centralized database containing prescription dispensation information from community pharmacies for all residents of BC. We obtained aggregate annual asthma incidence data from the Chronic Disease Registry (BC Ministry of Health) from 2000 to 2018. Population estimates were obtained from the BC Vital Statistics. The average of 4 and 5 years of prescription rates were calculated for 1-4 and 5-9 age groups, respectively.

Results: Four years average infant prescription rate decreased 74% from 1132.16 in 2000 to 298.87 per 1000 infants in 2018. Asthma incidence rate decreased 41% from 29.13 in 2000 to 17.29 per 1000 children in 2018 and 44% from 17.15 in 2005 to 9.66 per 1000 children in 2018, in 1-4 and 5-9 years of age group, respectively. Antibiotic use in infancy was strongly correlated with asthma incidence in children 1-4 years (Spearman's $r = 0.93$, $p < 0.001$) as well as in children 5-9 years of age (Spearman's $r = 0.89$, $p < 0.001$).



Conclusions: Our new updated finding shows strong correlation between antibiotic use in infancy and asthma incidence in children 1-4 years which continues up to 5-9 years age group. Further studies should include replicating these observations in other jurisdictions and population based retrospective cohort studies of full birth cohort at individual level.

IMMUNOGENICITY OF CHOLERA VACCINATION IN CHILDREN WITH INFLAMMATORY BOWEL DISEASE

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 10: IMMUNOCOMPROMISED HOSTS

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Background: The cholera vaccine can protect patients with inflammatory bowel disease (IBD) against both cholera and travelers' diarrhea. However, both immunosuppressive treatment and IBD can affect its vaccine immunogenicity. The aim of this study was to assess the immunogenicity and safety of the cholera vaccine in children with IBD.

Methods: Children older than 6 years with diagnosed IBD were enrolled in this multicenter study. All patients were administered two doses of the oral cholera vaccine (Dukoral®). Anti-cholera toxin B subunit IgA and IgG seroconversion rates were evaluated in a group with immunosuppressive (IS) treatment and a group without IS treatment (NIS).

Results: Immunogenicity was assessed in 70 children, 79% of whom received IS treatment. Post-vaccination seroconversion was displayed by 33% of children, for IgA, and 70% of children, for IgG. No statistically significant differences were found in the immune responses between the IS and NIS groups: 35% vs. 27% ($p = .90$), for IgA, and 68% vs. 80.0% ($p = .16$), for IgG, respectively. One case of IBD exacerbation after vaccination was reported.

Conclusions: The oral cholera vaccine is safe. The immunogenicity of the oral cholera vaccine in children with IBD was lower than previously observed in healthy ones. The treatment type does not seem to affect the vaccine immunogenicity.

Clinical Trial Registration: Clinical trial registration: ClinicalTrials.gov NCT03998449

SARS-COV-2 INFECTION IN PAEDIATRIC POPULATION LIVING WITH HIV IN MADRID.

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 10: IMMUNOCOMPROMISED HOSTS

Arantxa Berzosa Sanchez¹, Cristina Epalza², María Luisa Navarro Gómez³, Luis Escosa⁴, Sara Guillen-Martin⁵, Marta Illan¹, Luis Manuel Prieto Tato⁶, Itziar Carrasco García³, Alicia Hernanz Lobo³, Sonia Alcolea⁷, Talia Sainz⁸, Jose Tomas Ramos Amador⁹

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Background: SARS-CoV-2 incidence, risk of complications and seroprevalence in children living with HIV have not been reported. Objective: to describe the epidemiological and clinical characteristics of positive SARS-CoV-2 cases registered among paediatric HIV patients followed in five different hospitals in Madrid since March 2020.

Methods: A retrospective and multicentre study was performed. Confirmed infection was considered when PCR in nasopharyngeal swab was positive and/or IgG SARS-COV2 was positive. PCR was performed in patients with SARS-COV-2 symptoms or due to contact study. Blood samples were collected since June 2020 and chemiluminescence or enzyme-immunoassay serological techniques were used to determine the seroprevalence of IgG SARS-CoV-2. Epidemiological and immunovirological data were collected from last medical visit before COVID-19 pandemic started. Symptoms related to SARS-CoV-2 were actively collected.

Results: 60 patients were included: 11(18.3%) had confirmed SARS-COV-2 infection. Among PCR-positive patients: one patient (asymptomatic) never developed IgG and two had not serology after acute infection. SARS-CoV-2 IgG was positive in 8(13.3%) patients (2 of them were asymptomatic without contact known; 6 reported symptoms and 5 had previous PCR-positive) and indeterminate in 2(3.3%). Epidemiologic, clinical and SARS-CoV-2 characteristics are presented in table 1. All children and adolescents were on ART, 85% were undetectable (<50 copies/ml) and immunodeficiency (CD4+<500/ μ L) was presented in 9 patients. None required hospitalization neither SARS-CoV-2 specific treatment.

Table 1. Characteristics of patients

	Total patients (N=60)		
Epidemiological characteristics			
Women	36 (60%)		
Born in Spain	29 (48.3%)		
Transmission			
Vertical	52 (86.7%)		
Transfussional	2 (3.3%)		
Sexual	1 (1.7%)		
Others/Unknown	5 (8.3%)		
	Confirmed infection (N=11)	No infection (N=49)	
Epidemiological characteristics			p
Median age (years)	19 (14.5-19)	13 (11-19)	0.23
Microbiological test			
PCR positive in nasopharyngeal swab	8	0	
IgG positive	8	0	
Both positive	5	0	
SARS-CoV-2 Clinical characteristics			
Asymptomatic	2 (18.2%)	39 (79.6%)	<0.05*
Symptomatic	9 (81.8%)	10 (20.4%)	
Upper respiratory tract infection symptoms	7	5	
Fever and asthenia	5	4	
Anosmia & dysgeusia	3	1	
Abdominal pain	1	2	
Epidemic situation			
Contact with someone with COVID-19 (microbiological confirmation)	3	1	<0.05*
Contact with someone with symptom (no microbiological confirmation)	5	8	<0.05*
HIV Characteristics			
C-Clinical Stage (CDC)	4 (36.4%)	6 (12.2%)	<0.05*
Immunodeficiency (< 500 CD4+)	1 (9%)	8 (16.3%)	0.543
CV detectable (CV>50 copies/ml)	1 (9%)	8 (16.3%)	0.543

Conclusions: SARS-CoV-2 infection was confirmed in 18% of patients, being seroprevalence of IgG in our cohort around 13%. SARS-COV-2 appears to affect more likely patients on C-clinical stage (CDC). Although incidence and symptoms do not appear to be different from those in the general population, it is necessary to carry out more studies to determine the incidence, clinical presentation and serological evolution of SARS-CoV-2 infection in paediatric HIV patients.

RISK FACTORS FOR MORTALITY IN PEDIATRIC ONCOLOGY PATIENTS ADMITTED IN INTENSIVE CARE UNIT DUE TO SEPTIC SHOCK

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 10: IMMUNOCOMPROMISED HOSTS

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AGHIA SOPHIA CHILDREN'S HOSPITAL, Pediatric Intensive Care Unit, ATHENS, Greece

Background: In recent years, remarkable advances have been made in the treatment of childhood cancer and prognosis has changed markedly. Sepsis and septic shock remain a frequent complication in this group of patients, associated with high mortality rates. The aim of this study is to assess risk factors for mortality in pediatric oncology patients with septic shock, admitted to Pediatric Intensive Care Unit.

Methods: Retrospective study of a cohort of cancer and septic shock patients (n=20), admitted to a PICU of a tertiary childrens' hospital during 2015-2020, with comparison of the following potential risk factors: age, sex, underlying disease, disease stage, the presence of granulopenia and its duration, PRISM III score on admission, as long as the need for inotropic support, mechanical ventilation and number of organ disfunction.

Results: In our study, 40% of patients (n=8) died. In our sample, the variables who presented significantly associated with mortality were: the remission of primary disease (p 0.03), the presence of granulopenia on admission(p 0.017) and its longer duration (>7 days) (p 0.009). Non-survivors had a higher PRISM III score on admission (25 vs 17, p 0.05), a higher number of organ dysfunction(4 vs 2, p 0.012). Finally, inotropic support (p 0.04) and mechanical ventilation(p 0.018) were identified as significant risk factors for mortality, in this group of patients.

Conclusions: Mortality in pediatric oncology patients admitted in PICU due to septic shock remains high. Risk factors involved in the prognosis are the number of dysfunctional organs, as long as the duration of granulopenia. Further prospective studies are necessary to better characterize risk factors specific for pediatric cancer patients in order to predict earlier and accurately the severity of complications and mortality in this special group of patients.

FEBRILE CHILDREN WITH COMORBIDITY AT THE ED – WHY ARE THEY BEING LEFT OUT OF SCIENTIFIC STUDIES?

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

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Background: Little is known on children with comorbidity attending the ED with fever, as they are usually excluded from studies on febrile children. We aimed to describe patient characteristics and management of febrile children with comorbidity in comparison to children without comorbidity in European ED's.

Methods: The MOFICHE/PERFORM, a prospective multicentre study, took place at 12 European EDs. We analysed differences in management (diagnostic tests, treatment, admission) and diagnosis (focus, viral/bacterial infection) for children with and without comorbidity by multivariable logistic regression, adjusted for general patient characteristics and markers of diseases severity such as clinical alarming signs and vital signs. Comorbidity was defined as a chronic underlying condition that is expected to last at least 1 year.

Results: We included 38,110 patients, of which 17.0% had comorbidity, such as neurological (23.7%) and respiratory (21.5%). Children with comorbidity more often had alarming signs, abnormal vitals or abnormal blood tests: CRP>60 mg/l aOR 1.3 (95%CI 1.1-1.4), positive blood culture 2.0 (95%CI 1.4-3.0). Furthermore, life-saving interventions (aOR 1.9, 95%CI 1.6-2.3), intravenous antibiotics (aOR 1.6, 95%CI 1.5-1.8) general ward (aOR 1.6, 95%CI 1.5-1.7) and PICU admission (aOR 2.5, 1.7-3.6) were initiated more often. Bacterial infections such as sepsis/meningitis (aOR 2.9, 95%CI 2.0-4.1) or LRTI (aOR 2.0, 95%CI 1.7-2.3) were diagnosed more often.

Conclusions: Our data show how children with comorbidity are a population at risk, as they are more ill, more frequently have abnormal test results, more often require general ward as well as PICU admission and life-saving interventions and more often are diagnosed with bacterial infections.

SPATIAL CLUSTERS OF DIARRHEA HOSPITALIZATIONS IN CHILDREN IN BRAZILIAN CENTRAL-WEST REGION, 2017-2019

E-POSTER VIEWING

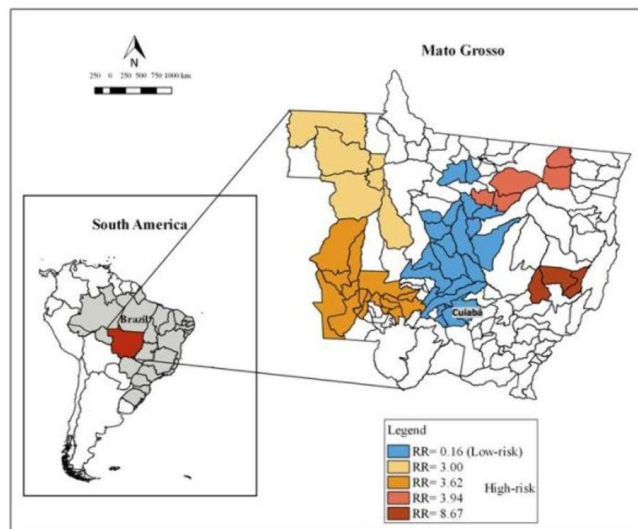
E-POSTER DISCUSSION SESSION 11: GENERAL PID

Ana Sartori, Leila Oliveira, Ana Jorge, Daniela Santos, Erica Pereira, Ester Oliveira, Michele Theis
Federal University of Mato Grosso, Institute Of Health Sciences, Sinop, Brazil

Background: Diarrhea is the one of leading causes of death among children under 5 years old in Brazil and worldwide. Poor sanitation facilities and unhygienic conditions are the main risk factors for diarrheal diseases. The incidence of childhood diarrhea can vary according to geographical areas. We aimed to identify the spatial clusters of all-cause diarrhea hospitalizations in children in Mato Grosso.

Methods: An ecological study using spatial scan statistics was conducted. The data were collected from Brazilian Hospital Information System for diarrhea in children under 1 from 2017-2019 in Mato Grosso, Central-West, Brazil. Primary diagnosis all-cause diarrhea (ICD10 codes: A00-A03/A04/A05/A06.0-A06.3/A06.9/A07.0-A07.2/A07.9/A08-A09) were selected. Based on the incidence of diarrhea, the Relative Risk (RR) was calculated to detect high and low-risk spatial clusters at the municipality level. The Poisson probabilistic model was used for statistic scanning in elliptic window and retrospective analysis. SaTScan and Qgis 2.18 were used for that purpose.

Results: A total of 1,274 hospitalizations for all-cause diarrhea in children under 1 were identified during 2017-2019. A low-risk cluster for diarrhea in children was found in the central region of Mato Grosso (RR:0.16, $p<0.001$), including the capital Cuiabá (Figure 1). Four high-risk clusters were identified in the east region (RR: 8.67, $p<0.001$), the north/northeast regions (RR:3.94, $p<0.001$) and in a wide range of the southwest (RR:3.62, $p<0.001$) and the west/northwest (RR:3.00, $p<0.001$) of the state.



Conclusions: The excess incidences of all-cause diarrhea hospitalizations in children under 1 are spatially clustered in the state of Mato Grosso showing priority areas with high-risk for diarrhea. The spatial distribution of diarrhea-related hospitalizations in children at the municipality level contributes to the surveillance of the disease and for the development of targeted intervention activities for the prevention and control of diarrhea in the state.

DECREASING DEATH RATES DUE TO INFECTIONS IN ICELANDIC CHILDREN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

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Background: Decreasing childhood death rates worldwide have been attributed to improved prenatal and perinatal care, higher immunisation coverage, better diagnosis and management of infections as well as progress in management of other diseases. The aim of this study was to describe changes in childhood death rates caused by infections in Iceland during almost fifty years.

Methods: The Director of Health in Iceland governs "The causes of Death register" which contains information on all deaths in the country. From this register, all deaths in children <18 years of age were retrieved for the period January 1st, 1971 until December 31st, 2018. When the causes were unclear from this register, further information could be accessed from hospital records, laboratory and post-mortem results.

Results: During the study period, 157 children <18 years died of infectious causes. During the first decade of the study, 89 children died of infections, the death rate was 0.1:1.000 children (0.03-0.19:1.000 children). During the last decade, eight children died of infectious causes, the death rate declining to 0.01:1.000 children (0.0-0.025:1.000 children). In the first period, the three most common causes of death were respiratory infections, bacterial meningitis and sepsis. During the last decade, four children died of sepsis, two of respiratory infections and none of bacterial meningitis.

Conclusions: Childhood death rates due to infections decreased substantially in Icelandic children over the last fifty years. A decrease in respiratory infections, meningitis and sepsis account for most of the decrease. Better diagnosis and management of infections as well as high immunisation coverage and new vaccines are probably the main explanation for this success.

PD077 / #1103

NON OPERATIVE MANAGEMENT OF ACUTE APPENDICITIS IN CHILDREN: ABOUT 123 CASES

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

Picard Clémence, Caroline Munzer, Lucas Ricco, Cécile Lemoine, Isabelle Claudet, Camille Bréhin
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Background: Acute appendicitis is the most common surgical emergency in children. Nonoperative treatment of nonperforated acute appendicitis in children is an alternative to appendectomy. The purpose was to determine the outcomes of non operative treatment of non perforated acute appendicitis in children.

Methods: In a single medical center, patients from 5 to 15 years old who were diagnosed with appendicitis: 1) with abdominal pain not exceeding 24 hours, 2) without radiologic evidence of appendicolith or appendiceal perforation or pelvic abscess, and 3) without signs of frank generalized peritonitis were included, and their data were retrospectively collected. The antibiotic treatment was the combination amoxicillin/clavulanic acid (80mg/kg/day of amoxicillin) 48h intravenous then 7 days orally

Results: One hundred and twenty three patients with uncomplicated appendicitis were enrolled in the study. The initial success rate (resolution of abdominal pain and hospital discharge without appendectomy) was 96% (118 out of 123 patients). Over a 24-month follow-up period, 15 patients experienced a recurrence with a median of 61 days after discharge. They benefited from surgical treatment. None of them had peritonitis, appendiceal perforation or pelvic abscess.

Conclusions: Antibiotic treatment now seems to be a real alternative to surgery in children with non perforated acute appendicitis. The results of current clinical trials should confirm the effectiveness of this treatment and its modalities.

PROBIOTICS AS AN ALTERNATIVE TO ANTIBIOTICS IN TREATMENT OF CAMPYLOBACTERIOSIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

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Background: Campylobacter species account for most cases of human gastrointestinal infections worldwide. The organism has been responsible for diarrhea in an estimated 400 - 500 million people globally each year. The recent trend is the growing resistance of *Campylobacter spp.* to antibiotics. This necessitates the search for alternative agents in therapy of campylobacteriosis. The study aimed to investigate the effectiveness of different probiotic strains in treatment of campylobacteriosis in children.

Methods: A comprehensive examination of 70 children with Campylobacteriosis aged 1 to 17 was carried out. Laboratory confirmation of diagnosis was performed by PCR-RT. Clinical observation of patients was carried out daily. Clinical (diarrhea, fever, vomiting) and laboratory data (CRP, *Campylobacter spp.* persistence) obtained during inpatient treatment were evaluated. Patients were divided into 4 groups. Group 1 (n=20): Azithromycin + any probiotic. Group 2 (n=20): Azithromycin. Group 3 (n=15): *Saccharomyces Boulardii*. Group 4 (n=15): *Enterococcus faecium* u *Bifidobacterium longum*. The severity of the infectious process was equal in all groups.

Results: The duration of diarrhea was minimum in groups 1 and 3 (3,2 and 3,1 days) in comparison to groups 2 and 4 (4,8 and 4,1 days). Temperature normalization was fastest in groups 1 and 4. Groups 3 and 4 were characterized by faster abdominal pain disappearance (3,7 and 3,8 days) in contrast to groups 1 and 2 (4,9 and 5,3 days). The frequency of *Campylobacter spp.* persistence on the 7th day of treatment was the lowest in group 4 (6,7%) what contrasted with detection of pathogen in 20% patients from group 2.

Conclusions: The use of probiotics can have positive effect on clinical course of campylobacteriosis in children by reducing the duration of abdominal pain, diarrhea and reducing the frequency of asymptomatic persistence of *Campylobacter spp.* after the treatment.

OSTEOARTICULAR INFECTIONS IN EUROPEAN PAEDIATRIC WARDS - PROSPECTIVE COHORT STUDY FROM THE EUCLIDS CONSORTIUM

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

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Background: Osteoarticular infections (OAI) are estimated to occur in 1 to 13 per 100.000 children in developed countries and have a high burden of disease.

Methods: Demographical, clinical and microbiological data of children with OAIs, prospectively collected between 2012 and 2017 for the European Childhood Life threatening Infectious Disease study (EUCLIDS), were analysed. We grouped the cohort in osteomyelitis (OM), septic arthritis (SA) or both (OM+SA) and further sub-grouped the patients in age groups of infants (≤ 3 months), young ($> 3-60$ months) and older children (> 60 months).

Results: 380 patients with OAIs: 203 with OM, 158 with SA and 19 with OM+SA were analysed. OM cases received longer intravenous antibiotic therapy (11 days vs. 5, $p < 0.0001$) and needed longer hospitalization stay (10 days vs. 7, $p < 0.0005$) than SA cases. The latter showed higher median CRP serum levels (82 mg/L) than patients with OM (52 mg/L) ($p = 0.017$). Older children predominantly suffered from OM (61% vs. 34% SA, $p < 0.0001$), while young children were more often diagnosed with SA (64% vs. 36% OM, $p < 0.0001$). Mild overall disabilities were more frequently seen in patients with OM + SA (40%, 6/15) than in OM (12%, 22/179) and SA cases (5%, 8/146, $P = 0.0005$). A causative pathogen was detected in 65% (247/380) of patients, of which *Staphylococcus aureus* made up 57%, followed by Group A Streptococcus (GAS) in 18% and *Kingella kingae* in 9%.

Conclusions: Paediatric OAI's are associated with a significant morbidity in European children. *Staphylococcus aureus* is still the major pathogen with need for development of a vaccine. Imaging of suspected osteomyelitis should also include the adjacent joints to prevent a development of sequelae in patients with OM + SA.

Clinical Trial Registration: No clinical trial

H.INFLUENZA - AN OVERLOOKED CAUSE OF PNEUMONIA IN CHILDREN?

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

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Background: Pneumonia accounts for up to 38.8 hospital attendances per 10,000 children across Europe. Since the introduction of the pneumococcal and *Haemophilus influenzae* type b vaccines, the role of bacteria as aetiological agents for pneumonia has declined. Although the majority of lower respiratory tract infections are presumed to be viral in origin, causative organisms are not isolated in a large proportion of children. As it is difficult to obtain samples from the site of infection, alternative diagnostic approaches must be considered.

Methods: Broad-ranging, sensitive molecular diagnostics were applied to blood and throat swabs of children presenting to emergency departments across Europe with pneumonia as part of the PERFORM study, using in-house PCR and commercial Luminex assays. Results were analysed alongside detailed clinical data and laboratory results, and compared with non-febrile controls and patients with other infectious illnesses.

Results: 14/3523 patients had a positive detection of *H.influenzae* in blood. This was associated with a child being 9.3 times more likely to have a diagnosis of pneumonia (95%CI 3.1–27.8). *H.influenzae* detection in blood was also significantly more likely if a respiratory virus was detected on a throat swab. The co-detected viruses include RSV-B (OR 23.1;95%CI:6.2-85.8), Metapneumovirus (OR 14.8;95%CI:3.2–68.5) and Parainfluenza1 (OR 7.1;95%CI:1.6-32.4). *H.influenzae* was not identified as a causative pathogen by the clinical team in any of these patients at the time of the illness.

Conclusions: The role *H.influenzae* as a pathogen causing pneumonia may currently be underestimated. *H.influenzae* was commonly co-detected with respiratory viruses in children with pneumonia, and positive identification of a virus from the upper respiratory tract does not exclude a bacterial contribution to their illness. Our data suggest that PCR detection of *H.influenzae* in blood may aid identification of pathogens causing pneumonia in children.

Clinical Trial Registration: This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 668303.

PATHOGEN DETECTION AND LENGTH OF HOSPITAL STAY IN HOSPITALISED CHILDREN WITH COMMUNITY-ACQUIRED PNEUMONIA IN SWITZERLAND

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 11: GENERAL PID

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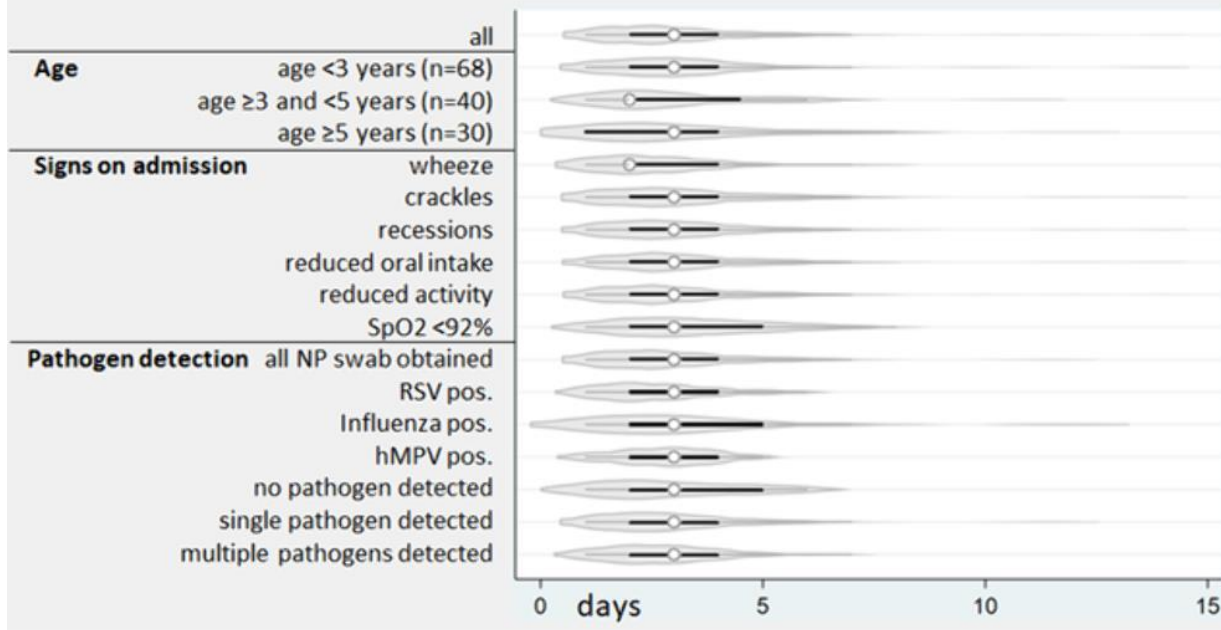
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Background: In previous studies, the average length of hospital stay (LOS) of children with community-acquired pneumonia (CAP) in high-resource settings was 2 days. Globally, since the introduction of conjugate-vaccines against encapsulated bacteria, respiratory viruses have caused most CAP hospitalisations.

Methods: At emergency departments at eight paediatric hospitals in Switzerland, the KIDS-STEP Trial enrolls children below 14 years of age with clinically diagnosed CAP based on clinical criteria, i.e. a combination of fever $\geq 38^{\circ}\text{C}$ and two or more of the following: cough, tachypnea, hypoxaemia, laboured breathing, and percussion or auscultation signs of lobar pneumonia. The trial is a superiority trial for the effect of oral corticosteroids on clinical stabilisation within 48 hours. In an ancillary study, admission day nasopharyngeal (NP) swabs were tested for respiratory pathogens with multiplex PCR (BioFire Respiratory Panel, bioMérieux).

Results: Until September 2020, 138 participants were enrolled, with a median age of 3.04 years (IQR 1.67-4.67) and median prior duration of cough of 5 (IQR 3-8) days and fever of 5 (IQR 2-6) days. On presentation, 108 (78.3%) showed reduced oral intake, 90 (65.2%) recessions, and on auscultation 88 (63.8%) had crackles and 29 (21.0%) wheeze. 43 (31.2%) had an oxygen saturation $<92\%$ in room air. Study NP swabs were obtained from 107 participants (77.5%). Of these, 29 (27.1%) tested positive for RSV, 19 (17.8%) for metapneumovirus and 11 (10.3%) for influenza virus. Multiple respiratory pathogens were detected in 22.4%. Median LOS was 3 days (IQR 2-4) and not associated with age, signs on admission or detected pathogens (fig. 1).

Fig. 1: Length of inpatient stay (in days) for children hospitalised with community-acquired pneumonia



Conclusions: In Switzerland, children hospitalised with CAP stay in hospital for median 3 days, and neither regular baseline characteristics nor detected pathogens are associated with LOS.

Clinical Trial Registration: NCT03474991

REIV-TOXO PROJECT: RESULTS FROM THE SPANISH COHORT OF CONGENITAL-TOXOPLASMOSIS (2015-2020)

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

Borja Guarch-Ibáñez¹, Clara Carreras-Abad², Antoinette Frick², Daniel Blázquez-Gamero³, Fernando Baquero Artigao⁴, Pere Soler-Palacin², On Behalf Of Reiv-Toxo Working Group¹

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Background: Congenital toxoplasmosis (CT) can lead to significant long-term neurological and ophthalmological sequelae. There is no international consensus for the surveillance of the disease in pregnant women and some regions of Spain are withdrawing their antenatal toxoplasmosis program. The aim of our study is to describe the epidemiological and clinical characteristics of CT in Spain in order to inform decision-making policies.

Methods: Ambispective observational study including all confirmed CT cases recorded on the REIV-TOXO database (January 2015-December 2020) that includes 122 Spanish hospitals. Eligible case-patients were infants with presence of toxoplasma IgM or IgA at birth or during first year of life, positive PCR in blood, urine, CSF or placenta, pregnant history of positive PCR in amniotic fluid, or persistence of IgG beyond 12 months of age.

Results: Fifty-two patients were included. Most of them were full-term newborns (40/52). Seroconversion during pregnancy was documented in 84% women, mostly in the third trimester of gestation (30/43). PCR in amniotic fluid was positive in 64% in whom amniocentesis was performed (9/14). Forty-three percent pregnant women (18/42) did not receive anti-toxoplasma treatment during gestation. Most cases were asymptomatic at birth (56%) and the most common manifestations were neurological (16/23) and ophthalmological (11/23). 74% newborns completed one year of anti-parasitic treatment and 43% presented one or more adverse events.

Conclusions: The REIV-TOXO project can provide valuable information about CT in Spain. Most patients are asymptomatic at birth. When CT diagnosis is only based on neonatal assessment these cases may be missed. Thus, universal serological screening in pregnancy would be desirable. Moreover, this study can supply data on the need to optimize follow-up and treatment of women during pregnancy. This information should be considered in Public Health policies.

CONGENITAL CYTOMEGALOVIRUS INFECTION: CLINICAL FEATURES AND OUTCOME OF A CASE SERIES OF AN ITALIAN PEDIATRIC TERTIARY REFERRAL CENTER

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

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Pediatrics and Infectious Disease Unit, G. Salesi Children's Hospital, Ancona, Italy

Title of Case(s): Congenital Cytomegalovirus Infection: Clinical features and outcome of a Case Series of an Italian Pediatric tertiary referral center

Background: Congenital cytomegalovirus (CMV) infection is the leading nongenetic cause of hearing loss and an important cause of neurodevelopmental delay. In industrialized countries rates of congenital CMV infection (cCMV) average 0.6 to 0.7% of live births. Treatment with valgancyclovir within the first month of life has changed the outcome of these patients.

Case Presentation Summary: Medical records of children with cCMV admitted to the Tertiary Centre of Pediatrics - Infectious Disease Section of G. Salesi Children's Hospital (Ancona, Italy) from January 1, 2010 to December 30, 2020 were retrospectively reviewed. Over the study period 51 children were recruited, 10 were excluded because they did not fulfilled the criteria, a total of 41 patients (21 girls) were included. In 66% of cases a primary maternal infection was detected and in 35% of cases the infection occurred in first semester. The majority of children were asymptomatic at birth (76%) and not subjected to antiviral medications, 16% of these developed a neurosensitive hearing loss and 22% a neurodevelopmental delay during the follow up. Altered cerebral imaging at diagnosis have showed an higher frequency of neurodevelopmental delay compared to those with normal imaging (43% vs 12%, $p=0.0475$). Antiviral medications were administered to 22% of children. 15% of all cases had a diagnostic delay (after 1 month of age) and in this group hypoacusia was found with an higher rate than in early diagnosed patients (78% vs 9% respectively; $p<0,0001$). Blood viral load was significantly higher in patients with symptomatic infection and/or hypoacusia compared to patients asymptomatic at birth ($p=0,05$).

Learning Points/Discussion: Early diagnosis of cCMV is a fundamental goal to identify patients deserving treatment since they show an higher risk of neurodevelopmental delay and hypoacusia with treatment delay.

INVESTIGATION OF A LOCAL INCREASE IN INVASIVE GROUP B STREPTOCOCCAL INFECTION RATES IN INFANTS, TEMPORALLY ASSOCIATED WITH THE COVID-19 PANDEMIC.

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

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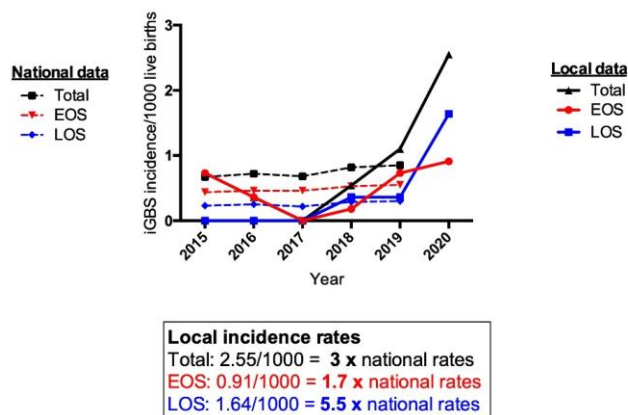
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Background: An increased incidence of invasive GBS (iGBS) infections was noted in infants at a UK District General Hospital in 2020. 14 cases of iGBS occurred in children <90 days of age (Incidence rate (IR) 2.55/1000); 5 early-onset (EOGBS; 0-6 days, IR 0.91/1000) and 9 late-onset (LOGBS; 7-89 days, IR 1.64/1000). These rates were 1.7-fold and 5.5-fold higher, respectively, than the 2019 UK national rates. Cases were retrospectively studied for antecedents to this increase, and compared to previous years cases to explore whether systems change during the COVID-19 pandemic played a role.

Methods: Maternal and infant case notes were reviewed for iGBS risk factors, demographic, clinical and microbiological data. Cases from 2020 were compared to cases from 2015-2019, and a matched control population.

Results: EOGBS cases in 2020 were demographically/clinically comparable to cases in 2015-2019. All EOGBS cases in 2020 had intra-partum risk-factors for infection but unknown antenatal GBS colonisation. LOGBS occurred more in low-risk term infants in 2020, compared to previous years. Antenatal maternal GBS colonisation was known in 2/9 LOGBS cases, 3/9 were preterm and 5/9 infants had previously received antibiotics. Mothers of infants with LOGBS had fewer antenatal microbiological samples in 2020 compared to previous years (56%vs.75%), possibly indicating reduced ad-hoc presentations during the COVID pandemic, though this difference was non-significant.

Invasive GBS disease in infants in a UK District General Hospital; 2015-2020



Conclusions: An increase in LOGBS disease was noted in our term, low-risk infant population during 2020. No clear impacts of the COVID-19 pandemic were identified to account for this and no nosocomial or geographical links between LOGBS patients were identified. Whole genome sequencing is on-going to identify whether a virulent strain is present in the community.

OSTEOARTICULAR INFECTIONS IN INFANTS UNDER THREE MONTHS OF AGE

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

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Title of Case(s): Osteoarticular infections in infants under three months of age

Background: Acute osteoarticular infections (OAI) in infants under three months of age (<3M) are rare and remain a diagnostic challenge because of the paucity of signs and symptoms with significant risk for orthopedic complications and functional sequelae. Our aim is to provide insight on clinical features, microbiology, treatment and outcome in OAI <3M since these are seldom described.

Case Presentation Summary: Methods A longitudinal observational study of infants <3M with OAI admitted to a tertiary care pediatric hospital, from 2008 to 2018. Infants were compared with a cohort of children >3M. Clinical, microbiological, imaging and outcome data were analyzed. **Results** We identified 22/261 cases of OAI <3M, 50% males with a median age of 38.9 days (IQR 14,5-60,0). 81.8% presented pseudoparalysis, 68.2% local inflammatory signs and 45.5% fever. The diagnosis was 40.9% septic arthritis, 31.8% osteomyelitis and 27.3% concurrent septic arthritis and osteomyelitis. The most affected bones and joints were femur (53.8%), humerus (23.1%), knee (46.7%) and hip (33.3%). Microbiologic aetiology was determined in 86.4%: *S. aureus* (57.9%), *Group B streptococcus* (26.3%) and *E. coli* (10.5%). Comparing groups, infants <3M had more often bone involvement (59.1% vs 33.1%, p=0.013), concomitant diagnosis (50% vs 21.6%, p= 0.012), previous vascular accesses (31.8% vs 0%, p=0.000), bacteremia (40.9% vs 14.9%, p=0.015) and radiographic alterations (36.4% vs 16.3%, p= 0.022). Also, they were treated with longer antibiotic courses, with similar complications, but more sequelae (14.3% vs 3.2%, p=0.036) at 12-months follow-up, which were avascular necrosis of the femoral head (2), angular deformity (1) and lower limb length discrepancy (2)

Learning Points/Discussion: Conclusions: *S. aureus* is still the most common cause of OAI in infants <3M. Even though complications are similar, sequelae were more frequent and more severe in young infants.

THE CONCERT STUDY: TREATMENT OF INFANTS WITH CONGENITAL CYTOMEGALOVIRUS INFECTION AND ISOLATED HEARING LOSS, DETECTED THROUGH NEWBORN HEARING SCREENING

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

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Background: While there is consensus that valganciclovir can prevent hearing deterioration in symptomatic congenital cytomegalovirus infection (cCMV), treatment of cCMV infants with isolated sensorineural hearing loss (SNHL) is still a topic of discussion.

Methods: Targeted CMV screening was incorporated into the newborn hearing screening (NHS) program. We conducted a non-randomized trial in cCMV infants aged ≤ 3 months with clinically inapparent disease and SNHL, comparing 6 weeks valganciclovir with no treatment. Primary endpoint was the change in hearing from inclusion to follow-up at 20 months. Secondary endpoints were neurodevelopmental development as measured by the Child Development Inventory and the BSID-III at age 20 months, viral load and adverse events.

Results: From July 2012 through October 2016, 1377 NHS referred infants were tested for CMV by PCR on dried blood spots. A total of 59 infants were diagnosed with cCMV (4.3%). Of these, 35 were included in the trial, in which 25 received antiviral treatment and 10 were controls. All follow-up assessments are completed and data analysis is ongoing. Taking repeated measurements into account, change in hearing was analyzed using a random intercept, random slope model. The difference in slopes is estimated at -0.92 (95% CI -1.39, -0.42, $p < 0.001$), the treated group showing a reduced hearing threshold on average. Neurodevelopmental outcome was similar in both groups. There were no serious adverse events related to treatment.

Conclusions: Incorporating targeted screening for CMV into the NHS is a feasible method to detect otherwise undiagnosed infants with cCMV. 6 weeks of valganciclovir treatment in cCMV infants with isolated SNHL has a modest effect on hearing at 20 months and does not seem to improve neurodevelopmental outcome.

Clinical Trial Registration: ClinicalTrials.gov Identifier: NCT02005822

LONGITUDINAL SURVEILLANCE REVEALS PERSISTENT, MINIMALLY SYMPTOMATIC BORDETELLA PERTUSSIS INFECTIONS IN INFANTS AND MOTHERS IN A LOW-RESOURCE URBAN COMMUNITY.

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

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Background: Clinical pertussis presentation can vary widely, though symptoms generally decrease in severity with age and disease exposure (including vaccination). Amoxicillin is the standard treatment for childhood upper respiratory infections according to the WHO's Integrated Management of Childhood Illnesses (IMCI), but is presumed ineffective against pertussis.

Methods: A cohort of healthy mother/infant pairs was enrolled from Chawama compound, a peri-urban slum in Lusaka, Zambia. Participants were systematically monitored from approximately 1 week to 4 months of age during scheduled visits to the (no-cost) Chawama Public Health clinic. At each visit, clinic staff recorded respiratory symptoms and antibiotics use, and collected nasopharyngeal (NP) swabs. Swabs were retrospectively tested for *Bordetella pertussis* presence via IS481 qPCR.

Results: Across 2015-16, we enrolled 1,981 mother/infant pairs and followed 1,320 pairs across ≥ 4 visits. Clinically diagnosed pertussis was rare (one infant), though pertussis detection via qPCR was common (8.9% of NP samples). Patient-reported respiratory symptoms predicted pertussis detection (infant RR=2.7; mother RR=1.6); most symptoms were mild. Repeated detections were observed in 179 (13.6%) infants and 193 (14.6%) mothers, and in both members in 89 (6.7%) pairs. Antibiotics were commonly prescribed to these subjects: 28 (37%) infants and 14 (15%) mothers. Amoxicillin accounted for almost all recorded antibiotics use.

Conclusions: Minimally symptomatic pertussis was surprisingly common in this population in both mothers and infants. Persistent infections and concordant infections within mother/infant pairs were also common. These data suggest that clinicians should consider pertussis diagnosis in instances of chronic cough, and raise questions about the timely and appropriate treatment of pertussis infections in low-resource settings.

SURVEILLANCE AUDIT OF HAND-WASHING PRACTICES AND DECREASE OF COLONIZATION IN A NEONATAL UNIT

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 12: CONGENITAL INFECTIONS

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Background: Healthcare associated infections (HAIs) are associated with mortality and morbidity, increase cost, prolong hospital stay and antimicrobial resistance. Newborns in Neonatal Intensive Care Unit (NICU) are susceptible to Central Venous Catheter infections (CVC-Is), because of immature immune, procedures and contact with healthcare (HC) staff. Preventive strategies against CVC-Is include hand hygiene (HH) enhancement and audits, relevant educational programs on CVC insertion and maintenance. To evaluate impact of HH audit and educational sessions regarding HH and CVC procedures on CVC-Is

Methods: We recorded HH compliance, HH agent consumption, CVC-Is (infections and colonization), patients- and CVC-days. Study period was subdivided in 20-month preintervention, 16-month intervention and post-intervention period (last one included targeted educational interventions on HH WHO techniques and CVC insertion and maintenance procedures). The 5-moments HH techniques, by antimicrobial soap and water or by alcohol-based hand rub, were audited by trained staff and categorized as appropriate. HC workers in NICU during audit dates, and visitors were surveilled.

Results:

	2015	2016*	2017*	p
Number of CVCs/Number of patients	255/601	253/727	275/645	NS
CVC colonization episodes/CVC-days	69/2324	65/2245	32/2063	0.0001
HH agent consumption (antimicrobial soap and alcohol hand rub in liters)	207	348	745	0.0001
HC workers HH compliance (%)	62.44	70.1	90.1	0.007

*Intervention period: September 2016 to December 2017

Improvement in HH compliance was observed combined with statistically important decrease in CVC-colonization episodes and increased HH agent consumption (Table). Of 636 HH observations, 348 (54.7%) were appropriate and 288 (45.3%) inappropriate. Inappropriate handwashing/hand rub was more prevalent during the daytime shifts. HH compliance rates were: before patient contact 89.4% (202/226), before aseptic procedure 97.2% (139/142), after contact with patients' body fluids 99.2% (131/132), after patient contact 89.5% (111/124), after contact with patient's environment 69.1% (65/94). Highest HH compliance rates were recorded among nurses during both periods.

Conclusions: Implementation of HH audit combined with educational programs targeting both HH and CVC insertion and maintenance procedures was effective on CVC colonization episodes decline. A further analysis is actually ongoing aiming to define quality characteristics of NICU personnel.

PROCALCITONIN AND C-REACTIVE PROTEIN GUIDED CLINICAL PATHWAY REDUCING ANTIBIOTIC USE IN CHILDREN WITH BRONCHIOLITIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

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Background: Bronchiolitis is the most common viral lower respiratory tract infections (LRTI) in children younger than one. Despite the lack of evidence that antibiotics are useful in slowing the course of this disease, their use is still widespread so it is suggested to reduce over-prescription. In 2019, a Procalcitonin-guided clinical pathway (CP) for LRTI management was implemented at the Department of Women's and Children's Health at Padua University Hospital in which the CP was presented to doctors in the Pediatric Emergency Department and Pediatric Acute Care Unit. This study aims to determine the consumption of antibiotics before and after CP implementation.

Methods: This is a pre-post quasi-experimental study that assesses the changes in antibiotic prescribing for bronchiolitis during two bimesters preceding CP implementation (Pre-period: 01/01/2018- 28/02/2018 and 01/01/2019- 28/02/2019) and during the bimester after CP implementation (Post-period 01/01/2020- 28/02/2020). The measured outcomes were the number of episodes receiving antibiotic treatment by type of antibiotic, compared to the number of total episodes considered in the different time-period.

Results: After the CP implementation, there was a significant reduction in antibiotic prescriptions from 36.2% to 12.5% in the Pre- vs. Post-period, respectively ($p=0.036$) in patients hospitalized for bronchiolitis. Co-amoxiclav treatments, the antibiotic most commonly administered, decreased from 66.6% to 33.3%. Furthermore, among outpatients' bronchiolitis episodes, a statistically significant decrease in beta2-agonists' use (18.0% pre- vs. 4.4% post- period) and a quasi-significant decrease in corticosteroids' use (8.0% pre- vs. 0% post-period) was observed.

Conclusions: An evidence-based CP supported by educational lectures is associated with significant changes in the prescribing habits of physicians at our center.

DIFFERENCES IN CLINICAL AND EPIDEMIOLOGICAL FEATURES BETWEEN INFLUENZA A/H1 AND A/H3 IN CHILDREN INPATIENTS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

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Background: Influenza A is a common cause of children hospitalization during the cold season, sometimes associated with severe evolution, especially in those under 5 years of age. We conducted a prospective study (November 2019-March 2020) to identify the clinical and epidemiological differences between A/H1 and A/H3 influenza among children (<18 years) hospitalized in a tertiary care in Bucharest, Romania.

Methods: Influenza viruses were identified by RT-PCR from nasopharyngeal swab. The A/H1 or A/H3 subtype was established by a second RT-PCR on the HA gene of influenza A strains. Clinical and epidemiological data were collected from each patient, after obtaining the informed consent of the parents. A total of 173 children positive for A/H1 influenza (n=67,38.7%) and A/H3 influenza (n=106,61.3%) were included in the analysis.

Results: Cases of A/H3 influenza were significantly more common in children over 5 years of age (46.2%vs.23.9%,p=0.017), with a median age of 4.5 years[IQR:1.7,9.7] compared to 3 years[IQR:0.9,4.9] in the group of children with influenza A/H1(p=0.003).Influenza A/H3 had a 7.6-fold higher risk [95%CI:1.07-60.6,p=0.025] of respiratory failure requiring supplemental oxygen and were more frequently hospitalized in the intensive care unit (6.6%vs.0%,p= 0.032).Duration of hospitalization was similar in both groups (p=0.665), but the presence of a chronic condition (n=22) extended the duration of hospitalization of children with influenza A/H3 by 2 days (p=0.037).

Conclusions: We identified a twice as high circulation of influenza A/H3 virus in the pediatric population compared to influenza A/H1 virus. All cases requiring intensive care hospitalization were attributed to influenza A/H3. The follow-up of the differences between the two influenza A subtypes must be done through extensive studies over several years, in order to take correct epidemiological and therapeutic measures.

THE EFFECT OF A “HANDSHAKE” ANTIBIOTIC STEWARDSHIP APPROACH ON THE MANAGEMENT OF CHILDREN WITH RSV BRONCHIOLITIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

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Background: Bronchiolitis is a common infection in infants with significant variation in clinical practice. Aim of this study was to investigate whether an Antibiotic Stewardship Program (ASP) using a “handshake” approach, apart from directing appropriate antibiotic use, can encourage physicians to follow practice guidelines.

Methods: A prospective study was conducted in children <2 years of age with RSV bronchiolitis admitted at a tertiary paediatric hospital in Athens, between December 2017-May 2018. Patients recruited from 3 paediatric departments all of which use the same bronchiolitis guidelines recommending conservative approach (NG feeding, oxygen supplementation, nasal washings). The ASP team was acting on a “handshake” basis in one department (intervention group) while the other 2 departments formed the control group.

Results: 172 RSV bronchiolitis patients studied (73 in the intervention group and 99 in the control group) with median age 2 months (IQR 1-4) and median hospitalization 4 days (IQR 3-7). Commonest recommendations given from the ASP team was against requesting x-ray (60%), urine culture (30%), blood culture (25%) and haematology (25%). Physicians in the control group ordered more frequently: haematology 99% vs 89% (p:0,004), urine culture 87% vs 33,8% (p:0,001), chest x-ray 66% vs 37% (p:0,001), bronchodilators and antibiotics 40% vs 23% (p:0,018) and 54% vs 36% (p:0,020) respectively.

Conclusions: ASP team using a “handshake” approach encouraged clinicians to follow practice guidelines and avoid unnecessary actions. Experience and techniques used in ASP are applicable in different aspects of patient care.

PREDNISOLONE FOR THE FIRST RHINOVIRUS INDUCED WHEEZING EPISODE REDUCES SUBSEQUENT USE OF RESPIRATORY MEDICATION

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

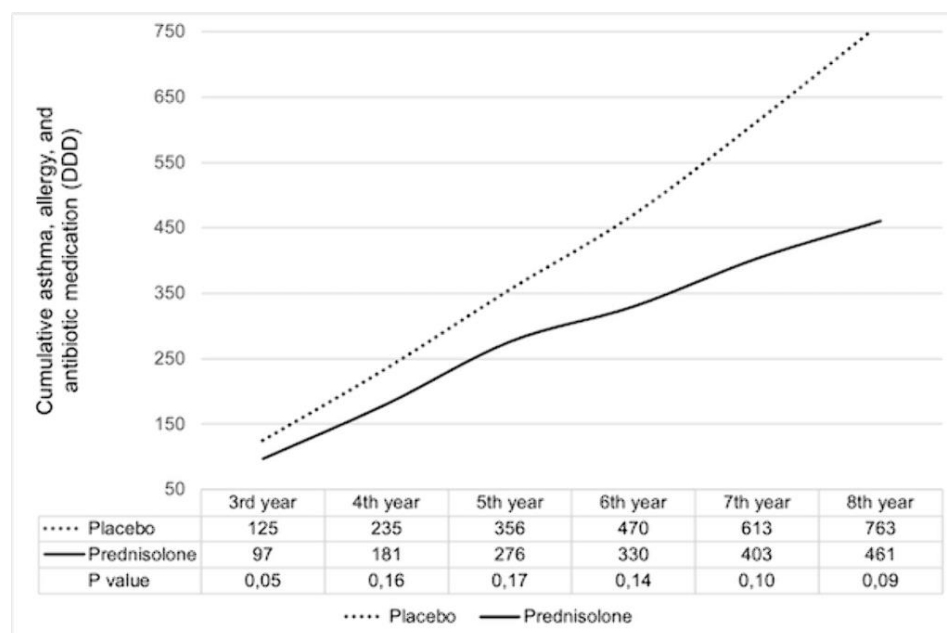
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Background: In small children with rhinovirus-induced wheezing, prednisolone has been shown to lengthen the time to wheezing relapse and initiation of regular control medication for asthma. We aimed to study whether the prednisolone intervention reduced the subsequent burden of respiratory medication i.e. the overall use of asthma, allergy, and antibiotic medication. We hypothesized that the overall consumption on the medication should decrease following the prednisolone treatment.

Methods: Our study cohort included children aged 3 to 23 months with rhinovirus-induced severe wheezing 66 children from two RCTs (clintrials.gov NCT00494624 and NCT00731575). The children were randomized to receive either oral prednisolone (8mg/kg over 3 days) or placebo. In this *post hoc* analysis our main outcome was the overall purchases of asthma, allergy and antibiotic medication until school age, at ages from 3rd to 8th year-of-life. The examined ATC classes were R03, R06, H02, and J01. The amounts of drugs were expressed as Defined Daily Doses (DDD).

Results: The groups were similar in terms of age, sex, atopic characteristics, viral infections, clinical presentation. The combined purchases of asthma and allergy medications and antibiotics were lower in the prednisolone treatment group (97 DDD) than in the placebo group (125 DDD) in the 3rd year of life ($P = .047$). In the following 5 years i.e., ages 3–7 the combined purchases of the prednisolone treatment group were lower, but the differences were not statistically significant.



Conclusions: Prednisolone in rhinovirus-induced severe wheezing alleviated the subsequent burden of respiratory medication. While the drug purchases serve only as a surrogate metric for the disease burden, we find the reduction in drug use very encouraging.

PERCEIVED CLINICAL IMPACT AND USEFULNESS OF RSV AND RSV/FLU POINT-OF-CARE TESTING AMONGST PAEDIATRIC DOCTORS IN A HOSPITAL SETTING

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

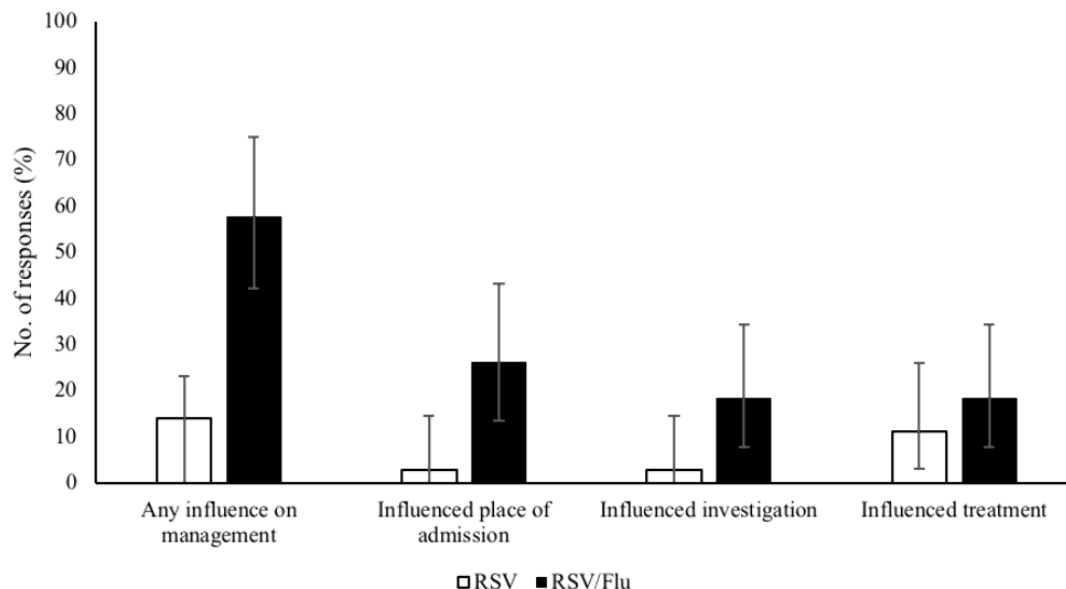
Paul Torpiano, David Pace

Mater Dei Hospital, Paediatrics And Adolescent Health, Tal-Qroqq, Malta

Background: The paediatric burden of influenza and respiratory syncytial virus (RSV) infection on hospitals is significant. While often dependent on polymerase chain reaction, accurate diagnosis may be achieved rapidly through antigen-based point-of-care testing (POCT). We performed a survey assessing the perceived clinical impact of RSV and combined RSV and Influenza A/B POCT amongst paediatric doctors performing these tests during the RSV and influenza seasons in Malta.

Methods: Children aged <2 years admitted to Mater Dei Hospital were included: those with clinically-suspected bronchiolitis (November 2019 - January 2020) were tested using RSV-POCT (SIMPLE RSV Operon Immunochromatographic Test, Operon Immuno & Molecular Diagnostics, Zaragoza, Spain), while those with clinically-suspected influenza-related illness (January - March 2020) were tested using RSV+FluA/B-POCT (SIMPLE RSV-FLU A/B Operon Immunochromatographic test, Operon Immuno & Molecular Diagnostics, Zaragoza, Spain). At each use, the doctor performing the test was asked to complete a questionnaire assessing the perceived impact of the test result on subsequent clinical management.

Results: Thirty-six questionnaires were completed for RSV-POCT, while 38 were completed for RSV+FluA/B-POCT. Amongst the former, 27.8% of patients (95% C.I. 14.2-45.2%) were found to be RSV-positive, whilst 39.5% (95% C.I. 24-56.6%) were positive for RSV or Influenza A/B on RSV+FluA/B-POCT. Perception of impact on clinical management was significantly greater for RSV+FluA/B-POCT compared with RSV-POCT alone (31.6% vs 11.1%; $p=0.0338$), and RSV+FluA/B-POCT influenced patient place of admission, investigation or treatment more often than RSV-POCT alone (57.9% vs 13.9%; $p=0.0001$).



Conclusions: Combined RSV and influenza POCT is more likely to be clinically impactful in a hospital setting than RSV testing alone. There is a growing need to improve understanding of how POCT can support clinical decision-making, especially in a post-COVID-19 world.

RESPIRATORY SYNCYTIAL VIRUS (RSV) AND BRONCHIOLITIS: HOW EPIDEMIOLOGY CHANGES IN THE COVID-19 PANDEMIC ERA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

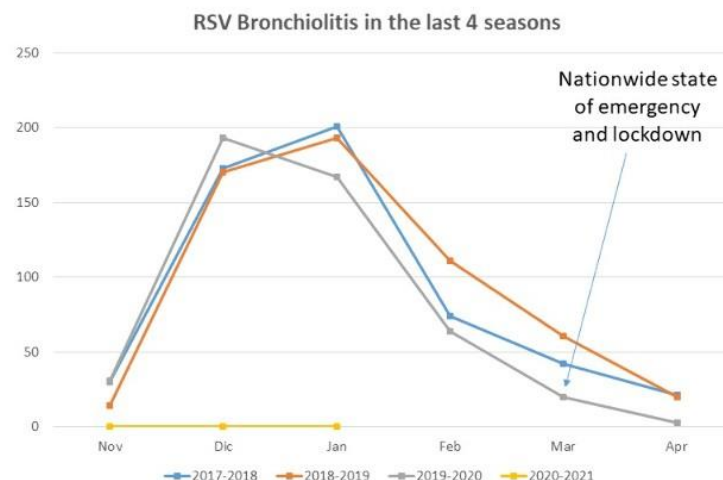
Anna Chiara Vittucci¹, L. Antilici¹, Claudia Ciarlito¹, Elena Bozzola¹, Livia Piccioni², Giulia Linardos², Stefania Ranno², Alberto Villani¹

¹Bambino Gesù Children Hospital, Dea-pg, Roma, Italy, ²Bambino Gesù Paediatric Hospital, Laboratory Of Virology, Rome, Italy

Background: Respiratory syncytial virus (RSV) represents the main cause of hospitalization for bronchiolitis in children < 1 year old. In 2020, SarsCoV19 pandemic spread worldwide and Italy was the first European country affected by COVID19. Italian government has imposed a broad range of public health measures to prevent the transmission since March 2020, including physical distancing, facial masks, travel restrictions, stay at home orders; these measures prevent transmission of all respiratory viruses. Aim of the study was to assess the impact of restrictive Covid19 measures on RSV related hospitalization in children

Methods: we evaluated the epidemiology of RSV bronchiolitis in children <1 year-old hospitalized at Bambino Gesù Children Hospital, Rome, Italy, with a diagnosis of bronchiolitis during the epidemic seasons from November 2017 to January 2021.

Results: During epidemic seasons (November-April) 2017-2018 and 2018-2019 we registered 541 and 569 RSV infections, characterized by an alternating prevalence of serotypes A and B. 2019-2020 epidemic season was positively affected by government's interventions: a total of 478 children were hospitalized, with a strong decrease in March and April in comparison to the previous year (-71,6%). Regarding the present season, as most of preventive measures are still in place, we have not registered any RSV hospitalization.



Conclusions: The strong reduction of RSV circulation during this epidemic season is likely due to public health measures which have a central role in preventing respiratory viruses' spreading and to the reduction of the local reservoir.

CORRELATION BETWEEN NASOPHARYNGEAL AND TRACHEAL SWABS RESULTS IN CHILDREN WITH BRONCHIOLITIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 13: VIRAL RESPIRATORY INFECTIONS

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Background: Bacterial respiratory superinfection in bronchiolitis is a frequent and serious complication that poses a true challenge for the clinic. Commonly, when ventilator-associated pneumonia is suspected, nasopharyngeal smears have been cultured in days previous to intubation. Little is known about whether the result of nasopharyngeal swab culture is representative of the lower respiratory tract bacteria, leading to superinfections and to clinical or analytical deterioration of patients.

Methods: Children with bronchiolitis admitted in an Intensive Care Unit of a tertiary referral hospital in Spain, from September 2010 to March 2020, were enrolled. We selected patients in whom both nasopharyngeal and tracheal swabs were cultured at the same time. Epidemiological, clinical and microbiological data were prospectively collected. Data were analyzed using SPSS. Significance level was set at $p \leq 0.05$.

Results: Ninety patients were selected. Median age was 46 days, 51.1% were males and 68.9% had positive RSV tests. *Haemophilus influenzae* was the most frequently isolated species in nasopharyngeal and tracheal cultures (20 (22.2%) and 10 (11.1%) cases, respectively). There was bacterial coinfection in 17 (18.9%) and 14 (15.6%) cases in nasopharynx and trachea. Fifty-three (58.9%) patients had at least one positive culture and 12/53 (22.6%) had the same culture result in upper and lower respiratory tract sample. 37/45 (82.2%) patients had negative tracheal culture given a negative nasopharyngeal culture.

Conclusions: More than 80% patients with a negative culture from nasopharynx had also a negative tracheal sample culture, although the bacterial identification in tracheal and nasopharyngeal swabs only correlated in a quarter of the cases. This may have implications for antibiotic policies when we suspect a lower respiratory tract bacterial superinfection in children with bronchiolitis.

COST IMPLICATION OF INTRODUCING A FULLY LIQUID READY-TO-USE PEDIATRIC HEXAVALENT VACCINE IN THE UNITED KINGDOM AND SWITZERLAND

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

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Background: Hexavalent vaccines (HVs), combining diphtheria, tetanus, acellular pertussis (DTaP), hepatitis B (HepB), inactivated poliovirus (IPV), and *Haemophilus influenzae* type B (Hib) antigens into one vaccine, are a cornerstone of pediatric immunizations. A fully liquid HV not requiring reconstitution (HV-NR; DTaP5-IPV-Hib-HepB) was introduced in Switzerland in 2019 and will be introduced in the United Kingdom (UK) in 2021. The objective of this study is to assess cost implications of using an HV-NR versus an HV requiring reconstitution (HV-R; DTaP3-HepB-IPV/HiB) in the UK and Switzerland.

Methods: A cost minimization analysis over a 5-year time-horizon (2020 currency) was implemented consisting of vaccine acquisition costs, healthcare provider (HCP) time, and immunization errors. The annual number of vaccine doses required to achieve 2020 national coverage levels was calculated from recommended schedules and wastage rates, e.g., from spillage, leakage, and improper storage. Parameters values and costs were obtained from literature. Sensitivity of results to uncertainty in the input parameters was ascertained through deterministic and probabilistic sensitivity analyses.

Results: The use of HV-NR versus HV-R resulted in a total potential savings of £11.4 (2.0-19.4) million and CHF 5.0 (2.5-8.0) million in the UK and Switzerland, respectively. Total vaccine acquisition cost savings were £2.32 (0.36-4.11) and CHF 10.63 (5.05-17.12) per eligible infant per year, resulting primarily from the lower wastage rate of HV-NR due to increased thermostability. HCP time savings were 1.23 and 1.32 minutes per eligible infant per year, and cost savings from reduced immunization errors were £0.022 (£0.003-0.039) and CHF 0.045 (CHF 0.018-0.084) per eligible infant per year.

Conclusions: In comparison with an HV-R, the use of an HV-NR has the potential to reduce HCP costs through decreased vaccine acquisition costs and immunization errors, and increased productivity.

IMPACT OF ROTAVIRUS VACCINATION ON ROTAVIRUS GASTROENTERITIS HOSPITALIZATIONS IN TAIWAN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

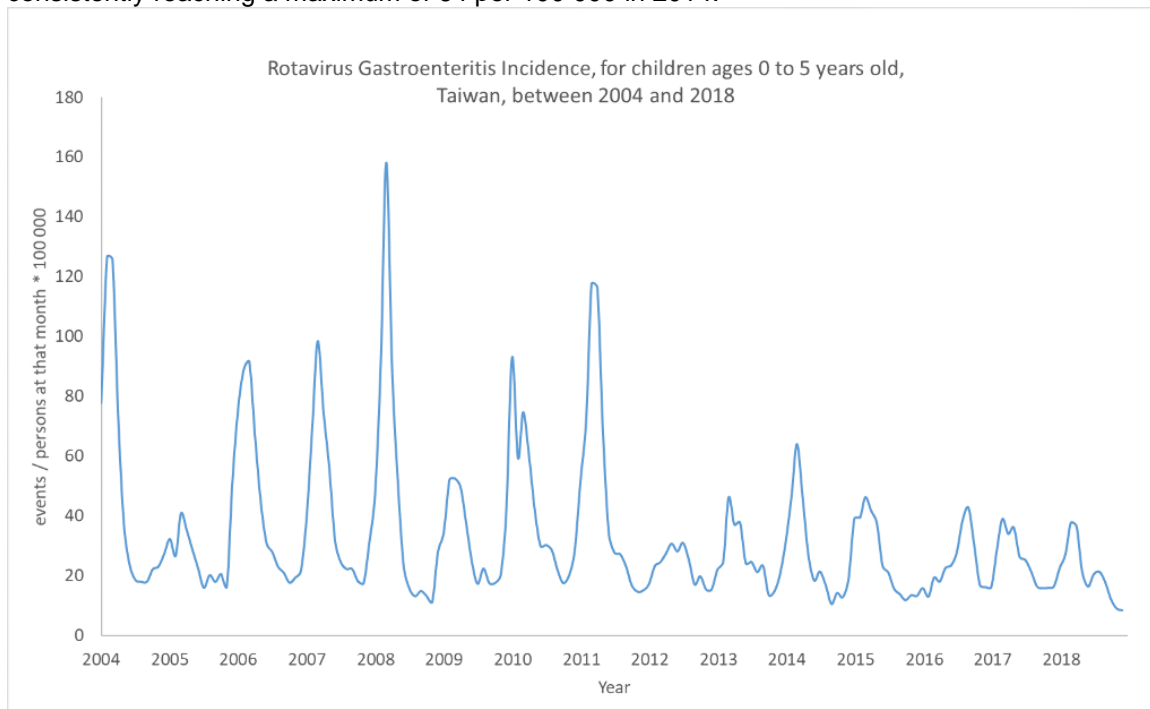
Cristina Carias¹, Lily Wu², Chun-Yi Lu³, Ya-Ting Chen¹

¹Merck & Co., Inc., Center For Observational And Real-world Evidence, Kenilworth, United States of America, ²MSD Taiwan, Medical Affairs, Taipei, Taiwan, ³National Taiwan University Hospital, Department Of Pediatrics, Taipei City, Taiwan

Background: Rotavirus vaccination was introduced in Taiwan in 2006. Vaccination has been voluntary with coverage rate of <30% prior to 2011, which increased to 49% in 2013, and above afterwards. In the current study, we report the impact of rotavirus vaccination on population-based rotavirus gastroenteritis (RVGE) incidence between 2004 and 2018 in children younger than 5 years of age.

Methods: We used Taiwan's National Health Insurance (NHIRD) database, which covers 99% of the Taiwanese population, to estimate RVGE incidence. Population size was extracted from the Ministry of the Interior, Taiwan. RVGE hospitalization was identified from NHIRD using ICD-9 and ICD-10 diagnostic codes. We calculated the monthly incidence of RVGE since 2004 through 2018 for children younger than 5.

Results: Across all years, RVGE incidence showed seasonal peaks, and was higher from November through March. In line with patterns observed in different regions, incidence was higher in children ages 1-2 years, followed by children younger than 1. For children younger than 5, RVGE hospitalization incidence during rotavirus season in the pre-vaccination and early vaccination years achieved a maximum of 160 per 100 000 children. After 2012, RVGE incidence during rotavirus season decreased consistently reaching a maximum of 64 per 100 000 in 2014.



Conclusions: While rotavirus vaccination was introduced in 2006 in Taiwan, higher impact of vaccination in reduction of RVGE incidence was observed after 2012, when the vaccination coverage rate increased to 49% and higher.

IMPACT OF VACCINATING PREGNANT WOMEN AGAINST PERTUSSIS ON HOSPITALIZATIONS OF CHILDREN UNDER ONE YEAR OF AGE IN A TERTIARY HOSPITAL IN CATALONIA

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

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Background: The recommendation for pertussis vaccination in pregnancy was established in Catalonia in mid-January 2014. The objective of this study was to compare the hospitalization rate for pertussis in children under one year of age before and after the implementation of the vaccination program.

Methods: Observational and retrospective study of patients under one year of age admitted to hospital with a diagnosis of pertussis. The hospitalization rate of patients under one year of age in the period prior to the vaccination program (2008 –2013) was compared with the period with vaccination program (2014 - 2019); for the whole of children under one year of age and in two subgroups: children under 3 months and between 3 and 11 months.

Results: Hospitalization rate was significantly lower in the period with vaccination program in children under one year of age and specifically in children under 3 months (2.43 vs 4.72 per 1,000 person-years and 6.47 vs 13.11 per 1,000 person-years, respectively). The rate ratios were: 0.51 (95% CI 0.36-0.73) for children under one year of age; 0.49 (95% CI 0.32-0.75) for those younger than 3 months and 0.56 (95% CI 0.30-1.03) for those with 3-11 months. No statistically significant differences were observed in the clinical severity between both periods.

Conclusions: The introduction of the pertussis vaccination program in pregnancy was associated with a global lower hospitalization rate for pertussis in children under one year of age and specifically in those under 3 months of age.

**POLIOMYELITIS, MEASLES, RUBELLA, DIPHTHERIA, TETANUS, AND HEPATITIS B
SEROEPIDEMIOLOGY AMONG CHILDREN BORN IN 2006–2015 IN FOUR REGIONS OF UKRAINE,
2017**

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

Nino Khetsuriani¹, Oleksandr Zaika², Liudmyla Slobodyanik³, Iryna Demchishina², William Weldon⁴, Nazibrola Chitadze⁵, Heather Scobie¹, Gretchen Cooley⁶, Brock Stewart¹, Marika Geleishvili⁷, Vusala Allahverdiyeva³, Patrick O'Connor⁸, Shahin Huseynov⁸

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Background: The decline of Ukraine's immunization coverage since 2009 led to an outbreak of circulating vaccine-derived poliovirus type 1 in Zakarpattia province in 2015, raising concerns regarding resurgence of other vaccine-preventable diseases (VPDs). To assess population immunity against polioviruses and other VPDs after the outbreak, we conducted serosurveys among children targeted by the polio outbreak response immunization (children born in 2006-2015).

Methods: We conducted serosurveys in four regions of Ukraine using cluster sampling in Zakarpattia, Sumy, and Odessa provinces and simple random sampling in Kyiv city and tested serum specimens for antibodies against polioviruses, measles, rubella, diphtheria, and tetanus, and for markers of hepatitis B virus infection (Table). Seroprevalence estimates and 95% confidence intervals were calculated.

Results: As shown in Table, seropositivity for polioviruses in Sumy, Odessa and Kyiv city was $\geq 89.0\%$; in Zakarpattia, seropositivity was $>80\%$ for poliovirus types 1 and 2 and 72.3% for type 3. Measles and rubella seropositivity were $\geq 86.6\%$ and $\geq 89.3\%$, respectively, except Zakarpattia (72.1% and 69.5% , respectively). In Zakarpattia, only 50.0% and 61.6% were protected against diphtheria and tetanus, respectively, compared with the other sites ($\geq 69.3\%$ and $\geq 80.7\%$, respectively). HBsAg seroprevalence was 0.7% in Zakarpattia and $0\%-0.1\%$ in other sites.

Table. Seroprevalence of antibodies against polioviruses, measles, rubella, diphtheria, and tetanus, and of the hepatitis B virus infection markers among children born in 2006-2015 in four provinces of Ukraine, 2017				
Disease	Seropositivity, % point estimate ^a (95% confidence intervals)			
	Zakarpattya (N = 1398)	Sumy (N = 1430)	Odessa (N = 1471)	Kyiv city (N = 799)
Poliomyelitis ^b				
PV1	80.2 (73.4–86.5)	94.9 (91.9–96.8)	89.0 (85.0–92.0)	94.4 (90.9–96.6)
PV2	84.5 (78.3–89.2)	95.2 (91.7–97.3)	91.6 (87.9–94.3)	94.8 (91.5–96.9)
PV3	72.6 (64.5–79.4)	91.3 (87.7–93.9)	91.6 (87.9–94.3)	88.8 (84.5–92.1)
Measles IgG ^c	72.6 (64.4–79.5)	91.1 (88.5–93.2)	87.8 (84.8–90.3)	86.6 (82.7–89.7)
Rubella IgG ^c	69.8 (61.0–77.3)	93.2 (90.9–94.9)	89.3 (86.0–91.9)	89.3 (85.4–92.2)
Diphtheria IgG ≥ 0.1 IU/mL ^d	50.0 (41.9–58.1)	76.2 (72.2–80.3)	69.3 (65.0–73.6)	79.2 (76.5–81.9)
Tetanus IgG ≥ 0.1 IU/mL ^d	61.6 (52.9–70.3)	89.1 (86.2–92.0)	80.7 (76.5–84.9)	88.9 (86.3–91.4)
Hepatitis B ^e				
Anti-HBc	4.5 (2.6–7.9)	0.7 (0.3–1.5)	1.0 (0.4–2.2)	1.0 (0.4–2.1)
HBsAg	0.7 (0.3–1.4)	0.1 (0.0–0.4)	0.0 (0.0–0.3)	0.1 (0.0–0.8)
N, number of children enrolled; PV, poliovirus; IgG, immunoglobulin G; HBV, hepatitis B virus; Anti-HBc, antibodies against hepatitis B virus core antigen; HBsAg, HBV surface antigen				
^a Estimates account for survey design, sampling weights and non-participation				
^b Neutralization reaction; specimens with reciprocal titers ≥ 8 considered seropositive				
^c ELISA (Enzygnost, Siemens, Germany); specimens with corrected optical density (cOD) ≥ 0.1 considered seropositive; includes specimens with cOD values in the indeterminate range (0.1–0.2) after repeated testing				
^d Multiplex microbead assay; antibody levels ≥ 0.1 IU/mL correspond to full protection				
^e Chemiluminescent microparticle immunoassay (CMIA) using Architect Anti-HBc II and Architect HBsAg Qual II with confirmation of HBsAg-positives by neutralization (Abbot Diagnostics, USA). Anti-HBc-positives considered HBV-infected (past or present infection) and HBsAg-positives considered chronically/currently infected				

Conclusions: Generally high polio immunity among children suggested the positive impact of the outbreak response immunization. Observed suboptimal measles immunity (<92% herd immunity threshold) was consistent with subsequent nationwide outbreak in 2017-2019 (>115,000 reported measles cases). Immunity against diphtheria was suboptimal (<80%), particularly in Zakarpattya. Protection against tetanus was adequate ($\geq 80\%$) except in Zakarpattya. Zakarpattya was the only site with HBsAg seroprevalence above the 0.5% European regional hepatitis B control target. Efforts to increase immunization coverage will help close immunity gaps in Ukraine, particularly in Zakarpattya.

A NATIONAL IMMUNIZATION REGISTRY AS A DIGITAL ASSESSMENT TOOL DURING OUTBREAKS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

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Hebrew University of Jerusalem, Faculty Of Medicine Braun School Of Public Health And Community Medicine, Jerusalem, Israel

Background: Immunization registries assemble vaccinations data to one database, enabling monitoring and planning to sustain and increase vaccination coverage. Even in high coverage locations, “pockets” of unvaccinated children occur, limiting herd immunity against contagious pathogens and expediting spread and outbreaks. We aimed to describe utilization of Israel’s immunization registry as a digital tool during vaccine-preventable-diseases outbreaks.

Methods: Routine vaccinations are offered without charge to all children at community-based clinics (age birth to 6 years) and school health services (age 6 to 15 years). Vaccinations are not mandatory. Israel’s population is 9.2 million, children (0-17 years) consist a third of the population; the annual birth cohort 184,370 (2018). The registry, launched in late 2009, expanded to include routine childhood vaccinations, from clinics and schools’ electronic health records.

Results: The registry was first used in the 2013 polio vaccination campaign (following wild poliovirus type 1 WPV1 isolation in sewage from southern Israel). The registry provided daily coverage data. The WPV1 event control was successful. The registry functioned in the 2018-2019 measles outbreak (n=4300 cases), 8-10% were hospitalized (the leading complication pneumonia/pneumonitis) with 3 fatalities. Most cases (75%) were under 15 years, 85% unvaccinated. The vaccination campaign used online registry data; MMR1/MMRV1 coverage rates in affected regions increased from 80% to 95% within 3 months with decline in measles incidence.

Conclusions: An ongoing childhood vaccination coverage monitoring, by a national registry, during regular circumstances prepares the basis for utilization in outbreaks and emergencies. The national immunization registry may become useful in the future implementation of the novel COVID-19 vaccines.

ROTAVIRUS VACCINE EFFECTIVENESS AMONG INFANTS WITH MEDICAL RISK CONDITIONS IN THE NETHERLANDS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

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University Medical Centre Utrecht, Julius Center, Utrecht, Netherlands

Background: Rotavirus vaccination has 87-100% effectiveness against severe rotavirus acute gastroenteritis (AGE), in healthy infants in high-income countries. Little is known whether infants with medical risk conditions (MRC) are equally protected. We conducted a quasi-experimental prospective multicenter before-after cohort-study to assess the vaccine effectiveness (VE) of the human rotavirus vaccine (HRV) among MRC infants.

Methods: HRV was implemented in routine care for MRC infants in 13 Dutch hospitals. Participants in the before and after cohort, HRV unvaccinated and vaccinated respectively, were followed for occurrence of (rotavirus) AGE up to 18 months of age. VE of at least one dose was estimated using time-to-event analysis for severe rotavirus AGE. Vaccine impact on rotavirus hospitalizations comparing pre- and post-implementation periods was also assessed.

Results: 631 and 851 infants with MRC participated in the before and after cohorts, respectively. In total, 1302 infants were premature (88.3%), 447 small for gestational age (30.2%) and 251 had at least one congenital disorder (17.0%). VE against severe rotavirus AGE was 30% (95%CI -36;65%) and -2% (95%CI -50;31%) against rotavirus AGE of any severity. Overall, the observed number of rotavirus hospitalizations was low and not significantly different between the cohorts (2 and 2, respectively).

Conclusions: In contrast to previous findings among healthy term infants, the routine use of human rotavirus vaccine in vulnerable medical risk infants offers limited protection against severe rotavirus gastroenteritis. Our study highlights the importance of studying vaccine performance in subgroups of medical infants separately. Funding: GlaxoSmithKline Biologicals SA, ZonMw, Innovatiefonds Zorgverzekeraars, UMC Utrecht.

Clinical Trial Registration: Trial registration: NTR5361 www.trialregister.nl

AN INVESTIGATIONAL RESPIRATORY SYNCYTIAL VIRUS VACCINE (RSVPREF3) SHOWS AN ACCEPTABLE SAFETY PROFILE IN MOTHERS AND INFANTS IN AN ONGOING PHASE II STUDY

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

José Luis Bartha Rasero¹, Robert Jeanfreau², Anu Kantele³, Osvaldo Reyes⁴, Marta García Sánchez⁵, Peyman Banooni⁶, Joanne M Langley⁷, Maria Begoña Encinas Pardilla⁸, Elisabeth Botelho-Nevers⁹, Jim Buttery¹⁰, Thorsten Stanley¹¹, Adrián Martín García¹², Hui Qian¹³, Antonella Tullio¹³, Ilse Dieussaert¹³, Zourab Bebia¹³, Ouzama Henry¹³

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²MedPharmics, -, Metairie, United States of America, ³Inflammation Centre, Helsinki University Hospital and University of Helsinki, Meilahti Vaccination Research Center, Mevac, Helsinki, Finland, ⁴International Vaccination Centre (CEVAXIN), National Network of Researchers of Panama (SNI), Department Of Obstetrics And Gynaecology, Panama, Panama, ⁵Hospital Quironsalud Malaga, Department Of Obstetrics And Gynaecology, Malaga, Spain, ⁶Matrix Clinical Research, Department Of Obstetrics, Gynaecology And Infertility, Los Angeles, United States of America, ⁷Canadian Centre for Vaccinology, IWK Health Centre, Dalhousie University and NSHA, Department Of Paediatrics, Department Of Community Health And Epidemiology, Halifax, Canada, ⁸Hospital Puerta de Hierro Majadahonda, Department Of Obstetrics And Gynaecology, Majadahonda, Spain, ⁹CHU de Saint-Etienne, Department Of Infectious Disease, Saint-Etienne, France, ¹⁰Monash Children's Hospital, Infection And Immunity Department, Melbourne, Australia, ¹¹Wellington Hospital, Clinical Trials Unit, Wellington, New Zealand, ¹²Hospital Universitario de Burgos, Department Of Obstetrics And Gynaecology, Burgos, Spain, ¹³GSK, Vaccines, Rockville, United States of America

Background: A maternal RSV vaccine is being developed to allow prevention of RSV disease among infants through passive immunity. We assessed RSVPreF3 investigational vaccine's reactogenicity and safety in mothers following administration during the 3rd trimester of pregnancy, pregnancy outcomes and safety in infants. Results until 6 weeks post-delivery are shown here.

Methods: In this ongoing phase II, observer-blind, placebo-controlled, multi-country trial, healthy pregnant women aged 18-40 years were randomised 1:1:1 to receive a single 60 or 120 µg dose of RSVPreF3 or placebo between 28^{0/7}-33^{6/7} weeks of gestation.

Results: 213 pregnant women and 206 infants participated to the study (5 women withdrew consent, lost to follow up or moved away pre-delivery; 1 refused infant participation; 1 experienced stillbirth that was assessed as not vaccine-related). Among women, the most frequently reported solicited adverse events (AEs) were pain at the injection site and fatigue (Table). Unsolicited AEs were reported by 30.2% of women, most frequent being influenza (2.8%) and oropharyngeal pain (2.8%). None of the serious AEs (SAEs) reported for 21.2% of women was fatal or considered vaccine-related; most SAEs were resolved within 1-7 days. Medically attended AEs (MA-AEs) were reported for 40.6% and pregnancy-related AEs of special interest (AESIs) for 22.6% of women (Table). 186 live births without and 21 with congenital anomalies (including minor ones) were recorded, none of which were life threatening, being evenly distributed across groups. SAEs were recorded in 24.8% of infants, none being fatal or assessed as vaccine-related, and MA-AEs and neonatal AESIs in 26.7% and in 18.0% of infants, respectively (Table). None of pregnancy-related or neonatal AESIs were assessed as vaccine-related.

Table. AEs reporting from vaccination until 6 weeks post-delivery

			60 RSVPreF3	120 RSVPreF3	Placebo	Total	
			n	n	n	n	% (95% CI)
Maternal solicited AEs within 7 days post-vaccination (N=210 ^a)							
Injection site	Pain	Grade 1	34	31	10	75	35.7 (29.2; 42.6)
		Grade 3	*1*	*1*	*1*	1	0.5 (0.0; 2.6)
	Erythema (mm)	Grade 1	1	5	0	6	2.9 (1.1; 6.1)
		Grade 3	0	0	0	0	0 (0; 1.7)
	Swelling (mm)	Grade 1	2	3	0	5	2.4 (0.8; 5.5)
		Grade 3	*1*	*1*	*1*	1	0.5 (0.0; 2.6)
Systemic	Fatigue	Grade 1	20	17	9	46	21.9 (16.5; 28.1)
		Grade 3	1	1	0	2	1.0 (0.1; 3.4)
	Headache	Grade 1	16	13	9	38	18.1 (13.1; 24.0)
		Grade 3	*1*	*1*	*1*	1	0.5 (0.0; 2.6)
	Nausea	Grade 1	12	9	8	29	13.8 (9.4; 19.2)
		Grade 3	1	2	0	3	1.4 (0.3; 4.1)
	Vomiting	Grade 1	4	2	2	8	3.8 (1.7; 7.4)
		Grade 3	1	2	0	3	1.4 (0.3; 4.1)
	Diarrhoea	Grade 1	7	10	8	25	11.9 (7.9; 17.1)
		Grade 3	1	1	0	2	1.0 (0.1; 3.4)
	Abdominal pain	Grade 1	3	7	4	14	6.7 (3.7; 10.9)
		Grade 3	1	3	0	4	1.9 (0.5; 4.8)
	Temperature (°C) ≥38.0		0	0	0	0	0 (0; 1.7)
		>40	0	0	0	0	0 (0; 1.7)
Maternal unsolicited AEs within 30 days post-vaccination (N=212 ^b)							
At least one AE	Any	19	25	20	64	30.2 (24.1; 36.9)	
	Related	1	1	1	3	1.4 (0.3; 4.1)	
	Grade 3	1	3	0	4	1.9 (0.5; 4.8)	
	Grade 3-related	0	0	0	0	0 (0; 1.7)	
Maternal AEs reported until 6 weeks post-delivery (N=212 ^b)							
SAEs	At least one AE	14	17	14	45	21.2 (15.9; 27.4)	
MA-AEs	At least one AE	28	34	24	86	40.6 (33.9; 47.5)	
AESIs	At least one AE	17	19	12	48	22.6 (17.2; 28.9)	
Infant AEs reported from birth until 6 weeks post-birth (N=206)							
SAEs	At least one AE	13	19	19	51	24.8 (19.0; 31.2)	
MA-AEs	At least one AE	16	20	19	55	26.7 (20.8; 33.3)	
AESIs	At least one AE	9	15	13	37	18.0 (13.0; 23.9)	

^a2 women did not provide information on solicited AEs and 1 was excluded from the analysis due to inadvertent unblinding; ^b1 woman excluded from the analysis due to inadvertent unblinding; N, number of participants; n, number of participants in a given category; CI, confidence interval; *x*, x women reported in one group and none in other groups, those women remain blinded since the study is ongoing; **Grade 1**, >20 to ≤50 mm for erythema and swelling, easily tolerated for other AEs, and **Grade 3**, >100 mm for erythema and swelling, prevents normal everyday activities for pain, fatigue, headache, nausea, vomiting, diarrhoea, abdominal pain, and unsolicited AEs. **Notes:** Grade 2 data not shown. Global Alignment of Immunization safety Assessment in pregnancy (GAIA) case definition was used for AESI evaluation.

Conclusions: Maternal RSVPreF3 vaccine demonstrated favourable safety profile in mothers and infants. **Funding:** GlaxoSmithKline Biologicals SA
Clinical Trial Registration: NCT04126213

THE YOUTH ATTITUDES ABOUT VACCINES (YAV-5) SCALE: ADAPTING THE PARENT ATTITUDES ABOUT CHILDHOOD VACCINES SHORT SCALE FOR USE WITH YOUTH IN GERMAN, FRENCH AND ITALIAN IN SWITZERLAND, EXPLORATORY FACTOR ANALYSIS AND MOKKEN SCALING ANALYSIS

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

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Background: Survey. Vaccine hesitancy (VH), defined as the delay in acceptance or refusal of some or all recommended adult and childhood vaccines despite availability of vaccination services is a threat to global health. No validated measures of VH for adolescent vaccination currently exist. We adapted the 5-item short scale of the Parent Attitudes about Childhood Vaccines (PACV) survey instrument (PACV-5) and translated it into German, French and Italian. We administered the PACV-5 to 1,003 youths aged 15-26 years in Switzerland.

Methods: We used Exploratory factor analysis (EFA) and Mokken scale analysis (MSA) to explore the psychometric properties (dimensionality, local independence, monotonicity, and invariant item ordering), investigated the reliability of the PACV-5 with the Cronbach's alpha and determined its construct validity by using logistic regression of the association between youth VH and non-receipt of the first HPV vaccine first dose with non-immunization as the primary outcome.

Results: EFA produced a single scale in German and French while two factors were obtained in Italian. All three language versions fit the Mokken scale models with overall medium scale strength. Cronbach's alpha was satisfactory in German and French but below 0.5 in Italian. Overall, there was significant association between VH and HPV vaccine non-receipt (OR; 3.9, 95%CI; 2.32-6.78). Analyses stratified by language showed a significant relationship between VH and non-receipt of HPV vaccine in German and French and a trend in Italian.

Conclusions: Our results demonstrate how PACV-5 is a valid and reliable scale for identifying vaccine hesitant youths and measuring VH in relation to the HPV vaccine uptake in Switzerland. This will help explore the determinants of HPV VH and help design evidence-based, targeted interventions that could improve HPV vaccine uptake among youth in Switzerland and elsewhere

HUMORAL AND CELLULAR IMMUNE MEMORY RESPONSE 12 YEARS AFTER SINGLE DOSE VACCINATION AGAINST HEPATITIS A IN ARGENTINIAN CHILDREN

E-POSTER VIEWING

E-POSTER DISCUSSION SESSION 14: VACCINES 2

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Background: Infants' universal HAV single-dose vaccination has been highly effective for controlling HAV infection in Argentina, and in many other Latin-American countries that adopted that strategy. Although antibodies wane over time, this has not been associated with HAV outbreaks or breakthrough infections, suggesting a relevant role for memory immunity. This study aimed to assess long term humoral and cellular immune memory response after HAV single-dose vaccination.

Methods: We selected HAV-single dose vaccinated individuals known to have, in a 2015 study, protective (PAL) or unprotective antibody levels (UAL) against HAV. Humoral memory response was assessed by measuring anti-HAV Ab titers at admission in both groups, and 30 days after a booster dose in the UAL group. Flow cytometry analysis of peripheral blood mononuclear cell (PBMC) sample stimulated with HAV antigen was performed to identify activated CD4+ memory T cells (CD3+CD4+CD69+CD45RO+) or CD8+ memory T cells (CD3+CD8+CD69+CD45RO+).

Results: 48/52 (92%) individuals from UAL group who completed follow up reached protective levels after booster dose. In the PAL group, 2/27 (7%) individuals waned HAV Abs lacking seroprotection, while in 25/27 (93%) Abs remained >10 mIU/mL. HAV-specific memory CD4+ T cells were detected in 25/47 (53.2%) subjects while HAV-specific memory CD8+ T cells were observed in 16/47 (34.04%) individuals. HAV-specific memory CD4+ and CD8+ T-cells was observed in 14/25 (56%) individuals with non-detectable anti-HAV Ab levels, showing that the presence of memory T-cells was independent of the level or presence of anti-HAV antibodies.

Conclusions: Long-term immunity demonstrated in the present work, including or not antibody persistence, suggests that individuals with waned Ab titers may still be protected and supports the single-dose HAV strategy.

EP001 / #795

RARE CASE OF CYST IN THE LUNG -HOW DO I MANAGE?

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Rare Case of Cyst in the Lung -How do I manage?

Background: Hydatid disease is a zoonotic disease of worldwide distribution caused by the larval stage of the parasite. Surgery is the definitive therapy of pulmonary hydatidosis. Benzimidazoles may be considered in patients with a surgical contraindication. Controversies still exist about optimal time to start pharmacotherapy, Timings of surgery and duration of treatment.

Case Presentation Summary: 9 year old male child presented with hemoptysis one and half month back. . EXAMINATION Poorly nourished, clubbing +. Respiratory system examination - decreased air entry on right lower zone, Total IgE- 2680.46 CT thorax - large thick wall cystic lesion in right lower lung containing clear fluid likely ?? hydatid cyst, similar cyst visible in liver Differential Diagnosis considered - Hydatid cyst Pleuropericardial cyst Tumor/ metastasis Lung abscess/ fluid filled cyst/TB Started on oral Albendazole. Cystectomy was performed without any complication. Recovered well and on oral albendazole which is planned to continue for least 3 months

Learning Points/Discussion: Hydatid cyst is a rare cause of cyst in the lung This child was managed with pharmacotherapy and surgical intervention

WEST NILE VIRUS OUTBREAK IN THE SOUTH OF SPAIN: PAEDIATRIC CASES OF NEUROINVASIVE DISEASE

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): WEST NILE VIRUS OUTBREAK IN THE SOUTH OF SPAIN: PAEDIATRIC CASES OF NEUROINVASIVE DISEASE

Background: Infection due to West Nile virus (WNV), an emerging mosquito-borne virus, can cause devastating neuroinvasive disease. Since its first isolation, it has spread worldwide causing human outbreaks in southern Europe over the last 20 years. Prior to 2020, only 6 adult cases of WNV neuroinvasive disease had been notified in Spain. During the outbreak in summer 2020 a total of 77 cases of WNV neuroinvasive disease were diagnosed in occidental Andalusia, 6 of which being children.

Case Presentation Summary: All of 6 paediatric cases were from the province of Seville (5 male/1 female; age 4-14 years (median 8 years)). At presentation, all children had fever, headache and vomiting, 4 decreased level of consciousness, 3 behaviour changes, 3 movement disorders, 1 seizures, 1 bulbar dysfunction and 1 right hemiparesis. WNV blood serology was positive (IgM ELISA) in all cases. CSF serology was obtained in 5 patients being positive (IgM) in 2. RNA was not detected in CSF/blood/urine of any patient. Brain MRI was altered in 2 patients and EEG in 4. All patients received IVIG, dexamethasone and acyclovir (until HSV encephalitis was ruled out), 5 received antibiotic therapy (until CSF negative cultures), 2 methylprednisolone (suspected autoimmune encephalitis) and 2 antiepileptic drugs. 5 patients were discharged after resolution of neurological symptoms (median days of hospitalization: 9), 1 patient remains admitted with flaccid tetraparesis and need of mechanical ventilation. 1 patient had a biphasic clinical course with psychiatric symptoms. 2 of the discharged patients have mild cognitive complaints at follow-up.

Learning Points/Discussion: WNV neuroinvasive disease is a potential devastating disease and should be included as differential diagnosis in children presenting with neurological symptoms in southern Europe during summer/autumn. Management remains to be supportive as specific therapy is lacking.

MIS-C AND HIV: HAVE WE MET BEFORE?

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): MIS-C and HIV: have we met before?

Background: The overlap of hyper-inflammatory syndromes in children is currently a topic of discussion. In April 2020, "Multisystem Inflammatory Syndrome in Children" (MIS-C) related to SARS-CoV-2 infection was first described. We here report two cases of HIV infection in children arising with characteristics similar to MIS-C.

Case Presentation Summary: We describe two girls with HIV infection: one 5 years old and the other 17 years old. At the diagnosis they were presenting fever and severe illness with evidence of coagulopathy and elevated markers of inflammation. Both have developed cardiac involvement: the 17 years old girl had ventricular dysfunction, severe myocarditis and arrhythmia; the 4 years old girl had characteristics of cardiac dysfunction were left ventricular hypertrophy, arrhythmia and increased cardiac markers. The little girl presented with interstitial pneumonia due to Pneumocystis Jirovecii and CMV infection; the other did not have opportunistic infections, but a worsening of the already known epilepsy. They had the criteria for diagnosed as MIS-C. In addition to an appropriate anti-retroviral treatment, the patients also needed immunomodulatory drugs: IGIV was sufficient in the 17-year-old girl, while receptor antagonist of IL-1, were also used in the 4-year-old girl. Both patients improved their general conditions with an optimal recovery of cardiac function.

Learning Points/Discussion: The relationship of MIS-C to SARS-CoV-2 infection suggests that the pathogenesis involves post-infectious immune dysregulation. Other RNA viruses, such as HIV, may induce an altered immune response; the extreme mutability of these viruses easily makes them proponents of reactive diseases capable of involving any district of the human organism. The predilection for heart tissue, as well as the high responses to specific therapies similar to those for autoimmune carditis, require a better understanding of the mechanism of the cytokines involved.

PARADOXICAL REACTION IN TUBERCULOUS MENINGITIS

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Worsening of tuberculous meningitis lesions despite adequate anti-tuberculosis treatment

Background: Tuberculous meningitis (TBM) is a rare tuberculosis presentation, but with high morbimortality. It is more frequent in children less than 2 years old. Paradoxical reaction, defined as the worsening of a preexisting lesion or the appearance of a new lesion after improvement with anti-tuberculosis drugs, occurs in approximately one-third of TBM.

Case Presentation Summary: A 16-months old girl presented to the emergency room with fever, vomiting and irritability for five days. She was admitted for intravenous serum therapy. Two days later she presented progressive consciousness level alteration. A cerebral CT scan showed marked acute hydrocephalus. An external ventricular drain was placed, microbiological samples were taken and broad-spectrum antibiotics plus dexamethasone were initiated. Cerebrospinal fluid (CSF) *Mycobacterium tuberculosis* PCR returned positive so a four-drug anti-tuberculosis regimen was started. TST was 0mm and interferon-gamma release assays were indeterminate. Thoracic CT scan showed pulmonary tuberculosis. Her mother was diagnosed of pulmonary tuberculosis by contact tracing study. The patient experienced a slow progressive improvement. Once CSF culture returned positive for *Mycobacterium tuberculosis* and sensitivity test showed susceptibility to all first-line drugs, ethambutol was withdrawn. After 2 months of good adherence to treatment, a new CT scan revealed new-onset tuberculomas. MRI showed a significant increase in leptomeningeal inflammation. No clinical worsening was observed. Paradoxical reaction was suspected and corticosteroids were added, with complete resolution of the lesions.

Learning Points/Discussion: TBM is a medical emergency. A high index of clinical suspicion, an early diagnosis and a prompt anti-tuberculosis treatment are necessary to increase survival of these patients. Symptoms in young children could be nonspecific, as irritability, anorexia or vomiting. Awareness about paradoxical reactions in TBM is crucial to avoid leading to wrong conclusions like treatment failure or first-line anti-tuberculosis drug resistance.

CEREBRAL MALARIA IN EUROPE: REDUCED AVAILABILITY OF IV ARTEMISININE DERIVATIVES

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): CEREBRAL MALARIA IN EUROPE: REDUCED AVAILABILITY OF IV ARTEMISININE DERIVATIVES

Background: Malaria should not be overlooked in a febrile child that has recently arrived from an endemic country. Artesunate, an IV artemisinin derivative, is now considered the first-line treatment for severe malaria albeit its limited availability in some European countries.

Case Presentation Summary: A twelve-year-old previously healthy girl was admitted one day after arriving in Portugal from Guinea-Bissau with a two-day history of high-grade fever, headache, abdominal pain and generalized myalgia. She presented anemia (hemoglobin 10.0 g/dL, NR: 12.0-16.0), thrombocytopenia (78×10^9 /L, NR: 150-450) and significant elevation of inflammatory markers (PCR 301.0 mg/L, NR<5, and procalcitonin >100 ng/mL, NR<0.1). Severe *Plasmodium falciparum* malaria was diagnosed due to hyperparasitemia (28.5%/erythrocytes – 11.872.000 parasites/ μ L) and cerebral malaria with severe lethargy and persistent vomiting and cytotoxic lesions of the corpus callosum (CLOCCs) on brain MRI, although there was not any electroencephalographic evidence of epileptic activity. IV quinine and clindamycin were administered, with progressive clinical improvement and lowering parasitemia. IV artesunate was not administered because it was not immediately available. Oral therapy with artemeter/lumefantrine was started 5 days later, after oral intake was resumed, parasite clearance since day 3 and the patient was discharged without symptoms on day 8.

Learning Points/Discussion: Although the use of IV artemisinin derivatives has risen over the last years in several European countries, its availability remains scarce since it does not possess a manufacturing and marketing license in the European Union. The need for a nationally centralized authorization as well as European regulation should be reviewed, particularly in cases of severe malaria with high risk of multi-organ failure and death, where the bureaucratic hurdles may hinder its timely administration.

CANDIDA-MENINGITIS AS A LATE COMPLICATION OF SUSPECTED UNTREATED NEONATAL CANDIDA-INFECTION, PRESENTING WITH AQUEDUCT STENOSIS AND SINUS VEIN THROMBOSIS IN AN 8 WEEK OLD FORMER PRETERM INFANT.

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Hydrocephalus due to aqueduct stenosis in an 8 week old former preterm infant.

Background: Hydrocephalus internus due to aqueduct stenosis in young infants can be a complication of CNS-infection. In systemic candida-infections, CNS-infections can become apparent with weeks of delay, especially if initially untreated. We present the case of an 8 week old former preterm with candida-meningitis 6 weeks after systemic infection without an identified pathogen.

Case Presentation Summary: A former preterm was referred to us for abnormal headgrowth, ultrasound showing hydrocephalus internus. MRI showed aqueduct stenosis and thrombosis of the right sinus transversus. During neurosurgical intervention, massive intraventricular growth of white, cotton-like substance was seen. CSF-analysis showed high protein, very low glucose and pleocytosis, highly suggestive of TB-meningitis. Antituberculous therapy was initiated, as well as broad-spectrum antibiotics and antifungal therapy due to the macroscopical intraoperative findings. The patients history showed that after preterm birth at 34 weeks he had a neonatal infection (no pathogen identified) which was treated with antibiotics for 6 days, his symptoms resolving only very slowly. He was discharged after 3 weeks, but persistent oral and perineal soor was reported. After intervention, repeated CSF cultures showed candida albicans, as well as swabs from different body regions. Treatment was streamlined to antifungal therapeutics. We suspect that the neonatal infection, which had shown very slow improvement and no identified pathogen, was a systemic candida-infection, thus untreated. Candida CNS-infection with a latency of weeks is reported, thrombosis is a known complication as well as CSF- analysis mimicing TB.

Learning Points/Discussion: In an infant abnormal headgrowth during the first weeks of life, consider latent CNS-infection, or complication of unrecognized CNS-infection as a possible cause. Detailed history can help to find the right diagnosis. Candida meningitis can cause sinus vein thrombosis and aqueduct stenosis, CSF-findings can mimic tuberculous meningitis.

VACCINE HESITANCY, KNOWLEDGE AND ATTITUDES OF PARENTS ABOUT VACCINES AND VACCINE-PREVENTABLE DISEASES IN GREECE

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Background: The World Health Organization (WHO) describes vaccine hesitancy as the “delay in acceptance or refusal of vaccination despite availability of vaccination services. Vaccine hesitancy remains one of the ten major global threats as per WHO in 2019. Research has identified several factors associated with parental vaccine refusal such as socio-cultural, personal beliefs and attitudes or previous vaccination experiences. The aim of this survey is to assess knowledge, attitudes and perceptions on vaccination of parents of children in a large geographical area in Western Greece.

Methods: A cross-sectional questionnaire based prospective survey was conducted between September 2019 to June 2020 on parents of children attending primary education in the city of Patras in Western Greece. Data on parental attitudes and beliefs about vaccinations were collected. Multivariable logistic regression was used to investigate factors associated with vaccine uptake.

Results: A total of 1227 questionnaires were analysed. 77% of parents belonged to age group 26-35 years, 73.7% were women. The majority of the sample participants were married/cohabiting (85.7%). 84.6% of them stated they would fully vaccinate their children. Main information sources for Greek parents were their primary care paediatricians (90.8%). In univariate analysis vaccination uptake was associated with older age ($p<0.002$), marital status (married/cohabiting) ($p<0.001$), Greek nationality ($p=0.001$) and higher education ($p=0.002$). In the multivariate analysis, marital status ($p<0.002$) and nationality ($p<0.001$) were found to be the most significant determinants.

Conclusions: Overall we found that the percentage of Greek parents that wish to vaccinate their children as per national recommendations is high. Public health interventions should target on the characteristics of the remaining percentage of vaccine hesitant parents. Training healthcare professionals to provide adequate information about vaccinations, is crucial to clarify misperceptions and concerns.

JAUNDICE AS PRESENTATION OF CYSTIC ECHINOCOCCOSIS

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Unusual cause of jaundice

Background: Cystic hydatidosis is a significant public health problem in South America, the Middle East and eastern Mediterranean. Cysts may be found in almost any organ, the liver being the most affected (60%), followed by the lungs (25%). Usually asymptomatic, cysts start to show symptoms once they outreach 10cm in diameter.

Case Presentation Summary: A 15-year-old girl presented to the emergency room with abdominal pain, vomiting, fever and, for the last 72 hours, jaundice and urine and stool colour changing. The patient was the first child of blood-related healthy parents, originally from Morocco. Her uncle had a history of hydatid cyst. The patient was born in Catalonia but she lived in a rural area of Morocco for 5 years (2010-2015), where she had contact with animals. Laboratory findings were aspartate aminotransferase level 59IU/L, alanine aminotransferase level 58IU/L, total bilirubin level 9mg/dL with direct bilirubin level 7,6mg/dl and eosinophil count 2889. Abdominal ultrasound showed a 12 cm solid-microcystic hepatic mass with compression of the right intrahepatic bile duct. MRI revealed a multivesicular hydatidic cyst in an active stage (fig 1). Treatment with albendazole 15mg/kg/day PO was initiated. IgG serology was positive to *Echinococcus granulosus*. Due to COVID-19 intercurrent, the patient underwent elective surgery the 30th day of treatment, performing a partial cystectomy because of important local adherences Treatment with albendazole is still ongoing 3 months after the surgery.

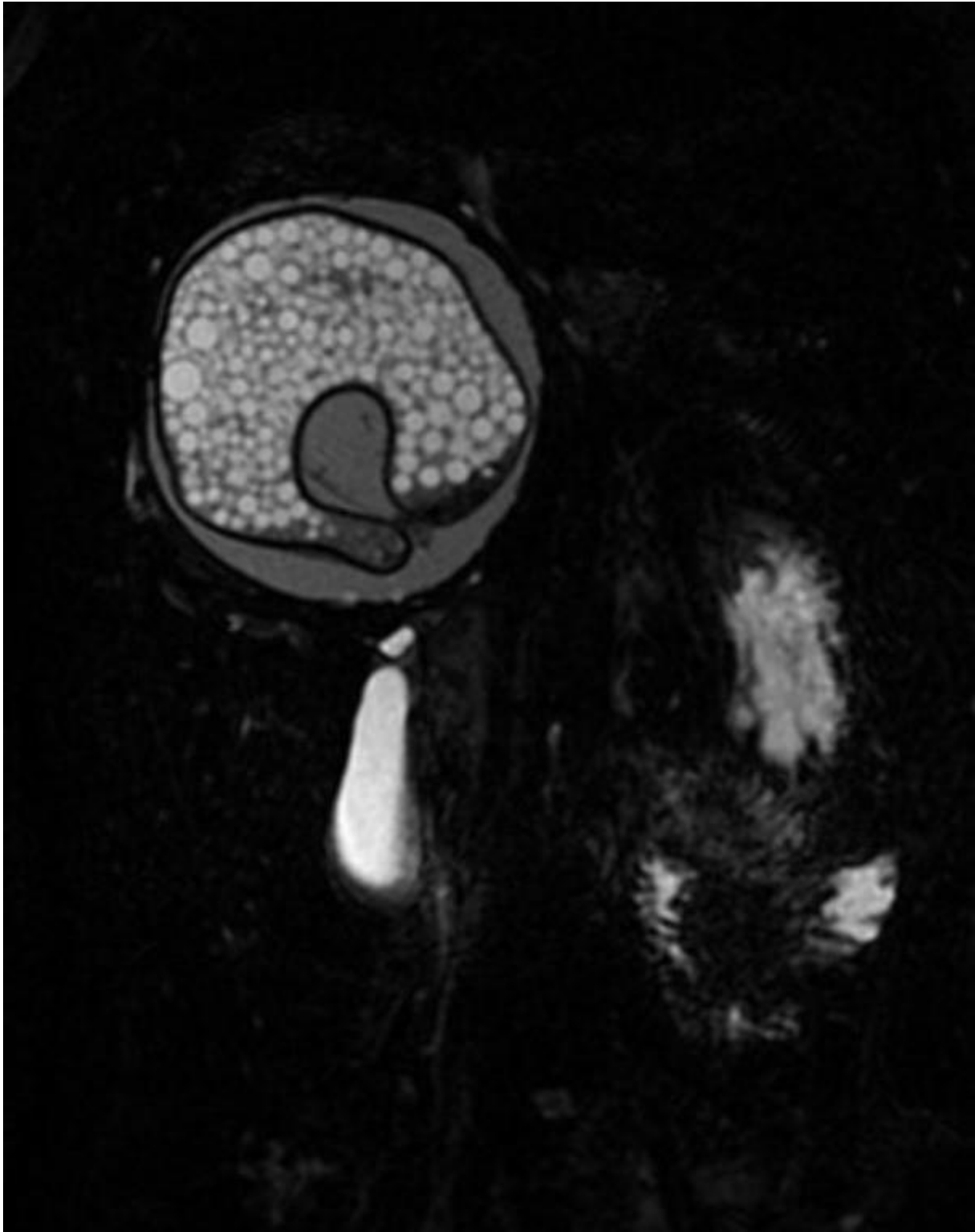


Fig 1.

Learning Points/Discussion: Jaundice can be the clinical presentation of cystic echinococcosis if the biliary duct is affected. Management of cystic echinococcosis requires a multidisciplinary team involving paediatric surgery, especially in cysts bigger than 5cm. Echinococcosis is part of the differential diagnosis in patients with chronic abdominal pain coming from endemic countries.

DIAGNOSTIC CHALLENGES IN A SEPTIC INFANT WITH UNDERLYING IMMUNODEFICIENCY

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): DIAGNOSTIC CHALLENGES IN A SEPTIC INFANT WITH UNDERLYING IMMUNODEFICIENCY

Background: Hyper-IgE syndrome (HIES) is rare primary immunodeficiency caused by mutations in STAT3 gene in 60% of the cases. Symptoms occur in infancy with pustular dermatitis, recurrent bacterial infections and abscesses. During childhood patients develop characteristic facial appearance, elevated serum IgE and a variety of connective tissue and skeletal abnormalities. The absence of immunologic abnormalities and unfulfilled criteria in newborns with severe infectious complications is a diagnostic challenge.

Case Presentation Summary: A female child born full-term with perinatal infection, pustular facial rash and elevated inflammatory markers was treated with antibiotic with good effect. At the age of 1 month she was hospitalized with poor general condition, afebrile, disseminated eczematous dermatitis, extremely high WBC, elevated CRP, ESR and microbiologic data of Staphylococcus aureus MSSA. Her condition deteriorated with occipital and liver abscesses, pulmonary consolidation in both lungs and clinical, laboratory and imaging data of MSSA Sepsis. Aggressive antibiotic treatment, hemotransfusions, IVIG, Plasma. The immunologic investigations revealed normal humoral immunity and cell immunity with slightly reduced total T lymphocytes and their suppressor-cytotoxic subpopulation; B lymphocytes in normal range; increased NK cell count. Positive expression of HLA class I and CD 18, CD 15, CD11b, CD 11c. Normal T-cell function and NBT test. The child underwent genetic testing revealing a pathogenic mutation in STAT3 c.1910T>C (p.Val637Ala) gene. An antibiotic prophylaxis with Co-trimoxazole was initiated with good clinical effect on the rash and no data of infections.

Learning Points/Discussion: The absence of immunologic abnormalities is typical for infants with HIES. The monitoring - evaluation of CBC, markers of inflammation, calcium homeostasis, investigation of humoral and cell immunity, microbiological tests, control of dental status and skeletal system. Treatment protocol - long lasting antibiotic prophylaxis, antifungals and IVIG if severe complications occur.

TUBERCULOSIS SCREENING AMONG MIGRANT CHILDREN IN GREECE: A SINGLE CENTER EXPERIENCE

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Background: Tuberculosis(TB) screening and treatment in migrant children is an important public health measure for the prevention of severe disease among this vulnerable population. In Greece, all migrant children are screened for TB as part of their health assessment before obtaining a resident permit or prior to their settlement in shelters. The aim of this study was to describe certain demographic, clinical and laboratory characteristics in a population of migrant children screened for TB in our clinic.

Methods: We retrospectively reviewed the clinical records of all migrant children that were referred to our hospital outpatient clinic between 01/01/2018 and 31/12/2020 to obtain a health assessment. Data included demographics, PPD test, prior BCG vaccination, Quantiferon test, chest X-ray, treatment, and outcome. All children with positive PPD-test were offered chest radiography and Quantiferon test, and treatment was decided accordingly.

Results: A total of 586 asymptomatic children were screened by PPD-test. Median age was 6 years (IQR=3-10) with male predominance (57.7%). Asia was the most common geographic area of origin (n=370, 63.1%). Previous BCG vaccination was reported in 271 children (46.2%). Fifty children (8.5%), mainly from Afghanistan, with a median age of 10 years (IQR=5-14), tested positive with PPD, and 19.1% of them [9 out of 47; 14 (IQR=6.5-15) years] had positive Quantiferon. Prior BCG vaccination was reported in 42 (84%) and in 6 (66.7%) children with a positive PPD-test and Quantiferon, respectively. Chest X-ray was performed in 56 children (9.6%) without pulmonary involvement. All children but one, lost to follow-up, completed treatment successfully, nine receiving INH for 9 months, and two INH+RIF for 3 months.

Conclusions: Latent tuberculosis was prevalent in newly arriving migrant children examined in our clinic, the majority originating from Afghanistan. If available, confirmation by Quantiferon appears helpful to avoid unnecessary treatment in children with prior BCG and positive PPD-test.

ACUTE RHEUMATIC FEVER IN DISGUISE OF PEDIATRIC INFLAMMATORY MULTISYSTEM SYNDROME TEMPORALLY RELATED WITH COVID-19 (PIMS-TS) IN AN ADOLESCENT BOY

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Acute Rheumatic Fever in disguise of Pediatric Inflammatory Multisystem Syndrome temporally related with COVID-19 (PIMS-TS) in an adolescent boy

Background: Pediatric Inflammatory Multisystem Syndrome temporally related with COVID-19 (PIMS-TS) or Multisystem Inflammatory Syndrome in Children (MIS-C) is currently considered a rare post-COVID-19 complication which, in a minority of cases, can lead to death. There are certain similarities between acute rheumatic fever (ARF) and PIMS-TS. Evidence of exposure to Group A streptococcus is the prerequisite for ARF diagnosis. Similarly PIMS-TS seems a post acute immunological reaction to an initial SARS-CoV-2 infection.

Case Presentation Summary: Presented with chief complaints of fever and cough for 10 days and difficulty in breathing for 1 day. On examination child was having respiratory distress with RR-68/mt and suprasternal and subcostal retractions. Pulses were low volume with a BP record of 80/30 mmHg. Per abdomen Liver was enlarged 8cm, tender with span of 16 cm. JVP was raised. There was swelling on dorsum of hands and feet. On CVS examination there was tachycardia with systolic as well as diastolic murmurs in mitral and aortic area. Child was initially managed as a case of cardiogenic shock with a possibility of sepsis and pediatric inflammatory multisystem syndrome temporarily associated with covid 19. Child was given intravenous immunoglobulin. Echocardiography revealed severe MR and AR with ejection fraction of 42%. Antistreptolysin (ASO) titres were significantly increased and so were inflammatory markers including CRP, ESR, Ferritin. Child was treated with oral steroids and benzathine penicillin. Patient's anti SARS-CoV-2 antibodies were also positive. Child was discharged on penicillin prophylaxis after 18 days of hospital stay.

Learning Points/Discussion: Even though there is a pandemic of Covid-19 one should be cautious about the occurrence of other diseases also. In our case although child initially looked like a case of PIMS-TS fulfilling WHO diagnostic criteria but presence of severe MR/AR was a hint for the diagnosis of underlying rheumatic heart disease and start on benzathine penicillin as secondary prophylaxis on discharge.

DALBAVANCIN USE IN A NEONATE WITH OSTEOMYELITIS

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Dalbavancin use in a neonate with osteomyelitis

Background: Management of acute neonatal osteomyelitis still remains challenging. We report a case of acute osteomyelitis in a preterm neonate treated with vancomycin and dalbavancin in order to shorten the length of hospital stay.

Case Presentation Summary: A male neonate, born prematurely (GA26w+5d, BW910gr) after a caesarian section, and receiving intensive care due to prematurity and its complications, developed edema, redness, sensitivity with simultaneously mobility restriction (passive and automatic movements) of the right lower extremity on the day 90 of hospitalization. Laboratory investigation including tibia X-ray, blood-culture, vein Triplex of the lower extremities, thrombophilia assessment were normal. Initial MRI of lower extremities was suggestive of myositis-periostic reaction of the femur. The patient was started on iv vancomycin and meropenem. On the 100th day of hospitalization, due to persistence of the clinical findings, an MRI was repeated showing evidence compatible with osteomyelitis of the right femur, while a bone scan documented the presence of bone inflammation. A central venous catheter was placed and the infant remained stable while repeated laboratory inflammatory indices were normal. Clinical findings improved gradually. Meropenem was discontinued after 24 days of treatment whereas vancomycin was continued as monotherapy for a total of 28 days. Treatment was completed with the addition of 2 doses (22.5mg/kg per dose) of iv Dalbavancin given with an interval of 7 days. The central catheter was removed after the second dose. Following MRIs (119th and 154th day) showed a significant radiological improvement. The infant was discharged on the 142th day and remaining on regular follow-up, thereafter.

Learning Points/Discussion: This is the first reported case of Dalbavancin safely given to an infant with osteomyelitis. This approach may reduce the length of hospital stay and allow the earlier removal of the central venous catheters.

ACUTE ABDOMEN IN AN 8-YEAR-OLD GIRL

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): Acute abdomen in an 8-year-old girl

Background: Pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) is a newly recognized systemic illness manifested by persistent fever and elevated inflammatory markers. Clinical presentation of PIMS-TS varies, its' definition is broad, and it can be mistaken for other, more common conditions such as severe infection. Therefore, adequate treatment is often delayed. Unnecessary interventions might be undertaken, such as surgery or antibiotic therapy.

Case Presentation Summary: We admitted an 8-year-old girl due to fever, abdominal pain, and vomiting for four days before admission. On physical examination, macular rash on the thorax and neck and red lips were observed. Laboratory tests revealed elevated CRP: 25 mg/dL, lymphopenia 0.34×10^3 cells/ μ L, and extremely elevated D-dimer level. Concerning SARS-CoV-2 status: PCR (-), IgG antibodies (+). Sepsis was suspected, and ceftriaxone with vancomycin were given. Abdomen ultrasound revealed inflammatory infiltration of the mesentery and intestines in the ileocecal area and inflamed appendix. Thus appendectomy was performed. After surgery, the girl's condition worsened. She had hypotension, tachycardia, and declines in saturation. She developed bilateral conjunctivitis, red rash on the trunk, and edema of extremities. She had elevated cardiac markers (NT-proBNP: 4136 pg/ml, troponin I: 26 ng/L); all other laboratory aberrations typical for PIMS-TS were present. Echocardiography revealed an ejection fraction of 50%. Due to hypotension, steroids were applied, followed by immunoglobulins. The patient fully recovered.

Learning Points/Discussion: Making a diagnosis of PIMS-TS can provide a challenge as one can encounter different masks of this condition. In the presence of increasing PIMS-TS occurrence, it must be taken into consideration while making a differential diagnosis in patients with fever and acute abdomen, especially when additional symptoms, such as rash, are present. Exposure to SARS-CoV-2 in medical history is also a valuable hint.

CHRONIC LYMPHADENOPATHY ARE NOT ALWAYS TUBERCULOUS LYMPHADENITIS; NEED TO THINK BEYOND

E-POSTER VIEWING

MEET THE EXPERT E-POSTERS

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Title of Case(s): CHRONIC LYMPHADENOPATHY ARE NOT ALWAYS TUBERCULOUS LYMPHADENITIS; NEED TO THINK BEYOND

Background: India has the highest tuberculosis burden according to a report from WHO in 2019. The number of non-tubercular mycobacterial infections is also on the rise worldwide. The knowledge about these infections is meager among pediatricians. This is a case report of an immunocompetent child presenting with chronic lymphadenopathy diagnosed with *M. abscessus*.

Case Presentation Summary: A 5-year-old well-grown female child, presented with a progressively increasing swelling in the left parotid area over a period of a month. FNA of the pre-parotid lymph nodes revealed a very low count of Acid-fast bacilli, CBNAAT didn't detect M.TB, and cytology suggestive of granulomatous inflammation. Antitubercular drugs (HRZE), were initiated but there was worsening of the clinical picture. There was purplish discoloration of the skin above the swelling along with the involvement of submandibular and the postauricular lymph nodes. The interferon-gamma release assay was negative which increased the suspicion towards NTM and she was initiated on Clarithromycin, rifampicin, and ethambutol. The pre-parotid lymph node abscess further worsened with sinus formation. The mycobacterial culture revealed non tubercular mycobacteria and molecular typing showed *M. abscessus*. She was managed initially with 2 weeks of parenteral imipenem and amikacin and was switched over to oral linezolid, co-trimoxazole, and clarithromycin when the swelling started to regress and was on oral therapy for 6 months. The child tolerated the therapy and no recurrence documented during the follow-up of a year.

Learning Points/Discussion: This case report highlights the importance of IGRA and molecular typing of NTM. Indian guidelines on tuberculosis management do not encourage IGRA in the management of TB but are useful in differentiating mycobacterial and NTM infections in older children. Molecular typing helps in refining the management and reduce the disfigurement due to sinus formation in children.

GLOBAL RESEARCH PRIORITY SETTING FOR CHILDHOOD PNEUMONIA: RESULTS FROM AN E-DELPHI STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - BACTERIAL PNEUMONIA

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Background: Pneumonia is the leading infectious killer of children under 5, causing an estimated 700,000 deaths in 2019, according to the Global Burden of Disease study. Continued lack of action and investment in pneumonia will prevent many countries from achieving the new sustainable development health goals by 2030, often pneumonia is the “missing piece” and major barrier to reducing child deaths. The Every Breath Counts Research Group conducted a study supporting research priority setting for childhood pneumonia and disseminate to the global pneumonia community, donors and stakeholders working in high-burden countries.

Methods: The e-Delphi method was used to consult over 300 childhood pneumonia experts through a multi-round online survey, collecting data on childhood pneumonia categories: 1) prevention, 2) diagnosis, 3) treatment and 4) crosscutting. Experts could also add topics related to pneumonia and COVID-19. The multiple rounds of the e-Delphi facilitated reaching expert consensus on research priorities for childhood pneumonia. Experts were invited to participate, via email, based on their work experience and/or publications on childhood pneumonia. A representative sample, in terms of country, gender and organisation type, was sought.

Results: from the study will be presented which show the pneumonia research priorities, as selected and ranked by the experts. The results included the additional research topics added on pneumonia and COVID-19.

Conclusions: These topics should now form the research priorities for global pneumonia control over the next 5-10 years.

MYCOPLASMA PNEUMONIAE INFECTION IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - BACTERIAL PNEUMONIA

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Background: *Mycoplasma pneumoniae* infection is a common and polymorphic disease. Community-acquired pneumonia is the most common clinical form of this infection, but all organs can be affected. The extra-respiratory manifestations, as well as their potential severities, are less well known. The aim of our study was to describe clinical, paraclinical, and evolutive characteristics, and treatment of *Mycoplasma pneumoniae* infections.

Methods: Our study is retrospective including all children hospitalized in our department for *Mycoplasma pneumoniae* infection between 2005 and 2019

Results: We enrolled 18 children divided into 13 boys and 5 girls. The mean age was 15.6years. The main symptoms were fever in 17 cases and cough in 8 cases. Ten patients had a pulmonary manifestation. Thirteen patients had extra-pulmonary involvement. Neurologic involvement was observed in 7 cases: meningitis in 4 cases and meningoencephalitis in 3 case. Five patients had skin involvement dominated by erythema multiforme in 4 cases. Hematologic involvement was observed in 3 patients. Antibiotic therapy was active in *M. pneumoniae* in 13 patients. The outcome was favourable without sequelae for all the patients.

Conclusions: *M. pneumoniae* infection in children is characterized by clinical polymorphism. Systemic extra-respiratory manifestations can be prominent. Early diagnosis and adequate management of this infection improve the prognosis.

INVASIVE PNEUMOCOCCAL DISEASE AND SEROTYPE DISTRIBUTION AT A TERTIARY HOSPITAL IN JAPAN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - BACTERIAL PNEUMONIA

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Background: After the introduction of pneumococcal conjugate vaccines (PCVs), invasive pneumococcal disease (IPD) due to non-vaccine serotypes has been increasing rapidly. These serotype replacements have become a worldwide problem. Interestingly, the serotype replacement is a little different between countries or regions within a country. We analyzed the pneumococcal serotypes of IPD and infectious respiratory diseases isolated at a tertiary hospital in Japan.

Methods: The pneumococcal serotypes of IPD in our hospital were determined from April 2016 to March 2019. Cases of IPD are defined as *Streptococcus pneumoniae* cultured from a normally sterile site. *S. pneumoniae* cultured from nasopharyngeal specimens obtained from patients who were admitted to our hospital with infectious respiratory diseases in 2018 were also analyzed to identify the prevalence of the serotypes.

Results: There were six IPD cases for the three years and 119 pneumococcal isolates in 2018. The six IPDs comprised three bacteremia (serotypes 10A, 12F, and 19A), one subcutaneous abscess (serotype 28F), one meningitis and one pneumomediastinum (serotype 21). There is no report about IPD due to serotypes 21 and 28F. All IPD were non-vaccine serotypes, and all patients had already had PCV13. In 2018, the most common serotype isolated from infectious respiratory diseases patients was 23A (19.3%), followed by 15A (16.0%) and 35B (14.3%), including 21 (7.6%) and 28F (1.7%).

Conclusions: All of the IPD serotypes and most of the prevalent serotypes were non-vaccine serotypes. Especially, pneumococcal serotypes 21 and 28F were newly identified after the introduction of PCV. Since the virulence of non-vaccine serotypes is expected to increase, it is important to accumulate global data of the pneumococcal serotypes of the IPD to further the development of new pneumococcal conjugate vaccines.

STREPTOCOCCUS PNEUMONIAE - ANTIBIOTIC CHALLENGES AND SEROTYPE DISTRIBUTION AT CHILDREN IN BRASOV, CENTRAL ROUMANIA, PRIOR TO AND ONE YEAR AFTER PNEUMOCOCCAL VACCINE IMPLEMENTATION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - BACTERIAL PNEUMONIA

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Background: *S.pneumoniae* remains an important pathogen and still determines a high morbidity and mortality through both mucosal and invasive disease. Romania has only recently implemented the pneumococcal vaccination on the NIP and still has a high resistance pattern at antibiotics commonly used against pneumococcus. The aim of the study is to continue the surveillance of pneumococcal disease at children admitted at the Childrens Clinic Hospital Brasov Romania along with the study of resistance pattern and pneumococcal vaccine coverage.

Methods: Prospective study during 11.2016-07.2019 of children admitted at the childrens Clinic Hospital Brasov for mucosal and invasive pneumococcal disease.

Results: 262 samples of pneumococcus were serotyped and sampled. 163 children came from rural area, 178 were under 2 years of age. 39.3% of them were vaccinated without PCV, 7.2% were vaccinated against pneumococcus at the time of the study. 48% had mucosal disease due to pneumococcus, 6,4% had invasive disease, 45% were admitted for other pathologies and were found to have pneumococcus. Main circulating serotypes: 22.5 % - 19F, 12.5% - 23F. 48% of our serotypes were resistant to more than 3 antibiotics, the coverage for PCV 13 is 73%, PCV15 74.42%, PCV20 82.82%.

Conclusions: Pneumococcus antibiotic resistance remains high in our region before and one year after implementation of PCV13 on the NIP. Continuous surveillance is mandatory and in the future the best coverage in our region is of PCV20.

RETROSPECTIVE ANALYSIS OF CLINICAL PRESENTATIONS AND OUTCOME OF CANADIAN CHILDREN WITH RECURRENT INVASIVE PNEUMOCOCCAL DISEASE: FROM THE IMPACT SURVEILLANCE NETWORK

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - BACTERIAL PNEUMONIA

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Background: Invasive pneumococcal diseases (IPD) due to *Streptococcus pneumoniae* causes severe morbidity and mortality. Clinical manifestations include sepsis, meningitis and pneumonia; particularly affecting young children and the elderly. Pneumococcal conjugate vaccines (PCVs) have been highly effective in preventing IPD. Up to 10.5% of pediatric IPD patients experience recurrent IPD (rIPD) linked to immunocompromise and other risk factors. rIPD mortality is not widely reported but ranges from 0% to 47% in the literature. Here, we investigate rIPD characteristics, risk factors and manifestations as well as the effects of PCV introduction on rIPD.

Methods: Our study is a retrospective review of rIPD, defined as IPD recurrence within 30 days irrespective of serotype, from the Canadian Immunization Monitoring Program, ACTIVE (IMPACT). The study includes children 0 to 16 years of age and covers the period between 1991 and 2019, during a time when PCVs against 7, 10 and/or 13 serotypes have been implemented in Canada.

Results: There were 180 cases of rIPD, with an overall survival rate of 98%. An increase over time in the proportion of rIPD due to non-PCV covered serotypes was observed (from 45% to 71%). Children with pre-existing medical conditions were more likely to be appropriately vaccinated for age, compared to those with no pre-existing conditions (43% vs. 13%, $p = 0.007$), following PCV introduction. The incidence of immunocompromise in this rIPD population was 43%.

Conclusions: The introduction of PCV programs has led to a decrease in rIPD due to vaccine serotypes along with an increase in rIPD due to non-vaccine types. Immunocompromised children appear to be disproportionately at risk of rIPD. The survival rate shown here is similar to the best IPD survival rates reported in the literature.

EPIDEMIOLOGICAL AND CLINICAL FEATURES OF PEDIATRIC COVID-19, AMONG CHILDREN (0-16 YEARS) IN A REGIONAL HOSPITAL CENTRAL GREECE (OCTOBER 2020-JANUARY 2021)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Coronavirus disease (COVID-19) was firstly reported at the end of 2019. The disease rapidly spread around the world and was declared a global pandemic. Despite the epidemiological importance, clinical patterns of children with COVID-19 remain unclear. The aim of this study was to investigate the clinical/laboratory characteristics of COVID-19 in a representative sample of children, according to social-demographic factors.

Methods: We retrospectively searched the children's medical records of the pediatric emergency room of our hospital.

Results: 432 children (0-16 years) were examined in the emergency department from 26/10/2020-23/01/2021 and during this time 253 RT-PCR-SARS-Cov2 were conducted: 130 in asymptomatic children, 51 in close contacts, 51 due to admission in pediatric clinic for other reasons and 21 due to preoperational check or entrance to other hospitals. We found 34 positive RT-PCR in children with no comorbidities, with a median age: 8.5 years (range: 0-16) and a predominance in females [23/34 (67.6%)]. The median time from illness-onset to diagnosis was 2 days. 13/34 (38.2%) were asymptomatic whereas 21/34 (61.76%) presented with symptoms shown in the Table below. Regarding the physical examination, in 18/34 (52.9%) nothing abnormal was found, and all the others 16/34 (47%) had pharyngitis with exudate. The main laboratory findings were: normal WBC with elevated level of monocytes (100%), elevated ALT/SGPT (37.5%), fibrinogen (37.5%) and C-reactive protein (75%) while none had marked lymphocytopenia. There were no abnormal imaging manifestations. The majority of pediatric-COVID-19 cases showed mild to moderate clinical features, and only 2 children needed hospitalization. Table: Symptomatic children with positive RT-PCR for SARS-Cov-2.

Symptoms	n/N (%)
fever	18/21 (85%)
cough-dyspnea	8/21 (38%)
stuffy-nose-sore-throat	9/21 (42.8%)
myalgia-fatigue	6/21 (29%)
dizziness-headache	3/21 (14.3%)
others	4/21 (19%)

Conclusions: To summarize, this descriptive study concluded that children with COVID-19 are generally presented with less severe disease or asymptomatic and that the overall prognosis of pediatric COVID-19 was good with a quick recovery.

HEMATOLOGIC PARAMETERS OF COVID-19 IN PEDIATRIC PATIENTS PREDICTING DISEASE SEVERITY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: COVID-19 is an extremely severe infectious disease affecting the world.. However, few studies have focused on the epidemiological ,clinical characteristics and laboratory findings of pediatric COVID-19. The aim of this study was to identify the changes of hematologic and immunological parameters in COVID-19 patients.

Methods: Retrospective study including patients under 18 years of age admitted with SARSCoV- 2 infection from March 1 to October 30, 2020. Infection was confirmed by real-time reverse transcriptase polymerase chain reaction (RT-PCR) and/or antibody testing. We describe the epidemiological and clinical data, laboratory and imaging findings, as well as treatment and outcome in these patients.

Results: Totally 3878 pediatric patients were tested and 353 (9.1%) were diagnosed as COVID-19. Median age of the patients was 9 years (4 day-17 years) . Regarding the severity ; 9 (2.5%), 293 (83%), 38 (10.8%), 13 (3.7%) cases were diagnosed as asymptomatic, mild, moderate, severe, critical respectively.Increased serum d-dimer, anemia ,thrombocytopenia, increased ferritin were significantly more commonly seen in severe/critical patients ($p<0.05$).Hospitalization time was positively correlated to serum leucocyte and serum d-dimer levels. Increased serum d-dimer was found to increase risk of disease severity 2.9 fold (%95 CI:0.13-0.85, $p=0.022$).

Conclusions: The disease course of COVID-19 appears to be milder in children, and the treatment was primarily based on supportive care. However, several concerns remain regarding risk stratification of pediatric patients.We conclude that presence of lymphopenia, , increased neutrophil/lymphocyte ratio, increased d-dimer, increased ferritin levels may alert physicians about high risk of disease severity of the pediatric patients.

EP023 / #1266

COVID-19 AND CRP RISE IN NEWBORNS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

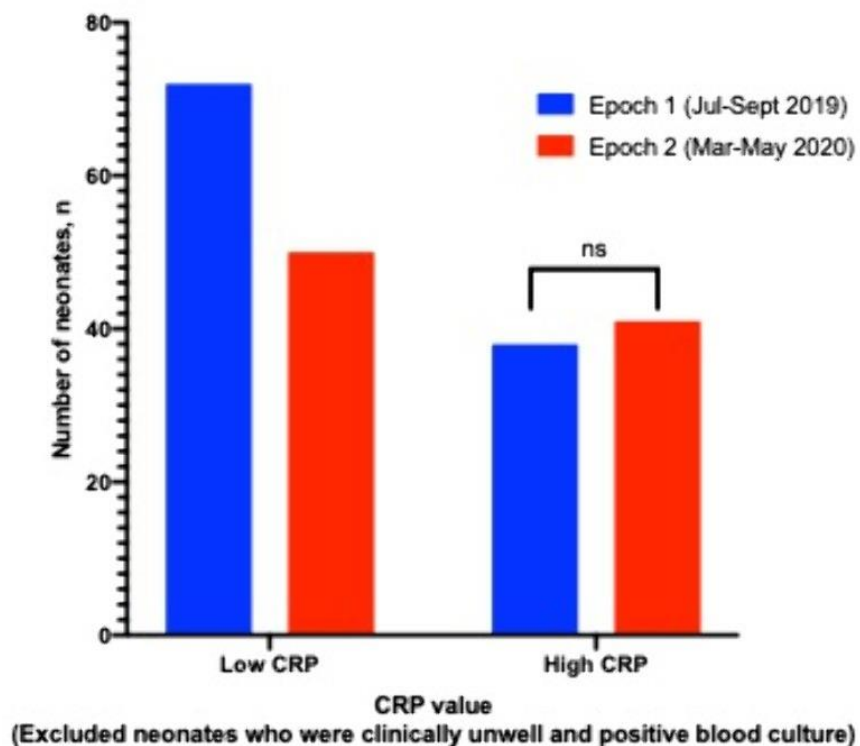
Sakina Ali, Maria Thompson, Sunitha Vimalasvaran, Sakina Ali
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Background: Limited data exists on the impact of the COVID-19 pandemic on neonates. Vertical transmission of SARS-CoV-2 has been postulated, but evidence remains scarce. However, some studies have shown infants (<1year) are more susceptible and become more critically unwell if infected with SARS-CoV-2. The aim of this study was to investigate the inflammatory impact, if any, of SARS-CoV-2 for babies born to mothers with suspected COVID-19.

Methods: Single-centre retrospective review of term infants (>37weeks) receiving intravenous antibiotics between March-May 2020 (pandemic, Epoch2) with indication for treatment being “maternal pyrexia”. These mothers were also suspected to have COVID-19 during the pandemic, due to pyrexia. We compared a similar cohort of infants screened for “maternal pyrexia” between July-September 2019 (pre-pandemic, Epoch1). The marker of inflammation used was C-reactive protein (CRP) with values of >10mg/L identified as ‘high’ as per NICE guidelines. We excluded infants who were clinically unwell or had positive blood cultures as potential confounders.

Results: Epoch 1; 139 infants received antibiotics. 29 were excluded, 38 infants had a high CRP. Epoch 2; 119 infants received antibiotics. 28 were excluded, 41 infants had a high CRP. There was no significant difference in the number of infants with high CRP between the two Epochs (Fisher’s exact test, $p=0.15$). In Epoch 2, 3 mothers tested positive for COVID-19. CRP in these babies was high (mean 65.2, range 10-100), but not statistically higher compared to the rest of their cohort (Unpaired t-test, $p=0.19$).

CRP Values for neonates in Epoch 1 & Epoch 2



Conclusions: This data shows the number of babies with a high CRP who were screened for maternal sepsis did not vary significantly between the two periods. This suggests that a significant inflammatory response is not seen in newborns whose mothers are suspected of having COVID-19.

EP024 / #754

DENGUE FEVER AND PEDIATRIC INFLAMMATORY MULTISYSTEM SYNDROME DURING SARS-COV-2 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: The COVID-19 pandemic continues to spread worldwide, and it is likely to overlap with the dengue epidemics in tropical countries. Due to overlapping clinical and laboratory features, it may be difficult to distinguish dengue from COVID-19 we need to consider dengue and COVID-19 in the differential diagnosis of acute febrile illnesses. So this study was undertaken to analyse the clinical features and laboratory investigations in these patients .

Methods: We retrospectively studied the case records of 21 patients diagnosed as pediatric inflammatory multisystem syndrome (based on WHO case definition) and dengue fever (either NS1 antigen positive or IgM antibody positive). These patients were admitted during months of September to december 2020 in the pediatric department of a tertiary care hospital of North India. A total of 106 patients were diagnosed with dengue fever. Out of these SARS-CoV-2 antibodies were positive in 57 patients. However only 21 patients fulfilled the case definition for multi inflammatory syndrome in children (MIS-C). Clinical features and laboratory investigations were analysed.

Results: Out of 21 children maximum children were older than 10 years age (76.2%) .Commonest finding on sonography was gall bladder wall edema followed by ascites. Thrombocytopenia was seen in 18 (85.7 %) patients at admission and in 14 (66.7%) platelets were less than 50000/mm³. LDH was raised in 19 (90.4%), Ferritin in 18 (85.7%) and D-Dimer in 13 (61.9%) of patients. Fever was seen in all the patients, 17 (80.9%) patients had shock on admission. Rash was seen in 15 (71.4 %) of the patients. All the patients were discharged.

Conclusions: Many of clinical features are common to both diseases. However increased levels of serum ferritin, d-dimer and CRP are more commonly seen in pediatric inflammatory multisystem syndrome due to covid as compared to lower platelet counts.

COVID-19 INFECTION IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Children with Juvenile Idiopathic Arthritis (JIA) usually take immunosuppressive therapy, therefore they may be at a higher risk for infection, including COVID-19 and they may have more severe course of infection. However, the question of whether children with JIA are at a higher risk and whether we need to change the treatment of JIA in patients with COVID-19 infection remains unclear.

The aim of study was to determine the frequency of COVID-19 infection among children with JIA and the course of COVID-19 on the background of JIA and immunosuppressive therapy.

Methods: The study involved 46 patients with JIA aged 2 to 18 years. Evidence of COVID-19 infection were typical clinical presentation and family history of infection, positive by PCR, positive by serology (antibodies G or M). Patients with the evidence of coronavirus infection were carefully interviewed about the course of the disease: symptoms, duration, treatment, complications.

Results: Evidence of COVID-19 was found in 8 (17.4%) patients with JIA. Systemic arthritis was in 4 children, oligoarthritis and polyarthritis - both in 2 children. Six children received immunosuppressants: methotrexate - 4 children, methotrexate with adalimumab - 2 children. The course of COVID-19 in 7 (87.5%) children was mild and did not require specific treatment. All children had fever, 4 - cough, and 3 (- anosmia. Only one patient presented with pneumonia.

In 3 cases JIA flare was reported, which in 2 cases required glucocorticoids, and in 1 case - NSAIDs.

Conclusions: The course of COVID-19 infection in patients with JIA is generally similar to the course of COVID-19 in children population, despite receiving immunosuppressive therapy. However, in 37.5% the infection caused an exacerbation of the JIA, which led to therapy escalation.

COVID-19 PNEUMONIA IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: COVID-19 is less serious in children than in adults. However, there are cases with dismal clinical outcome. The inpatient management and outcome of pediatric patients remains relatively unknown, hence the need to evaluate the clinical and imaging presentation at admission.

Methods: Observational study in pediatric inpatients admitted in a tertiary care hospital with COVID-19 pneumonia, from April to December 2020. Degree of severity of disease was stratified according to the classification by the *World Health Organization (WHO)*.

Results: 45 cases were identified. Median age 4,5 years [26 days - 18 years], 49% presented with comorbidities. Cause of admission: moderate to severe difficulty breathing (40%) and prolonged fever (22%). Frequent patterns of pneumonia were ground glass opacities alone (26%) or with peripheral consolidation (33%) bilaterally (80%) peripherally distributed (55%). 28/45 (62%) children developed complications such as acute respiratory insufficiency (13), ARDS (2). 2 needed invasive ventilation. Antiviral therapy in 29/45 (64%) patients with hydroxychloroquine (14), lopinavir/ritonavir (9), remdesivir (6). Antibiotics (77%), oxygen (40%), methylprednisolone (20%), inhaled corticosteroids (13%) and bronchodilators (18%). All showed a favourable evolution.

Conclusions: COVID-19 treatment in children is a clinical challenge and trials in treatment management are still needed, especially in paediatrics. Signs of severe and critical illness are crucial to define the best therapeutic approach.

MILD CLINICAL COURSE AND FAVORABLE OUTCOME IN INFANTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Coronavirus disease 2019 (COVID-19) primarily affects adults, with children typically having mild clinical course. There are limited data on disease severity in infants with COVID-19. The purpose of this study is to describe the clinical characteristics and outcome of infants with community-acquired COVID-19.

Methods: A single center retrospective cohort study was performed between March 2020 and December 2020 in infants aged <12 months old admitted to a COVID-19 referral paediatric hospital in Athens, Greece, following a positive reverse transcriptase-polymerase chain reaction (RT-PCR) for SARS CoV-2.

Results: 19 previously healthy infants (male:47.3%, mean age:2.1 months) were enrolled. History of known exposure to household COVID-19 was reported in 84.2%. The main presenting symptom was fever (68.4%), followed by poor feeding (57.9%), rhinitis (47.3%), low-grade fever (26.3%) and cough (10.5%). Mild gastrointestinal symptoms were present in 21%. Haematology revealed neutropenia in 47.3% of infants. One patient developed moderate respiratory distress and required PICU admission for non-invasive ventilation. Mean duration of hospitalization was 4 days and all infants had favorable clinical outcome. No infant to adult transmission was reported.

Conclusions: This study indicates that a household member usually infects infants with COVID-19 and although they are considered to be at high risk for severe disease, they mostly develop mild respiratory symptoms and have favorable clinical course. No death or severe complication was documented.

CLINICAL CHARACTERISTICS OF CHILDREN WITH COVID-19 IN MEDAN, NORTH SUMATERA PROVINCE, INDONESIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Indonesia contributed to one of the highest pediatric cases with COVID-19 worldwide. As in January 2021, about 104,000 cases in children have been reported with 593 deaths. The disease course in children is generally mild, however severe cases and fatalities are expected to increase as community transmission have not yet been controlled.

Methods: We conducted a prospective study on paediatric patients with positive COVID-19 infection hospitalised in G.L Tobing Hospital and Martha Friska Hospital between March and July 2020. Clinical data, laboratory results, length of stay and outcomes were recorded in the clinical forms adapted from the Ministry of Health guidelines for COVID-19 patients.

Results: A total 38 patients were hospitalized during the study period. Fifty percents were confirmed for COVID-19. Mean age was 10.3 (5.2) years, 57.9% were female, and 89.5% were referred from primary health centres. The majority of patients (68.5%) were asymptomatic, and 21.0% and 10.5% were diagnosed with URTI and pneumonia, respectively. Fever and cough were the most common symptoms found (21.1%), followed by nausea (10.5%), rhinorrhea (5.3%), and dyspnea (5.3%). All confirmed patients recovered with swab conversion ranges from 2 to 33 (14) days.

Conclusions: Our small study represented mostly mild illness of children with COVID-19 at the beginning of pandemic. However, as more paediatric cases have been reported, more data is needed to represent the true characteristics of children with COVID-19 in Indonesia.

EVALUATION OF CHILDREN WITH MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C): A SINGLE CENTER EXPERIENCE, ISTANBUL, TURKEY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Multisystem inflammatory syndrome in Children (MIS-C) was first reported from the UK in April 2020, can be a fatal disease if the diagnosis and treatment were delayed.

Methods: In this study, the demographic and clinical information, treatment, and laboratory findings of 39 patients who admitted to Marmara University Pendik Training and Research Hospital between 1 June 2020 and 2 January 2021 were evaluated retrospectively.

Results:

Demographic and clinical characteristics			
		n	%
Age group	<60 months	13	33,3
	60-120 months	9	23,1
	>120 months	27	43,6
Sex	Male	24	61,5
	Female	15	38,5
Underlying disease	Yes	13	33,3
	No	26	66,7
PICU requirement	No	29	74,4
	Yes	10	25,6
Prognosis	Discharged	37	94,9
	Exitus	2	5,1

Fever (> 24 hours) was present in all patients. The median duration of fever was 5.24±2.66. PCR test was positive in 10 patients, and COVID-19 IgG or IgM test was positive in 13 patients. Twelve patients had only contact history.

Conclusions: Although COVID-19 infection is usually asymptomatic or mild in children, MIS-C, which is a post-infectious complication; emerges as the most severe face of the COVID-19 pandemic affecting children. Anti-inflammatory and immunomodulatory drugs are currently the most commonly used treatment methods in addition to supportive therapies.

COVID-19 DISEASE CHARACTERISTICS IN DIFFERENT PEDIATRIC AGE GROUPS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: The coronavirus disease 2019 (COVID-19) pandemic is a major public health issue affecting many people worldwide. The aim of this study was to investigate the epidemiological, clinical, laboratory, and radiological characteristics, treatment, and outcomes in children with COVID-19 according to age groups.

Methods: We conducted a retrospective, single-center study of pediatric COVID-19 in a tertiary care hospital which serves as a pandemic hospital in Turkey between March-June 2020.

Results: A total of 139 pediatric patients with COVID-19 were examined. The patients were divided into three groups: 15 days-24 months old (Group 1, n=29, 20,9%), 25-144 months old (Group 2, n=52, 37,4%), and 145-210 months old (Group 3, n=58, 41,7%) according to age. The comparison between the groups was as following; WBC, lymphocyte, thrombocyte counts, AST, LDH, D-dimer and Troponin T levels were significantly higher in Group 1 patients than in other groups, hemoglobin, total protein and albumin levels were found to be significantly low in Group 1.

Conclusions: It is striking that lymphopenia is less common in those under 2 years of age. In this age group, higher d-dimer values, which are determinant for low molecular weight heparin treatment, and albumin has a lower course. These differences supports the theory that disease pathogenesis may differ between pediatric age groups.

NEONATES AND YOUNG INFANTS HOSPITALIZED WITH COVID-19: ARE THEY AT RISK?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Since December 2019, when the coronavirus SARS-CoV-2 first appeared in China, has spread rapidly across the world affecting all ages. Limited published data exist regarding COVID-19 infection in young infants.

Methods: Retrospective study of neonates and infants younger than 3 months, who were hospitalized with COVID-19, in the largest tertiary Pediatric Hospital in Greece from March 2020 to January 2021. Confirmed cases were defined through nasopharyngeal swabs tested positive for SARS-CoV-2 by real-time reverse transcriptase polymerase chain reaction (RT-PCR) and were admitted to the dedicated COVID-19 Unit of the "Aghia Sophia" Children's hospital. Demographic, clinical, laboratory and radiological data were also collected.

Results: Thirty-three neonates and young infants were hospitalized with COVID-19. Median age was 53 days (range 3-87 days). Most infants were hospitalized during December 2020. Most frequent symptoms were fever 73%, respiratory distress and cough 15%, gastrointestinal complications 9% and feeding difficulties 9%. Ten infants presented with neutropenia (30%) and five with lymphopenia (15%). Infants who tested for coagulopathy had elevated d-dimers (17/17, 100%). Chest x-ray was performed in 23 infants and 56% had normal findings. Only one infant developed MIS-C and received intravenous dexamethasone, remdesivir, IVIG and enoxaparin.

Conclusions: The clinical presentations in neonates and infants of the present study ranged from mild to moderately severe. All cases recovered relatively quickly and were asymptomatic by discharge.

CLINICAL MANIFESTATIONS AND LABORATORY FINDINGS IN CHILDREN HOSPITALIZED WITH COVID-19 IN A TERTIARY HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Dimitra - Maria Koukou, Maria Noni, Maria-Eleni Bompou, Evangelia Giannousiou, Georgios Kolovakis, Anastasia Papageorgiou, Tatiana-Soultana Tziola, Vana Spoulou, Athanasios Michos
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Background: Current data suggest that children are as likely as adults to become infected with COVID-19. Aim of our study was to describe clinical and laboratory findings of children hospitalized with COVID-19.

Methods: Retrospective study of children <18 years old, who were hospitalized with COVID-19 in the largest tertiary Children's Hospital in Greece during March 2020-January 2021. Children with or without symptoms of COVID-19, who were tested positive for SARS-CoV-2 by real-time reverse transcriptase polymerase chain reaction (RT-PCR), were admitted to the dedicated COVID-19 Unit of the "Aghia Sophia" Children's hospital. Demographic, clinical and laboratory data were collected.

Results: Totally 112 children were hospitalized with COVID-19. Half of children were ≤12 months old. Mean duration of hospitalization was 4 days (range 1-31 days) and 61% of children were hospitalized during the period 11/2020-01/2021. Symptomatic were 90% of the children. Clinical findings were fever(71%), respiratory symptoms(34%), gastrointestinal symptoms(23%) and feeding difficulties/drowsiness(13%). Six children (5%) underwent a surgical operation and four children presented severe complications (three infants presented MIS-C and one teenager DVT/PE). Half of the severe cases were admitted to PICU. Laboratory findings showed lymphopenia(36.6%), neutropenia(20.5%), monocytosis(26.8%) and elevated d-dimers(87.2%).

Conclusions: Although children of different age groups can equally be infected by SARS-CoV-2, severe cases are rare. Continuous epidemiological surveillance is important to conquer better knowledge of possible implications of COVID-19 in children.

COVID-19 AMONG CHILDREN WITH CANCER IN GREECE: RESULTS FROM THE NATIONWIDE REGISTRY OF CHILDHOOD HEMATOLOGICAL MALIGNANCIES AND SOLID TUMORS (NARECHEM-ST)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Mortality and severe adverse effects from the coronavirus disease (COVID-19) are mainly evident among the elders and adults with co-morbidities, whereas children seem to be at low risk for serious COVID-19 infections. Children with cancer are generally vulnerable to infections mainly due to immunosuppression caused by treatment. We aimed to preliminary assess the impact of COVID-19 among this population group in Greece.

Methods: We addressed a specific survey to the network of treating physicians and complementary sources collaborating in the Nationwide Registry of Childhood Hematological Malignancies and Solid Tumors (NARECHEM-ST) to monitor the impact of COVID-19 on cancer treatment and disease outcome among newly diagnosed and followed-up patients aged 0-18 years. Of note is the long-term contact of families with treating physicians also allowing accurate assessment of mortality.

Results: Fourteen children from a total of 2592 Greek children diagnosed with cancer from 2010 onwards, with a median age of 10.14 years (range: 5.6-18) were reported with COVID-19, during the last four months of 2020. As expected, leukemia was the commonest underlying malignancy (6/14); five of them were on maintenance treatment which was interrupted for 14 days. Another 4, were patients with lymphoma, three of whom during follow-up. Main symptom was fever in 7/14 patients. Predominant source of infection was a household contact. No special treatment for COVID-19 was administered and no

adverse outcome was detected in this case series.

Conclusions: Children with cancer with SARS-CoV-2 infection do not appear at increased risk of severe infection compared to the general pediatric population. Coexistence of cancer and COVID-19 does not cause adverse complications. Despite the general infection prevention measures that reduce the risk of SARS-CoV-2 transmission, an infected family member emerged as the main source of infection.

CITE SHARE BACTERIAL INFECTIONS IN HOSPITALIZED CHILDREN DURING COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Viral infections predispose children to secondary bacterial infections increasing the rates of hospitalization and mortality. The prevalence of bacterial infections with SARS-CoV-2 is yet to be determined which is crucial for accurate antibiotic choice. We aimed to assess the bacterial pathogens associated with SARS-CoV-2 as well as bacterial infections in hospitalized patients during COVID-19 pandemic.

Methods: The study is conducted at Hacettepe University Ihsan Dogramaci Children's Hospital from March till July 2020. Patients hospitalized for bacterial infections with a positive culture enrolled to the study. Demographic and laboratory findings were evaluated and compared according to SARS-CoV-2 positivity.

Results: Five-hundred and sixteen patients were enrolled to the study. The median age of SARS-CoV-2 positive patients' ($n=171$) was 117 months, 92 were female. Nine severe/critically ill COVID-19 patients had no concomitant bacterial infection. Only one patient had urinary tract infection while one had meningitis due to *E. coli*. SARS-CoV-2 negative patients ($n=345$) were hospitalized mostly due to urinary tract infections ($n=152$), bacteremia ($n=89$), acute gastroenteritis ($n=46$). The most common pathogen isolated in urine culture was *E. coli* ($n=99$) while *Staphylococcus* spp. was for blood culture ($n=52$).

Conclusions: Bacterial pathogen associated with children hospitalized for COVID-19 was quite low. Empiric antibiotics suggested for adults in COVID-19 may not be the best choice for children. Knowing the bacteria causing coinfection makes appropriate antibiotic usage possible.

CLINICAL RISK PROFILE ASSOCIATED WITH SARS-COV-2 INFECTION AND COMPLICATIONS IN THE EMERGENCY AREA OF A PEDIATRIC COVID-19 CENTER

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: In February 2020, the disease caused by the novel coronavirus (SARS-CoV-2), was classified as a pandemic. In the pediatric population, coronavirus disease (COVID)-19 has a reported mortality of less than 6% in complicated cases; however, the clinical characteristics and severity are not the same as those presented in the adult population. This study aimed to describe the clinical manifestations of patients younger than 18 years old and their association with the confirmation of the test and outcomes.

Methods: We conducted an analytical cross-sectional study of symptoms suggestive for SARS-CoV-2 infection. All subjects with a confirmatory test for SARS-CoV-2 were included. Initial symptoms, history of influenza vaccination, and previous contact were documented, and mortality and the requirement for assisted mechanical ventilation were identified. The proportions of the variables were compared with the χ^2 test. The odds ratio for a positive test and the requirement of intubation was calculated.

Results: Of a total of 510 subjects, 76 (15%) were positive for SARS-CoV-2. The associated symptoms were chest pain, sudden onset of symptoms, and general malaise. The variable most associated with contagion was the exposure to a relative with a confirmed diagnosis of COVID-19. Infants and subjects without the influenza vaccine showed an increased risk for respiratory complications.

Conclusions: The frequency of positivity in the test was 15% (infants and adolescents represented 64% of the confirmed cases), and the associated factors identified were contact with a confirmed case, sudden onset of symptoms, and chest pain.

HIGH CARDIAC TROPONIN LEVELS IN YOUNG INFANTS WITH ACUTE SARS-COV-2 INFECTION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Cardiovascular injury has been reported in adults with Severe Acute Respiratory Syndrome-Coronavirus 2 (SARS-CoV-2) infection and children with multi-inflammatory syndrome. Children with acute SARS-CoV-2 infection have no demonstration of myocardial involvement. The aim of the study is to evaluate the pattern of markers of myocardial injury in children hospitalized for acute SARS-CoV-2 infection.

Methods: At hospital admission, High-sensitivity cardiac troponin (hs-cTn), muscle-brain creatine-kinase (CK-MB) and N-terminal pro-Brain Natriuretic Peptide (NT-pro-BNP) were assessed, together with ECG and echocardiographic evaluation in those who showed altered biomarker during follow-up.

Results: At hospital admission, 7/116 children (6%, median age 1 month, IQR 1) showed high hs-cTn levels (mean value 550.5 ± 398.7 pg/mL), with a 3 to 30-fold increase over local threshold. A concomitant elevation of NT-proBNP was observed in 3 of them (mean 1024.3 ± 212.8 pg/mL). No alteration of CK-MB, cardiac function and ECG was observed. All cases were recorded in otherwise healthy infants <3 months (15.5% vs 0%, $p=0.007$). After a median follow-up of 60 days (IQR 30), 4 children still had levels higher than the local threshold (mean 73.2 ± 62.7 pg/mL).

Conclusions: Increased markers of myocardial injury elevated in infants with acute and mild SARS-CoV-2 support the hypothesis that SARS-CoV-2 has a specific cardiomyocyte tropism and may rapidly, and probably transiently, infiltrate the myocardial tissue of young infants.

IS SEVERE ACUTE RESPIRATORY SYNDROME (SARS) DUE TO SARS-COV-2 INFECTION DIFFERENT FROM SARS DUE TO OTHER RESPIRATORY INFECTIONS IN CHILDREN?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: COVID-19 pandemic has changed the epidemiology of severe acute respiratory syndrome (SARS), resulting in a high demand for inpatient management. Partly because of the lack of available clinical data, clinical features of SARS-CoV-2 infections in children remain little known. It is not clear if the clinical presentation and evolution differ in children with SARS-CoV-2 infection compared with other respiratory infections. We aimed to compare the clinical features and outcome of SARS in children with and without SARS-CoV-2 infection.

Methods: This was a retrospective cohort study conducted among patients aged less than 16 years who were admitted in the Paediatric Intensive Care Unit (PICU) in the hospital specialized in infectious diseases in Salvador, Brazil, from Mar 2020 to Aug 2020. Inclusion criteria comprised children admitted to the PICU with SARS upon admission and laboratory investigation of SARS-Cov-2 infection by RT-PCR of nasopharyngeal swab. Patients were grouped as with or without SARS-CoV-2 infection. Outcomes were death and mechanical ventilation.

Results: Out of 84 patients, 23.8% with and 76.2% without SARS-CoV-2 infection, median age was 29.9 months (IQR: 11.4–77.8), being the most common symptoms difficulty breathing (91.7%), fever (86.9%), and cough (72.6%). Patients with SARS-CoV-2 infection had longer disease (7.5 [3.0-9.5] vs 4.0 [2.0-6.8] days; $P=0.01$), more frequent skin rash (25% vs 0; $P=0.001$), congenital heart disease (20% vs 1.6%; $P=0.01$) and lower frequency of cough (55% vs 78.1%; $P=0.04$). No difference was found in the frequency of mechanical ventilation (30% vs 29.7%; $P=1$) or death (10.0% vs 6.3%; $P=1$).

Conclusions: Paediatric patients with SARS due to SARS-CoV-2 infection differed from patients with SARS without SARS-Cov-2 infection, particularly on the frequency of skin rash and duration of disease. Nonetheless, in this small sample study group, they evolved similarly.

CLINICAL SPECTRUM OF HOSPITAL ADMISSIONS DUE TO COVID-19 INFECTION IN A CHILDREN'S HOSPITAL IN GIPUZKOA (BASQUE COUNTRY, SPAIN)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Eider Oñate¹, Leyre Gajate¹, Amaia Urdangarin¹, Jon Igartua¹, Luis Piñeiro², Milagrosa Montes², Jose Julián Landa¹

¹Hospital Donostia, Pediatrics, Donostia, Spain, ²Hospital Donostia, Microbiology, Donostia, Spain

Background: *In December 2019, in Wuhan(Hubei,China), the first COVID-19 cases due to SARS-COV-2 were being reported.* The infection rate in the paediatric-age is 1-2 % and children are generally less severely affected. However,at the beginning of May 2020, it was described that some developed a systemic inflammatory syndrome(MIS-C) after the initial infection with clinical and analytical features similar to those observed in Kawasaki-Disease. The aim of this study is to describe the epidemiological,clinical and analytical characteristics of pediatric patients who were admitted with Sars-Cov-2 in a Tertiary Hospital of Gipuzkoa.

Methods: Observational and retrospective study carried out by reviewing the medical records of patients under 14 years old with a diagnosis of Sars-Cov-2 infection admitted to a tertiary hospital of a Spanish province between March 2020 and January 2021. Epidemiological, clinical and analytical variables were analyzed.

Results: Out 4988 positive COVID-children, only 13(0,26%) were admitted. The mean-age was four years (range:7days-14years):5(38%)<1 year,3(23%)1-5 years;4(31%)6-10 years and 1(8 %)>10 years. 8(61%) were male; 2(15%) had an underlying-disease; 9(69%) had close contact with a confirmed-case; 8(61%) were diagnosed by RT-PCR, 3(23%) by an antigen-test and RT-PCR, 1(7, 5%) antigen-test and 1 (7.5%) by the presence of IgG antibodies. 5 patients(39%) were asymptomatic, 7(87%) of the symptomatic patients had mild-symptoms (fever the most frequent) and only 1(13%) had symptoms compatible with MIS-C,requiring admission to the PICU.The median-stay was 4 days(range 1-14).

Conclusions: The incidence of admission in the pediatric age was low. Half of the patients were asymptomatic and were admitted due to other pathologies. Symptoms were mild in most cases and only one patient had symptoms compatible with MIS-C, presenting with similar features to those described in the literature.

ISOLATED NEUTROPENIA AS MARKER OF SARS-COV-2 INFECTION IN INFANTS.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Luca Pierri, Gian Paolo Ciccarelli, Marco Poeta, Claudia Schiavo, Francesco Barracore, Andrea Lo Vecchio, Alfredo Guarino, Eugenia Bruzzese
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Background: Haematological prognostic markers of Severe Acute Respiratory Syndrome-Coronavirus 2 (SARS-CoV-2) infection in children have not yet been identified. As reported for other viral infections, different grades of isolated neutropenia (mild to severe) are found in infants with Coronavirus disease 19 (COVID-19).

Methods: 81 children of whom 45 less than 1 year of age with positive nasopharyngeal swab were admitted with SARS-CoV-2 infection. Complete blood cell counts were obtained for each patient during hospitalization (T0) and after discharge (T1) when nasopharyngeal swab for SARS-COV-2 tested negative.

Results: 14/81 children (17,2%, median age 1,8 month, IQR 0,8) showed isolated neutropenia at T0 (mean value 700 ± 210 cell/ μ L) with normal white blood cells count (WBC) (mean value 7710 ± 560 cell/ μ L). Neutropenia was significantly more frequent in infants compared with children >1 year old (13/45 vs 1/36; $p < 0.05$). Four neutropenic infants (28.5%) showed an increase in neutrophil count during hospitalization, and other 5 (35.7%) children after discharge (mean follow-up 31 ± 29 days). In two cases persistent isolated neutropenia was recorded (860 ± 80 cell/ μ L). 3/14 patients have not been re evaluated yet.

Conclusions: Relative neutropenia is a frequent feature in infants with COVID-19 with a clear age-related pattern suggesting a specific age-linked specific immunologic response to SARS-CoV-2 infection.

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF CHILDREN WITH COVID-19 WHO DID NOT REQUIRE HOSPITALIZATION – THE SLOVENIAN EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Veronika Osterman, Petra Prunk Križanec, Natalija Bahovec, Tina Plankar Srovin, Liza Lah, Katarina Vincek, Tanja Avramoska, Aida Granda, Mojca Rožič, Urška Šivic, Simona Bizjak Vojinovič, Tatjana Mrvič, Maja Arnež, Breda Zakotnik

University Medical Centre Ljubljana, Department Of Infectious Diseases, Ljubljana, Slovenia

Background: At present, pediatric COVID-19 patients are considered to have mainly mild disease, compared with that of adults. The aim of our study was to identify the demographic and clinical characteristics of Slovenian children with COVID-19 who did not require hospital admission.

Methods: A nationwide case series of children with COVID-19 reported to the Department of Infectious Diseases, University Medical Centre Ljubljana from 1st March 2020 to 30th November 2020 was performed. Data on demographic and clinical characteristics were obtained from children's parents or guardians through telephone inquiry.

Results: 220 children were included, aged 0-5 years (27%), 6-14 years (55%) and 15-18 years (17%). 49% were female. Patients reported fever (70%), fatigue (46.8%), headache (41.4%), coryza (45.5%), cough (34%), gastrointestinal disturbances (23.6%), loss of smell (17.7%), loss of taste (16.8%), sore throat (15.5%), abdominal pain (8.2%), dyspnea (6.4%), chest pain (5.5%), loss of appetite (3.6%), irritability (1.8%), cervical lymphadenopathy (1.4%), hoarseness (1%), maculopapular rash (1%) and oral aphthous ulcers (0.5%). 69/220 (31.4%) children had at least one associated chronic disease, but only 1 of them required hospital admission.

Conclusions: Like other research to date, our results indicate a mild to moderate course of COVID-19 in children. Fever, fatigue, headache, coryza, cough and gastrointestinal disturbances stood out as the most common clinical features. Of the less described symptoms, sore throat and loss of appetite were frequently reported. We also didn't detect any severe course of disease in children with associated chronic diseases.

DISEASE CHARACTERISTICS IN CHILDREN AND ADOLESCENTS WITH COVID-19 FROM BRASOV REGION, ROMANIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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¹Children's Clinic Emergency Hospital, Pediatrics, Braşov, Romania, ²Sacele Municipal Hospital, Pediatrics, Sacele, Romania, ³"Dr. Aurel Tulbure" Municipal Hospital Fagaras, Pediatrics, Fagaras, Romania, ⁴Transilvania University, Computer Science, Braşov, Romania, ⁵Transilvania University, Pediatrics, Braşov, Romania

Background: Compared to other respiratory viruses, children have a lower risk of infection and most diagnosed infections are mild or asymptomatic, with a low fatality rate. Most reports on COVID-19 paediatric disease come from international studies, but data from Romania is scarce. **We aimed to** characterize the demographic, clinical and laboratory features of children diagnosed with SARS-CoV2 and hospitalized in Brasov region, Romania.

Methods: A **retrospective observational study** was conducted between May-December 2020, including 173 children (aged <18 years), diagnosed and hospitalized in 3 paediatric units in the region. Diagnosis was confirmed by identification of the virus in nasopharyngeal and oropharyngeal swabs by RT-PCR.

Results: Demographic data: higher rate of female patients (57.23%); the mean age 9.5 years old; 67 % from an urban area and 53.76% of Roma ethnicity. Underlying medical conditions in 21% patients 27.7% asymptomatic; most common symptoms: fever 31.7%, digestive tract symptoms 12.7%, anosmia 9.24%, respiratory symptoms 8.09%. Only 2 children required admission into an ICU unit Laboratory findings: normal WBC in 64.7% cases, low lymphocyte count 9.2%, high CRP 38.15 %, elevated liver enzymes 29%, high ferritin in 3.4%. Treatment: 4% supplemental oxygen. 9% systemic corticosteroids, 19% antibiotics and 3% anticoagulants

Conclusions: To our knowledge this is the first Romanian study including more than one hospital in a region. Our findings are mostly consistent with data from the literature.

AMBULATORY PATIENTS ATTENDING TO THE HOSPITAL WITH COVID-19: DATA FROM THE SPANISH EPIDEMIOLOGICAL STUDY OF CORONAVIRUS IN CHILDREN (EPICO-AEP)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Paula Rodríguez Molino¹, Carlos Grasa², Cristina Calvo¹, María De Ceano-Vivas³, Francisco José Sanz Santaefemia⁴, Mabel Iglesias Bouza⁴, Jose Antonio Alonso Cadenas⁴, Blanca Herrero⁴, Antoni Soriano-Arandes⁵, Joan Miquel Pujol Soler⁵, Mar Santos⁶, Elena Rincón⁶, Amanda Bermejo⁷, Ana Belen Jimenez Jimenez⁸, Ana Campos⁹, Beatriz Soto¹⁰, Ignacio Navarro¹¹, Teresa De Jesús Reinoso¹¹, Inés Marín Cruz¹², Itziar Astigarraga¹³, Maria Penin-Anton¹⁴, Maria Fernanda Guzman¹⁵, María Méndez¹⁶, Serena Villaverde González¹⁷, Alfredo Tagarro¹⁸, Cinta Moraleda¹⁷

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Background: Clinical features of COVID-19 in children have been mostly described in hospitalized patients. However, most patients don't need hospitalization. The aim of this study was to describe the characteristics of ambulatory patients with SARS-CoV-2.

Methods: EPICO-AEP is a multicentre cohort study conducted in Spain to assess the characteristics and outpatient treatment of children with COVID-19. Eligible participants were children aged 0 to 18 years attended in any of the hospitals of the network from March 12th 2020 to January 23rd 2021, with a SARS-CoV-2 infection confirmed by real-time polymerase chain reaction (RT-PCR) and not admitted.

Results: A total of 375 children were enrolled (median age[IQR]:77[12.7-130]months,53.9% male,20% with previous comorbidities).212/375(56%) referred a positive contact with COVID-19. The main symptoms were: fever(68%),cough(46%),rhinorrhoea(34%),sore throat(18%) or vomiting(17%).Other symptoms included:headache,abdominal pain,muscle aches,alteration in smell/taste or rash.1.3% had only rhinorrhoea and 7.3% were asymptomatic.Mean time until consultation was 3 days. Blood test was performed in 92/375 (*Table 1*) and chest X-ray in 77/375:46 were normal,11 had condensation and 20 other infiltrates. 10/375(2,6%)patients were treated with hydroxychloroquine for 5 days and 38/375(10%)with antibiotics. Primary diagnosis was:Upper respiratory infection(29%),fever without source(20.9%),flu-like(13.6%),pneumonia(11.8%),gastroenteritis(8.1%),skin problems(3.6%),bronchitis(3.6%),abdominal pain(0.9%),asthma(0.45%),whooping cough(0.45%).

Tables/Figures:

Parameters in blood test N patients/Total	Median	IQR
Hemoglobin (g/dL) 92/375	13	11.4-14.1
Leukocytes (/μL) 92/375	7555	5120-10530
Neutrophils (/μL) 90/375	3200	1575-4930
Lymphocytes (/μL) 90/375	2475	1305-3915
Platelets (/μL) 92/375	267000	216000-365000
CRP (mg/L) 88/375	5.3	0.8-20
Procalcitonin (ng/mL) 43/375	0.09	0.04-0.17
D-dimer (ng/mL) 30/375	260	118-438

Table 1: Main values in blood tests of ambulatory children with COVID-19

Conclusions: We described the clinical features of COVID-19 in ambulatory patients. Most children were attended soon after the beginning of the symptoms, which were mainly fever, cough and rhinorrhoea. However, we must take into account that there is a broad clinical spectrum where 33% were afebrile and only 1.3% had rhinorrhoea as unique symptom. In most patients, both blood and imaging tests were normal.

SARS-COV-2 INFECTION IN CHILDREN: A SINGLE CENTER EXPERIENCE.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Since the beginning of SARS-CoV-2 pandemic, our hospital is a referral center for children with SARS-CoV-2 infection, hospitalizing in the Pediatric ID Unit and treating children from all regions of Northern Greece.

Methods: We reviewed medical files of all hospitalized children with COVID-19 infection from March to December 2020, as well as the emergency department visits and admissions, analyzing demographic data, symptoms, disease severity, treatment and outcome for these patients. Emergency department visits declined by 40%, compared to the same period in 2019, while admissions by 52%. Fifty-eight patients with SARS-CoV-2 infection were hospitalized (43% females, median age 20,5 months, IQR= 131mo), which represents 13% of total admissions. 78% of the children were hospitalized during October-December 2020.

Results: 63% of the children had fever, 21% reported respiratory symptoms, 15% gastrointestinal symptoms and 5% skin rash. Only 6 patients, with median age 35 months, developed severe or critical disease, according to WHO disease severity classification, but no statistically important correlation between age and symptoms or disease severity was found. No infant under 12 months of age developed severe or critical disease. 27/60 patients were treated with antibiotics, 11 corticosteroids. Five patients needed oxygen therapy (median age 22 months).

Conclusions: There were three patients with multi-inflammatory syndrome and a positive PCR, who were treated with IVIG (median age 48 months). Only one patient with underlying neuromuscular disease was admitted to PICU and no deaths were recorded. Our experience was similar to other centers worldwide where the COVID-19 pandemic had a decreasing impact on the ED visits and admissions, and hospitalized children had milder clinical manifestations than adults. Unlike reports from other countries, infants did not develop severe disease nor needed prolonged hospitalization.

COVID19 -EPIDEMIOLOGICAL, CLINICAL AND EVOLUTIVE ASPECTS IN NEWBORNS AND INFANTS, IN A TERTIARY HOSPITAL FROM ROMANIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Andreea Florentina Stoenescu^{1,2}, Geta Vancea^{1,2}, Dana Ispas¹, Nicoleta Voicu-Parvu¹, Nicoleta Tudor¹, Cristina Iordache¹, Gabriela Scurtu¹, Andreea Popica¹, Ruxandra Horghidan¹, Gabriela Precup¹, Raluca Popescu¹, Claudia Chirila¹, Petre Iacob Calistru¹, Emanoil Ceausu², Simin-Aysel Florescu^{1,2}

¹Clinical Hospital of Infectious and Tropical Diseases "Dr. Victor Babes", Infectious Diseases, Bucharest, Romania, ²Carol Davila University of Medicine and Pharmacy, Infectious Diseases, Bucharest, Romania

Background: Although SARS-COV2 infection is more common in adults, many cases have been reported in newborns and infants.

Methods: Retrospective study, on a group of newborns and infants with SARS-COV2 infection, admitted to "Dr. Victor Babes" Infectious and Tropical Diseases Clinical Hospital, from Bucharest, in 2020. The objectives were to identify the socio-demographic, epidemiological and clinical-biological evolution of children diagnosed with COVID19 admitted to an infectious disease hospital.

Results: Out of the 114 patients, 70 (61.4%) were male, and 44 (38.5%) were from urban environments. 44.7% of the patients had contact with a family member diagnosed with COVID19. The most common symptoms were fever in 89 cases (78%) and digestive manifestations in 51 cases (44.7%). 34 (29.8%) associated dry cough and rhinorrhea was present in 17 cases (14.9%). 8 infants associated skin manifestations. Leucopenia was present in 12.2% cases, hepatocytolysis in 91 cases (79.2%). 31.5% and inflammatory syndrome in 31.5% cases. Radiologically, accentuation of the interstitial pattern was present in 45% cases.

Conclusions: The clinical evolution was favorable, none of the patients required transfer to the paediatric intensive care unit for intubation and mechanical ventilation. SARS-COV2 infection in newborns and infants may manifest in mild forms with a predominance of digestive manifestations, with a favorable evolution under symptomatic treatment.

EPIDEMIOLOGICAL, CLINICAL AND PROGRESSIVE SPECTRUM OF SARS-COV2 INFECTION IN FIRST 100 CHILDREN IN A TERTIARY HOSPITAL FROM ROMANIA DURING THE ACTUAL OUTBREAK

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Geta Vancea^{1,2}, Andreea Florentina Stoenescu^{1,2}, Cristina Iordache¹, Dana Ispas¹, Nicoleta Tudor¹, Nicoleta Voicu-Parvu¹, Gabriela Scurtu¹, Gabriela Precup¹, Andreea Popica¹, Ruxandra Horghidan¹, Claudia Chirila¹, Raluca Popescu¹, Cristina Sandu¹, Petre Iacob Calistru², Emanoil Ceausu¹, Simin-Aysel Florescu^{1,2}

¹Clinical Hospital of Infectious and Tropical Diseases "Dr. Victor Babes", Infectious Diseases, Bucharest, Romania, ²Carol Davila University of Medicine and Pharmacy, Infectious Diseases, Bucharest, Romania

Background: Although SARS-COV2 infection is more common in adults, many cases have been reported in the pediatric population. The objectives were to identify the socio-demographic, epidemiological and clinical-biological evolution of children diagnosed with COVID19 admitted to an infectious disease hospital.

Methods: Retrospective study, on a group of 100 children with SARS-COV2 infection, admitted to "Dr. Victor Babes" Infectious and Tropical Diseases Clinical Hospital, from Bucharest.

Results: Out of the 100 patients, 56 were male and most patients were 11-15 years old (27.9%). 79 patients had contact with a family member with COVID19. 18 cases were imported from other countries. 23 patients associated fever. 34 children had a dry cough and rhinorrhea was present in 17 cases. 14 patients associated digestive manifestations and 8 persons associated myalgia. 4 infants associated cutaneous manifestations. Anosmia and ageusia were present in 3 cases. Hepatocytolysis was present in 26 patients. Radiologically, the most common change was accentuation of the interstitial pattern.

Conclusions: The clinical evolution was favorable, none of the patients required transfer to the paediatric intensive care unit for intubation and mechanical ventilation. SARS-COV2 infection in children may manifest in mild forms with a predominance of respiratory manifestations, with a favorable evolution.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN – A SINGLE CENTER EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Multisystem inflammatory syndrome in children (MIS-C) is a new disease, associated with previous SARS-CoV-2 infection. This study was aimed to describe clinical manifestation of MIS-C in northeastern Poland. Multisystem inflammatory syndrome in children (MIS-C) is a new disease, associated with previous SARS-CoV-2 infection. This study was aimed to describe clinical manifestation of MIS-C in northeastern Poland.

Methods: This was a single-center prospective observational study done in a tertiary teaching hospital in Białystok, from October 2020 to January 2021. Children diagnosed with MIS-C were eligible for study inclusion. The diagnosis was made based on the WHO case definition.

Results: We included 14 children (5 girls and 9 boys) aged from 9 months to 17 years (median 12 years). The most common symptoms were fever (100%), abdominal pain (93%), conjunctivitis (79%), diarrhea (71%), and skin rash (64%). Obesity or overweight was present in 29%. Serum concentration of troponin was increased in 79% (median 54ng/mL; min-max, 2-5242). Concentration of vitamin D3 was below 20ng/mL in 64%, including 80% adolescents. All children received intravenous immunoglobulins and 71% received intravenous glucocorticoids. None of the children required treatment in the intensive care unit.

Conclusions: We can conclude that gastrointestinal and cardiovascular involvement is among the most prevalent organ dysfunctions in MIS-C. These patients are susceptible to develop cardiac complications. Interestingly, decreased concentration of vitamin D3 was common, especially in adolescents, what might indicate a potential role of vitamin D3 in the pathophysiology of MIS-C.

COVID-19 AMONG INFANTS: WHEN TO SUSPECT?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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³Bezmialem Vakıf University Hospital, General Pediatrics, Istanbul, Turkey

Background: Respiratory syncytial virus (RSV) and severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) are both types of respiratory viruses which may have similar symptoms. We aimed to review clinical manifestations of infants <1 year of age diagnosed as either COVID-19 or RSV infection.

Methods: Data of children under 1 year of age diagnosed as COVID-19 or RSV infection were evaluated retrospectively in a pandemic hospital in Istanbul.

Results: Before COVID-19 pandemic 22 children were diagnosed as RSV infection since December 2019. In the 8-month period of pandemic 16 infants were COVID-19. 6.2% of COVID-19 PCR positive cases were asymptomatic and 75% had mild disease. All children positive for RSV had lower respiratory tract infection. Fever (81.2%) and glassy eye appearance (25%) were more common in COVID-19. Cough (57.9%), wheezing (86.4%), rales (90.9%) were more common in RSV infection. Oxygen support need was higher in RSV infection (86.4% / 12.5%). Mortality was 9.1% and 6.2% in RSV infection and COVID-19 respectively.

Conclusions: Infants with COVID-19 showed milder clinic in comparison to RSV infection in this small group. One patient with congenital heart disease and COVID-19 who had concomitant blood culture positivity for *Pseudomonas putida* was dead.

ABNORMAL COAGULATION PROFILE IN PEDIATRIC COVID-19

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

Tatiana-Soultana Tziola, Maria Noni, Dimitra - Maria Koukou, Evangelia Giannousiou, Maria-Eleni Bompou, Athanasios Michos, Vana Spoulou
"Agia Sophia" Children's Hospital, Division Of Infectious Diseases, First Department Of Pediatrics, Athens, Greece

Background: Since the worldwide spread of SARS-COV-2, multiple observational studies indicated an increased risk for thromboembolic events in infected patients. However, data concerning the paediatric population still remain unclear. Our aim was to share our experience in managing children with COVID-19-related illnesses who appear with an altered coagulation state.

Methods: Abnormalities in coagulation markers, such as increased D-dimers, decreased fibrinogen or ATIII, prolonged PT time or aPTT, increased FV, FVII or FVIII, were recorded for every patient at the time of admission. The risk of thrombosis was evaluated individually and anticoagulant was initiated in selected cases.

Results: Forty-seven patients were enrolled. Twenty-six (55.3%) were males and the median age was 15.9 months. Most common findings were increased D-dimers values (41; 87.2%), prolonged PT time (16; 34%), increased FV (13; 27.7%) and aPTT time (12; 25.5%). Twenty-one (44.7%) patients had more than 2 abnormal parameters, while 2 (4.3%) had more than 4 abnormal parameters. The majority of patients experienced mild respiratory or gastrointestinal symptoms and no bleeding or thrombotic events occurred. Three (6.3%) patients experienced MIS-C and had statistically significant higher D-dimers ($p=0.023$) while 2 of them received thromboprophylaxis. One patient experienced DVT and PE with increased D-dimers, low ATIII and prolonged PT time and received anticoagulation treatment.

Conclusions: A large number of paediatric patients presented with abnormal coagulation profile, that was not in line with their mild clinical symptoms. An evidence-based approach is needed in order to determine patients who might benefit from anticoagulant prophylaxis.

ACUTE HEPATIN INJURY IN SARS-COV-2 INFECTED CHILDREN IN THE SPANISH NATIONAL COHORT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Hepatic injury has commonly been described in COVID-19 patients, both in acute infection and multisystemic inflammatory syndrome (MIS-C). However, data about children are scarce. Even if liver enzymes abnormalities are frequent in critically ill patients, they have rarely been documented as the main significant alteration. We aimed to describe the acute liver damage in the ongoing Spanish pediatric COVID-19 national cohort, EPICO-AEP.

Methods: We collected data from a multicenter, prospective cohort of patients <18 years-old with SARS-CoV-2 infection in 75 Spanish hospitals, from March 2020 to January 2021. We analyzed liver enzymes values and described the patients with severe elevation, as stated in DAIDS (Division of AIDS Table for Grading the Severity), grade 3-4 (severe/potentially life-threatening) >5.0 ULN (upper limit of normal), considering 35 IU/L as ULN.

Results: We collected liver enzyme values from 421/562 admitted patients (12% MIS-C). ALT median was 22 IU/L (IQR 15-40) in acute infections and 49 IU/L (IQR 25-92) in MIS-C. AST median was 35 IU/L (IQR 25-51) in acute infection and 50 IU/L (IQR 32-91) in MIS-C. Among 26 patients (6%) with severe/life-threatening ALT/AST elevation, 9 were MIS-C (median ALT 218, AST 157) and 17 acute infections: 8 pneumonias (median ALT 337, AST 298), 5 mild COVID-19 in patients with comorbidities and 4 previously healthy patients with hepatitis as main manifestation (*Table 1*).

Table 1. Previously healthy patients with hepatitis as main manifestation of SARS-CoV-2 and liver enzymes >5.0 ULN.

Patient	Age	Symptoms	Max AST/ALT (U/l)	Longest PT (sec)	Max CRP (mg/l)	Diagnosis	Outcome
1*	2mo	Fever + skin rash + poor feeding	1639/3326	12.6	57.5	Acute hepatitis	Discharged alive
2^	7yo	Prolonged fever + abdominal pain + diarrhea + skin rash	1439/1720	26.1	6	Acute hepatitis	Currently hospitalized
3	16yo	Malaise + vomiting + diarrhea	306/125	12	2.9	Acute hepatitis Gastroenteritis	Discharged alive
4	3mo	Fever + cough + runny nose	188/151	10.4	5.6	Febrile neutropenia Acute hepatitis	Discharged alive

mo: month old, yo: years old, PT: prothrombin time, CRP: C reactive protein

*Liver recovery 10 days after diagnosis

^ Persistent elevated liver enzymes. Developed eventually bone marrow failure and neurologic symptoms. Received bone marrow transplant.

Conclusions: In our cohort, liver enzymes abnormalities are common in admitted children with SARS-CoV-2 infection, particularly in inflammatory syndromes. Severe hepatic injury was especially described in critically ill patients. Even if rare, acute severe liver damage can occur in previously healthy children and may be the main presentation of COVID-19. Follow-up for excluding underlying situations that SARS-CoV-2 could trigger is essential.

CHARACTERISTICS OF CHILDREN HOSPITALISED FOR COVID-19: SLOVENIAN EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: In the course of a one year COVID-19 pandemic it is now well known that only a small percentage of children need hospitalization. The aim of our study was to review demographical data, clinical course, laboratory characteristics and treatment of children hospitalized with COVID-19 at our institution.

Methods: All children with COVID-19 admitted to the pediatric ward of Department of infectious diseases, University medical centre Ljubljana from March 2020 through December 2020 were included in our survey. Only children who were hospitalised due to COVID-19, not with COVID-19, were included in statistical analysis. Demographic, clinical and laboratory characteristics were obtained prospectively.

Results: Forty-four children were hospitalised due to COVID-19. The vast majority were infants under 1 year old (61,4 %). Most common clinical sign was fever (63,3%), followed by acute respiratory symptoms (45,5%), cough (27,2%), dispnoea (16%) and gastrointestinal symptoms (16%). There was no smell or taste loss noted. Leucopenia and thrombocytopenia were recorded in 18% and 9% respectively. Median C-reactive protein was within the normal range. Due to COVID-19 pneumonia 2 children needed oxygen therapy and were treated with remdesivir. Demographic, clinical and laboratory characteristics are presented in Table 1.

Table 1: Demographical, clinical, laboratory and treatment characteristics in children hospitalized for covid-19 in Department of infectious diseases, Ljubljana, Slovenia from March to December 2020.

Number of patients	44
M	24 (54,5%)
F	20 (45,5%)
AGE	
< 1 month	3 (6,8%)
1-3 months	14 (31,8%)
4-6 months	5 (11,4%)
7-12 months	5 (11,4%)
1-5 years	5 (11,4%)
6-10 years	2 (4,4%)
11-15 years	5 (11,4%)
16-18 years	5 (11,4%)
CLINICAL SYMPTOMS	
fever	28 (63%)
upper respiratory tract symptoms	20 (45%)
cough	12 (27%)
difficulties in breathing	7 (16%)
chest pain	4 (9%)
sore throat	1 (2%)
headache	4 (9%)
muscle/joint pain	2 (4,5%)
fatigue	4 (9%)
smell loss	0
taste loss	0
abdominal pain	1 (2%)
gastrointestinal disturbances	7 (16%)
LABORATORY FINDINGS	
C-reactive protein (mg/L)	median 5
max C-reactive protein (mg/L)	71
leucopenia ($< 4,5 \times 10^9/L$)	8 (18%)
thrombocytopenia ($< 150 \times 10^9/L$)	5 (9%)
TREATMENT	
oxygen supplement	2 (4,5%)
remdesivir	2 (4,5%)
antithrombotic prophylaxis	5 (11%)

Conclusions: The course of COVID-19 disease is generally milder in children. Infants are most likely to be hospitalized due to COVID-19 because of poor feeding, dehydration and irritability. Hospitalisations are usually short. Typical COVID-19 pneumonias observed in adults were really rare in our children cohort, the only two patients who needed oxygen support were 17 years old.

LONG TERM FOLLOW-UP OF CHILDREN AND ADOLESCENTS WITH COVID-19

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is the etiological agent of COVID-19, a new disease responsible for the 2020 pandemic causing thousands of casualties. Children seem to have a milder disease when compared to adults. Multisystem Inflammatory Syndrome (MIS-C) is a rare and severe presentation of COVID-19 in children. The long term sequelae of the infection in the pediatric population are not known.

Methods: Patients diagnosed with COVID-19 during the year of 2020 in a pediatric tertiary care center in São Paulo, Brazil, were invited to a follow-up study. Inclusion criteria were a positive Real Time Reverse Transcriptase Polymerase Chain Reaction (RT-PCT) or serology for SARS-CoV-2 and age younger than 18 years-old. During the follow-up visit patients had a physical examination, collected laboratory exams and X-ray and were evaluated through quality of life questionnaires.

Results: From February to December 2020, 150 children and adolescents were diagnosed with COVID-19 in our hospital. Sixty-seven patients were admitted to the hospital and 24 to the Pediatric Intensive Care Unit (PICU). Eight patients were diagnosed with MIS-C and six died. The follow-up cohort has 39 patients (female n=20). There were twenty admissions, 5 PICU admissions and 3 patients with MIS-C. Median age of the patients is 153 months. Thirty-six patients have pediatric chronic diseases, with 17 immunosuppressed (solid organ transplantation n=3, malignancy n=3, autoimmune diseases n=9, other n=2).

Conclusions: Although COVID-19 in children and adolescents can be a mild disease, long term effects of the disease and the social isolation are not yet known. Data about physical and psychological symptoms in children that recovered from COVID-19 will be important to improve care, especially in populations with chronic diseases.

COMPARISON BETWEEN SARS-COV-2 AND OTHER RESPIRATORY VIRAL INFECTIONS IN CHILDREN IN A TERTIARY CARE HOSPITAL IN BRAZIL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CLINICAL MANIFESTATIONS

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Background: Respiratory viral infections are common in children. Studies comparing features of SARS-CoV-2 and other respiratory viruses infections in adults have been published. Data concerning pediatric patients are scarce. We aimed to describe and compare demographic data, clinical characteristics and outcomes in children with SARS-CoV-2 and other respiratory viruses.

Methods: We did a single-center retrospective study in a tertiary care hospital in Brazil. We collected data from medical records of pediatric patients with suspected respiratory infection who presented to our hospital between April and September of 2020. Real-time polymerase chain reaction was used to detect SARS-CoV-2 and 21 other respiratory pathogens in all patients. We divided the patients into two groups: the first with SARS-CoV-2 infected children (n=83) and the second with other respiratory viral infections (n=157).

Results: We found that the most frequent viruses were rhinovirus (n=132), SARS-Cov-2 (n= 83) and Adenovirus (n=14). Seven patients had SARS-CoV-2 and other virus simultaneously. Patients with COVID-19 were older (Median age = 134 months vs 63 months; p=0.00). Fever (p=0.00), pneumonia (p< 0.0), headache (p=0.02) were more prevalent in the SARS-Cov-2 group. Patients with underlying conditions were more likely to present other viral infection than SARS-CoV-2 (p=0.04). Regarding the outcomes: hospitalization (p=0.003), oxygen therapy (p=0.002), shock (p=0.013) and death (p=0.02) were higher in the SARS-Cov-2 group.

Table 1 - Demographic data, clinical manifestations, bacterial coinfections and underlying conditions of laboratory-confirmed pediatric Coronavirus disease 2019 (COVID-19) versus other respiratory virus infection

Variables of laboratory-confirmed pediatric COVID-19	SARS Cov 2 positive (n=83)	Other Respiratory Viruses (n=157)	p
Demographic data			
Current age, months	134 (1-215)	63 (2-216)	0.00 [§]
Age <2 y	17 (21)	39 (25)	0.52
Age <5 years	27 (33)	72 (46)	0.05
Duration of signs/symptoms before diagnosis, days	3 (0-21)	3 (0-13)	0.77
Male sex	43 (52)	83 (53)	0.90
Clinical manifestations			
Fever	58/83 (70)	77/155 (50)	0.00 [§]
Duration of fever, days	2 (0-15)	1 (0-12)	0.09 [§]
Nasal discharge	32/81 (40)	79/149 (53)	0.05 [§]
Sneezing	14/80 (18)	25/140 (18)	1.00 [§]
Cough	33/81 (41)	84/146 (58)	0.02 [§]
Dyspnea	29/81 (36)	50/151 (33)	0.77 [§]
Anosmia	7/51 (14)	3/95 (3)	0.03 [§]
Pneumonia	20/83 (24)	8/155 (5)	<0.0 [§]
Myalgia	18/65 (28)	8/98 (8)	0.002
Headache	18/62 (29)	14/100 (14)	0.02 [§]
Conjunctivitis	5/74 (7)	4/118 (3)	0.31 [§]
Cutaneous rash	8/80 (10)	3/144 (2)	0.02 [§]
Diarrhea, vomiting and/or abdominal pain	24/81 (30)	33/148 (22)	0.26 [§]
Neurological (seizure)	7/82 (9)	13/152 (9)	1.0 [§]
Pediatric SARS	16/82 (20)	16/155 (10)	0.07 [§]
Hypoxemia	21/82 (26)	29/154 (19)	0.24 [§]
Arterial hypotension	9/82 (11)	4/154 (3)	0.01 [§]
Underlying conditions	62/83 (75)	135/157 (86)	0.04 [§]
Previous healthy	21/83 (25)	22/157 (14)	0.04 [§]
Pulmonary chronic diseases	9/83 (11)	23/157 (15)	0.55 [§]
Neuropathy	10/83 (12)	19/157 (66)	1.0 [§]
Cardiopathy	6/83 (7)	10/157 (6)	0.79 [§]
Diabetes	1/83 (1)	5/157 (3)	0.67 [§]
Systemic arterial hypertension	12/83 (15)	11/157 (7)	0.07 [§]
Immunocompromising diseases	32/83 (39)	57/157 (36)	0.79 [§]
Primary immunodeficiency	1/83 (1)	6/157 (4)	0.43 [§]
Solid organ transplantation or HSCT	4/83 (5)	15/157 (10)	0.22 [§]
Malignancy	19/83 (23)	31/157 (20)	0.62 [§]
Chronic kidney disease (stages 1-5)	5/83 (6)	7/157 (5)	0.76 [§]
Autoimmune diseases	7/83 (8)	8/157 (5)	0.40 [§]
Immunosuppressive agent use	27/83 (33)	46/157 (29)	0.66 [§]

Results are presented in n (%), median (minimum-maximum values) or mean ± standard deviation and n (%), SARS - severe acute respiratory syndrome, HSCT - hematopoietic stem cell transplantation.

§= U Mann-Whitney

&= exato de fisher

Conclusions: As previously published, rhinovirus was the most frequent virus circulating during the pandemics period. SARS-Cov-2 is more prevalent in older children. Our study found that SARS-CoV-2 infection was more frequently associated with pneumonia, this data is not observed in others pediatrics papers. Differently from other studies, we found that children infected with SARS-Cov-2 have worse outcomes than children infected with other respiratory viruses.

ENCEPHALITIS ADMITTED TO PEDIATRIC INTENSIVE CARE UNIT: A 20-YEAR RETROSPECTIVE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CNS INFECTIONS

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Background: Etiologic diagnosis of acute encephalitis is challenging. Early recognition and institution of timely appropriate specific therapy are essential to improve outcomes.

Methods: An exploratory study with retrospective data collection of patients aged 0-17 years with encephalitis admitted to Pediatric Intensive Care Unit (PICU), between 2001-2020, was conducted. Demographic, clinical and outcome data one year after PICU discharge were collected and analyzed.

Results: There were included 43 patients: 67%boys, median age 7years. The clinical presentation included fever(88%), seizures(84%), impaired state of conscience(79%). Abnormalities were observed on CSF(70%), neuroimaging(51%) and EEG(92%). An etiologic agent was identified for 58%: viral(20) and bacterial(5). One patient had confirmed autoimmune encephalitis and no etiology was found for 40% (7suspected to be autoimmune). 40% needed invasive ventilation, inotropics-19%, steroids-44%, immunoglobulin-16%. The median duration of PICU stay was 6days. Two patients died; 8/39 cases developed sequelae: epilepsy(4), developmental delay(2), behavioral/cognitive deficits(6). Children with longer invasive ventilation($p=0.004$) or PICU stay($p=0.01$) were at higher risk.

Conclusions: Although the advancements in technology, the etiologic diagnosis of acute encephalitis is still challenging. Increased duration of invasive mechanical ventilation and longer PICU stay seems to be related to neurologic sequelae.

INCIDENCE AND ETIOLOGY OF DUTCH CHILDREN WITH A SUSPECTED MENINGOENCEPHALITIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CNS INFECTIONS

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Background: The etiology of childhood meningoencephalitis in the Netherlands has changed significantly with the introduction of effective vaccination programs. We aimed to increase insight in the current incidence, etiology and outcome of childhood meningoencephalitis in the Netherlands.

Methods: This study was part of the Pediatric and Adult Causes of Encephalitis and Meningitis study (PACEM), a multicenter cohort study in three Dutch hospitals between 2012 and 2015. We included patients aged < 18 years with a suspected meningoencephalitis and categorized them in proven, possible and no meningoencephalitis. We analyzed demographics, clinical symptoms, neurological imaging, etiology and mortality.

Results: We included 432 children with a median age of 45.5 days (IQR 11.0-351.2). We identified 66 cases of proven meningoencephalitis 15.3%, most were of infectious origin, 92.4%. In 75.9% of children with a suspected meningoencephalitis no meningoencephalitis was diagnosed. Viral pathogens were the most frequent cause of proven meningoencephalitis 60.7%, enteroviruses were the most prevalent viral pathogen. Most children presented with fever 63.3%. Increased CRP, intrathecal WBC and total protein in CSF were associated with identification of a bacterial pathogen in CSF. Auto-immune encephalitis was associated with abnormalities on neuro-imaging in addition to neurological deficits at discharge.

Conclusions: The majority of children with a suspected meningoencephalitis is ultimately diagnosed with another diagnosis. Viral pathogens were the most frequent cause of proven infectious meningoencephalitis in children at young median age. Auto-immune encephalitis was associated with abnormalities on neuro-imaging and neurological deficits at discharge.

TRENDS OF BACTERIAL MENINGITIS IN CHILDREN AFTER A DECADE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CNS INFECTIONS

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Background: Introduction of vaccines against meningeal pathogens has changed the burden of bacterial meningitis in children in high-income countries. The aim of this study was to analyze clinical and epidemiological changes of bacterial meningitis in children in Kosovo after Haemophilus influenzae type b (Hib) vaccine was introduced in 2010.

Methods: This retrospective study enrolled children from 1 month until 16 years of age treated for bacterial meningitis during two study periods: 44 children treated during the period of January 1, 2010 through December 31, 2010 and 39 children treated during the period of January 1, 2019 through December 31, 2019, at the Infectious Diseases Clinic in Prishtina.

Results: Infants were more affected in 2019, 15 cases (38%), while in 2010 children >6-16 years of age, 19 cases (43%). Male gender dominated in both study periods 68% versus 72%. Neurologic complications developed more frequently in 2019 in 10 children (26%) compared with 7 (16%) in 2010. The overall mortality rate was almost equal in both periods 2.3% in 2010 and 2.6% in 2019. The etiology of bacterial meningitis cases was proven in 61 versus 41% of cases with meningococcus being the most common in 2010 and pneumococcus in 2019.

Conclusions: Steady number of bacterial meningitis in children after a decade and change in major pathogen should influence the introduction of pneumococcal and meningococcal vaccines in routine immunization programme for children in Kosovo.

CENTRAL NERVOUS SYSTEM COMPLICATIONS WITH ENDEMIC CORONAVIRUS INFECTION IN HOSPITALIZED PEDIATRIC PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CNS INFECTIONS

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Background: In pediatric patients, endemic coronavirus (229E, OC43, NL63, and HKU1) usually causes mild respiratory illness. There have been reports on fatal central nervous system (CNS) complications, including encephalitis in patients with coronavirus infection. The aim of this study is to investigate the clinical characteristics of CNS complications in patients with endemic coronavirus infection.

Methods: From January 2014 to December 2019, a retrospective medical record review was performed on pediatric patients aged less than 19 years with coronavirus infection through multiplex real-time PCR. The symptoms of the central nervous system were defined as clinically diagnosed seizure, meningitis, encephalopathy, and encephalitis.

Results: Coronavirus was detected in 436 patients' respiratory specimens. Among these, 271 patients (62.2%) were immunocompetent, and 165 patients (37.8%) were immunocompromised, including hematologic-oncologic disorder, solid organ transplant, primary immunodeficiency. The most common type of coronavirus was OC43 (47%). Neurologic symptoms were observed in 41 patients (9.4%). The most common underlying illness in patients with CNS symptoms was a pre-existing neurologic disease (34%). One immunocompetent patient required intensive care unit admission due to encephalitis. Three patients (two immunocompetent and one immunocompromised) continued to take anti-epileptic drugs as sequelae.

Conclusions: Endemic coronavirus infection may cause serious clinical manifestations such as CNS complication or neurologic sequelae, even in previously healthy children.

EVALUATION OF SHUNT INFECTIONS CAUSED BY GRAM-NEGATIVE BACTERIA IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CNS INFECTIONS

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Background: Shunt infections are a major cause of mortality and morbidity in pediatric hydrocephalic patients. Antimicrobial treatment options are limited due to the increasing rates of carbapenem-resistant bacteria infections. We aimed to identify the clinical characteristics, risk factors and carbapenem resistance rates of shunt infections caused by Gram-Negative bacteria.

Methods: A single-center retrospective study conducted at Ege University between January 2013 and December 2020. A total of 53 episodes were evaluated. Species identification were performed using the automated systems MALDI TOFF MS/VITEK 2 (Biomerieux, France). VITEK 2 (Biomerieux, France) automated microdilution method was used in sensitivity tests according to EUCAST recommendations.

Results: The mean age of the patients was 4.78±6.29 years and 54.7% were male. The most common reasons for shunt insertion were hydrocephalus due to prematurity, followed by meningomyelocele and intracranial tumor operation. The most common isolated bacteria were *Pseudomonas aeruginosa* (22.6%), *Escherichia coli* (22.6%) and *Acinetobacter baumannii* (15.1%). The rate of carbapenem-resistant GNSI was 26.4%. Use of nasogastric tube, total parenteral nutrition and prior carbapenem treatment were considered as risk factors for carbapenem-resistant GNSI. 30-day mortality and intensive care unit admission were statistically higher in patients with carbapenem-resistant GNSI.

Conclusions: Our results showed that use of nasogastric tube, TPN and prior carbapenem treatment were risk factors for carbapenem-resistant GNSI. 30-day mortality was higher in patients with carbapenem-resistant GNSI.

MANAGEMENT OF PAEDIATRIC BRAIN ABSCESS AND EMPYEMA IN THE UNITED KINGDOM – A NATIONWIDE SURVEY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CNS INFECTIONS

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Background: Background: Brain abscess and cerebral empyema in children are rare. Implementation of evidence-based practice, and definition of the best antimicrobial and neurosurgical management remains a challenge.

Methods: Methods: An electronic survey presenting three hypothetical clinical scenarios of children with suppurative brain infections was sent to general paediatricians, paediatric infectious diseases (PID) physicians and neurosurgeons at paediatric centres in the UK expected to care for this patient cohort. Questions pertained to both antimicrobial and neurosurgical management. The data were entered through a study-specific web-based data collection tool. The survey was answered by 61 clinicians from 27 UK hospitals, most consultants (50/61, 82%) in PID (27/61, 44.3%) , neurosurgery (23/61, 37.7%); 9/61 (14.7%) general paediatrics and microbiology (2, 3.3%).

Results: Results: Clinical decisions in the three scenarios differed in multiple respects. Conservative management was favoured among medical specialities 12/32 (37.5%) compared to NS 1/18 (5.6%), $p = 0.02$, in the first scenario. The same was seen for the third scenario (medical: 15/32 (46.9%); NS: 3/19 (15.8%), $p = 0.04$). No differences were found in scenario 2 based on speciality. We found no differences in suggested duration of empirical antimicrobials ($p = 0.41$), however antimicrobial choices, time of step down to oral therapy and reimaging policies differed.

Conclusions: Conclusions: We found considerable variation in the management of children with brain abscesses exists in the UK, supporting the need for further high-quality prospective studies to form the basis for a more evidence-based approach.

CONGENITAL SYPHILIS: RISK FACTORS AND BIRTH OUTCOMES IN A HOSPITAL FROM QUILMES, ARGENTINA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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Background: Syphilis is produced by the spirochete *Treponema pallidum*. Infection while pregnancy can be transmitted to the fetus or newborn by transplacental route or by contact with infective secretions or lesions in the birth canal. In recent years the cases have increased significantly. Objectives: to describe the clinical, epidemiology and evolution of newborns exposed to maternal syphilis. Determine risk factors associated with congenital infection.

Methods: A retrospective, descriptive and observational study that included live newborns and stillbirths between 1/1/2018 and 12/31/2019 from women diagnosed with syphilis in pregnancy. Statistical method: parametric variables were expressed as mean \pm standard error and were evaluated by Student's t test. Non-parametric variables were studied by χ^2 . A value of $p < 0.05$ was considered significant.

Results: 87 newborns were evaluated during the study period. Median gestational age was 39 weeks and the median birth weight was 3,205 grams. The median maternal VDRL title at diagnosis was 16 dils. Pregnant women received 3 doses of penicillin and in 51 women the last dose was <1 month prior to delivery. 49 newborns underwent VDRL at birth with a median of 4 dils. 49 p were administered sodium penicillin G, 19 benzathine penicillin and 19 received no treatment. Congenital syphilis was diagnosed in 13 patients. Mortality was 15%.

Conclusions: The incidence of congenital syphilis increased from 1.95/1,000 live newborns in 2018 to 4.85/1,000 live newborns in 2019. The risk of congenital syphilis was associated with a higher maternal VDRL titer at diagnosis, a higher VDRL titer at birth and an inadequate maternal treatment. Newborns with congenital syphilis had a lower gestational age and birth weight, a pathological physical examination, and a higher frequency of hospitalization in neonatology.

GROWTH IMPACT THROUGHOUT THE FIRST FOUR YEARS OF LIFE IN CHILDREN BORN WITH CONGENITAL ZIKA VIRUS SYNDROME

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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UFRN, Pediatrics, Natal, Brazil

Background: - At the end of 2014, an exanthematic disease outbreak followed by birth of several microcephalic children caused by Zika virus was subsequently identified as an international emergency. Yet, there are still gaps on how these children developed during the first years of life.

Methods: - This is a cohort study of 71 children with Congenital Zika Virus Syndrome (CZS) who were regularly followed-up during their first 4 years of life and assessed for maternal and child clinical/epidemiological characteristics as well as anthropometric data and risk factors for poor growth, need for gastrostomy tube placement and death outcome.

Results: During the first years, all infants born normocephalic had a significant downward trend in the head circumference (HC) z-score ($p < 0.001$), as well as all children analyzed. Weight/height z-score also decreased among all children ($p < 0.001$) and in the group of those born microcephalic ($p = 0.001$). At 12 months of age, 41.9% infants had a weight z-score < -2 ; at 36 months, that rate was 51.8%. In children with arthrogryposis, the risk of gastrostomy tube placement was 27.6 times greater ($p = 0.001$) and death outcome was 6.5 times greater ($p = 0.022$) than in children without these conditions.

Conclusions: - 79.4% of children were born with head circumference z-score < -2 . Among children born with CZS, being born with normal HC does not imply maintenance of adequate head growth in the first years of life. Arthrogryposis increases significantly the risk of gastrostomy tube placement and death outcome. The chance of survival beyond 36 months was 88.4%.

CONGENITAL SYPHILIS: THE IMPORTANCE OF PRENATAL SCREENING FOR IDENTIFICATION AND MANAGEMENT OF NEWBORNS AT RISK OF VERTICAL TRANSMISSION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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Background: Prenatal screening for Congenital Syphilis (CS) is an effective public health intervention. In Italy it is enforced both in the first and the third trimester of pregnancy since 2017. We postulate that the offspring needs a specialized health surveillance to ensure an adequate diagnostic-therapeutic framework and follow-up.

Methods: A retrospective cohort study has been conducted on newborns exposed to *Treponema Pallidum* during pregnancy and referred to the Federico II University Perinatal Infection Unit from January 2010 to December 2019.

Results: A total of 235 patients was enrolled. Fourteen received a diagnosis of CS. Since 2017 there was a doubling in exposed neonates but the rate of late maternal diagnoses significantly declined (20vs46 pcs/years, $p=0.012$). An early maternal diagnosis correlated inversely with the risk of vertical transmission ($p<0.001$). Time of maternal diagnosis and adequacy of treatment allowed postnatal assessment of need for penicillin-therapy($p<0.001$). The 14 with CS had a lower birth-weight($p=0.009$) and smaller cranial circumference($p=0.013$) than the exposed ones. Ten patients had at least one clinical manifestation;83% had a positive VDRL-test on CSF.

Conclusions: Maternal screening and treatment of Syphilis is essential to decrease the risk of disease to the fetus. However, postnatal assessment is also essential to further reduce this risk.

RISK FACTORS FOR ACQUISITION OF CMV INFECTION DURING PREGNANCY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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Background: Cytomegalovirus (CMV) is responsible of severe infections in the fetus. The objective of this study is to evaluate risk factors for acquisition of CMV infection during pregnancy.

Methods: Data of newborns exposed to CMV in uterus were collected: type of infection, maternal schooling, employment and age at delivery, previous pregnancy and parity. 279 infants were enrolled (53% males). Infection was classified as primary in 76 cases (Group 1, 27%), non-primary in 95 cases (Group 2, 34%), unclassifiable in 108 cases (39%). Mean maternal age at delivery was 29.3 and 30.6 years in group 1 and 2, respectively. All other data were present only in a small part of the sample.

Results: Degree equal or lower than diploma was found in 30 (97%) of group 1 compared to 46 (82%) of group 2. 1 mother (3%) in group 1 and 10 (18%) in group 2 were graduated ($p=0.04923$). In group 1 mothers with a previous pregnancy were 29/76 (38%), compared to 44/95 (46%) in group 2. 25/29 in group 1 had had only one previous pregnancy (86%) compared to 25/44 in group 2 (57%). 4/25 of group 1 (14%) and 18/44 of group 2 (41%) had had ≥ 2 previous pregnancies ($p=0.011221$).

Conclusions: Our study showed a significant difference in schooling and high parity between primary and non-primary infection groups. Identification of maternal risk factors is an important requirement for preventing acquisition of infection through appropriate behavioural strategies.

STREPTOCOCCUS INFECTION OF THE GROUP B IN NEWBORN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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Background: Streptococcus infection of the group B (GBSI) has severe course and high mortality in newborns

Methods: The study group consisted of 22 full-term newborn infants diagnosed with GBSI. Maternal history: 59% - from the first pregnancy; 72.2% of children - from the first birth, 18 (82%) mothers were diagnosed with colpitis with relapses during pregnancy. The laboratory parameters of the general blood count, biochemical parameters, as well as inflammatory markers were assessed: CRP, procalcitonin test (PCT). Statistical processing was carried out using the STATISTICA 10.

Results: The disease occurred in the first day of life in 86% of newborns, which required mechanical ventilation in 72.2% of cases in the first hours of the disease, as well as the administration of cardiotonic therapy with a combination of several inotropic drugs in 81%. 63.6% of patients had manifestation of hemorrhagic syndrome and in 27% of cases it was accompanied by pulmonary hemorrhage. The mean leukocyte count was 20 (2.93-61.4), children with leukopenia had the most severe course with infectious toxic shock. CRP was 63.71 (0.7-109.3), PCT - 13.9 (0.1-49.3).

Conclusions: GBS infection in full-term newborns is characterized by an early onset, requires a study of markers of inflammation and administration of antibiotic therapy.

AWARENESS AND ATTITUDES OF PREGNANT WOMEN ABOUT PREVENTION OF CONGENITAL INFECTIONS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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Background: Educating pregnant women on preventing congenital infections reduces their risk behavior for infections. However, pregnant women are not always sufficiently educated. There is a lack of data on the adequacy of pregnant women's education and risk behavior in Greece. This study aimed to assess pregnant women's knowledge towards preventing CMV infection, listeriosis, toxoplasmosis, and syphilis, and adherence to preventive measures during pregnancy.

Methods: A cross-sectional study was conducted in 2020 and included women in pregnancy or in the immediate postpartum period of the two public hospitals in Heraklion Crete. Data were collected after informed consent through a questionnaire, with questions about demographic characteristics, knowledge of preventive measures, pregnancy habits, and information source.

Results: Of the 355 participants (response rate: 88%) 78.1% had been informed about congenital infections, mainly by their obstetrician. Awareness was 82.5% for toxoplasmosis, 65.9% for syphilis, 42.8% for CMV, and 24.5% for listeriosis. The majority (75.2%) were informed on precautionary measures for toxoplasmosis, but only 19.4% for CMV infection and 14.1% for listeriosis. Higher education, Greek nationality, and age 26-35 years were associated with higher knowledge scores. Adherence to all precautionary measures was suboptimal (23.4% for toxoplasmosis, 5.4% for listeriosis, 47.3% for CMV infection).

Conclusions: Among pregnant women, knowledge about prevention and adherence to preventive measures were insufficient to prevent exposure to CMV, listeria, and toxoplasma. Information about syphilis was also limited. Targeted interventions are needed to educate pregnant women and women of reproductive age on prevention of congenital infections.

CLINICAL CHARACTERISTICS, DIAGNOSIS, NEUROIMAGING FINDINGS AND TREATMENT OF CONGENITAL CYTOMEGALOVIRUS INFECTION: A SINGLE CENTRE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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Background: Congenital cytomegalovirus infection (cCMV) is the most common congenital viral infection affecting 0,6-6,1% of live newborns worldwide. Although approximately 85-90% infants with cCMV are asymptomatic at birth, CMV is an important cause of neurodevelopmental delay and sensorineural hearing loss (SNHL).

Methods: A retrospective study on children with confirmed cCMV infection born between January 2012 and January 2020 and treated at University Hospital for Infectious Disease „Dr. Fran Mihaljević“, Zagreb, Croatia was conducted. Congenital CMV infection was confirmed by the identification of viral DNA by PCR in the urine sample. Statistical analysis was performed on 47 enrolled case-patients.

Results: Twenty-five patients (53,1%) were symptomatic. The most common CMV-related sign present at birth was thrombocytopenia (68%). Three patients (6,3%) had an ocular abnormality - chorioretinitis, optic atrophy and retinal hemorrhage were detected in different patients as an isolated finding. Twenty-seven patients (57,44%) had SNHL of which 13 (48,1%) were asymptomatic at birth. cUS was performed in 45/47 patients and was abnormal in 57,7%. Brain MRI was performed in 34 (72,3%) patients with white matter abnormalities being the most common pathology (38%). All patients were treated with valganciclovir or ganciclovir.

Conclusions: Involvement of the central nervous system, as well as SNHL, are present in both symptomatic and asymptomatic children with cCMV. Long-term sequelae may develop in all patients with cCMV. In comparison with cUS, MRI provides additional information and its routine use should also be considered in children with asymptomatic cCMV infection.

SEROCONVERSION OF PATIENTS WITH POSITIVE RT-PCR TEST FOR SARS-COV-2 IN PEDIATRIC POPULATION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - COVID-19 CLINICAL AND TREATMENT

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Background: Background: The proportion of seroconversion after infection by SARS-CoV-2 is unknown in children. **Objectives:** To determine the seroprevalence after infection by SARS-CoV-2 in children. To compare 2 serological techniques detecting antibodies against spike and nucleocapsid proteins

Methods: Multicenter prospective observational study in two University Hospitals in Madrid, Spain, of children with confirmed infection by RT-PCR between September and December 2020. A retrospective data collection was performed using a clinical-epidemiological questionnaire. Antibodies against nucleoprotein and *Spike* protein were simultaneously determined at 4-8 weeks after infection by two ELISA techniques (total antibodies and combined anti-SARS-CoV-2 targeting receptor binding domain within S and N proteins: IgG/IgA/IgM). The median time from infection to serology was 37 days. Quantitative variables are expressed as medians (IQR 25-75).

Results: Overall 109 patients were included. The epidemiological and clinical features are shown in the table. In 21.1% (95% CI: 14.5-29.7) of children serology against nucleoprotein alone was negative, whereas the combined serology against nucleoprotein and spike protein was negative in 18.3% (95% CI: 12.2-26.6) In 3 patients (2.7% total) discordant results were observed: positive combined serology against nucleoprotein and spike protein with negative antibody detection against nucleoprotein alone. In the rest of patients with positive serologies, both techniques were concordant.

Table. Epidemiological and clinical features in our sample of 109 patients			
Epidemiological features		Clinica features	
Sex	50.4% boys	Low-grade fever/fever	71.5%
Age	80 months (23-149)	Rhinorrhea	44%
Foreign	50.4% total 52.7% of them from Latin America	Cough	33 %
Underlying patology	28.4%, most of them recurrent bronchitis	Respiratory distress	9.1%
Symptomatic	89.9%	Headache	30.2%
Admitted in Hospital	6.4%	Asthenia	27.5%
Days of admission	2 (2-4)	Diarrhea	19.2%
PICU admission	0	Abdominal pain and vomiting	25.6%
Epidemiological screening)	13.7%	Skin	6.4%
Secondary case	51.3%	Anosmia	16.5%
Index case in family if patient secondary case	94.6%	Dysgeusia/Ageusia	13.7%

Conclusions: In our case series, around 20% of children resulted seronegative. This proportion seems higher in children than in adults. Although, there may be small differences in sensitivity between the two serological techniques, ELISA against SARS-CoV-2 receptor binding domain within the S and N protein seems to have a higher yield than ELISA against nucleoprotein antibodies. More studies are needed to determine the seroconversion rate and duration of antibodies in children as well as their clinical significance.

SEROCONVERSION IN CHILDREN AFTER ACUTE SARS-COV-2 INFECTION AND RELATIONSHIP WITH CT AT DIAGNOSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - COVID-19 CLINICAL AND TREATMENT

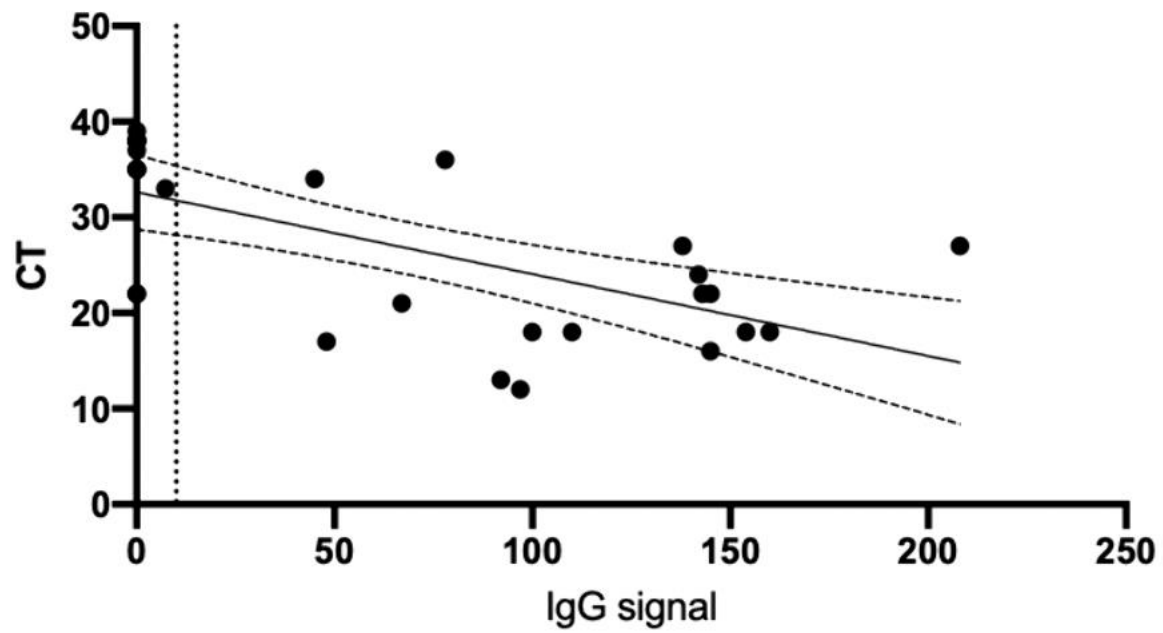
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Background: The proportion of children that create detectable antibodies to SARS-CoV-2 after infection, and the dynamics of the antibodies, are unknown. We hypothesized that not all the children had detectable antibodies after infection and that patients with a low cycle threshold (CT) value develop a high serological response. Our aim was to describe the proportion of children that seroconvert after SARS-CoV-2 infection and assess the correlation between diagnosis CT and level of IgGs.

Methods: The Epidemiological Study of Coronavirus in Children (EPICO-AEP) is a multicentre cohort study conducted in Spain to assess the characteristics of children with COVID-19 from the beginning of the epidemic in Spain. A serological substudy was performed in a subset of patients in 17 hospitals. Acute (≤ 14 days after diagnosis) and follow-up (≥ 15 days after diagnosis until 90 days) serologies were performed. The correlation between the signal of IgG against S1/S2 at follow-up and the CT at diagnosis was studied using the Spearman correlation coefficient

Results: 45 patients were included. In the acute serology, 30/45 (66%) had IgM+ and 5/41 (12%) had IgG+. In the follow-up, only 23/64 (67%) patients seroconverted IgG (median time between both serologies, 30 days, range 7-90 days). A total of 70% with previous IgM+ turned IgM negative. In the subset of 28 patients with available information, a moderate inverse correlation ($\rho = -0.65$ [95% CI (-0.82 to -0.36), $p < 0.001$]) was found between the CT at diagnosis and the intensity of the serological response (figure).



Conclusions: In one-third of children infected with SARS-CoV-2, no seroconversion was detected. There is a moderate inverse correlation between the CT value at diagnosis and the development of antibodies, suggesting that the higher the viral load, the greater the serological response.

THE CLINICAL PRESENTATION OF NEONATES AND YOUNG INFANTS WITH COVID-19 INFECTION WHO PRESENTED WITH SEPSIS LIKE SYNDROME: A CASE-CONTROLLED STUDY.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - COVID-19 CLINICAL AND TREATMENT

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Background: Coronavirus disease-2019 (COVID-19) may present with a spectrum of manifestations.

Children seem to have a favourable clinical course compared to other age groups. However, limited data are available in symptomatic infants Objective: We reviewed the clinical features of 105-infants (<2 months of age) who presented with sepsis like syndrome (SLS) and compared those who had COVID-19 infection (PCR positive) with the COVID-19 negative infants

Methods: A controlled single-institution retrospective study conducted on all infants <2 months admitted who presented with SLS between 1/4/2020 and 1/7/2020. These infants were divided into 2 groups. Group-1(n=41) had COVID-19 positive nasal/oropharyngeal swab (PCR) and group-2(n=40) had negative COVID-19 test(control group). The clinical and lab data of both groups were reviewed and analysed

Results: 105-infants admitted with clinical sepsis, (41)COVID-19 positive,(64)negative. Fever presented in90%of COVID-19 positive infants, 80%of the negative group. COVID-19-positive had higher incidence of nasal congestion and cough(39%,29% respectively) versus COVID-19 negative(20%,3%respectively)(P<0.05). Poor feeding and hypo-activity occurred more in COVID-19-negative(58%,45% respectively) versus COVID-19-positive(22%,2% respectively)(P<0.004). Full sepsis-workup and lumbar puncture performed in67%and partial septic workup done in23%. Full sepsis workup done in 92%of the COVID-19-negative. CSF cultures were negative in 26/27 COVID-19-positive(1-infant had Klebsiella meningitis). All COVID-19-negative had negative CSF-cultures. Blood culture was negative in both groups.Urine culture showed bacterial growth in 9-infants negative group.

Table-1 Demographic data for both groups.

	COVID-19 positive neonates N= 41	COVID-19 negative neonates N= 40
Gestational age (weeks)	38.3 (36-40)	38.5 (34-40)
Prematurity (<37 weeks)	3 (7%)	5 (7.8%)
Age at presentation (days)	32 (8-49)	17 (2-49)
Gender: male	(46%)	(43%)
Female	(54%)	(57%)
Male to female ratio	0.9:1	0.7:1
Mode of delivery:		
Normal vaginal delivery	(71%)	(70%)
C- section	(29%)	(30%)

*= P<0.05

Table -2 Clinical characteristic for both groups.

Symptoms and signs N (%)	COVID-19 positive neonates N= 41	COVID-19 negative neonates N =40	P value
Fever	36 (90%)	32 (80%)	0.2
Nasal congestion	16 (39%)	8 (20%)	0.03*
Cough	12 (29%)	1 (3%)	0.009*
Poor feeding	9 (22%)	23 (58%)	0.004*
Hypo-activity	5 (12%)	18 (45%)	0.004*
Irritability	5 (12%)	8 (20%)	0.17
Diarrhoea	6 (15%)	3 (8%)	0.15
Vomiting	3 (7%)	2 (5%)	0.33
Tachypnea	0 (0%)	1 (3%)	0.16
Vital sings (Mean)			
Temperature axillary (36.5-37.5)	38.10	38.25	0.12
Heart rate (normal range 110-160)	165.39	158.45	0.07
Respiratory rate (30-60)	45.10	44.13	0.22
Blood pressure systolic (65-85)	87.83	82.10	0.001*
Blood pressure diastolic (45-55)	51.51	45.90	0.001*
Oxygen saturation (> 94%)	41 (100) %	40 (100) %	

*= P<0.05

Conclusions: Our study showed that respiratory symptoms(cough and nasal congestion) were more prominent in the COVID-19 positive group while poor feeding and hypoactivity occurred more in the COVID-19 negative. However, the clinical difference between COVID-19 & sepsis looks difficult. Therefore, screening young infants with SLS for COVID-19 is necessary during this pandemic.

MAGNETIC RESONANCE IMAGING: A POWERFUL DIAGNOSTIC TOOL FOR AN EARLY IDENTIFICATION OF CONGENITAL CMV BRAIN DAMAGES IN ASYMPTOMATIC NEWBORNS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPECTIVE STUDY - CYTOMEGALOVIRUS

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Background: Congenital cytomegalovirus (cCMV) is the main cause of non-genetic deafness, mental retardation and neurological deficit in newborns. In particular, 10-15% of initially asymptomatic infected neonates develop long-term sequelae within two years of life. There aren't prognostic factor to identify, among asymptomatic babies, who will develop long term sequelae. Currently, the screening of newborn with cCMV include: physical examination, blood tests, cranial ultrasound scanning (CrUSS), Auditory Brainstem Response, ophthalmic assessment and abdominal ultrasound. Magnetic resonance imaging (MRI) is indicated in cCMV babies with clinically detectable neurological findings or with abnormalities at CrUSS.

Methods: Since January 2019 we perform cerebral MRI in all patients with cCMV. The exam was performed without anesthesia using a specific setting during the physiological and prolonged periods of sleep of the neonate.

Results: We studied 18 cCMV: 6 were positive to at least one of the routine screening tests and underwent antiviral treatment; 9 were negative to all the analysis performed; 3 resulted positive only to MRI. We treated these 3 babies with valganciclovir for 6 months considering the MRI abnormalities as sign of CNS involvement. All the 3 babies showed no toxicity during treatment. Considering all together the 12 asymptomatic cCMV babies at routine screening tests, none developed long term sequelae (mean follow up 15 months, range 3-24 months).

Conclusions: Our data suggest that routine MRI in cCMV could help to recognize otherwise asymptomatic newborns and their treatment possibly prevent neurological outcomes. Larger multicentric studies with longer follow up are needed in order to confirm this preliminary data.

THE FEATURES OF CMV INFECTIOUS MONONUCLEOSIS IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - CYTOMEGALOVIRUS

Alina Zaretska

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Background: Acquired cytomegalovirus infection, in most children older than one year, has manifestations of infectious mononucleosis. However, primary CMV infection causes about 7% of cases of infectious mononucleosis with the occurrence of symptoms that are considered by many authors do not differ from the current acute EBV infection. The aim of the study was to determine any features of the clinical and laboratory data on which CMV infectious mononucleosis manifested.

Methods: There were 33 children with infectious mononucleosis caused by CMV, who were in the pediatric department of Odesa infection's hospital during 2017-2019. They had no comorbidity or coinfection. Diseases' etiology was confirmed by PCR-RT. Children's age ranged from 1 to 12 years. 26 (70,2±7,51)% of them had moderate severity of the diseases and 11 (29,8±7,51)% severe.

Results: CMV mononucleosis is characterized by acute onset (89.9%), severe intoxication (86.5%), more often high (36.8%) fever for 7 or more days, with tonsillitis (73.3%), hepatomegaly (53.3%), splenomegaly (48.3%) and neutrophilic leukocytosis (67.6%) with atypical mononuclear (64.7%), accelerated ESR (53.3%), and hypochromic anemia (29.7%). The liver test data was shown a high level of acidic phosphatase (54.05±8.19)% with a predominantly normal level of bilirubin (97.3 ± 2.66)% and elevated levels of transaminases (ALT (29.7±7.51)%, AST (21.6±2.83)%) and elevated thymol test (81.1±6.44)%. The electrocardiogram data showed the impaired repolarization processes of the myocardium (40.0±8.94)%.

Conclusions: The course of infectious mononucleosis CMV etiology has its own characteristics in children. Detection of the features of CMV infectious mononucleosis in the early stages of diseases could decrease the time for diagnosing and prescribing appropriate treatment.

COMPARISON OF NASOPHARYNGEAL SWAB AND SALIVA SENSITIVITY IN THE DETECTION OF SARS-COV-2 INFECTION IN BOARDING SCHOOL CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

Clara Devina¹, Handayani Handayani¹, Andry Miraza¹, Andriamuri Lubis², Badai Nasution¹, R. Lia Kusumawati³, Inke Lubis¹

¹Universitas Sumatera Utara, Paediatrics, Medan, Indonesia, ²Universitas Sumatera Utara, Anesthesiology, Medan, Indonesia, ³Universitas Sumatera Utara, Microbiology, Medan, Indonesia

Background: The current pandemic of Coronavirus Disease-2019 (COVID-19) has caused a significant burden of disease worldwide. Indonesia has the highest number of cases in Southeast Asia, and children was accounted for 11.6% of cases. Early and reliable diagnosis of COVID-19 is crucial to control transmission, nevertheless nasopharyngeal swab as the main method to collect samples is invasive, inconvenience and requires technician skills. Saliva specimen collected from adults has been reported to be as sensitive and specific as nasopharyngeal specimen for the detection of SARS-CoV-2. However, the sensitivity remains unknown in children.

Methods: A cross sectional study was conducted in Islamic Boarding School in Deli Serdang, North Sumatera province, Indonesia in September 2020. Fifty-one samples from each nasopharyngeal swab and saliva was analysed at the Faculty of Medicine, Universitas Sumatera Utara, Indonesia. Nasopharyngeal swab was performed by a trained technician, while saliva was self-collected by the patient. RNA was extracted using two different extraction methods, and followed by amplification targeting the N and ORF1ab genes to confirm the SARS-CoV-2 infection.

Results: The positivity of SARS-CoV-2 infection using two extraction methods from nasopharyngeal samples were 100%, however the positivity of saliva samples were only 48.1%. We also calculated Ct value (mean±SD) between each samples, and there is no significant different results (nasopharyngeal matic 32.2±3.6; nasopharyngeal manual 32.3±2.6; saliva manual 33.7±3.2).

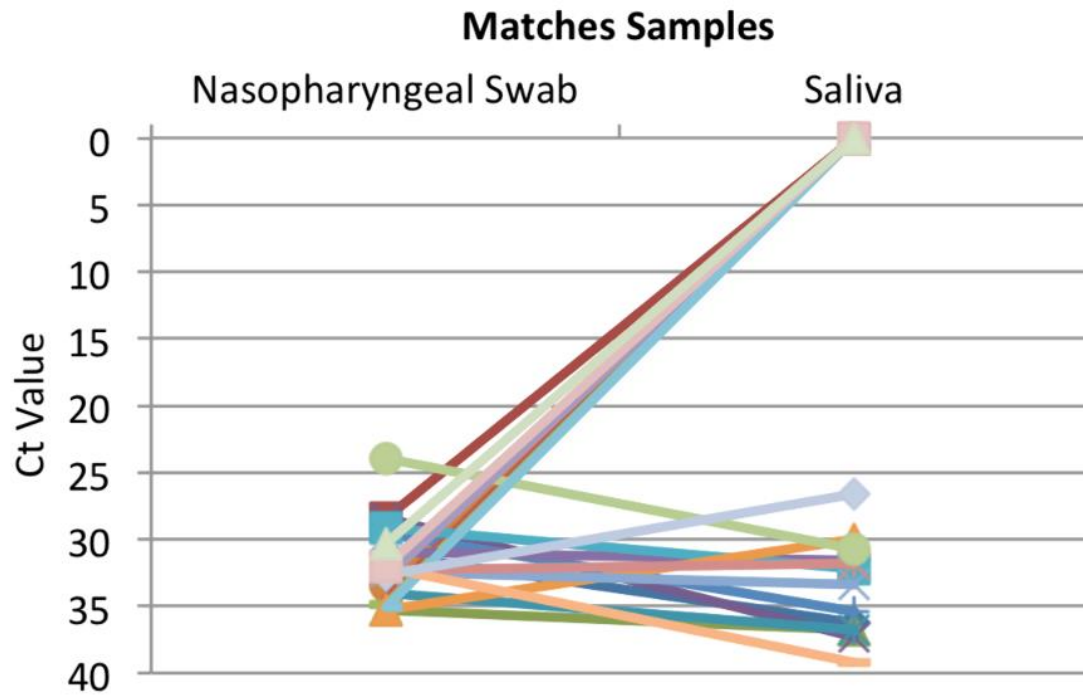


Figure 1. Cycle threshold (Ct) value of Matched Samples

Conclusions: Saliva has a low sensitivity in detecting SARS-CoV-2 infection in children. Screening using nasopharyngeal swab should remain the main protocol for COVID-19 diagnosis in children.

**SEROLOGICAL RAPID TESTS FOR THE DETECTION OF SARS-COV-2 IN HEALTH PERSONNEL:
EXPERIENCE AT RICARDO GUTIÉRREZ CHILDREN'S HOSPITAL (RGCH) IN BUENOS AIRES**

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
DIAGNOSTICS (SCREENING AND TESTING)**

Angela Gentile¹, Maria Del Valle Juarez¹, Maria Florencia Lucion¹, Claudia Ayuso², Soledad Areso¹,
Paula Della Latta¹, Alicia Mistchenko³, Viviana Osta²

¹Ricardo Gutierrez Children's Hospital, Epidemiology, Buenos Aires City, Argentina, ²Ricardo Gutierrez Children's Hospital, Laboratory, Buenos Aires City, Argentina, ³Ricardo Gutierrez Children's Hospital, Virology, Buenos Aires City, Argentina

Background: Serological tests are useful for evaluating the seroprevalence of SARS-CoV-2, both in the general population and in specific populations, for epidemiological purposes. The aim of this study was to describe the prevalence of IgM and IgG antibodies (Ab) detected by rapid serological tests and case confirmation by RT-PCR or Elisa performed on RGCH staff.

Methods: Cross-sectional study of seroprevalence by rapid testing of Ab anti SARS-CoV-2 in health personnel at RGCH (immunochromatography). Positive cases underwent RT-PCR for Sars-Cov-2 to detect active cases. Those with 2 or more positive serological rapid tests and negative RT-PCR were tested by ELISA. The data was collected and analyzed weekly (June 11th to August 26th).

Results: A total of 2,391 persons were tested; weekly testing average: 1,191 persons. A total of 13,586 rapid tests were performed: 2.5% IgM positive, IgG 0.7% and both IgM and IgG 0.2%. Five cases with positive PCR were detected. In 117 people, 2 or more TR positive and RT-PCR negative were recorded; 53% of them (n= 62) were tested with Elisa resulting 6/62 (10%) IgM positive; 10/62 (16%) IgG positive. The detection trend for IgG-positive rapid tests increased from 0.2% to 1.4%.

Conclusions: The Serological rapid tests allowed the detection of 5 cases of asymptomatic active infection and 10 cases of past infection. We consider it was an important tool to assess the evolution of the pandemic in hospital staff and to take the necessary isolation measures.

CHEST X-RAY FEATURES OF HOSPITALIZED CHILDREN WITH COVID-19 INFECTION IN A TERTIARY HOSPITAL

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPECTIVE STUDY -
DIAGNOSTICS (SCREENING AND TESTING)**

Evangelia Giannousiou, Dimitra - Maria Koukou, Maria Noni, Anastasia Papageorgiou, Vana Spoulou, Athanasios Michos
"Aghia Sophia" Children's Hospital, Division Of Infectious Diseases, First Department Of Pediatrics, Medical School, National And Kapodistrian University Of Athens, Athens, Greece

Background: In March 2020, WHO declared a COVID-19 pandemic. Published literature regarding pediatric population is still limited, because children have milder clinical course than adults. Imaging can contribute to the evaluation of disease severity and progression. Aim of our study was to describe the findings on Chest X-Ray (CXR) of hospitalized children with COVID-19 infection.

Methods: The study included patients aged <18 years old, who were hospitalized with confirmed COVID-19 and underwent CXR, in the largest tertiary Children's Hospital in Greece during the period March 2020-January 2021. Images were evaluated by pediatric radiologists during children's hospitalization.

Results: A total of 112 patients were hospitalized for COVID-19. CXR was performed in 63/113 (55.7%). Median age was 0.9 years (range 3 days-17 years). Patients with fever were 80.9%(51/63), respiratory symptoms 50.7% (32/63), respiratory distress 12% (8/63), gastrointestinal symptoms 17.4%(11/63), MIS-C (4.7%,3/63) and DVT/PE(1.5%,1/63). Four children (6.3%) had history of respiratory disease. Almost half of the patients had pathological findings in the CXR (46%,29/63). Most common finding was bilateral diffuse interstitial infiltration (44.4%,28/63), while lobe consolidation was met only in one patient. More than half children had normal CXR (53.9%,34/63).

Conclusions: CXR was performed only in half of hospitalized children with COVID-19. Less than half had pathological findings, though all were nonspecific. Therefore CXR should not be obtained as a first line tool for admitted pediatric patients, but only to evaluate disease progression.

SARS-COV-2 CLUSTER IN AN ISLAMIC BOARDING SCHOOL, AND FOLLOW-UP OF CHILDREN USING SALIVA SAMPLES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

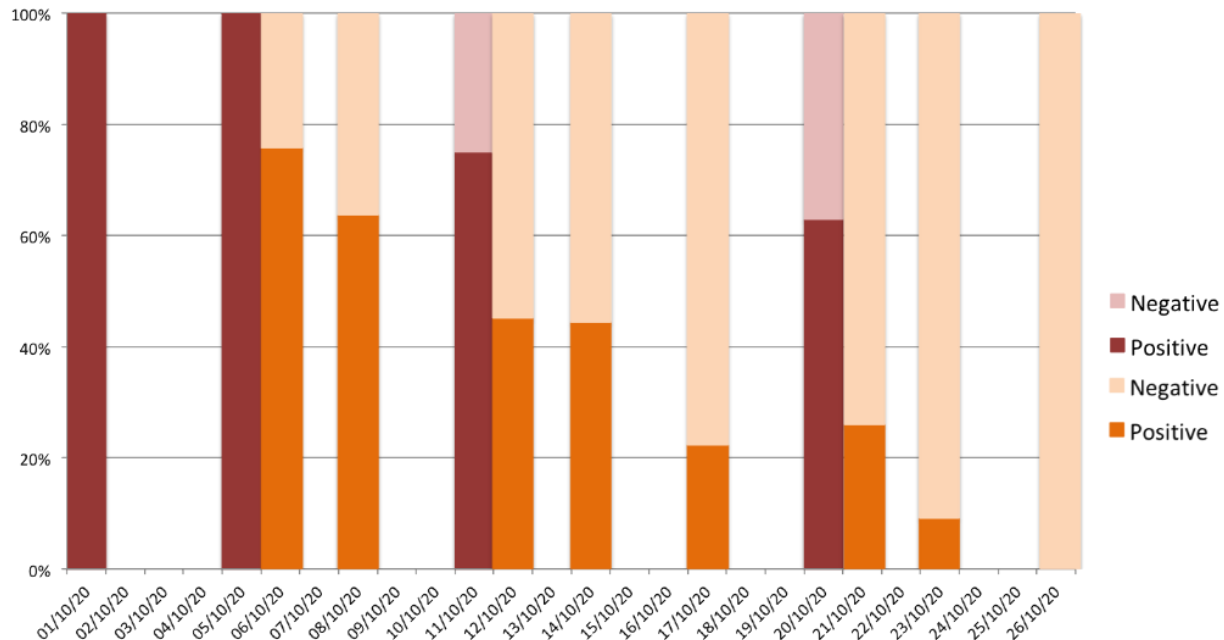
Clara Devina¹, Handayani Handayani¹, R. Lia Kusumawati², Andriamuri Lubis³, Badai Nasution¹, Inke Lubis¹

¹Universitas Sumatera Utara, Paediatrics, Medan, Indonesia, ²Universitas Sumatera Utara, Microbiology, Medan, Indonesia, ³Universitas Sumatera Utara, Anesthesiology, Medan, Indonesia

Background: SARS-CoV-2 has been predominantly circulated among adults, and children are reported not to be the drivers of the transmission. Indonesia has reported 1.066.313 COVID-19 cases as in 31 January 2021, in which 11.8% were infection in children. Although the government has implemented school closures since March 2020, boarding schools are exempted from this emergency regulation.

Methods: A total of 210 students aged 12 to 14 years were screened using nasopharyngeal swab for SARS-CoV-2 infection in October 2020. Positive individuals were followed up every 3 days using saliva samples, and weekly using nasopharyngeal swabs. Samples were analysed using RT-PCR at the Microbiology Laboratory at the Faculty of Medicine, Universitas Sumatera Utara, Medan. Clinical manifestations and history of contacts were recorded.

Results: Thirty-six female students (39.1%) were positive by RT-PCR, while none of the male students were infected. Six female teachers were also identified during the screening. 69.4% were asymptomatic, and the remaining had mild symptoms. All students became negative after 26 days of follow-up. Saliva showed lower sensitivity than nasopharyngeal swab in identifying SARS-CoV-2 infection using RT-PCR.



Conclusions: Boarding school has a high risk of SARS-CoV-2 transmission when the health protocols are not being implemented. Despite a majority of children in this study were asymptomatic, the spread of the infection occurred rapidly in the school. Isolation and monitoring should be implemented to control the outbreak and halt the transmission. Saliva has a lower sensitivity and should not be used to detect SARS-CoV-2 infection even in older children.

SERUM IG A, IG G AND NEUTRALIZATION ANTIBODY RESPONSES OF PEDIATRIC PATIENTS WITH COVID-19

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

Pembe Derin Oygur¹, Yasemin Ozsurekci¹, Sibel Laçinel Gürlevik¹, Kubra Aykac², Musa Kukul¹, Burcu Cura Yayla², Jale Karakaya³, Ali Bulent Cengiz¹, Mehmet Ceyhan¹

¹Hacettepe University Faculty of Medicine, Pediatric Infectious Diseases, Ankara, Turkey, ²Ankara Health Sciences University Hospital, Pediatric Infectious Diseases Unit, Ankara, Turkey, ³Hacettepe University Faculty of Medicine, Department Of Biostatistics, Ankara, Turkey

Background: Serologic tests are mandatory for determining true surveillance of pandemics. For SARS-CoV-2 having a high asymptomatic infection rate we need reliable serologic tests for diagnosis as well.

Methods: Antibody response of children against SARS-CoV-2 was examined by using an ELISA-based assay. Eighty-seven plasma samples collected from 77 confirmed and 10 probable cases were examined for IgG after 14 days of diagnosis. Neutralization antibodies (N-Abs) were also measured simultaneously. Ninety-three samples collected from 47 confirmed and four probable cases were tested for IgA at various time interval.

Results: Seven PCR negative patients were diagnosed with serology. The sensitivity of IgG was 92.8% after 14th and 94.2% after 40th days. The N-Abs correlated with IgG. The sensitivity of IgA was 88% on days 8-15. Both IgG and IgA were detected as late as 82 days. Two critically ill patients both received antiviral and IVIG, one mild and one asymptomatic patient neither received treatment, all confirmed by PCR failed to develop IgG antibodies. One critically ill patient developed IgA antibodies on day zero which was still positive on 82nd day.

Figure1. Immunoglobulin A (IgA) levels of patients at two different time intervals

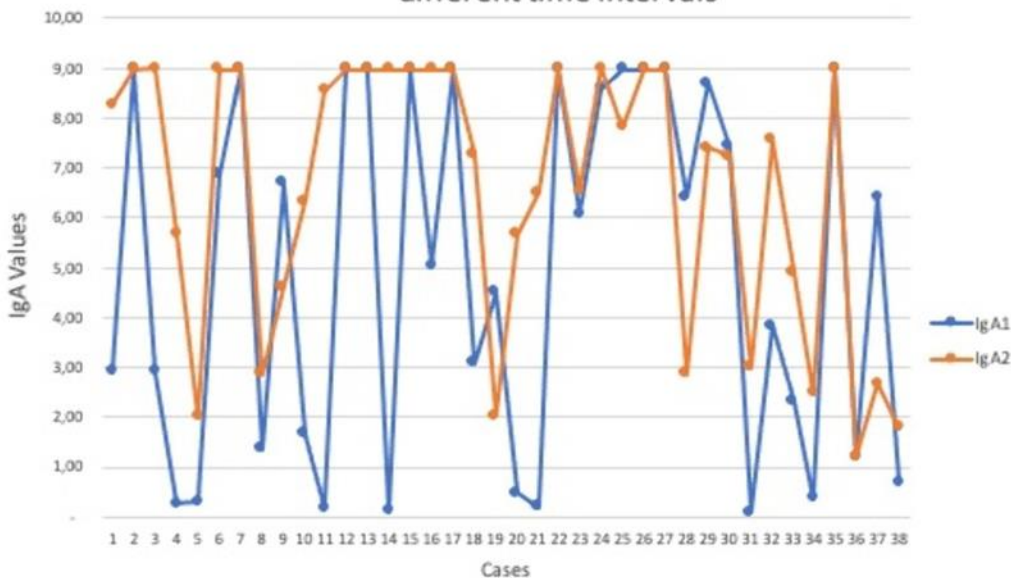


Table2. Serology and PCR results depending on time interval after the onset of disease

Days after onset	n	IgA				n	PCR				n	IgG				n	NAb			
		n+	Sensitivity (%)	n-	nbt		n+	Sensitivity (%)	n-	nbt		n+	Sensitivity (%)	n-	nbt		n+	Sensitivity (%)	n-	nbt
Total	93	75	82.4	12	4	174	78	45	96	87	81	93.1	6	87	81	93.1	4			
0-7	17	8	47.1	9	0	86	76	88.4	10	-	-	-	-	-	-	-	-	-	-	-
8-14	27	24	88	2	1	95	2	2.3	94	-	-	-	-	-	-	-	-	-	-	-
15-35	40	36	90	2	2	2	0	30	2	60	55	92.8	5	60	55	92.8	5			
36-60	9	8	88.9	0	1	-	-	-	-	17	16	94.1	1	17	16	94.1	1			

n: total number

n+: number of positive samples

n-: number of negative samples

nbt: number of borderline samples

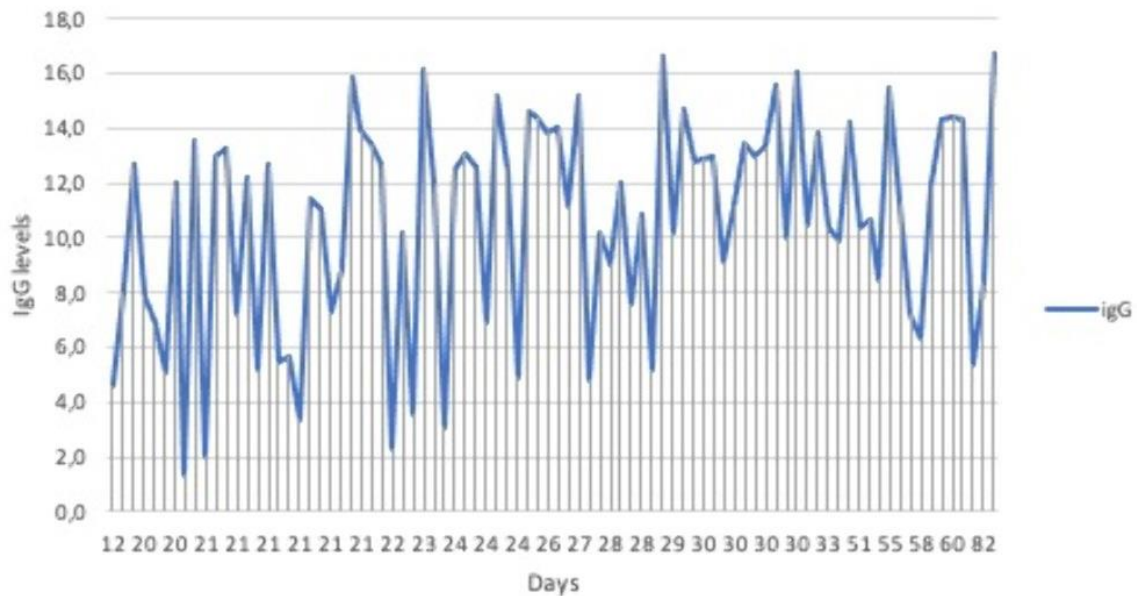
IgA: immunoglobulin A

IgG: immunoglobulin

NAb: neutralizing antibody

PCR: polymerase chain reaction

Fig 2. IgG Levels By Days



Conclusions: Serologic tests have their share of contribution in the diagnosis of COVID-19 in children. IgA can be useful in early days while IgG is more valuable in the late phase of infection. It is also possible that disease severity does not enhance antibody response in children or children who cannot produce antibodies have a more severe course. Multiple factors are probably responsible for seroconversion. The duration of seropositivity of children might be longer than adults.

USEFULNESS OF VIRAL LOAD DETECTION IN PEDIATRIC MILD-MODERATE COVID-19 CASES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

Marco Poeta¹, Francesco Nunziata¹, Luca Pierri¹, Alfonso Farina¹, Paolo Romano², Michele Cennamo², Andrea Lo Vecchio¹, Alfredo Guarino¹, Eugenia Bruzzese¹

¹University of Naples Federico II, Department Of Translational Medical Sciences, Section Of Pediatrics, Naples, Italy, ²University of Naples Federico II, Department Of Translational Medical Sciences, Section Of Pathology, Naples, Italy

Background: Pediatric COVID-19 is mainly asymptomatic or mild. Data on the association between viral loads of SARS-CoV-2 and clinical features and course of disease are scarce in children.

Methods: Clinical data were obtained from patient medical records. Real-time reverse-transcriptase polymerase-chain-reaction (RT-PCR) was used to detect SARS-CoV-2 nucleic acids from naso-pharyngeal swabs. PCR amplification cycle threshold (Ct) values was extrapolated as an estimate of SARS-CoV-2 viral load. Children were categorized in very high, high, moderate, and low viral load groups based on Ct values at the time of admission (Ct<10, 10-15, 15-25 or >25, respectively).

Results: Thirty-seven children admitted for COVID-19 were included in the study (median age 1 year, IQR 0-7): 7 (19%) were asymptomatic, 22 (59%) showed mild and 8 (22%) moderate disease. 27 children (73%) had very high, 5 (14%) high, 3 (8%) moderate and 2 (5%) low viral loads. Symptoms, pulmonary involvement and COVID-19 severity pattern was different between viral load groups ($p>0.05$). Nevertheless, absolute Ct values had a positive correlation with age ($p=0.029$), white blood cells ($p=0.035$) and neutrophils ($p=0.050$), and negative with C-reactive protein ($p=0.003$) and interleukin-6 ($p=0.002$).

Conclusions: In our study, most children had very high viral replication at admission. Despite the relationship of high viral load with young age, inflammatory markers and low neutrophils and white blood cells, no correlation was found with clinical presentation and severity. Ct values do not appear as a predictor of severity in children, but larger and quantitative analysis-based studies are needed to confirm these findings also in severe/critical pediatric cases.

THE POTENTIAL ROLE OF MEAN PLATELET VOLUME IN PREDICTION THE SEVERITY OF COVID-19 IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

Gizem Güner Özenen¹, Zümrüt Sahbudak Bal¹, Zuhale Umit¹, Nimet Melis Bilen¹, Sema Yıldırım Arslan¹, Ali Yurtseven², Eylem Saz², Burcu Carutcuoglu³, Ruchan Sertoz⁴, Zafer Kurugöl¹, Ferda Özkinay¹
¹Ege University Faculty of Medicine, Department Of Pediatric Infectious Disease, Izmir, Turkey, ²Ege University Faculty of Medicine, Department Of Pediatric Emergency, Izmir, Turkey, ³Ege University Faculty of Medicine, Department Of Clinical Biochemistry, Izmir, Turkey, ⁴Ege University Faculty of Medicine, Department Of Microbiology, Izmir, Turkey

Background: Children with COVID-19 showed milder symptoms than adults and minority of children required hospitalization. We aimed to identify the role of mean platelet volume (MPV) in prediction the prognosis of COVID-19 in children.

Methods: A single-center retrospective study conducted at Ege University between March 11, 2020 and December 11, 2020. During the study period, children (251 confirmed case, 65 suspected cases) with COVID-19 were evaluated. Laboratory analysis on admission, including white blood cell count (WBC), absolute neutrophil count (ANC), absolute lymphocyte count (ALC), hemoglobin (Hb), platelet count (PLT), MPV, CRP, procalcitonin (PCT), D-dimer, fibrinogen and N-terminal-pro-Brain Natriuretic Peptide (NT-pro-BNP) values were recorded.

Results: Confirmed COVID-19 patients had significantly lower mean values of WBC, ANC, ALC, PLT, Hb, CRP, PCT, fibrinogen and NT-pro-BNP. There was no significant difference in MPV between two groups. Fifty-five patients required hospitalization due to COVID-19. ROC curve analysis suggested that MPV level cut-off point for making the prediction of hospitalization due to COVID-19 was 9.8 fL, with a sensitivity and specificity of 60% and 58%. The area under the curve for the MPV, WBC, CRP, procalcitonin, D-dimer and NT-pro-BNP were statistically higher for hospitalized patients versus outpatients.

Conclusions: In this study, our results indicate that MPV, WBC, CRP, procalcitonin, D-dimer and NT-pro-BNP can be predictive values for the patients those required hospitalization due to COVID-19.

MANAGEMENT AND OUTCOMES OF CHILDREN WITH CLINICALLY SUSPECTED AND CONFIRMED SARS-COV2 DURING THE FIRST WAVE IN THE WEST MIDLANDS, UNITED KINGDOM

E-POSTER VIEWING

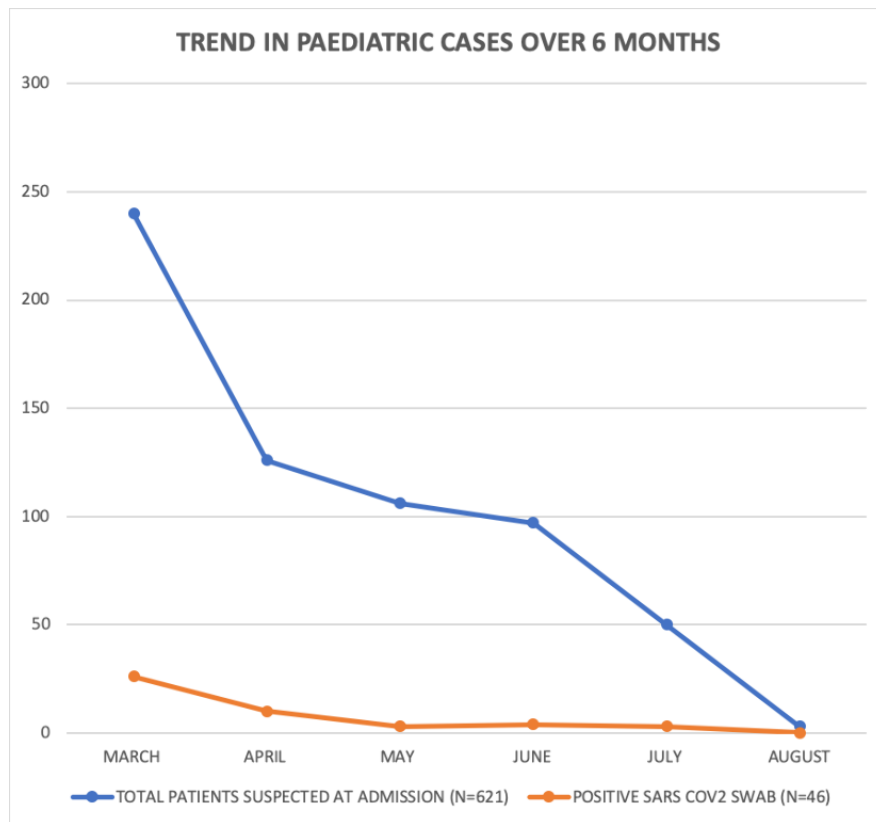
TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

Pooja Siddhi¹, Katherine Shelley², Hina Rizvi³, Annie John⁴, Ashley Holt⁵, Helen Mcdermott³, Steven Welch³, Niten Makwana², Hannah Vawda³, Naseem Muhammed³, Tsun Wu Kwan³, Karen Davies⁵, Anustupa Banerjee⁴, Ezgi Seager⁶, Sohail Nassir⁶, Lindsay Mulligan², Mathew Cant², Will Carroll⁷, Rebecca Horner⁷, Amal Elzubair⁷, Joy Onumbi⁷, Bolanie Oyelade⁷, Pooja Bakshi⁸, Srinivas Parepalli⁸, Yasmine Oumellil⁸, Asser Abdelbaky⁸, Sarah Meenan⁸, Joanne Pugh⁸, William Coles⁹, Mercy Magwenzi⁹, Sophie Hine⁹, Emma Blamey⁹, Ruth Pitt¹, Sarah Amanda¹, Zuro Baccha¹, Binu Babu¹, Andrew Pearce⁴, W Shinwari⁴, Simran Harlalka³, Nawal Zia³, Anusha Pachala³, Nina Smith³, Isabelle Crammer³, Justina Rweyemamu³

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Background: During the first wave of SARS-CoV2 in England, there was initially limited availability of confirmatory PCR for diagnosis, meaning clinical algorithms were used. We describe the management of children with suspected and confirmed COVID-19 in non-tertiary hospitals during the first wave of the UK epidemic.

Methods: A retrospective and prospective observational evaluation of pediatric cases based on BPAIIG guidance (March 2020) was conducted across nine hospitals in the West Midlands. Children (≤ 16 -years old) admitted with suspected SARS-CoV2 or a positive swab between 1st March-31st July 2020 were included. 'Suspected' cases had fever \pm respiratory or gastrointestinal symptoms, unexplained skin rash, or strong clinical suspicion. Data were collected and analyzed in Microsoft Excel and REDCap.



Results: 621 children were included. 566 (91%) had SARS-CoV2 swabs; 46(7.4%) were positive. 115(18%) had suspected SARS-CoV2 at discharge. 8(1.3%) PIMS-TS. Investigations- chest-radiograph in 402(65%), FBC- 373(60%), blood-cultures 276(44%), viral respiratory screen 186(30%), urine culture 138(22%). 201(50%) radiographs reported normal. 268(97%) blood cultures were negative. 395(64%) received antibiotics, 172(44%) cephalosporins. 10(1.6%) had antivirals. 557(90%) admitted to general-ward, 53(8.5%) high-dependency, 6(1%) ITU. 109(18%) received non-invasive respiratory support, 9(1.5%) intubation. 26% had associated co-morbidities, 36% in ITU group. Median admission duration was 2-days. 587(96%) were discharged home, 26(4.3%) transferred to ITU, 1(0.2%) died.

Conclusions: During the first wave, the impact of SARS-CoV-2 on children was still unknown. We observed that clinicians had a high level of suspicion of SARS-CoV2 infection at the beginning of the first wave. The number of both PCR-confirmed and clinical diagnoses decreased over time mirroring the downward trend observed in the community. We report high rates of investigations including radiographs and antibiotic use despite few confirmed bacterial infections. And the majority of initially-suspected SARS-CoV-2 children were negative.

DOG-BITES ARE AN IMPORTANT INDICATORS OF RABIES TRANSMISSION IN ALL AGE GROUPS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIGITAL TOOLS AND MACHINE LEARNING FOR PEDIATRIC INFECTIOUS DISEASES

Waqas Ahmad

KBCMA University College of Veterinary and Animal Sciences, Narowal Campus, Department Of Clinical Sciences, Narowal, Pakistan

Background: Dogs are the principal reservoir for the transmission of rabies both in animals and humans. Rabies is a primary infectious diseases of children in the teenage groups. There are three major categories of dog-bites that include nibbling of the naked skin by the dogs, sub-cut wound involving lacerations without the involvement of deep muscular tissue or bleeding, while the third category includes deep-subcut wound with bleeding.

Methods: In this study, we collected the retrospective dog-bite data from different pediatric sections of public sector hospitals in Pakistan from March 2020 to August 2020. The dog-bite cases were maintained in the registers kept at the hospitals. Students of veterinary sciences participated in this study and collected the data of total dog-bite injuries from their respective hospital in their home town.

Results: A total of 2445 cases of dog-bite injuries were reported from 11 public sector hospitals in Punjab, Pakistan. The dog-bite injuries were not categorically maintained in the registers. Regarding the age-wise distribution of the injuries, most of the dog-bites were reported in children age range between 13 to 17, while rest of the two categories had the age range between 10 to 12 and 18 to 20. Most of the dog-bites were inflicted on legs, arms, belly and face respectively.

Conclusions: Dog-bites are the true indicators for the contact tracing and possibility for the development of rabies in kids. Mostly dog-bites comes under category III in which immune globulins are necessary to be administered. Children do not have the awareness, knowledge and guides of their parents regarding the interaction with stray or pet dogs or cats. Hospital staff has to maintain the category and type of dog-bite injuries in the registers to follow up further.

THE MANAGEMENT OF PERIORBITAL CELLULITIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - DIGITAL TOOLS AND MACHINE LEARNING FOR PEDIATRIC INFECTIOUS DISEASES

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university hospital mohamed VI MARRAKECH, Pediatric Emergency Department, MARRAKECH,
Morocco

Background: Periorbital cellulitis is a relatively common condition in Pediatric Emergencies, where the high risk of developing serious ocular and neurological complications requires early diagnosis and appropriate treatment

Methods: The work described in this study was directed at learning more about how periorbital cellulitis is managed, and steps that can be taken to improve the management of these conditions. For this goal, we performed a retrospective study including 129 patients who presented to the Pediatric Emergency in The Mother-Child Hospital (CUH Mohamed VI) Marrakech during a period of 9 years and 2 months

Results: The age ranged between 1 months and 15 years with an average age of 4.3 years. Preseptal cellulitis was present in 101 cases, while 28 cases had retroseptal cellulitis. Fever was present in 62 patients. The eyelid oedema was constant. The bacteriological study was positive in 8 cases. Orbito-cerebral CT showed a pre-septal cellulite in 101 cases, orbital cellulitis in 11 cases, a subperiosteal abscess in 15 cases, and orbital abscess in 2 cases. Medical treatment was based on Ceftriaxone, Metronidazole +/- aminoglycoside. Or protected Amoxicillin. Surgical treatment was indicated in 8 patients. The outcome was favorable in all our patients

Conclusions: Child's periorbital are seen as a disease requiring medical multidisciplinary approach. Thus early diagnosis, appropriate antibiotic therapy and sometimes surgical treatment combined, can significantly reduce mortality and morbidity associated with this pathology

SINGLE CENTRE RETROSPECTIVE STUDY OF THE EFFECTIVENESS AND SAFETY OF CONSERVATIVE TREATMENT FOR PERITONSILLAR ABSCESES IN ADOLESCENTS AND CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - ENT INFECTIONS

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¹Lausanne University Hospital and University of Lausanne, Service Of Pediatrics, Department Woman-mother-child, Lausanne, Switzerland, ²Lausanne University Hospital and University of Lausanne, Unit Of Pediatric Infectious Diseases And Vaccinology, Lausanne, Switzerland, ³CHUV, Unit Of Pediatric Infectious Diseases And Vaccinology, Lausanne, Switzerland

Background: Peritonsillar abscesses (PTA) remains the most common deep infection of the head and neck. There is limited data on conservative management of PTA with antibiotics alone. However, at the Lausanne Children's Hospital, conservative treatment with antibiotic alone is most often practiced in children and adolescents with good results. Our objective is to describe the effectiveness and safety of this strategy.

Methods: We conducted an observational retrospective single-center study conducted in the Lausanne University Hospital. Children and adolescents under 18 years of age hospitalized from 01.01.2004 to 31.12.2014 with a diagnosis of PTA were included. Our primary endpoint was the failure of treatment defined as the occurrence of infectious complications or the necessity of a surgical intervention within 2 weeks following the admission. Demographics and clinical characteristics were compared between groups

Results: 107 children were analysed. Median age was 13.2 years (IQR 7.5-15.9) and 61 (57%) were female. 14 children (13%) had a surgery decided on admission. Among the 93 patients treated conservatively, 7 (8%) had a primary failure of which 2 were related to a complication and 5 to surgery less than 2 weeks after the diagnosis. The only determinant for the failure of the conservative treatment was an older age. 20 patients had a planned delayed surgery and 9 of the remaining 68 patients (13%) had a recurrence of PTA.

Conclusions: Conservative treatment of PTA is a safe treatment option for the vast majority of patients, especially in young children. A close follow-up during the first few days of management should identify patients who will require surgical management. Patients should be informed of the risk of recurrence.

EVALUATION OF COMPLICATIONS AND ITS RISK FACTORS IN CHILDREN WITH ACUTE MASTOIDITIS IN A TERTIARY HOSPITAL (2000-2019)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - ENT INFECTIONS

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Background: Mastoiditis can cause severe complications in children. In the last years, and despite anti-pneumococcal vaccination, the incidence of mastoiditis and its complications have not decreased, although epidemiological changes are reported. The aim of this study was to describe the complications associated with acute mastoiditis and risk factors associated with them in a 20 year-period in a tertiary hospital.

Methods: We conducted a retrospective observational study at Gregorio Marañón Hospital (Madrid, Spain). All children < 18 years admitted to the pediatric hospital with diagnosis of acute mastoiditis between 2000-2019, were included. The study was divided into two periods (2000-2009 and 2010-2019). Radiological and clinical complications recorded in the electronic medical history were described and risk factors associated with them evaluated. The study was approved by the ethics committee.

Results: 43/219(19.6%) children with mastoiditis developed complications, especially subperiostic abscess(88.4%), with 3.1% of children developing CNS complications (5 epi/subdural abscess and 5 venous sinus thrombosis). Complications were more frequent in the second study period (29.8%vs.10.4%p=<0.01). Children with complications were older, and had more often an underlying disease or previous otitis media. Other trends observed are shown in Table 1.

COMPLICATIONS			
	YES (n= 43)	NO (n= 176)	p value
Median age (months)	42.2 ± 40.0	29.4 ± 30.1	0.05
Underlying medical condition (%)	32.6	12.5	<0.01
Previous acute otitis media (%)	58.1	38.8	0.02
Ear draining (%)	23.2	15.0	0.20
Previous antibiotic treatment (%)	46.5	33.3	0.11
Fever during hospitalization (days)	1.7 ± 2.5	1.0 ± 1.4	0.08
CRP (mg/dl)	9.9 ± 10.1	9.4 ± 9.1	0.82
Leukocyte count (mm ³)	15,962 ± 5,965	17,494 ± 5,861	0.14
Neutrophil count (mm ³)	10,276 ± 5,104	10,653 ± 4,702	0.79
Microbiological isolation (%)	83.7	30.6	<0.01
Positive blood culture (%)	18.7	3.0	<0.01
<i>F. necrophorum</i> (%)	20.9	0	<0.01
Median iv antibiotic therapy (days)	10.5 ± 5.4	5.16 ± 2.4	<0.01
Median total antibiotic therapy (days)	24.2 ± 18.1	18.7 ± 14.9	<0.01
Median hospital stay (days)	11.2 ± 5.2	5.7 ± 3.0	<0.01
Rehospitalization (%)	4.6	6.0	1.00

83.7% had a microbiological isolation, being most common *S. pneumoniae*(30.6%), *F. necrophorum* (25%) and *S. pyogenes*(22.2%). The isolation of *F. necrophorum* was more frequently associated with complications.

Conclusions: Complications of acute mastoiditis were frequent in children in our setting, with and increased rate in the last years. Children with an underlying medical condition and previously diagnosed with otitis media were at highest risk. In contrast with other publications, children with complications were older in our series (median age 3.5 years). Isolation of *F. necrophorum* was associated with complications. CNS complications, although infrequent, should always be considered.

EPIDEMIOLOGY AND MICROBIOLOGICAL CHARACTERISTICS OF PEDIATRIC ACUTE MASTOIDITIS IN THE LAST 20 YEARS IN MADRID (2000-2019)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - ENT INFECTIONS

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Background: Mastoiditis is the most frequent complication of acute otitis media in children. In the last years, and despite anti-pneumococcal vaccination, its incidence has not decrease in high income countries, although epidemiological changes have been reported. The aim of this study was to describe the epidemiology of children with acute mastoiditis admitted to a tertiary hospital for a 20 year-period.

Methods: Retrospective observational study performed at the Gregorio Marañón Hospital (Madrid, Spain). Children < 18 years admitted to the hospital with the diagnosis of acute mastoiditis between 2000-2019, were included. Medical, epidemiological and microbiological data from the electronic records were collected. The study was divided into two periods (2000-2009 and 2010-2019). The study was approved by the hospital ethics committee.

Results: 219 patients were included; 57.1% male. Median age was 31.8 months(IQR:13-35 months). There were no differences between the median number of mastoiditis per year in the two study periods (11.5±7.2vs.10.4±5.2;p=0.7). 41.1% had a microbiological isolation: *S. pneumoniae*(32;35.2%), *S. pyogenes*(21;23.1%), *H. influenzae*(10;11.1%), *P. aeruginosa*(10;11.1%), *F. necrophorum*(9;10%) and *S. aureus*(9;10%). There were non-statistical differences between the first and the second period of study, with *S. pneumoniae*(47.7%vs.23.4%;p=0.02) being more frequent in the first, and *S. pyogenes*(18.2%vs.29.8%;p=0.22) and *F. necrophorum*(4.5%vs.14.9%;p=0.16) in the second. Patients with *F. necrophorum* had a worse outcome (Table.1).

	<i>F. necrophorum</i> (n=9)	Other isolation (n=82)	p value
Median age (months)	35.1 ±23.8	35.0 ± 38.8	0.99
Previous AOM (%)	77.8	46.3	0.09
Ear draining (%)	55.5	20.7	0.03
Previous antibiotic treatment (%)	77.8	35.8	0.03
Fever during hospitalization (days)	3.63±2.5	1.27 ± 1.9	<0.01
CRP (mg/dl)	19.7 ± 10.1	10.5 ± 11.6	0.03
Leukocyte count (/mm ³)	20,764 ± 6,256	17,337 ± 5,826	0.10
Neutrophil count (/mm ³)	15,466 ± 5,605	10,653 ±4,702	0.01
Positive blood culture (%)	33.3	9.5	0.08
Complications (%)	100.0	32.9	<0.01
Mastoidectomy (%)	88.9	35.4	<0.01
Venous sinus thrombosis (%)	33.3	1.2	<0.01
Median iv antibiotic therapy (days)	14.7 ± 7.2	7.23 ± 4.1	0.01
Median total antibiotic therapy (days)	28.7 ± 9.8	18.7 ±14.9	0.05
Median hospital stay (days)	14.1 ±7.5	8.2 ± 4.3	<0.01

Conclusions: According to our study, in the last 20 years there have been epidemiological changes in the bacteria causing mastoiditis in our setting, with *S. pyogenes* being the leading cause over *S. pneumoniae*. These changes may be related to pneumococcal vaccination. *F. necrophorum* is an emerging bacterium that can cause severe complications in patients with mastoiditis. Clinicians should be aware of this pathogen in children with mastoiditis and prolonged fever and elevated inflammatory parameters.

IMPROVING THE MANAGEMENT OF GROUP A STREPTOCOCCUS PHARYNGITIS TO REDUCE THE RISK OF COMPLICATIONS – AN AUDIT OF PRACTICE IN WORCESTERSHIRE ACUTE HOSPITALS TRUST 2006-2020

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - ENT INFECTIONS

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Background: Group A streptococcus pharyngitis is an oropharynx infection caused by *S.pyogenes*. Symptoms usually resolve spontaneously; however appropriate antibiotic treatment reduces the symptom length, likelihood of transmission and prevents complications. This audit measures compliance against the Infectious Diseases Society of America (IDSA) antibiotic guidelines to identify if changes following a previous audit have improved clinical practice.

Methods: This retrospective audit reviewed clinical details of patients under 16 years with positive group A streptococcus on throat or blood culture between May 2012 and April 2020 at Worcestershire Acute Hospitals NHS Trust (n=220). Clinical notes were reviewed for demographics; clinical presentation; antibiotic sensitivities and duration. This was compared to previous data (n=66) collected between May 2006 and April 2012, and compared to the IDSA antibiotic guidelines which recommends 10day treatment with penicillin, amoxicillin, or an alternative such as clarithromycin for penicillin-allergies.

Results: 220 patients had group A streptococcus between 2012 and 2020; antibiotics were prescribed to 158 (89%), this is compared to previously where 83% received antibiotics (n=55). 100% of the antibiotics prescribed were sensitive. 58% (n=82) had a minimum of 10days of antibiotics. This improved from 29% (n=16) who previously received appropriate antibiotic length. 2 patients (1%) required readmission due to complications, including post-strep glomerulonephritis, but received antibiotics consistent with guidelines. This improved from previous 9% complication rate (n=6).

Conclusions: Improved compliance with guidelines has reduced the complication rate for patients with Group A streptococcus infection. However a number of patients are still not receiving antibiotics, which could be improved by ensuring all positive swab results are appropriately actioned by the paediatric team. Although there appears to be a low risk of complications, it is important to ensure clinical practice is consistent with guidelines to reduce potential harm.

PEDIATRIC EMERGENCY DEPARTMENT VISITS AT TAWAM HOSPITAL DURING THE COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: COVID-19 pandemic has indeed affected the healthcare systems around the world. Lockdown among other different strategies developed to contain the virus. Subsequently, these had an effect on healthcare utilization. In our study, we examined the impact of the pandemic on pediatric emergency healthcare.

Methods: A retrospective study was conducted to compare between emergency department visits in a tertiary hospital in United Arab Emirates (UAE) between (March-June 2020) lockdown period and the pre-pandemic year (March-June 2019). The data were recruited from the medical records system and was further analyzed to explore the impact of COVID-19 on the pediatric ED health services utilization with respect to patient attendance, age, hospitalization rates, pediatric intensive care unit (PICU) admissions and trauma cases before and during COVID-19 pandemic.

Results: A drop of 41.6% was observed in the total number of pediatric ED visits after the initiation of lockdown. Hospitalizations decreased by 50% during the pandemic. However, 3% increase in PICU admissions which assumably is attributed to delayed medical help seeking. A larger number of trauma cases was noted, with a 10.4% increase compared to 2019. As we believed that the community had a huge fear of the pandemic, we compared numbers of patients leaving ED against medical advice and it was 0.6% higher during the pandemic time.

Conclusions: A significant decrease in the number of pediatrics emergency department visits had been observed in a tertiary hospital in the UAE during the COVID-19 pandemic, while the rate of critical care admissions increased which might reflect public fear and anxiety resulting in delayed presentation. These findings support the importance of public awareness and education on medical care resources available and providing alternative medical services like tele-medicine and help lines for children.

PEDIATRIC INFLAMMATORY MULTISYSTEM SYNDROME TEMPORALLY ASSOCIATED WITH SARS-COV-2 (PIMS-TS) IN SÃO PAULO, BRAZIL: PRELIMINARY DATA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Few months after the beginning of COVID-19 pandemia, a severe inflammatory syndrome was reported in previously healthy children that tested positive for SARS-CoV-2, and it was named PIMS-TS.

Methods: From March 2020 to January 2021, all reported PIMS-TS cases in hospitalized patients younger than 18 years of age in 12 hospitals in Sao Paulo, Brazil, were evaluated. We carried a descriptive analysis including clinical presentation, complications, and outcomes of patients who met the case definition for PIMS-TS according to the Brazilian Ministry of Health's criteria.

Results: As of January 2021, 77 patients met the inclusion criteria: 55.8% male; 63.6% white; mean age of 6 years. The majority (87%) was healthy, 54.5% did not present epidemiologic link to COVID-19 case. The mean fever duration was 7 days; 54% presented as a Kawasaki-like disease. The most common system involvement was gastrointestinal (82%), followed by dermatologic (71%), coagulopathy (61%), cardiac dysfunction (66%), and cardiovascular collapse (38%). 70% required intensive care admission, 27% mechanical ventilation. There were four (5%) deaths, only one in a previous health girl. Treatment was prescribed to 80% of the patients.

Conclusions: Our preliminary and ongoing data describe the first multicentric study in children with PIMS-TS in Sao Paulo, Brazil. The clinical presentation was varied. Despite the increased severity of the cases, the majority had favorable outcomes. Deaths occurred mainly in children with underlying disease (oncological or immunodeficiency). The disease appeared weeks after the peak of SARS-CoV-2 cases.

CORRELATION BETWEEN SARS COV2 VIRAL LOAD IN RESPIRATORY SAMPLES AND CLINICAL OUTCOMES IN PEDIATRIC PATIENTS WITH COVID 19 IN BUENOS AIRES, ARGENTINA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: SARS CoV2 infection produces clinical manifestations of varying severity. There is controversy about the correlation between the SARS CoV2 viral load in respiratory samples and the evolution and severity of the clinical picture. **Objectives:** to determine the correlation between SARS CoV 2 viral load in respiratory samples (based on CT values in the detection of viral genome) with the severity of the clinical picture.

Methods: Retrospective, observational and descriptive study that included patients under 15 years of age with confirmed SARS CoV2 infection at Isidoro Iriarte Hospital (Quilmes, Argentina) in the period from March 1 2020 to December 31, 2020.

Results: 312 patients (n) who met the inclusion criteria were included. Most cases were mild. All cases were community-based. Most frequent comorbidity was respiratory chronic disease. No antiviral treatment was administered to any patient. There was no requirement for admission to the PICU or mechanical ventilation. No bacterial or viral coinfection was detected and no patient died. No correlation between the SARS CoV2 viral load in respiratory samples and the severity of the clinical manifestations was detected.

Conclusions: In this study, mild infections were more frequent. Comorbidities were more frequent in patients with moderate and severe symptoms. Critically ill patients received antibiotics more frequently and for a longer time despite the absence of bacterial coinfections, they remained hospitalized for longer and required supplemental oxygen more frequently. We found no correlation between the SARS CoV2 viral load in respiratory samples and the severity of the clinical manifestations.

EPIDEMIOLOGICAL CHARACTERISTICS OF PAEDIATRIC INFECTIONS OF COVID-19 IN HONG KONG, A CITY WITH A STRINGENT CONTAINMENT POLICY

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
EPIDEMIOLOGY AND RISK FACTORS**

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Background: In the COVID-19 pandemic, children and adolescents are generally regarded as a minor group of patients but their contribution to the disease transmission remain unignorable. Hong Kong is a city strongly relying on a stringent contact tracing but disease still sustained in the community to date. In this study, we characterised the epidemiology of paediatric infections of COVID-19 in Hong Kong.

Methods: The line-listing of COVID-19 confirmed cases covering from January 23, 2020 to January 26, 2021 (over three waves of epidemics) was obtained from the Centre of Health Protection. The data included their demographics, symptomatic status, illness onset date, hospital admission date, clinical condition, death event, and hospital discharge date. Comparisons of epidemiological characteristics between adult and paediatric cases, and among epidemic waves were conducted.

Results: Totally there were 10,223 reported cases and 807 (7.9%) were paediatric cases. Of all the infected patients, the proportion of infected young children increased from 1.9% in the first wave to 5.8% in second wave ($p<0.05$), and to 4.7% in the third wave ($p<0.05$) respectively. Comparing with adult cases, there was a significantly higher proportion of asymptomatic infections in paediatric cases (26.7% vs 44.6%; $p<0.05$). Additionally, paediatric cases had the significantly shorter mean admission delay (4.04 vs 2.93 days; $p<0.05$) and hospital length of stay (13.8 vs 12.1 days; $p<0.05$).

Conclusions: A large proportion of paediatric asymptomatic infections remained a hurdle of COVID-19 control in settings like Hong Kong, given a presence of infectiousness and a high frequent of contact patterns in children group. Even though their disease severity was generally mild, a fast and efficient close contact tracing is strongly recommended in case vulnerable individuals such as elderly was infected by them.

SARS-COV-2 SEROEPIDEMIOLOGY IN PEDIATRIC POPULATION DURING THE FIRST YEAR OF THE PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

Filippos Filippatos¹, Elizabeth- Barbara Tatsi¹, Charilaos Dellis¹, Dimitra - Maria Koukou¹, Lamprini Posnakoglou¹, Ioannis Papassotiriou², Vasiliki Syriopoulou¹, Athanasios Michos¹
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Background: Seroepidemiology studies can direct public health measures and immunization policies. The aim of this study was to investigate the rate of SARS-CoV-2 seropositive children during the first and the second wave of COVID-19 pandemic in Athens, Greece.

Methods: Serum samples from children, who were admitted at the major tertiary Greek pediatric Hospital for any cause, were tested for SARS-CoV-2 antibodies using an electrochemiluminescence method (Roche Elecsys Anti-SARS-CoV-2). The samples of the study were divided into two periods, March 2020 - July 2020 and August 2020 - January 2021, which represent the first and second wave of the pandemic, respectively.

Results: In the first and second period, 12/481 (2.5%) and 86/773 (11.1%) serum samples were detected positive for SARS-CoV-2 antibodies, respectively. The median age and interquartile range (IQR) of the seropositive children was 13.5 months (IQR: 1.25-57) in the first period and 36 months (IQR: 3-132) in the second. In total, 5 seropositive asymptomatic newborns were detected. In the second period, 4 Multisystem Inflammatory Syndrome in Children (MIS-C) associated with SARS-CoV-2 Infection were diagnosed with 3/4 positive SARS-CoV-2 RT-PCR and 4/4 antibodies.

Conclusions: An increasing proportion of SARS-CoV-2 seropositive children was detected during the second period of the pandemic. Continuous surveillance of SARS-CoV-2 seropositivity will contribute to the assessment of the true infection rate of children, as the majority of them are asymptomatic.

“ COVID-19 AND RESPIRATORY VIRUS IN A PEDIATRIC HOSPITAL OF SAO PAULO – BRAZIL ”

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
EPIDEMIOLOGY AND RISK FACTORS**

Giovanna Guerra¹, Camila Morais¹, Marcus Martuchelli¹, Samantha Matos¹, Daniel Jarovsky¹, Danielle Leal², Camila Valerio², Vanessa Chalup², Bruna Telezynski², Fabyano Leal², Flavia Almeida^{1,3}, Eitan Berezin^{1,3}

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Background: Novel coronavirus (COVID-19) can affect all age groups. The clinical course of the disease in children and infants is milder than in adults. Our objective is to evaluate the frequency of patients admitted to Santa Casa de Sao Paulo University hospital with respiratory symptoms and the prevalence of the different respiratory viruses in the pediatric group.

Methods: During the year of 2020 we have performed pharyngeal swab specimens for all the children admitted with respiratory diseases to evaluate COVID-19 and other respiratory viruses using the Reverse-Transcription Polymerase Chain Reaction (RT-PCR) assay.

Results: We have included 455 patients with age between 0 and 14 years old. Of those patients, 287 were younger than five years old. The most frequent virus found was respiratory syncytial virus (RSV), found in 30 patients and COVID-19 found in 23 patients. We admitted 67 patients due to Severe Acute Respiratory Syndrome (SRAG). Forty-four were younger than five years old. In the 67 SRAG patients, the most important respiratory virus was RSV found in 12 patients. COVID-19 was present only in 2 patients with SRAG. Most of the patients with RSV (75%) were admitted from January to April 2020.

Conclusions: Covid-19 was less critical in pediatric patients than in older ages. RSV is still the most crucial virus as an etiologic agent in SRAG in the pediatric group.

“SEROPREVALENCE OF SARS-COV-2 IN THE PEDIATRICS DEPARTMENT”

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
EPIDEMIOLOGY AND RISK FACTORS**

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Background: Latin America became the epicenter of the COVID-19 pandemic in May 2020, mostly driven by Brazil's situation in the first wave. Healthcare workers are at increased risk of SARS-CoV-2 infection, experiencing a significant burden from COVID-19. Children typically have very mild, or no symptoms of infection, with a very low rate of hospital admission. This way, pediatricians may have a lower exposition to the virus. The aim of this study was to investigate the seroprevalence of SARS-CoV-2 in pediatricians in a Pediatric Department of a university hospital.

Methods: Between June and July 2020, during the first pandemic wave in Brazil, a cross-sectional study was performed in a Department of Pediatrics at a tertiary university hospital in São Paulo, including senior pediatricians and fellows. Seroprevalence of SARS-CoV-2 infection among pediatricians was determined by ELISA IgG and/or neutralizing antibodies. Participants were asked to complete an electronic structured questionnaire including clinical and demographic data.

Results: A total of 145 pediatricians (45% senior and 55% fellows) were tested for IgG and/or neutralizing antibodies for SARS-CoV-2 and 13.7% were positive. From these, 11.6% had a previous history of symptomatic COVID-19, confirmed by RT-PCR, and 88% had a positive serology. In the senior physicians group, the median age was 45.8 years. We just observed a positive serology in physicians with a previous history of symptomatic confirmed COVID-19. In the fellows group, median age was 27.7 years and seroprevalence was 18.7%, including fellows with a previous history of confirmed COVID-19, as well as asymptomatic.

Conclusions: Despite the fact that pediatricians were not identified as a medical category associated with higher risk of SARS-CoV-2, we found seropositive rates as high as 15%. Young fellows had a higher prevalence (18.7%) compared to senior pediatricians (10.7%).

THE EVOLUTION OF ACUTE RESPIRATORY INFECTIONS IN CHILDREN IN THE FIRST 6 MONTHS OF THE COVID-19 PANDEMIC IN ROMANIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Acute respiratory tract infections (ARIs) [upper respiratory tract infections (URIs) or lower respiratory tract infections (LRIs)] are a major cause of morbidity and mortality in children. The fear of contacting the novel coronavirus in the hospital determined a change in the behaviour and attitude that parents have towards the child with signs and symptoms of acute illness.

Methods: We conducted a retrospective, comparative study of children hospitalized for ARI, during March-August 2020, respectively 2019. We classified ARI in 3 categories: URI (ICD-10 codes: J00,J01,J02,J03,J04,J05,J06,J10.1,J10.8,J11.1,J11.8), LRI (ICD-10 codes:J13,J17,J18,J20,J21,J22,J44,J45,J10.0,J11.0), and acute respiratory failure (ARF) (ICD-10 code: J96.0). Clinical and epidemiological data were recorded from the hospital's computer system. A total of 2658 hospitalized children were analyzed. The hospitalization rate for ARI decreased 3.3 times in the first 6 months of the pandemic, 621 children for 2020 and 2037 for 2019.

Results: The number of children hospitalized for URI decreased significantly during the pandemic [16.1% vs. 27.4%, $p<0.001$, OR=2.0, 95%CI:1.6-2.5], without any age difference between the two groups. In contrast, the percentage of children with LRI increased significantly in 2020 [33.2% vs. 27.6%, $p=0.008$], these having a higher age compared to 2019 [3 years (IQR:0.4,8.6) vs. 1.8 years (IQR:0.3,6.1), $p=0.012$]. We identified ARF as a significant cause of hospitalization during the pandemic [3.7% vs. 1.7%, $p=0.002$], with no age differences between groups.

Conclusions: We identified an increase in hospitalizations for LRI and ARF during the first 6 months of the pandemic compared to the similar period of 2019. These aspects reflect the parents' fear of taking their children to the hospital during the pandemic. The parents should be fully aware that delaying access to hospital care may be more dangerous than the risks posed by COVID-19.

COVID19 IN DAYCARE AND SCHOOLS IN FINLAND IN 2020

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
EPIDEMIOLOGY AND RISK FACTORS

Otto Helve, Emmi Sarvikivi

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Background: Finland has 5.5 million inhabitants and 2 333 primary schools with ca. 550 000 students. The Finnish educational system consists of day care (from 0 to 6 years of age) and primary school (7 to 15 years of age). We report the results of the national surveillance on daycare and primary school exposures to SARS-CoV-2 from the beginning of the school year in August until the end of 2020.

Methods: Municipalities reported on daycare or primary school outbreaks through an electronic notification system or by personal contact after identifying the exposure incident through other COVID19 surveillance systems. The reporting physician or nurse in the municipality was contacted regarding each exposure incident after the last quarantine resulting from the exposure was finished to verify the notification and to collect data from possible secondary cases. Reports included information on the daycare unit or school in question, the number of individuals placed in quarantine and the number of symptomatic or asymptomatic secondary cases.

Results:

Figure						
Grade	Exposed, children	Exposed, personnel	Exposed, total	Secondary infections, children	Secondary infections, adults	Secondary infections, total
Daycare	5776	1506	7282	67	81	148
Primary school	24575	3013	27588	279	42	321
Total	30351	4519	34870	346	123	469

A total of 34870 persons exposed for COVID19 at daycare or primary school were identified and 469 secondary cases were reported. Stratified data shown in Figure.

Conclusions: There was a relatively small secondary attack rate in children and adults that had been exposed to COVID19 in daycare and primary schools, possibly highlighting the crucial role of mitigation measures in these units. These data are crucial in aiding the development of COVID19 control strategies involving schools.

COVID 19 IN CHILDREN AT THE BEGINNING OF THE PANDEMIC IN GEORGIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Covid 19 pandemic is a global challenge. The situation in Georgia at the beginning of the pandemic, was epidemiologically benign, as the measures taken proved to be effective. When the infection is rampant in a number of countries, only several hundred cases were reported in Georgia. As of July 6, 2020, according to the National Center for Disease Control, there were 877 registered cases in Georgia. lethality rate was 1.57%.

Methods: We retrospectively analysis of the 38 children medical histories, age of <18 years, with diagnosis of COVID19, who were treated at the Acad. V. Bochorishvili Clinic. Our purpose is characterize the course of the diseases by age, sex and severity. In all cases, nasopharyngeal swab test on SARS-CoV-2 was performed by RT-PCR. Statistical data processing was carried out using the statistical program SPSS.

Results: The first case of COVID19 in Georgia was registered on February 26, 2020. A median age of pediatric patients was 9.7 years. All the children belonged to the family clusters. The age distribution: 2 patients <1 year, 1–5 years-9; 6–10 years-11, 11–15 years-12, 4 patients over >15 years of age. The distribution rate by gender: 22 women and 22 boys. Clinical manifestation: asymptomatic-55%, Mild-36%, Moderate cases-9%. 6 patients developed pneumonia, CT imaging revealed changes characteristic for COVID19. Disease started with a high temperature >38°C, sore throat and dry cough-5 patient. 9 patient reported weakness. Simultaneously, symptoms-general weakness, low grade fever and cough were revealed in 7 patients. 1 patient 16 years of age, had a loss of smell and taste. Only four patients had intestinal dysfunction, 2 of them with other symptoms.

Conclusions: According to the results obtained, in the majority of pediatric patients the new coronavirus infection is mostly asymptomatic or mild symptomatic. Low-grade fever, general fatigue are the most common manifestation. Pneumonia in children appears most commonly as unilateral. Significant changes have been found in the findings of laboratory studies.

CLINICAL AND EPIDEMIOLOGICAL FEATURES OF 246 CHILDREN WITH CORONAVIRUS DISEASE-2019 IN TURKEY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Limited studies have been published on practices and management of corona virus disease 2019 in children from the beginning of the pandemic. With this study, we aimed to share the clinical and epidemiological characteristics of infection in pediatric patients and our experiences.

Methods: Corona virus disease-2019 reverse-transcription polymerase chain reaction test positive pediatric patients we followed up in our hospital between March to December 2020 were included in the study. The epidemiological, laboratory, radiological, and clinical data of the patients were analyzed retrospectively.

Results: 246 patients were admitted, the median age was 9 years, girls were %53. 76 (31%) patients were asymptomatic. Common symptoms; cough, fever, and sore throat. 199 (81%) have a family history, 32 (12%) patients had comorbidity. Laboratory findings; lymphopenia, eosinopenia, high C-reactive protein. Case classes; asymptomatic (32%), mild (52%), moderate (14%), severe (1.2%), critical (0.4%). 48 (19.5%) were inpatients and 11 (4.5%) were in intensive care. Tomography was performed 25 (10%) and 10 (4%) were abnormal. 22 (8%) patients received favipiravir, 16 (6%) antibiotics, 4 (1.6%) steroid and 3 (1.2%) heparin.

Conclusions: Although corona virus disease 2019 is often asymptomatic and mild in children, it may rarely have a severe course. More caution should be exercised in children under 1 year of age and in patients with comorbidities.

PEDIATRIC CANCER REGISTRATION DURING THE FIRST WAVE OF COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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¹Hellenic Society for Social Pediatrics and Health Promotion, Hellenic Society For Social Pediatrics And Health Promotion, Athens, Greece, ²Hippokration General Hospital, Pediatric Oncology Department, Thessaloniki, Greece, ³Pan. & Agl. Kyriakou' Children's Hospital, Department Of Pediatric Hematology-oncology, Athens, Greece, ⁴'Mitera' Children's Hospital, Pediatric Hematology-oncology Department, Athens, Greece, ⁵Children's Hospital "Agia Sophia", Paediatric, Athens, Greece, ⁶Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki, Hematology-oncology Unit, 2nd Pediatric Department,, Thessaloniki, Greece, ⁷A. Sophia Children's Hospital, Athens, Greece, Department Of Neurosurgery,, Athens, Greece, ⁸University of Ioannina School of Medicine, Ioannina, Greece, Department Of Hygiene And Epidemiology, Ioannina, Greece, ⁹P&A Kyriakou Children's Hospital, Athens, Greece, Department Of Orthopedics,, Athens, Greece, ¹⁰National and Kapodistrian University of Athens, Athens, Greece, Pediatric Hematology/oncology Unit, First Department Of Pediatrics, Athens, Greece, ¹¹A. Sofia Children's Hospital, Athens, Greece, Department Of Pediatric Hematology-oncology, Athens, Greece, ¹²Aristotle University of Thessaloniki, Greece, 4th Department Of Pediatrics, Thessaloniki, Greece, ¹³General Hospital of Thessaloniki Hippokration, Pediatric Oncology, Thessaloniki, Greece, ¹⁴Mitera & "Iaso" Children's Hospitals, Athens, Greece, Department Of Pediatric Neurosurgery, Athens, Greece, ¹⁵A. Sofia Children's Hospital, Athens, Greece, Department Of Pathology, Athens, Greece, ¹⁶P & A Kyriakou Children's Hospital, Athens, Greece, Pathology Laboratory,, Athens, Greece, ¹⁷St. Luke' Hospital,, Neurosurgery Department, Thessaloniki, Greece, ¹⁸P&A Kyriakou Children's Hospital, Athens, Greece, Department Of Orthopedics, Athens, Greece, ¹⁹Brown University, Providence, Rhode Island, Center For Evidence Synthesis In Health, Department Of Health Services, Policy And Practice, School Of Public Health, Rhode Island, United States of America, ²⁰National and Kapodistrian University of Athens, Athens, Greece, Department Of Epidemiology, Hygiene And Medical Statistics,, Athens, Greece

Background: The study aimed at assessing the impact of the coronavirus disease 2019 (COVID-19) pandemic on timely diagnosis and therapy of childhood cancer during the first wave of the COVID-19 pandemic and the implementation of severe restrictive measures in Greece.

Methods: Incidence of six types (central nervous system cancer, leukemia, liver cancer, lymphoma, neuroblastoma and renal cancer) of childhood (0-14 years) cancer are registered since 1996 by the Nationwide Registry of Childhood Hematological Malignancies and Solid Tumors (NARECHEM-ST). We compared monthly and overall registration of cases during the period January-August 2020 vs. the respective average number of cases during the first 8-month period of years 2015-2019 assuming constant childhood population. Alongside, we conducted a survey among health personnel of the collaborating pediatric cancer treatment centers.

Results: No deficit was observed in the overall number of cases registered during the first 8-month period of 2020(131 actual vs.130 expected,based on the previous 5-year registration)with more leukemia cases diagnosed than expected(54 vs 49.4).A noticeable peak was observed in July.Diagnosis seemed to delay in a boy born with unilateral stage III Wilms tumor,born with unilateral polycystic kidney, whose suggested ultrasound was postponed until after lockdown.Likewise, parental fear of exposure to COVID-19 may have led to delayed diagnosis and death from a second malignancy(Acute Myeloid Leukemia)in a 14-year-old girl with sarcoma.

Conclusions: The changing health care delivery on account of the pandemic remains a challenge. It is our duty how to best protect this fragile population exquisitely exposed to the indirect effects of the

COVID-19 pandemic.

SARS-COV-2 INFECTION IN CHILDREN: TRANSMISSION DYNAMICS AND CLINICAL CHARACTERISTICS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: There are several unknowns about COVID-19, especially in children. Therefore, case series from centers worldwide are important to better understand this condition. We describe all SARS-CoV-2 positive cases admitted to a paediatric tertiary hospital, the referral center for COVID-19 in the central region of the country.

Methods: From March 2020 to January 2021, 28.885 children were observed in the emergency service (ES) and 8.653 (30.0%) were tested for SARS-CoV-2: 5.972 (69.0%) were symptomatic and/or had contact with a known case and 2.681 (31.0%) were tested electively (before procedures under anesthetics or for admission to the ward). Patients with a SARS-CoV-2 RT-PCR positive test were analysed.

Results: 259 (3.0%) had a positive test. Median age was 5.5Y (12D-17Y). Family/cohabitant contact was the main form of exposure to disease (45.9%). The most frequent symptoms were fever (51.4%), cough (43.6%) and gastrointestinal symptoms (38.2%) (diarrhea in 13.9%). 5 had anosmia and 6 ageusia. 17.0% were asymptomatic. Hospitalization occurred in 16.6% and 32.5% of those had risk factors mainly oncologic disease and obesity. 3 patients needed oxygen supplementation (1 in intensive care); all were adolescents and obese. Remdesivir and hydroxychloroquine were not prescribed. All cases had a good outcome.

Conclusions: In our center, paediatric infection rate was low, frequently with a mild clinical presentation and following a contact with an infected cohabitant/family member. 17.0% were asymptomatic. The outcome was good in all.

LOW PREVALENCE OF CO-INFECTIONS WITH RESPIRATORY VIRUSES IN CHILDREN INFECTED BY SARS-COV-2

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

Giovanna Guerra¹, Vanessa Chalup², Camila Valerio², Samantha Matos¹, Camila Morais¹, Marcus Martuchelli¹, Bruna Telezynski², Fabyano Leal², Danielle Leal², Edison Durigon², Sofia Camargo³, Fernanda Anbar³, Flavia Almeida^{1,3}, Marco Aurelio Safadi^{1,3}

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Background: Co-infections of SARS-CoV-2 with respiratory pathogens have been documented previously at varying rates, but there is still lacking data on its prevalence and severity. The objective of this study was to determine the prevalence of SARS-COV-2 co-infection with seasonal respiratory viruses, between February and October during the 2020 pandemic.

Methods: From March to October 2020, the Laboratory received samples from 6 hospitals in the city of São Paulo, from children with upper (URTI) and lower (LRTI) respiratory tract infection, gastrointestinal (GI) symptoms, fever without source, atypical symptoms, as well as asymptomatic children. The samples were simultaneously tested for SARS-CoV-2 and other respiratory viruses, by reverse polymerase in real time (RT-PCR). In addition, the medical reports made available were analysed according to their age group and symptoms.

Results: Of 123 children who had positive samples for the SARS-CoV-2, viral co-infection was found in 7 patients(5.7%). Among the 15 seasonal respiratory viruses, only RSV(n=3), AdV(n=4) and PIV(n=1) were detected in the analyzed samples. Evaluating children infected only by SARS- CoV-2, 57% were male, mean age was 55 months,33% were asymptomatic. Between the symptomatic, we observed: URTI(21.5%), fever(18%), LRTI(16%), GI symptoms(6.8%), atypical symptoms(3.4%). In the group of Children with coinfection, 43% were male, mean age 36,5 months. Considering the symptoms, we observed: 43% asymptomatic,28% LRTI,14% URTI and 14% GI symptoms

Conclusions: Co-infection was detected in a smaller proportion (5.7%) of children with laboratory confirmed SARS-CoV-2, which could be explained by the closure of schools resulting in less spread of seasonal respiratory viruses that circulate significantly in children, social isolation and use of equipment of individual protection by the population resulting in minimized transmissibility.

EVOLUTION OF COVID-19 PANDEMIC IN PAEDIATRICS POPULATION– RETROSPECTIVE STUDY IN LEVEL 2 HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), rapidly became a global pandemic. The aim of this study is to understand the evolution of the pandemic in a level 2 hospital during 2020.

Methods: This is a retrospective study based on medical records of children admitted to the emergency room which fulfilled clinical criteria of SARS-CoV-2 between March and December 2020.

Results: We detected 137 positive cases. The incidence was similar between female and male, median age was 8 years. The distribution by age range was slightly higher in older adolescent. The main symptoms were fever, cough, rhinorrhea and headache. Other less frequent were diarrhea, myalgia and odynophagia. Seven patients admitted for hospitalization, from wich two teenagers with severe Pneumonia (needing intensive care), one infant with Bronchiolitis with hipoxia, one infant with Urinary Tract Infection (SARS-CoV-2 detected in addmission), a teenager without family support and a teenager with Meningococemia (death non-SARS-CoV-2 related).

Conclusions: The peak incidence was in November. Regarding the epidemiological questionnaire, 46% had an epidemiological link with SARS-CoV2 and of these, 67% had a family background of infection and only 14% had school context. The evolution of the pandemic forced schools to close and with reopening in September, there was an increase in the number of cases that followed the national trend. An epidemiological link was found in 46% but only a small percentage was in school. In children, most cases appear to be mild but severe case can occur.

EPIDEMIOLOGY OF PEDIATRIC COVID-19 AND HOUSEHOLD TRANSMISSION OF SARS-COV-2 IN NEGERI SEMBILAN, MALAYSIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

David Ng, Chin Ling, Thalitha Vijayakulasingam, Xi Cheng, Erwin Khoo, Ming Lee Lee, Kah Kee Tan
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Background: Households are one of the major settings of transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Here we use a household cohort study of pediatric patients admitted for SARS-CoV-2 infection to determine the features of household transmission of COVID-19.

Methods: A total of 185 index patients and 848 household contacts were enrolled. The patient and household contacts were tested by SARS-CoV-2 reverse-transcription polymerase chain reaction (RT-PCR). The index case was defined as the first person in the household with laboratory proven SARS-CoV-2 infection who had symptoms compatible with COVID-19. Information of all recruited individuals was obtained from medical records and supplemented by telephone interviews. The baseline characteristics of the index case and household contacts were described. Secondary attack rates of SARS Co-V-2 were computed and risk factors for transmission were determined.

Results: From the 185 households, 466 secondary cases occurred among the 848 household contacts, giving rise to a secondary attack rate of 55% (95% CI 51.5-58.2%). Multivariate analysis showed that index case being male gender, age above 18 years old and symptomatic were associated with higher transmissibility. The secondary attack rates to household members who were female and who had risk factors such as sleeping together, eating together during mealtimes and sharing utensils with the index case were also associated with increased risk for SARS-CoV-2 infection.

Conclusions: The secondary attack rate for SARS-CoV-2 in household is 55%. Our data provide insights to the epidemiology and household transmission of SARS-CoV-2.

COVID-19 – AN OVERVIEW OF HOSPITALIZED CHILDREN - MARCH 2020 – FEBRUARY 2021

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
EPIDEMIOLOGY AND RISK FACTORS**

Andreea Madalina Panciu¹, Ana Maria Popescu¹, Madalina Manole¹, Bianca Borcos¹, Elena Gheorghe¹, Mihaela Safta¹, Luminita Marin^{1,2}, Gheorghita Jugulete^{1,2}

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Background: The WHO declared an outbreak of COVID-19 in January 2020, and a pandemic since March 2020, a month that was also the beginning of the pandemic in Romania. Since then we have treated children and adults infected with SARS-COV2 virus. We aim to characterize the disease in the cohort of pediatric patients we have treated so far.

Methods: We did a retrospective study on the children hospitalized with confirmed diagnosis of COVID-19 on the 9th Pediatric Department of the National Institute of Infectious Disease „Prof. Dr. Matei Bals” in the period March 2020- February 2021. Diagnosis was confirmed by positive RT-PCR SARS-COV2. We analyzed the age distribution, clinical features, and frequency of different complications of COVID-19 in the children hospitalized in our department.

Results: We treated 128 cases of COVID-19 in children. 45% in the 1-5 years age group, 25% in the 6-10 years age group (6-10 years), 16% in the 11-14 years age group, 9% in the 15-18 years age group (15-18 years) and 4% newborns. The most frequent form of the disease was mild (50%), followed by the moderate form (33%) and asymptomatic form (17%). The most frequent complications were acute interstitial pneumonia (22% of cases), dehydration syndrome and gastrointestinal symptoms (12%), mild anemia (16%), cytolysis syndrome (12%), thrombocytopenia (5%), neutropenia (4%). 8% had underlying conditions.

Conclusions: We know until now that children most frequently develop a mild form of COVID-19, but they can also develop moderate to severe diseases, more frequently due to acute interstitial pneumonia and gastroenteritis with dehydration syndrome.

ETHNIC IMPACT ON SARS-COV-2 RELATED PAEDIATRIC HOSPITALIZATIONS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

Jessica Ruggiero¹, Beatrice Crotti¹, Lucia Savarè¹, Roberto Baronio¹, Angelo Mazza², Gianluigi Marseglia³, I. Dodi⁴, Claudio Cavalli⁵, Barbara Saccani⁶, Antonella Meini¹, Raffaele Badolato⁷, R. F Schumacher⁸

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Background: Since the outbreak of COVID-19, ethnic minorities show a greater incidence of severe disease, especially in Western countries; however, little is known about the role of ethnicity in childhood. The aim of our multicentre retrospective study was to analyze if and how ethnicity may affect incidence and severity of SARS-COV-2 infection in children <16 years of age

Methods: We collected data of all 111 SARS-CoV-2 positive children hospitalized between February 24 and July 10, 2020 in any of the five provincial HUB Centers most hit by the “first pandemic wave” in Northern Italy. Ethnic groups were defined according to geographical origin, using citizenship (determined by *Jus sanguinis* in Italy) as a proxy. Based on the official ISTAT data, the total paediatric (<16 years) population in those provinces comprised exactly 550'180 children.

Results: We identified 80/451'053 Italian children versus 31/99'127 foreigners that were admitted, thus showing a significantly increased risk for the latter (odds ratio 1.76; 95% CI: 1.16–2.66). Children from Africa had the highest risk for hospitalization: odds ratio 2.76 (95% CI: 1.56–4.87) when compared to the Italians. No significant differences were found in severity of disease (measured by length of hospitalization), comorbidities (namely overweight and underlying diseases), sex and age, although infants of all ethnicities had a 10-fold higher hospitalization risk (odds ratio 10.10; 95% CI: 6.84-14.92). None of the patients deceased.

Conclusions: As bureaucratic, cultural and information barriers mostly affect preventive and adult services and considering that in Italy, where hospitals are densely spaced, paediatric care is free of (out-of-pocket) charge, environmental and constitutional aspects may play an important role. Thus attention should be given also to exploring those issues as they might give important clues to the understanding of COVID-19.

SEROEPIDEMIOLOGY OF SARS-COV-2 IN HEALTH CARE WORKERS OF A TERTIARY PEDIATRIC HOSPITAL AND COMPARISON OF DIFFERENT ANTIBODY DETECTION METHODS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Health care workers (HCWs) have increased risk for SARS-CoV-2 infection. The aim of this study was to detect the SARS-CoV-2 antibody prevalence in HCWs of the largest pediatric hospital of Greece after the first wave of epidemic and to compare the results of 7 commercial anti-SARS-CoV-2 antibody detection tests.

Methods: Initial screening for SARS-CoV-2 antibodies was performed in serum samples of HCWs using the Abbott Architect SARS-CoV-2 IgG test on an ARCHITECT i2000SR instrument in June 2020. The positive samples were further tested with 6 additional tests (an Electrochemiluminescence Immunoassay (ECLIA), an ELISA and 4 rapid Immunochromatographic tests). Six months later, a follow up of the seropositive HCWs was performed with the same 7 assays.

Results: In June 2020, after the first wave of COVID-19 in Greece, 1216 serums of HCWs were tested for SARS-CoV-2 antibodies. Positive IgG antibodies were detected in 8/1216 (0.66%). However, testing the same serum samples with other 6 different antibody detection assays there was agreement only in one case (1/8, 12.5%), while the other 7 cases, there were mixed results. In the 6-month follow up, although there was waning of antibodies for all positive cases there were still variable results regarding seropositivity among different assays.

Conclusions: Significant differences were noticed using different SARS-CoV-2 antibody assays for the seroepidemiology study. The identification of a reliable antibody test is important to determine the actual number of COVID-19 cases and the duration of antibodies.

SARS-COV-2 SEROPREVALENCE IN TIME AMONG URBAN GENERAL PAEDIATRIC PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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³Franciscus Gasthuis & Vlietland, Department Of Medical Microbiology And Infection Control, Rotterdam, Netherlands

Background: During the early phase of the Covid-19 pandemic, SARS-CoV-2 infections were reported to be less prevalent among the paediatric population. The Rotterdam area had a high incidence of Covid-19 among adults compared to other parts of the Netherlands, especially during the first wave of Covid-19 (March-May 2020). We studied the prevalence of Covid-19 infections among general paediatric patients directly after the first wave and during the second wave.

Methods: We collected remaining plasma samples from all paediatric patients (1 month-18 years of age) visiting our (outpatient) clinic or emergency room, who had a blood draw for several medical reasons. We analysed the samples for the presence of total antibodies against SARS-CoV-2 by Wantai ELISA. We calculated the seroprevalence for two separate periods: July 21-Sep 19 and Oct 19-Dec 10. Patients with known Covid-19 related conditions (e.g. MIS-C) were excluded from the analysis. We compared seroprevalence with national data.

Results: We gathered 211 samples for period 1 and 240 samples for period 2. Median age was 7.2 (IQR 1.2-13.3) years. SARS-CoV-2 antibodies were detected in 4% and 14%, respectively ($p < 0.001$). Most children with SARS-CoV-2 antibodies were seen in the outpatient clinic for general paediatric problems with no differences between the two periods. Seroprevalence was higher compared to two national cohorts (Pienter healthy children cohort ~8 years old Oct 2020 < 2% and Sanquin blood donors Dec 2020 ~10 % for Rotterdam area).

Conclusions: Our study confirms a rapid increase in SARS-CoV-2 seroprevalence in general paediatric patients in the second half of 2020 with a higher seroprevalence compared to healthy subjects in nationwide studies. This might reflect our urban setting with its living conditions and/or a specific patient population.

BEST AVAILABLE TREATMENT STUDY (BATS) FOR INFLAMMATORY SYNDROMES ASSOCIATED WITH SARS-COV-2: A MULTI-CENTRE, INTERNATIONAL COLLABORATION TO STUDY THE CLINICAL FEATURES AND TREATMENT OUTCOMES OF MIS-C

E-POSTER VIEWING

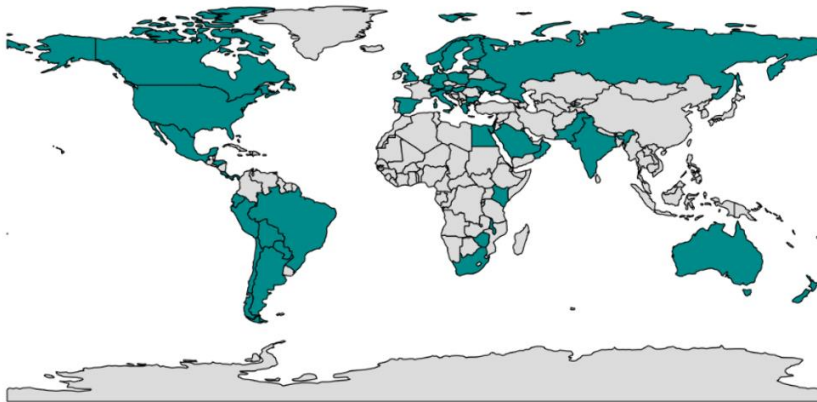
TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

Ortensia Vito, Andrew Mcardle, Eleanor Seaby, Harsita Patel, Priyen Shah, Sophie Rhys-Evans, Claire Broderick, Ruud Nijman, Myrsini Kaforou, Aubrey Cunningham, Elizabeth Whittaker, Jethro Herberg, Michael Levin, On Behalf Of Bats Consortium
Imperial College London, Department Of Infectious Disease, London, United Kingdom

Background: In April 2020, clinicians in many countries observed a new Multisystem Inflammatory Syndrome in Children (MIS-C) that appeared to be an unusual immune response to SARS-CoV-2 infection with features overlapping other known conditions such as Kawasaki disease, sepsis and toxic shock syndrome. Its underlying biology is still unknown and there is no gold standard diagnostic test for it. Treatment of MIS-C was adopted based on its clinical similarities to Kawasaki disease and macrophage activation syndromes. However, there is equipoise among clinicians as to which of these treatments should be used.

Methods: BATS invited clinicians worldwide to upload de-identified data from children with MIS-C onto an online database. Collected data included the presenting features, blood results, organ dysfunction and outcomes as well as treatment administered. Data was recoded on a daily basis until hospital discharge. Time in intensive care unit, duration of organ support, any long-term complications or deaths were recorded.

Results: 494 patients (average age, 8.05 years; 59.3% male) from 168 organisations in 47 countries have been recruited in the study so far, and the recruitment is still ongoing. The clinical and longitudinal data collected into BATS will compare the effectiveness of different anti-inflammatory and immunomodulatory drugs in treating MIS-C, including their effect on inflammatory markers, long-term complications or cardiac dysfunction.



Conclusions: In the absence of data from randomised trials, national and international management recommendations list a range of treatment options including intravenous immunoglobulin, methylprednisolone, supportive care and biological agents. Results from the BATS study will inform clinical practice by assessing the safest, most appropriate and effective treatment for patients with MIS-C, as well as identifying clinical and biological markers of disease progression and poor outcomes, and understanding the various phenotypes.

PREVALENCE OF THROMBOTIC COMPLICATIONS IN CHILDREN WITH SARS-COV-2 IN THE SPANISH EPIDEMIOLOGICAL STUDY OF CORONAVIRUS IN CHILDREN (EPICO-AEP)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Among adult patients with SARS-CoV-2 infection, a significant prevalence of thrombotic complications has been described. However, the knowledge of thrombosis in children with SARS-CoV-2 is scarce. We aimed to describe thrombotic complications among children infected with SARS-CoV-2 in the Spanish national cohort.

Methods: Children younger than 18 years infected by SARS-CoV-2 or with multi-inflammatory syndrome related to SARS-CoV-2 (MIS-C) attended at 75 hospitals are currently being enrolled in this registry that is still ongoing. From March 1st to September 30th, 2020, children with thrombotic complications associated with SARS-CoV-2 were included in this study.

Results: Of 537 children, four cases (Table 1) developed some thrombotic complication (0.7% [CI 95%: 0.2%-1.9%] out of the global cohort and 1.1% [CI 95%: 0.3%-2.8%] out of the hospitalized patients). Three out of these four patients were adolescent females, and two had significant thrombotic risk factors. All patients were treated with heparin and discharged without sequelae. D-dimer was available in 169 cases, with a median of 1,071 µg/L (IQR: 291-2,858 µg/L) and >1,500 µg/L in 68/169 (40.2%). However, only 2/68 (2.9%) cases developed a thrombotic complication. No MIS-C developed thrombosis.

Age	Gender	Medical background/risk factors	Other thrombotic risk factors	Thrombotic complication	D-dimer (µg/L)	Anticoagulation treatment	Thrombophilia workup	Outcome
4 y	Female	Systemic juvenile idiopathic arthritis on treatment with steroids and canakinumab	Central venous catheter	Right iliac vein thrombosis	5,953	Low-weight heparin	-	Discharged without sequelae
12 y	Female	Leukemia on chemotherapy and obesity	Central venous catheter	Thrombosis of the right upper limb	232	Low-weight heparin	Decreased protein C activity (58%)	Discharged without sequelae
13 y	Female	No	No	Left common and superficial femoral vein thrombosis	1,194	Low-weight heparin and cava filter	Lupus anticoagulant positive	Discharged without sequelae
13 y	Female	No	No	Thrombosis of the transverse sinuses and of the jugular vein, pulmonary embolism and femoral thrombosis	35,420	Continuous unfractionated heparin followed by Low-weight heparin	Normal	Discharged without sequelae

Conclusions: Thrombotic complications seem very uncommon in children with SARS-CoV-2. Increased D-dimer ≥ 3 times the normal value has been proposed as an indication for anticoagulation in adults. However, in children, only 2.9% with that value developed thrombosis. Adolescence and previous thrombotic risk factors may be considered when initiating thromboprophylaxis in children with COVID-19. Further studies are needed to clarify risk factors among children with COVID-19 in order to develop specific recommendations.

IMPACT OF COVID-19 ON VISITS IN A PAEDIATRIC EMERGENCY SERVICE DURING THE NATIONAL LOCKDOWN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: COVID-19 has significantly affected the use of healthcare worldwide and, consequently, admissions to hospital emergency services. In Portugal, school closure and national lockdown began on March 16, 2020. Schools and day-care centres gradually reopened after May 18. The aim of this study is to characterise the impact of the pandemic on admissions in an emergency service (ES) of a paediatric tertiary hospital.

Methods: A single-center retrospective cohort study with analysis of visits to the ES from March 30 to June 30, 2020 and comparison with homologous periods in the previous 3 years (2017-2019). ICD-9 coding was used.

Results: 53.883 visits to the ES were analysed (table). Comparing 2020 visits with the average numbers from 2017-2019, there was a 62.3% reduction ($p<0.001$), both in infection-related (69.2%) and in non-infection related conditions (56.3%). The infection rate for SARS-CoV-2 was 1.1%. In non-infectious conditions, the biggest reduction was in patients observed by orthopaedics (25.9% vs. 15.1%) and child psychiatry (2.4% vs. 1.1%), with an increase in children under the care of paediatricians (55.7% vs. 64.5%) and paediatric surgery (5.8% vs. 9.9%) ($p<0.001$). The median ages in all groups did not change.

Number of visits to the ES (March 30 to June 30)	2017	2018	2019	2020
Total	16.216	15.881	15.769	6.017
<i>Median age (Y) Interquartile range</i>	6.0 9.4	5.8 9.6	5.7 9.6	5.7 9.8
Infection-related	6.787	6.700	6.745	2.079
<i>Median age (Y) Interquartile range</i>	3.3 5.5	2.9 5.2	3.1 5.6	3.7 7.8
Non infection-related	7.377	7.721	7.550	3.302
<i>Median age (Y) Interquartile range</i>	8.9 9.4	9.0 9.8	8.9 9.7	7.3 10.1
Missing values	2.052	1.460	1.474	636

Conclusions: The COVID-19 pandemic led to a marked reduction in emergency visits, particularly in infection-related conditions. These results highlight the possible impact of the public health measures and closure of schools in the reduction of infections. However, an important reduction of non-infectious conditions was also observed, mostly in orthopaedics.

ENTEROPATHOGENIC AND SHIGA-TOXIN-PRODUCING ESCHERICHIA COLI CARRIAGE IN 959 ASYMPTOMATIC FRENCH INFANTS.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - GASTROINTESTINAL INFECTIONS

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Background: Shiga-toxin-producing *E. coli* (STEC) is a rare life-threatening pathogen due to its complication, the hemolytic and uremic syndrome (HUS). Conversely, enteropathogenic *E. coli* (EPEC) is one of the most frequently enteric pathogens but less virulent. Here, we assessed the rate of STEC carriage in children of age at risk for HUS and compared it to that of EPEC carriage among French children.

Methods: 959 rectal samples, collected between October 2017 and March 2020, from asymptomatic infants between 6 and 24 months of age were analyzed. A multiplex PCR allowing detection of the *eae* (intimin), *ehxA* (enterohemolysin), *stx1* and *stx2* (Shiga-toxin type 1 and 2) genes was used to screen for STEC (*stx1* and/or *stx2* positive) or EPEC (*eae* without *stx*) carriage. STEC-positive samples were isolated on selective culture media and the strain characterized. Demographic and clinical characteristics were compared between STEC and non-STEC carriers and EPEC and non-EPEC/ STEC carriers.

Results: Ten samples were STEC positive, resulting in 1%, 95%CI [0.56-1.90] STEC carriage. Eight strains were isolated and the repartition of serogroups was similar to that causing HUS in France. STEC patients more frequently had siblings than non-STEC patients (90% versus 54.8%, $p = 0.03$). EPEC carriage was estimated to be 13.5%, 95%CI [11.5-15.8]. In contrast to non-EPEC/STEC patients, patients with EPEC were more frequently associated with child-minder care than homecare or daycare centers ($p = 0.02$).

Conclusions: STEC carriage is low (1%) in healthy infants and is not related to daycare center attendance while EPEC carriage may be associated to child-minder care. In contrast to EPEC, STEC detected in infants can be confidently suspected as the cause of diarrhea and should be carefully managed.

PERITONITIS EMERGENCY IMAGING IN CHILDREN HOSPITALIZED IN A PEDIATRIC INTENSIVE CARE UNIT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - GASTROINTESTINAL INFECTIONS

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Background: Imaging in the Pediatric Intensive Care Unit (PICU) can provide an accurate diagnosis and contribute to the therapeutic approach of the child with acute abdomen. To investigate the contribution of imaging in the diagnosis and therapeutic management of patients presented with acute abdomen.

Methods: We investigated children with acute abdomen and recorded imaging modalities used and their interference with the preoperative diagnosis and postoperative management during PICU stay. Out of 81 patients operated upon, 58 (71.6%) had already received antibiotics and 71 (87.6%) were imaged preoperatively. Ultrasonography (66%) identified peritoneal fluid collection in 72.7% of children with peritonitis or pelvic abscesses, determined the cause in 48/57 patients (85.7%), and changed the therapeutic plan in 31/57 patients (55%, $p=0.001$).

Results: Radiographs revealed all 6 cases of ileus (3 bowel obstruction, 3 necrosis) exhibiting air-fluid levels (100%), as well as in right lower quadrant abnormalities in 6 cases of peritonitis. Computed Tomography (CT) performed in 8/81 children (9.9%), was abnormal in all examinations (100%) and confirmed the diagnosis of peritonitis in 5 children (62.5%) and bowel necrosis (37.5%). Regarding the necessity of emergency surgery of acute disease, only the diagnostic determination of the imaging diagnosis (AUROC 0.82, $p = 0.037$) and CRP (AUROC 0.86, $p = 0.01$) reached significant predictive capacity.

Conclusions: Imaging diagnosis and CRP may predict the risk of peritonitis or bowel necrosis to necessitate urgent surgery in PICU patients with acute abdomen. Ultrasonography exhibits a high degree of diagnostic accuracy. Radiography is useful in cases of ileus, while in rarer cases, the selective performance of Computed Tomography proves to be particularly reliable.

ACUTE BACTERIAL GASTROENTERITIS IN CHILDREN: 5-YEAR STUDY IN A LEVEL II PORTUGUESE HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - GASTROINTESTINAL INFECTIONS

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Background: Bacterial gastroenteritis has become more uncommon in developed countries. *Campylobacter* and *Salmonella* are the most frequently reported species, especially among young children.

Methods: A five year (January 2015 – December 2019) retrospective study was conducted in patients with positive stool culture admitted to the pediatric emergency of a Portuguese level II hospital. Demographic, clinical and therapeutic features, as well as associated complications, were assessed. SPSS 26.0 was used for statistical analysis.

Results: 265 children had a positive culture: 72,1% *Campylobacter* spp, 21,1% *Salmonella* spp, 6,8% others (*Yersinia*, *Aeromonas*, *Shigella*, *Proteus*). Most children lived in rural areas (67,2%). Seasonality was found for *Salmonella* (64,3% July-October). Diarrhea was the most common symptom (97,9% *Campylobacter* vs 100% *Salmonella*), mainly with blood/mucus (79,4%), followed by fever (64,4% *Campylobacter* vs 69,6% *Salmonella*) and abdominal pain (34,4% *Campylobacter* vs 55,4% *Salmonella*). Severe presentation was diagnosed in 5,3%, mostly patients > 2 years. Hospital admission occurred in 7,9% *Campylobacter* vs 17,9% *Salmonella* infections. Readmission rate was 18,9%.

Conclusions: Although bacterial gastroenteritis is usually mild and self-limited, attention is required for possible complications. In our study, severe disease was less common in younger children, which diverges from the literature. We presume that the overall concern with pacifiers and baby bottles sterilization, as well as the use of bottled or boiled water in food preparation, may be possible contributing factors.

MULTISYSTEM INFLAMMATORY SYNDROME OR SALMONELLA AND CAMPYLOBACTER GASTROENTERITIS IN CHILDREN. WHAT DO THEY HAVE IN COMMON?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - GASTROINTESTINAL INFECTIONS

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Background: The severity of multisystem inflammatory syndrome in children (MIS-C) related to SARS-CoV-2 infection has led to a high suspicion index. Diagnostic criteria frequently overlap with other entities, such as an acute gastroenteritis due to *Salmonella/Campylobacter* spp (S/C). The aim of this study is to analyse the cases of acute gastroenteritis caused by S/C during the COVID-19 pandemic in our centre addressing how many cases fulfilled MIS-C criteria, in comparison with the same period of the previous year.

Methods: Electronic medical records of patients admitted and diagnosed of acute gastroenteritis caused by S/C between April and December 2019 and 2020 were reviewed. Criteria of MIS-C from World Health Organization were applied.

Results: Twenty-one patients in 2019 and 42 in 2020 were included. No statistical differences were found regarding clinical characteristics, laboratory findings, evolution, days of admission or ultrasound findings. Antimicrobial treatment was significantly more common in 2020 (42.8% vs. 73.8%, $p=0.01$). Five patients fulfilled MIS-C criteria during the study period (1 in 2019 and 4 in 2020). Only one was diagnosed and treated with IVIG before isolation of *Salmonella*. *Campylobacter* was isolated in the remaining four patients. Five patients had SARS-CoV-2 IgG positive serology in 2020 including the patient that received IVIG.

Conclusions: The number of S/C infections in 2020 doubled over the incidence of 2019. The reason for this increase is unclear. Almost an 8% of patients with S/C gastroenteritis fulfilled MIS-C criteria, which remarks the importance of a complete differential diagnosis to avoid unnecessary treatments. Despite overlapping symptoms, only one patient received treatment for MIS-C.

THE SEVERITY OF GASTROENTERITIS CAUSED BY ROTAVIRUSES, NOROVIRUSES AND ADENOVIRUSES AMONG PEDIATRIC PATIENTS HOSPITALIZED IN BIALYSTOK, POLAND

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - GASTROINTESTINAL INFECTIONS

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Background: Acute gastroenteritis (AGE) is the disease that every child will suffer from. Viruses are the dominant causative agents among children diagnosed with acute gastroenteritis in Poland. There are three main viruses causing AGE: rotaviruses, noroviruses and adenoviruses. We have analyzed the clinical course and the results of laboratory tests of our patients to compare rotaviral to noroviral and adenoviral gastroenteritis among children hospitalized at the Department of Pediatric Infectious Diseases at the Medical University of Białystok Children's Clinical Hospital in Poland.

Methods: Children diagnosed with acute gastroenteritis between January 2006 and December 2020 were included into the study. Stool samples have been collected systematically, in order to check it for the virus's occurrence, commercially available immunochromatographic tests were utilized. The symptoms regarding fever, dehydration, frequency and pattern of stooling and vomiting, as well as laboratory tests upon admission were obtained from medical documents. Based on the collected data, the severity of disease was assessed according to the score system developed by Ruuska and Vesikari.

Results: Rotavirus AGE was diagnosed in 3396 children, norovirus AGE in 618, and adenovirus AGE in 436 children. Overall, rotavirus AGE was significantly more severe than norovirus and adenovirus AGE with respect to the 20-point score - median score 15 (IQR 13-16) for rotaviruses vs. 13 (12-14) for noroviruses vs. 13 (11-14) for adenoviruses. In rotavirus AGE C-reactive protein, urea, and liver enzymes were higher, whereas glucose and bicarbonates were lower when compared to other etiologies of AGE. Also, rotavirus AGE was associated with the longest duration of hospital stay.

Conclusions: Our study shows that rotavirus AGE in children is much more common and more severe in comparison to AGE caused by noroviruses and adenoviruses in Białystok, Poland.

SALMONELLOSIS IN CHILDREN IN A LEVEL II HOSPITAL: A COMPARATIVE STUDY BETWEEN TWO DECADES. WHAT CHANGED, WHAT STAYED THE SAME?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - GASTROINTESTINAL INFECTIONS

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Background: Salmonellosis represents a health problem in developing and developed countries. It is endemic in low-income countries, where poor sanitation is a reality. In high-income countries, it is usually acquired abroad. Aim: study salmonellosis evolution in a pediatric population of a level II Portuguese hospital, which serves a high number of African immigrants.

Methods: Retrospective, descriptive study of Salmonellosis cases from January/2015 to June/2020. Data were compared with a previous study (PS) from January/1999 to August/2003 and analyzed with SPSS®.

Results: Were included 63 children (14/year vs. 82/year in the PS): 81% Portuguese, most from African origin; median age of four-years-old (3.5-9 years old); 6% had a chronic illness. Complications occurred in 38.1% and 58.7% required hospitalization (67.8% in PS). In 63% of the isolates, serotype was identified: S.Enteritidis (38%), S.Typhimurium (22%), S.Typhi (3%). Antibiotic sensitivity test was performed in 100%. Antibiotic resistance rates were: ampicillin 19% (15.6% in PS), amoxicillin-clavulanic acid 6.4% (10.2% in PS), cotrimoxazole 6.4% (3.2% in PS); no resistance to third-generation cephalosporins was found in both studies.

Conclusions: Comparing the studies, there was a decrease in the number of cases and hospitalizations in the last years. Antibiotic resistance rates slightly increased for ampicillin and cotrimoxazole, but decreased for amoxicillin-clavulanic acid; no resistance was found to third-generation cephalosporins. Better hygiene conditions may contribute to a decrease in cases of salmonellosis. Future efforts should be pursued to allow earlier diagnosis and reinforce its notification in all cases.

CLINICAL STATUS OF CHILDREN AND ADOLESCENTS LIVING WITH HIV FOLLOWED IN THE SPANISH PAEDIATRIC HIV NETWORK (CORISPE)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: HIV infection in paediatric population in our country has progressively changed due to the decrease in vertical transmission and to advances in available antiretroviral treatments. The aims of the study were to describe epidemiological and clinical characteristics of the children and adolescents living with HIV in Spain as well as to know immunovirological and treatment-related outcomes.

Methods: A transversal and multicentre study was performed, including all children and adolescents living with HIV followed-up in the Spanish paediatric HIV network (CoRISpe) by December 2019. Data collected included epidemiological and HIV-related parameters, including virological and immunological data. Treatment regimens were analysed as well as their adherence to the first line treatment on Spanish guidelines.

Results: By December 2019, 283 patients were followed-up by CoRISpe. The median age was 16.1 years-old (IQR 12.4-18.2), 52.7% women. Epidemiological characteristics and treatments received are collected in [table 1](#). A 61.1% of patients were on A CDC-clinical stage, 21.8% on B and 17.1% on C. Only 4 patients (1.4%) were not receiving treatment: 1 recent diagnosis infant pending to start treatment and 3 adolescents who actively refuse ART. 86% of patients had > 500 CD4⁺/μL and only 1% presented less than 200 CD4⁺/μL. Among patients on treatment, 88.2% were undetectable (<50 copies/ml).

Table 1. Characteristics of patients and treatments received by December 2019

Characteristics of patients, N (%)					
Age					
	< 2 years old		4 (1.4%)		
	2 to 12 years old		63 (22.3%)		
	12 to 18 years old		141 (49.8%)		
	>18 years old		75 (26.5%)		
Via of transmission					
	Vertical		243 (86%)		
	Sexual		8 (3%)		
	Transfusion		6 (2%)		
	Other		26 (9%)		
Place of birth					
	Spain		173 (61%)		
	Sub-Saharan Africa		62 (22%)		
	Latin America		28 (10%)		
	Other		20 (7%)		
Treatment received by age (N, %)					
	< 2 y.o (N=4)	2-6 y.o (N=13)	6-12 y.o (N=50)	12-18 y.o (N=141)	>18 y.o (N=75)
NRTIs + NNRTIs		4 (30.8%)	5 (10%)	21 (14.9%)	4 (5.3%)
NRTIs + IP	3 (75%)	5 (38.5%)	16 (32%)	18 (12.8%)	8 (10.6%)
NRTIs + NNRTIs + PI		1 (7.7%)		1 (0.7%)	
Int. Inh.		3 (23 %)	29 (58%)	98 (69.5%)	61 (81.3%)
Main PI used					
-LPV/r	3 (75%)	6 (46.2%)	10 (20%)	8 (5.7%)	1 (1.3%)
-DRV			3 (6%)	24 (17%)	13 (17.3%)
-ATZ			3 (6%)	1 (0.7%)	
Main Int. Inh. used					
-RAL		3 (23%)	11 (22%)	10 (7.1%)	2 (2.7%)
-DTG			16 (32%)	60 (42.6%)	40 (53.3%)
-EVG				28 (19.6%)	14 (18.7%)
-BIC					5 (6.7%)
No treatment	1	-	-	1	2
Once-a-day	-	-	25 (50%)	112 (79.4%)	70 (93.3%)
Coformulations	-	-	5 (10%)	70 (49.6%)	54 (72%)
Adequacy to Spanish guidelines according to age					
	< 2 y.o	2-6 y.o	6-12 y.o	>12 y.o (N=216)	
First option recommendations	2 NRTIs + LPV/r	2 NRTIs+LPV/r o RAL o DRV/r	2 NRTIs+ DTG o ATZ/r	2 NRTIs+ DTG o EVG o DRV/r o RAL o ATZ/r	
Patients following those recommendations	100%	8/13 (61.5%) ^F	18/50(36%) ^S	172/216 (81.4%) ^R	

*NRTIs: Nucleoside Reverse Transcriptase Inhibitors. NNRTIs: Non-Nucleoside Reverse Transcriptase Inhibitors. PI: protease Inhibitors. Int. Inh: integrase Inhibitor.

^f5 patients received NRTIs + NNRTIs, with or without IP.

^g6 patients(12%) received NNRTIs. 10 patients(20%) still with LPV/r, 3(6%) received DRV. 13(26%) are receiving any Int. Inh. different to DTG. (LPV/r, DRV and RAL are included in Spanish guidelines as alternative treatment).

^h30 received NNRTIs. 9 adolescents received LPV/r. 5 patients started BIC in their regimens (pending to be included in Spanish guidelines).

Conclusions: Almost 300 children are followed-up in Spain (CoRISpe) due to HIV infection; most of them adolescents, predominating vertical transmission. 98.5% patients were on ART, 86% were immunologically controlled and 88.2% were undetectable, very close to 90-90-90 objectives. Adherence to the Spanish guidelines is excellent among infants and adolescents, being necessary to update those regimens in toddlers and children below 12 y.o.

CHARACTERISTICS OF HIV-INFECTED CHILDREN NEWLY INCLUDED IN CORISPE NETWORK (2015-2019)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: Vertical transmission of HIV has dramatically decreased in recent years in Spain. New children followed-up in Paediatric HIV Units in Spain were due to not diagnosed women at delivery, new sexually infections or due to children born abroad who come to Spain, with/without diagnosis and treatment. Aim of the study: to describe characteristics of new children living with HIV followed-up all around Spain.

Methods: A descriptive and multicentre study was performed. All new patients followed in the Spanish-Paediatric-HIV-Network (CoRISpe) in last 5 years were included and stratified into two groups: new diagnosis (ND) established in paediatrics Units in Spain and children previously diagnosed (PD) in their countries who arrived and start follow-up in Spain. Clinical-epidemiological characteristics and immunovirological situation at the beginning of the follow-up were compared.

Results: Between 2015-2019, 73 patients have been included: 42 ND(57.5%); 31 PD(42.5%). Characteristics of patients are collected in Table1. Among ND, 22(52.3%) were vertically infected: 10 were born abroad; 12 in Spain (among born in Spain: 5 mothers diagnosed after delivery, 3 didn't control pregnancy, 1 refused treatment, 1 postnatal infection, 2 data-not-available). Other 8(19%) were sexually infected (all boys, diagnosed with 15-17 years-old, 4 Spanish/4 migrants); 3(7.1%) were children born abroad, infected due to blood transfusion before coming to Spain and in 9 of them via of transmission was unknown.

Table 1: Characteristics of HIV-infected children included in CoRISpe from 2015 to 2019

	ND (N=42)	PD (N=31)	p-value
Women, N (%)	16 (38.1%)	15 (48.4%)	0.474
Age at first medical visit 0(years old), N (%)			
< 2	16 (38.1%)	4 (12.9%)	0.054
2 to 12	14 (33.3%)	16 (51.6%)	
12 to 18	12 (28.6%)	11 (35.5%)	
Via of transmission, N (%)			
Vertical	22 (52.4%)	24 (77.4%)	0.019
Sexual	8 (19%)	0 (0%)	
Transfusion	3 (7.1%)	0 (0%)	
Unknown	9 (21.4%)	7 (22.6%)	
Place of born, N (%)			
Spain	17 (40.5%)	-	<0.001
Sub-Saharan Africa	16 (38.1%)	12 (38.7%)	
Latin America	5 (11.2%)	13 (42%)	
Other	4 (9.5%)	6 (19.3%)	
Clinical Situation (CDC Clinical Stage), N (%)			
A	26 (62%)	18 (58%)	0.596
B	8 (19%)	7 (22.6%)	
C	8 (19%)	3 (9.7%)	
Immunological situation at first medical visit in Spain			
CD4+/mm3, median (IQR)	470 (208-1380)	639 (490-1023)	0.271
Mild Immunosupresion (CD4+ <500), N (%)	20 (47.6%)	10 (32.3%)	0.233
Severe Immunosupresion (CD4+ <350), N (%)	14 (33%)	5 (16.1%)	0.11
Virological situation at first medical visit in Spain			
Log. CV (copies/ml), median (IQR)	5.1 (4.7-5.9)	2.5 (1.6-4.4)	<0.001
Undetectable (<50 copies/ml), N (%)	0 (0%)	9 (29%)	<0.001
First treatment indicated in Spain			
AN + NAN	N=41 9 (22%)	N=30 7 (23.3%)	0.969
AN + IP	19 (46.3%)	13 (43.3%)	
Inh. Integrasa	13 (31.7%)	10 (33.3%)	

Conclusions: New diagnosis in Spain are decreasing and half of patients followed in CoRISpe are PD children who come to Spain. To note, among new diagnosis there were 12 vertically infected children born in Spain (highlighting the importance of strengthen gestational and delivery control measures) and 8 adolescents sexually infected who require sexual education and high clinical suspicion of paediatrics to establish a diagnosis.

EVALUATION OF THE IMPACT OF DELAYED IN DIAGNOSIS AND INITIATION OF ANTIRETROVIRAL THERAPY FOR HIV-1 INFECTED INFANTS ON THEIR VIRAL LOAD (VIRAEMIA) AND CD4 T LYMPHOCYTE CELL STATUS OUTCOME IN THE GAMBIA.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: To enhance durable viral suppression and upgrade CD4 cell immune functions of HIV-1 proviral DNA positive infants, Gambia government adopted WHO recommended sample collection from HIV exposed infants before or at 6-8 weeks after birth, through 4 weeks' timeframe from collection to ART initiation if tested positive. Despite, studies to determine if these infants were diagnosed and initiated on ART within the adopted timeframe to enhance this benefits are lacking. We determine effect of delayed in diagnosis and ART initiation on their CD4 cell and viraemia outcome.

Methods: 2015-2019 HIV-1 proviral DNA positive infants key dates retrospective data collection and analysis followed, prospective cohort study on CD4 cell and viraemia outcome of those followed within at least 6 months and at most 3 years on ART adherence from initiated dates. STATA version 13 used for the data analysis with delayed diagnosis and ART initiation dichotomized using the adopted timeframe, Pair T-test used to determine difference between mean initial and prospective, CD4 cell and viraemia outcomes respectively.

Results: Between 2015-2019, 95 infants were found tested HIV-1 proviral DNA positive. Overall, 49/95 were found initiated on ART 42 weeks median time from their delivery dates among which, 4 found adhered to the duration in the cohort of those not affect by the delays, difference between their mean initial and prospective CD4 cell outcome significantly ($P = 0.02$) higher than the 11 found adhered to the duration in the cohort of those affected ($P = 0.37$).The reverse was found in their viraemia outcome although, not statistically significant for both.

Conclusions: Inadequate enforcement/adherence to adopted timeframe was found affect CD4 cell and viraemia outcome of positive infants affected by the delays. This requires urgent attention to enhance improve prognosis.

NEW DIAGNOSIS OF MOTHER-TO-CHILD TRANSMISSION OF HIV IN 8 LATINAMERICAN COUNTRIES DURING 2018

E-POSTER VIEWING

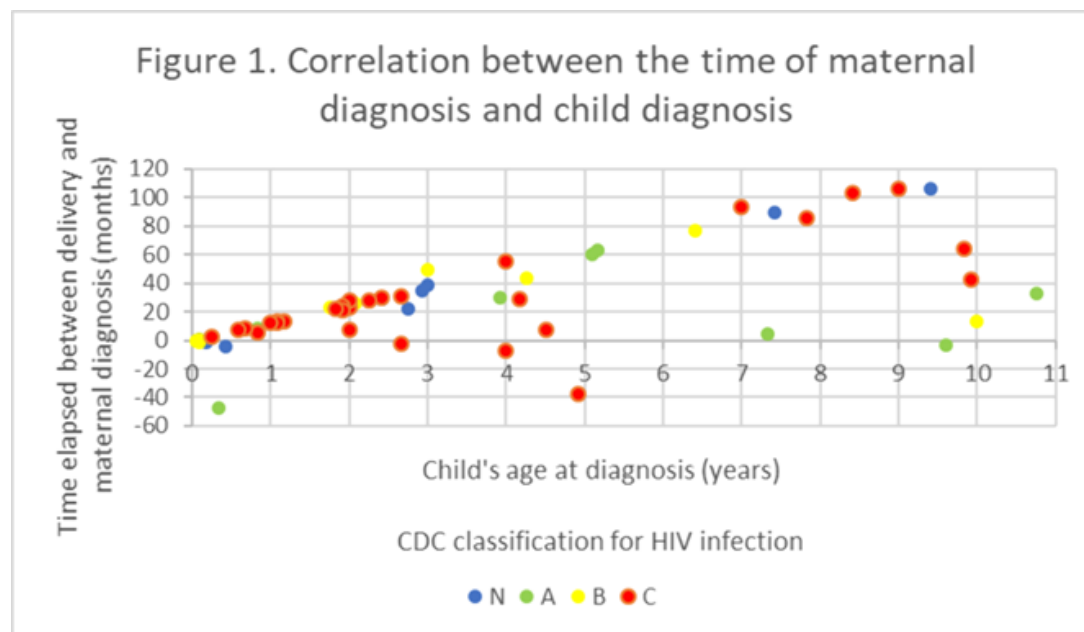
TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: Important prevention efforts have conducted to a reduction in the mother-to-child transmission (MTCT) of HIV globally. Preventing MTCT is key to reduce the global incidence of new HIV infections. Early diagnosis of new HIV infections is also essential to avoid childhood morbidity and mortality related to infection. The aim of the study was to describe the new cases of MTCT HIV infection in Latin American referral hospitals during 2018.

Methods: A retrospective review of the new cases of MTCT HIV diagnosed during 2018 in 13 referral hospitals from 8 Latin American countries (Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama) from PLANTAIDS (Paediatric Network for Prevention, Early Detection and Treatment of HIV in Children) during 2018 was conducted.

Results: Eighty-four children were included, with median age at diagnosis of 2.33 years (IQR:0.71-5.05). 51.90% presented with stage C of disease (following CDC classification for HIV infection), 35.90% had <15% CD4⁺ cells/mm³. A younger age at diagnosis ($p=0.039$), a smaller number of previous hospitalizations ($p=0.011$) and better immunovirological status ($p=0.02$) were found in children whose mothers knew their HIV status at delivery compared to mothers who were not aware of. The time elapsed between delivery and maternal diagnosis was correlated with the age of children at diagnosis, $p=0.668$, $p<0.001$ (Figure 1).



Conclusions: In our series, more than half of the children presented at diagnosis with an advanced stage of disease. Earlier diagnose of the pregnant woman is an essential point to improve. The earlier the mother is diagnosed, the better the child's prognosis. The delay in child's diagnosis leads to clinical and immunological deterioration.

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OUTCOMES OF CHILDREN AND ADOLESCENTS LIVING WITH HIV ON FOLLOW UP IN A NATIONAL REFERRAL HOSPITAL IN KENYA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: Antiretroviral therapy (ART) has been shown to reduce mortality among people living with HIV. Data on outcomes of ART is essential in evaluation of strategies used to identify, treat and suppress the HIV virus in children and adolescents. We sought to determine 5 -year outcomes of children and adolescents living with HIV on follow up in a National Referral Hospital in Kenya.

Methods: We conducted a retrospective review of records of children and adolescents aged less than 20 years who started ART between January 2004 and August 2013 at the Kenyatta National Referral Hospital (KNH) HIV clinic. Patients identified were followed up for 5 years from the date of enrollment. We excluded patients who transferred into the clinic while already on ART. We estimated mortality rates per 1000. Multivariate cox proportional hazards models were used to determine independent predictors of mortality.

Results: From January 1st 2004 to August 31st 2013, 1390 patients aged less than 20 started ART at the KNH HIV clinic, 46.5% were male. The median age at enrollment was 4.6 years [IQR (1.6-8.7)]. After the 5 years, 62.8% were active on follow-up, 12.6% transferred out and 22.5% were lost-to-follow-up (LTFU). The 5-year mortality was 5.6 per 1000. Mortality was highest in infants less than 2 years {aHR 6.5 ,95% C.I; (1.5-28.9) p=0.014} and those enrolled at WHO Clinical Staging 3 and 4 {aHR 4.4, 95% C.I.; (1.3-15.0) p=0.016}

Conclusions: There is need to track those LTFU to ascertain that they are still alive and on care. Infants should be prioritized for specialized care to avert mortality.

HIV-EXPOSED AND UNINFECTED INFANTS BORN TO HIV-INFECTED MOTHERS: A TEN-YEAR EPIDEMIOLOGICAL STUDY IN A TERTIARY HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: Although the number of infants infected with HIV is declining because of the prevention of HIV mother-to-child transmission, the number of HIV-exposed and uninfected (HIV-EU) infants born to HIV-infected mothers is increasing. Interest in the health outcomes of HIV-EU infants has grown, with several studies suggesting that these infants have increased mortality rates, increased infectious morbidity and impaired growth compared with HIV-unexposed infants. Limited data are available concerning HIV-EU infants in Greece.

Methods: Retrospective study of medical records of HIV-EU infants, who visited the Pediatric HIV outpatient office in the largest tertiary Pediatric Hospital in Greece, "Aghia Sophia" Children's Hospital, during the period 2010-2020. Demographic and perinatal data were collected from each infant. Comparison was made between the two periods 2010-2015 and 2015-2020.

Results: A total of 268 infants were studied. The origin of mother's infants was Greek 45%, African 35%, Romanian 14% and Asian 6%. Delivery by cesarian section had the 83% of the infants. Prematurity and low birth weight was found in 35% and 23% of the infants. Common maternal comorbidities were HBV(9%) and HCV(8%). Mothers with high risk of HIV transmission (62%) had more often a history of drug use and Asian or African origin. Comparison between the two periods showed an increase in high risk pregnancies during the second period.

Conclusions: Future research and monitoring of the health status and growth of HIV-EU infants is necessary. Infants born to HIV infected mothers are considered vulnerable and require diligent follow-up in order to reach their full health potential.

LONG-TERM FOLLOW-UP OF PERINATALLY HIV-INFECTED WOMEN PREGNANCIES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HIV/AIDS

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Background: Vertically HIV-infected women are a unique population, often heavily exposed to different antiretroviral regimens and with frequent psychosocial problems. Achieving and maintaining viral suppression during pregnancy represents a challenge, and the effect of pregnancy on viral suppression and long-term linkage to care has not been well described. The aim of this study was to describe a cohort of perinatally HIV-infected mothers, analyzing prevention strategies and describing pregnancy and post-partum outcomes.

Methods: Multicenter retrospective study within the Madrid Cohort of HIV-infected children, which is included in the Spanish Cohort of HIV-infected children and adolescents (the CoRISpe cohort). Vertically HIV-infected women which gave birth from January 2000 to December 2019 were included. Medical records including clinical and immunovirological data, adherence to care, AIDS-defining conditions and pregnancy related outcomes, were collected, up to December 2020.

Results: Sixty-two pregnancies in 33 perinatally HIV-infected women were included (figure 1). At conception, 66% were on treatment and 60% had undetectable viral load. All but one were treated during pregnancy and 81% were suppressed at delivery. Treatment regimen was changed due to pregnancy in 60%. All babies received prophylaxis (74,6% only AZT). There was one vertical transmission in a non-adherent psychiatric patient. Viral suppression was comparable before and after pregnancy, but postpartum treatment interruption occurred in 16 cases. Four women were diagnosed with AIDS after delivery and one died.

Perinatally HIV-infected women; n	33
Total number of deliveries; n	62
Ethnicity; n (%)	
Caucasian	28 (85)
Gypsy	3 (9)
Sub-Saharan	1 (3)
Arab	1 (3)
Substance abuse; n (%)	
Tobacco	16 (48)
Other	4 (12)
Comorbidities;	
HCV chronic infection	3 (9)
HBV chronic infection	2 (6)
HIV encephalopathy	1 (3)
Dilated cardiomyopathy	1 (3)
Mitral valve prolapse	1 (3)
Incontinentia pigmenti	1 (3)
Mental disorders; n (%)	6 (18)
Age (months) at HIV diagnosis; median [IQR]	19 [3 - 52,5]
Age (years) at first delivery; median [IQR]	20 [18.5 - 23]
ART regimens before pregnancy; median [IQR]	6 [4.5 - 8]
AIDS diagnosis before pregnancy; n (%)	11 (33.3)
On ART at conception; n (%)	41 (67)
On ART at birth; n (%)	61 (98.4)
On ART 1 year postpartum; n (%)	40 (71)
Indetectable viral load at conception; n (%)	37 (60)
Indetectable viral load at birth; n (%)	50 (81)
Indetectable viral load 1 year postpartum; n (%)	27 (58.6)
CD4 Cell Count/mm³ at conception; median [IQR]	544 [371.5 - 772]
CD4 Cell Count/mm³ at birth; median [IQR]	559 [441.5 - 716]
CD4 Cell Count/mm³ 1 year postpartum; median [IQR]	607 [367 - 838.5]
Cesarean delivery; n (%)	24 (37)
Zidovudine intrapartum; n (%)	50 (81)
Newborn prophylaxis; n (%)	
AZT	47 (77.1)
AZT + 3TC + NVP	11 (18.1)
AZT + 3TC + RAL	1 (1.6)
Other	2 (3.2)

Conclusions: Perinatally HIV-infected women may entail particular difficulties for health care providers. Achieving viral suppression can be challenging due to previous exposure to numerous antiretrovirals and adherence problems. A multidisciplinary approach is needed in order to improve adherence and linkage to care in these women, in order to avoid perinatal transmission in this population.

TRANSITION OF HIV-POSITIVE ADOLESCENTS FROM PAEDIATRIC TO ADULT CARE AT THE "HOPITAL ST CAMILLE" IN OUAGADOUGOU (HOSCO), BURKINA FASO

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - HIV/AIDS

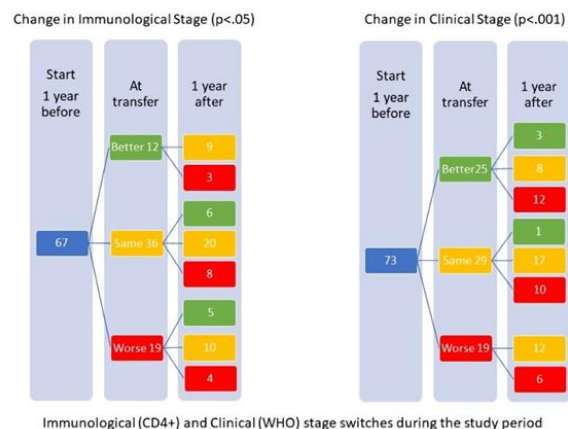
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Background: Passage from paediatric to adult services is a critical phase for all adolescents affected by chronic conditions. The aim of this work is to study the clinical, immunological and therapeutic evolution of HIV-positive adolescents from one year before, to one year after transition from paediatric to adult care services - within the same hospital.

Methods: Since 2004 we enrolled more than 400 vertically infected children in the HIV/AIDS program at HOSCO. Fully informed, compliant and autonomous patients >13-year-old were eligible for transition, which consisted in at least two consecutive "joined-service-appointments". We retrospectively compared immunological, clinical and therapeutical data as close as possible to the following three time points: one year before transition, at transition, and one year after transition.

Results:



Between 2008 and 2019 a total of 73 patients (34 females and 39 males) were transferred to adult service at a mean age 17.2 years. Mean time on HAART before transition was 6.9 years. There was important fluctuation over the two years (figure), with a significant decline in both, clinical stage (p<.001) and immunological stage (p<.05). Patients who went worse (by either parameter) were older, a difference more pronounced in young women, thou not statistically significant. During the first year after transition one patient deceased, three were lost to follow-up.

Conclusions: The data from our – largest ever published cohort with CD4+ counts and clinical stage data – show that even a well prepared and smoothly implemented transition from paediatric to adult care may expose adolescents to some risk, which seems to increase with age. Interestingly the decline was more evident in the clinical evaluation than on CD4-counts, suggesting that clinical stage evolution should be included in such studies.

SERUM INTERFERON PROFILE AND RESPIRATORY MORBIDITY IN YOUNG CHILDREN DEPRIVED OF PARENTAL CARE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - HOST RESPONSE DIAGNOSTICS AND IMAGING

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Background: Children deprived of parental care who live in orphanages are at higher risk of contracting recurrent respiratory tract infections (RTIs) than their peers living in families due to the continuous circulation of respiratory viruses within the orphanage setting. Interferons (IFNs) are crucial cytokines of antiviral immune protection as they interfere with viral replication and greatly influence both innate and adaptive immune responses to viruses. The retrospective cohort study aimed to assess respiratory morbidity in young children deprived of parental care in association with their serum interferon profile.

Methods: The study was conducted in 2015-2018 in a municipal orphanage setting in Dnipro, Ukraine. We enrolled a total of 62 children deprived of parental care, aged 12-36 months, who did not have any diagnosed immune deficiencies, immune suppression or acute infections. Additionally, 25 matched controls living in families were included. Serum concentrations of IFN- α and IFN- γ were measured using ELISA method. Also, we performed a conventional clinical immunological assay and a retrospective assessment of respiratory morbidity during the preceding year.

Results: Orphanage children contracted RTIs twice more often than controls, and experienced complications thrice more frequently ($p < .01$). Levels of both IFNs in controls significantly outnumbered the values obtained in orphanage children. This pattern was maximally expressed at the age of 24-36 months for IFN- γ (3.15 ± 0.66 vs. 6.11 ± 0.62 pg/ml in controls, $p < .01$). Contrariwise, no differences in the circulating T-cell subsets and immunoglobulins were found. IFN- α concentrations inversely correlated with the number of RTIs per year, IFN- γ levels were positively associated with breastfeeding in the first year of life.

Conclusions: In orphanage children malfunction of antiviral interferon-mediated protection is present, along with increased incidence and severity of RTIs, which could be seen as a vicious circle.

INFECTIOUS COMPLICATIONS OF SEVERE, CHRONIC, NON-MALIGNANCY ASSOCIATED NEUTROPENIA IN CHILDREN - A SINGLE CENTRE EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: Severe chronic neutropenia in children triggers extensive diagnostic work-up as well as broad cover pre-emptive antibiotic treatment when they present with fever without source. After ruling out malignancy, the challenge lies in identifying the underlying cause and treating appropriately. Our study aims to present the spectrum of infectious complications in this subset of patients and contribute to the risk assessment and management.

Methods: The Neutropenia Registry of our Pediatric Hematology Department was retrospectively accessed in order to identify hospitalized patients with neutropenia from January 2015 to December 2020. Patients with chronic severe neutropenia, defined as absolute neutrophil count lower than 500/mm³ in peripheral blood lasting for longer than 6 months, were included in this study. Underlying diagnoses, infectious complications and outcomes were documented.

Results: Severe chronic neutropenia was detected in 31/139 patients in the registry. Clinical outcomes and demographics are shown in Table 1. 9,7% (n=3) of patients developed hematologic malignancy and are excluded from further analysis. Table 1.

Total	31
Females	61,3%
Age(median,range)	21months(5months-12years)
<u>Infectious Complications</u> Viral Bacterial Skin/Soft tissue ENT OralCavity Bloodstream	21(67,7%) 7(22,6%) 3(9,7%) 2(6,5%) 1(3%) 1(3%)
<u>Recurrence Rate</u> (≥2infections/patient) Viral Bacterial	10(32,3%) 3(9,7%) 7(22,6%)
<u>Causes</u> Autoimmune Post-infectious Unspecified	11(35,5%) 6(19,4%) 11(35,5%)
<u>Treatment</u> GCSF IVIG Antibiotic-chemoprophylaxis	1(3%) 1(3%) 4(12,9%)
<u>Neutropenia Outcome</u> Resolution Median time to resolution(range) Ongoing	18(58%) 24months(10-60) 10(32,3%)
Follow-up(median,range)	3years(1-9)

Conclusions: The majority of patients had favorable outcome and low risk of infection. Viral infections are the most common identified trigger and complication. Concomitant assessment of phenotypic characteristics, growth, development and immunological profile may facilitate the etiological diagnosis and spare antibiotic treatment. In contrast with febrile neutropenia in patients with underlying malignancy, chronic neutropenia may be managed with minimal interventions and watchful approach.

IMMUNIZATION UPDATE IN IMMUNOCOMPROMISED CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: Previous studies have estimated a vaccination update rate lower than 10% in immunocompromised children. The main objective of the study was to describe the characteristics and vaccination update rates of hemato-oncology paediatric patients. The secondary objective was to identify epidemiological and clinical factors related to vaccination update rates.

Methods: A retrospective review of immunocompromised children followed in a paediatric infectious diseases outpatient clinic of a tertiary hospital in Madrid (Spain) from January 2015 to September 2019 was conducted. Demographic, clinical data and vaccination status [serological status for measles, mumps, rubella (MMR), varicella, hepatitis A and B and revision of vaccination schedule for diphtheria, tetanus, pertussis (DTP), pneumococcal, meningococcal, haemophilus, polio and influenza vaccines], after immunosuppression were collected. We considered vaccination update following the recommendations of the Vaccine Advisory Committee of the Spanish Paediatrics Association.

Results: Fifty-seven patients were included with median age of 9.78 years (IQR 4.57-14.24) at diagnosis and 11.02 years (IQR 6.49-15.64) at consultation. Fifty-one (89.5%) attended consultation, none of the others had their vaccination schedule updated. Vaccination rate of patients who attended consultation was 96.1% for DTP, pneumococcus and meningococcus, 94.1% for hepatitis B, 92.2% for polio, 88.2% for haemophilus influenzae, 86.3% for hepatitis A and MMR and 72.5% for varicella. 92.2% received influenza seasonal vaccine. Epidemiological and clinical factors influencing vaccination update rates are shown in table 1.

Table 1. Factors related with vaccination update rate.

Update	Chemotherapy (n=50)	HSCT (n=7)	p
Life attenuated	88.00%	14.28%	0.000
	Caucasian	Other ethnic groups	
Inactivated	55.80%	21.42%	0.033
Life attenuated	88.37%	50%	0.005
	Followed at consultation	Not followed at consultation	
Inactivated	52.9%	0.00%	0.025
Life attenuated	86.27%	16.66%	0.001

Conclusions: Vaccination update in immunocompromised children continues to be a challenge. Caucasian children and those who have undergone chemotherapy have the highest vaccination update rates. Follow-up of immunocompromised patients in a specialized consultation can improve vaccination rates decreasing the morbimortality associated with vaccine-preventable diseases.

INFECTIOUS COMPLICATIONS IN THE FIRST 100 DAYS FOLLOWING AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANTATION IN PEDIATRIC PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

Houda Limam, Samya Rekaia, Ilhem Ben Fraj, Rawia Farhat, Fethi Mellouli, Monia Ben Khaled, Monia Ouderni

National Bone Marrow Transplantation Center, Pediatric Immuno-hematology Unit, Tunis, Tunisia

Background: Infectious complications are a major issue after hematopoietic stem cell transplantation (HSCT) and remain a major cause of transplant related morbidity and mortality. The aim of the study was to analyze the incidence, type and outcome of infectious complications in the first 100 days following autologous HSCT.

Methods: We conducted a single-institution retrospective study. All children who received autologous HSCT between April 2018 and November 2020 were included. Pre-engraftment phase was defined as the time between infusion of stem cells and engraftment. Early post-engraftment phase was defined as the period from engraftment to day 100 after HSCT. Conditioning regimen consisted of mephalan and busulfan. A systematic antimicrobial prophylaxis with trimethoprim–sulfamethoxazole, acyclovir and fluconazole was administered. First-line antibiotic therapy consisted of one of the following broad-spectrum regimens: piperacillin-tazobactam with amikacin, ceftazidime with amikacin or imipenem with amikacin.

Results: Sixteen patients were identified. Median age at HSCT was 59.2 months. Median duration of neutropenia was 9 days (IQR 7.5-11). During pre-engraftment phase, fifteen patients developed febrile neutropenia. In twelve cases (80%), no pathogen was identified. Response to first-line treatment was seen in 33% of cases. Documented infections were caused by *A.baumannii*, *S.hominis* and *E.faecium*. Bloodstream infection occurred in 2 patients. During early post-engraftment phase, three patients developed fever without microbiological documentation but the clinical course was compatible with bacterial infection. No infection-related deaths were reported during the study period.

Conclusions: The majority of infectious episodes in our study were not documented with good response to empirical antibiotic treatment. Early post-engraftment infections were rare. No infection-related deaths occurred.

CYTOMEGALOVIRUS IN CHILDREN WITH SEVERE COMBINED IMMUNODEFICIENCY DISEASE AND OMENN SYNDROME BEFORE AND AFTER ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

Houda Limam, Samya Rekaia, Ilhem Ben Fraj, Rawia Farhat, Fethi Mellouli, Monia Ben Khaled, Monia Ouderni

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Background: Cytomegalovirus (CMV) infection is a major infectious cause of morbidity and mortality in patients with Severe Immunodeficiency Combined Disease (SCID) and Omenn syndrome. The aim of the study was to analyze the incidence and outcomes of CMV infection before and after allogeneic hematopoietic stem cell transplantation (HSCT) and to characterize the patients who developed CMV infection.

Methods: We conducted a retrospective study including children with SCID or Omenn syndrome who underwent HSCT between March 2000 and March 2020 in our pediatric immuno-hematology department. CMV infection was defined as a positive pp65 antigenemia assay or PCR higher than 150 copies/ml. CMV disease was defined as viremia with evidence of end-organ damage. Early CMV infection/disease occurs within the first 100 days after HSCT. Late CMV infection/disease occurs after day 100 following HSCT. Preemptive therapy was initiated when viremia was detected and consisted of ganciclovir, valganciclovir or foscarnet.

Results: Sixteen patients were identified. Median age at HSCT was 6 months (IQR 4-8). Four patients had CMV infection before transplantation with good response to preemptive therapy (ganciclovir n=3, ganciclovir and foscarnet n=1). After HSCT, CMV infection occurred in 5 patients at a median of 34 days post-HSCT. Among these, three had pretransplantation CMV infection, two had graft-versus-host disease and one received steroids. CMV disease was diagnosed in 2 patients at a median of 11.5 days post-HSCT. Both died shortly after HSCT with CMV pneumonia. No late CMV infection was reported.

Conclusions: This study confirms that, despite major advances in prevention of Cytomegalovirus infection in hematopoietic stem cell transplantation recipients, CMV infection is frequent within the first 100 days after transplantation. Lungs were the involved site of CMV disease in our patients. No late CMV infection occurred.

ASYMPTOMATIC MALARIA, HIV INFECTION AND THEIR EFFECTS ON ANEMIA AND T CELLS LEVELS IN CHILDREN IN DOUALA, CAMEROON

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: Human Immunodeficiency Virus (HIV) infection and Malaria are serious health problems mostly affecting Sub-Saharan Africa, where both diseases overlap and claim high tolls. There is evidence that these two health issues worsen each other through their effect on immune and hematological systems. This study aims to determine the effects of HIV infection and asymptomatic malaria on anemia and T cells counts in children.

Methods: From May to November 2016, 197 HIV infected and 98 HIV free non-febrile children aged 0-19 years (128 male and 167 female) participated in the study. All HIV infected children were receiving antiretroviral treatment and Cotrimoxazole. Malaria diagnosis was performed using Giemsa-stained thick blood film; immunological and hematological parameters were assessed through a flow cytometer and an automated analyzer respectively. Chi-2 or Fischer's exact tests were used to compare proportions; Mann-Whitney and Anova tests for means. Statistical significance was set at $p < 0.05$.

Results: Prevalence of malaria was 8.8% and anemia 40.7%. CD4⁺-T cells were higher in malaria infected children, both HIV positive and negative ($P = 0.049$). No significant association was found between malaria parasitemia and CD8⁺-T cell levels, both in HIV positive and negative children ($P = 0.41$). Anemia was higher in HIV positive children (0.019) especially in those with severe immunosuppression (0.001) and in younger children (0.0083). Children on HIV treatment presented lower malaria prevalence (8.6% versus 10.10%), though the difference was not significant (0.7068). Malaria infection was associated with lower hemoglobin levels (10.5 ± 1.7 versus 11.2 ± 1.4 ; $P = 0.016$).

Conclusions: Asymptomatic malaria may enhance CD4⁺-T cells. Both malaria and HIV infection lead to drop in hemoglobin levels. The HIV treatment protocol may reduce malaria prevalence. A better implementation of malaria preventive methods and proper anemia management are necessary to improve HIV-infected children health conditions and decrease malaria related morbidity in children.

INCREASING IMMUNOGLOBULIN USAGE IN CHILDREN IN ICELAND

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: Immunocompromised patients are burdened with recurrent and sometimes serious infections. When the immunological defect is primarily in the humoral axis, treatment with immunoglobulins can be necessary and life-saving. Immunoglobulins are increasingly used for off-label indications but the global source is limited. It is important to recognise changes in immunoglobulin usage and indications. The objective of this retrospective study was to evaluate clinical use of immunoglobulin for paediatric patients in Iceland and estimate off-label usage.

Methods: As part of a larger study, demographic information on individuals under the age of 18 who received immunoglobulins in Iceland from 2010-2019 was registered as well as medical indications. Information on every documented infusion of immunoglobulins for the same group in Landspítali, University Hospital was also registered. Indications were categorized as registered or unregistered based on European Medicines Agency and Food and Drug Administration guidelines.

Results: 131 individuals received immunoglobulin treatment, with 90% being exclusively treated intravenously. 110, or 84% of individuals, were treated for registered indications, 20 for unregistered indications and one for an uncertain indication. Half of the patients were treated for immunodeficiencies. Immunoglobulin usage increased fourfold during the study period, including a sharp increase in the last two years.

Conclusions: Immunoglobulin treatment in children is largely used for registered indications and the most frequent indications were immunodeficiencies. Continuous registration and evaluation of indications is recommended to further establish rational and effective usage of this important treatment option and minimise treatment of conditions where evidence of benefit is lacking.

STUDY OF ETIOLOGY OF INFECTIONS IN CHILDREN POST HEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT)AT A TERTIARY HEALTH CARE CENTRE -A RETROSPECTIVE COHORT STUDY FROM INDIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: Children post- HSCT are more susceptible to infections because of their compromised immune system. Gram-positive and gram-negative bacteria, Candida & Aspergillus species are major pathogens in the pre-engraftment phase. With neutrophil recovery, bacterial infections decrease, and infections by viruses, and fungi predominate .

Methods: Retrospective cohort study of 140 patients aged 1-18 years , who underwent HSCT over 14 years. Post-transplant period was divided into three time periods (0-30 days,31-100 days,101-1 year) . Pattern of infections in each group was studied using a standard proforma.

Results: . Mean time for neutrophil engraftment 12.6 days \pm 3 SD., 83.6% within 15 days, 14.2% after 15 days, failure to engraft in 3 patients (2.1%). 0-30 days - predominant infections - bacterial (31.4%) . Viral infections(9 6.4%), fungal infections (5%) Common virus isolated - CMV. Aspergillosis in 5 patients. 31-100 days - predominant infections were viral (25.7%) especially CMV (16.4%).Bacteremia in 22.1%. Fungal infections include Candidemia & Aspergillosis . 101-one year -predominant infections were viral (19.3%) ,majority were CMV (7.9%) ,VZV (7.9%)., . Candidemia was in 2 patients, Aspergillosis in one patient.

Conclusions: Bacterial infections were predominant in the immediate post-transplant period followed by viral infections. Overall incidence of gram positive and gram negative bacteremia was equal. Most common bacteria isolated was Staphylococcus, followed by GABHS. Most common virus isolated was CMV, common fungus being Aspergillus.

INFECTIONS IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS, MORE FREQUENT THAN IN HEALTHY CHILDREN? PROSPECTIVE MULTI-CENTER CASE-CONTROL STUDY.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: Children with Juvenile Idiopathic Arthritis (JIA) could be at a higher risk of infection. Our objectives are to describe and compare rate of infections in JIA patients vs. healthy controls.

Methods: A prospective, multicenter, case - control study was performed in Spain. Cases: children with JIA followed up at 7 participating hospitals. Controls were either siblings of children with JIA or healthy children. Participants were followed over 12-24 months with quarterly questionnaires collecting infection episodes. Tuberculosis, VHZoster, pneumonias and infections requiring hospital admission were considered severe infections. Rate of infection (episodes/patient/year) was compared using a Generalized Estimating Equations Model.

Results: 371 children, 181 JIA/ 190 controls were included. Mean age was 8.41 years (SD 3.76). 24.9% received no treatment, 23.8% methotrexate, 22% biological drug, 25.4% both. A total of 667 infections were collected, of which 15 (2.2%) were considered severe infections; 9 in JIA (1 Gastrointestinal 2 VHZoster, 6 pneumonias) and 6 in controls (1 Gastrointestinal, 1 VHZoster, 4 pneumonia). Rate of infection in JIA was 1.31 (SE 0.103) and 1.12 (SE 0.102) in controls (p=0.1958). Age <4 years was associated with a higher infection rate (2.51 vs. 0.98, p <0.001). (Table 1)

Table 1. Description of cohorts and main results of study

	GLOBAL	CASES - JIA	CONTROLS	<i>p</i>
n	371	181	190	
Gender, female	248 (66,8%)	136 (75,1%)	112 (58,9%)	0,001
Follow up completed (n)	342	152	190	
Time (months) (mean, range)	19,35 (6 – 30)	21,98 (11,6 – 28,6)	17,25 (6 – 28,6)	
Age (years) (median, SD)	8,41 (SD 3,76)	8,882 (SD 3,71)	7,96 (SD 3,77)	0,001
<4 years	61 (16,4%)	22 (12,2%)	39 (20,5%)	0,035
Influenzae vaccine				
Yes	122 (83,6%)	89 (88,1%)	33 (73,3%)	0,032
Complete vaccine calendar for age				
Yes	346 (98,9%)	160 (97,6%)	186 (100%)	0,047
No	4 (1,1%)	4 (2,4%) (missing MMR vaccine)	0	
Pneumococcal vaccine				0,25
Yes	309 (97,8%)	141 (96,6%)	168 (98,8%)	
Chickenpox vaccine				
Yes	264 (77,4%)	113 (70,2%)	152 (83,9%)	0,007
No	51 (15%)	30 (18,6%)	21 (11,7%)	
Past disease	26 (7,6%)	18 (11,2%)	8 (4,4%)	
Infection rate (n° inf/patient/year) (mean, SE)	1,29 (0,11 SE)	1,31 (0,10 SE)	1,12 (0,10 SE)	0,19
Adjusted by age				
<4years	2,51 (0,41 SE)	2,72 (0,45 SE)	2,20 (0,29 SE)	1
>4 years	0,98 (0,09 SE)	1,21 (0,09 SE)	0,83 (0,08 SE)	
p value (<4y vs. >4y)	<0,001	<0,001	<0,001	0,15
N° infectious episodes	667	361	306	
Serious infection				
Yes	15 (2,2%)	9 (2,5%)	6 (2%)	0,659
No	667	352	300	
Hospital Admission	4	3 (2 GI, 1 pneum)	1 (pneumonia)	
Zoster	3	2	1	
Pneumonia, outpatient	8	4	4	
Antibiotic treatment				
Yes	258 (38,5%)	132 (36,6%)	126 (40,8%)	0,23
No	410 (61,5%)	229 (63,4%)	181 (59,2%)	

JIA = Juvenile Idiopathic Arthritis.

Statistic analysis was made using a Generalized Estimating Equations Model with Poisson distribution and logarithmic link function. Rates are estimated by the least squares method and when necessary,

Conclusions: Despite being a potential risk group, there were no differences in infection rate, serious infection or antibiotherapy between patients with JIA and healthy controls. Age was the most important risk factor globally and in both groups.

INFECTIONS POST HAPLOIDENTICAL TRANSPLANT SINGLE CENTER EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - INFECTIONS IN PEDIATRIC TRANSPLANT MEDICINE

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Background: The use of T-cell repleted haploidentical transplant (haplo-HSCT) with post-transplant cyclophosphamide has increased the pool of available donors and the number of transplanted patients. However, it is associated with higher risk for infections due to more immunosuppression .

Methods: Retrospective analysis of all pediatric patients who underwent T-cell repleted haplo-HSCT using post-transplant cyclophosphamide at King Hussein Cancer Center, Amman ,Jordan from Jan-2013 to Dec-2018. Fifty-one patients underwent haplo-HSC. Twenty-five patients had malignant disorders (3-year overall survival, 65%) and 26 patients underwent transplant for non-malignant disorders (3-year overall survival 84%)

Results: Forty-four patients (80%) experienced at least one infection after transplant. The majority of infections were viral (N=60); CMV viremia was detected in 32 patients ; BK cystitis in 17, and EBV reactivation in 11. Gram positive infections were detected in 18 patients. Twenty-five patients developed gram negative infection which was a multidrug resistant organism in 15 cases. One patient developed invasive pulmonary aspergillosis. Eleven patients died: three due to graft failure, one of regimen related toxicity and 6 of disease relapse. Infection was not the primary cause of death.

Conclusions: Haplo-HSCT using post-transplant cyclophosphamide is feasible with similar incidence of infections as to the reported literature. We reported multiple serious infections in our cohort, including multidrug resistant gram negative bacterial infections. With proper supportive care, there were no deaths related to these infections in our patients. Prevention, early recognition and prompt treatment of infectious complications are essential to achieve good outcome in these patients. More efforts need to be done to minimize the risk of resistant infections in this population.

STOOL CULTURE IN THE EMERGENCY DEPARTMENT: WHO, WHY AND THEN?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - MANAGING "TRIVIAL" INFECTIONS (YOUNG ESPID)

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Background: Acute diarrhea is a condition that leads to frequent admissions in the pediatric emergency department (ED). In children without comorbidities or severity signs, no etiologic investigation is usually required. The aim of this study is to depict the population to whom stool culture was requested and the reason it was requested, the clinical presentation and chosen therapeutic conduct.

Methods: A retrospective, 5 year-time analysis, of all stool cultures requested in the pediatric ED (n=1056), of a level 2 hospital was performed, comparing patients with positive and negative stool cultures. Results of $p < 0.05$ were considered statistically significant.

Results: We recorded a rate of 25% positive cultures, the most common being *Campylobacter* (76%). Antibiotic prescription reached 13%, most frequently azithromycin. No statistically significant difference was found between groups, for clinical presentation with vomiting ($p=0.113$) or abdominal pain ($p=0.065$). Fever ($p=0.001$) and bloody diarrhea ($p=0.001$) were significantly more frequent in the positive group. Patients with positive cultures were admitted to the ED earlier ($p=0.01$; $4,01 \pm 6,17$ vs $6,65 \pm 11,2$ days). The presence of blood was the most stated cause of requesting a stool culture (50%) in contrast with extraintestinal manifestations and immunosuppression with 0,4 and 0,8%, respectively.

Conclusions: Stool culture is still requested in daily practice. However, the time required for the result isn't always compatible with emergency settings. Guidelines for more accurate request of this exam are yet to be defined. In our department, bloody diarrhea is by far the most alleged and is significantly more frequent in patients with positive cultures.

THE EPIDEMIOLOGY OF PAEDIATRIC BACTERIAL GASTROENTERITIS IN THE MALTESE ISLANDS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - MICROBIOLOGY

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Background: Gastroenteritis is a common communicable paediatric disease worldwide. We investigated the epidemiology of bacterial gastroenteritis in children aged <16 years in the Maltese Islands over a 5 year period.

Methods: Microbiological data on stool cultures taken from all children <16 years of age were collected retrospectively from public hospital databases from January 2013 - December 2017. There were 787 positive cultures (15.5%) out of 5081 submitted samples analysed. Annual incidence rates were calculated for all ages and specifically in <1, 1-5, 6-10 and 11-15 year olds. Trends in seasonality of positive stool cultures were also analysed. The 95% confidence intervals were derived by T-tests and distribution modelling, with logistic regression used to identify risk factors for gastroenteritis.

Results: Overall mean annual incidence rate of gastroenteritis was 220.3/100,000 children (95%CI: 198.4-244.7) with the highest incidence observed in the 1-5 year cohort (452.8/100,000; 95%CI: 433.6-545.9), followed by the <1 year old group (170.6/100,000; 95%CI: 125.8-238.3). Campylobacter was the most prevalent organism across all ages. Mean annual incidence of Campylobacter infection was significantly highest in the 1-5 year age group (286.2/100,000; 95%CI: 263.7-355.3) compared to all other age groups ($p=0.00240$). Similarly, the mean annual incidence of Salmonellosis was also highest in the same age group (145.0/100,000; 95%CI: 123.9-189.5), ($p=0.01207$).

Conclusions: The major burden of campylobacteriosis and salmonellosis is in 1-5 year olds. The mean annual incidence rates for Campylobacter and Salmonella followed comparable trends among the other age groups. Campylobacter species were most prevalent in spring whilst Salmonella was most prevalent in winter. Positivity rates for enteric pathogens varied geographically and were highest in Gozo and North of Malta. Understanding the epidemiology of bacterial gastroenteritis is crucial to guide prevention strategies.

**RESPIRATORY VIRUSES AETIOLOGY IN INFECTION ASSOCIATED SEIZURES -
CHARACTERISTICS OF CHILDREN WITH VIRAL SINGLE- AND CO-INFECTIONS**

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
MICROBIOLOGY**

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Background: Infection associated seizures affect up to five percent of children in Europe and North-America. Still, the pathogen aetiology especially in regard of the underlying infection are not fully investigated yet. A prospective study was performed in the University Children's Hospital Mannheim to determine the underlying pathogens, risk factors for complicated seizures and clinical course of infection associated seizures.

Methods: From January 2014 to April 2016, 184 children with febrile seizure were recruited for this prospective study. PCR for the following viruses was performed in the nasopharyngeal aspirates: Human herpes virus 6 (HHV-6), Adenovirus (AV), respiratory syncytial virus A and B (RSV), rhinovirus (RV), human coronavirus, Influenza A and B (FLU), parainfluenza virus 1, 2 and 3, enterovirus, human bocavirus and human metapneumovirus.

Results: The median age of all patients was 2.4 ± 1.6 with a male to female ratio of 1,4:1. 90% were febrile with a mean temperature of $39 \pm 1^\circ\text{C}$. The majority presented with a generalised convulsion (95%). In 97% of the cases, the children were admitted to hospital. In 75 (41%) single-infection and in 62 (34%) a co-infection was detected. Children with co-infections were with 2.2 ± 1.3 years significantly younger than children with a single-infection (2.2 ± 1.3 vs 2.6 ± 1.9 years) and more likely to have a positive family history for infection associated seizures (33% vs. 17%).

Conclusions: Infection associated seizures are dominantly linked to an infection with respiratory viruses in children below 3 years. Co-infections with respiratory viruses especially affect younger children and led in combination with a positive family history to infection associated seizures. HHV-6, FLU, AV, RV and RSV were the predominantly detected pathogens.

HEALTHCARE RESOURCE UTILIZATION AND COST ASSOCIATED WITH ANOGENITAL WARTS MANAGEMENT IN MOROCCO

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - MODELLING STUDIES

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Background: Anogenital warts are benign epithelial tumors caused by HPV infections. There are approximately 40 different genotypes of the Human Papilloma Virus (HPV) that can be found in the anogenital tract. Types 6 and 11 are the cause of more than 90% of anogenital warts (AW). The objective of this study is to describe the epidemiology and healthcare resource utilization (HCRU) of AW in Morocco, as well as the associated costs of treatment from the public healthcare perspective.

Methods: This is a descriptive study utilizing a Delphi panel to build consensus on epidemiology, HCRU and cost of AW in Morocco using a series of questionnaires to collect data. The process of using the Delphi technique results in the synthesis of the opinions of a panel of experts having gone through several exercises to facilitate greater consensus. The Delphi Panel in this study is composed of two rounds of individual and anonymous questions to each of 9 Moroccan-based experts in the field of AW, specifically dermatologists and gynecologists.

Results: Findings from this study suggest that 1.6% to 2.6% of women and 2.0% to 5.3% of men suffer from AW. Excision is the most prescribed therapy (75%) with a mean of 2 visits and 6 patients by month per physician who seek medical attention due to AW. Cost of AW management per case is estimated to range 2182-2470 MAD for women and 1610-1890 MAD for men.

Conclusions: HCRU and costs of AW in Morocco are significant. This study provides an estimation of AW data in Morocco that were not previously available.

EVALUATING THE POPULATION-LEVEL EFFECTIVENESS OF INCLUDING ROTAVIRUS VACCINATION IN THE RUSSIAN NATIONAL IMMUNIZATION PROGRAM

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - MODELLING STUDIES

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Background: Rotavirus gastroenteritis (RVGE) is a leading cause of infant hospitalization and death worldwide. In Russia, it has been reported to cause between 40 to 70% of acute gastroenteritis hospitalizations in children < 5 years-old. While a pentavalent rotavirus vaccine is available for use, universal vaccination is not yet recommended. We assessed the long-term epidemiologic impact of universal rotavirus vaccination compared to no vaccination in Russia.

Methods: We used an age-structured deterministic dynamic transmission model to assess epidemiological burden with and without vaccination, considering the possibility of reinfection and infections of different severity. The model was fitted to rotavirus monthly incidence data, considering underreporting (calculated: 66%). Model parameter values were obtained from published literature for rotavirus transmission and expert opinion. Vaccination coverage was assumed to be similar to that of measles-containing-vaccines. We calculated the population-level impact of universal rotavirus vaccination strategy in Russia over a short (5 years) and a long (10 years) time-horizon.

Results: RVGE universal vaccination was estimated to reduce RVGE cases and associated healthcare visits by 89% over 5 years. During this period, vaccination was estimated to avert over 392 thousand severe cases, and over 1 million mild cases. Over 10 years, the model was estimated to avert over 829 thousand severe cases and over 2 million mild cases. We found that cases decreased across all age-groups due to indirect vaccination effects.

Conclusions: Universal rotavirus vaccination program in Russia may avert a high number of RVGE cases and their associated health outcomes. Policy makers may want to consider universal rotavirus vaccination as a possible public health tool to diminish the burden of rotavirus in young children and the community in Russia.

ANTIBIOTIC RESISTANCE PATTERN OF PATHOGENS ISOLATED FROM PAEDIATRIC PATIENTS IN IBADAN: A CLINICAL AUDIT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - MULTIDRUG-RESISTANT BACTERIA AND THE SPREAD OF ANTIMICROBIAL RESISTANCE

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Background: Antimicrobial resistance is a significant threat to global public health. To combat its rise, in 2017, the WHO released its global antibiotic-resistant priority pathogens list, to guide development of new and effective antibiotics. This audit describes the epidemiology of multi-drug resistant organisms (MDRO), including the popular “ESKAPE” pathogens in paediatric patients at the University College Hospital, Ibadan, southwest Nigeria, to track resistance patterns and provide basis for rational antibiotic use.

Methods: A retrospective analysis of antibiotic susceptibility data obtained from the hospital's Clinical Microbiology and Parasitology unit for bacterial isolates cultured between January 2018 and June 2018 was carried out. Susceptibility testing was done using Kirby-Bauer disk diffusion method and interpreted according to the Clinical and Laboratory Standards Institute guidelines. Using a paediatric age limit of 15 years, data for the paediatric population was extracted and subsequently analysed.

Results: In this first-cycle audit, of 229 patient samples tested, 41 yielded viable cultures of which 13 were of multi-drug resistant (MDR) organisms (*resistance to one agent in at least three antibiotic groups*), giving an MDR prevalence of 5.67%. After expanding the criteria to include isolates with resistance to at least one antibiotic group, the drug resistance prevalence rose to 14% ($n=32$). The most frequently isolated MDR strain was *K. Pneumoniae* ($n=5$; 12.2%), followed by *P. aeruginosa* ($n=4$; 9.8%). **Figure1** shows resistance pattern of each isolate type to the different antibiotic groups tested.

Organisms	Penicillin		Cephalosporin		Aminoglycoside		Carbapenem		Vancomycin	
	Sensitive n (%)	Resistant n (%)	Sensitive n (%)	Resistant n (%)	Sensitive n (%)	Resistant n (%)	Sensitive n (%)	Resistant n (%)	Sensitive n (%)	Resistant n (%)
<i>E. coli</i>	0 (0)	4 (100)	2 (50)	2 (50)	3 (75)	1 (25)	4 (100)	0 (0)	Not tested	
<i>S. aureus</i>	8 (80)	2 (20)	7 (70)	3 (30)	9 (90)	1 (10)	Not tested		10 (100)	0 (0)
<i>K. pneumoniae</i>	4 (40)	6 (60)	2 (20)	8 (80)	5 (50)	5 (50)	8 (80)	2 (20)	Not tested	
<i>A. baumannii</i>	1 (100)	0 (0)	1 (100)	0 (0)	Not tested		1 (100)	0 (0)	1 (100)	0 (0)
<i>P. aeruginosa</i>	9 (90)	1 (10)	3 (30)	7 (70)	4 (40)	6 (60)	9 (90)	1 (10)	10 (100)	0 (0)
<i>P. mirabilis</i>	1 (100)	0 (0)	0 (0)	1 (100)	0 (0)	1 (100)	1 (100)	0 (0)	Not tested	
<i>P. vulgaris</i>	1 (50)	1 (50)	1 (50)	1 (50)	2 (100)	0 (0)	2 (100)	0 (0)	Not tested	
<i>K. oxytoca</i>	1 (100)	0 (0)	1 (100)	0 (0)	1 (100)	0 (0)	0 (0)	1 (100)	Not tested	
<i>Enterococcus sp.</i>	0 (0)	1 (100)	Not tested		1 (100)	0 (0)	Not tested		1 (100)	0 (0)
<i>H. influenza</i>	1 (100)	0 (0)	1 (100)	0 (0)	1 (100)	0 (0)	1 (100)	0 (0)	Not tested	

Figure 1: Antibiotic resistance pattern of isolated organisms to different antibiotic groups

Conclusions: From the findings, antimicrobial resistance is a significant challenge in the paediatric population of Ibadan, with *K. Pneumoniae* and *P. aeruginosa* being the most common isolated MDR pathogens. While the efficacy of the "big gun" antibiotics such as carbapenems and vancomycin remain conserved, it is important that this is maintained by adhering to prudent antibiotic stewardship and infection control guidelines.

ANTIMICROBIAL RESISTANCE PATTERNS OF SURGICAL WOUND INFECTIONS IN PAEDIATRIC PATIENTS IN IBADAN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - MULTIDRUG-RESISTANT BACTERIA AND THE SPREAD OF ANTIMICROBIAL RESISTANCE

Oluwafolajimi Adesanya

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Background: Antimicrobial resistance is an emerging threat to global public health. Infection of surgical wounds is a major risk factor for delayed post-operative wound healing. In the case of drug-resistant infections, most of which are hospital-acquired, wound healing is further delayed, resulting in prolonged hospitalisation and increased healthcare costs. It is therefore important that drug resistance patterns of wound infections are monitored closely by surgical departments. Here I describe one such surveillance study conducted at the Paediatric Cardiothoracic Surgery unit of the University College Hospital (UCH), Ibadan.

Methods: A retrospective study of drug resistance data was conducted for children aged 0-16 years, who developed surgical wound infections post-operatively, in the Paediatric Cardiothoracic Surgery unit of the UCH, over 6 months in 2018 (January 1-June 30). Specimen used include wound swab and biopsy, susceptibility testing was done using Kirby-Bauer disk diffusion and interpreted using the Clinical and Laboratory Standards Institute guidelines.

Results: A total of 20 patients were developed surgical site infections during the study period, consisting of n=14; 70% males and n=6; 30% females. The mean age of the subjects was 4.2 years (± 4.84). The most commonly isolated organism was *K. Pneumoniae* (n=4; 20%) and this demonstrated resistance to most commonly available antibiotics including: ceftazidime (100%), ampicillin (100%), gentamicin (75%) and ciprofloxacin (75%). The most common antibiotic to which the wound infections were sensitive were colistin (100%) and meropenem (75%).

Conclusions: The prolonged hospitalisation which characterises the post-operative recovery process for many paediatric cardiothoracic surgeries places children at higher risk of developing nosocomial infections which are usually multi-drug resistant. It is therefore important that drug resistance patterns are monitored closely, while effective infection prevention and control measures put in place in surgical departments.

DETECTION OF STAPHYLOCOCCUS AUREUS AND STAPHYLOCOCCUS EPIDERMIDIS IN THE NOSE AND PHARYNX IN A GROUP OF CHILDREN AND ADOLESCENTS IN MEXICO CITY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEAR-PATIENT, RAPID TESTING

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Background: *Staphylococcus aureus* is a bacterium that lives in symbiosis with humans, it is an potentially lethal pathogen of great clinical importance due to different virulence factors and resistance. In recent years *S. epidermidis* have acquired great relevance because they have become important opportunistic pathogens, mainly in infections associated with the use of medical implants.

Methods: 477 pharyngeal and nasal exudates were performed on pediatric patients under 16 years of age between 2013 and 2019, the swabs were stored in Tryptic Soy Broth, and they were inoculated on Mannitol Salt Agar and incubated for 24 hours at 37 °C. The presence of *S. aureus* was determined by fermentation of mannitol and positivity to the coagulase test or by sequencing of the 16S rRNA gene, while the presence of *S. epidermidis* was determined by the non-fermentation of mannitol.

Results: A total of 240 women (50.42%) and 237 men (49.58%) (N = 476) with an average age of 7.39 years (+/- 2.76) were studied, in which 207 (43.48%) strains of *S. aureus* were isolated in the nose and 225 (47.26%) in the pharynx, while 141 (29.62%) strains of *S. epidermidis* were found in the nose and only 70 (14.7%) in pharynx, 35 strains of other staphylococci (*Staphylococcus* spp) (7.35%) were isolated in the nose and 46 (9.66%) in the pharynx and no staphylococcus were found in the nose and pharynx.

Conclusions: A greater number of *S. aureus* carriers were found in the pharynx than in the nose, which coincides with research that studies the nose and pharynx in parallel and more *S. aureus* than *S. epidermidis* were also isolated in both sites and in a higher percentage to other staphylococci.

PYROGENIC EXOTOXIN PROFILE AND BIOFILM FORMATION IN STREPTOCOCCUS PYOGENES ISOLATES FROM PARAGUAYAN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEAR-PATIENT, RAPID TESTING

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Background: The clinical manifestations attributable to *S. pyogenes* are among the most diverse of any human pathogen. Its capacity to cause a wide variety of pathologies is related to the production of multiple virulence factors. We present one of the first results regarding virulence factors of *S. pyogenes* strains isolated from children in one reference hospital of Paraguay from 2016 to 2019.

Methods: 90 *S. pyogenes* isolates from different infection sources, both invasive and non-invasive, were included. The pyrogenic exotoxins *speA*, *speB*, and *speC* genes were detected by PCR. Biofilm formation was determined in 25 representative isolates by a quantitative method in microtiter plates. Clinical data were obtained from the microbiology laboratory system.

Results: SpeB was the most frequent exotoxin detected (80%), followed by SpeC and SpeA present in 52% and 34% of isolates, respectively. 98% of the isolates carried at least one exotoxin gene. The exotoxins genes' presence was more frequent on invasive isolates compared with non-invasive isolates, but with no statistically significant difference. As of biofilm formation, 92% (23) of isolates were classified as moderate adherent strains and 8% (2) as weak adherent strains.

Conclusions: The high frequency of exotoxin carriage and the capacity to form biofilm in the *S. pyogenes* isolates studied point to the possibility of the circulation of hypervirulent clones in the community. Thus, providing clinical and epidemiological information currently scarce in our country.

RISK FACTORS ANALYSIS FOR SUBOPTIMAL VANCOMYCIN CONCENTRATION USING CONTINUOUS INFUSION IN NICU: AN OBSERVATIONAL STUDY.

E-POSTER VIEWING

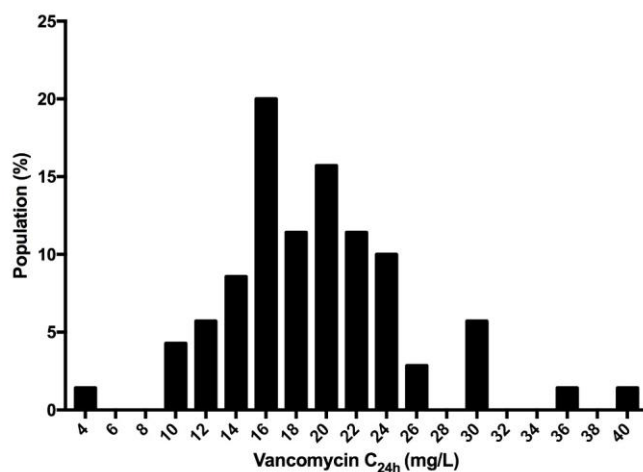
TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

Vladimir Cousin, Quiterie Laudouar, Nolwenn Le Sache, Valérie Furlan, Mostafa Mokhtari, Philippe Durand, Pierre Tissières
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Background: Gram-positive bacteria remains a major cause of neonatal sepsis and vancomycin is still widely used in these setting. In published series, proportion of newborn reaching recommended concentration is variable. We aimed to describe our experience with continuous vancomycin infusion and to identify factors associated with insufficient concentration at 24 hours of treatment.

Methods: Prospective and retrospective observational monocentric study of patients admitted to a general NICU and requiring a vancomycin treatment. We used a continuous infusion protocol, with a loading and a maintenance doses. Vancomycin target serum concentration after 24 hours (C_{24h}) was >20 mg/L. Demographic, infections and organ failure variables were analysed as predictors of vancomycin concentration.

Results: 70 treatments in 52 patients included. At treatment, median age was 12,5 days (IQR 7-23), post menstrual age 30 weeks (IQR 28-35) and median weight 1112 g (IQR 805-1722). Germs isolated were mainly Gram positive bacteria. Median vancomycin C_{24h} was 18 mg/L (Fig 1). 41 (58%) treatments had a $C_{24h} < 20$ mg/L. Risks associated with C_{24h} were creatinine level (OR 1,03 (95% CI 1,002-1,06)), weight gain (OR 0,21 (95% CI 0,05-0,79)) and biological inflammation (OR 0,22 (0,05-0,94)). Vancomycin was well tolerated without increase in creatinine after treatment ($p=0,36$). Fig 1: Vancomycin concentration



Conclusions: Despite a protocol adapted to patients' age and weight, we encountered inadequate concentration in 60% of patients. This may be due to the changes in vancomycin pharmacokinetic parameters such as volume of distribution and clearance within the neonatal population. These predictors together with concentration monitoring may help clinicians to manage vancomycin treatment in critically ill premature child.

NEWBORNS AT RISK FOR EARLY ONSET SEPSIS - A LEVEL II HOSPITAL EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

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Background: Newborns at risk for early-onset sepsis (EOS) require particular attention. According to most international guidelines, well-appearing newborns with only one risk factor for EOS may be safely managed with clinical observation for 48h, without laboratory screening. Our current practice is to undergo laboratory evaluation in all newborns at risk for EOS. With this study, we intend to characterize newborns at risk for EOS and review the screening protocol.

Methods: A retrospective study was conducted on neonates born in a level 2 hospital in the north of Portugal during the year of 2020. Prenatal, perinatal, and postnatal parameters were collected and analyzed.

Results: In 2020, 358 (of 1565) newborns presented risk factors for EOS: 66%one risk factor, 29%two or more, and 5%had suspected/confirmed maternal infection. All were evaluated with complete blood count and C-reactive protein(CRP). Thirty-four (9%)had CRP >10mg/L in the first 24h and of those, 9(26%) showed clinical signs of infection. Of all newborns, 8%presented signs of illness, collected blood culture and started antibiotics. The majority (74%)had normal CRP values and WBC. Initial blood cultures were all negative. Two newborns(both with>1 risk factor)repeated screening due to clinical deterioration, and sepsis was confirmed.

Conclusions: The incidence of EOS in asymptomatic newborns with risk factors is very low. Laboratory studies imply newborn pain and unnecessary prolonged hospital stay, adding limited benefit to clinical observation. Emphasizing surveillance in the first 48hours and reducing screenings only to newborns with more than 1 risk factor or suspected maternal infection, could significantly and safely reduce negative impact for these families and hospital costs.

EVALUATION OF THE KAISER PERMANENTE NEONATAL EARLY- ONSET SEPSIS RISK CALCULATOR MANAGEMENT RECOMMENDATIONS IN NEWBORNS WHO DEVELOPED EARLY-ONSET SEPSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - NEONATAL SEPSIS

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Background: The Kaiser-Permanente (KP) early onset sepsis (EOS) risk calculator calculates the EOS risk for newborns 34 weeks of gestation and above. We retrospectively evaluated the KP EOS risk calculator management recommendations versus Center for Disease Control and Prevention (CDC) guidelines in the same newborn group who developed EOS.

Methods: An observational retrospective cohort study including 50 newborns with proven EOS (positive blood culture within 72 hours of birth with an organism known to cause EOS) born at Kaplan Medical Center (KMC) between 2001-2018. We retrospectively calculated the EOS risk at four hours of birth and evaluated whether the calculator recommended antibiotic treatment versus the CDC guidelines.

Results: EOS was diagnosed in 50 of 109,877 newborns 34 weeks and above, an incidence of 0.46 per 1,000. Eighteen were symptomatic, 5 had equivocal clinical status, and 27 were asymptomatic by four hours of birth. Eleven newborns were born to mothers with chorioamnionitis. The KP EOS risk calculator recommended antibiotic to 19 newborns (38%), 18 were symptomatic. The calculator recommended against antibiotic treatment to newborns with equivocal clinical status and to six asymptomatic/equivocal clinical status newborns born to mothers with chorioamnionitis. The CDC guidelines recommended antibiotic treatment to 27 newborns (54%).

Conclusions: The CDC guidelines were superior in identifying equivocal and asymptomatic EOS cases by four hours of birth. Conversely, former studies showed that the KP calculator reduces antibiotic treatment and blood sampling burden compared to the CDC guidelines. Observation is important in diagnosing EOS and when using the KP calculator, enhanced observation is recommended in cases currently treated according to CDC guidelines.

EPIDEMIOLOGY PATTERN OF EARLY ONSET SEPSIS IN A PUBLIC MATERNITY IN BSAS, ARGENTINA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

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Background: Early-onset sepsis (EOS) defined as a positive blood or cerebrospinal fluid culture within the first 72 hours. Clinical Sepsis (CS) defined as those symptomatic cases without microbiological rescue, with five or more days of antibiotics. In our hospital, a study performed between January 1985 and December 1997, found that 66 episodes of early neonatal bacteremia were due to *Streptococcus agalactiae* (0.8‰), among 83,859 live newborns.

Methods: Determine the EOS rate within a five-years period between January 1st, 2013 until December 31st, 2017 and the microbiological distribution, comparing the incidence of EOS due to *S. agalactiae* since the introduction of the intrapartum antibiotic prophylaxis policy.

Results: During the study period, 28,965 alive newborn children we found 38 cases of EOS (global rate: 1.31‰), 25 (0.86‰) with Bacterial Sepsis (BS) and 13 (0.45‰) with CS. Annual incidence of BS per 1000 live births was: 2013: n=3 (0.48‰); 2014: n=4 (0.68‰); 2015: n=10 (1.79‰); 2016: n=5 (0.93‰); 2017: n=3 (0.52‰). Annual incidence of each microorganism was (‰): 2013: (0.16) *Streptococcus agalactiae*, *Escherichia coli*, *Listeria monocytogenes*; 2014: (0.17) *L. monocytogenes*, *Enterococcus faecalis*, *Streptococcus viridans*, *Stenotrophomonas maltophilia*; 2015: (0.18) Coagulase-negative staphylococci (CoNS), *S. agalactiae*, *Pseudomonas aeruginosa*, *E. faecalis* and (0.35): *E. coli*, *Streptococcus pneumoniae*, *Corynebacterium* spp; 2016: (0.19) *E. coli*, *S. agalactiae*, *L. monocytogenes*, CoNS, *Haemophilus influenzae*; 2017: (0.17) *E. coli*, *L. monocytogenes*, *S. pneumoniae*.

Conclusions: After the introduction of the intrapartum antibiotic prophylaxis policy, the incidence of EOS associated with *S. agalactiae* was lower than the historical rate, with a risk decrease of 7,60, OR 7,60 (2,39-24,19) $p < 0,001$. *E. coli* continues to be relevant and the isolation of *S. pneumoniae* and *L. monocytogenes* are notorious, this last one, probably being associated with the eating habits of our population.

LISTERIA MONOCYTOGENES INFECTION IN NEONATES: A 22-YEAR STUDY.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

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Background: *Listeria monocytogenes* (LM) is a facultatively anaerobic, nonspore-forming, gram-positive rod that multiplies intracellularly. Neonatal listeriosis is rare and causes serious neonatal infections and perinatal mortality.

Methods: This retrospective study investigated the clinical characteristics and outcomes of neonates admitted in a neonatal intensive care unit (NICU) from January 1999 to January 2021 with culture-proven *Listeria monocytogenes*.

Results: The study identified 3 neonates with listeriosis among 11,400 hospitalized neonates. The majority of neonates were born prematurely by spontaneous vaginal delivery (2/3,66.7%), through meconium-stained liquor (3/3,100%). Respiratory distress(2/3,66.7%), fever(1/3,33.3%), jaundice(1/3,33.3%), leukocytosis or leukopenia (3/3,100%), acidosis (2/3,66.7%) and elevated C-reactive protein (3/3,100%) were the predominant findings. In all cases, LM was isolated from blood cultures and there was no associated central nervous system infection. All neonates received antibiotic therapy with ampicillin and gentamicin. One neonate with bacteremia developed fulminant septic shock and died soon after birth. LM was an infrequent cause of early-onset sepsis (3/82,3.6%).

Conclusions: Although rare, *Listeria monocytogenes* remains a serious cause of early-onset septicaemia in neonates with high fatality rates associated with septic shock. Diagnosis requires a high level of suspicion as clinical findings are not specific and may not differ from other bacterial infections in neonates.

PREVALENCE AND SEROTYPE DISTRIBUTION OF GROUP B STREPTOCOCCUS AMONG PREGNANT WOMEN IN LEÓN, NICARAGUA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

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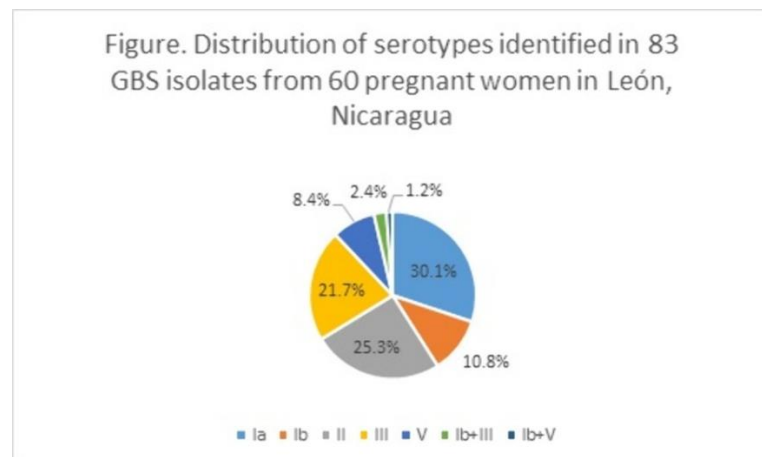
²National Autonomous University of Nicaragua, Leon, Microbiology And Parsitology, Leon, Nicaragua,

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Background: Rectovaginal group B Streptococcus (GBS) colonization in pregnant women is a risk factor for infant GBS disease, the primary cause of neonatal sepsis and meningitis globally. Current GBS prevention efforts include screening at 35-37 weeks gestation and intrapartum antibiotic prophylaxis. To inform development of novel maternal GBS vaccines, we assessed GBS colonization and serotype distribution in León, Nicaragua.

Methods: We collected vaginal and rectal samples from pregnant women at public health facilities. Samples were stored in modified Stuart's transport medium, and cultured within 24 hours of collection using the following methods: 1) direct plating onto chromogenic agar; 2) direct plating onto Columbia nalidixic acid (CNA) agar; and 3) incubation of samples in LIM broth followed by plating onto chromogenic agar or 4) CNA. Suspected GBS colonies were confirmed by latex agglutination, and GBS isolates underwent RT-qPCR to identify the serotype.

Results: Of 314 women, 60 (19.1%) were colonized in the rectum and/or vagina. Of 83 isolates randomly selected from GBS colonies for serotyping, we identified types Ia (30.1%), Ib (10.8%), II (25.3%), III (21.7%) and V (8.4%), and 3 instances of co-colonization with multiple serotypes: Ib + III (2.4%) and Ib + V (1.2%). Three-quarters of isolates were resistant to penicillin, the first-line prophylactic, 42.5% to vancomycin, 41.3% to erythromycin, 31.3% to clindamycin and 13.8% to ceftriaxone.



Conclusions: GBS serotype distribution in León is consistent with regional and global estimates. Widespread resistance to penicillin is worrisome and confirms the need for a GBS vaccine. All GBS serotypes detected in our study are included in multivalent GBS vaccine candidates, which could serve as a preferred alternative to penicillin-based intrapartum prophylaxis.

NEONATAL BACTEREMIA AND ANTIBIOTIC RESISTANCE AT THE ANGRE UNIVERSITY HOSPITAL CENTER (ABIDJAN, CÔTE D'IVOIRE)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

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Background: Neonatal infections represent a major public health problem due to their high frequency and morbidity and mortality. They therefore lead to the use of increasingly invasive therapeutics and the inappropriate use of antibiotics that encourage the emergence of resistant bacteria. Our objective was to describe the antibiotic resistance profiles of bacteria responsible for neonatal sepsis.

Methods: This is a retrospective study with descriptive and analytical aims, which took place from January to December 2020 at the Medical Biology Department of CHU Angre. Blood cultures were performed on newborns presenting clinical and biological signs suggestive of sepsis. Identification was performed using standard bacteriological methods. Antibiotic sensitivity was studied using an automated method (Vitek 2®).

Results: From 168 blood cultures performed, 45 were positive (26.79%). Enterobacteriaceae predominated with 62.22%. The main bacteria were *Klebsiella pneumoniae* (40%), *Staphylococcus aureus* (29%), *Escherichia coli* (11%), and *Enterobacter cloacae* (11%). *Streptococcus agalactiae* were isolated in two cases (4%). Among Enterobacteriaceae strains, 75% produced extended-spectrum beta-lactamase (ESBL). All strains of *Staphylococcus aureus* were resistant to methicillin (MRSA). For ESBLs, cross-resistance were respectively 90.48% for gentamycin, 69.23% for ciprofloxacin, and 84.61% for cotrimoxazole. MRSA, cross-resistance was 53.85% for gentamycin, 38.46% for kanamycin, 75% for ciprofloxacin, 84.61% for cotrimoxazole and 25% for erythromycin.

Conclusions: Knowledge of the phenotypic profile of bacteria responsible for neonatal infection will contribute to optimal management

MICROBIOLOGIC EPIDEMIOLOGY OF EARLY-ONSET SEPSIS IN NEONATES BORN AT ≥ 35 0/7 WEEKS' GESTATION IN KOREA DURING 2009-2018

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

Yoonsun Yoon¹, Hyejin So², Joon Kee Lee³, Dongsub Kim⁴, Kyo Jin Jo⁵, Hyun Ho Kim⁶, Yu-Jin Kim³, Se In Sung¹, Jina Lee², Dae Sun Jo⁶, Yun-Kyung Kim⁷, Su Eun Park⁵, Yae-Jean Kim¹

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Background: Sepsis within the first three days of life, remains a leading cause of mortality and morbidity. However, few studies have addressed their epidemiology in late preterm and term neonates, especially in Asia. The aim of this study was to estimate the epidemiology of early-onset sepsis (EOS) in neonates born at ≥ 35 0/7 weeks' gestation (GA) in South Korea.

Methods: A retrospective study was conducted in neonates with proven EOS born at ≥ 35 0/7 weeks' gestation from 2009 to 2018 in seven university hospitals in Korea. EOS was defined as the identification of bacteria from blood culture within 72 hours after birth.

Results: During the study period, a total of 51 neonates (0.32/1,000 births) with EOS were identified in seven hospitals. The median duration from birth to the blood culture collection that gave positive results was 17 hours (range, 0.2 to 63.9 hours). Among 51 neonates, 32 (63%) patients were born by vaginal delivery. The most common pathogen was Group B streptococcus (GBS) (n=21, 41.2%), followed by Coagulase-negative staphylococci (CoNS, n=7, 13.7%), and *S. aureus* (n=5, 9.8%). Among 51 neonates, 34 (73.9%) neonates received appropriate antibiotics. The overall 14-day mortality rate was 11.8%.

Conclusions: This is the first multicenter study on epidemiology with proven EOS born at ≥ 35 0/7 GA in South Korea.

OPTIMISING EARLY ONSET NEONATAL INFECTIONS' MANAGEMENT : PERFORMANCES OF A NEW ALGORITHM BASED ON RISK CLASSIFICATION IN A FRENCH COHORT.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEONATAL SEPSIS

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Background: Incidence of early onset neonatal infections (EONI) has consistently decreased in the past decade and antibiotics resistances have led to reconsider antibiotic administration in newborns. The French Health Authority(HAS) published in 2017 a screening strategy based on risk factors for infection and a clinical monitoring of newborns according to their risk for EONI. Our objective was to assess the diagnostic performances of this algorithm and its impact on antibiotic prescription and biological analysis compared to the previous guidelines.

Methods: All infants born after 36 weeks gestational age in one of the 15 maternities participating to the DIACORD trial were included. Newborns were classified in three groups of risk for EONI (A, B and C) according to maternal and peri partum criteria. Group B or C were at highest risk and had a medical examination at 6 and 12 hours of life or before in case of symptoms suggestive of EONI.

Results: Among the DIACORD trial, 5 434 patients had one maternal risk factor and 2 236 had a perinatal risk factor. There were 0.65% (n= 67) probable or confirmed EONI. The algorithm sensibility and specificity were 0.91 (95%CI [0.71 to 0.99]) and 0.70 (95%CI [0.69 to 0.71]) respectively. The previous algorithm had a sensibility of 0.95 (95%CI [0.74 to 0.99]) and a specificity of 0.59, (95%CI [0.58 to 0.60]). There would have been significantly less biological analysis (4.4 versus 34.2%) and antibiotic prescription (from 2.8% to 4.4%) with the HAS recommendations.

Conclusions: The new algorithm optimises management of newborns suspect of EONI with good diagnostic performances. Furthermore, it would reduce antibiotic exposition in the neonatal population.

TWO-YEARS EXPERIENCE OF PAEDIATRIC OPAT IN A TERTIARY CARE CENTRE IN BARCELONA, CATALONIA (SPAIN). THE EFFECT OF THE COVID-19 PANDEMIC.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NEW DEVELOPMENTS IN ANTIBIOTIC TREATMENT

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Background: Outpatient Parenteral Antibiotic Therapy (OPAT) is an appropriate alternative to inpatient care in carefully selected patients with several infectious diseases. Despite shorter experience, paediatric OPAT (p-OPAT) is known to have many relevant advantages, like allowing school attendance and reducing the risk of hospital acquired infections. The p-OPAT program in our hospital is integrated within the local Antimicrobial Stewardship Program (PROA-NEN).

Methods: Data from all consecutive children (<20 years of age and treatment by paediatric medical or surgical departments) receiving OPAT therapy at our centre from January 2019 to December 2020 were collected. Data regarding drug selection, therapeutic indication, treatment duration and modality (monotherapy vs dual therapy), number of saved beds, final clinical outcome, occurrence of adverse events and reason for discontinuation were analysed.

Results: Fifty-seven children (59.6% male) were included (median age 10.7y; IQR=5.5-16) with a total of 106 episodes (77 in 2019) and median duration of 18 days (IQR=9-17.3). Most commonly treated infections were respiratory exacerbations in cystic fibrosis (n=37;36/1), cholangitis (n=29;16/13) and bone infections (n=10;6/4). Most commonly used antimicrobials were piperacillin-tazobactam (n=23;15.6%), colistin (n=19;12.9%) and ceftazidime (n=14;9.5%); mainly in monotherapy (n=71;67.0%). In total, 1913 bed-days were saved (2.62 beds/day). Positive clinical outcome occurred in 78.9% episodes; 21,1% resulted in premature interruption of OPAT due to unfavorable clinical outcomes and catheter-related complications.

Conclusions: A p-OPAT program in a paediatric reference centre has allowed significant hospital bed-saving with appropriate clinical outcomes and few adverse events in a wide variety of infections. The decrease in yearly p-OPAT episodes from 2019 to 2020 is mostly due to less episodes of exacerbations in children with cystic fibrosis, probably caused at least partially by the indirect benefit of non-pharmacological interventions during the COVID-19 pandemic.

DIFFERENCES WITH RESPECT TO GENDER IN CHILDREN WITH STAPHYLOCOCCI IN THE NOSE AND PHARYNX

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL DIAGNOSTICS

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Background: *Staphylococcus aureus* is the most common pathogen causing skin and soft tissue infections (SSTI), as well as some invasive infections such as osteomyelitis and septic arthritis in children. *S. aureus* is also one of the most common organisms isolated from children with healthcare-associated illnesses and infections, regardless of whether they started in the community or were acquired in the hospital.

Methods: 360 pharyngeal and nasal swabs were performed on 360 pediatric patients aged 6 to 11 years between 2013 and 2019, the swabs were stored in tryptic soy broth and inoculated on mannitol salt agar. The presence of *S. aureus* was determined by mannitol fermentation and positivity to the coagulase test or by sequencing of the 16S rRNA gene, while the presence of *S. epidermidis* was determined by no mannitol fermentation.

Results: Of the total sample, 181 individuals were women (50.27%) and 179 were men (47.72%). 52% of the women were carriers of *S. aureus* in the pharynx and 43.75% in the nose, while in the men, 60.46% ($p < 0.05$) were colonized with *S. aureus* in the pharynx and 57.3% in the nose. Regarding the percentage of *S. epidermidis*, in women 15.46% and 39.58% were isolated in pharynx and nose respectively and in men 15.11% and 29.21%.

Conclusions: A higher proportion of *S. aureus* was found in the male gender than the female, and in the pharynx than in the nose a greater colonization was found, while for *S. epidermidis* a higher percentage was isolated in the nose than in the pharynx in both women and men. The proportion of carriers of *S. aureus* is very similar when grouped by age, for all ages, except for 9 and 10 years in the nose.

UTILITY OF GASTROINTESTINAL MULTIPLEX PCR FOR THE DETECTION OF INTESTINAL PATHOGENS IN PEDIATRIC PATIENTS. 5 YEAR EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL DIAGNOSTICS

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Background: Multiplex-PCR for intestinal pathogens is a technique only recently available for common clinical practice. Until now, it has been used for selected cases in reference centers, and it is yet to be established its utility and indications in ordinary practice.

Methods: We review our experience in the determination of multiplex-PCR(Biofire FilmArray®) in patients' stools(0-18 years old) for five years(2015-2020), performed in selected cases in outpatients of Digestive or Infectology áreas, or hospitalized children, usually after previous performance of other common diagnostical techniques (microscopy or antigenemic for parasites, stool culture or antigenemic for virus).

Results: Multiplex-PCR was used in 140 children, finding a positive result in 92 patients(65,7%):67,4% bacteria, 23,1% virus and 9,4% parasites. Among bacteria, the main pathogen isolated was E.coli (59,1%): enteropathogenic(26,8%) enteroaggregative(21,5%), Shiga-toxin-producer(6,4%), enteroinvasive(3,2%) and enterotoxigenic(1%). Within the Shiga-toxin producers, two cases of 0157:H7 serotype. Other were C.difficile(15%), C.jejuni(12,9%) and Salmonella(8,6%). About viruses: norovirus(37,5%), sapovirus and astrovirus(18,7% each) Within the group of parasites, G.intestinalis(69,2%) and Cryptosporidium(30,8%) were detected. Coinfections were detected in 22,9% of all patients(n=32), representing a third(34,8%) of patients with a positive result. Of these, 3-4 pathogens were found in 13 patients.

Conclusions: In our experience, the gastrointestinal multiplex-PCR, in selected cases, shows a high diagnostical yield. It allows quick detection of multiple pathogens, including viral pathogens that cannot be detected with other techniques. It also allows the quick identification of pathogenic bacterial strains, which facilitates to establish or not antibiotic treatment, as well as to detect and control outbreaks. More studies would be necessary to assess the yield of this test in a systematic use, and not just in selected cases.

STUDY OF PNEUMOCYSTIS PNEUMONIA IN CHILDREN WITH HEMATOLOGICAL MALIGNANCIES IN A CHILDRENS HOSPITAL IN NORTH INDIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL DIAGNOSTICS

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Background: Pneumocystis jirovecii pneumonia (PCP) is a serious opportunistic infection in children and adolescents with cancer. Important risk factors in HIV negative children include hematologic malignancies, hematopoietic stem cell transplantation, prolonged corticosteroid therapy, neutropenia and lymphopenia. Hence our aim was to study the incidence of PCP in children undergoing treatment for hematological malignancies with respiratory symptoms with suspected PCP in a tertiary care pediatric institute

Methods: 55 children with hematological malignancies presenting with respiratory symptoms, from January 2019 to September 2019, were included in the study and their samples were tested by direct immunofluorescence antibody staining for PCP using the Merifluor kit and later put up for RTPCR.

Results: Out of the 55 samples sent 12 tested positive for PCP by direct immunofluorescence antibody test. Maximum positivity of PCP was seen in the age group of 2-4 years. Majority (41.66%) of children were in the maintenance cycle of chemotherapy. 9 (75%) patients had hypoxia and 10 (83.33%) had cytopenia and positive chest x-ray findings. All of them received treatment with trimethoprim/sulphamethoxazole and 2 received second line therapy of clindamycin and primaquine due to treatment failure. Associated bacterial/fungal infections were seen in 3 children. RTPCR results will be discussed

Conclusions: PCP is a potentially fatal opportunistic infection in children with hematological malignancies. The high incidence of PCP infection found in the present study indicates that it is important to identify high-risk patient populations and highlights the role of prophylaxis and timely intervention in improving outcome. DFA staining could be a useful diagnostic tool for early diagnosis of PCP which would result in timely initiation of therapy in these children

THE UTILITY OF GROUP A STREPTOCOCCUS MOLECULAR TESTING COMPARED WITH THROAT CULTURE FOR DIAGNOSIS OF GROUP A STREPTOCOCCAL PHARYNGITIS IN A HIGH-INCIDENCE RHEUMATIC FEVER POPULATION.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL DIAGNOSTICS

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Background: Group A Streptococcus (GAS) is associated with significant morbidity and mortality in New Zealand and is responsible for acute Rheumatic Fever (ARF). Although early treatment of GAS pharyngitis reduces the risk of post-infectious complications, the current gold standard for diagnosis, throat culture requires 48 hours of incubation. In settings with a high-burden of GAS disease, a rapid GAS pharyngitis diagnostic test with a strong negative predictive value is needed to enable prompt and accurate treatment decisions.

Methods: This prospective study compares the Xpert® Xpress Strep A molecular test (Cepheid) to throat culture for the diagnosis of GAS pharyngitis. Throat swabs were collected from the emergency department and wards of Middlemore Hospital, New Zealand. The BioGX Group A Streptococcus- OSR for BD MAX™, was used to clarify discordant results and contribute to the composite gold-standard, throat culture or both molecular methods positive. Additional demographic, clinical and laboratory data was collected for analysis.

Results: 205/214 swabs were suitable for analysis. Compared to culture, the sensitivity, specificity, positive and negative predictive values of the Xpert® Xpress Strep A molecular test were 100%, 90.4%, 62.2% and 100%, respectively. Compared to the composite gold-standard, the sensitivity, specificity, PPV and NPV and were 100%, 95.8%, 84.4% and 100% respectively. 17 samples were Xpert® Xpress positive but culture-negative. 6/17 represent true positives with evidence of recent GAS.

Conclusions: The Xpert® Xpress Strep A molecular test is highly sensitive with a strong negative predictive value and can be safely introduced as a first line test for throat swabs, replacing culture in our setting. Its performance and rapid turnaround time results in a net antimicrobial stewardship benefit for our population.

IMPACT OF A MULTIPLEX GASTROINTESTINAL POLYMERASE CHAIN REACTION PANEL ON THE CLINICAL MANAGEMENT OF CHILDREN WITH GASTROENTERITIS: A MONOCENTRIC PROSPECTIVE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL DIAGNOSTICS

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Background: FilmArray Multiplex Gastrointestinal PCR (GI-PCR) allows fast and simultaneous detection of 22 enteric pathogens. The objective was to assess the impact of the results of the GI-PCR on the clinical management of children with gastroenteritis in a tertiary care center.

Methods: All children admitted in the emergency department or hospitalized for less than 3 days and eligible for stool culture from May to October 2018 were prospectively included in this monocentric study. Indications for stool culture followed European guidelines. A GI-PCR (BioFire FilmArray) was performed on each stool sample. Data on the children's health care management before and after the GI-PCR results were collected.

Results: 172 children were included (median age: 1 year and 10 months). GI-PCR's were positive for 120 patients (70%). The main pathogens were enteroaggregative *Escherichia coli* (n=39; 23%), enteropathogenic *E. coli* (n=34; 20%), *Shigella*/enteroinvasive *E. coli* (n=27; 16%) and *Campylobacter* (n=21; 12%). Considering the GI-PCR results and before stool culture results, the medical management was revised for 40 patients (23%): 28 initiations, 2 changes and 1 discontinuation of antibiotics, 1 hospitalization, 2 specific isolations (*Clostridium difficile*), 4 additional test prescriptions and 2 test cancellations. Azithromycin was the most prescribed antibiotic (n=22).

Conclusions: In this study, excluding the winter season, the GI-PCR's results impacted the medical management of gastroenteritis for almost ¼ of included children, and especially the prescription of appropriate antibiotic treatment. Further studies are needed to better assess the cost-effectiveness of this assay.

NEW ALGORITHM OF ANTIBIOTIC SELECTION REDUCES PSEUDOMONAS PERSISTENCE IN CHILDREN WITH CYSTIC FIBROSIS.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL DIAGNOSTICS

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Background: Here we present findings from 3-y long microbiological monitoring of *Pseudomonas aeruginosa* persistence in children with CF, that underwent antimicrobial treatment with antibiotics selected using AtbFinder. *Pseudomonas aeruginosa* is a common pathogen, causing chronic and life-threatening infections in airways of patients with cystic fibrosis (CF) from early childhood. AtbFinder – culture-based test system using a novel principle of antibiotic selection, named “populational response”, and highly effective in selecting antibiotics effective even against MDR bacteria in biofilms, delivering results in 4 hours.

Methods: 5 CF patients aged 12 to 15 years, with confirmed *P.aeruginosa* chronic infection, receiving prophylactic antibiotic therapy with antibiotics selected based on AtbFinder results were monitored over 3 years. Sputum was obtained during yearly check-up hospitalisations and the presence of *P.aeruginosa* was assessed with (i)AtbFinder or (ii)standard microbiological media.

Results: We analyzed the effect of antibiotic therapy selected with the AtbFinder on eradication of *P.aeruginosa*. After the switch to AtbFinder, eradication of *P.aeruginosa* was noted in 2 (40%) out of 5 subjects who had *P.aeruginosa* infection respectively ($p < 0.05$). Then studied how antibiotics selected with AtbFinder, affected *P.aeruginosa* sputum load in patients who were still having *P. aeruginosa* infection. The mean sputum density of *P.aeruginosa* following a switch from standard methods to AtbFinder from baseline (year 0) decreased by 2.2 log₁₀ CFU/g (from 5.7 log₁₀ CFU/g to 3.5 log₁₀ CFU/g).

Conclusions: Antibiotic optimization with therapy prescribed using AtbFinder results in progressive eradication of *Pseudomonas aeruginosa* from airways of children with CF.

RAOULTELLA SPECIES ASSOCIATED SEPSIS IN CHILDREN (RETROSPECTIVE STUDY AND LITERATURE REVIEW FROM A DEVELOPING COUNTRY)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Falak Abro, Asma Sherazi, Syeda Anum Fatima, Joveria Farooqi, Wajid Hussain, Waqar Sahito, Ali Saleem

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Background: *Raoultella spp.* is an emerging gram-negative organism with high antibiotic resistance associated with increased morbidity and mortality. It is increasingly reporting now in children. We describe the clinical spectrum and management option of *Raoultella spp.* reported in tertiary care pediatric hospital.

Methods: This is a retrospective study of all the reported *Raoultella species* in children admitted at Aga Khan university hospital from January 2017 to June 2020. There are clinic-demographics features, antibiotic resistance pattern, infection site, mortality and outcome, and hospital duration.

Results: *Twenty-three culture-positive Raoultella spp. identified in 20 children. Most of them were blood culture (12) 60%. Among twenty children, 11(55%) were female, with a median age of 9.5 months. Five (25%) children had a community-acquired infection source, and fifteen (75%) had hospital-acquired infection with Raoultella spp. The antibiotic analysis showed 10 (43.4%) had extensive drug-resistant. A combination therapy (triple regimen) was used in 7 (35%) of patients with severe sepsis. Microbiological clearance (sterility) was achieved in (12) 60% of the children. There were eight patients (40%) that died due to Raoultella associated sepsis.*

Conclusions: We find highly resistant *Raoultella spp.* associated with high mortality among reported cases, with a limited choice of antibiotics and combination therapy. The management of *Raoultella spp.* is possible and required with a multi-specialty approach

PROLONGED PPE USE IMPACT ON FRONTLINE HEALTH CARE PROVIDERS DURING COVID-19 PANDEMIC, TAWAM HOSPITAL EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: SARS cov2 was declared a global pandemic in March 2020, which affected many health care facilities globally. Frontline health care workers (HCW) are mandated to use the proper PPE while practicing during the pandemic. although the extended use of PPE can impose a physiological burden on the HCW this impact is under recognized in medical literatures.

Methods: A cross-sectional retrospective study based on a mass survey among health care providers in Tawam hospital, data collected through a self-directed electronic questionnaire consisting of 15 questions that focus on the impact of prolonged use of PPE on the medical staff general health. The survey further analyzed using Microsoft excel.

Results: A total of 577 respondents participated in the survey between 26th October to 22nd November 2020. Surgical mask (91%) was the most frequently used PPE. The four significant reported prolong PPE use side effects were earloop soreness (56%), skin dryness and itchiness (48%), breathing difficulty (43%) and headache (42%). Half of the participants (48%) believed symptoms are related to PPE use; particularly participants between 31-40 years old (43%). A higher percentage of participants believes that 95 mask is one of the most PPE affecting health (57%) followed by face shield (14%).

Conclusions: From our analysis, there was a significant impact of prolonged PPE use on HCWs Well-being and safety measures this might mandate further research on the subject with more attention to prophylactic management.

IMPROVED OUTCOMES WITH PERINATAL MULTIGENERATION CARE FROM AN HIV SPECIALTY CLINIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Morouge Alramadhan, Hassan Al-Khatib, Gilhen Rodriguez, Laura Benjamins, James Murphy, Gloria Heresi, Norma Perez

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Background: The rate of perinatal transmission of HIV has diminished from >30% to ~1% or less. We have followed patients since the 1980s and have accrued families where three generations have received care. Rates of mother to child transmission (MTCT) of HIV dropped from 100% first generation to 0% at the third generation. In this study, we compare selected health outcomes between attendees with 3 generations and other contemporary child bearing woman-child pairs.

Methods: Retrospective record review of perinatal HIV exposed babies and their mothers referred to the HIV clinic of the McGovern Medical School, Houston. We had 402 HIV infected mother-child pairs (2% multigenerational, 98% non-multigenerational). Chi-squared tests were used to compare outcomes.

Results: The study comprised eight, 3-generation families (grandmothers, generation G0) whose children (8, G1) had children (9, G2). All G1 children acquired perinatal HIV infection. Children G2 of G1 mothers remained HIV negative. Families with multiple generations attending the same HIV specialty clinic have markedly improved healthcare outcomes compared with the clinic's other child bearing women. As compared with the latter population, multigenerational attendees had similar viral loads, and rates of cART but significantly lower rates of use of illicit drugs, sexually transmitted diseases, and higher rates of vaginal deliveries (Table).

Characteristic	Clinic HIV Population		
	Multigenerational	General	p
MTCT Transmission Rate*	0%	5%	1
Vaginal Delivery	89%	35%	0.0195
Illicit Drug Use	11%	27%	0.0141
Sexually Transmitted Disease	56%	85%	< 0.0001
Detectable Viral Load	22%	24%	1
cART	100%	74%	0.2091
*Transmission Rate = G1 mothers to G2 newborns; other data are Multigenerational = G1 mothers; General = all other childbearing women over same time			

Conclusions: Family multigenerational attendance at the same HIV specialty clinic associates with markedly improved health outcomes compared to the clinic's general HIV population, including eliminating vertical transmission of HIV. It is unclear if this outcome results from the clinic's efforts or reflects a more health-conscious subgroup's self-selection.

IMPORTANCE OF DIFFERENTIAL DIAGNOSIS OF PARVOVIRUS B19 AMONG CHILDREN AND ADOLESCENTS WITH EXANTHEMATIC DISEASES IN RIO DE JANEIRO STATE, BRAZIL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Arthur Daniel Alves¹, Jéssica Raposo², Rafaela De Sousa², Vanessa De Paula², Claudete Cardoso³, Pâmela Freitas⁴, Julienne Araújo⁴, Marcelo Pinto¹, Luciane Amado¹

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Background: A great variety of viruses that cause exanthema share other clinical manifestations, making etiologic identification based only on clinical examination a major challenge in pediatric clinical practice. The most common agents of exanthematic disease(ED)include measles, rubella, dengue, varicella, cytomegalovirus, Epstein-barr, and human-herpes-virus-6. However,19% of cases remain without a defined etiology. A precise etiologic diagnosis represents an important challenge to the adequate clinical and epidemiological approach. Parvovirus B19(B19V)infection can cause ED, and it can represent an important risk to immunocompromised patients or with hematological disorders since they can progress to severe anemia.

Methods: The objective of this cross-sectional study was to carry out the differential diagnosis of B19V infection in patients with ED from Hospital Getúlio Vargas Filho and Hospital Universitário Antônio Pedro (Niterói, RJ). From December 2018 to December 2019, 54 children with ED were enrolled in the study. B19V infection was assessed through PCR, real-time PCR and ELISA (anti-B19V).

Results: The average age of the patients was 2 years (6 months to 15 years) and 55% were male. Three children were B19V DNA, anti-B19V IgM and IgG positive, showing 5.5% of acute infection prevalence, with an average viral load of 2.4×10^4 IU/mL. Phylogenetic analysis revealed that three B19V isolates were of genotype 1A. All B19V-positive patients had anemia ($Hb < 11g/dL$), while only 5.9% of B19V-negative patients had this condition. Anemia was significantly associated with B19V viremia (OR:73.0; CI95%:3.0-1720.1; $P < 0.01$), suggesting that the B19V might increase the risk of anemia occurrence.

Conclusions: Therefore, the differential diagnosis of B19V is of great importance to guarantee an adequate approach and to establish the required measures for ED control, especially during epidemic years of B19V infection.

VACCINATION COVERAGE OF PEDIATRICIANS IN CRETE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Vaccination of health care workers (HCW) reduces the risk of vaccine-preventable diseases (VPDs), prevents nosocomial transmission and preserves health care delivery during outbreaks. The aim of this study was to document the vaccination coverage of pediatricians working in national health system (NHS) and private sector.

Methods: A cross-sectional, questionnaire-based study was conducted between September and December 2020. The questionnaire was sent by email to all 302 active pediatricians in Crete, Greece. Vaccination coverage was investigated for: influenza, measles, rubella, mumps, varicella, hepatitis A, hepatitis B, diphtheria-tetanus-pertussis with Tdap, herpes zoster, pneumococcus, meningococcus, TB. Self-reported immunity was defined as either previous natural infection or complete vaccination.

Results: Of the 282 responders 94.7% were immunized against influenza. Complete vaccination coverage against measles was 42.3%, rubella 40.8%, mumps 41.1% and varicella 7.8%. Self-reported immunity for measles, rubella, mumps, and varicella were 85.8%, 79.8%, 74.1% and 93.3%, respectively. An overall of 64.5% of study participants were vaccinated for pertussis, whereas 84.8% were fully covered for hepatitis B. Vaccination coverage was significantly higher in younger age groups ($p < 0.05$). Female gender was associated with higher vaccination rates for rubella ($p = 0.015$). Influenza vaccination was significantly higher in the NHS.

Conclusions: We documented high vaccination coverage and self-reported immunity of pediatricians in Crete against influenza and MMR-V. Vaccination coverage with Tdap was higher than previously reported. Vaccination coverage against other VPDs is still relatively low. Initiatives to improve vaccination in HCW are urgently needed.

AGE AS A RISK FACTOR FOR ANTIBIOTIC OVERUSE IN CHILDREN WITH ACUTE RESPIRATORY INFECTIONS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Martin Angjelov, Nikica Jovanovski, Aleksandar Kirkovski, Valentina Risteska-Nejasmic, Katerina Kovacevikj, Sara Simonovska, Dragan Gjorgjevski, Saska Mitovska, Katarina Stavrikj
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Background: Antibiotics are frequently prescribed for children with conditions for which they absolutely provide no benefit at all, especially for viral respiratory infections. The aim of our study is to investigate age, as an antibiotic prescription risk factor in children with acute respiratory infection (ARI) in primary care.

Methods: A cross sectional study, based on a representative sample of 87 GPs, was conducted during 4 weeks in November 2019. All patients with an episode of ARI were involved in the survey. The analysis was performed using RStudio. Out of 4043 children from birth to 14 years of age, antibiotics were prescribed to 1972 (48.7%). Children were divided into: group 1 (0-3 yrs) with 1747 (43.2%), group 2 (4-6 yrs) with 1091 (27%) and group 3 (7-14 yrs) with 1205 (29.8%) children.

Results: 661 (37.8%) children in group 1, 522 (47.8%) children in group 2 and 609 (50.5%) in group 3 received antibiotics. The most common diagnosis in group 1 was common cold 508 (29.0%), and acute tonsillitis in group 2 and 3 21.8% and 25.5%. Broad spectrum antibiotic amoxicillin with clavulanic acid was the most frequent prescribed in all three groups: 32.5%, 35.2% and 33.3%.

Conclusions: After adjustment regression analysis showed that children aged 4-6 have 55% higher odds to be prescribed an antibiotic than kids aged 0-3 (OR, 1.55; 95% CI, 1.31 - 1.84). Children aged 7-14 have 70% higher odds to be prescribed an antibiotic than kids aged 0-3 (OR, 1.70; 95% CI, 1.45 - 2.01). Antibiotic prescribing is high and inappropriate in children. Age was identified as a predictor factor for antibiotic prescription. The risk for antibiotic prescription increases, with increasing the age.

INFANT DENGUE A 10-YEAR EXPERIENCE FROM A TERTIARY CENTER IN SOUTH INDIA.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Dengue virus (DENV) infection remains a major public health concern throughout the tropics. Several Asian countries report an increasing trend in proportion of infants affected. However, most studies are limited to case reports or small case series of infants from isolated outbreaks. We planned this study to look at clinico-laboratory profile, outcome, and predictors of severity in a large cohort of infants over a decade.

Methods: Electronic medical records of infants admitted at a tertiary centre of South India, with laboratory confirmed dengue infection between 2009-2019 were reviewed. Diagnosis was based on detection of NS-1 antigen and/or IgM-antibody against DENV or positive DENV RNA PCR in infants presenting with acute febrile illness and clinical features consistent with dengue. Three hundred ninety-five children with laboratory confirmed dengue admitted during study period, of which 99 (25%) were infants.

Results: Cyclical incidence pattern was noted with higher cases in alternate years. November, October, and September recorded highest cases in each year. Fever (99%) was most common, followed by gastrointestinal symptoms (vomiting, diarrhea - 28%) and upper respiratory symptoms (cough, coryza – 22%). Severe dengue was diagnosed in 53(53.5%) infants and shock in 39(39.4%). Fourteen children had MODS and 13 died. Infants with severe dengue were older had lower serum albumin and greater frequency of severe thrombocytopenia and coagulopathy. On multivariable analysis, low serum albumin predicted development of severe dengue [$p=0.003$, OR 12.4(2.42-63.7)].

Conclusions: Dengue in infants may pose challenge in clinical recognition due to undifferentiated presentation like other viral illness with gastrointestinal and URI symptoms. Severe dengue is common in this age group and lower serum albumin at presentation was predictive of severe disease.

THE HHV-6A AND HHV-6B IN CHILDREN IN MINSK

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: In 2012 HHV-6A and HHV-6B were classified as separate viruses. No data about the prevalent type of HHV-6 in Belarus. The aim of this preliminary study was to determine the frequency of detection of HHV-6A and HHV-6B in patients with infectious/noninfectious neurological diseases, infectious mononucleosis and exanthema, and in healthy control group in Minsk.

Methods: Quantitative detection of HHV-6 DNA was carried out by real-time PCR with a commercial kit (AmpliSens, Russia). For differentiation of HHV-6A and HHV-6B multiplex real-time PCR was used. HHV-6 DNA detected in 100 samples of clinical material (serum, peripheral blood cells, whole blood, saliva/buccal swabs, urine) from 85 patients with the following clinical diagnoses: encephalitis/meningoencephalitis (n=7), febrile seizures (n=2), epilepsy (n=4), seizures (n=4), polyneuropathy, unspecified (n=2), degenerative disease of nervous system, unspecified (n=2), infectious mononucleosis (n=41), exanthema (n=6), 17 healthy controls included in the study.

Results: HHV-6 was determined in 96% of clinical samples and in 95.3% of patients. It was not possible to establish the type of pathogen due to the low concentration of viral material (680 copies / ml and less) in 4 patients (4.7%). HHV-6A detected in 1.2% of children (n=1) and HHV-6B – in 94.1% (n=80). Detected HHV-6A was present in the blood of a 2-years old child with exanthema and single bilateral tonic seizures with clinical attacks focal engine debut.

Conclusions: On the basis of our data we found out the widespread prevalence of HHV-6B on the territory of the Republic of Belarus and its significant predominance in patients with various clinical manifestations. Further studies of the HHV-6A and HHV-6B prevalence in Belarus population are needed. The circulation of HHV-6A in our country was detected for the first time.

NEUROLOGICAL MANIFESTATIONS IN CHILDREN WITH LYME DISEASE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Lyme disease is characterized by polymorphic of the clinical picture, the erasure of some manifestations in the early stages, often simultaneous damage to several organs and systems, which can lead to errors and late diagnosis of the disease, defects in the provision of medical care, a high frequency of residual consequences and, as a result, to serious social and economic losses.

Methods: We analyzed 22 patients aged 1-17 years, the average age was 10 (5-12) years who were under observation in the City Children's Infectious Diseases Clinical Hospital in Minsk with a laboratory-verified diagnosis of Lyme disease. The confirmed fact of tick suction was noted only in 2 out of 22 patients. All patients with neurological symptoms had no erythema migrans.

Results: Neurological symptoms were present in 4 (18.0%) patients. Among non-specific complaints 3 (75.0%) patients noted headache and dizziness; 2 (50.0%) – an increase in body temperature to sub- and febrile; 1 (25.0%) – nausea and vomiting; 1 (25.0%) – back pain, 1 (25.0%) - joint and muscle pain, one patient (25.0%) reported double vision. In 3 (75.0%) children, focal neurological symptoms were detected in the form of tongue deviation, drooping corner of the mouth, and central left-sided paresis. At the same time, only one (25.0%) child had positive meningeal symptoms.

Conclusions: Lyme disease is characterized by the polymorphism of the complaints presented and the severity of the clinical picture. The intensity of the neurological symptoms presented was different and varied from headache, dizziness, double vision to central left-sided paresis.

THE PARTICULAR FEATURES OF PERTUSSIS AND CONCURRENT INFECTIONS AMONG CHILDREN

E-POSTER VIEWING

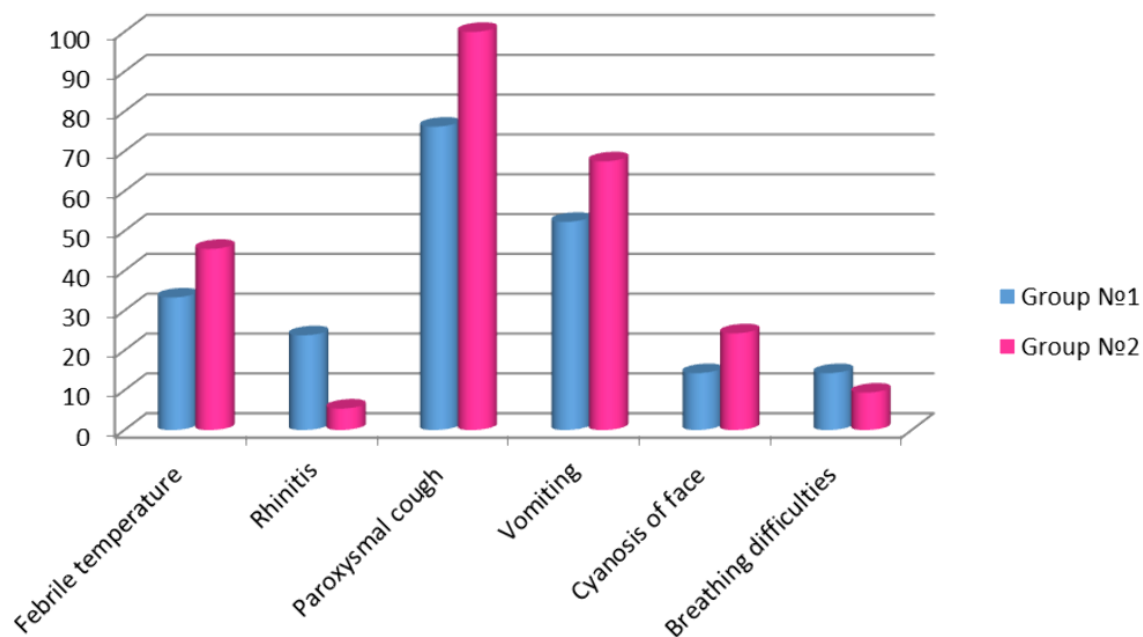
TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Olga Gavrilova, Inna Lastauka, Katerina Divakova, Alina Osmolovskaya, E Saroka
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Background: The incidence of a pertussis is increasing every year in Belarus, there were an increase in the proportion of vaccinated patients and in older age groups.

Methods: The study included 58 children who were treated at the City Children's Infectious Hospital in Minsk. The group №1 includes patients with mixed infection (pertussis+chlamydiosis/mycoplasmosis, n=21). The group №2 consists of patients with pertussis, n=37. The average age of the patients was 7 years and 5 months (3 months – 13 years and 3 months) without differences in two groups. Fifteen (75.0%) children were vaccinated against pertussis, 5 (25.0%) – not; in the group №2 – 24 (70.6%) against 10 (29.4%).

Results: The clinic data was analyzed and it was found were no differences in symptoms besides paroxysmal cough – it was in 16 (76.2%) patients of the group №1 against 37 (100%) in group №2 ($p=0.004$).



Conclusions: The clinical symptoms of pertussis with the addition of atypical flora differ little from a typical pertussis. Among patients with mixed infection the paroxysmal cough was detected less often compared to cases of single infection of pertussis ($p=0.004$). It is important that the average age of patients with a pertussis was 7 years and 67.2% of them were vaccinated.

VACCINE COVERAGE AND COCOONING OF INDIVIDUALS WITH TYPE 1 DIABETES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: People with type 1 diabetes mellitus (T1DM) are at increased risk of infections from vaccine-preventable diseases. This study focuses on compliance of T1DM patients to the recommended vaccination schedule, vaccination of their close contacts for influenza and factors potentially contributing to vaccination program deviations.

Methods: The study population comprised of children, adolescents, and adults with T1DM under follow-up at the Pediatric Clinic of a University Hospital and the Diabetic Center of a General Hospital. Data were extracted following informed consent from individual Vaccination Booklets, medical files and telephone interview. Vaccination records, demographic parameters, glycemic control and influenza vaccination of close contacts were studied.

Results: The study included 258 participants. Vaccination coverage for influenza was 76.7% for children, 64.4% for adults, for PCV 90.9% for children, but only 10.8% for the 23-valent, for hepatitisB 99% for children and 78.2% for adults. Youngsters were vaccinated against Hib 91.9%, meningococcusC 96.9%, measles-mumps-rubella 90.3%, chickenpox 86.4%, hepatitisA 76.5% and HPV 42.5%. Less than 65% of both age-groups were fully vaccinated for diphtheria-tetanus-pertussis and meningococcusA,C,W,Y. Approximately 50% of close contacts were not vaccinated against influenza. Patients with better glycemic status seemed to comply with properly vaccination and had better vaccinated family contacts.

Conclusions: T1DM patients were sufficiently vaccinated regarding their basic vaccination schedule, but inadequately covered for adolescence and group-specific vaccines. Their family contacts were not sufficiently vaccinated for influenza. Targeted interventions may increase vaccination coverage.

PAEDIATRIC SUBACUTE HAEMATOGENOUS OSTEOMYELITIS – HOW DOES LOCATION CHANGES OUR PERCEPTION?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Pediatric subacute haematogenous osteomyelitis (PSAHO) is an infectious process lasting more than 2 weeks without acute symptomatology, characterized by moderate localized bone pain, mild or no systemic manifestations, non-contributory laboratory results, negative blood cultures and often positive radiological findings with a distinct lytic lesion. Historically the most frequent locations are long bone diaphysis but different anatomic places have been described with the increasing awareness and interest for this entity.

Methods: Longitudinal, observational study including 18 cases of children under 18 years old (yo) admitted to a tertiary care paediatric hospital over a 10-year period (2008-2018) with the diagnosis of PSAHO. Clinical, laboratory, imaging and outcome data was registered and analyzed.

Results: Mean age was 3,9 yo (77,8% <4yo). When identified (7/18), *K. kingae* was the most frequent pathogen (3/7). Most frequent location was the calcaneus (7/18), followed by femur(5), tibia(3), talus(1) and clavicle(1). Comparing long bone with foot PSAHOs, we found no significant differences between time from symptom beginning to diagnosis, but patients with foot PSAHO had more previous observations before diagnosis (mean 1,1 versus 0,5). Mean maximum CRP (9,4 mg/L versus 25,6mg/L) and ESR (35,3mm/h versus 60,3mm/h) were significantly lower in foot PSAHO. Radiographic lytic lesions presented in 7 cases (87,5%) of long bone against one case (12,5%) of foot PSAHO.

Conclusions: PSAHO is a distinct form of osteomyelitis characterized by a delayed diagnosis due to an indolent onset, mild symptoms and blunted lab results. Our study demonstrates that the lengthy differential diagnosis of foot pain in children and even greater paucity of laboratory and radiographic signs of infection in foot PSAHO, when compared to other locations, serves to only further delay the diagnosis and implies an even greater index of suspicion on the evaluation of these patients.

CLINICAL CHARACTERISTICS OF BRUCELLOSIS AMONG CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Brucellosis is the one of the most common zoonosis worldwide, affecting all ages. The revealing symptoms differ according to the clinical presentation and the affected sites. We aimed to study the clinical and therapeutic features of brucellosis among children.

Methods: We conducted a retrospective study including all patients aged ≤ 18 years, hospitalized in the infectious diseases department between 1993 and 2019. Wright agglutination test was positive in all cases.

Results: We included 31 cases with a mean age of 13 ± 4 years. There were 19 male children (61.3%). The revealing symptoms included fever (87.1%), night sweats (67.7%) and arthro-myalgia (61.3%). There were 24 cases of acute brucellosis (77.5%) and 7 cases of sub-acute brucellosis (22.5%). Three cases of neurobrucellosis, 2 cases of hip arthritis and 2 cases of sacroiliitis were noted. Blood (25.8%), cerebrospinal fluid (6.4%) and joint fluid cultures (3.2%) were positive for *Brucella spp.* Patients received rifampin (100%) with doxycycline (64.5%) or trimethoprim-sulfamethoxazole (35.5%). The disease evolution was favorable in all cases.

Conclusions: The diagnosis of brucellosis should be considered in front of fever associated with night sweats and arthro-myalgia among children in endemic areas.

TIMING OF IMMUNIZATION IN PREMATURE AND LOW BIRTH WEIGHT NEONATES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Premature newborns are susceptible to infections and their vaccinations should be performed according to their chronological age, as recommended in term neonates. We evaluated the vaccination time in preterm and low birth weight neonates and factors contributing to vaccination program deviations.

Methods: Data from neonates hospitalized during the period 2016-2018 were collected from the registry of the Department of Neonatology and the Neonatal Intensive Unit of a University Hospital. Detailed vaccination data for the first two years of age were electronically provided by the parents after informed consent. Delay of vaccination was defined as any dose administered 7 days later than the recommended.

Results: Among 419 preterms 61.8% were low-birth-weight. Almost all of the neonates (> 98%) were fully vaccinated by 12 months and up to 24 months >80% had received the first dose of the vaccines recommended for the second year of life. An increasing delay was recorded for the 3rd and 4th doses of DTaP-IPV-Hib-HepB, the first dose of varicella and all doses of PCV13 and Rota. In total, 58.5% of all vaccine doses were delayed ($p<0.05$). Low birth weight correlated, although marginally, to the outdated vaccination ($p=0.054$).

Conclusions: Preterms and low-birth weight neonates are sufficiently vaccinated, although with delay in almost all doses of the recommended vaccines. Efforts should be implemented on parents' awareness on the benefits of timely vaccination of preterms and low-birth weight neonates.

THE BURDEN OF CYSTIC ECHINOCOCCOSIS AMONG CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Fatma Hammami, Makram Koubaa, Amal Chakroun, Fatma Smaoui, Khaoula Rekik, Chakib Marrakchi, Mounir Ben Jemaa
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Background: Cystic Echinococcosis is nowadays recognized as a neglected tropical disease. In the paediatric population, hydatid cyst (HC) affects commonly the lungs. However, any other organ can be affected, which might lead to misdiagnosis. We aimed to study the clinical and therapeutic particularities of HC among children.

Methods: We reported a retrospective study including all patients aged ≤ 18 years hospitalized for HC between 1997 and 2019. The diagnosis of HC was confirmed by cystic lesions reported on imaging associated to positive serology.

Results: We encountered 25 children with a mean age of 10 ± 4 years. There were 18 males (72%). The revealing symptoms were cough (56%), chest pain (32%) and abdominal pain (12%). The lungs were the most common site (80%) followed by the liver (40%) and the brain (8%). Multifocal hydatidosis was noted in 10 cases (40%). All patients had surgery, which was associated with albendazole in 20 cases (80%). The median duration of medical treatment was 3 months [1-24 months]. The disease evolution was favourable (92%). We noted 2 relapsing cases (8%).

Conclusions: Cystic Echinococcosis was not a rare disease in our region. Once the diagnosis is established, surgical and medical treatment are indicated. Preventive measures are crucial in order to avoid relapsing cases due to reinfestation.

MENINGOCOCCEMIA – A REAL EMERGENCY IN PEDIATRIC PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Meningococemia represents a concerning public health problem and it is considered one of the most serious and life-threatening infectious diseases during childhood with great consequences like septic shock, where inadequate perfusion of tissues occurs due to endotoxemia.

Methods: We performed an observational retrospective study to patients admitted in "Sf. Parascheva" Infectious Diseases Hospital from Iasi, Romania for a period of 30 months (January 2018 -June 2020). We studied medical records of patients with the diagnosis of meningococemia and we included in our study 11 patients. To assess the severity of meningococemia we used Stiehm-Damrosch/ Niklasson severity score. We followed: the prognostic score with the clinical and biochemical modification, hours/days of hospitalization, if the patient died or was discharged after treatment, paraclinical data

Results: Most of the patients were younger than 1 year old(63%) and the oldest had 15 years, with median age of 3.3 years. None of the patients had received meningococcal vaccination. In 2 cases Ceftriaxone was administered prior to presentation in our hospital. A total of 5 deaths were recorded representing an overall mortality of 45%;the severity score was over 2 with a median of survival time of 23 hours from the moment of admittance. Treatment was performed according to protocol and was started in the first 30 minutes of the hospitalization.

Conclusions: Meningococemia represents one of the most important medical emergencies in the pediatric pathology. It represents a serious cause of death, despite the advance in medical sciences.

**URINARY TRACT INFECTIONS DUE TO COMMUNITY-ACQUIRED ESBL-PRODUCING
ESCHERICHIA COLI IN HOSPITALISED CHILDREN IN A TERTIARY HOSPITAL**

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Venizeleion General Hospital, Paediatrics, Heraklion, Greece

Background: Urinary tract infections (UTIs) due to community-acquired ESBL-producing *Escherichia coli* in children rise in prevalence worldwide.

Methods: We retrospectively studied all cases of UTIs admitted in the Pediatric Clinic of Venizeleion General Hospital between 1st January 2019 and 31st December 2020. Age, sex, urine culture results and duration of hospital stay were recorded. Urine specimens were received collected choosing the age-appropriate method for each patient. Fischer exact test and t-test were used for the statistical analysis.

Results: The incidence of ESBL UTIs rised from 13.9% (5/36) in 2019 to 19.23% (10/52) in 2020 ($p=0.78$). 40% (6/15) of all ESBL(+) cases were recorded in boys. In all but one cases, *E.Coli* was the ESBL(+)pathogen. The median age of ESBL cases was 7.0 months (3.4 in nonESBL) in 2019 and 2.63 (7.0 in nonESBL) in 2020. The average hospital stay was longer for ESBL patients (10.6 vs 6.56, $p<0.0001$) throughout the study period.

Conclusions: The incidence of ESBL-producing *Escherichia coli* in UTIs is high and rising and is significantly higher compared to that recorded in the same hospital between 2012-2016. There is urgent need to detect the risk factors associated with this increase so as to better address the problem of antibiotic resistance in our region.

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GROWING UP WITH HIV INFECTION: THE GREEK EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Increasing numbers of children infected with human immunodeficiency virus (HIV) are reaching adulthood, largely because of advances in treatment over the past 10 years. In the Pediatric HIV Unit of "Aghia Sophia" Children's Hospital we follow all HIV positive children living in Greece since the beginning of the epidemic.

Methods: A retrospective study was performed among patients who transitioned from pediatric to adult care and were followed-up in our department. Epidemiological, clinical and laboratory data were collected from all patients retrospectively.

Results: Until 2020, 140 children were diagnosed with HIV infection in Greece. Seventy-four (52.9%) patients were perinatally infected and 24 (32.4%) of them died during childhood. Twenty-one children followed in our Unit have reached adulthood. During their childhood, 8 (38.1%) patients were hospitalized due to respiratory infections. Nine (42.9%) patients had positive viral load when they reached adulthood due to poor compliance and 4 (19%) had CD4+ levels less than 500 cells/mm³. Three patients died following their transition to adult clinics. These patients were born before ART initiation, had low CD4+ levels during transition and resistance mutations have been detected in all of them.

Conclusions: Given the limited therapeutic options available during the early years of these patients' lives, the long-term outcomes among this population are encouraging.

PREOPERATIVE COLONIZATION AND POSTOPERATIVE INFECTIONS IN PEDIATRIC CARDIAC SURGERY PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Marilena Prapa¹, Sophia Tzalavra¹, Xanthi Agrogianni¹, Charikleia Barbaresou¹, Nikos Spyridis²

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Background: Patients with congenital heart disease (CHD) often need hospitalization and repetitive antibiotic therapies before surgery, with high risk for pathogen colonization. The aim of this study is to verify the impact of preoperative colonization on postoperative infections in a population of pediatric cardiac surgery patients

Methods: Retrospective study of pediatric cardiac surgery patients who were admitted in a single tertiary Cardiac Intensive Care Unit (PCICU), during 18 months. A screening for colonization was performed on their admission to the PCICU, with swabs from pharynx or tracheal aspiration samples and anus.

Results: 79 patients were enrolled, with a median age of 5,3 months and 59,5 %females. 64,6% were previously hospitalized with median duration 27 days (15-68). Screening for colonization was performed on their admission to PCICU. Positive colonization was detected in 55,1% of patients. 30 patients (38%) developed infection in the early postoperative period, mostly Blood Stream Infection (BSI, 74,8%, 22 patients) and Ventilator-Associated Pneumonia (VAP, 17,2%, 5 patients). In 20% of patients(N=6), the causative agent derived from patient's colonization. Colonization with ESBLs was identified as significant factor for postoperative infection [RR 5,5 (1,15-26,79, p=0,011)].

Conclusions: Our results suggest that the impact of preoperative colonization on postoperative infections may be negligible. Carriage of ESBLs is a risk factor for post-operative infection in pediatric cardiac surgery patients. Larger prospective studies are needed to identify the correct management of colonized patient in the setting of the pediatric heart surgery.

DETECTION OF HELICOBACTER PYLORI INFECTION BY HELICOBACTER PYLORI IGG SEROLOGY TEST IN PEDIATRIC PATIENTS AT THE PHILIPPINE GENERAL HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: This research is a survey to determine the validity of serum *H. pylori* IgG in the detection of *H. pylori*-associated gastroduodenitis. *H. pylori* is isolated in 95% of gastric cancer. The ESPGHAN and NASPGHAN (2011), recommends that the initial diagnosis should be based on *H. pylori* positive on culture or positive for both histopathology and rapid urease test (RUT). Despite the availability of the ELISA-based test, no local study has investigated its validity as a diagnostic tool.

Methods: Cross sectional which included consecutive patients 1-18 years old with upper gastrointestinal symptoms who underwent esophagogastroduodenoscopy. *H. pylori* infection was diagnosed by positive tests for both rapid urease test (RUT) and Giemsa stain of gastric biopsies. *H. pylori* IgG (ELISA) serology was also performed.

Results: Twenty five (25) patients [Mean (SD) age: 12 (4.5) years, 68% females] were included. Majority presented with epigastric pain (64%) and had endoscopic gastritis (84%). Four patients had ulcers (1 antral, 3 duodenal). Giemsa stain was positive in 16 (64%) patients and RUT in one. Prevalence of *H. pylori* infection was 4%. Serum *H. pylori* IgG test was positive in two; borderline in three with a 100% sensitivity, 80% specificity and a positive and negative likelihood ratio of 10.9 and 0.6.

Conclusions: The *H. pylori* IgG serology test has a high sensitivity and specificity for detection of *H. pylori* gastroduodenitis. Likelihood ratios suggest a good diagnostic test. However, the results are limited by the low prevalence of *H. pylori* infection.

UNDERLYING SINUSITIS LEAD TO PROLONGED HOSPITAL STAY AND INCREASED RISK OF COMPLICATION IN CHILDREN WITH PRESEPTAL CELLULITIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Nimet Melis Bilen, Gizem Güner Özenen, Sema Yıldırım Arslan, Zafer Kurugöl, Ferda Özkinay, Zümrüt Sahbudak Bal

Ege University Faculty of Medicine, Department Of Pediatric Infectious Disease, Izmir, Turkey

Background: Preseptal and orbital cellulitis may have serious complications therefore prompt and appropriate treatment is important. In this study we aimed to evaluate the effects of predisposing factors on hospital stay and complications in children with preseptal cellulitis and to compare the patients according to predisposing factor as sinusitis or not.

Methods: Medical records of 94 patients hospitalized for preseptal and orbital cellulitis at Ege University Hospital between April 2011 and September 2020 were reviewed retrospectively. Demographic characteristics, clinical characteristics, all biochemical and radiological parameters, treatment regimens, duration of treatment, change in treatment regimens and complications were recorded. The patients were divided into two groups as those with predisposing factor sinusitis (Group A) and others (group B).

Results: 86 patients (91.4%) were diagnosed with preseptal cellulitis. The most common underlying disease was sinusitis (34%). The comparison of the patients in group A and group B showed no difference among age, gender, and duration of symptoms. There was no significant difference between the selected treatment regimens in terms of complications or the need for surgical intervention. The duration of hospital stays ($p=0,003$) and parenteral treatment ($p=0,007$) was significantly longer in patients with sinusitis and they also developed complications more common than remaining patients (12,5% vs 1,6%, $p=0,044$).

Conclusions: Sinusitis as a predisposing factor for preseptal cellulitis can lead to prolonged hospitalization, prolonged parenteral antibiotic therapy and patients with sinusitis are likely to develop complications more common.

THE COMPARISON OF CLINICAL RISK FACTORS AND OUTCOMES OF CANDIDA ALBICANS AND NON-ALBICANS CANDIDEMIA IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Candidemia is still a major cause of mortality and morbidity in pediatric patients. *Candida albicans* (CA) has been the most common isolate from candidemia and recently the incidence of non-albicans *Candida* (NAC) spp. has been increased. We aimed to determine the demographic, clinical characteristics, risk factors and outcomes of children with candidemia.

Methods: A single-center retrospective study conducted at Ege University between January 2008 and December 2019. A total of 315 episodes were evaluated. There were 103 episodes of CA and 212 of NAC candidemia. Fungi were isolated from the blood cultures using the BacktAlert system (bioMérieux, France). They were identified with conventional mycological methods and their assimilation profiles were determined with ID 32 C (bioMérieux, France) between 2008-2014; and identified by MALDI TOFF MS (bioMérieux, France) between 2014-2019.

Results: The mean age of the patients was 4.73±5.37 years. The most common underlying disease was intestinal failure; followed by solid-hematologic malignancy and solid organ-bone marrow transplantation. The most common isolated species were *C. parapsilosis*, *C. albicans* and *C. glabrata*. The length of hospital stay was significantly longer in patients with NAC candidemia. Use of total parenteral nutrition and antifungal prophylaxis were significantly more common in NAC candidemia. CA and NAC isolates fluconazole resistance was 9.8%, and 35.3%, respectively. There was no statistically difference between mortality rates of CA and NAC candidemia.

Conclusions: Our results showed that prolonged hospital stay, use of total parenteral nutrition and antifungal prophylaxis are risk factors for NAC candidemia.

**THE ATTITUDE OF THE FAMILY PHYSICIANS AND PEDIATRICIANS TOWARDS
RECOMMENDATION OF THE OPTIONAL VACCINES IN MANISA-TURKEY**

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: To examine the physician's attitude toward optional vaccines(OV) that are not included in the national pediatric immunization program in Turkey.

Methods: A questionnaire designed for family physicians and pediatricians have been conducted between January 2020-January 2021, via phone or face-to-face. Our study includes 113 physicians' responses from 73 pediatricians and 40 family physicians who work in Manisa province, 13 responses were excluded due to missing data. The participation rate was %40. Median age of the participants is 30,(range:24-58).

Results: There was no statistically significant difference between the recommendation of the vaccine and year in practice ($p=0.797$, $p=0.680$). 99% of the participating physicians recommended at least one of OV. Physicians who considered themselves well informed were found to be informing their patients by physicians themselves more compared to the physicians who said they are not well informed ($p=0.011$).46% of physicians found to be informing families on the OV on their request while 33% of physicians inform families in all cases. Meningococcal B($n=83$), Meningococcal A($n=81$), Rotavirus($n=78$), HPV($n=58$) and influenza($n=34$) were found to be recommended.

Conclusions: FP point out lack of their information compared to pediatricians. Most physicians recommend OV in addition to the national immunization programme. Major reason for the lacking parent outreach was found to be; 56.7% high number of patients Vaccination guides on optional vaccines may address the need for information and education on the topic. This study is ongoing.

ANEURYSM OR NOT – WHAT WILL BE THE FINAL? KAWASAKI DISEASE – 5-YEAR POLISH PEDIATRIC HOSPITAL EXPERIENCE (RETROSPECTIVE STUDY).

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Kawasaki Disease (KD) is an inflammatory disease that affects the cardiovascular system and occurs mainly in children under the age of 5. At the beginning of the disease, we do not know whether a child will develop a coronary aneurysm or not. There are predictive scales (Kobayashi, Sano, Egami, and Harada risk scores) based on Asian data. We decided to analyze risk factors for developing coronary artery aneurysms in a group of Polish children.

Methods: It was a retrospective study conducted in one of the two pediatric hospitals in Poznan, Poland (St. Joseph's Hospital). It was based on hospital records (ICD-10 code M30.3). Children hospitalized due to KD from the 1st January 2015 to the 31st December 2019 were included (48 patients). Demographic data, laboratory tests, and echocardiography results were collected.

Results: There were four patients with coronary aneurysms. Patients with coronary aneurysms were more often diagnosed with thrombocytosis and pericarditis – differences were not statistically significant. All the typical KD signs were more common in patients without coronary aneurysms. Pneumonia was diagnosed, based on chest X-ray, in 75% of patients with coronary aneurysms and in 18% of patients without aneurysms ($p = 0.01$). CRP and PCT levels were higher in the group of patients without coronary aneurysms ($p = 0.17$ and $p = 0.23$, respectively).

Conclusions: Most of the differences between patients with coronary aneurysms and without were not statistically significant. The biggest disadvantage of this study is a low number of patients. That is why we hope that national Polish register (*MOIS Cor - Multiorgan Inflammatory Syndrome COVID-19 Related*) which was created at the beginning of 2020 will provide a large number of cases.

LIVER DAMAGE IN CHILDREN WITH EBV-ASSOCIATED MONONUCLEOSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: The morbidity of infectious mononucleosis in children in the Republic of Belarus has increased over the past 5 years. The Epstein-Barr virus (EBV) is the most common etiologic agent of infectious mononucleosis in childhood.

Methods: The study included 41 patients with infectious mononucleosis associated with EBV. The study group (n = 17 / 41.5%) consisted of children with liver damage. The comparison group included (n = 24 / 58.5%) patients with EBV infection without liver damage. All patients underwent complete blood count, biochemical blood test with determination of total bilirubin, alanine aminotransferase (ALT), aspartate aminotransferase (ASAT)), alkaline phosphatase (ALP), thymol test. Statistical processing was carried out using the STATISTICA 10.

Results: Clinical manifestations of EBV infection in the study group and in the comparison group were: fever 95.8% and 95.8%, lymphadenopathy - 70.6% and 62.5%, adenoiditis 76.5% and 19 79.1%, tonsillitis 35.3% and 45.8%, rash 17.6% and 12.5, hepatosplenomegaly 64.7% and 66.7%, respectively $p > 0.05$. The median reactive lymphocytes was 20.5% (14.5-31.5) vs 13 % (10.0-25.0), $p < 0.05$. Among biochemical parameters, statistically significant increase in the study group ($p < 0.05$) identified in ALAT (U / L) 153 (137-251) vs 25.9 (19.0-35.5), AsAT (U / L) 127 (104.0-203.0) vs 39.5 (29.3-44.0), ALP 474.1 (379.4-754.0) vs 370.2 (303.2-401.3), thymol test (U) 4.5 (3.3-4.8) vs 2.1 (2.1-2.4).

Conclusions: EBV infection in children with liver damage has a typical course with signs of adenoiditis, tonsillitis, lymphadenopathy, fever, hepatosplenomegaly, with cytotoxic syndrome without disruption of bilirubin metabolism and with increasing reactive lymphocytes more than 20%.

GENERAL KNOWLEDGE ABOUT LYME DISEASE IN ADULT POPULATION OF NORTHEASTERN POLAND

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Northeastern Poland is an endemic area of Lyme borreliosis. Social media and news programs often share false and misleading information about this disease. In this study, we assessed the knowledge about Lyme disease among parents presenting with their child to our infectious diseases department.

Methods: We created an anonymous questionnaire about Lyme disease and other tick borne diseases and their prophylaxis. The study was carried on in Pediatric Infectious Diseases Department in Białystok, Poland. Questionnaires were given to parents to fill out. There were subsequently collected or handed in the following day.

Results: We surveyed 102 persons. Besides tick-bites, Lyme disease can be transmitted by breastfeeding or dog-bites, according to 6% and 2% of respondents. Arthralgia, headaches, and erythema migrans were the best-known symptoms of the disease, pointed by 84%, 73%, and 60%, respectively. Chronic fatigue and depression were picked by 44% and 17% respondents, respectively. No-one properly identified all typical manifestations of the disease. Eight percent of respondents preferred alternative methods, like oral supplements or bioresonance over antibiotics in the treatment of Lyme disease. Only 39% believed that Lyme disease is treatable.

Conclusions: Overall, the entire sample reported a low level of knowledge about Lyme disease. Myths and misconceptions regarding signs, symptoms and treatment of the disease are prevalent. This emphasizes the need for interventions including awareness campaigns and educational programs.

ASSOCIATION OF MONOCYTE NEUTROPHILE RATIO AND SEVERITY OF DENGUE IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPECTIVE STUDY - OTHER

Suryadi Tatura

Faculty of Medicine, Sam Ratulangi University/RSUP Prof. Dr. R. D. Kandou Hospital, Pediatric Department, Division Of Pediatric Infection And Tropical Disease, Manado, Indonesia

Background: Dengue remains a major health problem in tropical countries. Early management can reduce morbidity and mortality. Whether peripheral blood can be used as a predictor of dengue severity is interesting to study.

Methods: A cross sectional study was done in children with dengue were admitted to the Pediatrics Department of Kandou Hospital, Manado, Indonesia. Criterion of dengue was WHO criteria (2011). We analyzed association between monocyte to neutrophile ratio and severity of dengue (dengue fever and dengue haemorrhagic fever), was using logistic regression test and Point Biserial test. MNR and hematocrit was using Person correlation test. An ROC curve and Chi-square test were used to analyze the prognostic value of MNR. Minimum sample size 38, $r=0.4$, power 80, p significant <0.05 .

Results: Thirty-nine children with dengue were included in this study. Thirty-one subject were moderate to severe of dengue. There was a moderate association between MNR and severity of dengue ($p=0.012$, $r=-0.544$), MNR and hematocrit ($p=0.001$, $r=-0.501$). Prognostic value was very low (AUC 0,16, $p=0.003$, 95%CI 0.021-0.302).

Conclusions: There is an association between monocyte to neutrophile ratio (MNR) and severity of dengue. Prognostic value of monocyte to neutrophile ratio was very low.

PROGNOSTIC SIGNIFICANCE OF INCREASED LYMPHOCYTE IN CHILDREN WITH SEPSIS: A PROSPECTIVE COHORT STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

Suryadi Tatura

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Background: Sepsis remains a major health problem in tropical countries. The Peripheral blood is an easily accessible biological marker that has been reported to represent disease severity. Objective. To assess association between lymphocyte and multiple organ function (Pelod score) and mortality in children with sepsis.

Methods: A cohort prospective study was done in children <18 old years with sepsis were admitted to Pediatric Intensive Care Unit of Kandou Hospital, Manado, Indonesia, Criterion of Sepsis was The third International Consensus Definition Of Sepsis and Shock Septic. We analyzed association lymphocyte and mortality was using logistic regression test. The association of lymphocyte and multiple organ dysfunction (PELOD SCORE) was using person correlation test. An ROC curve and Chi-square test were used to analyze the prognostic value of lymphocyte. Minimum sample size 38 (consecutive sampling), $r=0.4$, power 80, p-value significant <0.05

Results: Thirty-eight children with sepsis were included in this study. Subject of the study consist of 19 survivor and 19 non survivor, 1-192 month age. There was a association between lymphocyte and mortality ($p=0.032$), lymphocyte and Pelod score (0.036 , $r=0.341$). Prognostic value were AUC 0,740 (95%KI 0,565-0,915, $p=0,012$) and maximum cut off point was 22%, sensitivity 68,4% dan specificity 73,7%.

Conclusions: There is an association between lymphocyte and multiple organ dysfunction and mortality. Prognostic value of lymphocyte was significant

ANALYSIS OF PERTUSSIS MORBIDITY AMONG CHILDREN OF ALMATY CITY AND CONCERNS RELATED TO THE IMMUNIZATION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Despite the presence of pertussis vaccine in the vaccination schedule, according to the Public Health Committee of the Ministry of Health of the Republic of Kazakhstan, over the 3 years (2015-2017), there has been an increase in the incidence of whooping cough by 3.2 times. The aim of the study was to determine the incidence of whooping cough in children in Almaty for an 8-year period, starting in 2010, and to identify problems associated with immunization against whooping cough.

Methods: The material was statistical data on the incidence of whooping cough in the Infectious Disease Clinical Hospital of Almaty for the period 2010-2017.

Results: During the studied period were hospitalized 413 children with a diagnosis of Pertussis. The causes in 118 children were the lack of vaccination, due to medical withdrawals-57 children, due to the parents' refusal-26 cases. In 12 children up to 2 months the disease developed due to the fact that they did not have time to receive. Also revealed that 20 children received an incomplete course of vaccination. Pertussis mainly affects children under 1 year of age, only 64.4%, of which 34.7% are children from 7 to 12 months of age.

Conclusions: The most common cause of whooping cough was the lack of vaccination due to medical withdrawals and parents' refusal to immunize with DPT-vaccine. The overwhelming majority of sick children are children of the first year of life. For the period 2010–2017. there is no trend towards a decrease in the incidence of whooping cough.

IMPACT OF 7-AND 13-VALENT PNEUMOCOCCAL CONJUGATED VACCINE ON SUSCEPTIBILITY TO ANTIMICROBIALS OF STREPTOCOCCUS PNEUMONIAE IN CRETE, GREECE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - OTHER

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Background: Pneumococcal conjugate vaccines PCV7 and PCV13 (introduced in our area in 2004 and 2010, respectively) were related to decreased *S. pneumoniae* morbidity, serotype replacement, and changes in susceptibility to antibacterials. In this study, we investigated the impact of conjugated vaccines to the antimicrobial susceptibility pattern of *S. pneumoniae* clinical isolates in children in Crete.

Methods: This was a retrospective observational study that included all *S. pneumoniae* clinical isolates from children which were cultured, serotyped and tested for susceptibility to antimicrobials, in the referral healthcare facility of Crete, i.e., a well-defined area of high vaccination coverage during the 21-year period 1999-2020, divided in pre-PCV (1999-2004), PCV7 (2005-2010) and PCV13 (2011-2020). Data were compared using Fisher's exact probability test.

Results: A total of 402 isolates (54 invasive) were included. In the vaccine period (2005-2020) the pan-susceptibility rates of *S. pneumoniae* strains were significantly increased compared to the pre-vaccine period (128/243 vs 30/159, $p<0.0001$). Moreover, in the PCV vaccine era the non-susceptibility rates were significantly lower compared to the pre-vaccine period for cefuroxime ($p=0.004$), cefepime ($p=0.02$), imipenem ($p<0.0001$), meropenem ($p=0.008$), erythromycin ($p=0.01$), clarithromycin ($p=0.01$), azithromycin ($p<0.0001$), cotrimoxazole ($p=0.002$) and chloramphenicol ($p=0.02$). However, the non-susceptibility rate for clindamycin was increased in the vaccine period ($p=0.005$).

Conclusions: In the small population of our study area, following the introduction of PCV7 and PCV13 conjugated vaccines, the pan-susceptibility rates of *S. pneumoniae* isolates to antibiotics were increased, whereas decrease of the non-susceptibility rates for several antimicrobials was observed.

POST-NATAL COVID19 IN NEONATES AND SMALL INFANTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PEDIATRIC COVID-19 CLINICAL PRESENTATION AND TREATMENT

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Background: Severe acute respiratory syndrome coronavirus 2 disease (COVID19) in children presents as a mild disease compared with adults. Small infants are the exception with higher severity and worst outcomes.

Methods: Prospective cohort study of infants under four months who, from march to december 2020, were admitted to the infecciology ward for COVID19. The infection was confirmed through SARS CoV 2 PCR in naso/ oropharyngeal swabs or respiratory specimens.

Results: We identified 35 infants with a median age of 33 days, eight had comorbidities. Twenty-seven (77%) had known exposure to a SARS-CoV-2 infected person. Most were symptomatic (91%) with fever (22) being the most common symptom. Over the course of the disease, we verified neutropenia (15) and lymphopenia (4); Elevated inflammatory markers (21) and D-dimers (18). The chest radiography was altered in 15. Seven did antiviral treatment and one hydroxychloroquine. Three received corticosteroids. Six had severe and critical disease. The median admission time was 5 days. One infant died.

Conclusions: COVID19 in the newborn and small infant presents as an upper respiratory tract infection with fever. The severity of the disease is non-negligible with a considerable proportion of severe and critical cases. Underlying comorbidities seem possible drivers of disease severity.

CHARACTERISTICS OF CHILDREN AFFECTED BY COVID-19 ASSOCIATED MULTISSYSTEMIC INFLAMMATORY SYNDROME IN RECIFE / PERNAMBUCO-BRAZIL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PEDIATRIC COVID-19 CLINICAL PRESENTATION AND TREATMENT

Regina Coeli Ferreira Ramos¹, Ana Luiza Nogueira Goncalves², Diana Maria Gouveia Aires Novais¹, Paula Teixeira Lyra¹, Roberta Maria Aguiar Milet³, Danielle Di Cavalcanti Sousa Cruz¹, Ana Carla Augusto Moura Falcão¹, Maria Angela Wanderley Rocha¹

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Background: Recently, a significant multisystemic inflammatory associated to Covid-19 (MIS-C) response has been identified in children during this pandemic in all over the world. It seems to be similar to Kawasaki disease, while impacting the healthcare system due to the severity of cases.

Methods: Cross-sectional cohort study carried out at the reference hospital in pediatric infectious diseases during the peak period of the COVID-19 on the first year of the pandemic in Recife/Pernambuco located in the Northeast of Brazil.

Results: 350 children were admitted in a reference hospital for Infectious disease from March/2020 to January/2021, from Pernambuco, Northeast of Brazil. Of this total, 20(5,7%) children completed criteria on medical records regarding MIS-C temporal associated with Covid-19 by WHO criteria. 12(60%) were male. 9(45%) of the children most affected correspond to age group between 4 and 9 years old. 18(90%) had previously been healthy. Most of the cases occurred in June(40%) three months after beginning pandemic in Brazil. All of them are from Pernambuco, Northeast of Brazil.

Conclusions: However, the association between multisystem inflammatory syndrome in children and COVID-19 is still unknown. Although there is some evidence that the development of MIS-C is a post-viral immunological reaction to COVID-19, understanding of the immune response induced by SARS-CoV-2 remains poor. There are many questions currently emerging that need to be answered. We have to alert all physicians to the characteristics of the syndrome in each country.

ANALYSIS OF VACCINATION ANAMNESIS IN CHILDREN WHO HAVE HAD AN INFECTION CAUSED BY SARS-COV-2

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PEDIATRIC COVID-19 CLINICAL PRESENTATION AND TREATMENT

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Research Institute of Pediatrics of the Central Clinical Hospital under the Russian Academy of Medical Sciences, Moscow, Russia, Vaccines And Disease Prevention, Moscow, Russian Federation

Background: SARS-CoV-2 is of great concern around the world due to its high contagiousness and mortality, as well as the lack of effective protection. The recent research has shown that BCG vaccination can prevent the new coronavirus infection due to the non-specific protective effect of vaccine. Other epidemiological studies demonstrate the influence of the BCG vaccination factor on the incidence and mortality from COVID-19 in different countries of the world.

Methods: The study included 143 people, who were subdivided into 5 groups: the 1-st group - children 0 - 12 months old; the 2-nd group - 12 - 24 months; the 3-rd group - 2 years - 6 years old; the 4-th group - 6-14 years old; the 5-th group - 14-18 years old. Children were assessed for the presence or absence of vaccination, according to the existing immunization schedule with the National Programme of Immunization in Russia and the presence of extra-calendar vaccination.

Results: The vaccination rate is extremely low: only 30% of COVID-19 convalescents were vaccinated against polio and 33.5% against whooping cough, diphtheria, tetanus. Most children have not been vaccinated against influenza and PCV. Among children vaccinated with OPV over the past 2 years, the disease with coronavirus infection was characterized by a mild course. Most of observed patients with COVID-19 - 139 children (97.2%) had BCG vaccination, and only 1 child (0.6%) was revaccinated against tuberculosis. Only 37% of children who have undergone COVID-19 are vaccinated more widely than the NCPP.

Conclusions: The vaccination history of children from different groups is characterized by a low level of vaccination. The non-specific preventive impact of routine pediatric immunization during COVID-19 dictates the preservation of vaccination programs during the period of restrictive measures.

CHARACTERISTICS OF COVID-19 PNEUMONIA IN A COHORT OF HOSPITALIZED PEDIATRIC PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PEDIATRIC COVID-19 CLINICAL PRESENTATION AND TREATMENT

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Background: Our objective was to analyze the characteristics of children admitted for SARS-CoV2 pneumonia.

Methods: The Epidemiological Study of Coronavirus in Children (EPICO-AEP) is a multicentre cohort study conducted in Spain to assess the characteristics of children with COVID-19. Eligible participants were children aged 0 to 18 years attended in any of the 75 hospitals of the network from March 3rd 2020 to January 18th 2021, hospitalized with a primary diagnosis of pneumonia and with SARS-CoV-2 infection confirmed by real-time polymerase chain reaction (RT-PCR) in nasopharyngeal swabs.

Results: 150 children included, 40% women, aged 8.7 years (1.16-13.08), 53% with comorbidities. Relevant symptoms: 80% had fever (4 days [1-8]), 16% wheezing, 41% shortness of breath; 10% SatO₂<92%.

Imaging studies: in the first radiograph, 38% presented consolidation, 53% other infiltrates and 4% effusion. 16% admitted into PICU. Admission time: 5 days (3-10). Labs values: Full blood count (FBC): 7800x10³/μL (4260-11810), lymphocytes: 1800x10³/μL (900-3195), CRP 24.5 mg/L (7-71), PCT 0.15 (0.07-0.75) ng/mL. Treatment: 41% received hydroxychloroquine, 22% steroids and 9% remdesivir.

Conclusions: Pneumonia in children with COVID-19 usually presents FBC and reactants similar to other frequent respiratory viruses; 1/6 have wheezing, almost 40% presents consolidation and more than a half (53%) other infiltrates. 80% had fever and over fifty percent had comorbidities.

Children on treatments had longer hospitalizations than children without treatments, likely reflecting more severity. Prognosis is overall good.

**GASTROINTESTINAL MANIFESTATION IN CONFIRMED PEDIATRIC'S CASE OF COVID-19 IN
SAIFUL ANWAR GENERAL HOSPITAL MALANG, INDONESIA**

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PEDIATRIC
COVID-19 CLINICAL PRESENTATION AND TREATMENT**

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Background: Coronavirus disease (COVID-19) infection in children has become a major issue in global pandemic. There are some evidences revealed the gastrointestinal involvement showed increase in many report. Majority symptoms of COVID-19 in children usually associated to respiratory system. There are scarce data regarding this issue, especially in Indonesia.

Methods: In this retrospective study, we learned all of the children confirmed COVID-19 during hospitalization in Saiful Anwar General Hospital Malang. Clinical and laboratory evaluation of gastrointestinal system's manifestation were evaluated for all cases.

Results: There were 440 children suspected with COVID-19 infection. Twenty two of them were confirmed COVID-19 infection by PCR swab examination. There were 19/22 patients suffered from COVID-19 infection have gastrointestinal symptoms. The most common clinical symptoms were anorexia 17/22 patients, nausea-vomiting 14/22 patients, abdominal pain 7/22 patients, diarrhea 5/22 patients, and gastrointestinal bleeding respectively 5/22 patients.

Conclusions: Only 22 children of 440 children confirmed COVID-19 infection, which is 19/22 patients suffered from GI complaints. Anorexia and nausea vomiting were predominant GI symptom in this study.

COMPARISON OF ANTIBIOTIC CONSUMPTION IN NEONATES USING DAILY DEFINED DOSES AND DAYS OF THERAPY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PHARMACOLOGY

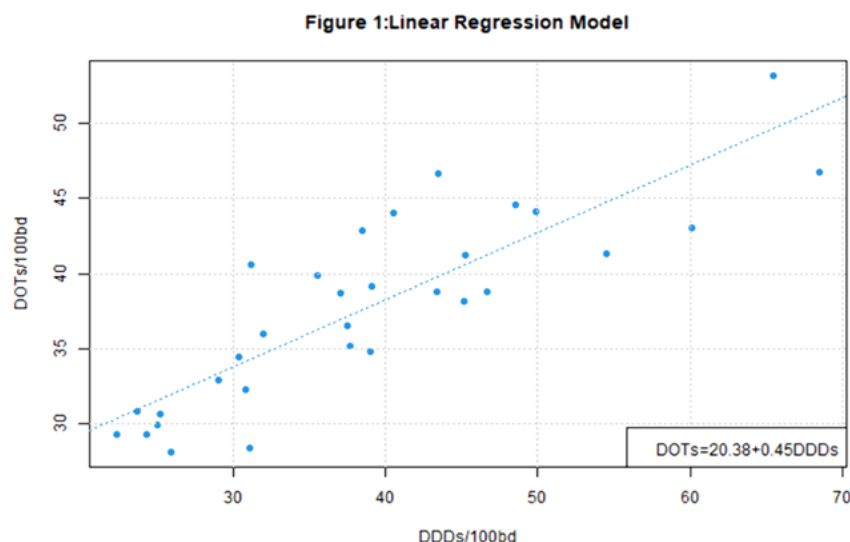
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Background: Although monitoring of antibiotic consumption in neonates is essential, there is no consensus on the appropriate metric to use. Currently, Days of Therapy (DOTs) are recommended by the World Health Organization for children and neonates. However, the application of DOTs requires longitudinal data collection and access to patient level data, which is not feasible in all institutions. Aim of the study: To compare Daily Defined Doses (DDDs) and DOTs as metrics of antibiotic consumption in neonates and investigate their relationship.

Methods: A retrospective analysis was conducted in a tertiary care level neonatal intensive care unit (NICU). Data on antibiotic (antibacterial and antifungal) consumption from April 2017 to December 2019 were expressed as monthly defined daily doses per 100 bed-days (DDDs/100BD) and monthly DOTs/100BD. Correlation analysis was applied to examine the relationship between the two metrics while a linear regression model was developed to predict DOTs/100BD using DDDs/100BD.

Results: A total of 1297 neonates were hospitalized during the study period. Mean (\pm SD) of total antibiotic consumption (33 time points) was 38.7 ± 7 and 39.2 ± 11.8 for DOTs/100BD and DDDs/100BD, respectively. After adjusting for trend, seasonality and autocorrelation, a strong correlation was found between the two metrics of total antibiotic use ($r=0.72$, $p<0.001$). Results of the linear regression model are shown in figure 1.



Conclusions: Use of a linear regression model to calculate DOTs/100BD could be a useful approach for neonatal facilities where access to patient medical records is not feasible, although further validation of the model is needed.

GRAM NEGATIVE BACTERAEMIA IN PAEDIATRIC PATIENTS WITH CANCER: A TARGET FOR ANTIMICROBIAL STEWARDSHIP

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PHARMACOLOGY

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Background: Bacteraemia is one of the leading causes of morbidity and mortality in paediatric cancer patients. The most frequently isolated microorganisms are gram-positive bacteria, although gram-negative associate higher mortality rates. Early empirical broad-spectrum antibiotic use has critically improved the outcome but an early switch to targeted regimens is desirable. We describe the epidemiology of gram-negative bacteraemia in cancer patients admitted to a referral paediatric centre, and to identify aspects that may improve antimicrobial use.

Methods: Retrospective observational study of all gram-negative bacteraemia in patients <18 years of age with cancer in a tertiary care 268-bed children's hospital in Barcelona (Spain) between January and December 2019. Data on the empirical and targeted antimicrobial regimens were collected, together with clinical outcomes.

Results: Overall, 129 positive blood cultures were identified. A gram-negative bacterium was isolated in 35. The most commonly used empirical antibiotic regimens were: piperacillin-tazobactam + amikacin (28.6%), meropenem (28.6%), meropenem + amikacin (20.0%) and ceftriaxone (11.4%). Four microorganisms were resistant to piperacillin-tazobactam and one to meropenem; in 4 of the former, a previous history of extended-spectrum beta-lactamase (ESBL) producing *K. pneumoniae* colonization was observed. Median time to switch to targeted regimen was 2.1 days (IQR 2.0-4.0). 54.2% corresponded to febrile neutropenia episodes. Twelve patients presented with septic shock (3 deaths), all received an adequate empirical regimen (Table 1).

Table 1. Demographic, clinical, and microbiological characteristics of the included episodes (n=35)

Demographic characteristics and clinical outcomes		Microbiological outcomes	
Male – n (%)	17 (48.6)	Isolated microorganism – n (%)	
Age (years) – Mean ± SD	5 ± 4.8	<i>Escherichia coli</i>	19 (54.2)
Type of cancer – n (%)		<i>Klebsiella pneumoniae</i>	8 (22.8)
Solid tumour	17 (48.6)	<i>Pseudomonas aeruginosa</i>	3 (8.6)
Acute leukaemia	18 (51.4)	<i>Haemophilus influenzae</i>	2 (5.7)
Chemotherapy – n (%)		<i>Citrobacter spp</i>	1 (2.9)
Low intensity	1 (2.9)	<i>Campylobacter spp</i>	1 (2.9)
Medium intensity	4 (11.4)	<i>Enterobacter cloacae</i>	1 (2.9)
High intensity	22 (62.9)		
No current treatment	8 (22.8)		
Previous HSCT – n (%)	2 (5.7)	Resistance pattern – n (%)	
		Piperacillin-tazobactam	4 (11.4)
		Meropenem	1 (2.9)
		Amikacin	0 (0.0)
Previous multidrug-resistant microorganism colonization – n (%)	4 (11.4)	Mechanism of resistance – n (%)	
		ESBL	4 (11.4)
PICU admission – n (%)	12 (34.3)	<i>Carbapenemase</i>	1 (2.9)
Death – n (%)	3 (8.6)		

SD = standard deviation, HSCT = Hematopoietic stem-cell transplantation, ESBL = extended-spectrum beta-lactamase, PICU = paediatric intensive care unit.

Conclusions: The initial antimicrobial empirical approach in children with cancer and risk of gram-negative bacteraemia must consider local epidemiology and previous data on multidrug-resistant microorganism' colonization to optimize antimicrobial selection. An earlier switch to targeted regimen is needed.

SEROPROTECTION RATES AGAINST HEPATITIS-A AMONG INDIAN CHILDREN, ADOLESCENTS, AND ADULTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Hepatitis-A vaccination is not yet a part of the national immunisation program in India. In absence of this, hepatitis-A outbreaks keep occurring in various parts of the country. In view of the non-availability of recent seroprevalence data from India, this study was planned. The study aimed to find out the proportion of protected individuals against hepatitis-A by measuring the specific IgG titre, among children (9-12 years), adolescents (16-18 years), and adults (25-30 years)

Methods: In this cross-sectional, observational study, apparently healthy subjects from out-patient department (OPD) of tertiary care hospital in Northern India, over one year period (July 2018-June 2019), were enrolled after taking informed consent and their blood sample was collected. Institute ethics committee clearance was obtained before enrolment. Hepatitis-A virus (HAV) DIA.PRO, Milano (ITALY) quantitative IgG ELISA kits were used.

Results: A total of 80 subjects (M: F = 43:37) were enrolled from three age groups. Subjects with a history of hepatitis-A vaccination in past were excluded from enrolment. In our study antibodies (IgG) against hepatitis-A were ≥ 10 U/ml (seroprotective) in 56% (14/25), 84% (21/24), 96.7% (29/30) in age groups 9-12 years, 15-18 years and 25-30 years respectively.

Conclusions: A large proportion of children (44%) before crossing the age of 12 years remain susceptible to hepatitis-A infection in India; which has a definite potential to cause outbreaks. For countries having a higher proportion of susceptible children, the most cost-effective strategy could be childhood immunisation with the hepatitis-A vaccine.

EPIDEMIOLOGICAL AND CLINICAL CHARACTERIZATION OF NEGLECTED DISEASES IN PEDIATRIC AGE IN MINAS GERAIS, BRAZIL: HUMAN IMMUNODEFICIENCY VIRUS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

Caroline Alves¹, Caio De Lima², Mateus Ferro², Otávio Augusto Campos³, André Silva², Marcos Martins², Guilherme Vasconcelos², Alessandra Satokata⁴, Mariângela Alves⁵, Cláudia Carrijo⁶, Tatiany Calegari²

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Background: The Human Immunodeficiency Syndrome is a public health problem, caused by the etiological agents of human immunodeficiency virus (HIV-1 or HIV-2). Besides all of public policies to prevent the contamination, the virus detection rate on pregnant women has grown in the last years. In addition, other social aspects have an influence, such as stigma and prejudice regarding the disease, which reduces the demand for early diagnosis and treatment.

Methods: This is a study based on secondary data about the HIV in the state of Minas Gerais, Brazil, from 2010 to 2019. The data of the HIV notification are from Notifiable Diseases Information System (SINAN) and tabulated in a spreadsheet. The parameters used for the analysis were the gender, the age in years, the ethnicity, and the form of transmission.

Results: In ten years analyzed, 286 notifications were made with an annual average of 28.60(±1.18) diagnosed cases and a total reduction of 60.47%(±14.61) in the number of occurrences. The male gender was 57.73%(±6.95) of the registered occurrences. It was noted the predominance of the age group of 0-4 years corresponding to 47.42%(±7.03) of notifications. Regarding ethnicity, the brown-skin population was observed in 55.00% (±8.90) of the notifications, the caucasian in 34.17%(±8.49) and the black in 10.83%(±5.56). The form of transmission of 5.65%(±4.06) indicated sexual contact and the others mentioned vertical transmission.

Conclusions: HIV is a public health problem that is increasing the number of pediatric cases due to neglect and prejudice about the disease. This is critical because it is a disease that facilitates the development of other pathologies. The results show a large number of vertical transmissions, requiring better follow-up during prenatal and new public policies to decrease the number of cases.

MULTICENTRIC HOSPITAL-BASED SURVEILLANCE OF PERTUSSIS AMONGST INFANTS ADMITTED IN TERTIARY CARE FACILITIES IN INDIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

Aditi Apte¹, Rahul Shrivastava¹, Sonali Sanghavi², Monjori Mitra³, Padmasani Venkat Ramanan⁴, Jugesh Chhatwal⁵, Sweta Jain², Jaydeep Choudhury³, Sarala Premkumar⁴, Ruchika Kumar⁵, Anita Palani⁴, Gurmeet Kaur⁵, Narendra Javadekar¹, Pramod Kulkarni¹, Denis Macina⁶, Ashish Bavdekar¹

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Background: Despite introduction of the DPT (diphtheria pertussis tetanus) vaccine in the expanded program for immunisation, India significantly contributes to global burden of pertussis. Pertussis can lead to severe manifestations in infants requiring hospitalisation. The present study aimed to estimate the burden of pertussis amongst hospitalised infants in India using multicentric hospital-based surveillance.

Methods: This was a multi-centric hospital-based surveillance conducted among hospitalized infants with clinical suspicion of pertussis based on modified Cherry's criteria. Eligible infants were screened for presence of *Bordetella pertussis* and/or *Bordetella parapertussis* in the nasopharynx using culture and real time polymerase chain reaction (RTPCR) testing. The outcomes included proportion of infants with laboratory-confirmed pertussis (either culture or RTPCR-confirmed) [LCP] and economic burden of pertussis amongst at the level of the households.

Results:

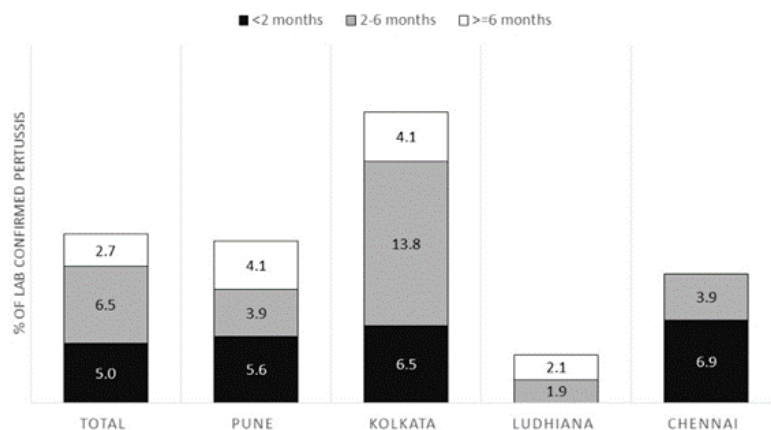


Figure 1: Age-wise proportion of laboratory confirmed pertussis cases

Of 693 infants recruited, 32(4.6%) were detected with LCP. Age-wise proportion of infants with LCP is shown in Figure1. Progressive cough with post-tussive emesis[50%] and pneumonia[34%] were the common clinical presentations. Apnea in young infants(<2months) was significantly associated with pertussis[6.25%vs.0.45%, $p<0.0001$]. Infants with LCP were likely to be younger[median age 102.5vs.157days, $p=0.02$] and preterm[42.9%vs.24.5%, $p=0.03$]. Significantly more infants with LCP were not age-appropriately vaccinated[68.7%vs47.7%, $p=0.04$]. All case of LCP amongst young infants were

unvaccinated. LCP was associated with increased costs for hospitalization, pharmacy and loss of working days by care-givers compared to non-pertussis cases.

Conclusions: Our study provides first systematic evidence for disease and economic burden of pertussis amongst hospitalised infants in India. Young and preterm infants and those inadequately immunised against pertussis are at higher risk of infection.

E. COLI INVASIVE DISEASE IN PORTUGUESE CHILDREN 2010-2019: A NATIONWIDE RETROSPECTIVE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Bacterial invasive disease (BID) is associated with significant mortality and morbidity. The knowledge of its epidemiology and antibiotic resistance pattern is crucial for adequate empirical antibiotic treatment. *Escherichia coli* is one of the major causes of BID in children.

Methods: A retrospective, multicentric, nationwide Portuguese BID Study 2010-2019 with 21 participating hospitals. A subgroup of children with *E. coli* detected on normally sterile body fluids was analyzed. Newborns were excluded.

Results: *E. coli* was isolated in 259 cases of 2294 BID(11%) - blood(95%), cerebrospinal fluid(3%), pleural fluid(2%). 52% were boys, 28% 1-2 months, 50% 3-35 months, 9% 3-9 years-old e 13% ≥10 years-old. Diagnosis: bacteriemia with urinary infection(59%), peritonitis(6%), pneumonia(5%), meningitis(4%), bacteriemia with gastrointestinal disease(2%), otomastoiditis(1%), osteoarticular infection(0.4%), cellulitis(0.4%); bacteriemia without focal infection(21%). Comorbidity was found in 21%, 18% had sequelae and 2% died. Mortality was higher with risk factors(7%), sepsis(5%) and age 3-9 years-old(8%). In 97% antibiotic susceptibility was available, with resistance to Amoxicillin/clavulanate(16%), cefuroxime(6%), cefotaxime(5%), TMP-SMX(7%), aminoglycosides(6%) and carbapenems(0.8%).

Conclusions: *E. coli* is an important cause of BID in children and although it's more prevalent in the first years of life, it may cause severe disease in all pediatric age groups, with a wide clinical spectrum of infection. The antibiotic resistance pattern is worrisome, with cefotaxime resistance in 5% and the emergence of carbapenem resistant strains.

PREVALENCE OF EARLY ONSET DISEASE RISK FACTORS AND GBS COLONIZATION IN A COHORT OF WOMEN IN GREECE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Early Onset GBS Disease (EOD), known for its low prevalence and high mortality rates, is associated with maternal GBS colonization. Preterm birth, preterm/prolonged rupture of membranes, GBS bacteriuria during any trimester of the current pregnancy, intrapartum fever and a history of a previous neonate with invasive GBS disease are considered EOD risk factors. We sought to determine the prevalence of EOD risk factors and the rate of positive cultures in Greece, where universal GBS screening is recommended.

Methods: A cross sectional study of 604 postpartum women was conducted in three major hospitals-maternity clinics (two public and one private) in Athens. Short questionnaires were filled in by participants and additional data, including EOD risk factors, were obtained from patients' medical records.

Results: 12.6% (76 women) had at least one EOD risk factor; the most common was premature birth (9.8%-59 women). There were no women with a history of a previous neonate with invasive GBS disease. Women with any EOD risk factor were 2.75 times more likely to be colonized ($P=0.014$). 34.6% (209 women) did not have a culture taken at all. The rate of culture collection did not differ between women with or without an EOD risk factor ($P=0.939$).

Conclusions: Over one in 10 women had one or more EOD risk factors. Despite their increased risk of colonization, the presence of EOD risk factors was not associated with the rate of GBS screening culture. In order to prevent EOD, universal screening guidelines should be followed or at least screening of all high-risk women should be achieved.

EPIDEMIOLOGICAL DATA AND PROGNOSTIC MARKERS OF MYOCARDITIS IN CHILDHOOD AND YOUTH

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Myocarditis is an inflammatory life-threatening disease of the myocardium, mainly of viral aetiology. We aimed to investigate patients with acute myocarditis and to associate demographic, clinical and laboratory data with complications and disease outcome.

Methods: Children and young adults treated in the Pediatric Intensive Care Unit (PICU) and the Cardiology Department, both in University Hospital of Heraklion between 2008-2020 entered the study. Electronic and patient case notes were used to collect data. Demographics, treatment, imaging, complications and outcome were recorded. Overall, 76 patients were enrolled, mean age 19 ± 7 years, 66 (87%) males, length of stay (LOS) 8 ± 4 days. Most commonly infectious causes found were rhinovirus and enterovirus. High troponin levels were positively correlated with AST, LDH, CK-MB ($p < 0.001$), but not with BNP or LOS.

Results: ST-segment elevation (65%) and negative T waves (59%) were more common in children ($p = 0.015$). Reduced contractility (LVEF $< 40\%$) shown on echocardiography was more common in younger-aged patients ($p = 0.01$), associated with LOS ($p < 0.05$), raised CRP ($p < 0.001$) and increased BNP ($p < 0.03$). Cardiac magnetic resonance imaging was positive for myocarditis in 75%. ROC analysis revealed that worse outcome was predicted by LVEF $< 40\%$ ($p = 0.001$) and increased white blood cells ($p = 0.002$). Young adults had a better outcome compared to pediatric patients (98% vs. 79%, $p = 0.012$) and showed a lesser complication rate (3.6% vs. 21.1%, $p = 0.015$).

Conclusions: Children exhibit a more severe form of myocarditis with higher rates of affected contractility and electrocardiographic changes than young adults. Rhinovirus and enterovirus are the most common infectious causes of myocarditis. Although the outcome is negatively affected by a young age, increased number of white cells and decreased contractility, its prognosis remains good in the majority of patients.

PARENTS' PERSPECTIVE OF ANTIBIOTIC USAGE IN CHILDREN: A NATIONWIDE SURVEY IN ITALY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Antibiotics represent the most widely prescribed drugs in children worldwide, both in hospital and community settings. A comprehensive approach to understanding the reasons and determinants of antibiotic prescription in the pediatric age is needed. This study aimed to assess parents' attitudes and perspectives about antibiotic use.

Methods: Prospective observational study was conducted in all Italian Regions between February 1st and April 30th 2020, using a standardized questionnaire.

Results: 6625 parents from all Italian regions completed the survey. 76% of parents were aware that only bacteria are the target of antibiotics, 92.9% knew that the antibiotic has no direct effect on fever. Antibiotic self-prescription (10.4%) or by call (19.9%) or message (9.6%) consultation were common. 93% of parents were aware that excessive use of antibiotics could select resistant bacteria and 84.7% knew that they could fight resistance. Parents born out of Italy or those with lower income had a higher probability to receive less information or knowledge of proper antibiotic use

Conclusions: Our study suggests that parents' knowledge and attitudes toward antibiotic use and prescription is improving compared with previous studies, while there is still a gap regarding antibiotic resistance, particularly on practices that can reduce its burden. Our study's negative finding is that families from low-income settings or those born abroad have significantly more misconceptions about important antibiotic practices.

TRENDS IN EMERGENCY SERVICE VISITS FOR HERPES ZOSTER (HZ) IN PEDIATRICS: 2009-2020

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

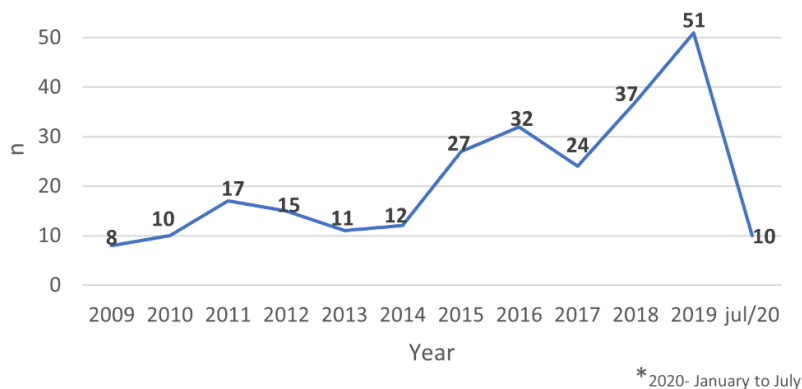
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Background: Although more common in the elderly and immunocompromised, HZ can occur in healthy children. The aim of this study is to review the epidemiology and management in a tertiary paediatric hospital.

Methods: Retrospective review of medical records of 254 cases of HZ, aged <18Y (mean age of 9.3Y ($\pm 4.8Y$)), observed between January 2009 and July 2020, in a country that does not use varicella vaccine.

Results: The annual distribution (figure1) shows an upward trend, peaking in 2019 ($p < 0.001$). 3 children were immunocompromised. Varicella occurred 2.8Y (median) before the first episode of HZ (2M-13.5Y). On those who had varicella in the first year of life, HZ occurred more frequently within a $\leq 24M$ period (61.5% vs 38.5%; $p < 0.001$). 6 children had recurrent HZ (up to 6 times), on the same location. 69% received antivirals. The main complications were bacterial co-infection ($n=12$), meningitis ($n=1$) and facial paralysis ($n=1$); 6 required hospitalization. All had a favorable outcome.



Conclusions: HZ has an increasing trend throughout the years in this paediatric population. Despite affecting mostly immunocompetent children, with mild symptoms, there was a high use of antivirals. There was an association between primary infection in the first year of life and earlier reactivation.

**EPIDEMIOLOGY OF CANDIDEMIA IN CHILDREN AND NEONATES IN SOUTH KOREA:
MULTICENTER STUDY**

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
POPULATION STUDIES AND SURVEILLANCE**

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Background: Invasive candida infection is a serious health threat in the high-risk pediatric population. Data on pediatric epidemiology of candidemia in Korea are limited.

Methods: A retrospective chart review was performed in patients aged 0-18 years diagnosed with candidemia from 2009 to 2018 in tertiary hospitals. Patients were divided into two groups; the neonatal group was comprised of babies with postnatal age 28 days or younger and any patients hospitalized in the neonatal intensive care unit (NICU), and the rest of the patients were grouped into the pediatric group. Only the first candidemia episode for each patient was included. Candida species, antifungal sensitivity, underlying condition, and outcomes were investigated.

Results: A total of 216 patients with candidemia were identified from four hospitals; 107 in the neonatal group and 109 in the pediatric group. Non-albicans Candida spp. (67.2%) was more common than albicans. *C. parapsilosis* was the most commonly identified species (36.5%) followed by *C. albicans* (33.8%), *C. tropicalis* (9.7%), *C. glabrata* (8.8%) and *C. krusei* (5.6%) in all patients. Antifungal sensitivity result to fluconazole was available in 148 patients. About 12.2% of isolates were either intermediate or resistant to fluconazole. Overall mortality within 30 days after candidemia was 23.6%.

Conclusions: Overall, non-albicans candida species composed the majority of pathogens in candidemia in the past decade. Resistance to antifungal agents was noted, and monitoring for epidemiologic change is warranted.

INCREASE OF PAEDIATRIC CAT-SCRATCH DISEASE (CSD) DURING THE COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: CSD does not have a well-established incidence, serologic diagnosis has limitations and the benefit of antibiotics is not clear. We aimed to characterize cases of CSD in the last decade.

Methods: We conducted a retrospective analysis of 70 cases of CSD, with a median age of 8,5y (0-17), 50% male, diagnosed in a paediatric hospital between January 2010 and December 2020. Recent infection was considered probable if IgG \geq 128 and definitive if: positive IgM or increase of the title of IgG/IgM or positive PCR.

Results: The number of cases/year, from 2010/2020, was 4/4/5/13/3/10/4/3/2/3/19, occurring mostly between September-November. 90% had contact with cats and 41,4% a scratch. Adenitis was found in 93%, mostly axillary. Six had hepatosplenic disease and 1 Parinaud oculoglandular syndrome. The median time to medical observation was 8d (0-45). For localised disease, antibiotics were given to 95,2% (macrolide in 70%). In this subgroup, the median time to resolution was 30d irrespective of treatment with a macrolide as the first-line antibiotic (8-180 in the macrolide group vs 5-285). Outcome was favourable in all.

Conclusions: There was a significant increase in the incidence of CSD in 2020. The COVID-19 pandemic may be a contributing factor, with longer time at home and more contact with pets. Despite a long course in some cases, outcome was good in all, including the cases that were not treated or received a b-lactam.

METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS SCREENING IN PEDIATRIC HOSPITALIZED PATIENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The incidence of community-acquired methicillin-resistant *Staphylococcus aureus* (MRSA) infection is rising. Many countries have implemented screening programs to identify, cohort and isolate MRSA carriers in healthcare facilities leading to reduced MRSA transmission. We present the results of the protocol for prevention and control of MRSA colonization implemented in our department, integrated in a level II Portuguese hospital.

Methods: An epidemiologic inquiry to identify and screen high risk patients for MRSA colonization was applied at the admission to all children (0-18years). Isolation measures and decolonization protocol were also employed. Epidemiological and clinical data were analyzed using chi-square test with proper adjustments and nonparametric tests for quantitative non-normative variables.

Results: Between august2017-february2020, 3881 epidemiologic inquiries were filled. At least one risk factor for MRSA colonization was found in 1481 patients: recent hospitalization (65%) or antibiotic prescription (58,3%); presence of indwelling medical devices (2,6%); chronic wounds (1%) or history of infection/colonization with multidrug-resistant organisms (2,1%). 4,3% nasal swabs were positive for MRSA. Isolation measures were applied to all patients and decolonization protocol to 49,3%. There was no difference in comorbidities between colonized and non-colonized patients. History of infection/colonization with multidrug resistant organisms was the most important risk factor for MRSA colonization ($p=0,001$).

Conclusions: In our study a low prevalence rate of MRSA carriers in high risk patients was found. The identification of risk factors at admission such as history of infection/colonization with multidrug resistant organisms and early implementation of isolation measures are crucial to prevent healthcare transmission.

EPIDEMIOLOGICAL ASPECTS OF DENGUE IN BRAZIL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Dengue is an arbovirus transmitted by the *Aedes aegypti* mosquito. It is the main viral disease transmitted by mosquitoes in the world, it is common in tropical and subtropical areas with a dramatically increasing number of cases in recent decades. The objective is to identify epidemiological characteristics of distribution, affected population and the method of diagnosis of dengue in Brazil.

Methods: The data was collected in the Notifiable Diseases Information System (SINAN) and tabulated in a spreadsheet. The parameters analyzed were the distribution of cases over the months, the region of the country, and the form of diagnosis and individual characteristics, including the age, the sex and race. All cases reported in Brazil up to 2019 were considered in this analysis.

Results: Up to 2019, 5,871,728 cases were reported. The number of registered cases was higher during summer and autumn. The region with the highest number of notifications was the Southeast (57.47%), followed by the Northeast (18.92%) and Midwest (16.88%) regions. Out of the total, 1,146,203 did not report the diagnostic method, 1,618,277 reported having made the diagnosis by laboratory tests, 3,016,295 due to clinical and epidemiological characteristics. The most affected group was of people between 20 and 59 years old (63.55%). Females were 55.52%. Brown was the most prevalent race (30.47%).

Conclusions: A higher prevalence of dengue cases was identified in the summer and autumn months in the Southeastern region. A greater number of cases was observed in people aged 20 to 59 years, brown and white. Women were more affected than men. The number of laboratory diagnoses is still insufficient, reflecting a poor management of public health care and low investments.

DIAGNOSIS OF CONGENITAL SYPHILIS IN BRAZIL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Syphilis is a chronic infectious disease caused by *Treponema pallidum*. The transmission can occur through sex or vertically, causing the congenital syphilis. Infected infants, in congenital cases, may suffer severe sequelae, including sensorineural hearing loss and cerebral palsy, but this can be avoided with timely treatment. This study analyzed the epidemiology of congenital syphilis cases notified in Brazil since 2010.

Methods: Data were collected in the Notifiable Diseases Information System (SINAN). The parameters analyzed were the cases in children under one year of age per year of diagnosis, the percentage distribution of the age of children in diagnosis, and the congenital syphilis cases according to mother's age group by year of diagnosis. All cases were reported from 2010 to 2019 in Brazil.

Results: The cases at the age of up to one year increased progressively, from 6,946 in 2010 to 26,441 in 2018, and then suffered a slight decrease, with 24,130 cases in 2019. The diagnosis was made in the first 7 days of life in more than 95% of cases. In relation to the mother's group, the age of 20-29 years was the one with the highest prevalence (52.73%), followed by 15-19 years (23.09%) and 30-39 years (18.78%). The ages with the lowest number of cases were over 40 and 10-14 years.

Conclusions: An increasing trend was observed in the number of cases over the years. In addition, the age of diagnosis remained early, mostly over the first 7 days of life. Regarding mother's age, a predominance of young adults was observed, followed by adolescents. This may represent the reduced care of young adults over their own health in Brazil in recent years.

THE EPIDEMIOLOGIC ASPECT OF MALARIA IN BRAZIL EXCLUDING THE NORTH

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Malaria is a parasitic infection transmitted by the mosquito Anopheles. The Plasmodium leads to a cyclical fever, which is a characteristic, that helps in the diagnosis. Five species can infect humans. These are P.falciparum, P. Malariae, P.vivax, P.ovale, and P.knowlesi. We seek to identify the variety of cases in Brazil over the recent years, analyzing the total cases over each year, the month of the first symptom, and the most affected region excluding the North.

Methods: The data were collected using the Notifiable Diseases Information System (SINAN) and tabulated in a spreadsheet. The parameters analyzed were the total cases over the year, the month of the first symptom, and the most affected region. All cases were reported during the period between 2015 and 2019 in Brazil. The North was excluded from the analysis in this study.

Results: Over the interval 2015-2019, 2,762 cases were reported. The year with the greatest number of cases was 2018, with 728 cases, and the year with the smallest number of cases was 2016, with 495 cases. The biggest number of cases was notified in January, with 326 cases and the smallest number of cases was notified in June, with 189 cases. The most affected region is the Southeast, with 1,520 cases reported in the interval 2015-2019.

Conclusions: The highest prevalence of malaria was reported in the Southeast, the most populated region in Brazil, other regions notified similar number. A greater number of cases was observed in January than the other months, representing summer in Brazil. Between 2015 and 2019 there was no significant increase in malaria cases in the country, and the Southeast was the leader of cases each year.

CLINICAL AND EPIDEMIOLOGICAL CHARACTERIZATION OF NEGLECTED DISEASES IN PEDIATRIC AGE IN THE STATE OF MINAS GERAIS, BRAZIL: TUBERCULOSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Tuberculosis caused by *Mycobacterium tuberculosis* is a serious bacterial infectious disease with direct transmission from inhalation of aerosols containing the bacillus. In Brazil between 2017 and 2018 there was an increase in the incidence of the disease, as well as in cases in children under 10 years of age. The objective of this research is the clinical and epidemiological characterization of childhood tuberculosis.

Methods: It is a descriptive epidemiological study, using secondary data collected from the Notifiable Diseases Information System (SINAN), the data was collected from January 2007 to December 2018, in the state of Minas Gerais, Brazil. The data was tabulated in a spreadsheet. The variables analyzed were the ethnicity, the gender, the zone, the age, the clinical form, the diagnosis and treatment.

Results: There was a predominance of cases in brown (50.10%), in male (51.93%), in urban areas (90.43%), in the age groups 0-4 years old (55.34 %), 5-9 years (56.21%) and 10-14 years (46.31%). 81.75% of chest X-rays had suspicious signs, 55.45% of sputum smear microscopy for acid-alcohol-resistant bacillus (BAAR) had positive results, 43.97% of sputum cultures were positive and 83.92% presented results suggestive of tuberculosis in the histopathological exams conducted. The prevalent clinical form was pulmonary (71.44%) and Rifampicin was indicated in 67.33% of cases for the treatment of the disease.

Conclusions: The profile most affected by the disease was boys from 5 to 9 years of age, living in urban areas, with pulmonary tuberculosis diagnosed mainly by the histopathological exam, which is not the gold standard, and received treatment with an appropriate antibiotic, which enables the planning of control actions. The use of another exam might be because of the low cost.

PEDIATRIC VISCERAL LEISHMANIASIS IN BRAZIL: A SECONDARY DATA ANALYSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Visceral Leishmaniasis (VL) is an endemic infectious disease in Brazil. Its mortality rate of over 90% if untreated and its close relation to poverty, associated with its neglected tropical disease status, poses a worrying panorama to Brazilian public health. The goal is to analyze the epidemiology and mortality of VL in Brazilian population ranging from 0 to 19 years old, through the years of 2009 to 2019.

Methods: The data about confirmed VL infections and mortality rate in Brazilian territory was gathered from the Notifiable Diseases Information System (SINAN) and tabulated in a spreadsheet. The analyzed parameters were age ranges (under 1, 1 to 4, 5 to 9, 10 to 14 and 15 to 19 years old) and mortality rate referred to the period of 2009 until 2019.

Results: In ten years of analysis, 20750 LV cases were reported. The most affected age range was "1 to 4 years old", with an average of 900 cases per year. Age ranges of under 1 year old have an average of 319/year; 5 to 9, 322/year; 10 to 14, 168/year; and 15 to 19 years old, 178 per year. Children under 1 year old presented the highest mortality rate, 4.95%, while 5 to 14 years old children presented 1.25%. The average mortality rate of the analyzed age ranges was of 4.15%.

Conclusions: The highest number of VL cases refers to children of 1 to 4 years old and the most prevalent mortality rate was in "under 1 year old". The data presents the need of continuous control and monitoring of VL in the Brazilian pediatric population, especially children under 1 year old, who have presented high mortality rates when compared to the other age ranges.

RELATION BETWEEN PREMATURITY AND LEAD, CADMIUM AND MERCURY CONCENTRATIONS IN UMBILICAL CORD BLOOD IN SBA REGION (WEST OF ALGERIA)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Exposure to heavy metals such as lead, cadmium and mercury during pregnancy carries a great risk to the mother as well as the fetus. The aim of this study was to measure in umbilical cord blood the concentration of lead (Pb), mercury (Hg) and cadmium (Cd), and evaluates the relationship between this levels and prematurity. The lead, cadmium and mercury levels were measured by atomic absorption.

Methods: Lead, cadmium and mercury were measured in umbilical cord blood samples of 70 women who delivered at “service of obstetrics and gynecology” in Hospital-Center University of Sidi Bel Abbes region in Algeria between 2016 and 2017.

Results: The results revealed several factors predisposing to prematurity in addition, age of mother, Socio-economic level and History of abortion. The mean concentrations of cord blood lead, cadmium and mercury were; 18.97 µg/L, 0.26 µg/L, and 6.20 nmol/L, respectively. There was a highly significant direct correlation between cord lead concentrations and gestational age ($r=0.43$; $P = 0.017$), and we found that gestational age and birth weight inversely correlated with cord mercury concentration ($r=0.44$ and $r=0.57$ respectively). No correlation was observed between cord cadmium concentrations and gestational age.

Conclusions: This study has shown that pregnant women in this region of the country were exposed to high levels for heavy metals which need an intervention.

LOW LEVELS OF PEDIATRIC VARICELLA-RELATED HOSPITALIZATION IN 2020: COMPARISON BETWEEN COVID-19 PANDEMIC PERIOD AND DATA FROM 2008-2019 IN TURKEY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: There are some non-pharmaceutical interventions implemented for the control of COVID-19 pandemic including curfews, school closures, mandating social distancing, canceling mass gathering activities, and travel restrictions. The effect of pandemic and non-pharmacological interventions on other childhood diseases is limited. In this study we plan to evaluate varicella related hospitalization rate during COVID19 pandemic period and to compare pre-pandemic period.

Methods: VARICOMP is a prospective study, which aims to evaluate pediatric varicella-related hospitalization in Turkey since 2008. At this part, medical records of children requiring hospitalization due to varicella from 30 health care centers (representing 50% of the childhood population in Turkey) have been evaluated between March 2020 and December 2020, and compare the obtained data since 2008. Only 24 children (12 boys, 12 girls, aged between 1 month-17 years, median age 67 months) were hospitalized during the COVID-19 pandemic, while 234 to 595 children per year have been hospitalized between 2008 and 2019.

Results: While we observed decline for varicella related immunization among children aged between 1-5 years after the introduction of single dose varicella vaccine during 2013-2019, the incidence of varicella related hospitalization among all aged groups were significantly lower during the COVID-19 pandemic. During the pandemic there are no seasonal peak which we previously observed in pre-pandemic period as January and May. While 72% of children were previously healthy during the pre-pandemic period, 62.5% of hospitalized children have an underlying condition.

Conclusions: Implemented measures for the control of COVID-19 pandemic, especially school and day care center closures, curfew for children and mandating social distancing might reduce the transmission of varicella virus, resulting low levels of hospitalization. Further surveillance needed after easing the restriction when pandemic is controlled.

MENINGOCOCCAL DISEASE SURVEILLANCE IN THE ASIA–PACIFIC REGION: UPDATES FROM THE GLOBAL MENINGOCOCCAL INITIATIVE (GMI)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The incidence, serogroup distribution of invasive meningococcal disease (IMD) continues to change rapidly, and to provide an update on surveillance, epidemiology and prevention is essential. A Global Meningococcal Initiative (GMI) 2020 meeting aimed to evaluate the latest surveillance data and control strategies for IMD in the Asia–Pacific region.

Methods: IMD cases are often reported throughout the region, but not notifiable in some countries. The incidence of IMD is low, higher among children and similar across the Asia–Pacific region (0.02-2/100,000 persons), with outbreaks predominantly occurring among certain sub-populations. Some countries have now implemented serotyping or genotypic/genomic analysis for case confirmation and strain tracking.

Results: The predominant serogroups were B, C, W, and Y. Regarding the ST-11 complex(cc11), these are distributed including the Asia/Pacific MenW genomes within the Chinese strain sublineage (China, Japan), the Hajj strain sublineage (Bangladesh,Russia), and the South American strain sublineage (Russia, Japan, New Zealand). A novel penicillin-resistant W:cc11 strain initially identified in Australia, with cases now arising in New Zealand, Japan. Resistance to ciprofloxacin, which is of concern, with the close monitoring of antibiotic-resistant clonal complexes for example cc4821,that emerged in China now

identified in Canada and Japan, being a priority.

Conclusions: There are a range of control strategies (chemoprophylaxis and/or immunization for high-risk groups) employed across the Asia-Pacific region; however, most countries do not include meningococcal vaccination as part of their National Immunization Programs. Some countries (e.g. Australia and China), in the region have incorporated meningococcal vaccines into their program in response to outbreaks or the emergence of virulent strains. Even so, there are several potential barriers to vaccine uptake, including cost, availability, and misconceptions surrounding vaccination.

PARENTAL KNOWLEDGE, ATTITUDES AND PRACTICES ON ANTIBIOTIC USE FOR UPPER RESPIRATORY TRACT INFECTIONS IN CHILDREN IN GREECE IN THE ERA OF COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Upper respiratory tract infections (URTIs) are common in children. Even though they are usually of viral origin, parental expectations often contribute to inappropriate antibiotic prescription. The purpose of this study was to analyze parental knowledge, attitudes and beliefs on antibiotic use for children with URTIs infection in Greece in the era of COVID-19 pandemic

Methods: This questionnaire-based cross-sectional survey was conducted between May and August 2020 involving a random sample of parents who visited primary health care centers in the city of Patras, in Western Greece. Data on parental attitudes and beliefs about antibiotic use were collected. Univariate analysis was used to identify risk factors associated to injudicious antibiotic use. Chi-square test was used for qualitative data. Factor analysis was performed to identify groups of parents with common characteristics

Results: Of the 412 participants, 26,9% believed that antibiotic use may prevent complications of common cold and flu. 61% were concerned about antibiotic side effects. Most parents (69%) declared considerably anxious about their children's health during COVID-19 pandemic. Although the majority (85%) knew that COVID-19 infection is viral, half of them were uncertain as to whether antibiotics are needed. Parents of low socioeconomic status ($p=0.002$) and educational level ($p=0.005$) were more likely to ask for antibiotics for COVID-19. Factor analysis revealed certain groups of parents with common characteristics and attitudes.

Conclusions: Overall we found that the percentage of Greek parents that anticipate antibiotics for viral infections including COVID-19 remains still high. Public health interventions should target on these parents' characteristics to reduce antibiotic overuse and misuse. Training healthcare professionals to provide adequate information is crucial to clarify misperceptions in the field.

SECULAR TRENDS OF BACTERIAL GASTROENTERITIS IN MALTESE CHILDREN FROM 2015 TO 2020: INVESTIGATING THE EFFECT OF THE SARS-COV-2 PANDEMIC

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

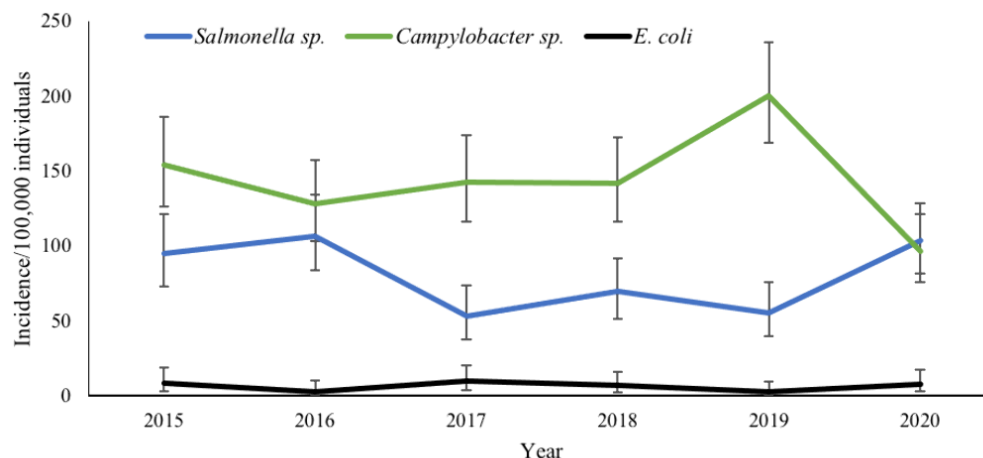
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Background: Infectious diarrhoea is a major public health concern worldwide. Enteropathogenic bacteria contribute to substantial morbidity in developed countries. We present a retrospective analysis of secular trends of paediatric bacterial gastroenteritis from 2015-2020.

Methods: Children aged <16 years who had a positive stool culture or polymerase chain reaction for *Salmonella* sp., *Campylobacter* sp., or diarrhoeogenic *Escherichia coli* were included. Results were obtained from electronic records at Mater Dei Hospital in Malta. Incidence rates for each pathogen were calculated, and Fisher's Exact Test was used to obtain 95% confidence intervals.

Results: *Campylobacter* sp. was the commonest cause of paediatric bacterial gastroenteritis from 2015-2020, with incidence varying from 97-201/100,000 individuals, and a significant fall evident from 2019 to 2020 (201/100,000 vs 97/100,000; $p<0.0001$). Conversely, incidence of *Salmonella* sp., the second commonest causative agent of bacterial paediatric gastroenteritis, increased in 2020 compared with the 2017-2019 period (2017 vs 2020: 53/100,000 vs 104/100,000, $p=0.0008$; 2018 vs 2020: 70/100,000 vs 104/100,000, $p=0.0291$; 2019 vs 2020: 56/100,000 vs 104/100,000, $p=0.0013$). The number of diarrhoeogenic *E. coli* isolates in stool culture was stable over the 2015-2020 period.



Conclusions: We describe a significant rise in paediatric *Salmonella* sp. gastroenteritis and fall in *Campylobacter* sp. gastroenteritis observed between 2019 and 2020. While these may be part of natural trends in the pathogens causative of bacterial gastroenteritis, the significant changes suggest the possibility of a relationship with the start of SARS-CoV-2 pandemic in Malta (first documented case: 7th March 2020) as well as the lockdown measures (start date: 12th March 2020) implemented to restrict local spread. Further research on food storage, processing and consumption behaviour of children during this pandemic is needed.

INCIDENCE OF MENINGITIS DURING THE LOCKDOWN OF PATIENTS HOSPITALISED IN THE PAEDIATRIC EMERGENCY DEPARTMENT OF THE MOTHER AND CHILD HOSPITAL, MARRAKECH UNIVERSITY HOSPITAL IN MOROCCO.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Bacterial meningitis is a diagnostic, therapeutic and prophylactic emergency, especially for children. Knowledge of the incidence of meningitis during the period before and after lockdown allows us to determine the factors that influence the incidence of the latter and to identify the existence of links between the state of confinement and meningitis.

Methods: A retrospective epidemiological study based on a documentary analysis of 72 files using an operating sheet was carried out in the emergency department of the mother and child hospital of the Marrakech University Hospital on the incidence of meningitis for the period of the month (3, 4, 5,6) in 2019 and (3, 4, 5,6) in 2020.

Results: The results show successively during the period of lockdown versus the period before lockdown a decrease in the number of patients hospitalised for meningitis (30; 42), a predominance: male (60%; 71.43%), from 1 month to 2 years of age (33.34%; 34.15%), from urban areas (76.67%; 76.19%). for the final diagnosis (20%) of meningitis are confirmed in confinement versus (2.38%) before confinement.

Conclusions: The need for more in-depth correlational studies to better study the associations between meningitis and lockdown in COVID.

SUBMICRON AEROSOL POLLUTION IN PRIMARY SCHOOLS IS RELATED TO COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: It was reported before relatively high levels and big differences of indoor air pollution in primary schools within one middle size Eastern European city (Prokopciuk N, Environ Sci Pollut Res, 2020).

Methods: Aerosol pollution was measured during the period 2017-2018 in primary schools of Vilnius. The total aerosol particle number concentration (PNC) in the size range 0.01 to > 1.00 µm was evaluated using condensation particle counter (CPC, TSI model 3007). Particle number (PN) and particle mass (PM) concentrations in the size range 0.3 - 10 µm were measured using an Optical Particle Separator (OPS, TSI Model 3330). Retrospective morbidity data of pupils aged 6-11, were presented by State Institute of Hygiene. The number of pupils participating in the study was 3435.

Results: The level of morbidity of pneumonia among children in schools varied from 0.8 to 3.2%. It was found significant correlation between the prevalence of pneumonia per person and PNC as well as PMC in the particle size range of 0.3 to 1.0 µm ($r=0.72$, $p=0.019$ and $r=0.75$, $p=0.020$). It was found no correlation in the size range of 0.3-2.5 µm and 0.3-10 µm for PNC and PMC. The level of indoor air pollution in this size range (0.3-1.0 µm) varied in schools from 40.47-189.88 parts/cm³ (PN) to 2.02-7.63 µg/m³ (PM).

Conclusions: Indoor aerosol pollution in the particle size range of 0.3-1.0 µm is related to community acquired pneumonia morbidity in children. Further prospective studies are needed to confirm these results. **Acknowledgement** We are thankful for collaboration State Institute of Hygiene and Center for Physical Sciences and Technology.

ATTITUDES OF MEDICAL AND NURSING TRAINEES ON MANDATORY VACCINATION OF HEALTH CARE PROFESSIONALS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Vaccinations of healthcare professionals (HCPs) is a key measure of infection control in healthcare facilities, but uptake rates remain low. Mandatory vaccination policies have been occasionally implemented to increase compliance among HCPs, but this remains an issue of controversy. The purpose of this survey was to assess the attitudes and beliefs of young physicians and nurses towards mandatory vaccination and further explore their knowledge and vaccination coverage against VPDs.

Methods: A prospective cross-sectional study was conducted in 2020 and included all medical and nursing trainees of a referral teaching hospital in Crete, Greece. Trainees consisted of medical residents as well as medical and nursing students undergoing their clinical training. An anonymous questionnaire was distributed following pilot testing. The knowledge of the participants was evaluated through a total score of 9 correct answers to 9 questions and then was modified on a scale of 0-100, with a higher score indicating better knowledge.

Results: In total, 410 trainees participated (response rate: 87.2%), of whom, 194 residents, 154 medical and 62 nursing students. The majority (78% in total; 75.8% of residents, 83.8% of medical students and 71% of nursing students) supported mandatory vaccination for HCPs and 84.6% believed that immunization should be a prerequisite for employment. Vaccination coverage was suboptimal; students had lower vaccination rates against influenza, hepatitis B, measles, mumps, rubella and varicella as compared to residents. Medical students had higher mean knowledge scores (69.7%, 6/9 questions) than residents (64.8%) and nursing students (57.5%).

Conclusions: This study demonstrates that mandatory vaccination policies are supported by the next generation HCPs. Constant education of HCPs may affect their attitudes towards vaccinations and raise their vaccination coverage.

EPIDEMIOLOGY OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION IN CHILDREN UNDER FIVE IN DR SOETOMO HOSPITAL, SURABAYA, INDONESIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Human Immunodeficiency Virus (HIV) infection is a growing problem for children worldwide. The number of HIV patients in Indonesia is increasing as well. The prevention of mother to child transmission (PMTCT) program in Indonesia which is held in 2004 still unsatisfied of coverage about 46% in 2020. However, since its implementation the cases of perinatal acquired HIV have begun to decrease. We report the epidemiology pediatric HIV under five year old in our hospital after implementation of PMTCT program in Indonesia.

Methods: We reviewed cross sectionally our medical record in pediatric HIV outpatient clinic. HIV patients who bellow five years were included. Sex, breast feeding status, route of delivery, first diagnosis stages, and ARV treatment were recorded. Clinical stages is based on WHO clinical classification. Diagnosis was confirmed by serology and virology test.

Results: We have 17 children of 140 patients on ARV are under five year old. Eighty-eight percent patients in the age of 3-5 year. Most of them are female, 70% were borned spontaneously, and 82% were breastfed. Eighty-two percent patients were diagnosed as clinical stage 3 and 4 and received first line of ARV consist of Lamivudine, Zidovudine, and Nevirapine, and 1 patient changed to Tenofovir, because of anemia as side effect of Zidovudine. They all have had CD4 and viral load monitoring, and 8 (47%) patients had undetectable result of viral load evaluation.

Conclusions: Most HIV patients under five came on AIDS condition. Vaginal delivery and breastfeeding are the factors of their transmission. It explains how important PMTC as prevention tool to decrease HIV cases in children. Early diagnosis, treatment and monitoring play the role for viral suppression. First line ART still shows as potent ARV in limited resources countries.

CHANGES IN ROTAVIRUS MOLECULAR EPIDEMIOLOGY DURING THE POST VACCINATION ERA IN GREECE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

Dimitra - Maria Koukou¹, Elizabeth- Barbara Tatsi¹, Panagiota Chatzichristou¹, Georgios Trimis², Charilaos Dellis¹, Theodota Liakopoulou³, Genovepha Chronopoulou⁴, Eleni Vourti⁵, Athanasios Michos¹, Vasiliki Syriopoulou¹

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Background: Rotavirus (RV) vaccination has been implemented since 2007 in Greece and coverage was 60% as of 2020. RV circulating genotypes differ geographically and temporally, and so we present here possible changes in the RV molecular epidemiology during the post vaccination period.

Methods: Demographic data and fecal samples were collected from Greek children (0-16 years old), hospitalized with symptoms of gastroenteritis in eight Pediatric Departments. Study's period was 09/2017-08/2020. Samples were tested for RV Group A antigen with rapid immunochromatographic assay. Positive samples were further G and P typed employing RT-PCR, semi-nested multiplex PCR and Sanger sequencing of the VP7 and VP4 genes.

Results: A total of 535 children (male: 58%) participated in the study with median age 1.9 years. Genotypes were determined in 508/535 strains (95%) and their distribution was as following: G2P[4] (21.5%); G1P[8] (20.5%); G4P[8] (20.7%); G9P[8] (11.2%); G9P[4] (9.4%); G12P[8] (4.1%) and G3P[8] (2.8%). Uncommon and mixed genotypes were identified in 7.6% and 2.2% of the samples respectively. Seasonal distribution of RV genotypes is shown in the table below.

Season	Predominant RV Genotypes (%)
2017-2018	G4P[8] (42.5%)
2018-2019	G9P[8] and G9P[4] (33.4% in total), G2P[4] (32.3%)
2019-2020	G1P[8] (28.4%)

Conclusions: This study indicates high diversity of the predominant RV genotypes in Greek children during the post vaccination era. As RV incidence decreases, continuous monitoring reveals the diversity of genotypes presented in the residual cases.

OUTBREAK OF WHOOPING COUGH IN A NURSERY IN A POPULATION WITH VERY HIGH VACCINE COVERAGE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Whooping cough is a highly contagious disease and an important public health problem because of its resurgence despite decades of vaccination. We describe an outbreak in a population with very high vaccine coverage.

Methods: We performed an investigation of a whooping cough outbreak that lasted 5 weeks (June to July 2020) in a nursery with 19 children. All were appropriately vaccinated for age according the national immunization programme, with at least 3 doses, from different vaccine batches. *Bordetella pertussis* (Bp) was identified by RT-PCR, with negative *B. parapertussis*. The *Public Health Management of Pertussis in England*, PHE, 2018 definitions of suspected, epidemiologically linked and confirmed case were used.

Results: 17/19 were suspected cases presenting with cough. 8 were confirmed with positive Bp RT-PCR test; 2 had negative Bp RT-PCR (2-3 week history of symptoms); 7, epidemiologically linked, were not tested. The index case was identified. Median age was 2,5Y (16M-3,5Y). All had mild symptoms, and there were no hospitalizations or complications. Time of clinical presentation, vaccination and Bp RT-PCR results are in figure 1. No symptoms were registered in adults. One sibling, aged 7Y, with 5 doses of vaccine, also presented with cough and had a positive Bp RT-PCR.

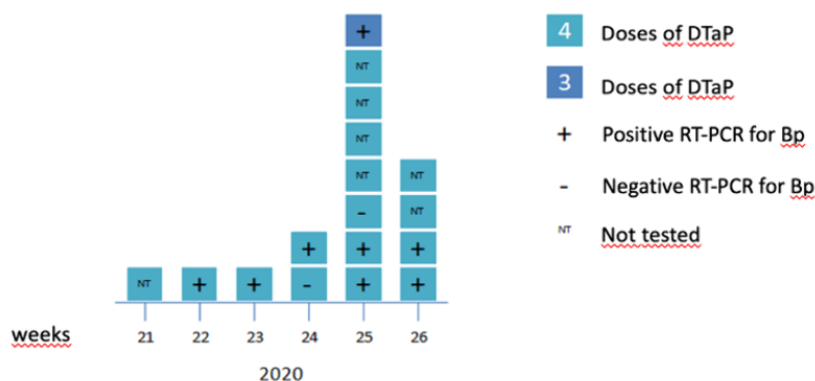


Figure 1. Epidemic curve, number of doses of DTaP vaccine and Bp RT-PCR results (each square represents one case)

I

Conclusions: This outbreak, in which 17 out of 19 children were symptomatic despite being immunised, raises concerns about the effectiveness of the vaccine and the possibility of a vaccine-escape mutant.

A DROP IN A NUMBER OF REPORTED CASES OF INFECTIOUS DISEASES DURING THE COVID-19 PANDEMIC IN POLAND

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The first case of COVID-19 in Poland was diagnosed on 4th of March 2020. Since then, social distancing measures were implemented to reduce the spread of the pandemic. The aim of the study was to assess how these measures affected the annual change in the incidence of non-COVID-19 infections.

Methods: We have selected 9 common infectious diseases that are mandatorily reported to the Polish National Institute of Hygiene. We analyzed the number of cases reported in the entire Poland in 2020 when the restrictions were implemented, and in years 2016-2019 to compare how strongly restrictions influenced on the drop of cases.

Results: In 2020 there was a dramatic drop of reported non-COVID-19 infectious diseases in Poland, compared to years before the pandemic (2016-2019). Pertussis demonstrated the biggest decline of 77% followed by viral acute gastroenteritis (73%), scarlet fever (60%), chicken pox (57%), invasive pneumococcal disease (57%), invasive meningococcal disease (49%), newly detected HIV infections (37%), and influenza (35%). Bacterial acute gastroenteritis showed the lowest decline of 20%.

Conclusions: Our data suggests that restrictions implemented in the time of a pandemic may successfully prevent various infectious diseases that are transmitted by close contact. Social distancing, hand hygiene and the use of face masks play an important role in reducing transmission of airborne diseases, but also unexpectedly stop infections spread by other routes like HIV and gastroenteritis. This conclusion may be a helpful lesson for the future to successfully prevent the spread of various pathogens so rapidly and easily.

BRONCHIOLITIS INCREASES THE RISK OF RECURRENT WHEEZING OR ASTHMA: REAL WORLD DATA TELLS US

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Several studies have suggested that RSV-associated early infections during the childhood is a risk factor for development of recurrent wheezing (RW) or asthma. We estimate the risk of RW or asthma in children with a previous history of bronchiolitis (PHB) using Real World Data (RWD) from the Valencia Health System Integrated Database (VID), in Spain.

Methods: A population-based study using RWD. All children born between 2012 and 2015 residing in the Valencia Region were followed until 2019 or their 5th birthday. RW or asthma: children ≥ 2 y/o with three or more wheezing-related ICD codes in one year at least one month elapsed or at least one asthma code in the follow-up period in primary care. Children with PHB: children < 2 y/o with a hospital-related or primary care bronchiolitis diagnosis ICD-coded. Statistics: risk of RW or asthma was estimated by a multivariable logistic regression.

Results: The study included 171,984 children. Of those, 47,160 (27%) had a PHB and 29,109 (17%) RW or asthma episodes. 59% of the 5,687 severe bronchiolitis were RSV-bronchiolitis. Risk of RW or asthma is shown in Table 1:

Table1: Recurrent wheezing or asthma risk by bronchiolitis diagnosis before 2 y/o.	
	<2 y/o bronchiolitis
Ref: No bronchiolitis	OR (95%CI)
Outpatient bronchiolitis	3.02 (2.94, 3.11)
Severe RSV-bronchiolitis	3.19 (2.95, 3.44)
Sever non-RSV-bronchiolitis	4.03 (3.69, 4.40)

OR: Odds ratio, CI: Credible interval.

Conclusions: Outpatients and severe bronchiolitis in the two first years of life increase the risk of RW or asthma in children 2-4 y/o. 59 % of severe bronchiolitis were due to RSV.

THE IMPACT OF A DECADE OF MALARIA CONTROL IN NIGERIA, DETAILED MAPPING AND A DESCRIPTIVE ANALYSIS OF DATA FROM 2008 TO 2018

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Malaria remains a leading cause of malaria morbidity and mortality among children globally. The mortality is highest in Sub Saharan Africa, particularly in Nigeria, which accounts for about 40% of the global mortality. There has been significant investment in malaria control in Nigeria without success! We analysed data from multiple sources from 2008 to 2018 and described the impact of multiple malaria control interventions on malaria morbidity and mortality in Nigeria and globally

Methods: We performed a secondary analysis of available data on malaria control in Nigeria. The sources of data were: Nigeria Demographic and Health Survey (NDHS) 2008, 2013 and 2018; Nigeria Malaria Indicator Surveys (MIS) 2010 and 2015; Nigeria in World Malaria Report 2008 to 2018; We extracted relevant malaria control and prevalence data from the NDHS and MIS. We analysed morbidity and mortality data. We created trend graphs and mapped in patterns of control and disease in Nigeria.

Results: The global prevalence of malaria fell steadily from 243 to 188.9 million cases annually from 2008 to 2018. The trend in Nigeria showed that estimated cases rose from 50.6 to 57.2 million from 2011 to 2018. The actual incidence rose from 28,430 to 29,194 cases per 100,000 from 2012 to 2018. Mortality fell globally from 863,000 to 411,000 deaths, while the Nigerian estimates fell from 207,700 to 95,800 deaths. Local data showed progressively increasing rates of ITN use, IRS and urbanisation, spread out unevenly across the country

Year	Reported cases (1000)	Reported deaths (1000)	global estimated cases (1000)	global estimated deaths (1000)	global U5 deaths (1000)	Nigeria estimated cases (1000)	Nigeria estimated deaths (1000)	Nigeria estimated incidence rate (per 100,000 population)	Estimated Population at risk (1000)	PfPR2_10	Nigeria summary estimated deaths (1000)
2008			243000	863	733.6						
2009	4295.7	7.5	225000	781	663.9						
2010	3873.5	4.2	216666	655	428						153.4
2011	3392.2	3.4	219000	660	561	50577	207.7				143.7
2012	2087.1	7.7	207000	627	26	48000	180	28430.32616	168833.8	26	136.4
2013	12830.9	7.9	198000	584	453	37000	146	21311.4858	173615.3	14	123.6
2014	7827	6.1	214000	438	306	60000	115.5	33802.8169	177500	16	121.4
2015	8376.3		212000	429	303	61000	110	33479.32514	182202		111.6
2016	11682		216000	445		57300	100.7	30813.04494	185960.2		104.4
2017	18691		231000	422		54029	95.9	28306.22633	190873.2		95.9
2018	18870.2		228000	411		57184	95.8	29194.17362	195874.7		95.8

Conclusions: Lack of consistent data negates proper malaria control evaluation, in the absence of reliable local data. Despite apparent uptake in control activities, it has not translated into sustained progress towards elimination. This implies data gaps and a need to use the data to refocus malaria control.

EPIDEMIOLOGICAL CONSIDERATION OF MEASLES DISEASE IN INFECTED ALBANIAN CHILDREN DURING JANUARY 2018 JANUARY 2019.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Measles is an acute highly contagious infectious disease caused by virus part of Paramyxoviridae family viruses. The aim of this study is to identify new cases among 516 Albanian children aged 1-14 years, suspected and hospitalized for measles disease during January 2018 - January 2019 and the distribution of the disease according to age, gender, living area and seasonality.

Methods: Method and material: In this retrospective study we included 516 suspected children for measles, aged 1-14 years, hospitalized in Infectious Disease Service of Pediatric Department during January 2018-January 2019. For the confirmation of diagnose we have used: Real Time – PCR(RT-PCR) assay, IgM- antibody serology for Measles and Rubella and isolation of virus in Vero Slam cell culture line

Results: Results: In 516 suspected children for measles we confirmed: 385 new cases during January 2018 – January 2019. According to age group predominate 1-6 years old age group with 195 cases(50.6%), followed by <1 years old with 169 cases(43.8%), >6 years old with 21 cases (5.4%).

According to gender: predominate males with 217 cases(56.3%) and females with 168 cases(43.7%).

According to seasonality predominate spring season with 188 cases(48.9%) followed by winter with 120 cases(31.1%), summer with 60 cases(15.6%) and autumn 17 cases(4.4%). According to living area predominate urban area with 378 cases (98.2%), rural area with (1.8%)

Conclusions: Conclusion: During the period January 2018- January 2019 we confirmed 385 new cases with measles in Albanian children, hospitalized in our service. Most affected group is age 1-6 years old with 195 cases (50.6%), by gender most affected are males with 217 cases(56.3%), mostly spread in spring season with 188 cases(48.9%) and urban areas predominate with 378 cases(98.2%)

EPIDEMIOLOGICAL DATA OF URINARY TRACT INFECTION IN PEDIATRIC AGE GROUP IN ALBANIA.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Urinary tract infection imply invasion of urinary tract by pathogens, which may involve the upper or lower tract depending on the infection in the kidney, or bladder and urethra. UTIs are a potential cause of fever in pediatric patient. UTIs in association with renal abnormalities contribute to long term complications. The aim of this study was to show the epidemiological data, clinical profile and the complications of urinary tract infections in pediatric age for all the cases presented to the Emergency Department of "Mother Teresa" University Hospital Tirana, Albania.

Methods: This is a retrospective study over a 12 -month period from January to December 2020. In the study we have included all the children diagnosed with urinary tract infection from 1 month to 14 years old, presented to our service. Epidemiological data analyzed were sex, age, clinical manifestation and complications.

Results: 1095 cases were collected during this period. The prevalence of UTIs is 10%. The peak age is bimodal, one peak in infancy, the other peak between 2-4 years, at the time of toilet training. Group age 0-1y; 36.1% (395: 74.6% Male/25.4% Female), 1-2y; 18.1% (199: 55% Male/45% Female), 2-4y; 27.4% (301: 68.5% female/31.5% male), 4-8y; 13.7% (149: 65.5% female/34.5% male), 8-14y 4.7% (51: 78% female/22% male). During 0-2y predominated uncircumcised male infants 61%, following by female 2-14y 69%. Clinically; <2y fever, poor feeding, failure to thrive, lethargy, foul-smelling urine, >2y fever, chills, dysuria, hematuria, urinary retention, suprapubic and costovertebral pain, foul-smelling urine. E. Coli was isolated in 86% of cases, Klebsiella 11%, P. mirabilis 3%. 1058 (96.6%) were self-limited under the use of oral antibiotics and 37 (3.4%) cases were hospitalized. Urosepsis 0.91%.

Conclusions: Prevalence rates of UTI varied by age, gender and circumcision status. Prevalence estimates can help clinicians make informed decisions regarding diagnostic testing in children presenting with signs and symptoms of UTI. Recognizing and treating these infections promptly and accurately is important. This avoids the early renal damage, protects renal functions and especially reduces the relapse of the urinary tract infection, that is very common in pediatric age.

VACCINATIONS IN PREGNANCY AND MATERNAL SEROPREVALENCE OF BORDETELLA PERTUSSIS ANTIBODIES IN GREECE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Immune competence in the first months of life depends a lot on the active transplacental antibody transfer during pregnancy. Guidelines for vaccinations in pregnancy recommend that all pregnant women get the seasonal influenza vaccination in any trimester and Tdap vaccine preferably between 27 and 36 weeks in each pregnancy. Data on maternal vaccinations and seroprevalence of antibodies against vaccine preventable diseases in Greece are limited. In this study, we focus on vaccination status and seroprevalence of Bordetella pertussis IgG antibodies in pregnant women.

Methods: The study was performed in two maternity hospitals in Athens, Greece. Having obtained informed consent, women were interviewed with a structured questionnaire. Details concerning demographics and maternal immunization status were recorded. Subsequently, maternal antibody concentrations for B. pertussis IgG antibodies were measured from blood sample taken before or during delivery. Antibody titres were measured using ELISA.

Results: In a 3-year period, 222 samples with paired questionnaires were analysed. Median age was 33 years (16-42). Maternal vaccination status revealed that only 3 (1.4%) and 37 (16.7%) women were vaccinated with Tdap and influenza during pregnancy, respectively. Median B. pertussis IgG levels were 14.6 IU/mL. Low/no protection (<40 IU/ml) to B. pertussis was observed in 190 (85.6%) women, while only 8 (3.6%) women showed borderline protection (40-50 IU/ml) and 24 (10.6%) had long term protective antibodies (>50 IU/ml).

Conclusions: This study reveals low vaccination coverage with Tdap and influenza in pregnant women in Greece. Clinicians should bear in mind waning immunity against B. pertussis in childbearing women and offer Tdap vaccine in every pregnancy, as well as seasonal flu vaccination, as pregnant women are at increased risk for influenza-associated complications. National campaigns to increase awareness for this important topic are needed.

CHARACTERISTICS OF INFECTIOUS DISEASES AMONG REFUGEE CHILDREN ADMITTED IN A PEDIATRIC INTENSIVE CARE UNIT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: "Migrant crisis" is probably among the most difficult challenges faced by Western countries during the last years. Greece is the country of first arrival in Europe for a great number of refugees. The aim of this study is to study the characteristics of infections in critically ill refugee pediatric patients.

Methods: Descriptive retrospective study analyzing demographic and clinical data of refugee children (1 month-16 years) admitted in the Pediatric Intensive Care Unit of a tertiary pediatric hospital in Athens, Greece, between 2015 and 2020.

Results: During the duration of this study, refugee children represented 4.6% (n=58) of PICU admissions (n=1237), with median age 2 years and 56.1% (n=32) females. The most frequent ethnic origin was Syrian, followed by Afghan [35 (61.4%) and 15 (26.3%) respectively]. The most frequent cause of admission was severe infection (n=24, 42.1%), with pulmonary infections representing 70.8% (n=17), followed by sepsis 25% (n=6). RSV and pertussis were most frequent in infants (8/17, 47.05%), while influenza and *Streptococcus pneumoniae* were the dominant pathogens in older children (35.2%). 54.1% of patients stayed in a refugee camp. Median duration of hospitalization was 4 (2-7.5) days.

Conclusions: Refugee children in PICU are a unique population not only because they have a different genetic background, but also because they are exposed to different environmental factors compared to children residing in their country of origin. They also suffer from common and often vaccine preventable infectious diseases. It is important to take these into account, in order to provide better health care in this high risk for critical illness population

CLINICAL AND ECONOMIC BURDEN OF ACUTE OTITIS MEDIA AND OTITIS MEDIA WITH EFFUSION IN CHILDREN < 15 YEARS IN SPAIN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Data on clinical and economic burden of Acute Otitis Media (AOM) and Otitis Media with Effusion (OME) in children in Spain is scarce and limited to regional level studies. This study estimated the annual number of inpatient admissions, and primary care visits for AOM and OME and associated complications in children <15 years old in Spain in 2015.

Methods: AOM and OME cases were identified using ICD-9 and ICPC-2 codes in two public databases: *Conjunto Mínimo Básico de Datos - Hospitalización* (CMBD-H) and *Base de Datos Clínicos de Atención Primaria* (BDCAP) from the Spanish Ministry of Health. AOM and OME cases include nonsuppurative OM, suppurative and unspecified OM and Eustachian tube disorders, mastoiditis and acute myringitis.

Results: In 2015, there were 2,901 hospitalizations for AOM and OME in children < 15 years old, representing 48% of AOM and OME related hospitalizations across all age groups. Mean length of stay was 2.8 days. There were 1.3 million AOM and OME associated primary care visits. Total medical expenditure on AOM and OME was €77.2 million in 2015; 91% of expenditures were associated with primary care visits.

Conclusions: In Spain, the clinical and economic burden of AOM and OME is still substantial and has a significant impact on the National Health System.

EPIDEMIOLOGICAL SITUATION OF ACUTE GASTROENTERITIS IN ALBANIAN CHILDREN DURING THE PANDEMIC YEAR 2020.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Acute gastroenteritis (AGE) is a common infection disease in pediatric age, and the major presenting situation in Emergency Department (ED) of our hospital. Before the year 2020 we had a large number of AGE cases, approximately 9000 children each year. During this year we have noted a markedly decrease in ED visits number likewise AGE cases. The causative agents are transmitted both by respiratory route and those fecal-oral.

Methods: The aim of this study was to show the epidemiological data, risk factors, clinical characteristics, its complications and the tendency of this disease. In study are included all children with signs of acute gastroenteritis aged from 1 month to 14 years old, presented in Pediatric Emergency room of University Hospital "Mother Teresa", Tirana during the period 1 January to 31 December 2020.

Results: During this period 1686 children were presented with signs of acute gastroenteritis. Among them 215 severe cases which are admitted to hospital. Age group most affected was 1m-12m with 609(36.1%) cases, which is the major group for severe cases too, followed by group age 1-4 years old with 546(32.3%) cases and age group 5-14 years old with 531(31.4%) cases. The peak was in December. Some of the associating symptom we found were: fever, abdominal colic, etc. About the causative agent we have found mostly the rotavirus and some cases with SARS -Co2 virus.

Conclusions: Emergency Department visits with acute gastroenteritis has declined since the onset of Covid-19 pandemic. Measures to prevent Covid-19 spread had a great impact on reducing the incidence of common infections, one of those AGE. The quarantine, the closure of schools and nurseries, limitation of social activities, wearing the facial mask, hand washing led to significant drop in AGE cases in our hospital.

RESILIENT CHILD HEALTH SERVICES AND CHILDHOOD IMMUNISATION PROGRAMME DURING THE EARLY COVID-19 PANDEMIC IN SWEDEN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

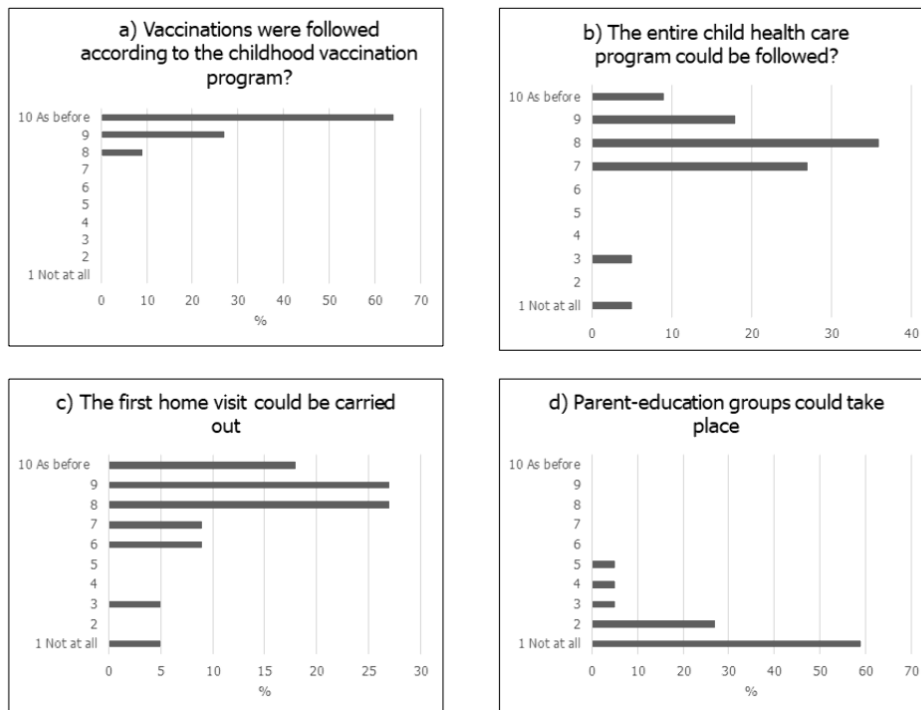
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¹Regional Child Health Office Scania, Regional Child Health Office Scania, Malmö/Lund, Sweden, ²Public Health Agency of Sweden, Public Health Agency Of Sweden, Solna, Sweden, ³Karolinska Institutet, Department Of Global Public Health Stockholm, Stockholm, Sweden

Background: Routine immunization programs are at risk of disruption due to the COVID-19 pandemic. This study aimed to investigate the resilience of the Swedish national immunization program for children up to the age of five years during times of crisis.

Methods: This was a cross-sectional study, using a web-based survey exploring the current organization of the Child Health Services, focusing on vaccination. The survey was sent to all regional Child Health Offices in Sweden. Both descriptive quantitative analysis and qualitative content text analysis were performed.

Results: All regional child health offices responded (N=21). Vaccinations have been prioritized, intensified efforts at communication have been performed and a flexibility within all organisational levels of the child health services was reported. In addition, the vaccine supply has been sustained and the child health centres have remained open. However, periodic shortages of staff, increased numbers of health visit cancellations, and paused parent-education groups were reported, presented in figure 1 a-d (scale 1-10, 1 = not at all; 10 = as before the COVID-19 pandemic)



Conclusions: The Swedish immunization program has shown to be resilient during the early COVID-19 pandemic through a sustainable organization with the child health offices as a central point.

EVALUATING AN HIV PREVENTION INTERVENTION FOR ADOLESCENT AND YOUNG ADULT PRISON INMATES IN KENYA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

Shivani Shah

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Background: The US President's Emergency Plan for AIDS relief (PEPFAR) funds the Transforming TB and HIV Prevention, Care and Treatment (TACT) Project in Kenya. Respect Kenya (part of TACT), is a behavioural intervention consisting of voluntary counselling sessions incorporating risk reduction, offering HIV testing and referral for STI screening for presumed HIV negative inmates. The aim was to determine the demographics of adolescents and young adults enrolled in Respect Kenya and evaluate uptake of this programme (completion of sessions, tested for HIV and referred for STI screening).

Methods: Retrospective aggregated data from the Respect Kenya register tool (2016-2018) was analysed. Comparisons were drawn between age groups (15-19 and 20-24 years), gender and HIV incidence clusters (defined by the incidence of HIV in the counties in which the prisons were located).

Results: 12,691 (10140 male and 2551 female) inmates registered for the programme and 9482 (74.7%) completed the programme. There was no significant gender difference between the groups who were tested for HIV or referred for STI screening. 95% were tested for HIV (9547 male, 2449 female), however only total of 10% were referred for STI screening. Males were enrolled from low and medium HIV incidence counties whereas females were enrolled from principally medium and high incidence counties.

Conclusions: Respect Kenya was a successful intervention for a vulnerable population within a high-risk environment, providing counselling, HIV testing and links to healthcare. Routinely, those with positive HIV tests were referred to HIV services but no further data is available regarding outcomes. This programme was taken up by both sexes with no significant gender differences. Further work is needed to elicit the needs of this key population and facilitate access to HIV prevention, testing and treatment and highlight the importance of STI screening.

OCCULT BACTEREMIA IN PORTUGUESE CHILDREN 2010-2019: A NATIONWIDE RETROSPECTIVE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Occult bacteremia (OB), defined as a positive blood culture in an otherwise well-appearing febrile child 3 to 36 months-old with no identifiable source of infection, is a frequent invasive bacterial disease and empiric antibiotic treatment is often started when clinically suspected.

Methods: Multicentric, nationwide Portuguese Invasive Bacterial Disease Study 2010-2019, with 18 participating hospitals. A subgroup analysis was performed on children 3 to 36 months-old with fever without source and bacteremia. Children with the diagnosis of sepsis were excluded.

Results: Overall, 226 cases were analyzed; 54% were boys. A comorbidity was found in 10,6% (prematurity 5.3%, sickle-cell disease 3.5%). Forty-nine different bacteria species were isolated. *Streptococcus pneumoniae* (22.8%), *Streptococcus viridans* group (20.6%), *Staphylococcus aureus* (13.6%) and *Escherichia coli* (5.3%) were the most frequent isolates. Antibiotic sensitivity data was available in 80.7%; overall resistance to amoxicillin/clavulanate and cefotaxime was found in 4.8% and 2.2%, respectively. The three major bacteria species identified in 2010-2011 compared to 2018-2019 were: *S. pneumoniae* (n=13; n=13); *S. viridans* (n=10; n=9); *S. aureus* (n=4; n=9).

Conclusions: We found a wide range of bacteria species as a cause of occult bacteremia. *S. pneumoniae* is still the major cause of OB after the introduction of infant universal vaccination with 13-valent conjugated pneumococcal vaccine in 2015. Empiric treatment of OB with either ceftriaxone or amoxicillin/clavulanate is still a good option in Portuguese children.

REAL-WORLD EVIDENCE ON INVASIVE MENINGOCOCCAL DISEASE SURVIVORS' LIFE EXPECTANCY AND NEED FOR STATE FINANCIAL SUPPORT IN FRANCE USING SNIIRAM DATABASE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

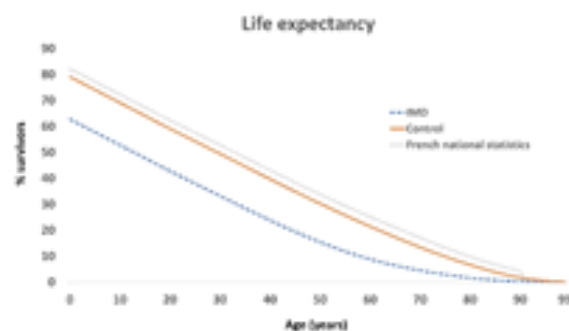
Jing Shen¹, Stéphane Bouée², Emmanuel Aris³, Corinne Emery², Ekkehard Beck¹

¹GSK, Value Evidence And Outcomes, Research & Development, Wavre, Belgium, ²CEMKA, Cemka, Bourg-La-Reine, France, ³GSK, Vaccine, Wavre, Belgium

Background: Invasive meningococcal disease (IMD) is an uncommon severe disease with a high risk of mortality (up to 15% despite receiving treatment) and long-term sequelae in survivors. Research on IMD's impact on life expectancy in survivors and their need for state financial support is limited. Using real-world data, we estimate predicted life expectancy and socioeconomic burden following IMD.

Methods: SNIIRAM (French national health insurance) data from all hospitalised IMD patients in France (01-Jan-2012 to 31-Dec-2017) and matched controls were analysed. Within the 6-year period after the initial hospitalisation, survival curves estimated life expectancy loss, and risk ratios (RR) were calculated for three state benefits: Salary loss compensation (SLC) until retirement age for disability-induced reduced working capacity, financial aid for healthcare costs due to long-term illness (CLTI) and Universal complementary health coverage (UCHC). Flexible parametric survival models were fitted to extrapolate life expectancy beyond the 6-year period, over lifetime.

Results: In the 6-year period, 3,239/3,532 (91.7%) hospitalised IMD patients survived initial hospitalisation, having a lower life expectancy (3.1 months less than controls ($p < 0.0001$) over the 6-year period), and a significantly greater need for SLC and CLTI (RR 3.9 (95%CI:2.3–6.4) and RR 1.85 (95%CI:1.71–2.00), respectively). Extrapolating beyond the 6-year period suggests reduced life expectancy persists lifelong. Figure shows comparable life expectancy for controls and the general population, while estimates for IMD survivors are consistently lower, e.g. at age 30, IMD survivors can expect to live a further 33.3 years versus 49.5 years for controls.



Conclusions: IMD survivors have a shortened life expectancy and may need long-term financial state support. Improved disease management and especially prevention through vaccination may play a key role in providing significant long-term benefits.

EPIDEMIOLOGICAL PARADOXES OF THE PANDEMIC YEAR IN UKRAINE: A PLUNGE IN VACCINATION COVERAGE AND PEDIATRIC HOSPITAL ADMISSIONS FOR SOME VACCINE-PREVENTABLE DISEASES IN 2020. SHOULD WE EXPECT ANY "DELAYED OUTBREAKS"?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: In Europe incidence of some vaccine-preventable diseases (VPD) including measles decreased dramatically during 2020 against containment measures due to the COVID-19 pandemic. Some countries report difficulties with achievement of the planned routine vaccination coverage while immunization rates in Ukraine often were insufficient even before the pandemics. The retrospective study aimed to assess the number of pediatric hospitalizations and vaccination coverage for some VPD in 2019-2020 in Dnipro, Ukraine.

Methods: To explore the number of hospital admissions for VPD, we performed a retrospective assessment of medical documentation of the two large municipal secondary-level healthcare settings, the City Clinical Hospital 21 specializing on infectious diseases and the Specialized Multidisciplinary Hospital 1, for the period of 2019-2020. Regional vaccination coverage data were taken from the national open immunization registry.

Results: In compliance with the European data, number of hospital admissions for VPD plummeted during 2020 compared to 2019: from 179 (including 14 in the first year infants) to 0 for measles; from 3 to 0 for mumps and from 76 (7 in infants) to 46 (2) for varicella. No rubella admissions were registered. Immunization rates also decreased; for instance, MMR coverage dropped from 99.9% for both first and second doses in 2019 to 92% and 89.4%, respectively, in 2020.

Conclusions: In Ukraine containment measures imposed against COVID-19 significantly influenced pediatric hospital admissions for other infectious diseases despite that the restrictions were moderate for the most of the year and the population demonstrated poor adherence to them. Drop in immunization coverage is concerning in terms of probability of a "delayed outbreaks" both in children and adults in 2021-2022 after further mitigation of the restrictions. Potential co-infection of VPD with COVID-19 could impede diagnostics and worsen the disease outcome.

THE ANALYSIS OF THE COST-EFFECTIVENESS OF FLU VACCINATION OF CHILDREN AGED 6-60 MONTHS IN ONE POLISH CITY DURING ONE SEASON (RETROSPECTIVE STUDY).

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Influenza, despite existing knowledge and prophylaxis, is still a problem. According to the national

data in Poland (about 40 million people), there were 4,491,879 people diagnosed with influenza and influenza-like illness in 2018-2019 season. We decided to conduct a study analyzing the number of hospitalizations due to influenza among children in one of the largest Polish cities (Poznan) and to assess the cost-effectiveness of vaccination of children aged 6-60 months.

Methods: It was a retrospective study based on hospital records (ICD-10 codes J10) gathered between 1st

September 2018 and 30th June 2019 in two pediatric hospitals in Poznan. Demographic and data regarding hospitalization were collected. The analysis was performed using PQStat.

Results: 275 children were hospitalized due to influenza in both hospitals, predominantly boys (55.3%). The

average age of patients was 47 months (1-204 months). The average hospitalization length was five days (1-25 days). Pneumonia was found in 25.5% of patients. The cost of hospitalization was calculated at 238 319.40 EUR, while the cost of vaccination was estimated (assuming vaccination of all children aged 6-60 months living in Poznan) at 292 266.00 EUR.

Conclusions: Based on the analyzed group, the cost of vaccinations exceed the cost of hospitalization. It can not be

stated that flu vaccination of children in Poznan is cost-effective. However, we are aware that we have not considered the hidden costs (the cost of purchased medications, the cost of work absence (parents), the aspect of herd immunity). Therefore parents should be encouraged to vaccinate their children.

THE EVOLVING EPIDEMIOLOGY OF COVID-19 AMONG CHILDREN AND ADOLESCENTS AGED 0-18 YEARS DURING FEBRUARY 1, 2020 – JANUARY 31, 2021, IN THE JERUSALEM DISTRICT, ISRAEL.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

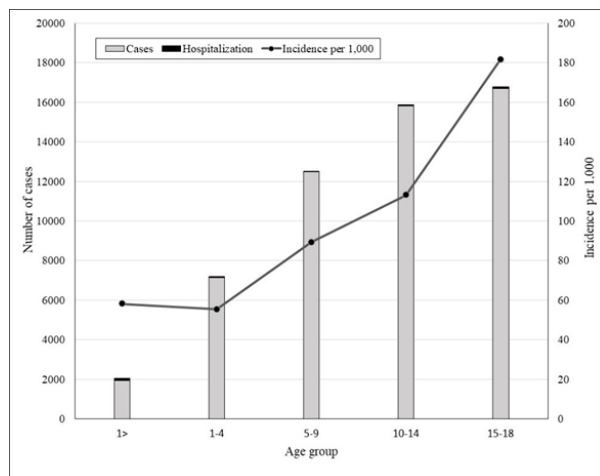
Chen Stein-Zamir

Hebrew University of Jerusalem, Faculty Of Medicine Braun School Of Public Health And Community Medicine, Jerusalem, Israel

Background: The epidemiology and impact of COVID-19 infection in children and adolescents and the overall pediatric outcomes are important to estimate global disease burden. COVID-19 studies have shown that, compared to adult patients, children show milder clinical presentations, better prognosis and lower mortality rates. In Israel (population 9.2 million) 641,146 confirmed COVID-19 cases with 4767 fatalities were notified during February 1, 2020–January 31, 2021.

Methods: We studied the age-specific population-based COVID-19 epidemiology in the 0-18 years' group, in the Jerusalem district. The group aged 0-18 years in the Jerusalem district included 538,956 children and adolescents (2020). During the 12 months (February 1, 2020 – January 31, 2021) 148,021 confirmed COVID-19 cases were notified in the Jerusalem district (population 1.3 million) with 775 fatalities. Of 148,021 confirmed COVID-19 cases in the Jerusalem district, 54,458 (36.8%) were aged 0-18 years.

Results: COVID-19 infection was diagnosed in 10.1% (54,458/538,956) of the 0-18-years-olds. The group of the 0-18-years olds comprise 41% of the Jerusalem district population. The 0-18-years-olds fraction of the district's COVID-19 cases changed over the year. During February-May 2020, they accounted for 28.3% of cases, in June-November 2020, 33.6% and in December 2020-January 2021 increased significantly to 40.7% ($p < 0.001$). Incidence rates increased with age (fig. 1). Hospitalization rates differed with age – 5.3% in infants under 1 year and 0.5% in children 1-18 years [Odds Ratio 11.06, 95%CI 8.7-13.9, $p=0.0001$].



Conclusions: As the novel COVID-19 vaccines currently are not approved for use in children under 16 years of age, it is important to assemble valid data on the disease burden among children and adolescents.

RETROSPECTIVE STUDY OF NOSOCOMIAL INFECTION EPIDEMIOLOGY IN VARIOUS WARDS OF UNIVERSITY CLINICAL HOSPITAL IN BIALYSTOK, POLAND, 2017-2019

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The prevalence of nosocomial infections varies depending on ward type, with various factors of patient's treatment contributing, such as placement of catheter or intubation. Thus, sites of infections differ from urinary tract infections, surgical wounds, lower respiratory tract (LRT) and skin/subcutaneous tissue. We investigate whether there is a diversity in this occurrence in the surgical, non-surgical and ICU wards of the children's hospital of Białystok, Poland.

Methods: This was a single-center retrospective study of patient records from 2017-2019. Detailed hospital records of noted nosocomial infections in individual wards, were obtained and general incidence of infections were noted. Furthermore, greater focus was given to the Department of Pediatric Infectious Diseases where specific patient data was obtained- age, gender, symptoms, season and microbe species and analyzed.

Results: The highest incidence of nosocomial infections was noted in the ICU (14.3 episodes per 100 hospitalizations), followed by nonsurgical and surgical wards (1.2 and 0.3 episodes per 100 hospitalizations, respectively). There was a striking significance of rotaviral infections with highest prevalence in nonsurgical wards (54%) and lowest in the ICU (0%) - here LRT infections predominated (44%). All nosocomial infections spiked in February. Rotavirus predominated in children <2 years old (y/o), contrasting to norovirus >2y/o; both had a higher incidence in boys. Rotaviruses peaked in January and noroviruses in February.

Conclusions: In conclusion, the most frequent nosocomial infection throughout wards, excluding ICU in the analyzed setting was rotavirus. It predominated in the months of January (2017-2019) and was recorded most commonly in the male gender.

CAMPYLOBACTER GASTROENTERITIS: A RETROSPECTIVE STUDY OF A PAEDIATRIC EMERGENCY DEPARTMENT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Campylobacter is one of the main causes of bacterial gastroenteritis in children in the developed world. This foodborne disease is considered an important public health problem, with a substantial burden. The vast majority of cases are self-limited and usually do not require antibiotic treatment. We aimed to determine the prevalence trends of Campylobacter gastroenteritis in the last 5-years and study clinical and therapeutic profiles.

Methods: A retrospective study was performed in the setting of a paediatric emergency department in a tertiary Portuguese hospital. Medical records of 762 patients with history of acute diarrhoea, who underwent stool culture between January 2016 to December 2020, were reviewed.

Results: Campylobacter species were present in 230 (30.2%) cultures, with an increase in 2020 (45.7%). Children 1 to 2 years old had the highest incidence (45.7 %). 124 (53.9%) had bloody diarrhoea and 46 (20%) mucosanguineous. Of the 48 (20.9%) children without blood or mucus diarrhoea, 30 (62.5%) had fever. Sixty three (27.4%) were treated with macrolides, being 2020 and 2017 the years with highest medication rates (32.1% and 44.7% respectively). The need to medicate children ≥ 10 years old only happened in 2020 (37.5%). Campylobacter susceptibility to erythromycin was 97.8%.

Conclusions: The increase in Campylobacter cases reinforces the need for implementation of a local strategy to reduce this foodborne infection. Infection was self-limiting in the majority of cases but antibiotic need increased in the last year and at older ages. This may indicate an increase in Campylobacter pathogenic potential. Genomic studies are needed.

PAEDIATRIC INFLUENZA IN ICELAND 2014-2019

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Annually, influenza infects 10-20% of children although fewer will seek medical attention. Paediatric influenza deaths are rare but still exceed 100 cases annually in Europe. Children secrete higher viral loads, have longer duration of illness and often need to be cared for by parents/guardians and thus play a role in driving influenza epidemics. Personal hygiene can reduce risk of infection, but influenza vaccination is the most effective way of prevention. The aim of the study was to describe all paediatric influenza cases in Iceland and their relationship with vaccination status.

Methods: All children tested for influenza in Iceland through five flu seasons from 2014-2019 in Iceland were included and subtypes determined. Demographic factors and influenza vaccination status were registered for each season. Descriptive statistics and chi-squared analysis were applied.

Results: Confirmed paediatric influenza cases were 374 (12.9% of 2900 tested), 179 girls and 195 boys. The median age was 2.6 years and 284 (75.9%) were <7 years. Flu A-H1N1 was most prevalent in 2015-16 and 2018-19 while H3N2 was most common in 2014-2015 and 2016-2017. In 2017-2018 a B-strain was dominating. Ten percent of all tested children >6 months (vaccine eligible) were vaccinated in the respective influenza season and they were less likely to be infected with flu (4.8% of tested) when compared to non-vaccinated children (7.2%, p:0.09).

Conclusions: This study describes the number of positive paediatric influenza cases in Iceland over five seasons and showed that children <7 years represented 75% of cases. Universal vaccination of children in Iceland is currently not recommended but may prevent a large proportion of paediatric influenza cases and contribute to reduction of further transmission in the community.

INCREASE OF MRSA INFECTIONS IN A LOW ENDEMIC COUNTRY PARTLY DRIVEN BY SOFT TISSUE INFECTION IN INFANTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Prevalence of Methicillin-resistant *Staphylococcus aureus* (MRSA) varies but has traditionally been low in the Nordic countries. In 2000-2008, higher rates were observed in Iceland and elsewhere in N-Europe, probably due to clones of high transmissibility. The aim of the study was to describe the epidemiology of MRSA in Iceland.

Methods: All MRSA cases in Iceland from 2009 – 2019 were included. Clinical information was collected and Panton-Valentine-Leukocidin(PVL) and *spa*-types were determined. Cases were defined as hospital(HA-MRSA) or community acquired(CA-MRSA). Clinical samples were identified using standard methods and classified according to EUCAST.

Results: Paediatric MRSA cases were 138. The incidence was highest for children <24 months of age, peaked at 140 cases/100.000 individuals with a 21.7% year-on-year increase($p<0.001$). The increase was 12.7% for 2-5 year olds($p=0.07$) but remained constant in older children. In children >6 months, soft-tissue infection was the clinical picture in >50% of cases, but asymptomatic colonisation for the youngest infants. Majority of cases were CA-MRSA (72-89%) apart from infants <6 months old where 50% were HA-MRSA. The *spa*-types t019, t002 and t253 were most common and PVL-positive cases were strongly associated with soft-tissue infections.

Conclusions: A large rise was seen in incidence in paediatric MRSA cases during the study period and was driven by increasing incidence in young children, particularly soft-tissue infections in children aged 6 months–5 years. Increased travel and population diversity may contribute to this phenomenon which is also reflected in increased diversity of *spa*-types. Awareness of MRSA infection remains important and may warrant changes in empirical antimicrobial therapy for young children in Iceland.

THE IMPACT OF ROTAVIRUS VACCINATIONS ON HOSPITALIZATION RATES DUE TO ROTAVIRUS GASTROENTERITIS IN NORTHEASTERN POLAND

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: In 2006, the WHO recommended introduction of the rotavirus vaccine for routine immunization of all infants. Until 2020, however, the vaccine was voluntary and self-paid in Poland. In 2021 the rotavirus vaccine was introduced into the Polish National Immunization Program (NIP). We have aimed to analyze the coverage with rotavirus vaccine and its impact on hospitalization rates in northeastern Poland in 2006-2020, before introducing this vaccine to the NIP.

Methods: The annual coverage with rotavirus vaccine was calculated from the number of infants vaccinated with the rotavirus vaccine and the number of live births during a corresponding year. The data has been obtained from the Department of Epidemiology at the National Institute of Public Health—National Institute of Hygiene and the Demographic Surveys Department. To calculate the impact of immunization with rotavirus vaccine on hospitalization rates due to the rotaviral AGE in northeastern Poland we used Spearman's rank correlation coefficient and stepwise multiple regression models.

Results: During the period of analysis, the vaccination coverage increased from 1% in 2007 to 23% in 2019. The number of hospitalizations due to rotavirus acute gastroenteritis remained stable over the years (average 45.3 hospitalizations per 10,000 children; 95%CI, 42.5-48.3). The analysis found no significant relation between the vaccine coverage and the number of hospitalizations caused by rotaviruses.

Conclusions: Although the vaccine coverage has increased significantly over the years, it had no real impact on hospitalization rates due to rotavirus gastroenteritis in northeastern Poland. This shows that self-paid vaccination with rotavirus vaccine was not effective in reducing hospitalizations, strengthening the need for including this vaccine into the NIP.

GENDERNEUTRAL HPV-VACCINATION IN FLANDERS 2019-2020 – IMPACT OF THE COVID-19 LOCK-DOWN ON THE VACCINATION PROGRAMME

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The HPV-vaccination programme was introduced in Flanders in September 2010 for girls (first year of secondary school). In 2016 vaccination coverage reached 91%. Since September 2019 the programme is gender neutral. All vaccinations with free-of-charge vaccines should be registered in the vaccination registry. By July 2020 only 44% of HPV-vaccinated adolescents had received the recommended 2 doses with similar coverage in girls and boys.

Methods: We analysed registered HPV-vaccination data for the school years 2019-2020 and 2020-2021 in order to evaluate to what extent a postponed second dose (scheduled in 2019-2020) was given in the catch-up programme from September to December 2020, and to evaluate if this catch-up vaccination or the COVID19 pandemic had an effect on the uptake of the first HPV-vaccination dose in the new cohort targeted in the current schoolyear (2020-2021).

Results: The number of registered vaccinations from September to December in 2019 and 2020 was similar for girls and boys. From all adolescents who received a first HPV-vaccination from September to December 2019, 94% completed their 2nd dose by the end of 2020. The number of registered first doses given in the current schoolyear was about 95% of the registered number of first doses in the previous schoolyear.

Conclusions: Data analysis of registered HPV-vaccinations showed that the vaccination uptake for the second dose for last schoolyear's target group increased from 44% in July to 94% by the end of 2020. The catch-up effort by school health services and school closures due to Covid-19 outbreak measures had no or very little impact on the first dose coverage of the new cohort.

EPIDEMIOLOGICAL CONSIDERATE OF VARICELLA INFECTION, IN INFECTION DISEASES SERVICE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Background: This is a retrospective study to present epidemiological data of children with Varicella infections.

Methods: Methods & Materials: In this study are included 156 children aged 1-14 years, hospitalized in our service during January 2015- December 2020. 149 of them, presented complications which will be analyzed based on age, gender, place, seasonal distribution, clinical data and complications.

Results: The most relevant part are secondary skin and soft tissues infections (impetigo, cellulite) (31.41%), respiratory infections (pneumonias) 25%, urinary tract infections (9.61%), bacteremia 12 cases, neurological complications 48%, hepatitis (2.56%), (0.64%), gastrointestinal disorders (10.25%) .The average length of hospitalizations was 5.2 days. . The average age was 7.5 years old. The most affected age was 7-14 years old with 43.7% of the cases, then 1-6 years old with 35.2 % of the cases and in children older than 12 months with 21.1% of the cases . (43%).

Conclusions: Conclusions: Pneumonia and secondary skin infections are the most common complications, while complications such as hepatitis and neurological complications are less common. The varicella vaccine will play an important role in preventing the disease

INVASIVE SALMONELLA DISEASE - A TEN YEAR NATIONWIDE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: *Salmonella* may cause invasive disease, being immunosuppression and young age the major risk factors. This study aims to characterize Invasive Salmonella Disease (ISD) in children in Portugal.

Methods: A retrospective, observational, multicentre study of bacterial invasive disease (BID) in patients aged 1 month to 18 years old was performed in Portugal in the 10-year period from 2010 to 2019. ISD was defined by *Salmonella* isolates from a normally sterile site. Statistical analysis was performed using SPSS® Statistics26.

Results: ISD was accountable for 44 cases amongst 2294 cases of BID (1.9%); 43.2% were under 3 years-old. Ten (20.5%) had an underlying condition; 5.2% of children <3 years-old and 32% of older children. *Salmonella* isolates were: *S. typhi* (12), *S. enteritidis* (7), *S. typhimurium* (3), other (22). Bacteremia with gastroenteritis or without a source represented 95,4% of the diagnosis. One immunosuppressed patient died; 13.6% had clinical sequelae. Antibiotic resistance was found to ciprofloxacin (31.8%), ampicillin (15.9%), trimethoprim-sulfamethoxazole (11.4%) and third-generation cephalosporin (7%). No resistance was found to chloramphenicol and tetracycline.

Conclusions: ISD represented less than 2% of IBD in our series. It affected mainly younger children and older children were more likely to have an underlying condition. The susceptibility pattern is worrisome and we should consider to recover chloramphenicol at hospital pharmacies.

PSEUDOMONAS INVASIVE DISEASE IN PORTUGUESE CHILDREN 2010-2019: A NATIONWIDE RETROSPECTIVE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: *Pseudomonas* is an important cause of severe gram-negative infection. The knowledge of its epidemiology and antibiotic resistance pattern is crucial for adequate empirical antibiotic treatment.

Methods: A retrospective, multicentric, nationwide Portuguese BID Study 2010-2019 with 21 participating hospitals. A subgroup of children with *Pseudomonas* detected on normally sterile body fluids was analyzed. Newborns were excluded.

Results: *Pseudomonas* were isolated in 57 of 2294 cases of BID (2.5%): 61% were boys; 46.3%, 1-35 months-old, 18.5% 3-9 years-old and 35.2% ≥10 years-old. *P. aeruginosa* (89.5%), *P. putida* (3.5%), *P. stutzeri* (1.8%), other (5.3%) were isolated from blood (77.4%), deep -abscess (15.1%), cerebrospinal-fluid (3.8%), pleural-fluid (3.8%). Diagnosis: bacteraemia without source (36.5%), pneumonia (17.3%), meningitis (11.5%), urinary infection (5.8%), osteoarthritis (5.8%), necrotizing-fasciitis (5.8%), others (17.2%). Comorbidities were present in 57.4%; sequelae in 33.3%. Three deaths occurred. Antibiotic resistance: ceftazidime (8.8%), piperacillin/tazobactam (8.8%), ciprofloxacin (7%), meropenem (5.3%), amikacin (3.5%), colistin (1.8%).

Conclusions: *Pseudomonas* invasive disease occurred in all paediatric age groups, predominantly in children with comorbidities. There was a wide spectrum of clinical presentations and a significant morbidity and mortality was found. The antibiotic resistance pattern is worrisome, with around 5% of the strains resistant to carbapenems and 9% to piperacillin/tazobactam and ceftazidime.

**BACTERIAL INVASIVE DISEASE MORTALITY IN PORTUGUESE CHILDREN - A 10 YEARS
MULTICENTRIC RETROSPECTIVE STUDY**

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
POPULATION STUDIES AND SURVEILLANCE**

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Background: Invasive Bacterial invasive disease (BID) is associated with significant mortality and morbidity. The knowledge of its epidemiology and antibiotic resistance pattern is crucial for adequate empirical antibiotic treatment.

Methods: A retrospective, multicenter, nationwide Portuguese BID Study 2010-2019 with 21 participating hospitals. Age, gender, site of bacterial isolation, comorbidities, clinical outcome and antibiotic susceptibility were analyzed. Newborns were excluded.

Results: Fifty-eight (2.8%) children out of 2039 with BID died: 55.2% were boys; 39.7% 1-35 months-old, 24.1% 3-9 years-old, 36.2% ≥10 years-old; and 50.9% had at least one comorbidity. Clinical diagnosis: sepsis with/without focal infection (59.3%), meningitis (5%), pneumonia (3.4%) and otomastoiditis (1,7%). Bacteria were isolated in blood (80.6%), cerebrospinal (12.5%), other (6.8%). Etiology: *Klebsiella pneumoniae* 25%; *Streptococcus pneumoniae*, *Escherichia coli* and *Streptococcus pyogenes*, 8.3% each. Mortality increased in the last five years (18vs40), mainly due to *K. pneumoniae* (4vs14) and *E. coli* (1vs5). Antibiotic resistance: third-generation cephalosporins (18/45); carbapenems (9/30).

Conclusions: Mortality associated with BID has been increasing over the last years, mainly due to gram-negative bacteria which recently express a high-level resistance to carbapenems.

STREPTOCOCCUS AGALACTIAE INVASIVE DISEASE IN PORTUGUESE PAEDIATRIC POPULATION 2010-2019

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: *Streptococcus agalactiae* is responsible for a great burden of bacterial invasive disease (BID) with significant morbidity and mortality, especially in the perinatal period. Concern about antimicrobial resistance is growing and should be considered.

Methods: A retrospective, multicentric, nationwide Portuguese BID study 2010-2019 with 21 participating hospitals was conducted. A subgroup of children with *S. agalactiae* detected on normally sterile body fluids was analyzed. Neonatal period was excluded.

Results: *S. agalactiae* was isolated in 73(3.2%) of 2294 BID total cases (blood-80.6%, cerebrospinal fluid-16.7%, synovial fluid-1.4%, profound abscess pus-1.4%). Boys comprised 53.4% of cases, 74% had 1-2 months-old, 20.5% 3-35 months-old and 5.5% 3-9 years-old. At least one risk factor was present in 13.7%(prematurity 12.5%, immunosuppressive therapy 1.4%). The diagnosis were bacteremia without focal infection(50.7%), meningitis(27.4%), cellulite(8.2%), osteoarticular infection(6.8%), bacteremia with gastrointestinal disease(1.4%), bacteremia with urinary tract infection(1.4%), peritonitis(1.4%), otomastoiditis(1.4%) and toxic shock syndrome(TSS) 1.4%.Sepsis was observed in 51.4% of cases. Sequelae were diagnosed in 12.7% and mortality was 1.4%.

Conclusions: The group above six months-old comprised only 6.8%(n=5) with diagnosis of meningitis, osteoarticular infection, peritonitis, otomastoiditis and TSS.Sequelae were present in two patients; one with immunosuppressive treatment.Among the 95.9% available antimicrobial susceptibility tests, resistance was found for penicillin(1.4%), gentamicin(5.5%) and clindamycin(6.8%). **CONCLUSIONS** *S. agalactiae* is a noteworthy etiology of BID in children with greater preponderance in the first months of life, but it should not be overlooked at later ages. The increasingly emergence of antimicrobial resistance to beta-lactams is alarming, as well as for second-line treatment antibiotics as gentamicin and clindamycin.

SEROPREVALANCE OF SARS-COV-2 ANTIBODY AMONG GENERAL POPULATION ACROSS 34 DISTRICTS IN MEDAN: POPULATION-BASED CROSS-SECTIONAL STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PREVENTION OF SARS-COV-2 TRANSMISSION

Handa Yani, Clara Devina, Andry Miraza, Fihzan Ginting, Kartini Marpaung, Aridamuriany Lubis, Badai Nasution, Lia Kusumawati, Muhammad Ichwan, Inke Lubis, Ranti Permatasari
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Background: Despite upsurge cases of COVID-19 were observed in Medan since the beginning of the pandemic, the true infection rate remains unknown. Therefore, the seroprevalence of antibodies against SARS-CoV-2 in 34 districts of Medan was assessed as an indicator of the true infection rate.

Methods: Participants were randomly selected in this population-based cross-sectional study in Medan from 24 November 2020 to 12 January 2021. We collected drops of capillary blood from a finger prick on DBS cards. 6-mm disk of DBS was punched out and incubated for 1 hour at room temperature in 294 μ L of ELISA sample buffer with constant shaking (300-350 rpm). Elutes were tested simultaneously for the presence of anti-SARS-CoV-2 IgG, Ig M, and Ig A with ELISA method. Besides, current infections were also assessed using detection of either E, N, and ORF1ab gene of RT-PCR.

Results: A total of 2020 individuals were screened during the study period. Of those, 122 (6.0%) were positive for COVID-19. The positivity rate ranges from 0.6% to 31.7% at nine different locations of mass screening. 652 children were being tested and 9% (11) of children contributed to all confirmed cases. All of the children were asymptomatic. The antibody detection findings will be presented at the meeting.

Conclusions: The low and waning seroprevalence rate in several countries despite it being severely affected by SARS-CoV-2, including Medan, Indonesia reflects herd immunity against COVID-19 is still a long way off and effortful.

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POSSIBLE RISK OF NOVEL CORONAVIRUS DISEASE 2019 (COVID-19) TRANSMISSION AMONG HEALTH CARE WORKER IN IN PEDIATRIC ONCOLOGY WARD: DOES SCREENING THE PATIENTS ARE IMPORTANT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - PREVENTION OF TRANSMISSION

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Background: cancer patients are at higher risk of COVID-19 infection and more likely to have higher morbidity and mortality, in the other hand because of immunodeficiency condition, the oncology patient sometime can show asymptomatic symptom while has risk of longer spread the infection to other. frontline health care workers (HCW) had an 11.6-times higher risk of testing positive and those who reported that they had inadequate access to PPE had a 23% higher risk. Both factor can effect COVID-19 spread in pediatric oncology ward

Methods: we collected pediatric oncology patient that admitted to Hasan sadikin general hospital between October 3th 2020 when we found the first confirm case of COVID-19 in HCW working at pediatric oncology ward to Februari 4th 2021. The data consist of number of pediatric oncology patient and COVID-19 status, also data of HCW COVID-19 status using Nucleic Acid Amplification Test (NAAT). We differentiated the data between period when the NAAT performed based on indication, and after NAAT performed regularly as screening for oncology patient that admitted to the hospital

Results: between October 3th to December 5th 2020 when the NAAT only performed if the patient suspected COVID-19 there are 10 cases of confirm COVID 19 among HCW in that ward that related to confirm patient cases in the ward, while after the policy changes for routine screening for all patient that admitted to oncology ward, we found 5 confirm case of covid 19 among HCW, but all of them doesn't have any relation with the patient and get it from community

Conclusions: HCW are population at risk, Routine Screening should be considered as policy in pediatric oncology patient because of risk of asymptomatic condition while a bigger risk to transmit COVID-19.

AN AUDIT ON USAGE OF PERSONAL PROTECTIVE EQUIPMENT AGAINST COVID 19 INFECTION IN LOW RESOURCE SETTING

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PREVENTION OF TRANSMISSION

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Background: Covid-19 pandemic has placed Health Care Workers (HCW) at a higher risk and the Personal protective equipment (PPE) aids preventing the infection among HCW. An audit was carried out in a tertiary care Hospital, Sri Lanka to assess the current practice of PPE among HCW.

Methods: A self-administered questionnaire was given to health care workers (HCW) in medical and surgical paediatric wards of Teaching Hospital Karapitiya, Sri Lanka. Results were analyzed using SSPS version 25. Overall response rate was 86% (n=151). Of them, 74.1% were females. The commonest category was doctors (n=49) followed by nurses (n=48).

Results: Surgical mask (70.2%) was the widely used mask and the usage of KN95 and N-95, were 21.9%, 7.3% respectively. 61.6% re-use the mask once it is removed. 30.5% of HCW keep their mask inside clean polythene and 21.2% keep the mask on a surface before re-use. The Majority (58.9%) dispose the mask at the end of the shift. Among other PPE worn are gowns (82.8%), face-shields or goggles (79.5%), gloves (52.3%), caps (31.1%). 74.2% felt that it's impractical to maintain physical distance in the ward mainly due to limited space.

Conclusions: 69.5% agreed that they wash hands in right circumstances and 46.4% always followed right steps. 50% and 80% were unhappy about availability of hand-sanitizer and hand towels respectively. 42.4% accepted having poor hygienic practices. Mask hygiene needs improvement with adequate provision to minimize its reuse. It is important to emphasize on proper hand hygiene and educate regarding appropriate use and disposal of PPE in the ward setup.

TELEPHONE CONSULTATIONS FOR COVID-19 IN A TERTIARY HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PREVENTION OF TRANSMISSION

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Background: COVID-19 pandemic has had an enormous impact in the way we practice medicine. Numerous changes have been made in order to reduce the risk of transmission of SARS-CoV-2. In this context, telemedicine use has increased significantly as it offers an effective alternative for delivering medical care while keeping social distance. The aim of this study is to describe our experience with telephone consultations for the follow-up of COVID-19 patients in a tertiary hospital.

Methods: Retrospective descriptive study of the children with confirmed or suspected diagnosis of COVID-19 who were followed-up by telephone consultations in a tertiary hospital between March and June 2020. Follow-up started after being discharged from the Emergency Department or the Pediatric Ward. Medical records, including epidemiological, clinical and follow-up data, were collected.

Results: 72 children (46 male, 26 female) with median age 83,5 months [IQR=16,3-157,5] were included. 19,4% had comorbidities and 44,4% had been hospitalized. 40 children were diagnosed of COVID-19 (33 RT-PCR, 7 antibody test). In those with positive RT-PCR seroconversion rate was 67,7%. Median symptom duration was 25,5 days [IQR=13,8-37] and clinical deterioration occurred in 26,4%. 14 patients (19,4%) were attended in the Emergency Department during follow-up and one required hospitalization with favorable outcome. Median follow-up time was 28 days [IQR=21-39] and median telephone consultations per patient was 6 [IQR=4-8].

Conclusions: Telephone consultations are a useful and safe alternative for the medical care of children with mild SARS-CoV-2 infection. However, some patients may require hospital visits due to prolonged symptoms and risk of clinical worsening. Even though seroconversion rate is lower than in adults, serology tests could have a role in the diagnosis of COVID-19 in children with compatible symptoms and negative RT-PCR.

CLINICAL CHARACTERISTICS OF NEONATES BORN TO MOTHERS INFECTED WITH SARS-COV-2 IN CRETE.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - PREVENTION OF TRANSMISSION

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Background: Data regarding the vertical transmission of SARS-CoV-2 to neonates and its clinical features is scarce.This study aimed to evaluate the impact of maternal SARS-CoV-2 infection in neonates.

Methods: We conducted a retrospective cohort study of all neonates born to women with RT-PCR confirmed SARS-CoV-2 infection in Crete between January 2020 and January 2021.

Results: We report seven neonates born to six SARS-CoV-2 positive women;annual incidence of 1/1,000births.All women were positive at delivery,and all but one asymptomatic.Neonates were delivered by cesarean section (5/7,71%),and one neonate required transfer from a district hospital.In three cases,RT-PCRresults became available after delivery,healthcare workers had not taken full precautions and were quarantined.Neonates were isolated and received formula feeding while lactation was maintained.43% of neonates were asymptomatic.Nasopharyngeal swabs for SARS-CoV-2,RT-PCR performed at 24(6/7) and after 48hours of life were all negative.The mean length of stay was 5.8days(3-14days), all neonates were discharged without complications.

Conclusions: Limited data is available on the mechanisms of transmission of SARS-CoV-2 in the perinatal period. This study was conducted in a low COVID-19 morbidity area, and there was no evidence of vertical transmission to neonates born to women who tested positive for SARS-CoV-2.Our results encourage"rooming in"when precautionary measures are taken.

HUMANITARIAN CRISIS AND PAEDIATRIC INFECTIOUS DISEASES: SAMOS' HOSPITAL EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - REFUGEES AND MIGRANTS

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Background: Samos is a main entrance for the migrant population in Europe. This study aims to write down epidemiologically the infections of migrant children and compare them with non-migrant infections in the same period.

Methods: This is a retrospective descriptive study including migrants <16 years old, that were examined or/and admitted to Samos' General Hospital the period 01/2018- 12/2019, as well as non-migrants that were admitted at the same period. Data were gathered by hospital record archives.

Results: Out of 9380 children the 4812 (51,3%) had infectious disease as admission cause. 2095 migrant children were examined for infection with an average age of 4 years old. 94,6% originated from Middle East whereas 5,4% from Africa. Most common infections included respiratory (53,8%), gastrointestinal (18,1%), skin (5,3%) and urinary (4,8%). 4,3% of the children suffered varicella and 1,8% parasitic infection. Migrant children were admitted more often (10,35%) than non-migrant (6,15%). Migrants had 2 days longer hospitalization duration ($p<0,001$) and presented most frequently (by 5,58%) stability/worsening of disease or needed to be transferred to tertiary hospital.

Conclusions: Infectious diseases and specifically respiratory infections are the main health burden of migrant children. Adverse living conditions favor epidemiological outbreaks and transmission of infectious diseases. The application of medical screening and treatment protocols is crucial in migrant entrance points.

INTERNATIONAL ADOPTION OF CHILDREN WITH SPECIAL NEEDS IN SPAIN: DISEASES AND IMMUNIZATION.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - REFUGEES AND MIGRANTS

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Background: International adoption (IA) has decreased in recent years in Spain. However, IA of children with special needs (SN) have increased. The aims of the study were to confirm whether the pathologies described in the pre-adoptive reports of IA children with SN correspond to the ones they present upon arrival to our IA Reference Unit of La Paz University Hospital (Madrid) and to describe their epidemiological characteristics.

Methods: A retrospective and descriptive study was performed. Among 324 internationally adopted patients assessed in our IA Unit between January 2016 and July 2019, 57 (17.5%) with SN were included. Pre-adoptive epidemiological and clinical variables were collected, as well as complementary test results and established diagnoses following their evaluation in the Unit. Diagnosis reported pre-adoption and those established in Spain were compared.

Results: There were 21 women (36.84%); median age was 27 months[IQR:17-39]. Main origins were China 36 children(63.16%), Vietnam 18(31.58%).73.68% were living in orphanages. The pathology that motivated IA via SN was confirmed in 45(79%), 4(7%) had minor pathologies; being healthy the other 8(14%). Pre-adoption pathologies and those established in Spain are collected in figure 1. The main pathologies described in pre-adoption reports were neurological(24.56%) and hematological(22.58%) whereas after their evaluation in the Unit, 35.48% were diagnosed with weight-growth delay (35.48%) and microcephaly(27.42%). Infectious pathologies were presented in 17 children(29.82%). Only 4(7%) provided a complete immunization schedule for age/country.

Figure 1. Diagnosis reported pre-adoption and diagnosis established in our Unit.

	Pre-adoption diagnosis, N (%)	Diagnosis established in Spain, N (%)
Any pathology	57/57 (100)	57/57 (100)
Cleft lip and/or palate	12 (21.05)	12 (21.05)
Heart disease	10 (17.54)	11 (19.30)
Congenital heart disease	6 (10.53)	6 (10.53)
Atrial septal defect	1 (1.75)	0
Permeable oval foramen	2 (3.51)	3 (4.84)
Others	1 (1.75)	3 (4.84)
Gastrointestinal disorders	9 (15.79)	6 (10.53)
Bowel disorders	5 (8.77)	5 (8.77)
Abdominal Wall defects	2 (3.51)	0
Others	2 (3.51)	1 (1.75)
Haematological diseases	14 (22.58)	4 (7.02)
Nonspecific anemia	9 (15.78)	2 (3.51)
Thalassemia	4 (7.02)	2 (3.51)
Jaundice	1 (1.75)	0
Visual defects	4 (7.02)	8 (14.04)
Decreased visual acuity	3 (5.26)	7 (12.28)
Retinopathy of prematurity	1 (1.75)	1 (1.75)
Skin disorders	6 (10.53)	8 (14.04)
Skin angioma	2 (3.51)	2 (3.51)
Dermatitis	3 (5.26)	3 (5.26)
Scabies	1 (1.75)	1 (1.75)
Vitiligo	0	1 (1.75)
Alopecia	0	1 (1.75)
Infectious diseases	7 (12.28)	17 (29.82)
Intestinal parasite infection	0	8 (14.04)
Parasitic infection*	0	11 (19.30)
Congenital infections	6 (10.53)	1 (1.75)
Others	1 (1.75)	1 (1.75)
Neurological disorders	14 (24.56)	22 (38.60)
Psychomotor development delay	4 (7.02)	6 (10.53)
Cranial disorders	7 (12.28)	8 (14.04)
Macrocephaly	1 (1.75)	1 (1.75)
Microcephaly	0	17 (29.82)
Sensorineural hearing loss	2 (3.51)	2 (3.51)
Hypertension intracranial	1 (1.75)	1 (1.75)
Orthopaedic pathology	3 (5.26)	3 (5.26)
Lung diseases	5 (8.77)	1 (1.75)
Weight and/or growth delay	1 (1.75)	22 (38.60)
Endocrinopathology	-	5 (8.77)
Serological status (congenital infections)	56 (98.25)	57 (100)
VIH antibodies	53 (92.98)	57 (100)
Positive	0	0
Syphilis (RPR y/o VDRL)	51 (91.07)	57 (100)
Positive	2 (3.92)	0
HBs Antigen	55 (96.49)	57 (100)
Positive	1 (1.81)	0
VHC antibodies	3 (5.26)	57 (100)
Positive	1 (33.33)	1 (1.75)

**Strongyloidiasis, Schistosomiasis, Toxocariasis*

Conclusions: In our series, the pre-adoptive reports are quite reliable, confirming the pathologies described preadoption in more than three quarters of the patients. To note, weight-growth delay and microcephaly, as well as infectious diseases, were not described in preadoption reports, and should be checked once upon arrival. IA children with SN require close follow-up and evaluation in specialized IA centers with extensive-experienced multidisciplinary teams, able to provide comprehensive care.

THE PRIORITY HEALTH ISSUES AND KEY HEALTH DETERMINANTS OF DETAINED FILIPINO CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - REFUGEES AND MIGRANTS

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Background: Rising societal pressures for the Filipino urban poor population – precipitating increased crime – alongside widespread corruption, have led to many children being both lawfully and unlawfully detained in child rehabilitation centres. Far from rehabilitating, detained children live in prisonlike conditions, despite the illegality of child imprisonment in the country. Their human rights disregarded; they suffer from abuse, neglect and a multitude of health issues, with no access to healthcare. This study explores the experiences of formerly detained looked-after adolescents, on the priority health issues of detained Filipino children.

Methods: A qualitative study was conducted in June 2019 in the Olongapo PREDA children's home. Eighteen semi-structured interviews, utilising photo-elicitation, were conducted to retrospectively explore the experiences of formerly detained children and their carers, who were purposively sampled. Data was transcribed and thematically analysed. Ethical approval was granted by the University of Leeds.

Results: Adolescents and carers commonly reported eight key health issues in detained children: skin disease, wounds, mental health issues, malnutrition, respiratory disease, dental problems, sexual health issues and gastrointestinal issues; with skin disease, mental health issues and malnutrition reported most frequently. Six determinants of health in detention centres were identified: hygiene, food, weather, overcrowding, facilities and safeguarding issues.

Conclusions: The majority of key health issues reported correlate with those seen in Filipino street children; however amplification of some determinants of health in detention – including overcrowding, poor hygiene and safeguarding issues – lead to further health issues; such as scabies, tuberculosis and sexual health issues in detained children. Further recognition of, and accountability for, the situation of child 'Rehabilitation Centres' must be taken by the Philippines, in order to protect the welfare and health of detained Filipino children.

A 3-YEAR RETROSPECTIVE STUDY OF CHILDREN HOSPITALIZED WITH STAPHYLOCOCCAL SCALDED SKIN SYNDROME (SSSS) IN A SECONDARY HOSPITAL (CENTRAL-GREECE): AN EPIDEMIOLOGICAL REVIEW OF 13 CASES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: Staphylococcal-scaled skin syndrome (SSSS), also known as Ritter disease, is a potentially life-threatening disorder and a pediatric emergency. SSSS is a blistering dermatosis caused by toxigenic strains of *Staphylococcus aureus*. The diagnosis is mainly clinical, based on the findings of tender erythroderma, bullae, and desquamation with a scalded appearance especially in friction zones, periorificial scabs/crusting and positive Nikolsky sign.

Methods: From January 2018-December 2020, we retrospectively recorded the medical files of all children admitted with SSSS to the pediatric wards, of our General Hospital, in Central-Greece.

Results: We included 13 patients with a clinical diagnosis of SSSS. 8/13 (61.5%) were male. Mean age of diagnosis was 2.69 ± 1.55 years. All patients presented with erythema and exfoliation, 5/13 (38.46%) presented with pharyngitis and 3/13 (23.07%) with ophthalmitis. Fever had 5/13 (38.46%) in presentation (low fever $< 38^\circ\text{C}$). Skin tenderness was the most common symptom, present in 13/13 (100%) subjects. Mean hospitalization was 5.73 ± 1.71 days. Severe complications were not seen and no fatalities were observed. Before admission antibiotics received 8/13 (61.5%) patients. The total duration of therapy both IV and PO was 10 days in all patients except 1 that totally received 14 days. Isolation and identification of pathogenic microorganisms by blood, throat, ocular, dermal as well as drug susceptibility are summarized in the Table Below. **Table:** *Staphylococcus aureus* detection susceptibility to antibiotics in 13 patients with SSSS during 2018-2020.

Type of culture	Performed n/N%	Positive n/N%	Oxacillin		Clindamycin		Erythromycin		Fucidic acid	
			Sensitive n/N%	Resistant n/N%	Sensitive n/N%	Resistant n/N%	Sensitive n/N%	Resistant n/N%	Sensitive n/N%	Resistant n/N%
Blood	13/13	0/13	-	-	-	-	-	-	-	-
Throat	10/13	2/10 (20%)	1/2 (50%)	1/2 (50%)	1/2 (50%)	1/2 (50%)	1/2 (50%)	1/2 (50%)	-	2/2 (100%)
Nasal	8/13	5/8 (62.5%)	5/5 (100%)	-	4/5 (80%)	1/5 (20%)	4/5 (80%)	1/5 (20%)	2/5 (40%)	3/5 (60%)
Ocular secretion s	6/13	3/6 (50%)	3/3 (100%)	-	3/3 (100%)	-	3/3 (100%)	-	1/3 (33.3%)	2/3 (66.6%)
Skin lesions	8/13	5/8 (62.5%)	5/5 (100%)	-	5/5 (100%)	-	5/5 (100%)	-	1/5 (20%)	4/5 (80%)

Conclusions: Early diagnosis and treatment is imperative to reduce the morbidity and mortality of this condition. A high index of suspicion is essential for an accurate diagnosis to be made and treatment promptly initiated. Acknowledgment: To Microbiology-laboratory, General Hospital, "Achillopouleio", County of Magnesia, Central-Greece

AN EPIDEMIOLOGICAL-RETROSPECTIVE STUDY OF ANTIBIOTIC RESISTANCE OF STAPHYLOCOCCUS AUREUS STRAINS ISOLATED FROM CHILDREN (0-14 YEARS) DURING 2017-2019.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: Staphylococcus aureus is a major cause of skin and soft tissue infections, and also capable of causing invasive disease less frequently. The study of local antibiotic resistance in S. aureus strains isolated from skin and pharyngeal cultures as well as eye, nose, ear and umbilical swabs from paediatric patients were included.

Methods: From January 2017 to December 2019, we retrospectively recorded the antibiograms of all children examined (168 children) at the outpatient clinics or admitted (49 children) to the pediatric wards of the General Hospital of Volos, Central Greece, with community-associated staphylococcal infections. The identification and susceptibility results were provided by VITEK2 system based on CLSI.

Results: Staphylococcus aureus isolated from 168 children, 0-14 years old. 9 strains resistant to β -lactams were found (MRSA 5,4%). No strains resistant to gentamycin, vancomycin and co-trimoxazole were found and 2 strains (MRSA 1.2%) were intermediate resistant to amikacin. Remarkably high resistant strains were found to clindamycin (10,1%), clarithromycin (14,9%) and fucidic acid (63,7%). Among the MRSA strains there were more multidrug resistant strains than among MSSA (methicillin sensitive staphylococcus aureus) strains. More specifically 44,4% of the MRSA strains were also resistant to clindamycin and clarithromycin, unlike 8,2% and 12,6% respectively, of the MSSA strains detecting statistically significant difference ($p < 0.01$).

Conclusions: Staphylococcus aureus is a common pathogen in paediatric clinical practice, capable of being resistant in different categories of antibiotics. The local antibiotic resistance is lower compared with similar epidemiological studies. These findings support the urgent need for antibiotic stewardship interventions in the community in order to decrease the incidence of multidrug resistant strains.

COMPARISON OF EFFECTIVENESS AND SAFETY BETWEEN PENICILLIN G AND AMOXICILLIN-CLAVULANATE AS EMPIRIC ANTIBIOTIC TREATMENT FOR PERIODONTAL ABSCESS IN HOSPITALIZED CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: Periodontal disease may be complicated by local and systemic spread of infection, leading to periodontal abscess and need for intravenous antibiotic therapy. Current empirical antibiotic therapy include amoxicillin-clavulanate or a combination of penicillin and metronidazole. Data are scarce regarding the effectiveness of narrow-spectrum antibiotic treatment such as penicillin only. Thus, the aim of this study was to compare the effectiveness and safety between intravenous penicillin G only and amoxicillin-clavulanate in children with periodontal abscess.

Methods: A retrospective study was conducted between January 2010 and December 2020 including hospitalized children with periodontal abscess. Effectiveness and adverse effects were compared between children treated with intravenous penicillin G only to those treated with intravenous amoxicillin-clavulanate. Univariate and multivariate analyses for predictive factors for length of stay were performed.

Results: Seventy one children, of whom 25 were treated with penicillin G and 46 with amoxicillin-clavulanate were included. No significant difference was found in the baseline characteristics of the two treatment groups, including maximal fever or C-reactive protein values upon presentation. Penicillin G was more effective with regard to length-of-stay (4.2 versus 5 days, $p=0.008$) and length of intravenous antibiotic treatment (3.9 versus 4.5, $p=0.023$). The overall rate of reported adverse effects was not different between the groups, including frequency of peripheral line replacement and gastrointestinal symptoms (20% versus 22%, $p=0.864$).

Conclusions: Our result support the use of narrow-spectrum antibiotic treatment with penicillin G for the treatment of periodontal abscess in children.

EVALUATION OF CLINICAL AND LABORATORY RESPONSE IN CHILD PATIENTS USING TIGECYCLINE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: As the frequency of multidrug-resistant bacterial infections has been increasing worldwide in recent years. Tigecycline may be an important option in children for life-threatening infections, in the age of nosocomial infections due to multi-drug resistant bacteria. There is relatively little data in the literature on the use of tigecycline in pediatric patients. The aim of this study was to present our experiences on the use of tigecycline in critically ill children to guide future studies in the pediatric age group by evaluating the effectiveness of tigecycline in children.

Methods: In this study, pediatric patients who were treated with tigecycline between 01.01.2010 and 31.10.2018 at Eskişehir Osmangazi University Medical Faculty, which is a tertiary hospital, were analyzed retrospectively to obtain data about the efficacy and safety of tigecycline treatment in children. Patients using tigecycline were identified using the pharmacy database. Clinical and laboratory data of patients were obtained from patient files.

Results: This study included 91 children, ages ranging from 7 months to 17.5 years. Of the patients, 52 were female (57.1%). At least one predisposing factor was present in 98.9% of the patients. A total of 51 bacteria were isolated in 44 patients. Carbapenem resistance is 95.2% of 21 isolated bacteria. The tigecycline resistance was 3.9% during the period of the study. Only two of 91 patients were observed to experience one or more of the clinical side effects of tigecycline.

Conclusions: Based on our retrospective study, it has been concluded that tigecycline can be used as salvage therapy in resistant infections where options are limited, although definitive results cannot be drawn about the efficacy and safety of tigecycline in children.

LONGITUDINAL TRENDS OF ANTIMICROBIAL RESISTANCE IN A PEDIATRIC INTENSIVE CARE UNIT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: Intensive Care Units (ICUs) are often the epicentre of emerging problems of hospital-acquired infections (HAIs) and antimicrobial resistance (AMR). Data on isolated pathogens longitudinally and trends. Our study aimed to determine the cultured microorganisms from biological samples and AMR trends over a decade (2008-2019) in a university PICU of AMR in Pediatric ICUs (PICUs) are generally limited.

Methods: Electronic database from the Infection Control Committee was used. Data were retrospectively extracted and analyzed. The antibiotic markers for the monitoring of AMR were established on the basis of the protocol on the monitoring of HAIs in the ICU of the European Center for Disease Control and Prevention. Overall, 1,598 positive cultures were analyzed. Gram-negative microorganisms (972, 60.8%) predominated; gram-positive (475, 29.7%), fungi (151, 9.5%). Coagulase-negative Staphylococci (CoNS) were more often isolated from blood cultures (62.9%) whereas *Staphylococcus aureus* (SA) from bronchial secretions (59.7%) ($p < 0.001$).

Results: No increasing methicillin-resistant SA (MRSA, 17-75%) to MSSA was noted ($p = 0.06$). Most commonly gram-negative isolates were *Pseudomonas aeruginosa* (365, 37.6%), Enterobacteriae (302, 31.1%), *Acinetobacter baumannii* (167, 17.2%), *Stenotrophomonas maltophilia* (130, 13.4%). Longitudinally, carbapenem resistance ranged 15-73% for *P.aeruginosa*, 13-60% for Enterobacteriae, 29-95% for *A.baumannii*, with different resistance rate annually. Similar longitudinal resistance pattern found when cephalosporin 3rd generation (C3G) resistance rates were tested; 7-62% for *P.aeruginosa*, 13-67% for Enterobacteriae, and 8-100% for *A.baumannii*. The percentages of multi-resistant Gram-negative strains were: multidrug-resistant (MDR) 23.5%, extensively drug-resistant (XDR) 15.6%, pandrug-resistant (PDR) 1.2%.

Conclusions: The high PICU carbapenem and C3G resistance rates of *P.aeruginosa*, *A.baumannii*, Enterobacteriae and MRSA, although did not change the last decade, however, stresses the need for stricter implementation of infection control bundles and AMR stewardship interventions.

THE EFFECTIVENESS OF ANTIMICROBIAL STEWARDSHIP PROGRAMS AND CHANGES OF ANTIBIOTIC-RESISTANT BACTERIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: Antimicrobial stewardship program (ASP) is helpful to manage antimicrobial use systemically. We analyzed the changes in antimicrobial consumption and proportion of antibiotic-resistant bacteremia before and after ASP implementation.

Methods: This study was conducted on pediatric patients below 19-year-old who were admitted to Samsung Medical Center from January 2001 to December 2019. Antimicrobial consumption was calculated as days of therapy (DOT) per 1000-patient-days. The study period was divided into a pre-intervention period (2001 to 2008) and a post-intervention period (2009 to 2019). We analyzed a DOT, antimicrobial consumption, and the proportion of extended-spectrum beta-lactamase (ESBL)-producing *Escherichia coli* and *Klebsiella pneumoniae* bacteremia.

Results: The number of patients were increased by 130.8% from 68,803 in 2001 to 105,787 in 2019 ($p < 0.001$). Antimicrobial consumption increased from 453.3 DOT per 1000-patient-days to 562.2 DOT per 1000-patient-days ($p = 0.001$) in the pre-intervention period, and decreased from 584.5 to 510.0 DOT per 1000-patient-days ($p = 0.003$) in the post-intervention period. The proportion of ESBL-producing bacteremia increased from 28.8% in 2009 to 51% in 2019 ($p < 0.05$). However, meropenem consumption did not increase during the same period ($p = 0.793$).

Conclusions: During the study period of 19 years, although there was an increase in the number of patients with more complicated diseases, the antibiotics consumption, which peaked in years 2008-2009 then continuously decreased until 2019 by the implementation of ASP.

PREVALENCE, RESISTANCE PATTERNS & CLINICAL CHARACTERISTICS OF EXTENDED SPECTRUM BETA-LACTAMASE PRODUCING ENTEROBACTERIAE (ESBL-PE) URINARY TRACT INFECTIONS: CASE SERIES FROM A CHILDREN'S HOSPITAL IN GREECE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

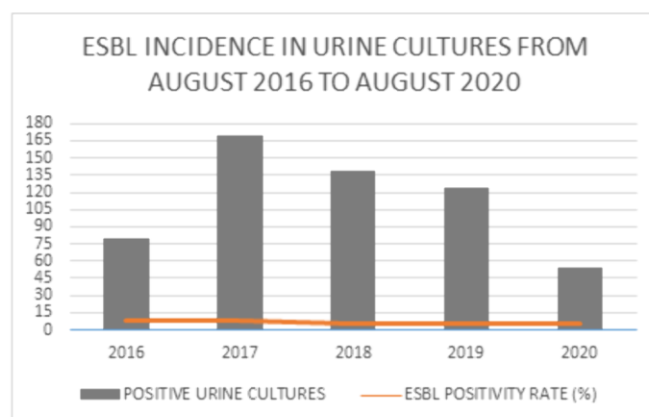
Anastasia Manoli¹, Marina Letsiou¹, Kanella Drakopoulou¹, Marita Antoniadi¹, Aspasia Karasante¹, Efstathia Staikou², Konstantina Giannakopoulou², Fani Mylona¹, Stavroula Kostaridou¹, Patra Koletsis¹
¹PENTELIS CHILDREN'S HOSPITAL, Paediatric Department, PENTELI, Greece, ²PENTELIS CHILDREN'S HOSPITAL, Microbiology Department, PENTELI, Greece

Background: Antimicrobial resistance is increasing among uropathogens and the production of ESBLs is a major mechanism, conferring resistance to β -lactams as well as other antibiotic classes. The aim of this study was to evaluate prevalence, resistance patterns and clinical outcomes of cases with ESBL-PE urinary tract infections, and define risk factors for optimal management and oral treatment options to avoid prolonged hospital stay.

Methods: Retrospective study of the Microbiology Department urine cultures' registry from August 2016 to August 2020 and of patients' medical records with identified ESBL-PE(+) urine cultures. Positive urine examination was defined by appropriate age criteria (suprapubic aspirate/urine catheter or clean catch method: $\geq 10^4$ and $\geq 10^5$ cfu/mL, respectively). Data on underlying medical conditions, use of antimicrobial chemoprophylaxis or treatment during the last 6 months and follow up for recurrence of UTI, were collected.

Results: ESBL-PE positivity rate was 6.0%(34/568) (Figure 1); 65% E.coli, 35% Klebsiella pneumoniae. 70% of isolates were identified via Vitek-2 automated system (bioMerieux) in addition to Kirby-Bauer test. Sensitivity to antibiotics of interest: amoxicillin/clavulanate 11/31 (35%), co-trimoxazole 11/32 (34%), Nitrofurantoin 20/29 (69%), piperacillin/tazobactam 27/33 (82%), Norfloxacin 23/33 (70%), ≥ 1 aminoglycosides 33/34 (97%). Median age was 1 year (IQR, 0.5-7.0), 40% boys, 65% admitted for IV treatment. Clinical outcomes data were available for 76%: 65% had received antibiotics during last 6 months (mainly co-amoxiclav, 2nd generation cephalosporins), 46% had underlying renal disease, mainly Vesicoureteral Reflux, and 1/34 had a recurrent ESBL(+) UTI episode.

Figure 1.



Conclusions: The incidence of ESBL- PE is similar to previous studies from South Europe, around 5 to 6%. The recognition of risk factors in children, especially recent exposure to antibiotics and underlying renal anomalies, should be considered for appropriate empirical therapy. The use of nitrofurantoin chemoprophylaxis remains a safe option as previous administration of extended spectrum antibiotics selects for resistant strains.

MULTISTEP ANTIMICROBIAL STEWARDSHIP INTERVENTION ON ANTIBIOTIC PRESCRIPTIONS AND TREATMENT DURATION IN CHILDREN WITH PNEUMONIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: The Italian antimicrobial prescription rate is one of the highest in Europe; antibiotic resistance has become a serious problem. Inadequate antibiotic prescriptions have been frequently reported, especially for lower respiratory tract infections. The implementation of antibiotic stewardship programs and the use of Clinical Pathways (CPs) are excellent implementation strategies because they have proven to be effective tools at diagnostic and therapeutic levels. The study aims to evaluate the antibiotic prescriptions in patients with community-acquired pneumonia before and after the implementations of two CPs in Pediatric Emergency Department, in 2015 and in 2019.

Methods: The periods analyzed are seven semesters (one before CP-2015 called PRE period, five post CP-2015 called POST 1-5 and 1 post CP-2019 called POST6). The patients have been split into two groups: (i) children admitted to the Pediatric Acute Care Unit (INPATIENTS), and (ii) patients evaluated in the PED and sent back home (OUTPATIENTS).

Results: After the implementations we observed a reduction of broad-spectrum antibiotics prescription for inpatients (100% PRE-period, 66.7% POST-1, 38.5% POST6) contextually an increase in amoxicillin use (33.3% PRE-period, 76.1% POST1, p-value 0.078 vs 0.018). The outpatients group's broad-spectrum antibiotics prescriptions decreased from 54.6% PRE to 17.4% in POST6. Both for outpatients and inpatients, there was a decrease of macrolides. The antibiotic therapy duration decreases both for inpatient and outpatient (13.5 days (PRE-period) to 7.0 days in the POST6 for inpatient, 9.0 days (PRE) to 7.0 days (POST1) for outpatient)

Conclusions: This study shows that CPs are effective tools for an antibiotic stewardship program. Indeed, broad-spectrum antibiotics usage has dropped and amoxicillin prescriptions have increased after implementing the CAP CP-2015 and the 2019 update.

URINARY TRACT INFECTION IN THE FIRST YEAR AFTER PEDIATRIC RENAL TRANSPLANTATION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: At present, renal transplantation is recognized as the most effective treatment for patients with advanced chronic kidney disease. The emergence of infections especially urinary tract infection (UTI) may cause rejection in the first months after renal transplantation. UTI is also known as the most common bacterial infection following kidney transplantation. The main purpose of this study was to determine UTI frequency, type of microorganisms causing UTI, and antibiotic susceptibility pattern in the first year following renal transplantation in Iranian pediatric recipients.

Methods: This retrospective cross-sectional study using census sampling method was performed on 81 Iranian children who had undergone renal transplantation between 2012 and 2017. The patients who had suffered from UTI in the first year following transplantation were enrolled in this study.

Results: In this study, 51 (63%) cases were male (p -value=0.03). Overall, 19, 10, and 3 UTI episodes had occurred in the first month, from the first to sixth months, and between sixth month and one year after transplantation; respectively. *Pseudomonas aeruginosa* (*P. aeruginosa*) was introduced as the most frequent cause of UTI within the first month. During the first to sixth months following renal transplantation, *Escherichia coli* (*E. coli*) was the most frequent agent of UTI in this period.

Conclusions: It is suggested to stop the administration of trimethoprim/sulfamethoxazole and 3rd generation cephalosporins for empirical treatment of UTI in Iranian pediatric kidney transplant recipients. Ciprofloxacin should be administered cautiously secondary to the growing rate of antibiotic resistance in this group.

COMPARISON OF COLISTIN SUSCEPTIBILITY TESTING BY PHOENIX AND BROTH MICRODILUTION METHOD FOR CARBAPENEM RESISTANT ISOLATES IN A TERTIARY PEDIATRIC HOSPITAL .

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

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Background: Colistin has been effective in treating infections caused by *Pseudomonas*, *Escherichia* and *Klebsiella* species. Colistin is an effective antibiotic for treatment of most multidrug- resistant Gram-negative bacteria. It is used currently as a last-line drug for infections due to severe Gram-negative bacteria followed by an increase in resistance among Gram- negative bacteria

Methods: A study was undertaken to compare colistin susceptibility using BMD and Phoenix 100 in carbapenem resistant gram-negative isolates to evaluate the discrepancies and further course of action. The objective of this study was to compare Colistin susceptibility by 2 methods- broth microdilution and Phoenix, to assess the need for broth microdilution method. A total of 177 isolates over the 8 months were studied (February - September 2020). All the isolates were carbapenem resistant and Enterobacteriaceae and non-fermenters - *Pseudomonas aeruginosa*, *Acinetobacter baumannii*.

Results: obtained by Phoenix system correlated with broth microdilution method except for 4 isolates (all 4 were reported resistant by Phoenix) which showed very major errors which indicates that in case of resistance to Colistin by Phoenix, broth dilution method must be used for confirmation . Also in case of Phoenix system showing susceptibility to Colistin, we can safely report those isolates without doing micro broth dilution as we did not encounter any isolates that were susceptible on Phoenix and resistant on micro broth dilution method.

Conclusions: Phoenix Colistin MIC values are reliable in case the isolate is susceptible to Colistin. Broth microdilution has a role to play in Colistin resistant strains and therefore can be used selectively.

FEBRILE URINARY TRACT INFECTIONS IN CHILDREN IN LUXEMBOURG: MICROBIOLOGICAL AGENTS AND PREVALENCE OF ANTIBIOTIC RESISTANCE IN ESCHERICHIA COLI – EVOLUTION OVER THE PAST 5 YEARS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

Claire Sommelette^{1,2}, Pierre François^{1,2}, Michel Kohnen³, Chantal Tsobo³, Armand Biver², Olivier Niel², Isabel De La Fuente Garcia²

¹Catholic University of Louvain, Pediatrics, Ottignies, Belgium, ²Centre Hospitalier du Luxembourg, Pediatrics, Luxembourg, Luxembourg, ³Centre Hospitalier du Luxembourg, Microbiology, Luxembourg, Luxembourg

Background: Background: Appropriate use of antimicrobials for treatment of urinary tract infections (UTIs) is vital in an era of increasing antibiotic resistance. The aim of this study was to describe the evolution of microbiological agents responsible for febrile UTIs and their antibiotic resistances in our pediatric national center of reference between 2014 and 2019.

Methods: Methods: We performed a retrospective study of medical and laboratory files of all children (0-15 years old) attending our hospital with a confirmed febrile UTI based on ICD 10 codes and revision of the files. 278 cases of febrile UTI were analyzed, 142 for 2014 and 136 for 2019.

Results: Results: Patient's demographic and clinical characteristics were similar in both groups: 33% and 34% were boys, median age was 1.6 and 1.8 years old, 24% and 16% had a concomitant uropathy (2014 and 2019 respectively). The most frequent pathogen found on urine culture was *E. coli*, (88,7% in 2014 and 92,6% in 2019). Other pathogens including *Enterococcus* spp, *Klebsiella* spp, and *Pseudomonas aeruginosa* were found in the remaining cases. Prevalence of antibiotic resistance for commonly prescribed antibiotics for *E. coli*, and comparison between 2014 and 2019 is described in Figure 1.

Antibiotic/Resistance mechanism	2014 %	2019 %	P value
ESBL	5,6	5,5	0.88
Meropenem	0	0	NS
Amoxicillin	44,3	51,7	0,24
Amoxicillin-clavulanic acid	16,9	42,65	<0.0001
Cefuroxime	4,9	11,0	0,06
Ceftriaxone	4,2	8,9	0,18
Co-Trimoxazole	16,9	17,6	0,87
Gentamycin	4,9	2,2	0,34
Amikacin	0	0	NS

Conclusions: Conclusion: A major increase in amoxicillin-clavulanic acid resistance is observed over the past 5 years, as well as a trend of increase in cephalosporine resistance. Prevalence of extended-spectrum β -lactamase-producing *E. coli* (ESBL) remains low and stable (5% in both years) and no cases of carbapenem resistant *E. coli* were detected. These results suggest that antibiotic resistance remains a major issue in pediatric UTI.

HIGH RATES OF ANTIBIOTIC PRESCRIBING IN CHILDREN WITH VIRAL RESPIRATORY TRACT INFECTIONS IN A TERTIARY PAEDIATRIC A&E. DO GUIDELINES REALLY WORK?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - RESISTANCE

Evangelia Liakou¹, Ioanna Chranioti¹, Irini Eleftheriou¹, Eleni Kourkouni², Ioannis Kopsidas¹, Maria Tsolia¹, Nikos Spyridis¹

¹National and Kapodistrian University of Athens, Second Department Of Pediatrics, Children's Hospital 'p. And A. Kyriakou', Athens, Greece, ²Center for clinical epidemiology and outcomes research, Cleo, Athens, Greece

Background: Antibiotic use in children for infections of presumed viral etiology is a major concern. Practice guidelines assist in decision-making and prudent antibiotic prescribing. The purpose of this study was to document prescribing patterns following the implementation of practice guidelines in the hospital setting.

Methods: A retrospective longitudinal study of children presenting in Accident & Emergency (A&E) of a tertiary paediatric hospital in Athens, Greece between November 2019-March 2020 with an infection related diagnosis. A&E physicians have been advised to use practice guidelines handouts for common paediatric infections, developed by the hospitals' Infectious Diseases specialists. Commonest diagnoses and linked antibiotic prescriptions (type and dose) were documented. Demographic characteristics and immunization status was also recorded.

Results: 3811 children (median age 5 years) were included in the study of which 842 (22%) received antibiotics. Commonest clinical syndromes linked to antibiotic prescribing were: "otitis media" (92%), "acute sore throat" (45%), "bronchitis-chronic cough" (50%) and "pneumonia" (95%). Amoxicillin was the commonest antibiotic prescribed in children with otitis media and sore throat (71%), clarithromycin and amoxicillin in children with bronchitis (40% and 36% respectively). Amoxicillin was prescribed in 52% of children with pneumonia while 20% received combination of amoxicillin and clarithromycin

Conclusions: Antibiotic prescribing for infections of presumed viral etiology is significant despite practice guidelines recommendations for watchful waiting in children with no supporting evidence of bacterial infection. Use of Amoxicillin as first line agent is encouraging. Multifaceted approach is needed to tackle excessive antibiotic use in A&E setting.

INCREASING INCIDENCE OF STAPHYLOCOCCAL SCALDED SKIN SYNDROME

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SKIN INFECTIONS

Glykeria Rouva¹, Elena Vergadi¹, Fani Ladomenou², Despoina Apostolaki³, Panagiota Spyromitrou-Xioufi², Maria Tsirigotaki¹, Nikolaos Giormezis⁴, Sofia Maraki⁵, Emmanouil Galanakis¹

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Background: Epidemiological data on Staphylococcal Scalded Skin Syndrome (SSSS) and the molecular pattern of associated *Staphylococcus aureus* strains are scarce. The aim of this study was to evaluate the burden of SSSS disease and characterize the *S. aureus* isolates in children with SSSS in Crete.

Methods: All cases of neonates and children (0-16 years old) with SSSS that were admitted in the three major hospitals of the area during the 6-year period 2015-2020 were retrospectively included. Clinical and microbiological characteristics were evaluated. Molecular analysis of selected isolates was performed using pulsed field gel electrophoresis (PFGE), multi-locus sequence typing (MLST) and polymerase chain reaction to detect toxin genes.

Results: In total, 192 cases (81 boys; median age 1.8 years, range 7 days-12 years-old) were recorded. SSSS cases increased from 14/192 (7.3%) in 2015 to 44/192 (23%) in 2020 ($p < 0.001$). Incidence was 43/100,000 among 0-14 years-old and 113/100,000 (0-4 years-old). Highest SSSS rates (55.2%) were noted between August to November ($p < 0.0001$). *S. aureus* was isolated from skin and/or nasal swabs in 74/192 (38.5%) cases. Sixty-six isolates (89.2%) were susceptible to methicillin. Molecular testing of 23/74 (31.1%) isolates revealed ST121 clone in 56.5% (13/23) that carried *eta* and/or *etb* genes.

Conclusions: Cases of SSSS are recently increasing in our region and are mainly associated with methicillin susceptible strains. The emergence of a single *S. aureus* clone (ST121) related to the disease was documented.

ARE SEPTIC INFANTS UNDER THE AGE OF 3 MONTHS GETTING TIMELY MANAGEMENT IN A TERTIARY PAEDIATRIC EMERGENCY DEPARTMENT (PED)?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

Charlotte Adams, Ailsa McIlwaine, Rachel Crozier, Andy Watson
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Background: Sepsis in children is a leading cause of morbidity and mortality worldwide, with a mortality rate of up to 50%. Therefore timely diagnosis and management is crucial. This audit of infants admitted to PED with sepsis assessed compliance against the following standards: IV antibiotics given within 60 minutes of arrival (if meeting sepsis criteria on triage) or patients should be diagnosed within 100 minutes and receive antibiotics within 60 minutes of diagnosis. In addition, infants under 3 months screened for sepsis should have cultures for blood, urine and CSF.

Methods: A retrospective search of patients coded as sepsis and under 3 months, admitted between 1/9/2019-29/2/20, was performed. This identified 75 patients whose electronic records were then reviewed.

Results: 12% (9) of patients received antibiotics within 60 minutes of triage. 56% (42) of patients were diagnosed with sepsis within 100 minutes of admission and 44% (33) received antibiotics within 60 minutes of diagnosis. Within the emergency department 48% (36) had a urine culture sent and 26% (20) had a successful lumbar puncture.

Conclusions: Only 12% (9) of patients received antibiotics in line with the NICE 2017 Sepsis guidance. This work formed part of a larger project assessing the reasons for delays in antibiotic administration in sepsis. The results will be discussed via departmental teaching and infographics. Further interventions include review of the sepsis screening tool, use of an order set for investigations and further training for medical and nursing staff around neonatal cannulas and lumbar punctures. Once these changes are embedded this work will be re-audited.

HOW SEVERE ARE RICKETTSIAL INFECTIONS AMONG CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

Fatma Hammami, Makram Koubaa, Amal Chakroun, Fatma Smaoui, Khaoula Rekik, Chakib Marrakchi, Mounir Ben Jemaa
Hedi Chaker University Hospital, University of Sfax, Tunisia, Infectious Diseases Department, Sfax, Tunisia

Background: Rickettsial infections (RI) usually mimic benign viral infection due to similarities in clinical symptoms. However, severe forms and complications have been reported with rickettsiosis. Children can be affected as well. We aimed to study the particularities of RI among children.

Methods: We conducted a retrospective study including all patients aged ≤ 18 years hospitalized for RI between 2001 and 2019. The diagnosis was confirmed by serologies (seroconversion).

Results: We encountered 59 children, among whom 45 were male (76.3%). The mean age was 14 ± 3 years. All patients consulted for a febrile maculopapular skin rash, associated with headache (76.3%), vomiting (47.4%) and cough (13.5%). Physical examination revealed an eschar (22%) and meningeal syndrome (18.6%). Laboratory investigations showed thrombocytopenia (52.5%) and liver cytolysis (44%). Severe forms of RI included meningitis (18.6%), pneumonia (3.3%) and myocarditis (1.6%). Treatment was based on doxycycline (71.1%), fluoroquinolones (16.9%) and macrolide (11.8%). The mean duration of treatment was 9 ± 3 days. The disease evolution was favourable (100%).

Conclusions: The diagnosis of RI should be largely based on high index of suspicion, careful clinical and laboratory results. Early diagnosis is crucial in order to start antibiotics and avoid, therefore, fatal untreated forms.

PAEDIATRIC KINGELLA KINGAE INFECTIONS IN STOCKHOLM, SWEDEN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

Per Hagerman, Christian Giske, Olof Hertting
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Background: *Kingella kingae* is a clinically important pathogen and one of the leading causes of osteoarticular infections (OAI) in infants and toddlers. Rarely, it causes other infections, such as endocarditis. Before the use of Nucleic Acid Amplification Tests (NAATs), *K. kingae* went largely microbiologically unconfirmed. Research on the clinical, biochemical and microbiological characteristics of children with *K. kingella* infections is of importance for the understanding of this pathogen in children. In this study, we aimed to characterize laboratory-confirmed paediatric *K. kingae* infections

Methods: All paediatric patients with positive *K. kingae* cultures between 2010 and 2020, including blood cultures and tissue cultures, as well as all paediatric patients with a positive 16S rDNA sequencing (16S) result for *K. kingae* (n=20) were retrospectively retrieved from the laboratory information system (LIS) at Karolinska University Laboratory, which covers the entire paediatric population of Region Stockholm and Region Visby (pop. 2 390 000).

Results: 14 girls and 13 boys had laboratory-confirmed *K. kingae* infection. 4 had a positive blood culture, 3 had a positive bone or joint culture and 20 had a positive bone or joint 16S. 3/7 with positive cultures and 1/20 with positive 16S, had an underlying disease. Median age was higher in culture-positive children than in culture-negative, 16S positive children (29 months vs. 19 months). 2/7 culture-positive and 20/20 16S-positive cases were associated with OAI. Mean CRP was 30.6 mg/dL in all, 52.3 mg/dL in culture-positive and 23.6 mg/dL in culture-negative cases.

Conclusions: Laboratory-confirmed *K. kingae* OAIs are rare, probably because few bone and joint samples are obtained. The data extracted from this small study suggest that culture-positive *K. kingae* infections differ from 16S-positive infections in severity, underlying diseases, focus of infection and inflammatory response.

IDENTIFICATION OF PATHOGENS IN PEDIATRIC SEPTIC ARTHRITIS CASES BY REAL-TIME PCR: A MULTI-CENTER STUDY IN TURKEY (PEDSART STUDY)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: Septic arthritis (SA) is a serious bacterial infection that must be treated efficiently and timely, but the huge number of culture-negative cases makes the local epidemiological data important. Accordingly, the aim of this study was to evaluate the etiology, clinical characteristics, and therapeutic approach of SA in children in Turkey, emphasizing the role of real-time polymerase chain reaction (PCR) techniques in diagnosis.

Methods: In this multi-center, prospective study, children who were hospitalized with the diagnosis of SA between February 2018 and July 2020 in 23 hospitals in 14 cities of Turkey included. Clinical, demographic, laboratory, radiological findings have been noted and real-time PCR have been performed in synovial fluid samples.

Results: Seventy-five children between 3 to 204 months (median 74 months) diagnosed with acute SA were enrolled. The combination of synovial fluid culture and real-time PCR resulted in the detection of causative bacteria in 33 (44%) of patients. In 14 (18.7%) patients, the etiological agent was demonstrated by the PCR method only. The most commonly isolated etiologic agent was *Staphylococcus aureus*, which was detected in 22 (29.3%) patients, while *Streptococcus pyogenes* was found in four (5.3%) patients and *Kingella kingae* in three (4%) patients. Concurrent osteomyelitis was seen in 10/75 (13.3%) children.

Conclusions: *Staphylococcus aureus* is the main pathogen in pediatric septic arthritis cases and with the use of advanced diagnostic approaches like real-time PCR the chance of diagnosis increases.

BLOODSTREAM INFECTIONS AFTER CARDIAC SURGERY IN A PEDIATRIC POPULATION OF A TERTIARY CENTER

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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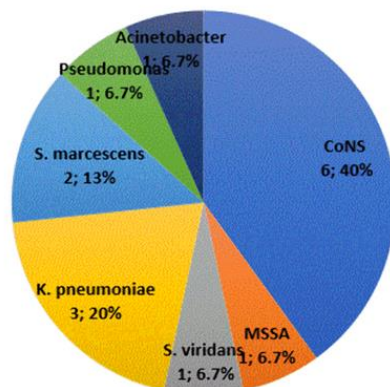
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Background: Bloodstream infections (BSI) are the most frequent nosocomial infections in pediatric intensive care units (PICU) and increase morbidity and mortality. This study has been designed to determine the etiology, risk factors, and outcome of bloodstream infections in children after cardiac surgery. We limited our study for patients undergoing cardiac surgery with cardiopulmonary bypass (CPB), knowing that risk of infection is higher in these patients.

Methods: Patients, 0 to 16 years, admitted in PICU between August 2016 and December 2019 after cardiopulmonary bypass, with suspected bloodstream infection (cases) and with no suspected infection (controls), were prospectively recruited. Demographic, clinical, laboratory, and microbiologic data, from patient's medical records and laboratory and microbiologic results, were collected. The study was approved by our hospital research committee. SPSSv.22, was used in statistical analyses.

Results: 75 cases and 36 controls were recruited, with no epidemiological differences. The median age was 5 months (IQR 0-13). 20% (15/75) of the cases had a positive blood culture (figure 1).

MICROBIOLOGICAL ISOLATIONS IN BLOOD CULTURES



Differences in time of PICU admission (40 vs. 10 days; p 0.029) and time of central line insertion (14.86 vs 6.17 days; p 0.025) were found. A trend was observed with longer CPB (200 vs 150 min; p 0.086), higher percentage of open chest (37% vs 22%; p 0.1), and greater blood product exposure (36% vs 22%; p 0.14).

Conclusions: BSI after cardiac surgery increases morbidity in pediatric patients (longer PICU length of stay) in this series, as previously reported in other publications. In our study, the most important risk factor associated with BSI was prolonged maintenance of central lines. Regarding etiology, the most frequent isolated bacteria was CoNS, and GNB account for almost half of all microbiological isolations in this series.

MEAN PLATELET VOLUME AS A POTENTIAL PREDICTOR OF BACTEREMIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: The mean platelet volume (MPV) is considered a marker of platelet function and reactivity. It is an easily available index in the emergency departments (ED) and its changes have been associated with several types of inflammatory and infectious conditions. Correlation between MPV and bacteremia or sepsis is still unclear. The aim of this study was to characterize the clinical onset of bacterial infections with associated bacteremia and to analyze the potential usefulness of MPV for early prediction of bacterial infection.

Methods: Clinical records of patients diagnosed with bacteremia, admitted to our pediatric ED between 2016 and 2020 were retrospectively reviewed. Case group (n=37) was compared to a control group (n=56), matched by sex and age. Platelet count and indexes were assessed at the time of admission in the ED. Values of $p < 0.05$ were considered statistically significant.

Results: The mean age was 3.5 ± 4.5 years. Fever was more frequent in the case group (89.2% vs 83.9%) and mean time of illness evolution was shorter (30 vs 45 hours). Organ dysfunction occurred in 30% of patients with bacteremia. MPV's values, in the cohort, varied between 6.6 and 11.6 fL (mean of 8.2 ± 1.03 fL). No statistically significant difference was found between groups ($p = 0.157$), neither in the division by Gram groups ($p = 0.649$). On the other hand, platelet count was significantly lower in the case group ($p = 0.038$), with mean values of $298 \pm 158 \times 10^9/L$ vs $320 \pm 97.74 \times 10^9/L$.

Conclusions: MPV is not yet proven to be an effective marker of bacteremia in children. Correlations of MPV with platelet distribution width may be helpful in distinguishing consumptive mechanisms. Absolute platelet count is more likely to be decreased in patients with sepsis, which correlates with the case group.

CRIMEAN CONGO HEMORRHAGIC FEVER DURING PANDEMIC: CHILDREN PRESENTED WITH HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: Crimean Congo Hemorrhagic Fever (CCHF) is an acute tick-borne infectious disease which can also be transmitted by direct contact with infected human or animal blood. The responsible virus is CCHF virus of Bunyavirus family. CCHF is endemic in certain regions of Turkey during summer months. Hemorrhagic complications and hemophagocytic lymphohistiocytosis (HLH) are usually responsible for fatalities in adults whereas CCHF is rare and its course is mild in children for reasons that are obscure. We present five children who were admitted with HLH and diagnosed as CCHF during the pandemic.

Methods: Five children with PCR confirmed CCHF admitted with severe clinical and laboratory findings consistent with HLH were enrolled to the study. Demographic findings, clinical courses as well laboratory results, treatments and outcomes noted.

Results: All patients were admitted in April and May 2020. All had the clinical, laboratory (Figure1) and bone marrow aspiration findings consistent with HLH (Table1). Although all patients had thrombocytopenia and increased levels of d-dimer, petechia was observed only in 3 patients while no hemorrhagic complications encountered. Since intravenous immunoglobulin (IVIG) was not effective in the treatment of HLH, prednisolone administered to all patients. Two patients had transient bradycardia on the 3rd day of steroid treatment resolving on the 7th day of admission. All patients fully recovered and discharged.

Table 1. Demographic findings, treatment durations and outcomes of cases.

Cases	Age	Sex	Complaints	Physical Findings	FFPT/PCT	Ribavirin Duration (days)	IVIG Duration (days)	Steroid Duration (days)	Complications	Outcome
Case 1	15.4	M	Fever Myalgia, Headache	HSM, petechia	+/+	5	2	5	Transient bradycardia	Survived
Case 2	7.9	F	Fever Malaise Nausea	HSM Petechia	+/+	5	2	5	None	Survived
Case 3	12.6	M	Fever Headache Myalgia	HSM	+/-	5	2	5	None	Survived
Case 4	9.4	M	Fever Malaise Nausea	HSM petechia	+/+	5	2	5	Transient bradycardia	Survived
Case 5	9.8	F	Fever Headache	HSM	+/=	8	2	2	None	Survived

Table Legend

HSM: Hepatosplenomegaly

FFPT: Fresh frozen plasma transfusion

PCT: Platelet concentrate transfusion

Figure 1. Mean laboratory values of patients by hours.

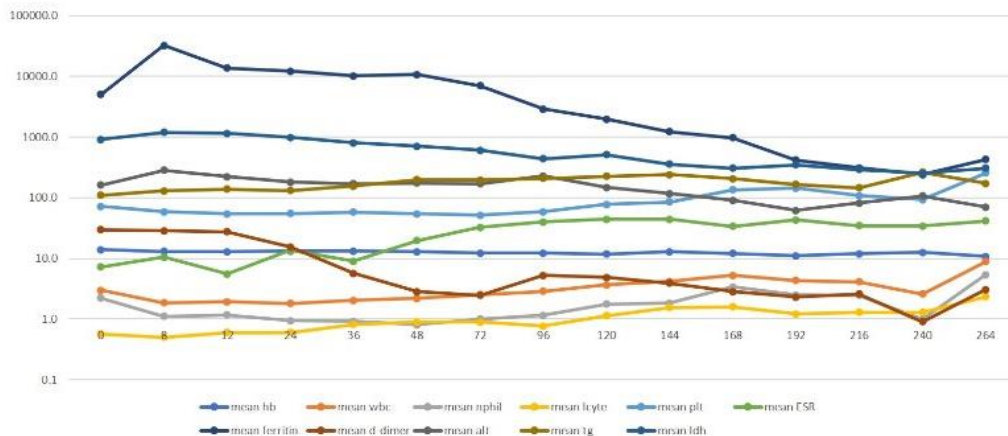


Figure Legend:

mean hb : Mean hemoglobin (mg/dl)
 mean wbc: Mean white blood cell count ($\times 10^3 \mu\text{l}$)
 mean nphil: Mean neutrophil count ($\times 10^3 \text{ cl}$)
 mean lcye: Mean lymphocyte count ($\times 10^3 \mu\text{l}$)
 mean plt: Mean platelet count ($\times 10^3 \mu\text{l}$)
 mean ESR: Mean erythrocyte sedimentation rate (mm/h)
 mean ferritin: Mean ferritin ($\mu\text{g/l}$)
 mean d-dimer: Mean d-dimer (mg/l)
 mean alt: mean alanine transaminase (U/l)
 mean tg: mean triglyceride levels (mg/dl)

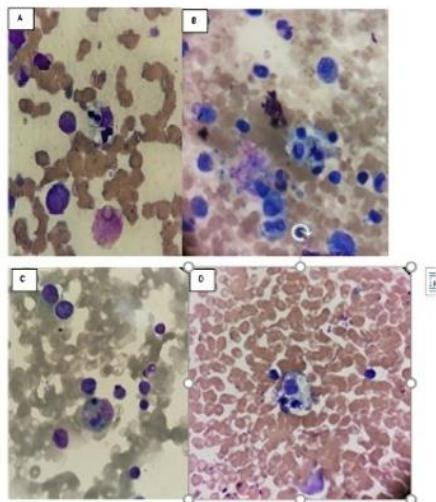


Figure 2. Bone Marrow Aspirates showing hemophagocytosis

Conclusions: In Turkey, CCHF usually has a mild disease course in children and no fatalities have been reported for children since 2001. Severe presentations such as HLH and coagulopathies although rare can be encountered in children. Contrary to adults, with prompt and appropriate treatment the outcomes are excellent for children

USEFULNESS OF CRP AND PCT AS BIOMARKERS OF INVASIVE BACTERIAL DISEASE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: Invasive bacterial infections (IBI) are becoming increasingly rare but have a non-neglectable rate of morbimortality. Therefore, biomarkers for more precocious diagnosis are needed since early targeted therapy is a good prognostic factor. The aim of this study was to analyze the usefulness of C-reactive protein (CRP), procalcitonin (PCT) and white blood cell count (WBC) for the diagnosis of IBIs.

Methods: Comparative and retrospective analysis of 40 children with IBI, admitted to a level II hospital during a 5 year period, was performed. Cases were compared with 70 control individuals, matched for age and sex, diagnosed with non-invasive bacterial infections. Statistical analysis was performed using SPSS; *p* values <0.05 were considered statistically significant.

Results: In the case group, mean age was 3.8 ± 4.8 years; 89% reported fever (mean time evolution of 30.2 ± 35.9 hours), 73% had only one blood culture requested. The most isolated agents were *Streptococcus pneumoniae* (n=11), *Neisseria meningitidis* (n=5) and *Staphylococcus aureus* (n=5). No statistically significant difference was found in WBC ($p=0.99$), CRP ($p=0.20$) and PCT ($p=0.14$) at the time of admission between groups. Mean highest detected CRP, in seriated blood analysis, was significantly higher in the case group ($p=0.015$), but not mean highest PCT ($p=0.09$). Both mean highest values were recorded, on average, 24 hours after admission.

Conclusions: The studied biomarkers did not prove to be useful, at the time of admission, in differentiating IBI from other bacterial illnesses. Although mean highest CRP detected was higher in the case group, given that it was detected 24 hours after admission, it may be unhelpful in early antibiotic administration.

PERSISTENT FEVER, SPLENOMEGALY AND PANCYTOPENIA IN A 14-YEAR-OLD FEMALE WITH PROSTHETIC VALVE REPLACEMENT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: Q fever is a zoonotic infection caused by *C. burnetii* and the most commonly identified sources of human infection are farm animals. *C. burnetii* endocarditis is a rare cause of culture negative endocarditis in children. Here, a case of subacute/chronic endocarditis due to *C. burnetii* who had prosthetic pulmonary valve and no contact with farm animals is presented.

Methods: A 13-year-old female patient was referred to our hospital with recurrent fever for 3 months. In her medical history, she had VSD and pulmonary binding operation when she was 4 months old, and pulmonary valve replacement (PVR) when she was 9 years old. Although she lived in a rural area, there was no animal contact except to take care of her kitten. On physical examination, vital signs were stable except for the fever, 3/6 systolic murmur, liver 4 cm palpable, and spleen palpated up to inguinal.

Results: Laboratory tests revealed pancytopenia, hypergammaglobulinemia, direct coombs positivity, an increase in acute phase reactants and an increase in LDH. Blood cultures were negative. Bone marrow examination was normal. Thin and thick blood smears for malaria were negative. No pathological finding was detected in PET-CT. Transthoracic echocardiography (TTE) was normal. Serological tests were positive for *C. burnetii*. The patient was accepted Q fever endocarditis and doxycycline and hydroxychloroquine were started. We thought the cat as a reservoir. In the follow-up, the patient's fever and spleen size regressed in the first week after treatment.

Conclusions: *C. burnetii* should be investigated in patients with clinical suspicion of endocarditis who has prosthetic heart valve, whereas there is no echocardiographic findings, blood culture positivity, and contact with farm animals.

STAPHYLOCOCCUS AUREUS INVASIVE DISEASE AMONG THE PAEDIATRIC POPULATION IN PORTUGAL BETWEEN 2010 AND 2019: A NATIONWIDE MULTICENTRE OBSERVATIONAL STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: *Staphylococcus aureus* (SA) infection is common in paediatric age. Although mostly associated with uncomplicated skin and soft tissue infection, SA may be responsible for potentially severe bacterial invasive disease (BID). Antibiotic treatment may be optimized based on local epidemiology and antimicrobial resistance patterns.

Methods: A retrospective, observational, multicentric, nationwide study of BID in patients aged between 1 month and 18 years in Portugal between 2010 and 2019 was performed, with 21 participating hospitals. Patients with *S. aureus* invasive disease (ISAD) were selected and distributed based on age-group (1–2 months old, 3–35 months old, 3–9 years old and over 10 years old), gender, normally sterile site of bacterial isolation, comorbidities, clinical outcome and antibiotic susceptibility testing results.

Results: A total of 423 patients with ISAD were identified among all ages; boys represented 61.3%. Bacterial isolation sites included blood (82%), cerebrospinal (2.1%), synovial (10.9%) and pleural (1.4%) fluids and deep tissue (3.5%). Clinical presentations included osteoarticular infection (34%), cellulitis (12.9%), pneumonia (10.5%) and surgical site infection (5.5%), among others. Bacteraemia with unknown focus represented 23.6%. Sepsis occurred in 15.8%. Comorbidities were present in 23.7%. Complete recovery was reached by 75.1%, 24.4% developed sequelae and 0.5% (n=2) died. Methicillin-resistant SA (MRSA) was found in 20 cases (4.7%).

Conclusions: ISAD is a serious clinical condition in all age-groups. Although it is mainly associated with osteoarticular and skin and soft tissue infections, it significantly caused bacteremia with unknown focus. Flucloxacillin has shown to remain an appropriate first-line antibiotic. However, since MRSA represented almost 5% of infections, vancomycin must be the choice in life-threatening infections until antimicrobial

susceptibility tests are available.

EPIDEMIOLOGY AND CLINICAL PRESENTATION OF PEDIATRIC PATIENTS WITH HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION AT A TERTIARY CARE HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TB AND HIV

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¹Shaheed Zulfiqar Ali Bhutto Medical University, Pediatrics, Islamabad, Pakistan, ²Pakistan Institute of Medical Sciences, Infectious Diseases, Islamabad, Pakistan, ³Pakistan Institute of Medical Sciences, Pediatrics, Islamabad, Pakistan

Background: HIV infection in children is a disease with social, economic and medical aspects that make it one of the most challenging diseases. Pediatric HIV infection usually presents with recurrent infections, chronic diarrhea, cutaneous manifestation, lymphadenopathy, visceromegaly, thrombocytopenia, pancytopenia and failure to thrive. This study will help in viewing the different patterns of presentation of HIV in pediatric population.

Methods: It was a retrospective study in which we evaluated the records of pediatric patients diagnosed with HIV from 2005 to 2020 at Pakistan Institute of Medical Sciences, Islamabad. All the data like age, gender, area, presenting complaints, examination findings at the time of diagnosis, mode of transmission, co infection and co morbidities were recorded. Descriptive analysis was done to calculate frequencies and means of the variables. SPSS 20 was used for data analysis.

Results: Out of 94 children, 61 (65%) were male and 33 (35%) were female with M:F ratio as 1.8:1. Majority of patients (44%) were below 4 years. Fever was found in 55% of the cases followed by cough (39%) diarrhoea (29%), pallor (27%), shortness of breath (26%), weight loss (23%) and failure to thrive (22%). Forty reported co infections with pneumonia (25%), Tuberculosis (16%) and soft tissue infection (6%). Eight (9%) patients were thalassemic. Mother to child transmission (60%) was the commonest mode of transmission followed by blood transfusion 22 (23%) and parenteral transmission 6(6%).

Conclusions: In children HIV is more common in male especially under 4 years with fever being the commonest symptom and mother to child transmission being the commonest mode of transmission.

CHILDREN AND ADOLESCENTS PERINATALLY INFECTED WITH HIV EXPERIENCE FEW SYMPTOMS OF FATIGUE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TB AND HIV

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Background: Fatigue is a commonly reported symptom among adults living with HIV and among children with a chronic disease. Fatigue can have disastrous effects on health status, including health related quality of life (HRQOL). Still, fatigue is underexplored in children and adolescents perinatally infected with HIV (PHIV) in the Netherlands. This study aims to explore the occurrence of fatigue in PHIV receiving optimal HIV care in the Netherlands, and its association with their HRQOL.

Methods: We measured HRQOL and fatigue using the Pediatric Quality of Life Inventory™ (PedsQL 4.0) and the PedsQL Multidimensional Fatigue Scale (MFS). We used regression analysis adjusted for age and gender to compare outcomes to three groups: 1) HIV-uninfected peers (HIV-, matched for age, sex, ethnicity, socioeconomic status and adoption status), 2) a sample representing the general Dutch population and 3) children with a chronic disease (CCD). Within the PHIV+ group we explored the association between fatigue and HRQOL using linear regression analysis.

Results: We enrolled 14 PHIV children (median age 10.2 years [IQR 9.2-11.4], 35.7% male) and fourteen HIV-. Compared to CCD, PHIV children significantly reported less symptoms on one subscale (general fatigue; mean difference 13.0, 95% CI 1.3 to 24.8). No other significant differences were found. PHIV children scored relatively low on the cognitive fatigue scale in comparison to HIV-uninfected matched controls, CCD and the general population, although these differences did not reach significance. Among PHIV, reporting more symptoms of fatigue was associated with a lower HRQoL score.

Conclusions: PHIV children and adolescents do not experience more symptoms of fatigue than their healthy peers. Cognitive fatigue might be the exception. Fatigue in PHIV also appears to be associated with children's HRQOL. Further research should confirm these exploratory findings.

GLOBAL PAEDIATRIC ANTIMICROBIAL STEWARDSHIP AND INFECTION PREVENTION CONTROL STRATEGIES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - THE SPREAD OF ANTIMICROBIAL RESISTANCE

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Background: The growth of antimicrobial resistance (AMR) worldwide has led to increased focus on antimicrobial stewardship (AMS) and infection prevention and control (IPC) measures, although primarily in high-income countries (HIC). We aimed to compare paediatric AMS and IPC resources and activities between low middle-income countries (LMIC) and HIC and to determine the barriers and priorities for AMS and IPC in LMIC as assessed by clinicians in those settings, via a global survey.

Methods: An online questionnaire was distributed to clinicians working in HIC and LMIC healthcare facilities in 2020.

Results: Participants were from 135 healthcare settings in 39 LMIC and 27 HIC. Formal AMS and IPC programs occurred in significantly less LMIC healthcare settings compared with HIC (AMS 42% vs. 76%; IPC 58% vs. 89%). Hand hygiene promotion was the most common IPC intervention (82% of LMIC settings), although LMIC hospitals had more limited access to reliable water supply and handgel. The most common barrier to paediatric AMS and IPC was lack of education: 17% of LMIC settings had education on antimicrobial prescribing, and 25% on infection control.

Conclusions: A collaborative international approach is needed to combat AMR, using targeted strategies that address the imbalance in global AMS and IPC resource availability and activities.

IMMUNE MODULATING THERAPY IN MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN: EXPERIENCE IN A TERTIARY CARE CHILDREN HOSPITAL WITH A DEDICATED COVID-19 REGIONAL CENTER

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TREATMENT

Francesca Calò Carducci¹, Andrea Smarrazzo², Nicola Cotugno³, Caterina Marabotto², Cristina De Benedetti³, Mary Lombardi², Raffaella Scrocca², Nicole Olivini², Laura Lancella¹, Stefania Bernardi¹, Donato Amodio³, Veronica Santilli³, Laura Cursi¹, Sara Chiurchiù¹, Lorenza Romani¹, Emma Manno³, Carlo Concato⁴, Daniela Perrotta⁵, Patrizia D'Argenio¹, Corrado Cecchetti⁵, Fabrizio De Benedetti⁶, Paolo Palma³, Andrea Campana², Alberto Villani⁷, Paolo Rossi¹

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Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in pediatric population is usually associated with asymptomatic or paucisymptomatic disease; in few cases may result in the multisystem inflammatory syndrome in children (MIS-C), a serious, life-threatening condition. At the time being, the clinical management of this condition and the choice of the immune modulating therapy rely on expert opinions.

Methods: We retrospectively reviewed clinical files of children admitted in an Italian Pediatric COVID-19 Regional Center in the period march 2020-january 2021. We found 21 patients fulfilling CdC case definition for MIS-C.

Results: Median age was 11 years (2-17 years) with male/female ratio 12/9. As first-line treatment 10 patients received iv immunoglobulins (ivlg) at 2 g/kg plus steroids, namely methylprednisolone 2mg/kg/die with subsequent tapering; 4 patients received anakinra 8-10 mg/kg/die plus steroids; 4 patients received ivlg only; 3 patients received ivlg plus high dose steroids; 2 patients received ivlg plus steroids plus anakinra. Due to lack of response, 5 patients required second-line treatment: four cases received anakinra and one patient immunoglobulin. All patients fully recovered in a median of 13 days (9-64 days)

Conclusions: Multicentric randomized clinical trial are needed in the setting of MIS-C in order to define the optimal therapeutic approach for first and second line treatment

SAFE DISCHARGE DURING THE PANDEMIC: CHILDREN WITH COVID-19 INFECTION AND PAEDIATRIC MULTISYSTEM INFLAMMATORY SYNDROME (PIMS), A POST DISCHARGE FOLLOW UP REPORT.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TREATMENT

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Background: *Follow-up after discharge via telemedicine or home visit has shown to reduce readmissions and improve adherence to treatment. We report the outcomes after discharge of pediatric patients with COVID-19 infection and Paediatric Multisystem Inflammatory Syndrome (PIMS) in a region where SARS-CoV-2 and dengue cocirculate.*

Methods: *Patients who were discharged from May 1st 2020 to January 15th 2021 with a diagnosis of COVID-19 infection (PCR positive) or PIMS associated to SARS-CoV-2 and dengue were included. A form containing discharge summary information and possible anticipated complications related to both diseases was created. The first contact was 72 hours post-discharge and included 1) questions related to general wellbeing, family and social environment, 2) adherence and tolerance to the treatment indicated 3) answers to questions caregiver might have; then a weekly call for 3 weeks.*

Results: *A total of 223 patients met the inclusion criteria, 34 (15%) were not reachable by phone and 189 (85%) completed follow up. There were 91 (48%) female. Regarding age, 27 (14%) were younger than 1 year, 47 (25%) 1 - 4 years, 20 (11%) 4 – 6 years, 40 (21%) 7 - 10 years, 55(29%) older than 10 years. Their diagnosis were: 91 (48%) COVID-19 + other condition, 64(34%) PIMS associated to COVID-19, 9(5%) COVID-19 + Dengue, 16(8%)COVID-19 PCR negative but antibody test positive, 9 (5%) Dengue with warning signs. During the first call 58 (31%) patients were symptomatic: 18 (31%) intolerance to exercise, 20 (34%) irritability, 18 (31%) hand and feet peeling, 14 (24%) myalgias and arthralgia, 18 (31%)cough. Among symptomatic patients 6 (3%) were readmitted, diagnosis included urinary tract infection, tuberculosis, wheezing, arthritis, splenic sequestration, gastroenteritis.*

Conclusions: *An emergent disease benefits from close follow-up after discharge due to the ability to detect early symptoms associated to COVID-19/PIMS that are not yet clearly described and therefore require further investigation. Furthermore it builds trust and establishes a strong connection with the healthcare system.*

THE DECLINE OF DIPHTHERIA CASES IN 2020 IN EAST JAVA INDONESIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TROPICAL/PARASITE INFECTIONS & TRAVEL MEDICINE

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Background: For the last ten years, East Java Province in Indonesia has been having a high number of diphtheria cases. This province also has a high number of Covid-19 patients. During 2020, there was a significant decline of all infectious disease patients. East Java also performed outbreak response immunization (ORI) in 2018. The aim of this study was to report the epidemiology aspect of diphtheria cases in the province for 2020.

Methods: This was a surveillance study based on daily, weekly, and monthly report from 38 districts. The report's source was hospitals, community health centers, doctors, and paramedics. The report consists of demographical, clinical, and laboratory aspects. All reports were collected at the Provincial Health Office. The period of this report was the whole year of 2020. All cases were reconfirmed by the national expert committee. The microbiological culture was performed at Public Health Laboratory in Surabaya.

Results: For 2020, 29 districts send reports, and the total number of diphtheria patients in the province was 46 (weekly average was 1.75) among 96 clinical suspected cases. Six of those cases were above 18 years of age. East Java contributed 24.14% of all Indonesian cases. Two microbiological cultures showed *C. diphtheriae mitis toxigenic*. One patient died (CFR 1.1%). In 2019 there were 237 cases, with 13 positive microbiological cultures and 2 dead patients.

Conclusions: Covid-19 pandemic changes the incidence of many infectious diseases significantly. However, the diphtheria cases in East Java were not disappeared. The impact of ORI in 2018 was significant. The responsibilities of public health officers and all clinicians remain tough.

IMPORTED P. VIVAX IN CHILDREN: AN ENTITY NOT TO BE DISMISSED

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TROPICAL/PARASITE INFECTIONS & TRAVEL MEDICINE

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Background: In Europe, the majority of the imported malaria cases occur in travellers or migrants returning from sub-Saharan Africa. Paediatric cases of imported *P. falciparum* malaria have been widely described in the literature, but there is scarce data on the role of *P. vivax*. The aim of this study was to describe the characteristics of imported paediatric *P. vivax* malaria in our setting.

Methods: We included patients under 18 years of age with laboratory confirmed *P. vivax* malaria diagnosis from Microbiology Laboratories' electronic databases of five public health centres in Catalonia (Spain) from January 2009 to December 2019 (both included). Epidemiological, clinical, laboratory, treatment and outcome data were retrospectively collected from medical electronic records and a descriptive analysis was performed. Ethical approval was obtained from all participating centres.

Results: Forty-five children (64% male) were included, median age 10.7 years (IQR 4.9-13.6). Most (31) returned from Pakistan, 17 were recent migrants and 14 were visiting friends and relatives (VFR). Median asymptomatic period after arrival was 97 (IQR 62-246) days. Main symptoms were fever (98%), vomiting (40%), hepatomegaly (36%) and splenomegaly (31%). Workup showed thrombocytopenia (84%), anaemia (64%); mean parasitaemia was 1.6% (SD 1.2). Eight patients fulfilled WHO criteria for severe malaria, two admitted to PICU. Most patients (58%) received chloroquine; primaquine added in 51%. No deaths or sequelae occurred.

Conclusions: Recent migrants or VFR travellers from Pakistan are a risk group for imported *P. vivax* malaria. *P. vivax* malaria must be suspected in children presenting with fever returning from endemic areas, even months after arrival, and can present with severe clinical courses. The rate of primaquine therapy was suboptimal and its use should be encouraged, in order to eradicate the parasite.

CONSEQUENCES OF BCG VACCINATION STRATEGY CHANGE ON TUBERCULOSIS ADMISSIONS IN A PORTUGUESE HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Hospital Beatriz Ângelo, Pediatric Department, Loures, Portugal

Background: Tuberculosis (TB) still poses a public health concern all over the world. The incidence of TB in Portugal has decreased below 20/100 000. Subsequently, since 2016, BCG vaccination strategy includes only children from risk groups. This study aim was to evaluate possible consequences of BCG vaccination strategy change.

Methods: A retrospective analysis was conducted in Hospital Beatriz Ângelo, in which all TB cases in children admitted between 2012 and 2020 were included. Epidemiological and clinical data were collected through consulting patient hospital records. A comparative analysis between admissions in the time period of 2012-2016 (universal BCG vaccination) and 2017-2020 (BCG vaccination only for risk groups) was conducted.

Results: A total of 24 patients were included. The majority were female (79.2%) and age ranged from 16 months-old to 17 years-old (median of 8). Between 2012-2016 there were a total of 10 (41.7%) cases, while between 2017-2020 there were 14 (58.3%). Children below 5 years-old diagnosed in 2017-2020 constituted 33.3% of total cases, while in 2012-2016 the group above 15 years-old was predominant (25%, p-value 0.026). 25% had no BCG immunization. No difference was found in isolation criteria, length of stay and presence of complications between children with and without BCG immunization.

Conclusions: This study reveals that TB cases were more prevalent in the group age below 5 years-old after the change of BCG vaccination strategy. Nevertheless, there was no evident consequence on the patients' outcome showing therefore that the recent change in the BCG vaccination strategy does not seem to be causing harmful repercussions, but further studies are needed to conduct a more comprehensive analysis.

TUBERCULAR MENINGITIS IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

Amal Chakroun, Makram Koubaa, Fatma Hammami, Fatma Smaoui, Chakib Marrakchi, Khaoula Rekik, Mounir Ben Jemaa

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Background: Tubercular meningitis (TBM) continues to be a common cause of neuromorbidity in children. Difficulties arise in retaining the diagnosis and its management. We aimed to study the clinical, therapeutic, and evolutionary features of TBM in children.

Methods: We conducted a retrospective study including all patients admitted in our department for tubercular meningitis between 1990 and 2019.

Results: We enrolled 8 children. The mean age was 15,3. The most frequent revealing symptom were fever and headache. The lumbar puncture showed lymphocytic cell pleocytosis and Ziehl-Neelsen staining was negative in all cases. Mycobacterial culture was positive in 3 cases. Polymerase chain reaction (PCR) of Koch's bacillus in the CSF was positive in 2 cases. All patients had computed tomography that showed meningeal contrast enhancement in 5 cases and tuberculoma in 3 cases. All patients received corticosteroids and quadruple antitubercular therapy for 2 months followed by bitherapy. The mean duration of antitubercular treatment was 16.8 months. The outcome was favorable in 62.5%.

Conclusions: The diagnosis and treatment of TBM continue to be challenging. Development of new diagnostic modalities and intensified drug regimens improve the outcome of pediatric TBM and reduce the mortality rate

SUBCLINICAL TUBERCULOSIS IN CHILDREN: DIAGNOSTIC STRATEGIES FOR IDENTIFICATION REPORTED IN A 6-YEAR NATIONAL PROSPECTIVE SURVEILLANCE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Background: Subclinical tuberculosis (TB) is well recognized and defined as a disease state with absent or non-recognized symptoms. The study quantifies the contribution of subclinical TB in children and details diagnostic strategies used for identification.

Methods: Data was collected between December 2013 to November 2019 through the Swiss Pediatric Surveillance Unit (SPSU). Children with culture/molecular confirmed TB or with a treatment with ≥ 3 anti-mycobacterial drugs were included.

Results: A total of 139 children with TB disease were included in the final analysis, of which 44 (33%) were subclinical. The median age of children with subclinical compared to symptomatic TB was 3.6 (IQR 1.9 to 9.4) and 9.7 (IQR 2.7 to 14.3) years, respectively ($p=0.001$). In subclinical children diagnosis was made by the following combinations of abnormal/confirming results:

culture/molecular+immunodiagnostic+chest radiography in 12 (27%), immunodiagnostic+chest radiography in 19 (43%), culture/molecular+chest radiography in 2 (5%), culture+immunodiagnostic in 1 (2%), chest radiography only in 9 (20%) and immunodiagnostic only in 1 (2%) case.

Conclusions: A notable proportion of children with TB had subclinical disease. This highlights the importance of non-symptom-based TB case finding in exposed children and refugees from high-TB-prevalence settings. The results suggest that screening in children with a combination of immunodiagnostic testing, imaging, culture and molecular testing results is adequate to identify subclinical TB

CLINICAL AND THERAPEUTIC FEATURES OF CHILDHOOD LYMPH NODE TUBERCULOSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

Fatma Hammami, Makram Koubaa, Amal Chakroun, Fatma Smaoui, Khaoula Rekik, Chakib Marrakchi, Mounir Ben Jemaa

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Background: Childhood tuberculosis (TB) contributes to the global burden of TB. It's a multisystem disease that might infect any organ, among which, lymph nodes are the most common site of extrapulmonary TB. We aimed to study the clinical and therapeutic features of lymph node TB among children.

Methods: We carried out a retrospective study including all children aged ≤ 18 years diagnosed with lymph node TB between 2005 and 2019.

Results: We encountered 21 cases among whom 15 were females (71.4%). The mean age was 12 ± 3 years. Six patients had a family history of TB (28.5%). Patients consulted for fever (42.8%), asthenia (47.6%) and weight loss (19%). Elevated C-reactive protein levels (42.8%) and hyponatremia (23.8%) were noted. Tuberculin skin test was positive (57.1%). Histological (66.6%) and microbiological evidence (61.9%) confirmed the diagnosis. The mean duration of antitubercular therapy was 9 ± 2 months. Side effects included leukopenia (4.8%) and cholestasis (4.8%). The disease evolution was favorable (90.4%). Death (4.8%) and relapse (4.8%) were noted.

Conclusions: The diagnosis of lymph node TB among children should be considered in front of systemic symptoms and a family history of TB, especially among the infants. Fine needle aspiration or a lymph node biopsy are required to confirm the diagnosis.

TUBERCULOSIS IN CHILDHOOD AND ADOLESCENTS IN TERTIARY CARE HOSPITAL IN PUGLIA-ITALY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

Pasqua Massagli^{1,2}, Amalia Amoroso², Maurizio Carone², Anna Maria Giannini², Rita Grandolfo², Valentina Santoiemma², Francesco Tansella², Domenico Tricarico², Claudio Cafagno², Desiree Caselli²
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Background: Despite being treatable and curable, Tuberculosis (TB) leads to significant morbidity in childhood and adolescent. In Italy recently has been increasingly diagnosed probably due to the presence of immigrants, especially in Southern Italy.

Methods: Methods. Analysis of all cases of TB admitted to the Infectious Diseases Department of our referral teaching children hospital GIOVANNI XXIII in Bari, Apulia. Between January 1 and December 31, 2020, 13 cases of TB were admitted. They were of Italian ancestry (n=7) or from non-EU countries (n=6). Their median age was 14 years (range, 40 days - 17 years) 4 are in early childhood and 6 adolescents.

Results: Results. Pneumonia was the main clinical manifestation: hilar adenopathy in 7, pleural effusion in 4. Some cases had atypical clinical picture: O.M., a 40 days female from East Europe, presented with acute respiratory distress, simulated severe bronchiolitis. Chest CT showed massive mediastinic infiltration. A 6-month-old Nigerian patient suffered multiple abscesses in the mediastinum and lateral neck, with severe impairment of the general condition; cause respiratory failure he was admitted to intensive care. No evidence of TBC infection was obtained but the child improved and healed with anti-tuberculosis therapy.

Conclusions: Conclusions: 3 Italian patients, (16 -17 years) had a similar presentation with pneumonia and massive pleural effusion requiring pleural drainage. 3 patients, aged between 18 months and 9 years, had pulmonary localization with lobar pneumonia. 3 migrant (17 years old) from Libya had similar clinical manifestations involving lung and hilar lymph nodes without pleural effusion. - At least 50% of cases are autochthonous - the index case was not always found, - clinical manifestations below the year were extremely severe. - In some cases, MANTOUX was negative.

HOW TO MANAGE CHILDREN WITH ABDOMINAL TUBERCULOSIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

Fatma Hammami, Makram Koubaa, Amal Chakroun, Fatma Smaoui, Khaoula Rekik, Chakib Marrakchi, Mounir Ben Jemaa

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Background: Tuberculosis (TB) remains a public health issue affecting all ages. The diagnosis of abdominal tuberculosis (ABT) among children is difficult due to not only its nonspecific clinical and laboratory signs, but also, due to the low index of suspicion. We aimed to study clinical and diagnostic particularities of ABT among children.

Methods: We carried out a retrospective study including all children aged ≤ 18 years diagnosed with ABT between 2001 and 2019.

Results: We identified 22 cases with a mean age of 12 ± 5 years. Twelve patients (54.5%) were males. Peritoneal TB was the most frequent clinical presentation (59%), followed by nodal (36.3%) and ileo-caecal (27.3%) TB. The revealing symptoms were fever (72.7%), abdominal pain (63.7%) and diarrhea (45.5%). Radiological investigations showed ascites (59%), abdominal lymph nodes (36.3%) and bowel wall thickening (22.7%). Laparoscopy showed peritoneal nodules (45.4%) and dense adhesions (13.6%). Histopathological (59%) and bacteriological proof (27.3%) confirmed the diagnosis. The mean duration of treatment was 13 ± 4 months. The disease evolution was favourable (95.5%). One patient died (4.5%).

Conclusions: The various types of ABT were responsible for its myriad presentations, which may lead to treatment delay. The diagnosis should be bearded in mind in front of each child with digestive signs and fever, especially in endemic countries.

MANAGEMENT OF URINARY TRACT INFECTION IN INFANTS YOUNGER THAN 3 MONTHS OF AGE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - UROGENITAL INFECTIONS

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Background: There are no clear recommendations to date on how to deal with the management of urinary tract infection (UTI) in infants younger than 3 months of age. The main objective of our survey was to describe the management of UTI in this age group.

Methods: We surveyed French hospital practitioners who usually manage UTIs in infants younger than 3 months of age: i.e., physicians working in pediatric emergency departments, general pediatric departments, neonatology departments, and general emergency departments. Each participant completed a questionnaire containing two UTI clinical case vignettes, one involving a 2 month-old infant and the other 3 weeks. Diagnostic methods, initial and second-line therapeutic approaches and initial follow-up were analyzed. Statistical analyses used EXCEL and R-STAT software.

Results: E-mails were sent to 111 hospitals across France. 165 answers from 52 centers (47%) were collected. Urine cultures were performed systematically for the 3-week-olds and frequently (58%) for the 2-month-old infant, without systematic consideration of the urine dipstick test results. Initial antibiotic therapy for 48h by cefotaxime-aminoglycoside was proposed by 97% for the 3-week-old infant. Initial single-agent therapy was proposed by 21% for the 2-month-olds. A switch to monotherapy was proposed by 94%, mainly after culture results, intravenous by 58% for the 3-week-old infant and oral by 75% for the 2-month-old.

Conclusions: This study showed suboptimal management of UTIs of infants younger than 3 months of age in France. Clarification of best practices is necessary. Specific guidelines may improve this management.

CLINICAL AND MICROBIOLOGICAL ASPECTS OF URINARY TRACT INFECTIONS WITH *E. COLI* IN INFANTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - UROGENITAL INFECTIONS

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Background: Urinary tract infection (UTI) is the most common type of severe bacterial infection in infants. In 80-90% of cases *E.coli* is the main etiological agent identified. We conducted a retrospective study among infants hospitalized for UTI with *E.coli* in a tertiary pediatric hospital, Bucharest, Romania, for a period of two years, 2018-2019.

Methods: All infants hospitalized consecutively with UTI, in which *E. Coli* was isolated in uroculture, were included in the study. All samples were tested on 8 antibiotics: ampicillin, amoxicillin/clavulanate, cefuroxime, ceftriaxone, ceftazidime, ciprofloxacin, gentamicin, trimethoprim/sulfamethoxazole. The data were interpreted according to the recommendations of the Clinical & Laboratory Standards Institute 2017. Clinical and epidemiological data of the patients were recorded from the hospital's informatic system.

Results: A total of 72 infants presented UTI with *E.coli*, with a predominance of females (65.3%) and a median age of 5 months (IQR: 4,8). An increased rate of antimicrobial resistance was identified as follows: 76.8%-ampicillin, 67.8%-amoxicillin/clavulanate, 27.5%-trimethoprim/sulfamethoxazole, 23.2%-cefuroxime, 19.4%-ceftazidime, 15.7%-ceftriaxone, 14.3%-ciprofloxacin, 5.9%-gentamicin. A total of 2 strains were resistant to all antibiotics tested, and 9 were classified as Extended Spectrum Beta-Lactamases(ESBL). The history of UTI and the presence of a renal malformation was associated with a risk of 4.8 times [95%CI:1.1,21.8;p=0.030], respectively 6.7 times [95%CI:1.1,41.0;p=0.024] higher isolation of *E.coli* ESBL.

Conclusions: We identified an increased rate of antimicrobial resistance of *E.coli* isolates in infants with UTI. These data reflect a suboptimal prescription pattern of antibiotics in Romania. Continuous studies to monitor the antimicrobial susceptibility of *E.coli* are needed for prompt measures to limit the increase in resistance rate.

BACTEREMIC URINARY TRACT INFECTION IN A PORTUGUESE NATIONWIDE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - UROGENITAL INFECTIONS

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Background: Urinary tract infection (UTI) is one of the most common causes of bacterial infection in pediatrics. The estimated rate of concurrent bacteremia varies from 5% to 31%. Recommendations are lacking as to when to collect blood cultures in UTI or how to adequate treatment in bacteremic UTI in children.

Methods: A retrospective, nationwide, Portuguese Bacterial Invasive Disease (BID) study between 2010-2019 with 21 participating hospitals. A subgroup of children (1 month to 18 years) with bacteremic UTI was analyzed.

Results: In 2294 cases of BID, 203 corresponded to bacteremic UTI (8.8%). 51.5% were male; 29.8% 1-2 months, 55% 3-35 months, 7.1% 3-9 years and 8.1% ≥ 10 years. The presence of at least one comorbidity was found in 13.6%. There was no mortality and most patients recovered well (12.2% with sequelae).

The etiology was: *Escherichia coli* (75%), *Klebsiella pneumoniae* (6%), *Staphylococcus aureus* (2.5%), *Streptococcus mitis* (2%), *Proteus mirabilis* (2%), and others (12.5%).

E. coli susceptibility tests showed resistance to penicillin (48%), TMP/SMX

(36.2%), amoxicillin/clavulanate (19.7%), cefuroxime (3.3%), cefotaxime (3.3%) and meropenem (1.5%).

Conclusions: In our cohort around 85% of the patients were younger than 36 months-old which reiterates that young age is a risk factor for bacteremic UTI. Outcome was favorable in the large majority of cases. As expected, *E. coli* was the major cause of bacteremic UTI. We emphasize the high resistance pattern to amoxicillin/clavulanate which compromises its role on the empirical antibiotic treatment and the emergence of carbapenem resistant strains.

FUNCTION OF PERTUSSIS ANTIBODIES IN INFANTS FOLLOWING PERTUSSIS VACCINATION IN PREGNANCY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE DEVELOPMENT (PHASE 1-2) – BACTERIAL AND ALL NON-VIRAL

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Background: Immunization against pertussis in pregnancy protects young infants from pertussis disease by transfer of IgG. There is no established correlate of protection and antibody function as well as concentration is thought to be important. We determined the function of antibodies against pertussis at the time of infants' primary immunizations following immunization with pertussis vaccine in pregnancy.

Methods: Samples from a randomized controlled trial of pertussis immunization in pregnancy in Canada collected from infants at time of primary immunization were tested for avidity using our recently optimized methodology. Ammonium thiocyanate was used as a bond-breaking agent to measure the relative avidity of anti-pertussis toxin (PT) IgG using concentrations between 0.25 Molar (M) (very low avidity) and 3 M (very high avidity).

Results: A subset (n=27) of samples with geometric mean concentration of total anti-PT IgG levels 9.5 IU/ml (range 3-26) were included. In this subset of infants the mean relative avidity index of very high, high, high-medium, medium, medium-low, low, very low avidity anti-PT IgG were 3.9% (SD, 2.3), 15.0% (SD, 6.4), 11.9% (SD, 4.1), 13.3% (SD, 3.2), 19.9% (SD, 3.2), 14.6% (SD, 6), and 21.2% (SD, 10.4), respectively. There was no significant correlation between total anti-PT IgG levels and avidity ($R = -0.28$, $p = 0.15$).

Conclusions: Even at relatively low total levels of anti-PT IgG, antibodies against pertussis with high avidity are maintained till time of primary vaccination in infants born to women vaccinated against pertussis in pregnancy. These antibodies might confer protection against pertussis in young infancy. Further characterization of these antibodies (antibody-dependent phagocytosis and affinity) will shed light on function of anti-pertussis antibodies induced after vaccination in pregnancy.

IMPACT OF MENINGOCOCCAL C CONJUGATE VACCINE ON INCIDENCE OF INVASIVE MENINGOCOCCAL DISEASE IN AN 18-YEAR TIME-SERIES IN BRAZIL AND IN DISTINCT BRAZILIAN REGIONS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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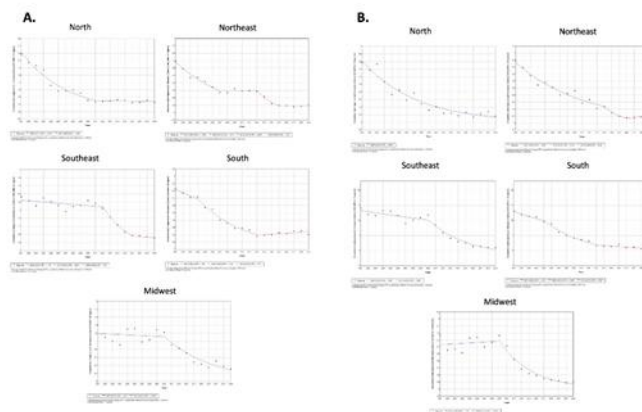
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Background: *Neisseria meningitidis* is responsible for the Invasive Meningococcal Disease (IMD), a major public health problem that needs to be controlled with vaccines. Therefore, Brazil implemented the Meningococcal C conjugate Vaccine (MCC) among children under 2-years-old in 2010 to prevent Meningococcal C Disease (MenC). We evaluated the impact of MCC vaccine in distinct Brazilian regions in an 18-year time-series.

Methods: This ecological study and time-series analysis assessed all IMD and MenC cases reported in all age groups with the diagnoses: meningococemia, meningococcal meningitis or both, from 2001 to 2019. Data were collected in the health information item on the DATASUS platform. The pre-exposure period was from January 2001 to December 2009 and the post-exposure period from January 2011 to December 2019. Joinpoint regression was performed to assess the Annual Percent Change (APC) of the incidence rate and to search statistically significant time point decreases during the analysed period.

Results: IMD incidence decreased in all Brazilian regions from 2001 onwards, without apparent additional reduction attributable to MCC vaccine in the North, Northeast and South regions. The higher and statistically significant APC reduction in all age groups, in the North and South regions, and in children < 5 years, in the Northeast region, occurred before MCC vaccine implementation, between 2001-2011 (-15.4%), 2004-2012 (-14.4%), 2001-2013 (-10.3%), respectively (Figure 1). The annual incidence of MenC in all age groups reduced after the implementation of the vaccine, with the exception of the South region.

Figure 1. Joinpoint regression models for incidence rates due to Invasive Meningococcal Disease, in all age groups (A) and in < 5 years (B), by Brazilian region of residence. Brazil 2001 to 2019



Conclusions: IMD and MenC had different behaviours after MCC vaccine implementation in Brazil during this time-series. This suggests that the serogroup of IMD can differ in a country among regions and the control of IMD should be individualized and based on multiple health care measures.

THE IMPACT OF 10-VALENT PNEUMOCOCCAL CONJUGATE VACCINE UPON HOSPITALIZATION RATE OF CHILDREN WITH PNEUMONIA IN DIFFERENT BRAZILIAN ADMINISTRATIVE REGIONS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

Mariana Ferreira¹, Eduardo Netto², Cristiana Nascimento-Carvalho¹

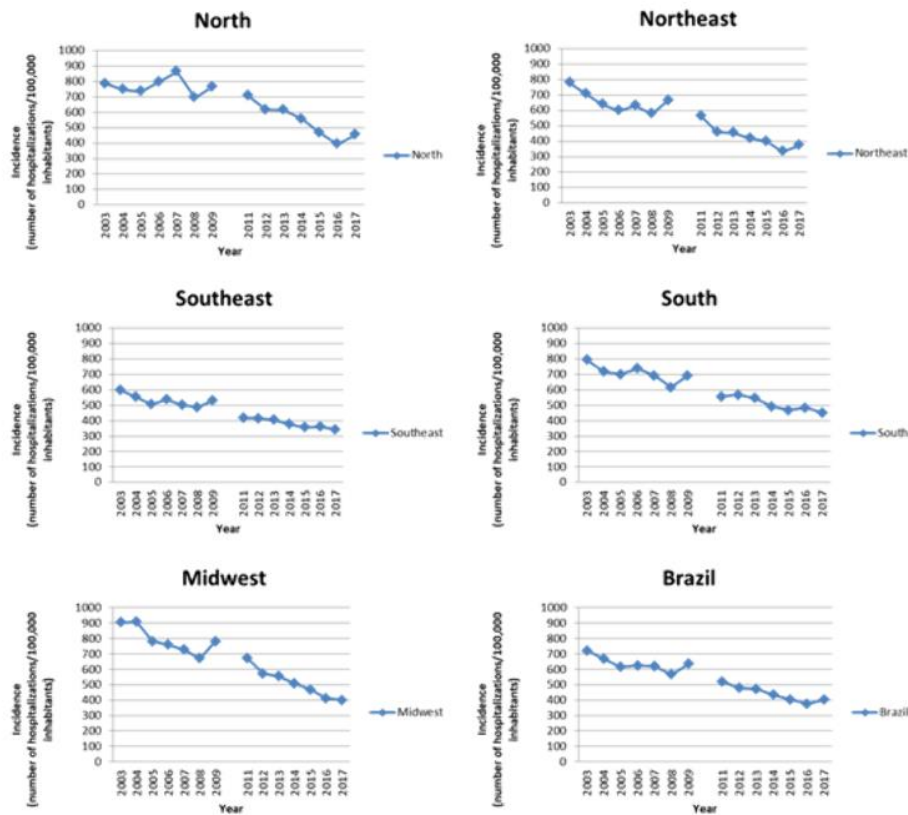
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Background: *Streptococcus pneumoniae* is the most frequent bacterial causative agent of pneumonia. Due to its significant contribution to the morbidity and mortality population, the 10-valent pneumococcal vaccine (PCV10) was introduced in Brazil in 2010. Brazil is divided into five administrative regions which differ in socioeconomic indices among each other. Estimates of PCV10 impact on hospitalization rates due to pneumonia stratified by Brazilian regions are lacking. We aimed to fill this gap, especially in concern of data up until 2017.

Methods: This is a population-based ecological investigation. Data about hospitalizations due to pneumonia, diarrhea or asthma among patients aged up to 19 years in the pre-exposure (2003-2009) and in the post-exposure (2011-2017) periods were retrieved from the National Health System database. Hospitalization rates were estimated for each region and the rates obtained in the pre and post-exposure periods were compared by Prais-Winsten regression. The Human Development Index (HDI) was collected in the distinct regions.

Results: Overall, hospitalization rates due to pneumonia declined by 34.5%. Similar trends were observed for hospitalization rates due to diarrhea and asthma, and also in each region. The North was the only region that presented an exponential incidence decline pattern which could be explained by PCV10 implementation (-10.8% in the quadratic regression, $p < 0.01$). The HDI changed from very low and low to medium and high (Northeast and North), and from medium and high to high and very high (Midwest, Southeast, South), from 2003 to 2017.

Figure 1. Incidence of hospitalization (number of hospitalization/100,000 inhabitants) due to pneumonia in children aged 0-19 years before and after PCV10 implementation in each Brazilian major region and in the whole country.



Conclusions: The downward trend in pneumonia hospitalizations had already started before PCV10 introduction in Brazil. The impact of PCV was significant in one region which HDI improved drastically during the study period. A higher impact of PCV10 on pneumonia hospitalization is possible in regions with lower HDI.

IMPACT OF UNIVERSAL SINGLE DOSE VARICELLA VACCINE ON PEDIATRIC VARICELLA-RELATED HOSPITALIZATION IN TURKEY (VARICOMP STUDY 2008-2018)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – VIRAL

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Background: VARICOMP is a prospective study, which aims to evaluate pediatric varicella-related hospitalization in Turkey between 2008-2018. Single dose varicella vaccine at 12 month of age was introduced to the National Immunization Program in February 2013 and varicella vaccination coverage is 95% in children 12 to 24 months of age. The aim of this study was to evaluate the impact of 5.5 years universal varicella vaccination on varicella related hospitalization.

Methods: Medical records of children requiring hospitalization due to varicella from 30 health care centers in 17 cities (representing 50% of the childhood population in Turkey) have been evaluated from October 2008-October 2018.

Results: 4372 children (2458 boy, 1915 girls; 72.3% previously healthy) were hospitalized for varicella over the 10-year period. The incidence of varicella related hospitalization among children aged between 1-5 years was significantly lower at post vaccine era comparing the pre-vaccine era (2.43 vs. 6.12 per 100.000 children; $p<0.001$). Incidence of varicella related hospitalization was similar among age groups including below 1 years and 5-10 years, however incidence of varicella-related hospitalization among 10-15 years and >15 years age groups are higher at post-vaccine era ($p<0.05$), while case numbers are relatively low.

Conclusions: The incidence of varicella related hospitalization in children 1-5 years old declined after the routine use of single dose varicella vaccine in Turkey. After 66th month of routine single dose immunization, we did not yet observe herd protection for other age groups. Implementation of second dose of varicella vaccine into the NIP would help to control the disease activity.

HPV VACCINATION UPTAKE IN BOYS AFTER INTRODUCTION OF GENDER-NEUTRAL HPV VACCINATION IN GERMANY - A RETROSPECTIVE DATABASE ANALYSIS (IMS® VACCINE ANALYZER)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – VIRAL

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Background: Since 2007 HPV vaccination in Germany has been recommended and funded for girls. In June 2018 a gender-neutral recommendation for adolescents 9-14 years with catch up to 17 was published by the German Standing Committee on Vaccination (STIKO) and is part of mandatory funding since January 2019. The objective of this report was to monitor the uptake of HPV vaccination in boys in Germany.

Methods: Data were used from the IMS® Vaccine Analyzer database between January 2018 and October 2020. The database contains anonymized electronic medical vaccination records from a panel of office-based physicians and was used for nation-wide projections of administered doses per month to vaccine eligible adolescents of age 9-17 in the German population.

Results: The number of boys 9-17 years-old that received their first dose increased after the gender-neutral recommendation from 832 in June to 9,670 in December 2018. With fully implemented reimbursement in January 2019 a sharp increase to 28,691 occurred. In the following months numbers were between a maximum of 53,139 (July 2019) and a minimum of 27,242 (March 2020). The number of girls that received the first dose fluctuated between 50,788 (March 2019) and 25,609 (April 2020)(Figure

1).

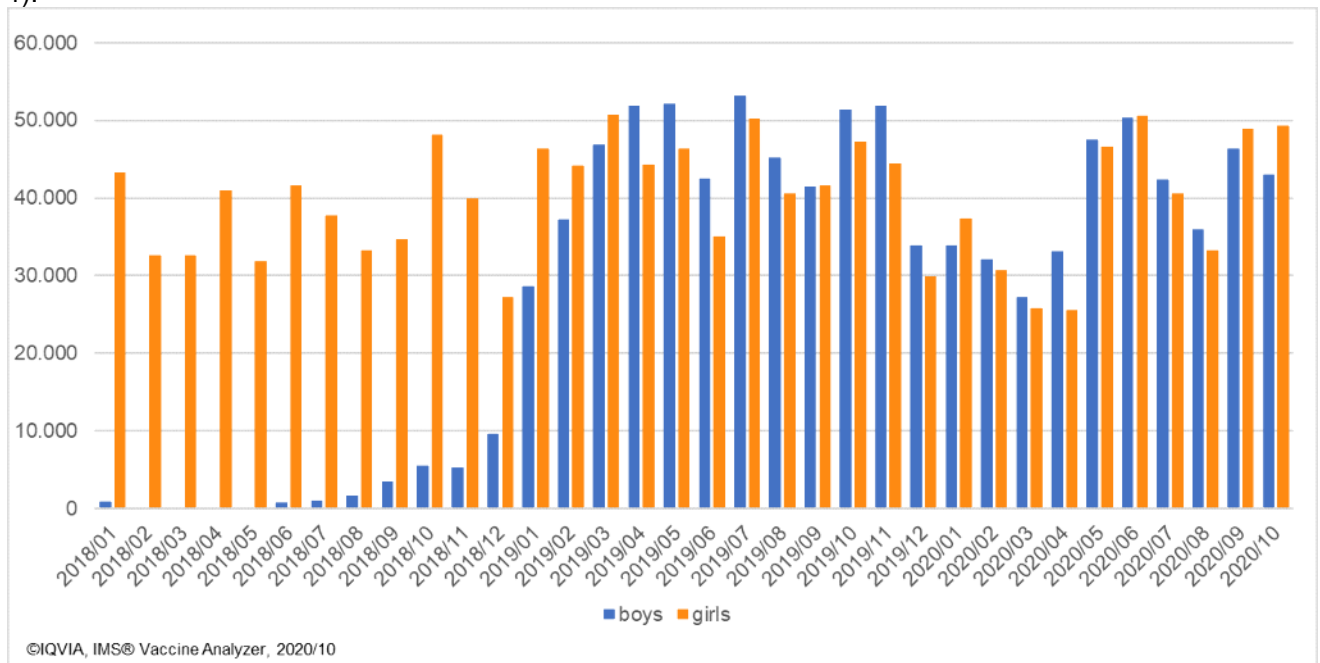


Figure 1. HPV vaccinations per month (first dose) given to adolescents aged 9–17

Conclusions: Within a few months after the reimbursement of HPV vaccination for boys the monthly numbers of administered first doses reached the levels also observed for girls. This might generally point to a good acceptance of the gender-neutral recommendation by physicians and parents. Lowest numbers in March/April 2020 for boys and girls might be due to the COVID-19 pandemic.

PARENTS AND HEALTHCARE PRACTITIONERS EXPLORATION OF ATTITUDES AND BELIEFS OF THE ROTAVIRUS VACCINATION IN UKRAINE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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Background: Rotavirus Gastroenteritis (RVGE), one of the most frequent causes of diarrhea in children, can lead to severe dehydration. The most effective way to prevent RVGE is through vaccination which is recommended by WHO for inclusion in all national programs. However, the window of administration of rotavirus vaccines is fixed. In Ukraine, vaccination against RVGE is non-mandatory. This study aimed to investigate parents' and healthcare practitioners' (HCP) knowledge of RVGE and rotavirus vaccines, drivers of the decision to vaccinate and related sources of information.

Methods: This qualitative study included structured discussions with 60 parents of children less than 5 years old and interviews with 30 HCPs related to RVGE diagnoses and treatment. We performed descriptive thematic analysis of the structured discussions using MAXQDA qualitative data analysis software.

Results: The sources of RVGE knowledge for parents were the internet, experience from other parents and communication with HCPs (including nurses). The majority of parents learned about rotavirus vaccine after their children were too old to receive it. Additional barriers to vaccination included the unavailability and need to pay for the vaccine. HCPs working in inpatient departments of infectious diseases and those face RVGE more often supported the use of the vaccine more actively than family doctors. However, they contacted with parents of healthy newborns less often than family doctors.

Conclusions: The majority of parents were aware of RVGE. Informing parents about RVGE vaccination after children were too old to receive it appeared to be the main barrier to vaccination. Exposure of doctors to RVGE seemed to influence their decision to support RVGE vaccination. This study highlighted the need to educate parents early on after birth and the need to educate doctors not usually exposed to RVGE.

PNEUMOCOCCAL VACCINATION RATES IN TERM INFANTS AFTER CHANGE OF RECOMMENDATION FROM A 3+1 TO A 2+1 SCHEDULE IN GERMANY – BIRTH COHORT 2018

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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Background: In August 2015, the German Standing Committee on Vaccination (STIKO) changed the pneumococcal conjugate vaccination (PCV) schedule for term infants from a 3+1 (2, 3, 4, and 11-14 months) to a 2+1 scheme (2, 4, and 11-14 months). It was expected that a reduction might lead to a higher acceptance of vaccination. Study aim was to assess vaccination rates and timeliness for PCV after change of recommendation based on real-world data.

Methods: A retrospective claims data analysis using the InGef Research Database containing an age and gender representative sample of the statutory health insured population in Germany was conducted. The study population of this interim analysis consisted of all term infants in this database born in 2013 (last cohort completely under 3+1 recommendation) or in 2016 respectively 2018 (first respectively third cohort completely under 2+1 recommendation) with an individual follow-up of 9 months.

Results: After follow-up of 9 months, 89.7% (89.2% / 89.2%) of the 2018 (2016 / 2013) birth cohort received at least one dose PCV. 7.1% (7.3% / 3.5%) of the infants obtained only one dose within the follow-up period, 79.5% (77.9% / 10.0%) received two doses and 3.1% (4.0% / 75.4%) three doses. Out of infants with PCV, 53.6% (51.9% / 44.9%) received the first dose and 34.1% (33.9% / 39.4%) the second dose on time according to STIKO.

Conclusions: There is no clear evidence that the reduction of the PCV schedule induced a higher acceptance of vaccination. Although the rate for “at least one dose” slightly increased, 20% of infants born in 2018 did not receive the recommended two doses after follow-up of 9 months. Furthermore, vaccinations were still often delayed and the rate of unvaccinated infants remained constant.

POTENTIAL EFFECT OF TWO DIFFERENT RECOMMENDATIONS FOR PNEUMOCOCCAL VACCINATION IN PRETERM (3+1) AND TERM (2+1) INFANTS IN GERMANY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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²Pfizer Pharma GmbH, Pfizer Biopharma Group /pfizer Global Vaccines, Berlin, Germany, ³Xcenda GmbH, Real World Evidence, Hannover, Germany

Background: In August 2015, the German Standing Committee on Vaccination (STIKO) changed the pneumococcal conjugate vaccination (PCV) schedule for term infants (TI) from a 3+1 (2, 3, 4, and 11-14 months) to a 2+1 scheme (2, 4, and 11-14 months). For preterm infants (PI), the 3+1 schedule remained. Study aim was to assess vaccination rates and timeliness (as recommended by STIKO) for PCV in PI after the change of recommendation for TI based on real-world data.

Methods: A retrospective claims data analysis was conducted using the InGef Research Database containing an age and gender representative sample of the statutory health insured population in Germany. The study population consisted of all PI in the database (identified by ICD-10-GM codes P07.2 and P07.3) born in 2016 or 2018 with an individual follow-up of 9 months. Hexavalent combination vaccination (HEXA) with a consistent 3+1 recommendation for TI and PI was analyzed as reference.

Results: After follow-up of 9 months, 74.9% (73.3%) of PI of birth cohort 2018 (2016) received the three recommended HEXA vaccinations. At the same age, only 49.2% (43.3%) of PI obtained the three recommended PCV doses and 7.7% (9.1%) received no PCV at all. Out of PI with PCV, 50.7% (45.7%) received the first dose, 33.4% (28.7%) the second dose, and 37.5% (35.2%) the third dose on time according to STIKO.

Conclusions: Although STIKO still recommends a 3+1 PCV schedule for PI in Germany, only about half of all PI received the three recommended doses within 9 months compared to about 75% who obtained three recommended doses of HEXA. Vaccinations were still often delayed and about 8% of all PI remained unvaccinated. Further analyses especially regarding the booster dose will follow with data availability.

ANTI-VACCINATION IN SOCIAL NETWORKS VERSUS REALITY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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Background: Vaccine hesitancy is one of the biggest problems that present medicine is facing. Although vaccines are the most efficient methods of preventing infectious diseases, the number of parents avoiding vaccines are increasing every year. We asked parents of children admitted to our pediatric department and those of on social networks and compared their responses to understand how vaccine hesitancy appears in their respective realities.

Methods: We created a 24-item anonymous questionnaire with questions concerning general attitudes toward vaccines, their safety, infectious diseases and immunity. The study was carried out in the Pediatric Infectious Diseases Department in Białystok, Poland. Questionnaires were given to parents to fill out. They were subsequently collected or handed in the following day. Also, an online version of that questionnaire was collected on various Facebook groups engaging in topics of parenthood.

Results: We collected 2464 online and 194 paper surveys. Twenty-six percent of parents surveyed online answered that there is no need for vaccinating children, while in the paper version only 5% chose that answer. Parents surveyed online more often preferred “natural methods” of strengthening immunity over immunizations (31% vs. 11%), believed that vaccinations cause autism (29% vs. 15%), rejected conjugated hexavalent vaccines (38% vs. 20%), and considered various infections as less dangerous, compared to parents surveyed in person.

Conclusions: The study shows that anti-vaccination beliefs are overrepresented in social networks, compared to real life. People supporting immunizations do not express their opinions on social networks as willingly as people of more extreme sets of beliefs typical for anti-vaccination movements. Increasing popularity of social networks and lack of control over the shared content might expose parents to false or manipulated information and, as a result, affect their opinions on immunizations.

INFLUENZA VACCINE UPTAKE AND HESITANCY IN A SPECIAL-EDUCATIONAL-NEEDS SCHOOL DURING 2020/21 AND POSSIBLE IMPLICATIONS FOR THE COVID-19 VACCINATION PROGRAMME

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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Background: Vaccination in vulnerable groups is key to controlling the impact of diseases like Influenza and Covid-19. Under UK vaccination guidelines, all primary-school aged children and those with learning disabilities are eligible for annual Influenza vaccination. This retrospective audit was carried out in an ethnically diverse school for children with learning disabilities in inner London, following the school's Influenza vaccination programme in winter 2020/21. We report rates of Influenza vaccination uptake throughout the school and reasons for non-uptake, including amongst an extremely clinically vulnerable sub-group of children.

Methods: Vaccinated students were identified using medical records and for those not vaccinated, the reason for non-vaccination was identified, where possible. Parents/guardians of a clinically vulnerable sub-group whose vaccination status was unknown were contacted and asked if they had sought vaccination elsewhere (via their family doctor) and if not, were asked the reason(s) for non-vaccination and their future intentions regarding the COVID-19 vaccine.

Results: 19.9% (51/256) of students were given the Influenza vaccine in school over winter 2020/21.

Table 1: Reasons for non-vaccination in school (n=205)					
Reason	Non-return of written consent form	Written refusal by parent or guardian	Refusal by child in school	Child absent from school	Severe egg allergy
Number	140	51	6	6	2
% (of total non-vaccinated students (205))	68.3%	24.9%	2.9%	2.9%	0.98%

There was no written consent returned for 140 children and their vaccination status was unknown. Of these, 44 were identified as extremely clinically vulnerable and 33 were contactable. In this sub-group the rate of influenza vaccine refusal was established as 51.5%. Parental intentions regarding COVID-19 vaccine in this subgroup were: 45.5% likely to accept, 9.1% likely to decline, 45.5% uncertain or preferred not to say.

Conclusions: Influenza vaccination in this study population was very low compared to national figures in UK schools. Contributing factors included high levels of parental refusal, non-return of consent forms and absences due to shielding or COVID-19 outbreaks. We are urgently working to address hesitancy and improve uptake, to maximise future rates of Influenza and Covid-19 vaccination.

PERCEIVED EMOTIONAL IMPACT AND FEARS ABOUT SARS-COV-2 PANDEMIC IN PARENTS OF CHILDREN WITH CHRONIC CONDITIONS AND OF HEALTHY CONTROLS.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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Background: COVID-19, pandemic containment measures have a major psychologic impact in child. Some studies showed that they are highly sensitive to feel, physical and social isolation (lack of school activity), impacting on their psychological well-being and ultimately leading to increased anxiety and depression. We compared the psychological impact of COVID-19 in parents of children with chronic disease with those of healthy children

Methods: We enrolled 500 parents of patients with chronic disease (N=278) and parents of healthy children (N=222). Data were collected through a self-reported questionnaire investigating: socio-demographic data, knowledge about SARS-CoV-2 infection and parents' perception of emotional status of children. A likert scale was adopted to quantify answers.

Results: Parents of children with showed a lower grade of education and a higher unemployment rate than controls ($p = <0.001$). Their fear of children being infected was higher ($p=<0.001$). No difference was found regarding the knowledge of transmission and the measures to prevent infection. As reported by parents, the most frequent feelings emotions were sadness in healthy children and anxiety in children with chronic disease. (Figure).

Figure. Demographic and emotional status of parent's of chronic and healthy child during COVID-19 pandemic. The significance level for all analyses was set to $\alpha = .05$.

Variable	N	Healthy children N = 278	Chronic disease N = 222	p-value
Gender	500			0.235
Female		234 (84%)	196 (88%)	
Male		44 (16%)	26 (12%)	
Age	500	41 (6)	40 (7)	
Education	500			<0.001
Primary school		2 (0.7%)	9 (4.1%)	
Middle school		24 (8.6%)	58 (26%)	
High school		76 (27%)	98 (44%)	
Degree		176 (63%)	57 (26%)	
Occupation	500			<0.001
Unemployed		80 (29%)	121 (55%)	
Employed		198 (71%)	101 (45%)	
Age of child	500	7.9 (3.9)	8.8 (4.2)	0.013
How strong was your fear of your child being infected with SARS-CoV-2?	284			0.245
No fear		6 (3.7%)	11 (9.0%)	
Little fear		28 (17%)	22 (18%)	
Some fear		88 (54%)	57 (47%)	
Much fear		40 (25%)	32 (26%)	
How worried were you of your child being infected with SARS-CoV-2?	500			<0.001
Not at all worried		11 (4.0%)	8 (3.6%)	
Slightly worried		53 (19%)	33 (15%)	
Somewhat worried		125 (45%)	67 (30%)	
Very worried		89 (32%)	114 (51%)	
How do you rate your knowledge about virus spreading ?	283			0.085
No knowledge		2 (1.2%)	6 (5.0%)	
Poor		10 (6.2%)	14 (12%)	
Some		106 (65%)	75 (62%)	
Good		44 (27%)	26 (21%)	
Did you wear a face mask when going out?	284			0.262
Never		1 (0.6%)	0 (0%)	
Always		158 (98%)	122 (100%)	
Sometimes		3 (1.9%)	0 (0%)	
In your opinion, did your child experience any particular emotions during this period?	496			0.190
no		7 (2.5%)	14 (6.4%)	
Little emotion (because of young age)		39 (14%)	30 (14%)	
yes		198 (71%)	146 (67%)	
I don't know		34 (12%)	28 (13%)	

Conclusions: Parents of children with chronic diseases show a major emotional impact to SARS-CoV-2 infection compared to parents of healthy control. A post hoc analysis of our sample showed a lower socio-cultural background and a higher unemployment rate compared to controls, possibly as a consequence of their family condition. Although they applied preventive measures similar to controls, they felt they were not informed enough and were generally more worried for their children. Our findings support the need of providing psychologic and social support for parents of children with chronic disease during pandemic.

ADHERENCE TO UNITED STATES ROTAVIRUS VACCINE STANDARDS IN PRETERM INFANTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

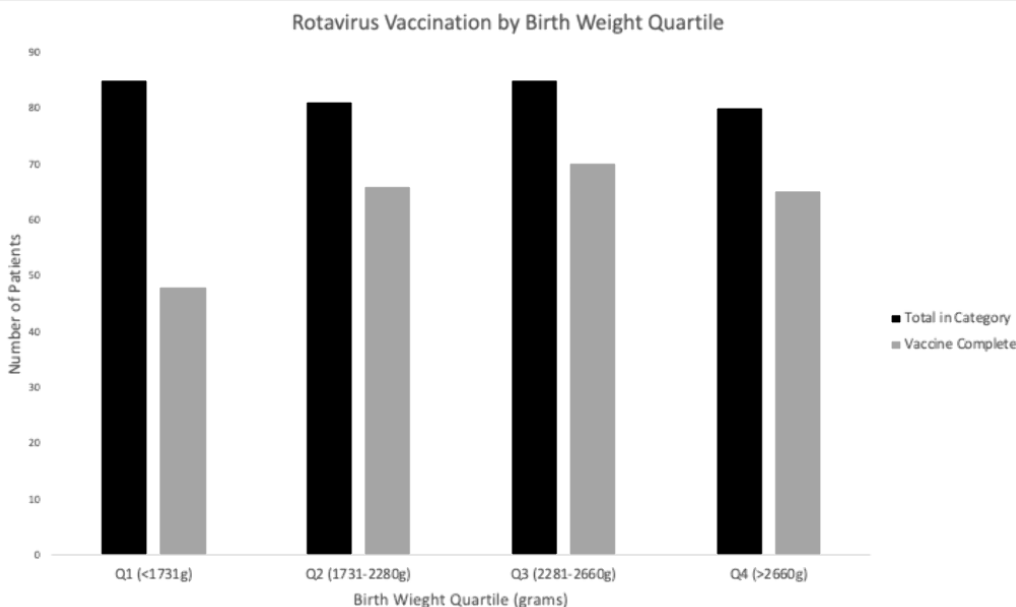
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Background: Despite preterm infants' risk of severe illness from rotavirus gastroenteritis, most neonatal intensive care units (NICUs) in the United States are reluctant to administer the live-attenuated rotavirus vaccine. Outpatient providers may also be hesitant or lack knowledge regarding vaccine eligibility in former premature infants. The objective of this study was to assess outpatient adherence to rotavirus vaccine administration in eligible preterm infants born at an overseas U.S. military hospital.

Methods: In a retrospective review, we evaluated infants born $\leq 36+6$ weeks' gestational age (GA) and admitted to the U.S. Naval Hospital Okinawa NICU between 2013 and 2019, who qualified for rotavirus vaccination upon NICU discharge (<15 weeks chronologic age). Adherence was assessed by how many eligible infants received a partial or complete vaccine series (RV1 or RV5). Chi-square analysis was used to evaluate categorical demographic factors between rotavirus vaccine adherence groups.

Results: We identified 331 neonates who met study inclusion criteria (median birth weight 2280g, GA 34.5 weeks). Those born in the lowest quartiles for weight (<1731 g, $p < 0.0001$) and GA (<32.4 weeks, $p = 0.001$) were least likely to receive any dose of rotavirus vaccine (Figure 1). Infants were more likely to complete a full course of RV1 (2 doses) versus RV5 (3 doses) ($p < 0.001$). Infants with bronchopulmonary dysplasia (BPD) had lower odds of receiving rotavirus vaccine compared to those without BPD (37% versus 86%, OR 10.5).



Conclusions: Our findings demonstrate that a large proportion of premature infants who qualify for the rotavirus vaccine upon NICU discharge are not receiving standards of vaccine care. Alarming, the most vulnerable premature neonates are at highest risk to be incompletely vaccinated. Our data also suggest improved vaccine adherence using a 2-dose (RV1) rather than 3-dose (RV5) regimen.

INFLUENZA VACCINATION COVERAGE AMONG PROFESSIONALS IN HEALTH OF THE CHILDREN'S HOSPITAL OF THE UNIVERSITY HOSPITAL OF TOULOUSE DURING THE 2019-2020 WINTER SEASON.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE HESITANCY

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Background: During the 2018-2019 season, more than 2,600 children visited the paediatric emergency department of the Children's Hospital of Toulouse for flu syndrome, with among them, 221 hospitalized. Children are patients at risk of influenza. Health care staff must be vaccinated against influenza to protect this population. The objective of our study is to know the rate of influenza vaccination among the Hospital's health professionals of this Hospital during the 2019 season- 2020.

Methods: We carried out a monocentric retrospective epidemiological study in the Children's Hospital of Toulouse Purpan University Hospital during the winter season 2019-2020. The population included in the study included doctors, interns, nurses, childcare workers, childcare assistants, nursing auxiliaries, health professionals, physiotherapists, psychologists, stretcher-bearers, educators, dieticians, radio manips, medical secretaries in

position at the Purpan Children's Hospital between 1 November 2019 and 30 May 2020. The main judgment criteria was the rate of influenza vaccination coverage of professionals. of health. Secondary judgment criteria were reasons for or against vaccination.

Results: Two hundred and eighty-seven people responded to the questionnaire, out of which one hundred and four seventeen have been vaccinated (69.61%). The most frequently cited factors in favour of vaccination were the protection of patients and their family and the protection of themselves. The main obstacles to vaccination were the fear of side effects (49%), the trivialisation of the disease (23%), the perception of a unnecessary vaccination (46%).

Conclusions: Vaccination coverage for the health staff is higher than that found in the literature but is not sufficient. Access to vaccination within the service, and the implementation of information measures on the seriousness of the disease, safety and effectiveness of vaccination should be developed for better protection against vaccination coverage.

HOSPITAL SUPERVISED VACCINATION IN CHILDREN: A THREE-YEAR SINGLE-CENTRE EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

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Background: Suspected contraindications to vaccines may be a cause of incomplete or delayed immunization. A Safe Environment Immunization Protocol (SEIP) was established to offer pre- and post-vaccination counselling for children at risk.

Methods: We describe the experience of the SEIP of the Pediatric Unit of Imola Hospital (Bologna), from January 2017 to December 2019. Anamnesis and clinical evaluation were collected for each case. If these were sufficient to exclude vaccine allergy, a full dose of vaccine was administered. If symptoms suggestive of IgE-mediated reactions were recorded, allergy skin tests were performed (Prick-by-Prick with the vaccine and, in case of negativity, intradermal reaction with the vaccine diluted 1/100) and an individualized immunization plan was discussed.

Results: 36 children (for a total of 58 visits) were examined. Motivations for referral were: adverse events after previous vaccination in 15 cases (42%; 11 immediate reactions); personal history of atopy in 14 (39%; 9 egg-allergy); chronic conditions in 5 (14%) and parental anxiety in 2 (5%). Two patients showed allergy skin test positivity, one to influenza- and one to MMR-vaccine. The first was recommended to avoid influenza-vaccines; the second had already completed his anti-MMR schedule, so he was given the contraindication to gelatin-containing vaccines. No cases of post-vaccination reactions were reported.

Conclusions: The low number of patients ineligible for vaccination and the absence of adverse reactions confirm the safety and efficacy of the protocol. Even though real contraindications to vaccines are rare, specialized consultancy about vaccination risks can guarantee an individualized approach and improve adherence to vaccination plans.

SELF-REPORTED ERRORS RELATED TO VACCINE RECONSTITUTION IN SOUTH KOREA: A NATIONAL PHYSICIANS' AND NURSES' SURVEY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

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Background: Vaccine-related errors (VREs) result from mistakes in vaccine preparation, handling, storage, or administration. We aimed to assess physicians' and nurses' experiences of VREs in South Korea, focusing on reconstitution issues, and to understand the barriers to and facilitators of preventing them.

Methods: This was a cross-sectional study using an internet-based survey to examine experiences of reconstitution-related errors, and experience or preference with regard to ready-to-use vaccines (RTU) by physicians and nurses (assistant and registered). Nurses and physicians were recruited through online medical communities. Additional nurses were recruited via snowball sampling.

Results: A total of 700 participants, including 250 physicians and 450 nurses, responded to the questionnaire. In total, 76.4% and 41.5% of the physicians and nurses, respectively, reported an error related to reconstituted vaccines. A greater proportion of doctors than nurses reported having experienced each error. A total of 94.8% of physicians had experience with RTU vaccines, and all preferred RTU formulations. Most common reasons to prefer RTUs were decreasing VREs (79.2% physicians, 24.2% nurses), decreasing preparation time (79.2% physicians, 63.3% nurses) and increase in work efficiency (71.6% physicians, 68.9% nurses).

Conclusions: This study highlights the high frequency and types of reconstitution-related errors in South Korea. RTU vaccines could help reduce the time needed for preparation, reduce the risk of errors and enhance work efficiency of vaccinators.

IMMUNOGENICITY OF WHOLE-CELL AND ACELLULAR PERTUSSIS VACCINE ACCORDING TO DURATION OF CONSERVATION OF PROTECTIVE TITERS OF SPECIFIC ANTIBODIES AFTER COMPLETED VACCINATION IN CHILDREN WITH DISORDERS OF THE NERVOUS SYSTEM

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

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Background: Children with pathology of the nervous system are significantly more likely to have an unprotected antibody level with the introduction of various vaccines (diphtheria toxoid, measles, and mumps vaccines). We tried to show that children with pathology of the nervous system significantly more often than healthy ones had an unprotected level of antibodies after a completed complex of vaccinations against whooping cough.

Methods: An analysis of the level of pertussis antibodies was carried out after 4 injections of vaccines with the whole-cell (DTP) or acellular component (DTaP) in 147 children who were vaccinated according to the national vaccination schedule of the Russian Federation at 3-4, 5-6 and 18 months of age. Among vaccinated children 36% (53/147) had neurological diagnoses, 64.0% of children (94/147) had no neurological pathology and were a comparison group.

Results: Children with pathology of the nervous system 1 year after the completed course of vaccination, who were vaccinated with both DTP and DTaP in 50.0% of cases had unprotected antibody titers ($p < 0.05$). In the comparison group unprotected titers were observed in 14.7% of vaccinated with DTaP and in 17.5% of vaccinated with DTP. Pertussis antibodies were determined by the standard agglutination reaction method and enzyme-linked immunosorbent assay (ELISA). The diagnostic titer was considered in RA 1:80, in ELISA of more than 28 IU/ml.

Conclusions: Children with pathology of the nervous system lose their protective titers of antibodies against pertussis faster, regardless of the type of pertussis vaccine. Children with neurological pathology are at increased risk for developing whooping cough and need revaccination against whooping cough earlier than general population.

THE IMMUNOGENICITY AND SAFETY OF SIMULTANEOUS PCV13 AND HIB VACCINATION IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS: A COHORT STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

Olga Lomakina¹, Ekaterina Alexeeva^{1,2}, Tatyana Dvoryakovskaya^{1,2}, Ivan Kriulin^{1,2}, Ksenia Isaeva¹, Aleksandra Chomakhidze¹, Rina Denisova¹, Anna Mamutova Mamutova¹, Anna Fetisova¹, Marina Gautier¹, Kristina Chibisova¹, Dariya Vankova¹, Elizaveta Krekhova², Irina Tsulukiya², Irina Zybikova¹, Natalia Tkachenko¹

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Background: Juvenile idiopathic arthritis (JIA) is associated with a high risk of pneumococcal and Haemophilus influenzae type b (Hib) infections. In most cases, such complications may lead to an interruption of antirheumatic therapy and worsen the patient's prospects. We aimed to evaluate the immunogenicity and safety simultaneous PCV13 and Hib vaccination in children with JIA.

Methods: We included patients with JIA ages 2 through 18. Pneumococcal (PCV13) and Hib-conjugate vaccines were administered (0.5 ml each) concurrently subcutaneously. The antibody titers were evaluated before and 3 weeks after the vaccination by ELISA. The seroconversion rate was defined as percentages of subjects with at least a 2-fold rise in antibody titers from pre- to post-vaccination. Seroprotection was established at anti-pneumococcal IgG ≥ 7 U/ml and anti-Hib IgG ≥ 1.07 ug/ml. Vaccine safety was assessed based on the rate of adverse events (AEs) recorded during 3 weeks after vaccination.

Results: The study included 430 patients. At baseline, seroprotection to pneumococcus was identified in 387 (90.0%), and to Hib – in 141 (32.8%) patients. After vaccination seroprotection along with seroconversion of anti-pneumococcal IgG was found in 199 (46.3%), and anti-Hib IgG – in 300 (69.8%) cases. Seroprotection only was established in 216 (50.2%) and 111 (25.8%) patients, and was not achieved in 15 (3.5%) and 19 (4.4%) patients, respectively. Post-vaccination systemic AEs were observed in 15 (3.5%) patients (hemophagocytosis suspected in one case), and local AEs – in 70 (16.3%).

Conclusions: Simultaneous PCV13 and Hib vaccination of children with JIA has shown high immunogenicity and low rate of systemic AEs.

GENETIC PROFILE OF INBORN ERRORS OF IMMUNITY USING WHOLE EXOME SEQUENCING IN INDIVIDUALS WITH BCG LOCALIZED ADVERSE EVENTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

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Background: In *Mycobacterium tuberculosis* endemic regions, BCG vaccine is administered early after birth to confer protection against severe form of tuberculosis disease. Disseminated BCG adverse events are indisputably associated with an underlying immunodeficiency condition. Previous reports suggest that BCG adverse events, even localized ones (BCGitis), can be the first manifestation of immunodeficiency. We investigated children with a history of BCGitis who needed drug treatment looking for possibly pathogenic variants in genes known to cause inborn errors of immunity.

Methods: Forty-four probands with a history of BCGitis who needed drug treatment were evaluated. The exome sequences obtained by Next Generation Sequencing were filtered for variants in the 344 genes associated with 354 Inborn Errors of Immunity (IEI-Genes) described by the International Union of Immunological Societies (IUIS) and classified according to the recommendations of the American College of Medical Genetics. The identified candidate variants were validated by Sanger sequencing. When possible, family segregation was evaluated. The study was approved by the Ethics Committee and all parents gave written informed consent.

Results: Among probands, 36 were sporadic cases and 8 were familial cases. Among the sporadic cases, 69.4% presented, besides BCGitis, immuno-allergic or other infectious conditions that required hospitalization. Among the familial cases, this rate was 66.7%. Both sporadic cases and familial cases with variants in the analyzed IEI-genes, 50% presented variants classified as pathogenic or likely pathogenic, in 19 IEI-genes: one third were related to defects in intrinsic and innate immunity, mainly genes with Mendelian susceptibility to mycobacterial disease (MSMD), and remaining genes were distributed in other five IUIS classifications groups.

Conclusions: The pathogenic or likely pathogenic variants found may be related to BCGitis, suggesting that they may be a sign of inborn error of immunity.

INCIDENCE RATES OF SAFETY EVENTS OF INTEREST AMONG CHINESE CHILDREN EXPOSED TO PREVENAR 13 IN A REAL-WORLD SETTING: A RETROSPECTIVE COHORT STUDY USING AN ELECTRONIC HEALTH RECORD DATABASE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

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Background: Pneumococcal disease is the leading cause of vaccine-preventable morbidity and mortality among children under 5 years both globally and in China. In October 2016, Prevenar 13 (13vPnC) was approved in China for the prevention of invasive disease caused by *Streptococcus pneumoniae* for infants and children aged 6 weeks to 15 months. This study aims to estimate incidence rates (IRs) of safety events of interest (SOIs) among Chinese children exposed to 13vPnC in China.

Methods: We conducted a retrospective cohort study using an electronic health record database in Yinzhou district of Ningbo city in China. Children 0-2 years of age receiving at least one dose of 13vPnC between 1 May 2017 to 24 July 2020 were included in the study. Five SOIs including all seizures, febrile seizure, urticaria and angioedema, apnea, and fever within 7 days after vaccination were identified using ICD-10 codes. Three risk periods (0-3, 4-7, and 0-7 days) were selected to observe SOIs.

Results: A total of 21,240 children was identified. None had apnea within 7 days post vaccination. IRs (per 1000 person days at risk and per 1000 doses) for all doses during 0 through 7 days post 13vPnC vaccination for all seizures, febrile seizure, urticaria and angioedema (all events were urticaria), and fever were 0.012 (95% CI: 0.006-0.026) and 0.099 (95% CI: 0.047-0.207), 0.004 (95% CI: 0.001-0.014) and 0.028 (95% CI: 0.007-0.113), 0.127 (95% CI: 0.101-0.160) and 1.013 (95% CI: 0.804-1.276), and 0.458 (95% CI: 0.406-0.518) and 3.659 (95% CI: 3.240-4.132), respectively.

Conclusions: This study demonstrated that 13vPnC was generally safe and tolerated in Chinese infants and children aged 1-24 months in the real-world setting. Future studies should consider medical chart review for validating SOIs.

SAFETY OF PENTAVALENT ROTAVIRUS VACCINE AFTER 15 YEARS OF POST-LICENSURE EXPERIENCE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINE SAFETY (POST LICENSURE)

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Background: Rotaviruses are the most common cause of severe diarrhoeal disease in young children throughout the world causing 2 million hospitalizations every year and 86 deaths per 100,000 population aged <5 years annually. In February 2006, live oral pentavalent rotavirus vaccine (RV5) was first launched and universally recommended in the US for appropriately aged infants. By November, 2020, 310,000,457 doses of RV5 were distributed and 103,333,486 infants are estimated to have been vaccinated worldwide. We reviewed safety of RV5 over the 15 years of post-licensure experience.

Methods: We reviewed and characterized spontaneously reported adverse event (AE) reports submitted to the company for RV5 globally from 28-November-2005 through 27-November-2020.

Results:

Table. Top 10 Most Common AEs Reported following Administration of RV5 (November, 2005-November, 2020)

Reported Adverse Event	Number of AE Reports	Number of Serious AE Reports (%)	Number of AE Reports after RV5 only (%)	Reporting rate per million doses distributed*
Diarrhoea	2938	790 (26.9)	1668 (56.8)	9.48
Vomiting	2344	785 (33.5)	1208 (51.5)	7.56
Pyrexia	2162	647 (29.9)	757 (35.0)	6.97
Intussusception	1533	1478 (96.4)	604 (39.4)	4.95
Haematochezia	1182	868 (73.4)	591 (50.0)	3.81
Gastroenteritis rotavirus	835	588 (70.4)	708 (84.8)	2.69
Crying	810	297 (36.7)	224 (27.7)	2.61
Irritability	807	279 (34.6)	115 (14.3)	2.60
Rash	760	118 (15.5)	121 (15.9)	2.45
Abdominal pain	590	254 (43.1)	262 (44.4)	1.90

Note: individual reports can contain more than one AE. All temporally related AEs are included regardless of causality
 *The reporting rate was calculated based on 310,000,457 doses distributed between November, 2005-November, 2020

A total of 24,482 AE reports were received during the observation period; 5,427 (22%) reports were classified as serious (per the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use definition). The overall reporting rate was 78.8 AE reports per million doses distributed. The majority of the reports (11,602 (47%)) were from the United States, followed by Australia (3,339 (14%)), Germany (1,393 (6%)), Japan (1,304 (5%)) and China (1,261 (5%)). Top 10 most commonly reported AEs are presented in the Table.

Conclusions: Review of the 15-year post-licensure experience of RV5 did not identify any unexpected patterns. The data were consistent with findings in pre-licensure clinical trials and post-licensure studies. Reporting rate of intussusception was below the estimated background rate in general pediatric population that ranges between 80-520 per million infants annually in different regions.

COVID-19 VACCINE UPTAKE AMONG HEALTHCARE WORKERS IN A TERTIARY CHILDREN'S HOSPITAL IN ATHENS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINES

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Background: Healthcare workers(HCWs) are on the frontline of the fight against COVID-19 pandemic and are therefore at increased risk for significant morbidity and mortality, which make them a priority group for vaccination. This study aimed to examine COVID-19 vaccine uptake among HCWs and identify barriers and facilitators associated with its acceptance. A cross-sectional self-administered anonymous questionnaire survey was performed among HCWs in a tertiary children's hospital in Athens during the second pandemic wave to assess HCWs attitudes toward COVID-19 vaccination.

Methods: Descriptive statistics and associations between specific factors were conducted using SPSSv.20. **[RESULTS]** Responses from 210 participants [106 doctors(50.5%), 84 nurses(40%) and 20 other auxiliary staff(9.5%)] were retrieved. The majority of the participants were informed of the COVID-19 vaccine recommendation by their hospital(75.7%, 159/210) and/or internet(national CDC, medical articles)(51%, 107/210). Overall, 147/210 HCWs(70%) were vaccinated against COVID-19. Non-vaccination rates were significantly higher among auxiliary staff(55%, 11/20) compared to nurses(34.5%, 29/84) and doctors(21.7%, 23/106)($p=0.006$). Among doctors, the lowest uptake was reported in general surgeons(41.7%, 5/12).

Results: Moreover, vaccination rate of HCWs working exclusively in ED was 33.3%(5/15), which was significantly lower than that of HCWs working in wards(77.1%, 54/70)($p=0.04$). HCWs who were adequately informed of vaccine recommendations by hospital infection control committee and those vaccinated against influenza the current season and/or previously, were more likely to receive a COVID-19 vaccine compared to those who were not informed or vaccinated against flu[106/123(86.2%) vs 18/33(54.5%), $p=0.00$, 118/154(76.6%) vs 29/56(51.8%), $p=0.001$ & 116/144(80.6%) vs 31/66(47%), $p<0.001$ respectively]. Motivations and barriers for vaccine acceptance are displayed in Table 1.

Facilitators among vaccinators	N (%)
I want to protect myself and my family	128/147 (87.1)
I want to help control the COVID-19 pandemic	107/147 (72.8)
I want to protect my patients	89/147 (60.5)
I follow rules of my hospital	30/147 (20.4)
I am at risk group	11/147 (7.5)
The vaccine was easily accessible and available	10/147 (6.8)
Other	1/147 (0.7)
Barriers among non-vaccinators	
I am afraid of vaccine side effects in the future	31/63 (49.2)
The vaccine is not safe and more scientific evidence is needed	28/63 (44.4)
I was not thoroughly informed	14/63 (22.2)
I am planning for a pregnancy	11/63 (17.5)
I am not at risk	7/63 (11.1)
I have an autoimmune disease/ I am under immunosuppressive treatment	4/63 (6.3)
It was a doctor's advice due to history of allergic reaction	4/63 (6.3)
I was infected by COVID-19	3/63 (4.8)
I prefer being vaccinated with vaccine of another company	2/63 (3.2)
I am pregnant	2/63 (3.2)
I am breastfeeding	1/63 (1.6)
I do not believe in vaccines	1/63 (1.6)
Other	2/63 (3.2)

Table 1. Facilitators and barriers for COVID-19 vaccine acceptance among HCWs

Conclusions: HCWs who had previously experienced adverse vaccine-related events, reported the lowest vaccine uptake [1/4 (25%), $p=0.047$]. A total of 86/210 (41%) HCWs, mainly doctors [52/86 (60.5%), $p=0.024$] agreed with a mandatory administrative directive for vaccination. **[CONCLUSION]** Informing thoroughly HCWs, discussing their concerns and organizing campaigns that will address the fears and highlight the importance of COVID-19 vaccine for this priority group may further increase vaccination rates among HCWs.

EFFECT OF THE COVID-19 PANDEMIC ON INFLUENZA VACCINATION

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINES

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Background: Seasonal influenza vaccination coverage remains low in Greece and even families of children with underlying health conditions are reluctant to have it. The aim of our study was to show if the evolving COVID-19 pandemic has changed this concept.

Methods: This study was conducted from 20/09/2020 until 15/01/2021 in the Primary Healthcare Center of Spata, Attika, Greece. For every child having influenza vaccination in our clinic we recorded the reason, their age and gender, as well as influenza vaccination history. The number of children vaccinated during the same period of the previous year was also recorded.

Results: 122 children have been vaccinated during this period compared to 103 during the same period the previous year. Age: 0-5 years: 24,1%, 5-10 years: 34,5%, 10-16 years: 41,4%. Gender: 53,4% girls, 46,6% boys. Children that had been vaccinated at least once in the past: 54,3%. Reasons for vaccination: underlying health condition: 8,6% (80% previously vaccinated), person with underlying health condition or infant under 6 months of age in the household: 52,6% (57,4% previously vaccinated), COVID-19 pandemic: 28,4%, vaccinated annually with no health related reason: 13%.

Conclusions: During this season **18,4% more children** have been vaccinated compared to the previous one. In **28,4%** this decision was attributed to the pandemic. However, if we include those with underlying health conditions to themselves or their household, that had never been previously vaccinated, this number increases to **52,3%**. Apparently, the infectious disease emergency did lead to an increase in influenza vaccination coverage. We believe that in part this can be attributed to fear and in part to more valid scientific information made available to the public during the pandemic.

ATTITUDES OF HEALTHCARE PROFESSIONALS AND PARENTS TOWARDS VACCINE SAFETY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINES

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Background: Up-to-date vaccines are one of the most thoroughly tested medical products with high level of safety confirmed by numerous studies. Since immunization was invented, the safety of this procedure has been discussed and nowadays, despite evidence, some people still deny the safety of this procedure. In this study, we compared the attitude of doctors, medical students and parents towards vaccine safety.

Methods: We created two anonymous questionnaires. Both concern the general attitudes toward vaccines, their safety, and infectious diseases. One was designed for doctors and medical students and the other was designed for parents. The study was carried out in the Białystok Children's Clinical Hospital in Poland where the questionnaires were distributed among doctors working in the hospital and parents visiting it. Also, an online version of those questionnaires was conducted on various groups on Facebook directed to doctors and medical students and likewise on groups engaging in topics of parenthood.

Results: We surveyed 2658 parents, 154 doctors, and 166 medical students. Ninety-six percent of doctors and 97% of medical students described all vaccines as "rather safe" or "very safe". Parents tended to answer "rather safe" but diversity of answers in this group was bigger. The COVID-19 mRNA vaccine was labeled "rather unsafe" or "very unsafe" by 39% of parents, whereas HPV vaccine received that score from 29%, and flu vaccine from 25% of parents. Respondents perceiving vaccines as unsafe scored severity of infections lower than those who perceived vaccines as safe.

Conclusions: Generally, doctors and medicine students assess vaccines, including the COVID-19 vaccine, as safe. Parents were concerned the most about the newest vaccines, like the COVID-19 vaccine, what might create some obstacles in reaching the required vaccine coverage in the population.

ACCEPTABILITY OF VACCINATION AGAINST COVID-19 IN PEDIATRIC HEALTHCARE WORKERS DURING INFLUENZA SEASON

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINES

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Background: Influenza season overlapped with the second wave of coronavirus disease 2019 (COVID-19) pandemic. Vaccination represents the main public health intervention to reduce the spread of both viruses and hospital care burden. Vaccine hesitancy or refusal can lead to disease outbreaks. This study aims to estimate the acceptability of influenza and COVID-19 vaccines in health-care workers (HCWs).

Methods: We conducted an analytical cross-sectional study in pediatric HCWs working in a large University Hospital in Southern Italy. The study population included residents/PhD 38.8%, nurses 21.3%, consultants 12.5%, academic personnel 8.8%, administrative/lab staff 8.7% and other HCWs 9.7%. 16.9% had one or more chronic diseases. We administered an anonymous questionnaire collecting demographic data, attitude towards flu vaccination, willingness and concerns about COVID-19 vaccine.

Results: Among the 216 HCWs (76.4% females, median age 32y, IQR 28-43.75) enrolled, 36.6% were immunized for Influenza in 2019/20 season vs 54.2% in 2020/21, and the majority (83.3%) had little/no fear about flu-vaccine and confidence in its effectiveness (84.3%). Most responders were prone to COVID-19 vaccination (98%) and confident about its efficacy (92.6%). Concerns about short-term (32.8%) or long-term (42%) side-effects were reported, with no difference among HCWs with or without chronic diseases. 55.8% had doubts about the duration of immunity.

Conclusions: The COVID-19 pandemic increased Influenza vaccination coverage in HCWs of our department in 2020/21 season waiting for adequate vaccination coverage against SARS-CoV2. HCWs attitudes towards vaccination are key determinants of vaccine uptake and recommendation to their patients. Further efforts are needed to disseminate appropriate information in order to reduce hesitancy and fear of side effects, improve immunization coverage and inclusion by age and health status.

THE IMPACT OF COVID-19 PANDEMIC ON THE BASIC IMMUNIZATION COVERAGE RATE IN SOUTH SUMATRA PROVINCE, INDONESIA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VACCINES IN THE SPOTLIGHT OF PANDEMICS

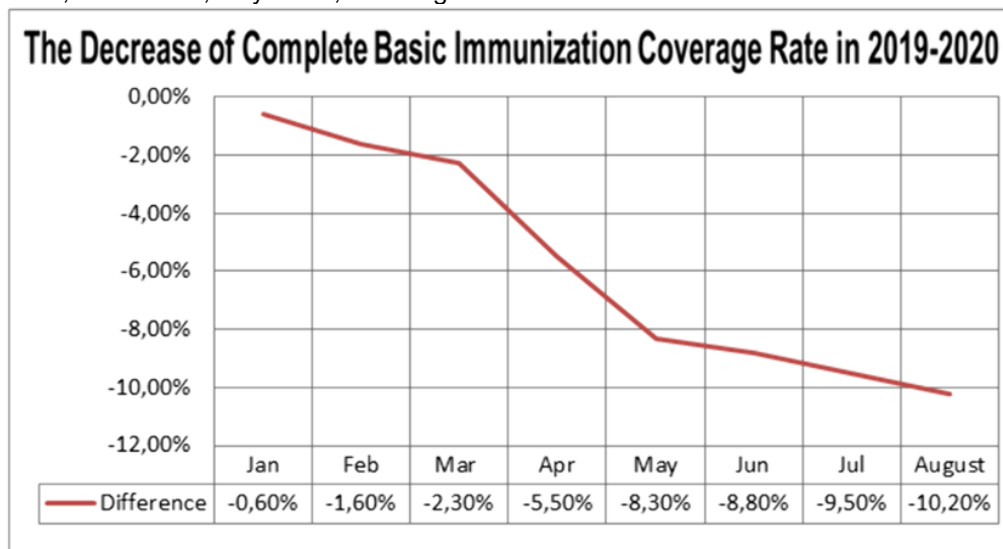
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Background: The COVID-19 pandemic and the effort to overcome could cause negative impacts on immunization services utilization. During the pandemic, the immunization coverage rate in various regions had decreased. This research was conducted to determine the impact of COVID-19 pandemic on the basic immunization coverage rate in South Sumatra Province.

Methods: The basic immunization coverage rate in South Sumatra Province in January-August 2019 and January-August 2020 were obtained from South Sumatra Provincial Health Office. The period of COVID-19 pandemic was April-August 2020. The target for basic immunization coverage rate was 95% per year or 7.9% per month. Based on the risk of COVID-19, regions were grouped into green, yellow, orange, and red zones.

Results: The complete basic immunization coverage rate in South Sumatra Province permonth in January to August 2019 was 7.7%, 16.1%, 24.2%, 31.6%, 39.9%, 48.2%, 56.7% and 65.2%, respectively. Meanwhile in January to August 2020 was 7.1%, 14.5%, 21.9%, 26.10%, 31.6%, 39.4%, 47.2% and 55%. The decrease in 2020 coverage rate in January was 0.6%, February 1.6%, March 2.3%, April 5.5%, May 8.3%, June 8.8%, July 9.5%, and August 10.2%.



The complete basic immunization coverage rate on July 23rd 2020 in yellow zone was 50.2%, orange zone 47.6%, and red zone 42%.

Conclusions: The complete basic immunization coverage rate in South Sumatra Province did not reach the target during the COVID-19 pandemic. The decrease of immunization coverage rate was highest at the beginning of COVID-19 pandemic. The red zone had the lowest coverage rate. Based on the interview obtained from South Sumatra Provincial Health Office, the dominant factor that cause basic immunization coverage rate reduction during the COVID-19 outbreak was the health workers and health facilities.

BURDEN OF SEVERE ACUTE RESPIRATORY INFECTION-RELATED PICU ADMISSIONS IN CHILDREN YOUNGER THAN 2 YEARS IN GREATER ACCRA, GHANA BETWEEN 2019-2020: A PILOT STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Severe acute respiratory infection (SARI) is a major reason for paediatric intensive care unit (PICU) admission in young children globally. However, burden data from lower-(middle-)income countries are lacking. We performed a retrospective pilot study to assess the burden of SARI-related PICU admissions in children <2 years within the catchment area of Korle-Bu Teaching Hospital (KBTH), a tertiary hospital with 24 PICU beds in Accra, Ghana, for 2019-2020.

Methods: To determine the incidence rate (IR) of SARI-related PICU admissions we used the World Health Organisation manual on calculating disease burden. We collected data for all children <2 years who had been admitted to the PICU with SARI between December 2019 – December 2020. We created a spot map displaying residence areas of the study population. The catchment area included the districts of where >80% of the study population resided. Population data of all children <2 years living in the catchment area in 2020 were obtained from Ghana Statistical Services.

Results: In total, 26 children (11 male, 15 female) had been admitted to the PICU with SARI between December 2019 - December 2020. Average age was 8 months. The majority of children had been admitted in March 2020. Using district-stratified population data, we calculated a SARI-related PICU admission IR of 11 per 100,000 children <2 years for the catchment area. IR was calculated by dividing the total number of SARI-related PICU admissions by the catchment population.

Conclusions: It is feasible to calculate an IR for SARI-related PICU admissions at KBTH. The IR was lower than expected, possibly due to the retrospective study design, the fact that the PICU was relatively new, or limited PICU access for the catchment population.

THE RSV GOLD ICU PILOT STUDY: FEASIBILITY OF GLOBAL REAL-TIME DATA COLLECTION FOR RSV-RELATED PEDIATRIC MORTALITY AT 7 PEDIATRIC INTENSIVE CARE UNITS WORLDWIDE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: RSV GOLD (Respiratory Syncytial Virus Global Online Database) collects global retrospective data on RSV-related mortality in children <5. Retrospective data collection is time consuming and sensitive to errors. Real-time data might contribute to better understanding of the current RSV burden. The RSV GOLD ICU pilot study assessed the feasibility of collecting real-time data of RSV-related mortality in children <5 at Pediatric Intensive Care Units (PICUs) where RSV testing is routinely available in 5 different World Health Organization (WHO) regions.

Methods: We selected 7 PICUs from 5 different WHO regions (European, South East Asian, Eastern Mediterranean, Western Pacific, American) to participate for a total of 10 RSV seasons between 2018-2021. Site coordinators were instructed to share real-time data on RSV-related <5 deaths through an online questionnaire. Real-time data sharing was defined as data shared within 2 weeks after mortality. We initiated no contact with the PICUs during the seasons to ensure a representable outcome. We followed up with each PICU to check completeness of data.

Results: In total 3 deaths were shared, which was concordant with our estimations (≥ 3) based on previous mortality ratios provided by the study sites. All deaths were shared within 24 hours after mortality occurred. No deaths were missed during the data collection. All site coordinators expressed their intention to continue sharing real-time data with RSV GOLD.

Conclusions: This pilot study shows that global real-time data sharing of RSV-related mortality in children <5 years at PICUs is feasible. To increase real-time data collection from countries where routine RSV testing is not available, we initiated the ICU Network Study at 10 PICUs in lower(-middle) income countries, for which we will provide a molecular point-of-care (POC) test to participating study sites.

A PROSPECTIVE STUDY OF RISK FACTORS FOR BRONCHIOLITIS SEVERITY IN PATIENTS ADMITTED TO A REGIONAL SPANISH HOSPITAL (2017-2019)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Acute bronchiolitis is the main cause of hospital admission among children under two years of age in our territory. The most commonly identified agent is respiratory syncytial virus (RSV). If admission to PICU is advised, this is usually associated with specific risk factors and an increase in antibiotic therapy. The objective of our study was to evaluate the differences in risk factors, microbiology and management between the admissions of bronchiolitis to either the PICU or the hospitalization ward.

Methods: We conducted a prospective study of all children <2 years old admitted with the diagnosis of bronchiolitis at the hospital Universitari de Girona Dr. Josep Trueta, in Girona (Spain), during two years (1st July 2017- 31st December 2019), who were treated as inpatients in the standard hospital setting (WARD group) or in the PICU (PICU group). All data from demographics, clinical and severity (assessed by HSJD Score), complementary exams and antibiotics prescriptions were recorded. Detection of respiratory viruses in nasopharyngeal swab was accomplished by RT-PCR.

Results: We included 406 children (302/104; WARD/PICU group). The most frequently detected virus was RSV (55%, 226/406). Patient groups differed in HSJD Score for the severity of bronchiolitis ($P<0,001$). In 50% patients in the WARD group no complementary exam was performed during their hospitalization. As expected, the two groups significantly differed in duration of hospitalization, supplementary oxygen, ventilator support and antibiotic use. No differences regarding the causative virus, age, comorbidities, blood test values (WBC, ANC, CRP and procalcitonin) were found. All blood cultures were negative in both groups.

Conclusions: In hospitalized infants, RSV was the most frequent agent causing bronchiolitis. Despite common use of antibiotics in PICU patients, there are no differences in the results of laboratory tests between WARD (milder) and PICU (more severe) patients.

BACTERIAL INFECTION IN PATIENTS WITH SEVERE BRONCHIOLITIS, RISK FACTORS AND COMORBIDITIES.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Bacterial infection (BI), both community-acquired (CA-BI) and hospital-acquired (HAI), might present as a severe complication in patients with acute bronchiolitis. The aims were to describe BI in patients with severe bronchiolitis, and to define risk factors for BI and BI associated morbidities and mortality.

Methods: Prospective, descriptive and observational study. Patients with bronchiolitis, admitted to the pediatric intensive care unit, between 2011 and 2017 were included. CA-BI [I1] [MBG2] [OG3] was diagnosed in patients with pneumonia, sepsis, urinary tract infection, meningitis and invasive enteritis. HAI was diagnosed in patients with catheter associated blood stream infection, health-care associated pneumonia and catheter associated urinary tract infection. Etiology of each BI, risk factors for BI development and BI associated morbidity and mortality were investigated.

Results: 675 patients were included, 399 (59.1%) men, median age of 47 days (IQR 25-99). 175(25.9%) patients developed BI, 118(67.4%) CA-BI and 57(32.6%) HAI. BI was significant associated with higher BROSJOD score, PRISM III ($p < 0.001$) and bacterial co-infection ($p = 0.006$). The multivariate analysis showed that a BROSJOD > 12 had an independent association with CA-BI (OR 2.83), with pneumonia (OR 2.65), and sepsis (OR 2.46). Infants with BI had longer PICU and overall hospital stay ($p < 0.001$), and required more mechanical ventilation and inotropic support ($p < 0.001$). Mortality was higher in patients with HAI ($p = 0.039$).

Conclusions: BI occurs in 25% of patients with acute severe bronchiolitis. A BROSJOD > 12 points may alert the presence of CA-BI, especially pneumonia, considering antibiotic indication. Those with BI, have higher morbidity and mortality.

AGE PECULIARITIES OF MEASLES IN INFANTS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Measles in the first 6 months of life is rare because of the presence of maternal transplacental antibody in infant. A large number of sick infants in the first 6 months of life can be possible because of unvaccinated status of mothers and lack of immune maternal protection. The aim of the study was to identify the peculiarities of measles in infants younger than 6 months.

Methods: 21 infants under the age of 6 months, who suffered from acquired measles, were under our supervision in the Chernivtsi Regional Children's Clinical Hospital (Chernivtsi, Ukraine) in the period 2017-2019. Most children were hospitalized in the prodromal period of measles. We analyzed anamnestic, clinical and some laboratory parameters. The results were analyzed by the method of descriptive statistics. The research was performed in compliance with the principles of bioethics.

Results: The clinical picture in all patients was characterized by a combination of fever and maculopapular rash. Clinical age patterns of the disease in children under 6 months of age were as absence of: Koplik's spots (77%), conjunctivitis (40%), cough (24%) and nonspecific petechial oral enanthema (86%). Most cases were moderate (96%) and complicated (52%). The predominant complications of measles were respiratory diseases (obstructive bronchitis and pneumonia) with minimal numbers of otitis. Dehydration because of gastrointestinal symptoms was also observed. CBC in most cases (77%) presents as a normal range.

Conclusions: Thus, age patterns of measles in infants under 6 months of age were characterized by an incomplete clinical picture of moderate severity with a high risk of respiratory and gastrointestinal complications.

ROLE OF VIRAL PATHOGEN IN HOSPITALIZED CHILDREN WITH COMMUNITY ACQUIRED PNEUMONIA IN QATAR; ATTENTION-GRABBING REPORT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Community acquired pneumonia (CAP) is a leading cause of childhood morbidity and mortality globally. Our aim was to determine common viruses associated with (CAP) in hospitalized children with risk factors for pediatric intensive care unit (PICU) admission

Methods: A cross-sectional single institutional retrospective descriptive study performed at Hamad Medical Corporation in Qatar for children admitted with CAP from Dec 2017- Dec 2019 included details of demographics and respiratory viruses detected by PCR nasal swab.

Results: 260 hospitalized children with CAP between 3 months-14 years with mean age of 4 years included. 234 had PCR nasal swab that tested positive in 198 (81.5%); single virus in 137 cases and multiple in 61 cases. The commonest was Rhinovirus 78 (28%). Fever was the commonest symptom in 193 (97%) followed by cough 190 (95%). Most common finding in Chest x-ray (done in 98%) was infiltrates 92 (39%) then consolidation 82 (35%). Antibiotics were used in 188 (94%) with median hospital stay 7.7 days. The commonest virus in PICU admissions 49 (20%) / 234 nasal swabbed children) was H1N1 influenza particularly in children with cerebral palsy, history of prematurity and asthma. 6/198 patients only received flu vaccine

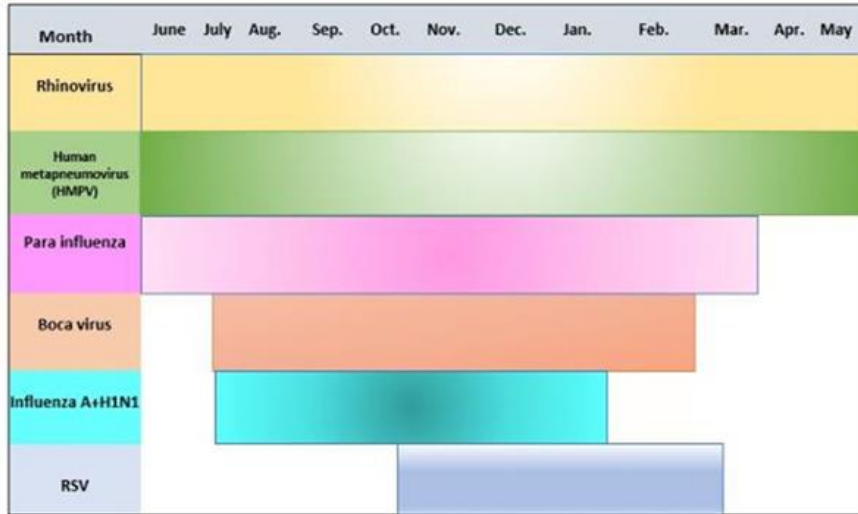


Figure-1 sessional variation for the commonest single viruses

Viruses	Rhino virus	RSV	HMPV	Influenza A with H1N1 influenza virus	Parainfluenza
No. of cases in PICU	14	8	8	5	5
Respiratory Support	2 cases intubation 7 cases Non-invasive ventilation	2 cases with Intubation 3 cases non invasive	4 cases non-invasive ventilation	1 case Intubation 3 cases Non-invasive ventilation	2 case intubation 3 case non-invasive ventilation
Length of stay in PICU	3-28 days	15 days	3-5 days	3-10 days	3-5 days
Antibiotic use	In 10 cases	In 6 case	In 4 case	In 5 cases	In 5 cases
Comorbidities	1 case down 5 cases CP 1 premature 2 case Asthma	1 case premature baby , 1 CP	1 case down 1 case CP	3 cases cerebral palsy(CP)	1 case Asthma 1 case premature baby 3 cases CP

Figure-2 PICU admission per single commonest virus

Pathogens	Rhinovirus	RSV	HMPV	Boca	Para influenza	Influenza A	Mixed viruses
Variable/number	N= 78	N= 40	N= 29	N= 27	N= 25	N= 22	N= 139
Hospitalized cases, number (%)	42 (21%)	30(15%)	15 (7%)	7 (3%)	7 (3%)	13(6.5%)	61(30%)
Presence of Cough (100%)	42 (100)	26(86)	15 (100)	3 (45)	7 (100)	13 (100)	56 (91)
Fever	41 (99)	28 (93)	15 (100)	7 (100)	7 (100)	12 (92)	60 (99)
Tachypnea	20 (50)	19 (63)	15 (100)	7 (100)	7 (100)	10 (76)	45 (75)
Crackles	26 (51)	16 (30)	14 (93)	5 (71)	5 (71)	9 (69)	45 (75)
Nasal congestion	11 (26)	13 (43)	11 (73)	6 (85)	6 (85)	8 (61)	38 (60)
poor feeding	37 (88)	27 (90)	12 (80)	7 (100)	7 (100)	3 (23)	39 (63)
wheeze	13 (30)	14 (46)	4 (26)	7 (100)	3 (45)	2 (15)	19 (31)
pallor	3 (7)	3 (1)	3 (2)	5 (71)	2 (18)	1 (7)	2 (3)
Sore throat	0 (0)	2 (0.8)	1 (1)	0	0	1 (7)	4 (6)
otitis media	2 (4)	3 (1)	0	0	1 (1)	0	6 (9)
chest indrawn	11 (26)	13 (43)	13 (85)	0	5 (71)	6 (46)	29 (29)
pO2 <94%a	11 (26)	14 (46)	11 (73)	6 (85)	0	8 (61)	30 (30)
Chest X ray taken	42 (100)	29 (99)	15(100)	7 (100)	7 (100)	12 (92)	60 (99)
consolidation	10 (20)	15 (30)	9 (64)	2 (18)	3 (45)	9 (64)	19 (22)
hyperinflation	7 (14)	3 (1)	4 (28)	5 (71)	2 (18)	3 (21)	8 (9.3)
plural effusion	6 (12)	4 (1.5)	1 (1)		1 (1)	1 (7)	11 (12)
infiltrate	26 (53)	10 (33)	0		1 (1)	1 (7)	40 (46)
Mean hospital stay (day)	8 days	7 days	9.4days	7.4days	5.4days	12 days	6.7 days

Figure-3 viruses' description among hospitalized children with CAP

Conclusions: Our study revealed that Rhinovirus was the most common causative agent in hospitalized children with CAP. H1N1 influenza virus plays a major role in PICU admission, adherence to annual influenza vaccine may reduce CAP complications and morbidity.

ACUTE LYMPHOBLASTIC LEUKEMIA AS A DIFFERENTIAL DIAGNOSIS OF MONONUCLEOSIS-LIKE ILLNESS WITH NEGATIVE VIRAL SEROLOGIES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: EBV causes infectious mononucleosis (IM), which is a common disease in childhood. Similar clinical manifestations could be attributable to CMV, Adenovirus, Parvovirus B19, and Mycoplasma pneumoniae. Sometimes serology tests for all those viruses could be negative, and it represents a challenge to exclude diseases with presentations suggestive of IM, such as acute lymphoblastic leukemia (ALL).

Methods: We conducted a retrospective study of children with IM and mononucleosis-like illness (MLI). Patients with negative viral serology tests (NVST) were compared to a control group of 32 children with newly diagnosed ALL. We collected data about sex, age, duration of symptoms before diagnosis, clinical signs and symptoms, and CBC parameters for both groups.

Results: We enrolled 254 children with a typical clinical presentation of IM/MLI. Thirty-nine patients (15.3%) had NVST. There was no statistically significant difference between the two groups in sex, the incidence of fever, lymphadenopathy, splenomegaly, and leukocytosis/leukopenia. However, we found that the NVST group was highly significantly older than the ALL group. NVST patients had a significantly shorter duration of symptoms and highly significantly higher incidence of pharyngitis. Patients with ALL had a significantly higher incidence of fatigue and hepatomegaly and highly significantly higher incidence of thrombocytopenia, and anemia.

Conclusions: MLI can mimic ALL. The absence of positive viral serology among the patients with MLI is frequent. In such cases, ALL should be considered. We showed that despite some overlapping characteristics, there are clear differences in clinical presentation between MLI and ALL. Therefore, an additional diagnostic work-up besides CBC is rarely needed to exclude ALL.

UTILITY OF RESPIRATORY MULTIPLEX-PCR IN HOSPITALIZED CHILDREN WITH RESPIRATORY INFECTION, SISTEMATICALLY APPLIED

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

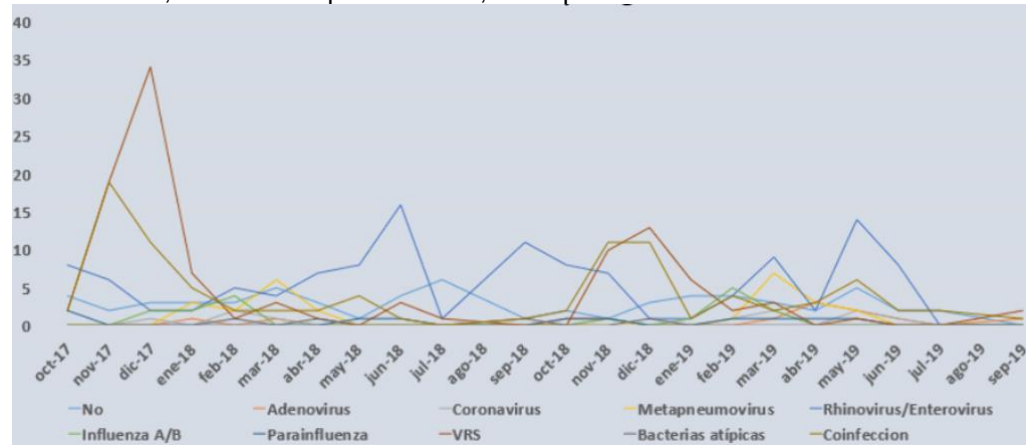
Ana Belen Jimenez Jimenez¹, Elvira Martín López¹, Jorge Hernández Del Real¹, Maria José Hernández Bruñas¹, Amalia Martínez-Antón², Marta Paúl², Llanos Salar Vidal¹, Ricardo Fernandez-Roblas³

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Background: Diagnosis of multiple respiratory pathogens is recently accessible in clinical practice. It is not yet clear its advantage in front of single determination of RSV-Influenza. Besides, much of the available information is biased by its exclusive performance to selected cases. This study aims to know the frequency in our environment of 22 pathogens that cause respiratory infections in hospitalized children, in pre-COVID period.

Methods: For 2 years(October 2017-September 2019), multiple PCR-technique in nasopharyngeal lavage(Biofire®) for 22 pathogens, was realized systematically in all children admitted for respiratory infection.

Results: 471 patients admitted for bronchiolitis(n=150),bronchospasm(n=227),pneumonia(n=48) and other infections(n=46). Some pathogen is identified in 87.0%(mainly Rhinovirus, RSV, Adenovirus and Metapneumovirus, 20%coinfections). RSV is associated with younger children and Coronavirus-229E with older in a significant way. Some agent is identified in 94% of bronchiolitis, 85.9% of bronchospasms. and in 70.8% of pneumonias, not only in winter months (November-January account only 44.0%). RSV-Influenza concur with the peak of bronchiolitis(November-January), Metapneumovirus(January-April), Parainfluenza(May-June) and Rhinovirus(peaks in November and June) prevail. Atypical bacteria are only detected in 1,7% bronchospasms and 0,8% of pneumonias.



Conclusions: Multiplex PCR technique systematically used in hospitalized children present high detection rate, detects pathogens in most patients and all the year, with 20% co-infections. Nevertheless, the etiology-severity relationship is not well defined in all pathogens, therefore are necessary more studies to conclude in favor of the realization of this test systematically. For atypical bacteria, given the low rate detected in our study, systematic search without clinical suspicion should not be recommended. The study design shows the epidemiological map in our setting, in pre-COVID period.

SEVERITY OF RESPIRATORY INFECTIONS IN HOSPITALIZED CHILDREN ACCORDING TO THE ETHIOLOGIC AGENT. ROLE OF THE MULTIPLEX-PCR.

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: The determination of respiratory pathogens through PCR is recently accessible for clinical practice, though it is yet to be determined its usefulness or whether it should be performed in a systematic way. Our aim is to know the severity profile of the various pathogens studied, as well as that of the coinfection, since it has been carried out systematically on all patients admitted for respiratory infection.

Methods: For 2 years (October 2017-September 2019) multiplex-PCR in nasopharyngeal lavage (Biofire®) for 22 pathogens was collected in a systematic and prospective manner in all children admitted for respiratory infection. The main variables of severity considered were days of hospitalization, need for oxygen, need for PICU and respiratory assistance, and duration.

Results: Between 471 children hospitalized, 82,9% requiring oxygen, 17% admission in PICU (of that 95,0% required respiratory assistance, but only 2.5% invasive ventilation). Higher severity is found with VRS (more oxygen ($p<0,0001$), more admission in PICU ($p<0,013$) and more respiratory assistance ($p<0,015$)). However, Rhinovirus requires shorter hospitalization ($p=0,009$) and less PICU admission ($p=0,032$), as well as less respiratory assistance ($p=0,025$). Metapneumovirus required more days of oxygen ($p=0,015$), and longer hospitalization and respiratory assistance ($p=0,09$). Atypical bacteria required less oxygen ($p=0,045$) for fewer days ($p=0,034$). Influenza A/B less days of oxygen ($p=0,048$). Coinfections (20%) required more oxygen for more days, and higher PICU admission.

Conclusions: We identify a severity-pathogen relation (VRS and Metapneumovirus higher severity, Rhinovirus to a lesser one). Influenza and atypical bacteria require less oxygen, probably related to admissions for causes other than respiratory insufficiency. Patients with coinfection require more days in PICU and more oxygen. More studies are needed in order to establish the coinfection's role and the usefulness of knowing the pathogen in real time for a more efficient handling of children admitted due to respiratory infection.

IMPACT OF A HEALTHCARE ROUTE CHANGE IN A PEDIATRIC EMERGENCY DEPARTMENT

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Acute bronchiolitis(AB) is an important cause of both:respiratory-morbidity and patient-care overload. It is known that no effective preventive or therapeutic strategies exist, and this leads to a high variability in the management. A new healthcare-route strategy has been incorporated in our autonomous-community in october2019, whose aim is the unification and improvement of AB management by the uniform evaluation,as well as the reduction of unnecessary treatment.The purpose of this study is to compare the management before-after the implementation of the strategy in the Pediatric Emergency Department.

Methods: Comparative retrospective pre-post study of 2 independent patient groups diagnosed with AB attended at PED, between October-15-2018 and December-15-2018 (pre-intervention group) and 2019-2020 (post-intervention group). The variables analyzed are:age,severity,additional tests, treatment received,reconsultations and destination. The statistical significance is obtained by T-student for the variable age and χ^2 or Fisher-test for the rest of variables,with the SPSS25@statistic.

Results: 612 cases were analyzed (294 pre-intervention,318 post-intervention). A significant reduction in the administration of bronchodilators (55,78%vs3.14%; $p<0,001$) was observed. The rest of the results are shown in table 1.

Variable	Pre-intervention	Post-intervention	p*
Mean age(months)	6.5	6.5	NS(0.06)
Severity Mild Moderate Severe	118/225(52.44%) 88/225(39.11%) 19/225(8.44%)	192/309(62.13%) 101/309(32.68%) 16/309(5.17%)	0.02 NS(0.12) NS(0.13)
Chest-radiography	31/294(10.54%)	27/318(8.49%)	NS(0.75)
Salbutamol	164/294(55.78%)	10/318(3.14%)	<0.0001
Adrenaline	13/294(4.42%)	42/318(13.2%)	0.0001
Corticotherapy	12/294(4.08%)	5/318(1.57%)	NS(0.059)
Antibiotics	18/294(6.12%)	12/318(3.77%)	NS(0.17)
Reconsultations	54/294(18.36%)	49/318(15.4%)	NS(0.32)
Hospitalization	104/294(35.37%)	105/318(33%)	NS(0.53)

Table 1. Results. *Statistical significance: $p < 0,05$

Conclusions: After the implementation of the new healthcare-route an increased number of adrenaline-tests were done, but a significant reduction was observed in salbutamol prescription without increase either in reconsultations or in hospital admissions. It must be noted a drastic reduction of AB cases in 2020, very probably interfered by the general hygienic measures taken due to ongoing SARS-Cov-2 pandemic.

TRANSAMINASE ELEVATION IN CHILDREN WITH HUMAN METAPNEUMOVIRUS INFECTIONS
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E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Human metapneumovirus (hMPV) is a relatively new virus first described in 2001. It is one of the causative agents of acute respiratory infection (ARI) in children. For the last two decades clinical presentations, age and risk groups have been established. In 2019 winter, we encountered a number of patients with elevated transaminases, all hospitalized for pneumonia with hMPV positivity. Although a few studies reported a transient transaminase elevation in hMPV infection, the associated factors were not evaluated. In this study we aimed to evaluate the transaminase elevation in hMPV patients.

Methods: From 2015-2020, children (1 month- 18 years) admitted to Hacettepe University İhsan Doğramacı Children's Hospital with ARI symptoms searched retrospectively through medical reports and patients whose nasopharyngeal swabs were positive solely for hMPV were enrolled to the study. Demographic properties, chief complaints, diagnoses, disease courses, laboratory tests were evaluated and recorded.

Results: During the study period, 6846 cases of ARI with PCR positivity for one or more viruses investigated, hMPV was responsible for 1.7% of all cases. The median age was 18.5 months (1-228 months) with a slight male predominance (F/M: 53/65). About 50% of the cases had underlying diseases. Fifty two percent of the cases were hospitalized, with a median of 9 days (1-187) and 23.7% of them had transient transaminase elevation with no alternative plausible reason of whom two patients died

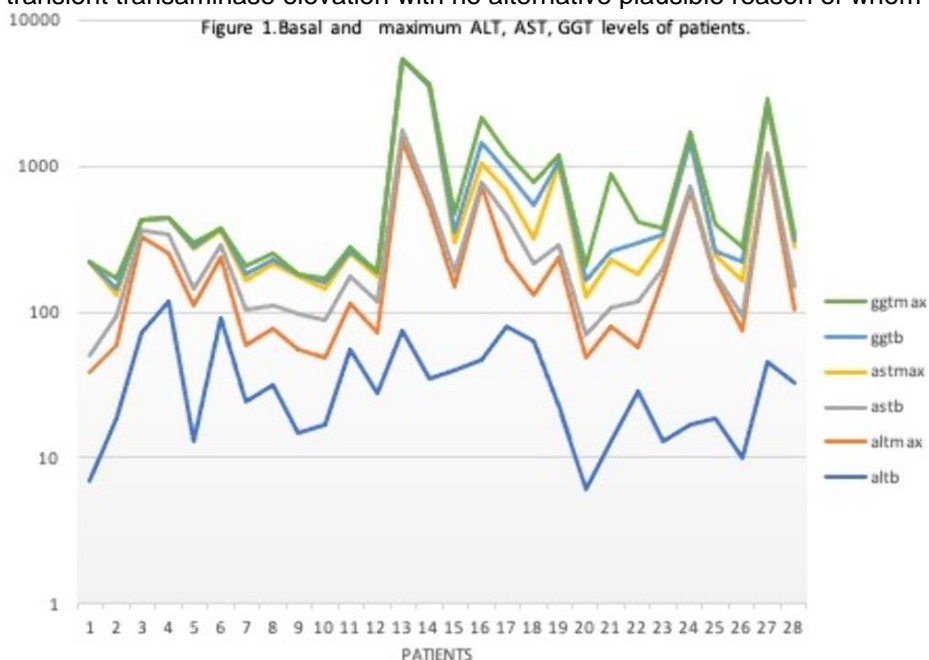


Table 1. Demographic findings and laboratory values of patients hospitalized for hMPV infection with elevated and normal liver enzymes.

Patients (n=62)	Patients with elevated transaminases (n=28)	Patients with normal transaminases (n=34)	p
Median age (months)	21.5 (1-123)	22 (1-187)	p=0.42
Sex (F/M)	11/17	17/17	p=0.48
Underlying Diseases (%)	22 (61.6)	24 (70.1)	p=0.52
Hospitalization (%)	28 (100)	34 (100)	-
ICU stay (%)	11 (39.3)	5 (14.75)	p=0.629
Max ALT level (median) (min-max)	84 (29-1428)	23 (13-26)	NA
Max AST level (median) (min-max)	102 (38-3671)	39 (10-51)	NA
Max GGT level (median) (min-max)	70 (13-741)	16 (10-23)	NA
Exitus (n)	2	-	p=0.196

n: Number
F/M: Female: Male
ICU: Intensive Care Unit
Max: Maximum
Min: Minimum
ALT: Alanine transferase
AST: Aspartate transferase
GGT: Gamma glutamyl transferase

Conclusions: The elevation of transaminases and GGT levels in children with hMPV infections are rarely reported. Transient elevation of transaminase does not seem to be related to age, sex, or underlying diseases. Patients requiring ICU have statistically significant elevated maximum ALT, AST but not GGT levels (p= 0.014) which could be explained with the severity of infection.

CLINICAL AND EPIDEMIOLOGIC CHARACTERISTICS OF HOSPITALIZED PEDIATRIC PATIENTS WITH RESPIRATORY SYNCYTIAL VIRUS INFECTION IN ZHENGZHOU, CHINA

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Human respiratory syncytial virus (RSV) is one of the leading causes of acute respiratory infection (ARI) in children under 5 years old worldwide. We aimed to describe the characteristics of RSV infection from hospitalized young children with ARI in China.

Methods: A prospective case-series study was conducted in Zhengzhou of Henan Province, in Central China, from December, 2018 to November, 2019. Pediatric inpatients aged 5 years or younger with ARI were enrolled. Throat swabs were collected within 24h of admission and tested for RSV by Real-time PCR. RSV season was defined as consecutive weeks during which the percentage of RSV-specific PCRs testing positive per week exceeded a 10% threshold.

Results: A total of 2988 pediatric inpatients were enrolled, among which 386 (12.9%) were RSV-infected. The peak positive rate (47.5%) by month was found in December. The RSV infection rate significantly varied by age. Among the 386 RSV-infected patients, 88.9% (343/386) were under 2 years and 74.1% (286/386) were under 1 year. Patients under 6 months account for 79.4% (227/286) of patients under 1 year. Among RSV-infected patients under 1 year of age, 85.3% were previously healthy, e.g., with full-term birth and without any comorbidities.

Conclusions: Pediatric patients with ARI under 1 year of age suffered more from RSV infection than other age groups, particularly the infants under 6 months. Most RSV-infected infants were full term otherwise healthy which suggested that a significant clinical impact on healthy infant and prevention and control strategies against RSV should target all infant.

IMPACT OF SOCIAL NON-PHARMACEUTICAL INTERVENTIONS ON AMBULATORY VISITS FOR BRONCHIOLITIS IN FRANCE, THE PARI STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

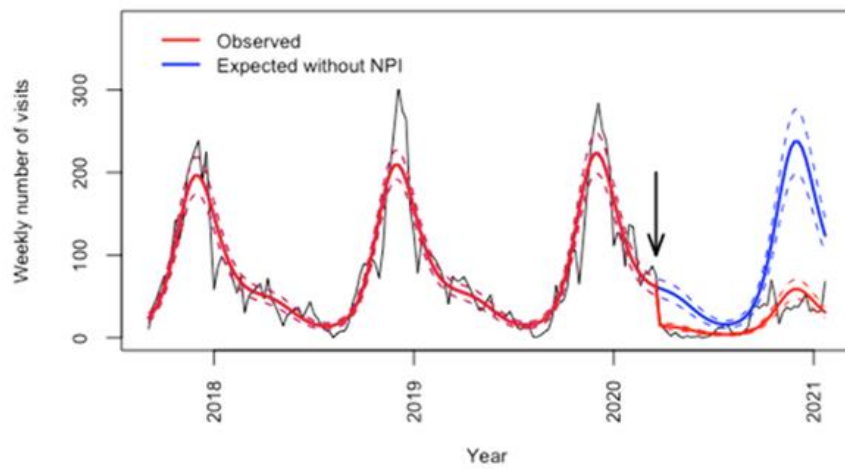
Alexis Rybak^{1,2,3,4}, Stéphane Béchet¹, Naim Ouldali^{1,3,5}, Nathalie Gelbert⁴, Bruno Frandji⁶, François Vie Le Sage⁷, Georges Thiebault⁴, Fabienne Kochert⁴, Fabienne Cahn-Sellem⁴, Andreas Werner⁴, Corinne Levy^{1,4,8,9}, Robert Cohen^{1,4,8,9}

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Background: Bronchiolitis is an important cause of paediatric consultation during seasonal outbreaks. In France, unprecedented non-pharmaceutical interventions (NPI) have been implemented to reduce the spread of SARS-CoV-2. After a first strict lockdown from March to May 2020, various NPI mainly focusing on adults and children older than 6 years old, including mandatory wear of face mask, have been decided gradually. We aimed to describe the impact of these measures on ambulatory visits for bronchiolitis in France.

Methods: We performed a prospective study using data from a paediatric ambulatory research in infectious diseases (PARI) network. Throughout France, 107 pediatricians specially trained in infectious diseases used the same software, AxiSanté 5 Infansoft for electronic medical records. Medical diagnosis from the electronic medical record was transmitted daily when an infectious disease was diagnosed. Weekly number of visits for bronchiolitis was analyzed with a quasi-Poisson regression. We defined 03/09/2017 to 21/03/2020 as the pre-intervention period and 22/03/2020 to 23/01/2021 as the post-intervention period. Urinary tract infection served as control outcome.

Results: During the study period, 146,319 children visited participating paediatricians including 12,265 bronchiolitis and 822 UTI. When comparing to the model predictions if NPI were not implemented, a significant decrease for visits for bronchiolitis was observed (OR 0.248, 95% confidence interval [95% CI] 0.19-0.31, $p < 10^{-5}$, Figure). By contrast, urinary tract infections were not impacted by NPI (OR 1.17, 95% CI 0.86-1.60, $p = 0.29$).



Conclusions: Non-pharmaceutical interventions focusing on adults and children older than 6 years old had a major effect on reducing ambulatory visit for bronchiolitis. Continuing the surveillance is required to detect a delayed outbreak, especially if NPI are lifted.

A COMPARATIVE STUDY OF CHARACTERISTICS OF CHILDREN HOSPITALIZED FOR INFLUENZA DURING TWO EPIDEMIC SEASONS IN A PEDIATRIC DEPARTMENT OF A TERTIARY HOSPITAL IN PIRAEUS, GREECE

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Seasonal influenza is a vaccine-preventable disease associated with significant morbidity. The aim of this retrospective study was to compare epidemiological characteristics of children hospitalized due to influenza during the two recent seasons.

Methods: Demographic and clinical features of children with confirmed influenza hospitalized in our department in 2019-2020 and 2018-2019 flu seasons were retrospectively compared.

Results: Type B Influenza virus was detected in significantly higher percentage in 2019-2020 compared to 2018-2019 season (35.7% versus 0%, $p=0.000$). In 2019-2020 season, median age of hospitalized children was significantly lower (2.75 versus 5.5 years, $p=0.05$), with a higher percentage of infants (25% versus 3.3%, $p=0.017$). In both epidemic seasons, the majority of children was totally unvaccinated (96.4% versus 96.7%, $p=ns$), while 1 out of 2 children had prior contact with other patients diagnosed with influenza (57.1% versus 50%, $p=ns$). Compared to 2018-2019, seizures were observed more frequently in 2019-2020 (17.9% versus 3.3%), finding that did not reach statistical significance ($p=0.07$).

Conclusions: During the 2019-2020 and 2018-2019 seasonal influenza periods, differences both in the type of circulating virus type and in the age distribution of hospitalized children were recorded. In both seasons, 1 out of 2 hospitalized children mentioned prior close contact with other influenza patients highlighting the need for raising public awareness towards the importance of annual influenza vaccination as well as the maintenance of infection prevention measures.

QUANTIFYING THE IMPACT OF RAPID RSV TESTING ON PATIENT OUTCOMES : A RETROSPECTIVE STUDY

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: This study aimed to compare outcomes in children with lower respiratory tract infections (LRTI) before and after introduction of a rapid respiratory syncytial virus (RSV) test over three years (2017-2019) at a single site. In 2017 and 2018 routine nasopharyngeal swabs were used, subsequently in 2019 the Cobas Liat rapid test with turnaround time of 30-90 minutes was introduced. The study aimed to investigate whether a rapid diagnosis of RSV decreased antibiotic usage, need for imaging, blood tests, return following discharge, and duration of stay.

Methods: A retrospective case note review of children aged 3 months- 5 years presenting to Christchurch Hospital, New Zealand with lower respiratory tract symptoms over three influenza seasons, May – July 2017, 2018 and 2019 was conducted.

Results: Forty-two patients had a swab positive for RSV in 2017-2018 (15 in 2017 and 27 in 2018), 24 had a rapid flu swab positive for RSV in 2019. Seventy percent of patients with an RSV LRTI in 2018-2019 received antibiotics (30/42) compared to 50% of those in 2019 (12/24) ($p=0.08$). There was no significant difference in patients requiring imaging ($p=0.5$), blood tests ($p=0.54$), reattending after discharge ($p=0.755$), or duration of stay ($p=0.56$) between the two cohorts.

Conclusions: Rapid RSV testing may reduce antibiotic usage in children presenting with LRTI symptoms but has no significant effect on imaging, blood tests, reattendance or duration of stay. A larger prospective study is required to further quantify the impact rapid RSV tests have on patient outcomes.

FEASIBILITY OF POST-MORTEM RESPIRATORY SYNCYTIAL VIRUS TESTING IN A NORTH-NIGERIAN HOSPITAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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³Respiratory Syncytial Virus Network Foundation, Resvinet, Zeist, Netherlands

Background: Nigeria has the 5th highest pneumonia-related mortality rate in children younger than 5 years. Respiratory Syncytial Virus (RSV) is a major cause of severe respiratory infection-related death in this age group, but clinical data are lacking. In 2018 we started a pilot study in which post-mortem nasopharyngeal swabs were collected for viral analysis from children younger than 5 years who died with respiratory infection at Ahmadu Bello University Teaching Hospital, North-Nigeria. After 1 year we conducted a survey to evaluate the feasibility of this pilot study.

Methods: Feasibility was evaluated using three criteria. First, social and cultural acceptance of post-mortem RSV testing was assessed by conducting in-depth interviews among departmental staff. Second, the ability to adhere to pilot study guidelines was assessed by analyzing the recruitment process, hospital logistics and patient records. Third, ethical considerations were evaluated using the “four principles approach”.

Results: Social and cultural obstacles for post-mortem RSV testing identified were the need to bury the child as soon as possible and religious beliefs that conflict with post-mortem examination. Of 14 eligible patients, one was recruited. There was no 24-hour coverage by trained doctors and those who were trained had insufficient time for recruitment. Post-mortem RSV testing posed ethical challenges regarding the capability of recently bereaved parents of giving informed consent.

Conclusions: Post-mortem collection of nasopharyngeal swabs was challenging due to cultural and practical barriers. All departmental staff members should be trained to ensure 24-hour recruitment.

EVALUATION OF RSV TESTING PRACTICE AND POSITIVITY BY PATIENT DEMOGRAPHICS IN THE UNITED STATES

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

Phuong Tran^{1,2}, Sabina Nduaguba^{1,2}, Diaby Vakaramoko^{1,2}, Yoonyoung Choi³, Almut Winterstein^{1,2}

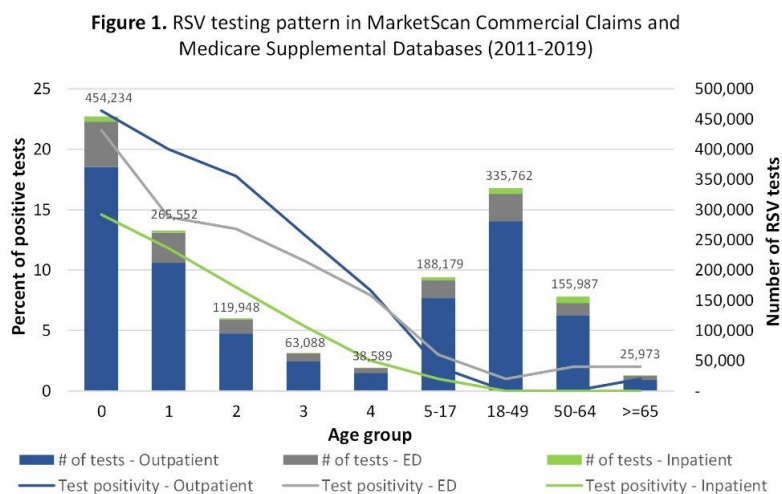
¹University of Florida, Center For Drug Evaluation And Safety, Gainesville, United States of America,

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Background: Most children with RSV are not tested. RSV incidence estimates from health records are commonly adjusted for RSV under-ascertainment by applying the test positivity reported in CDC's National Respiratory and Enteric Virus Surveillance System (NREVSS) to respiratory tract infections without identified pathogen. However, patient-level characteristics are not available in NREVSS and leave uncertainty about applicability because more specific incidence adjustment may be optimal as testing practices and positivity may vary across groups. We used billing records to evaluate variations in testing practices and positivity among different patient groups.

Methods: Using billing records for privately insured patients from 2011-2019, we determined distributions of RSV test claims and test positivity across age groups, regions, clinical settings, and test types. A positive RSV test result was assumed based on a RSV diagnosis in outpatient encounters within ± 7 days of the test or inpatient encounters that overlapped with or followed a test within 3 days. For multiple tests on the same day, we retained the test with the highest sensitivity (PCR > viral isolation/culture > antigen).

Results: In claims, most tests were for young children (age 0-4: 57.6%, age 5-17: 11.3%). Test positivity in claims was 11.5%, with large variation across age groups (age 0-4: 19.6%, age 5-17: 1.6% and adults: 0.4%, Figure 1), regions (range 6.0-14.8%), clinical settings (inpatient 4.7%, ED 11.1%, outpatient 11.8%), and test types (antigen 21.2%, PCR 2.4% and viral isolation/culture 0.6%).



Conclusions: The study demonstrates that RSV testing practice and test positivity vary across patient groups. Demographic-specific testing practice and positivity adjustment could improve the accuracy of RSV incidence estimates.

HIGH CIRCULATION OF RHINOVIRUSES IN PAEDIATRIC POPULATION AFTER SCHOOL REOPENING DURING SARS-COV-2 PANDEMIC IN CATALONIA (SPAIN)

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Rhinoviruses (RV) are a common cause of mid upper respiratory tract infections in children, but they are also related to moderate-severe cases of lower respiratory tract infections (LRTI) like wheezing or asthma exacerbation. RV are divided in three species (RV-A, RV-B and RV-C) that co-circulate all over the year. We aim to study virological diversity and clinical characteristics of RV laboratory-confirmations in children after school reopening with the application of non-pharmaceutical interventions (NPI) to control the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Methods: During September 2020, respiratory samples from <16 year-old patients attended in a tertiary hospital in Catalonia with fever, respiratory or gastrointestinal symptoms or those that required hospitalization for any cause were collected to rule out SARS-CoV-2 infection. If SARS-CoV-2 tested negative, other respiratory viruses were analysed. RV were detected by real-time multiplex RT-PCR-based assay (Allplex Panel Assay, Seegene, South Korea) and further characterised based on the phylogenetic analysis of the partial coding sequence of the VP4/2 protein. Medical records were retrospectively reviewed.

Results: From 661 samples, 303 (45.8%) tested positive for RV (89.4% RV-A, 0.3% RV-B and 4.7% RV-C) with a median age of 4.5 years (IQR 1.8-6.5) and predominance in male sex (56%). Most patients (265/303; 87.5%) did not require hospital admission. RV-A49 and RV-A61 were related to 47.4% (18/38) and 10.5% (4/38) of hospital admissions for LRTI, respectively. Two patients with LRTI required PICU admission, both related to single RV-A49 infections. Co-infections were observed in 10 cases, 6 with adenovirus, 3 with bocavirus and 1 with respiratory syncytial virus.

Conclusions: RV circulate in paediatric population at the beginning of schools despite NPI to avoid SARS-CoV-2 transmission, being the most hospitalizations related to RV-A49.

CLINICAL AND VIROLOGICAL CHARACTERISTICS OF A COHORT OF INFANTS HOSPITALIZED FOR RESPIRATORY SYNCYTIAL VIRUS RELATED BRONCHIOLITIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Respiratory syncytial virus (RSV) is the main responsible of bronchiolitis worldwide. Most children requiring hospitalization are previously healthy but 2-3% of patients develop complications. The absence of predictive markers is one of the main limitations in the management of bronchiolitis. Aims: describe the clinical features of infants hospitalized for RSV bronchiolitis, describe the viral load (VL) at the admission and after 5 days, identify the VL as a possible prognostic marker for bronchiolitis

Methods: we have prospectively enrolled all infants hospitalized in the Pediatric University Department, Bambino Gesù Hospital, Rome, Italy, with a diagnosis of bronchiolitis and RSV infection identified by quantitative PCR on nasopharyngeal swab, from November 2019 to March 2020. For each patient, we collected the medical history; on day 5 +/-2 a swab was repeated for the evaluation of the VL

Results: We enrolled 80 children <12 months with RSV infection. The median age was 41,5 days. 80% were infected by RSV-A, 15% by RSV-B and 5% by RSV A+B. The 13,75% of children needed intensive care. The VL did not correlate with any clinical parameter of severity, however consistent viral clearance was associated with a higher VL at admission(p: 0.041). RSV-B showed a higher VL at compared do RSV-A. Age at admission, prematurity and low birth weight were the most important risk factors for severe disease and readmission.

Conclusions: The VL value at admission and trend does not seems to correlate with the clinical course of bronchiolitis. The most important risk factors were related to the host characteristics. Further studies are needed to evaluate the role of VL and to identify prognostic factors for bronchiolitis.

UNDERSTANDING THE BURDEN OF RSV HOSPITALIZATIONS AMONG YOUNG CHILDREN: AN ADMINISTRATIVE DATABASE ANALYSIS FROM 2015-2018, SPAIN AND PORTUGAL

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Respiratory syncytial virus (RSV) is a leading cause of acute lower respiratory infection (ALRI) in young children. Evidence suggests that combining RSV-specific and ALRI ICD-9/10 codes can improve estimates for RSV hospitalizations. This study aimed to analyse the burden of hospitalizations with/duo to RSV in children, in Spain and Portugal.

Methods: Administrative data of hospitalizations in children under 5 years of age was extracted from National Health System (NHS) hospitals databases, for three seasons (2015/16-2017/2018), which contain all NHS discharges in mainland Portugal and ~60% of NHS discharges in Spain. Three case definitions were considered for potential RSV hospitalizations: (a): RSV-specific; (b): (a) plus unspecific acute bronchiolitis; (c): (b) plus other unspecific ALRI. Results are presented as means, in Spain and Portugal.

Results: Over three seasons, a total of 110,229 cases were identified in Spain and 19,311 in Portugal. Mean hospitalization rate per 1,000 population was 55.5 and 51.5 in the first year of life, 16.0 and 12.5 in the second year and 5.4 and 3.5 above. Otherwise healthy children accounted for 92.9% and 93.1% of cases. Mean length-of-stay was 5.1 days and 5.6, being higher in children with a risk factor. Invasive and non-invasive mechanical ventilation were used in 0.9% and 3.6% of cases in Spain and 1.4% and 6.2% in Portugal.

Table 1. Summary of results for potential RSV related hospitalizations, per RSV case definition (seasons 2015/16 to 2017/18)

Variable	Patients' characteristics	Spain, 2015/16 to 2017/18 ⁽¹⁾			Portugal, 2015/16 to 2017/18 ⁽¹⁾		
		RSV-specific ⁽²⁾	RSV & acute bronchiolitis ⁽³⁾	RSV & ALRI ⁽⁴⁾	RSV-specific ⁽²⁾	RSV & acute bronchiolitis ⁽³⁾	RSV & ALRI ⁽⁴⁾
Total cases (% of total within each case definition)	Total	43,247 (100%)	65,443 (100%)	110,229 (100%)	7,748 (100%)	14,565 (100%)	19,311 (100%)
	[0-24[months	40,914 (94.6%)	62,918 (96.1%)	88,603 (80.4%)	7,452 (96.2%)	14,001 (96.1%)	16,655 (86.2%)
	[24-60[months	2,333 (5.4%)	2,525 (3.9%)	21,626 (19.6%)	296 (3.8%)	564 (3.9%)	2,656 (13.8%)
	No risk factor	40,907 (94.6%)	61,690 (94.3%)	102,437 (92.9%)	7,338 (94.7%)	13,765 (94.5%)	17,977 (93.1%)
	With risk factor	2,340 (5.4%)	3,753 (5.7%)	7,792 (7.1%)	410 (5.3%)	800 (5.5%)	1,334 (6.9%)
Mean hospitalization rate per 1,000 people	[0-12[months	29.4	46.0	55.5	25.3	46.2	51.5
	[12-24[months	3.8	5.1	16.0	3.3	7.6	12.5
	[24-60[months	0.6	0.6	5.4	0.4	0.7	3.5
Mean length-of-stay per episode	Total	5.7	5.4	5.1	6.1	5.4	5.6
	[0-24[months	5.7	5.4	5.3	6.0	5.4	5.7
	[24-60[months	5.0	4.9	4.1	6.3	4.9	5.0
	No risk factor	5.3	5.0	4.6	5.6	5.1	5.1
	With risk factor	12.3	11.2	11.4	14.6	11.4	12.9

(1) Epidemic season includes cases from September to June.

(2) Includes only RSV-specific diagnosis (ICD10 codes: J21.0, J12.1, J20.5 and B97.4; ICD9 codes: 079.6; 466.11; 480.1).

(3) Includes RSV-specific and acute bronchiolitis without specific virus identification diagnosis (previous ICD10 codes, plus J21.8, J21.9; or previous ICD9 codes, plus 466.19).

(4) Includes RSV-specific and other ALRI without specific virus identification diagnosis (previous ICD10 codes, plus J12.8, J12.9, J18.0, J18.8, J18.9, J21.8, J21.9, J20.8, J20.9, J22; or previous ICD9 codes, plus 466.0; 519.8; 480.3; 480.8; 480.9; 487.0; 485; 486).

ALRI - Acute lower respiratory infection; RSV - Respiratory syncytial virus.

Conclusions: In both countries, infections potentially related to RSV led to substantial hospitalizations, length-of-stay, and resource consumption. Otherwise healthy children account for almost all potential RSV hospitalizations in children under 5 years, mostly in the first 2 years of life. Overall, results were similar across countries, except for the use of mechanical ventilation, which was higher in Portugal.

PULMONARY AND SYSTEMIC BACTERIAL CO-INFECTIONS IN SEVERE BRONCHIOLITIS

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Bronchiolitis represents the most common cause of non-elective admission to pediatric intensive care units (PICUs) Antibiotic treatment is recommended in cases suspected of bacterial co-infection. The aim of this study is to estimate the incidence of bacterial co-infections, and the amount of antibiotic use in children with severe bronchiolitis.

Methods: Retrospective study of children with severe bronchiolitis admitted to the PICU of a single tertiary hospital between 2010-2020.

Results: During the study period, bronchiolitis patients (n=85) represented 3.5% of PICU admissions (n=2419), with a median age 2 months and 64.7% males. 35.2% of patients (n=32) had comorbidity, mostly Congenital Heart Disease (31.2%, n=10). RSV was the most frequent pathogen (64.7%, n=55), followed by Rhinovirus (7%, n= 6) and Influenza (5.8%, n=5)). Bacterial co-infection had 37.6% (n=32) patients, mostly pneumonia (43.7%, n=14/ VAP n=4), followed by sepsis (18.7%, n=6, nosocomial n=1), and UTI (n=2, 6.2%). Risk factors for bacterial co-infection included the presence of comorbidities, previous NICU hospitalization and MV. Bacterial coinfection prolonged the PICU LOS (7 vs 4 days, p 0.0002)

Conclusions: Although in previously healthy infants admitted to PICU with bronchiolitis, bacterial co-infection was uncommon, 85.8% of patients (n= 73), including all the intubated patients, received antibiotics. Severe bronchiolitis patients it may not be prudent to withhold antibiotics unless one was certain that a virus infection is documented. Discontinuing antibiotics after 48 hrs, in otherwise stable, healthy infants with known bacterial cultures and viral test results should be considered.

EXTRAPULMONARY MANIFESTATIONS OF SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 INFECTION IN CHILDREN

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - CLINICAL MANIFESTATIONS

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Background and Objective: Children infected with SARS-CoV-2 usually develop asymptomatic or mild disease compared to adults. There is, however, increasing evidence that children may also present with non-specific and/or atypical extrapulmonary manifestation of SARS-CoV-2 infection. The objective of the study was to describe the extrapulmonary/atypical manifestations of COVID-19 in children.

Methods: A literature search was performed in PubMed and Scopus for the time period between 01 January 2020 to 30 October 2020. Peer-reviewed papers in English were retrieved using the following keywords and combinations: 'pediatric', 'child', 'infant', 'neonate', 'novel coronavirus', 'SARS-CoV-2', 'COVID 19' and 'gastrointestinal', 'renal', 'cardiac', 'dermatologic' or 'ophthalmologic'. References within included articles were further reviewed for additional articles. We included published case series and case reports providing clinical symptoms and signs in SARS-CoV2 pediatric patients.

Learning Points/Discussion: The collected data show that in children the clinical manifestations of COVID-19 extend beyond fever and respiratory symptoms. The extrapulmonary and atypical features of COVID-19 include gastrointestinal, ocular, neurologic, cardiovascular, renal and dermatological manifestations. The most frequently described extrapulmonary manifestations include diarrhoea and vomiting, abdominal pain due to mesenteric lymphadenitis, intussusception in infants, conjunctivitis, anosmia/ageusia, generalized seizures, myocarditis, nephrotic syndrome, rhabdomyolysis and papulovesicular or multiforme like exanthem. In addition, the rare multi-inflammatory syndrome associated with SARS-CoV-2 infection has been reported. We conclude that paediatricians should be aware of these presentations to aid early diagnosis and management of COVID-19. It is necessary to continue to monitor these atypical manifestations as the pandemic lasts, so that appropriate testing and public health measures can be implemented rapidly.

STATEMENT OF THE ITALIAN PEDIATRIC SOCIETY ON THE MANAGEMENT OF POST-INFECTIOUS NEUROLOGICAL SYNDROMES

E-POSTER VIEWING

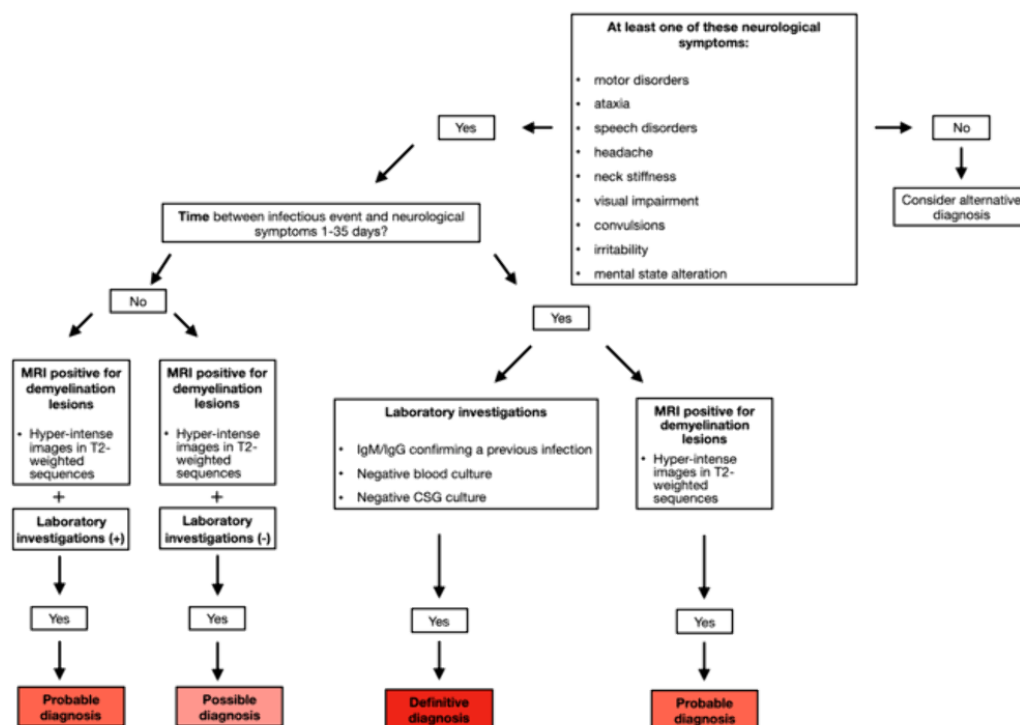
TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - CNS INFECTIONS

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Background and Objective: Background: Post-Infectious Neurological Syndromes (PINS) are heterogeneous neurological disorders with post or para-infectious onset. PINS diagnosis is complex, mainly related to the absence of any recognized guidelines and a univocal definition. Aim of the study: to elaborate a diagnostic guide for PINS.

Methods: We retrospectively analysed patients younger than 14 years old admitted to Bambino Gesù Children's Hospital in Rome for PINS from December 2005 to March 2018. Scientific literature using PubMed as research platform was analysed: the key words "Post-Infectious Neurological Syndromes" were used.

Learning Points/Discussion: A polysymptomatic presentation occurred in a percentage of 88% of the children. Motor signs and visual disturbances the most observed symptoms/signs were the most detached, followed by fever, speech disturbances, sleepiness, headache and bradypsichism. Blood investigations are compatible with inflammation, as a prodromal illnesses was documented in most cases. Normal cerebral spinal fluid (CSF) characteristics has been found in the majority of the study population. Magnetic resonance imaging (MRI) was positive for demyelinating lesions. Antibiotics, acyclovir and steroids have been given as treatment. We suggest diagnostic criteria for diagnosis of PINS, considering the following parameters: neurological symptoms, timing of disease onset, blood and CSF laboratory tests, MRI imaging.



PAEDIATRIC QUALITY OF LIFE IN CONGENITAL CMV: CURRENT KNOWLEDGE AND FUTURE DIRECTIONS

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - CYTOMEGALOVIRUS

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Background and Objective: Congenital cytomegalovirus (cCMV) is the most common congenital infection. Around 25% of infants infected with cCMV develop permanent sequelae. However, there is a paucity of research evaluating the quality of life of children with cCMV. This literature review evaluates current evidence regarding long-term effects of cCMV on infected children, and considers methodology used in quality of life studies that could be applied to cCMV and possible impacts on updated health economic evaluations of cCMV.

Methods: We reviewed studies that reported long-term effects of cCMV on infected children, studies that measured quality of life in children with cCMV and similar paediatric populations, and studies that reported psychometric properties of quality of life measures.

Learning Points/Discussion: This literature review found a high prevalence of long-term sequelae amongst children with cCMV. This is likely to significantly impact quality of life of infected children and their families. Only one study assessed quality of life in children with cCMV and their parents, which was subject to bias and only incorporated one quality of life measure. There is a need for further research evaluating quality of life in cCMV. There are many existing quality of life measures that could be suitable for use in future studies of quality of life in cCMV, with varying psychometric properties and assessing different constructs. Measures should be selected based on their relevance to sequelae of cCMV (for example, inclusion of a hearing-specific measure to assess the effect of sensorineural hearing loss), but generic quality of life measures are also important for comparison to the general population. Researchers should consider the importance of spillover effects on quality of life of family members as well as effects on the child's own quality of life.

LAUNCH OF UNITED AGAINST RABIES (UAR) FORUM BY OIE TO FOSTER ELIMINATION OF RABIES

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - DIGITAL TOOLS AND MACHINE LEARNING FOR PEDIATRIC INFECTIOUS DISEASES

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Background and Objective: Rabies has been declared as the most horrifying and deadly infectious disease among all other pediatric diseases. More than 40% children die of rabies every year due to multifactorial aspects related to humans, animals and the environment. Previously, at 28th of September 2020, the OIE and WHO has collectively launched entitled 'United Against Rabies (UAR), A Global Virtual Event'. The objective of this review is to impart the significance of the global health force under the paradigm of One Health approach by the use of UAR forum.

Methods: The review was conducted by collecting the response from the global participants during the virtual event held at 28th Sep, 2020. The participants conveyed different messages regarding the policy process and future recommendations pertaining to the epidemiology, surveillance, control and elimination of rabies in the online system of the event.

Learning Points/Discussion: Various important points were summarized during the keynote presentations of speakers and the participants which are described below in subheadings; 1. Cross-cutting collaborations: The disease has been referred as the ignored zoonosis and hence, the human and animal health is at stake, therefore, the collaboration of the organisations, NGOs and institutes working in animal and human health, environment and social setups must come forward to take the lead. 2. Setting up Milestones Global targets are needed to be defined and emphasized in the global mission of rabies elimination for different countries endemic with rabies. 3. Fostering One Health Approach in Rabies Endemic States One Health is the solution to eliminate rabies and hence, the problems and obstacles regarding the implementation of this approach are needed to be highlighted in rabies endemic countries. 4. Prioritization and Country Ownerships 5. Role of Stakeholders and improved diagnostics

HHV-6 STATUS IN ALL CHILDREN DIAGNOSED WITH CANCER — NECESSARY OR NOT?

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background and Objective: HHV-6 causes a mild childhood infectious disease in an immunocompetent host, but it could cause severe clinical manifestations in immunocompromised children. There are many reports on severe complications of HHV-6 in children with solid organ and hematopoietic stem cell transplantation (HSCT), but there are few studies that evaluate the impact of HHV-6 in children with malignancies who received chemotherapy without HSCT.

Methods: We carried out a literature review using PUBMED to identify studies published between 2000-2020. The search terms were: „HHV-6“ or „Human herpesvirus 6“ in the age group from 0-18 years. An additional filter was „cancer“. The initial search identified 409 studies; 28 studies met inclusion criteria.

Learning Points/Discussion: Reviewed studies reported the following:

- 1) High seroprevalence of HHV-6 among children with malignancy at the time of diagnosis compared with control groups, indicating the oncogenic potential of HHV-6.
- 2) Statistically, a significant difference between pre- and post-treatment patient samples for HHV-6 IgG seropositivity indicated that primoinfection with HHV-6 among patients during chemotherapy treatment is relatively common. The seroconversion is more prevalent among children with leukemia compared with children diagnosed with solid tumors, which could be attributable to different chemotherapy regimens.
- 3) HHV-6 could be chromosomally integrated, which may be wrongly interpreted as (re)infection and may lead to unnecessary exposure to antiviral drugs.
- 4) Patients diagnosed with HHV-6 DNAemia during chemotherapy had a greater risk for a longer duration of febrile neutropenia, pneumonia, rash, elevated transaminases, lymphopenia, and agranulocytosis.
- 5) HHV-6 has an immunomodulatory effect and increases the risk for CMV and other opportunistic infections.

These findings suggest that assessment of HHV-6 status should be determined in all children diagnosed with malignancy, but more comprehensive studies are required.

PAEDIATRIC CLINICAL APPLICATION OF BACTERIOPHAGE THERAPY IN THE “POST-ANTIBIOTIC ERA”: CURRENT USE AND GUIDELINES

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - NOVEL ANTIMICROBIAL TREATMENTS

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Background and Objective: With rising incidence of multi-drug resistant pathogens, we are approaching the “post-antibiotic era”. Without discovery of new antibiotics, the consequences of AMR would be devastating, more so to paediatric practice. The resurgence of bacteriophage therapy, a previously abandoned predecessor of antibiotics has however offered renewed hope. While there have been a few documented cases of its use, only five of these were in paediatric patients. Here, I review these cases and appraise the guidelines for use of phage therapy in paediatric practice.

Methods: A search for relevant papers on the PubMed and Google Scholar databases; and a manual search of grey literature was conducted, using the keywords: “bacteriophage therapy”, “phage therapy”, “case report”, “paediatric”, “antimicrobial resistance” and “phage therapy guidelines”. Initial results were screened and irrelevant articles were excluded. A final list of five case reports was considered for this review.

Learning Points/Discussion: Figure1 summarises the details of the five paediatric cases of bacteriophage therapy use.

Age, Sex	Indication for Bacteriophage therapy	Bacteriophage cocktail used	Dosage and route of administration	Clinical outcome	Survival	Concomitant antibiotics use
2 y.o., m.	Recalcitrant multi-drug resistant <i>Pseudomonas aeruginosa</i> infection with complicated sepsis, following cardiovascular surgeries	<i>P. aeruginosa</i> bacteriophage obtained from the US Navy	3.5×10^6 PFU administered intravenously, every 6 hours	<i>P. aeruginosa</i> not detected.	Patient suffered a cardiac arrest after the sixth dose and treatment was discontinued. Patient subsequently died a few days later	Yes. Combination regimen of meropenem, tobramycin and polymyxin B
13 y.o., m.	Continuous isolation of <i>P. aeruginosa</i> from a sternal wound despite conventional antibiotic therapy, following double lung transplantation	<i>Pseudomonas</i> phage PAS and <i>Pseudomonas</i> phage PA10	4×10^{10} PFU/mL administered intravenously	<i>P. aeruginosa</i> not detected, sternal wound closure.	Untill present	Yes. Combination regimen of intravenously colistin (2 MIU; twice daily), ceftazidime (750 mg) and intravenous avibactam (187.5 mg; thrice daily)
15 y.o.	Cystic fibrosis patient with disseminated multi-drug resistant <i>Mycobacterium abscessus</i> infection following bilateral lung transplantation	Phages Muddy, ZoeJ45 and BP33HTH-HRM10	10^8 PFU/mL of each phage, administered intravenously every 12 hours for 32 weeks	<i>M. abscessus</i> not detected, sternal wound closure, improved liver function and resolution of infected skin nodules	Untill present	No
16 y.o., m.	Netherton syndrome patient with multi-drug resistant <i>Staphylococcal</i> skin infection	<i>Staphylococcus</i> Sb1 phage and Pyobacteriophage from the Eliava Phage Therapy Centre, Tbilisi, Georgia	10mL of Pyobacteriophage solution orally once daily, 10mL of <i>Staphylococcus</i> Sb1 phage orally once daily (preceded by stomach acid neutralization using 100 mL of “Borjomi” alkaline water) and topical administration of bacteriophage solution to skin lesion.	Skin lesions became smaller by 7th day of treatment, <i>S. aureus</i> not detected by 6 months post-treatment	Untill present	No. Due to allergic reaction to multiple antibiotic agents, including cephalosporins (cefuroxime), penicillin, macrolides, sulphonamides and aminoglycosides
17 y.o., f.	Cystic fibrosis patient with multi-drug resistant <i>Achromobacter xylosoxidans</i> chronic lung infection	<i>Achromobacter</i> phage cocktail from the Eliava Institute of Bacteriophages, Microbiology and Virology, Tbilisi, Georgia and Leibniz Institute, Germany	3×10^5 PFU/mL of <i>Achromobacter xylosoxidans</i> phage preparation in a compression nebulizer once daily for 20 days, repeated at 1 month, 3 months, 6 months and 12 months after initial treatment	Significantly improved lung function by 3 months post-treatment	Untill present	Yes. Colistin, trimetoprim-sulfamethoxazole, ciprofloxacin and tobramycin aerosols, intravenous piperacillin/taobactam

Table 1: Summary of paediatric cases of compassionate phage therapy

Currently, there is no phage-based therapeutic agent approved for commercial use by the EMA or FDA. Consequently, there are no regulatory guidelines for the use of bacteriophage-based therapeutics in clinical practice. From the few successful compassionate uses, the following inferences can be drawn: - bacteriophage therapy should only be considered when other antibiotic options have failed -establishment of lytic phage library is crucial to determining which bacteriophages would be safe and effective for use - multiple phage products should be combined in a cocktail to prevent development of phage-resistant bacteria species -when possible a combination of antibiotic and bacteriophage therapy should be employed to harness their synergistic effect -the best route of administration which is one that delivers the phage directly to the site of infection should be selected

PERSONALISED PHAGE THERAPY CENTRE: NEED OF THE HOUR

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - NOVEL ANTIMICROBIAL TREATMENTS

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¹Mehr Chand Mahajan DAV College for Women, Microbial And Food Technology, Chandigarh, India,

²MCM DAV College, Microbial And Food Technology, Chandigarh, India

Background and Objective: Rising threat of antibiotic resistance and evident dearth of new antibiotics, presses on the need of focusing on alternative non-antibiotic approaches. Modern phage therapy represents a potent, safe treatment option as supported by data published till date. The present review highlights on setting up of a "Personalized Phage Therapy Centre" aiming to save lives of those not responding to antibiotics. We present the complete set-up required, co-ordinated networking of various units for setting up phage treatment centers (presently lacking) essential for clinical success of phage therapy especially for compassionate use.

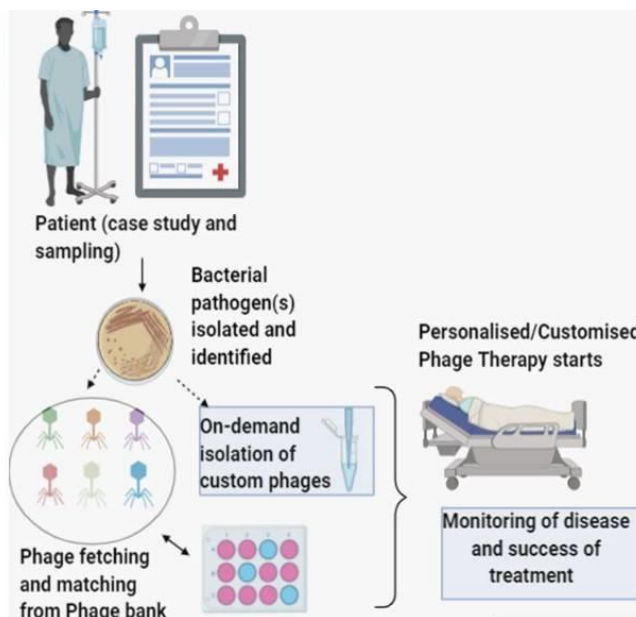
Methods: This is literature review highlighting on the need to set up a Personalised Phage Therapy based treatment centre and the co-ordinated networking required. We have made the present review based on data collected from previous and latest published data from Pubmed.

Learning Points/Discussion:

"Personalized Phage Therapy- A Step Ahead (New world of treatment.....)"

✓Personalized Phage therapy for approval by FDA (under compassionate use)

in case of highly vulnerable patients with chronic untreatable bacterial infection as an emergency use drug, (when antibiotics stop working)



Personalized Phage therapy is a non-antibiotic approach that should be given utmost priority in research for its clinical approval and success. Personalised or customised approach will have higher rate of clinical success in patients as it will include careful matching of phages with pathogenic strain involved. Although approved in Russia and few European countries, phage therapy is still not FDA approved in Western countries and Asian countries. Also, presently we have very few phage therapy based centres worldwide with none in developing countries. Use of Personalized Phage therapy should be on fast track approval by FDA in case of highly vulnerable patients with chronic untreatable bacterial infection as an emergency use drug, (when antibiotics stop working) under compassionate use. Also, setting up of phage therapy library cum bank and treatment center should be backed and supported by govt. funds and schemes. We present co-ordinated network required, units and sub-units essential for functioning of such centres.

A CURRICULUM OVERVIEW OF ANTIBIOTIC MANAGEMENT COURSE OFFERED BY THE EUROPEAN SOCIETY OF PAEDIATRIC INFECTIOUS DISEASES (ESPID)

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - OTHER

Maryam Amirrad

MOHAP, Paediatrics, Dubai, United Arab Emirates

Background and Objective: Due to the misuse of antibiotics, a high level of antimicrobial resistance has emerged, while the supply of new antibiotics has reached almost the end of the pipeline (Dixon, J., Duncan, C., 2014). Therefore, many world-wide institutions have aimed at providing courses or programs regarding antimicrobial stewardship. The aim of this review is: to describe the curriculum of the Antibiotic Management Course (AMC) offered by the European Society of Pediatric Infectious Diseases (ESPID, 2021), to define the teaching and assessment methods used, and to provide recommendations for educational development of the AMC.

Methods: The information to describe the curriculum was gathered from ESPID's website. Educational methods in the literature were reviewed to define the teaching and assessment methods and provide recommendations for future improvement of the AMC.

Learning Points/Discussion: Readings, problem-based learning (PBL), and online discussions are used in AMC. Using PBL in the curriculum actively involves the students in learning, and preserves their autonomy and control (Spaulding, 1991). The course is based on Self-Regulated Learning (SRL) which is one of the known learning strategies used by educators to help students organize their learning goals (Boekaerts, 1997). SRL is defined by Zimmerman (1986) as "an active participation of students, metacognitively, motivationally, and behaviorally in their learning process" (p. 308). Recommendations - A review of the competencies can be conducted to follow the international guidelines of antimicrobial prescribing and stewardship competencies. - The content of the curriculum can be broadened to cover the outpatient settings where a lot of antibiotic overuse happens worldwide (Holstiege, et al., 2014). - A short workshop at the end of modules supports the application of the learned knowledge and acquired competencies. - Integration of more case-based scenarios and illustrations in the tests and final assessment.

ASSOCIATION BETWEEN GENETIC POLYMORPHISMS AND PEDIATRIC SEPSIS: SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - OTHER

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Background and Objective: The wide variability in pediatric septic patients' outcomes, confirms the knowledge gap on sepsis pathophysiology. Current medical research has focused on genetic variations that may predispose individuals for increased susceptibility and unfavorable outcomes.

Methods: A systematic review of English literature was performed based on PRISMA guidelines. We reviewed studies investigating possible association between genetic polymorphisms (SNPs) and sepsis in pediatric population, published until the 30th of June 2020 in Pubmed and Scopus databases.

Learning Points/Discussion: From 3053 studies that identified fifty eight fulfilled the inclusion criteria. Most of them were case control studies. Twenty nine studies included premature newborns, 6 full term newborns, 2 neonates regardless of gestation age and 21 infants and children. Genes that were studied included IL-1b, IL6, IL10, TNF, MBL, ACE, TLR4 and CD14 . Most common SNPs predisposing to sepsis were rs1800795 at IL6 gene detected in 11/58, and rs1800629 polymorphism of TNF gene studied in 10/58. SNPs protecting from sepsis were also reported such as BPI rs4358188 and DEF-b1 rs1799946, but further research needs to be done to establish positive association. Current sepsis management strategies focus on identification of environmental risk factors for prevention and new antibiotics development. Meanwhile, identification of SNPs in the regulatory and coding regions of genes for components of the innate immune system contributing to sepsis risk, may lead to an individualized approach. Recognition of vulnerable patients could give the opportunity for immediate and appropriate treatment. However, the disparate results emphasize the need for further studies.

**EVOLUTION OF THE GLOBAL EPIDEMIOLOGY OF INVASIVE MENINGOCOCCAL DISEASE (IMD)
2010-2019: A LITERATURE REVIEW**

E-POSTER VIEWING

**TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - POPULATION STUDIES AND
SURVEILLANCE**

Carmen Pardo De Santayana¹, Paul Balmer², Jamie Findlow³, Myint Tin Tin Htar¹

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Background and Objective: Invasive meningococcal disease (IMD) has a constantly evolving epidemiology and substantial morbidity and mortality. This literature review reports the evolution of IMD incidence and serogroup distribution worldwide from 2010 to 2019.

Methods: Observational studies and national surveillance reports (January 2010-June 2020) were reviewed. Main outcomes were overall incidence and serogroup proportion, overall and by age groups.

Learning Points/Discussion: Of 1763 articles and 339 reports identified, 23 and 99 were included, respectively. IMD incidence (/10⁵) generally decreased; in North America (0.45 to 0.32 in Canada 2010-2017, 0.12-0.1 in US 2015-2018), Europe (0.73 to 0.62, 2010-2018), and South America (1.54 to 0.53 in Brazil 2010-2018, 0.67 to 0.36 Chile 2012-2019). Evolution varied in other countries such as Russia, Saudi Arabia and New Zealand, and incidence showed sudden peaks within the Meningitis Belt. In 2010, MenABCWY globally represented 82% (South Africa) - 100% (Colombia, Paraguay, Canada, Uruguay) of all IMD. In 2018, this was 68% (Africa) - 100% (Brazil), registering similar ranges across Europe. In 2010, MenB predominated notably >50% in Quebec, Europe (in 14 countries) Oceania and Israel, whereas MenC predominated in Brazil and MenW in Africa and Argentina. In 2018, MenB generally remained the most predominant serogroup, while MenW increased proportionally from 2010 to 2018 in Europe (3 to 23% in UK, 4 to 50% in Netherlands), South America (11 to 50% Chile, 7 to 15% in Brazil) and Oceania (4 to 36%, Australia, 7 to 27% New Zealand). In Europe, MenB mostly affected young children and adolescents; MenW and Y affected the older adults. IMD epidemiology is constantly evolving with changes in individual disease-associated serogroups over time. Despite this serogroups A, B, C, W, Y, all vaccine preventable, remain the main cause of IMD.

CURRENT GLOBAL EPIDEMIOLOGY OF INVASIVE MENINGOCOCCAL DISEASE (IMD), 2017-2019: A LITERATURE REVIEW.

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - POPULATION STUDIES AND SURVEILLANCE

Carmen Pardo De Santayana¹, Paul Balmer², Jamie Findlow³, Myint Tin Tin Htar¹

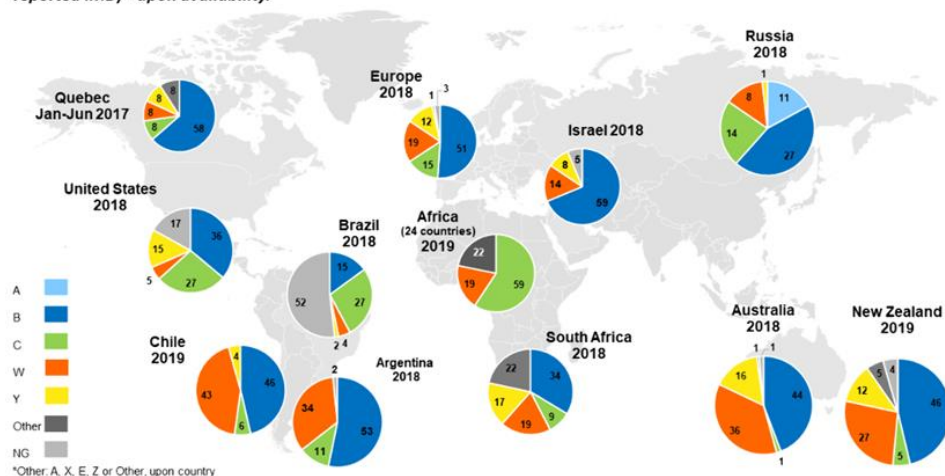
¹Pfizer, Medical Development, Scientific & Clinical Affairs, Paris, France, ²Pfizer, Medical Development, Scientific & Clinical Affairs, Colleagueville, United States of America, ³Pfizer, Medical Development, Scientific & Clinical Affairs, Surrey, United Kingdom

Background and Objective: Invasive meningococcal disease (IMD), with substantial worldwide disease burden, has a constantly evolving global epidemiology. Understanding the current epidemiology is important for vaccine program decision making.

Methods: Published observational studies through Medline and national surveillance reports through Google search from 1st January 2010 to 30th June 2020 were identified and reviewed. Main outcomes were IMD incidence and serogroup distribution. The IMD epidemiology within 2017-2019 was reported here.

Learning Points/Discussion: A total of 1763 articles and 339 surveillance reports were identified, 23 and 99 included, respectively. During 2017-2019, overall IMD incidence (105) was 0.32 in Canada (2017) and 0.10 in the US (2018). It ranged from 0 to 2.39 in Europe (2017-2018), 0.36 to 0.53 in South America (2018-2019), 0.03 to 0.70 in Asia (2018) and 0.24 to 2.09 (2017-2018) in Africa. Highest incidence rates were observed in infants <1 year of age, ranging from 0.83 (US) to 28.20 (New Zealand), followed by children 1-4 years old and adolescents. Relatively high incidence was also observed in older adults in the US, Netherlands, Norway, Spain, and Malta. Serogroups ABCWY were responsible for 71-100% of all IMD. MenB was generally predominant reaching over 50% of all IMD in Quebec, Europe, Argentina, and Israel. MenC was predominant in Brazil (27%) and the Africa (59%). MenW was predominant (>40%) in Chile and Netherlands and second most predominant in South Africa, Argentina, Oceania and most of European countries (up to 38%) (Figure 1). IMD is a relatively rare disease but remains a public health concern. It is observed across all ages, but infants/young children are at highest risk followed by adolescents. Majority of all confirmed IMD were due to serogroups ABCWY, which are vaccine preventable.

Figure 1. Serogroup distribution of Invasive Meningococcal Disease Worldwide (2017-2019), (Serogroup % among all reported IMD) - upon availability.



REVIEW OF THE FOUR-COMPONENT MENINGOCOCCAL SEROGROUP B VACCINE REGISTRATIONS, RECOMMENDATIONS, AND USE IN REGIONAL AND NATIONAL IMMUNIZATION PROGRAMS

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - POPULATION STUDIES AND SURVEILLANCE

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Background and Objective: The development of the four-component meningococcal serogroup B vaccine (4CMenB) was realized through advancements in reverse vaccinology and was considered a scientific breakthrough. However, eight years since the first registration in Europe there are still gaps in the implementation of the vaccine. In this abstract, we provide an overview of the current 4CMenB registration status, recommendations, and use in Regional and National Immunization Programs (RIPs and NIPs).

Methods: We reviewed the recommendations and immunization programs in all countries where 4CMenB was registered through non-systematic literature search and review of country-specific recommendations from recommending bodies and medical societies, and the use in RIPs and NIPs.

Learning Points/Discussion: 4CMenB is registered in 45 countries, among which thirty-three national expert bodies have made clinical recommendations for its use as of January 2021 (Figure). Nine countries recommend 4CMenB for all infants, children, adolescents, and high-risk groups; ten others recommend it for infants and high-risk groups; and two for the infant population only; the remaining 11 countries recommend it for high-risk groups. The United States recommends 4CMenB for individuals 16-23 years of age, with a preferred vaccination at 16-18 years based on shared clinical decision making and high-risk groups. To date, 4CMenB has been introduced into RIPs in Australia and Spain and in the NIPs of the United Kingdom, Andorra, Ireland, Italy, San Marino, Lithuania, Malta, Czech Republic, and Portugal. Although most countries have recommendations, not all have implemented routine immunization programs. In the future, more countries may consider Men B programs based on increasing evidence on effectiveness and safety from countries where the vaccine has been made available.

Countries	Infant	Child	Adolescent	High-risk
Australia, Austria, Belgium, Brazil, Canada, Canada, Czech Republic, Denmark, Hungary, and Hungary	■	■	■	■
China, France, Germany, India, Italy, Lithuania, Poland, Portugal, Spain, and the United Kingdom	■			■
Indonesia and India	■			
Argentina, Canada, Finland, France, Germany, Luxembourg, New Zealand, Norway, Russia, Russia, and Singapore				■
Total	■	■	■	■

FUNDING: GlaxoSmithKline Biologicals SA funded this study and all costs related to the development of the publications.

MENINGOCOCCAL DISEASE OUTBREAKS: A MOVING TARGET AND A CASE FOR PREVENTATIVE VACCINATION

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - POPULATION STUDIES AND SURVEILLANCE

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Background and Objective: *Neisseria meningitidis* undergoes continuous antigenic change and strain evolution. Outbreaks of invasive meningococcal disease (IMD) occur when a new virulent strain meets a non-immune population. Outbreaks are therefore characterized by their unpredictability.

Methods: We assessed outbreak response strategies and the impact of interventions in a non-systematic literature search in PubMed from 1997-2020.

Learning Points/Discussion: Since 1997, IMD outbreaks have occurred on all continents and have been caused by serogroups A, B, C, W, Y and X. Emergency mass vaccination campaigns have been undertaken in institutions (e.g. serogroup B outbreaks in US colleges) through to regional/national levels (e.g. serogroup B outbreaks in Saguenay-Lac-Saint-Jean, Canada, and New Zealand). For most emergency responses the vaccine impact could not be measured. Emergency vaccination responses to IMD outbreaks consistently incurred substantial costs in terms of direct monetary expenditure on vaccine supplies, personnel, and interruption to other programs. Impediments included the need for rapid transmission of information to parents/communities/healthcare workers; issues around adherence of target population; geographic and logistical challenges; poor vaccine uptake by older adolescents/young adults, often a target age-group; and difficulties in obtaining large quantities of vaccine very quickly. For serogroup B outbreaks, the need for 2 doses was a significant issue, contributing substantially to costs, delayed onset of protection and non-compliance with Dose 2. Real-world descriptions of outbreak control strategies and the associated challenges show that without exception, reactive outbreak management is administratively, logistically, and financially costly, and the impact is often difficult to measure. Highly effective vaccines covering 5 of 6 disease-causing serogroups are available. In view of the unpredictability, rapidity and potential lethality of outbreak-associated IMD, prevention through routine vaccination is the most effective means of control.

GLOBAL EVOLUTION OF ANTIMICROBIAL RESISTANCE IN NEISSERIA MENINGITIDIS AND PUBLIC HEALTH IMPLICATIONS

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - THE SPREAD OF ANTIMICROBIAL RESISTANCE

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Background and Objective: Antimicrobial resistance (AMR) has increased worldwide in *Neisseria meningitidis* (Nm) isolates in recent years. Although numbers are still small, this might pose a serious health threat as antibiotics are widely used to treat invasive meningococcal diseases (IMD), as chemoprophylaxis in patients' contacts, and during outbreaks. We provide an overview of the current situation from AMR data in Nm isolates reported worldwide.

Methods: We reviewed available surveillance data (1983-2020) to conduct a descriptive analysis of AMR in Nm isolates worldwide. AMR data were included regardless of patient's age, geography, invasive/non-invasive isolate, number of isolates and identified serogroup. Studies reporting only reduced susceptibility were excluded.

Learning Points/Discussion: Our analysis included datasets from 49 countries, which reported AMR in Nm isolates to classic antibiotics, new generation antibiotics, or both. Penicillin was widely used as both IMD chemoprophylaxis and treatment. Resistance to penicillin, however, was first reported in the early 80s, and since then has been constantly notified. The use of other classic or new generation antibiotics was, therefore, recommended by international and local guidelines as first-line agents for empiric bacterial meningitis treatment and for chemoprophylaxis. As expected, AMR to these antibiotics has also been reported. Results for countries reporting AMR to classic, novel or both types of antibiotics are summarized in Figure 1. Further surveillance of AMR in meningococcal isolates is advised, to assess the impact of antibiotic use and the evolution of AMR. As with *Streptococcus pneumoniae*, the emergence of AMR in Nm isolates is worthy of concern, as it might hamper the options available for the prevention and treatment of meningococcal infections. Meningococcal vaccines should be considered to prevent IMD and thereby reduce antibiotic use and the risk of acquisition and spread of AMR.

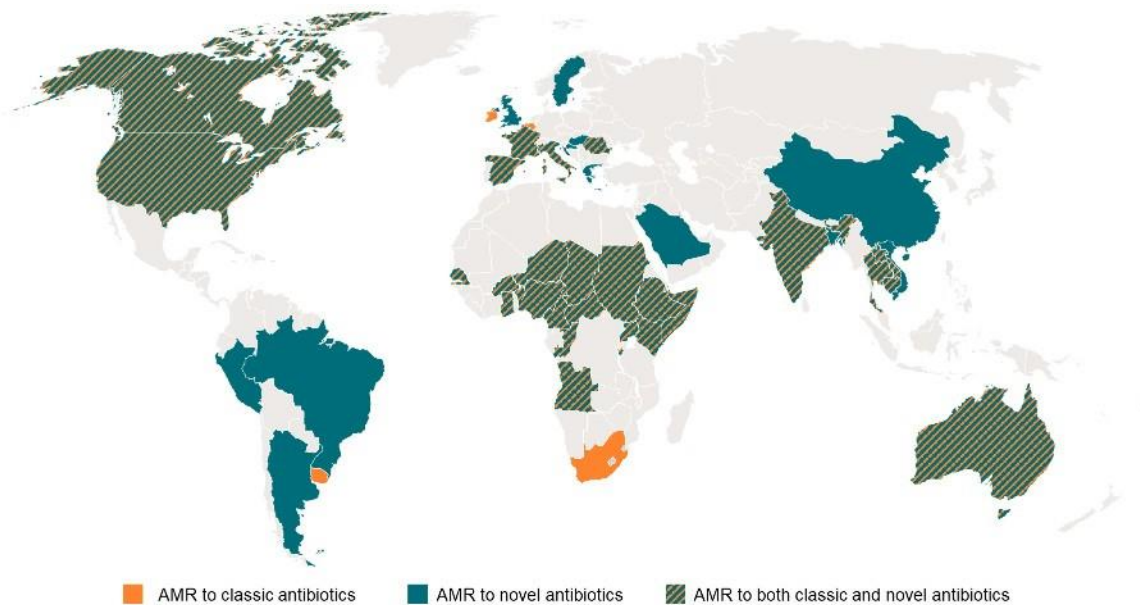


Figure 1. Countries reporting AMR in *Neisseria meningitidis* isolates.

Classic antibiotics: amoxicillin, ampicillin, benzylpenicillin (penicillin G), minocycline, penicillin, penicillin V, sulfadiazine, sulphonamides and tetracycline.

Novel antibiotics: azithromycin, cefotaxime, cefuroxime, ceftriaxone, chloramphenicol, ciprofloxacin, erythromycin, levofloxacin, meropenem, ofloxacin, rifampicin and trimethoprim-sulfamethoxazole and cotrimoxazole.

AMR: antimicrobial resistance.

Note: Countries (period of time) included in the analysis were: African Meningitis Belt (2000-2006); Argentina (2010-2011); Australia (2010, 2013-2016, 2019); Bangladesh (1999-2006); Belgium (2000-2010); Brazil (2009-2016); Cambodia, Thailand and Laos (2007–2018); Cameroon (2012); Canada (1983, 2006, 2013-2016); China (1978-2016); Croatia (2009-2014); England/Wales (1984-1997, 2019); Ethiopia (2009, 2019-2020); France (1987-2011, 2017); Greece (2020); Hungary (2013); India (2005-2006, 2012); Ireland (1996-2016); Italy (1995-2016, 2018, 2019); Peru (1999, 2017); Romania (2007-2008); Saudi Arabia (2019); Singapore (2000-2008); South Africa (1987); Spain (1988, 1994-2011); Sweden (1995-2011); United Kingdom (1984-1987, 2019); United States of America (1984, 1993-2004, 2007-2011, 2013-2020); Uruguay (2010); Vietnam (1987-1996).

PARADOXICAL REACTION IN TUBERCULOSIS DISEASE WITH WORSENING SIGNS AND SYMPTOMS DURING TREATMENT IN IMMUNOCOMPETENT CHILDREN – A LITERATURE REVIEW

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Background and Objective: Worsening signs and symptoms in children with proven TB disease more than two weeks after starting anti-tuberculous treatment (ATT) is a well-recognized and concerning entity. This paradoxical reaction (PR) is defined as clinical or radiological worsening of pre-existing tuberculous lesion(s) or development of new lesion(s) in patients who initially improve with ATT. It has most frequently been described in HIV-infected individuals but is also seen in immunocompetent children.

Methods: Literature search was done (31 January 2021) using Web of Science (databases including MEDLINE). MeSH search terms were "paradoxic" OR "upgrading", "reaction", "deterioration", "tuberculosis". Filter applied: child: birth-18years. A total of 218 records were identified including 6 case series reporting more than 2 cases. Characteristics of reported cases are shown in **Figure**.

Learning Points/Discussion: PR occurs in 3–15% of patients with TB according to current literature. PR develops mostly within the first months after the start of ATT and varies in its severity and duration. Diagnostic biomarkers for PR are lacking. Most frequent affected sites are lymph nodes and the central nervous system (CNS). As pathophysiological cause, hypersensitivity to release of and the persistence of the TB-antigens (tuberculo-protein/cell-wall) has been postulated. Described risk factors in children are young age, multifocal disease, high bacillary load and elevated monocytes. Treatment failure due to drug resistance, insufficient drug concentrations as a result poor adherence or underdosing should be ruled out, when PR is suspected. Corticosteroids treatment is commonly used, especially in case of CNS involvement. Larger international cohorts to study risk factors and formulate guidelines on diagnosis and treatment are necessary.

Publication year	Country	Observation period (y)	PR cases	Age, mean (range)	Site of primary diagnosis (cases)	PR manifestation after primary diagnosis (time range)	Paradoxical reaction (cases)
1987	Hong Kong	3	5	12.5 y (4 m - 17 y)	intracranial (5)	10 d - 5 m	worsening primary/increase size primary (incl. tuberculoma) (5)
2006	India	13	10	12.9 y (6 - 18)	intracranial (10)	3 w - 1 y	worsening primary/increase size primary (incl. tuberculoma) (10)
2012	Canada	7	15	9.8 y (0.2 - 17)	multiple sites (6) intracranial (3) intrathoracic (10) abdomen (1) lymphnode (2)	10 - 181 d	worsening primary/increase size primary (13) new sites (abdomen) (2)
2013	Belgium	13	12	26 m (5 -148)	intrathoracic (10) lymphnode (1) multiple sites (1)	15 - 75 d	worsening primary/increase size primary (9) new sites (2 lymphnode, 1 pleural) (3)
2016	Spain	5	5	2.6 y (1.6 – 7.2)	intrathoracic (4) intracranial (1)	23 - 53 d	worsening primary/increase size primary (5)
2017	India	5	33	4.3 y	intrathoracic (15) intracranial (7) multiple sites (6) abdomen (1) lymphnode (3)	mean: 104 d	worsening primary/increase size primary (27) new sites (4 lymphnode; 2 pericardial effusion) (6)

Figure: Characteristics of paediatric tuberculosis disease cases with paradoxical reaction. (PR: paradoxical reaction; y:years; m:months; w:weeks; d:days)

REAL-WORLD IMPACT AND EFFECTIVENESS OF MENACWY-TT

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - VACCINE DEVELOPMENT (PHASE 1-2) – BACTERIAL AND ALL NON-VIRAL

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Background and Objective: The meningococcal ACWY polysaccharide conjugate vaccine using tetanus toxoid as a carrier protein (MenACWY-TT) is licensed to prevent disease caused by meningococcal serogroups A, C, W, and Y in individuals aged ≥ 6 weeks. Since its licensure in 2012, MenACWY-TT use has increased, and it has been implemented into many national immunization programs (NIPs). We provide an overview of the recent impact and real-world effectiveness from several countries.

Methods: Meningococcal disease epidemiology, vaccine impact, and effectiveness data were collected from countries that introduced MenACWY-TT into their NIPs. The Netherlands used MenACWY-TT exclusively and routinely vaccinates toddlers at 14 months of age and adolescents at 14 to 18 years of age. Data were also available from Australia, Chile, and England, where MenACWY-TT was recently used exclusively or predominantly in the NIP, despite other MenACWY vaccines being previously used. Due to low numbers of MenA cases in these countries, vaccine impact for this serogroup was not determined.

Learning Points/Discussion: Results: MenACWY-TT vaccine effectiveness (VE) of 92% was reported against MenW disease after vaccination of toddlers in the Netherlands (VE data in adolescents were not available as no MenW cases were observed). The toddler program in conjunction with the adolescent program resulted in a decrease of 85% in MenCWY cases in vaccine-eligible age groups. Decreases in the number of MenCWY cases were similarly reported in vaccine-eligible age groups in Australia, Chile, and England (Table). In nonvaccine-eligible ages, decreases in MenCWY cases were also observed, indicating potential indirect (herd) protection. **Conclusions:** Recent data from multiple countries have confirmed the effectiveness of MenACWY-TT, providing direct protection in toddler and adolescent age groups, and indirect protection imparted through adolescent vaccination programs. Funded by Pfizer Inc.

Table. Reduction of MenACWY invasive meningococcal disease due to MenACWY programs in several countries

Serogroup	CWY	C	W	Y
The Netherlands (2017/2018 vs 2019/2020)*				
One dose (toddlers and adolescents) + catch-up [†] (MenACWY-TT program introduced in 2018)				
Vaccine-eligible ages (15–36 months and 14–18 years of age)	85% (32, 97)	–	82% (18, 96)	–
Nonvaccine-eligible ages (all other ages)	50% (28, 65)	–	57% (34, 72)	–
England[‡] (2015/2016 vs 2018/2019)				
One dose (adolescents) + catch-up [§] (<25 years old; MenACWY program introduced in 2015)				
10–25 years of age	78%	100%	80%	72%
25+ years	26%	-3%	32%	27%
All ages	39%	-2%	46%	42%
Australia[‡] (2017 vs 2019)				
One dose (toddlers and adolescents; MenACWY-TT introduced in 2017–2018)				
Vaccine-eligible ages (1–4 years + 15–19 years)	83%	100%	90%	50%
25+ years	50%	69%	46%	51%
All ages	56%	57%	62%	44%
Chile[‡] (2014–2019)				
One dose (toddlers) + catch-up (mass vaccination in 2012; MenACWY-TT introduced in 2014)				
Vaccine-eligible ages (1–4 years)	–	–	80%	–
25+ years	–	–	68%	–
All ages	–	–	71%	–

MenACWY=meningococcal serogroups ACWY; MenACWY-TT=meningococcal serogroups ACWY vaccine conjugated to tetanus toxoid as a carrier protein; MenCWY=meningococcal serogroups CWY.

*Reduction in incidence rate with 95% CI.

[†]Catch-up campaign using a single dose of MenACWY-TT for those 14–18 years of age (birth cohorts 2001–2005) undertaken between October 2018 and June 2019.

[‡]Reduction in number of cases.

[§]Catch-up program offered to individuals 14–18 years of age and up to 25 years of age.

^{||}Mass MenACWY vaccination campaign to children 9 months to 4 years of age between October 2012 and December 2013.

RECENT ADVANCES IN MENINGOCOCCAL B DISEASE PREVENTION: REAL WORLD EVIDENCE FROM 4CMENB VACCINATION

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

Federico Martín-Torres¹, Angelika Banzhoff², Chiara Azzari³, Philippe De Wals⁴, Robin Marlow⁵, Helen Marshall⁶, Mariagrazia Pizza⁷, Rino Rappuoli⁷, Rafik Bekkat-Berkani⁸

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Background and Objective: The 4-component meningococcal serogroup B (MenB) vaccine (4CMenB) was licensed in 2013 based on immunogenicity and safety data. Considerable real-world data describing its impact, effectiveness and safety have only recently accumulated following 4CMenB program introduction.

Methods: Available evidence on vaccine impact (VI), effectiveness (VE) and safety of 4CMenB in routine use were reviewed.

Learning Points/Discussion: Estimates of VE are available from 5 countries obtained during funded routine use in the United Kingdom (UK) and Italy; a healthcare setting in Portugal; a prospective observational study in South Australia; and outbreak control in Saguenay-Lac-Saint-Jean, Canada. VE of at least 3 doses of 4CMenB administered to infants ranged from 59.1% to 93.6%, and estimates were usually higher than predicted strain coverage rates using the Meningococcal Antigen Typing System (MATS). VE in children and adolescents (including 2 months to 20-year-olds in Quebec), was 100% in the first 2-3 years after vaccination. Effectiveness was sustained for 4 years in Quebec and for 2 years after the booster dose in young children vaccinated in infancy in the UK. The impact of 4CMenB on MenB invasive disease was demonstrated in infants in the UK, Italy, and Spain, and in children/adolescents/young adults in prolonged outbreaks in Saguenay-Lac-Saint-Jean and South Australia. VI on university/college outbreaks cannot be measured due to the small number of cases. However, the absence of breakthrough cases after vaccine implementation is suggestive of VI. The safety profile of 4CMenB administered in real-world settings appears to reflect that established in pre-licensure clinical trials. No safety concerns have been raised in post-marketing surveillance. The substantial body of data demonstrating 4CMenB effectiveness and impact in real-world settings supports its use in IMD prevention.

THE EVOLUTION OF MENINGOCOCCAL VACCINATION STRATEGIES IN EUROPE

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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Background and Objective: Invasive meningococcal disease (IMD) is an uncommon but life-threatening and unpredictable condition with highest incidence in infants, young children and adolescents. Vaccines are available for the prevention of the five most frequent meningococcal serogroups (MenA/B/C/W/Y). Herein, an overview of vaccination strategies evolution implemented in the national immunisation programmes in Europe from 1999 to 2020 is reviewed.

Methods: Data was retrieved from Global, European and national health organizations websites for vaccination schedules, type, and targeted age groups. In addition, a literature search was performed using PubMed. Accordingly, we reported the vaccination strategies in an overview and in addition, we described their historical evolution in 5 selected countries (The United Kingdom (UK), The Netherlands, Greece, Italy and Ireland).

Learning Points/Discussion: European vaccination programs are dynamic and different despite some commonalities. Almost all countries introduced vaccination recommendations for population at high-risk of invasive meningococcal disease once the vaccines were licensed. The main factors determining the vaccination strategies were: fluctuating IMD epidemiology, ease of vaccine implementation, ability to induce herd protection, immune response persistence, favourable benefit-risk balance and cost-effectiveness. The MenC vaccine was first implemented in infants in the UK in 1999 followed by the other countries, while MenACWY was first introduced in adolescents in Greece in 2011. In some countries (including the Netherlands, the UK and Ireland), the adolescent MenC dose was replaced by a MenACWY. From 2015, and following the UK, an increasing number of countries are also introducing MenB vaccination during infancy. Future strategies will have to depend on several factors such as, but not limited to, epidemiological changes and availability of vaccines with broader serogroup coverage with cost-effectiveness considerations. GlaxoSmithKline Biologicals SA funded this study.

REAL-WORLD EVIDENCE FOR HEALTHCARE PROFESSIONALS - A REVIEW OF COMMON METHODS AND OUTCOMES FOR POST-MARKETING VACCINE ASSESSMENT

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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Background and Objective: Licensure of vaccines has largely been dependent on outcomes data from clinical trial (CT) populations. As vaccines enter into routine use, real-world evidence (RWE) from the general population becomes available. The performance of vaccines under real-life circumstances is important to inform public health decisions. RWE methodology is, however, less well known in the medical field than CT methodology. A review of the most common RWE methodologies and outcomes is presented here for Healthcare Professionals (HCPs).

Methods: RWE is reported for most available vaccines. Using available data from post-marketing vaccine assessments, we conducted a narrative review of the most common methods and outcomes usually reported in RWE studies.

Learning Points/Discussion: When used in the target population, both vaccine effectiveness (VE) and vaccine impact (VI) are RWE measures. VE evaluates reduction in risk of contracting a disease in vaccinated individuals - commonly assessed using case-control studies, or for rare diseases, the screening method, using vaccine coverage of the targeted population. VI reports reduction in number of cases (incidence) following vaccination in a population – therefore considers unvaccinated subjects, and herd protection if coverage is high enough. Antibody persistence assesses antibody levels over time (in both CTs and RWE), whereas duration of protection indicates the expected time a vaccinated individual is protected from disease. In addition to CT safety data, post-marketing safety surveillance can identify rare and very rare adverse events or safety signals, providing a more complete safety profile. CTs demonstrate vaccine performance in an ideal setting, whereas RWE indicates how vaccines protect in real-life situations. RWE includes outcomes in populations who may not be included in CTs - a setting comparable to patients visiting their HCP.

CLINICAL AND REAL-WORLD EVIDENCE AFTER A DECADE OF MENINGOCOCCAL ACWY-CRM VACCINE FOR PREVENTION OF INVASIVE MENINGOCOCCAL DISEASE IN THE PEDIATRIC POPULATION

E-POSTER VIEWING

TYPE 2: LITERATURE REVIEW OR GUIDELINE REVIEW - VACCINE SAFETY (POST LICENSURE)

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Background and Objective: MenACWY-CRM vaccine is licensed since 2010, for the prevention of invasive meningococcal disease (IMD) due to *N. meningitidis* serogroups A, C, W and Y. IMD is unpredictable, uncommon and life-threatening. We summarize real-world evidence (RWE) accrued during the first decade since its licensure, regarding MenACWY-CRM vaccination impact on IMD incidence and carriage. An overview is also provided, from clinical trials and observational post-licensure studies, of immunogenicity and safety in the pediatric population.

Methods: We conducted a narrative review, based on published clinical data and RWE of MenACWY-CRM vaccine in the pediatric population, with focus on immunogenicity and safety data, also when MenACWY-CRM was coadministered with other vaccines, and effectiveness data generated so far.

Learning Points/Discussion: The accumulated evidence highlights MenACWY-CRM vaccine as very immunogenic and well tolerated in infants, toddlers and adolescents. In addition, no safety concerns have been found when administered to pregnant women and in immunocompromised individuals. Clinical data are also available on MenACWY-CRM coadministration with routine pediatric (and non-pediatric) vaccines, including 4CMenB (multicomponent vaccine against serogroup B IMD), rotavirus, human papillomavirus, combined diphtheria-tetanus-pertussis (dTpa) and travel vaccines, showing no clinical interference with the different antigens tested or with the single vaccines' safety profile. Evidence showing the ability of MenACWY-CRM vaccination to reduce *N. meningitidis* carriage in adolescents and young adults adds value to strategies to fight IMD. After a decade of use, the reported evidence indicates that MenACWY-CRM vaccine can reduce IMD incidence and has an acceptable clinical safety profile. In coadministration with 4CMenB, MenACWY-CRM helps protect against five of the most prevalent *N. meningitidis* serogroups causing IMD. In addition, MenACWY-CRM vaccination can be conveniently integrated into existing national immunization schedules, thus improving vaccine coverage and streamlining the healthcare process.

POSOLOGICAL SIGNIFICANCE OF ANTIBIOTICS BRANDS & TYPES IN PERSONALISED ANTIMICROBIAL THERAPY FOR PAEDIATRIC HEALTH IN POVERTY CAPITA COUNTRY OF THE WORLD

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - ANTIBIOTIC TREATMENT REVISITED

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Background: With poverty as co-morbidity of infectious diseases in poverty-endemic countries, selection of optimally-potent antimicrobials is essential, for avoidance of treatment failures, and minimising emergence of antibiotic resistance in paediatric health.

Methods: Multi-discs antibiotics, brands of oral and intramuscular / intravenous, and paediatric antibiotics were assayed on bacterial strains from faecal and vomitus specimens of gastroenteritic children $\leq 1\frac{1}{2}$ years of age, using agar disc- and modification of agar well-diffusion methods. Simple percentage data were the statistical analyses used.

Results: Respective overall antibiotic susceptibility profiles were higher (oral tablets / capsules- 20.0%-90.0% & 20.4%-90.5%), highest (intramuscular and intravenous- 60.0%-83.3% & 62.2%-82.7%), lowest (oral paediatric- 6.7%-63.3% & 11.0%-64.6%). Bacteriostatic potentials of different corresponding antibiotics (Gram-positive bacteria) were: cefuroxime [Discs: 26.7% vs. Tablets: 90.0%]; gentamycin [Discs: 3.3% vs. IV/IM 60.0%]; erythromycin [Discs: 3.3% vs. Tablets: 63.3% 83.3%]; ofloxacin [Discs: 36.7% vs. Tablets: 70.0%]; augmentin [Discs: 10.0% vs. Paediatric: 16.7%]; ciprofloxacin [Tablets: 26.6% vs. IV/IM: 70.0%, 63.3%]; ampicillin [Tablets: 76.6% vs. IV/IM 83.3%]; amoxicillin [Tablets: 36.6%, 83.3% vs. IV/IM 63.3% vs. Paediatric 21.4%, 46.7 %, 23.3%]; chloramphenicol [Drugs 90.0%, 66.6% vs. IV/IM 73.3%]; septrin [Tablets: 66.6% vs. IV/IM 63.3% vs. Paediatric 50.0%]. Bacteriostatic rates for Gram-negative bacteria were, cefuroxime [Discs: 18.9% vs. Tablets: 81.1%]; gentamycin [Discs: 1.6% vs. IV/IM 70.9%]; erythromycin [Tablets: 51.1%, 81.8]; ofloxacin [Discs: 18.1% vs. Tablets: 20.4%]; augmentin [Discs: 15.0% vs. Paediatric 16.7%]; ciprofloxacin [Discs: 14.2% vs. Tablets: 21.5% vs. IV/IM: 74.0%, 74.8%]; ampicillin [Discs 5.5% vs. Tablets: 90.5% vs. IV/IM 80.3%]; amoxicillin [Tablets: 53.5%, 87.4% vs. IV/IM 79.5% vs. Paediatric: 18.9%, 30.7%, 21.3%]; chloramphenicol [Tablets: 84.2%, 35.4% vs. IV/IM 73.2%]; septrin [Tablets: 55.9% vs. IV/IM 62.2% vs. Paediatric 50.4%].

Conclusions: Varying bacteriostatic potentials of different corresponding antibiotic-brands among same bacterial-strains is of posological significance.

Clinical Trial Registration: Not Applicable

USE OF BIOFIRE® FILMARRAY PNEUMONIA PANEL FOR DETECTION OF PATHOGENS IN LOWER RESPIRATORY TRACT SPECIMENS IN PEDIATRIC PATIENTS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - BACTERIAL PNEUMONIA

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Background: The new Biofire® Filmarray Pneumonia Panel (BFP-BioMérieux, France) offers advantage against conventional cultures of respiratory tract specimens with rapid detection and quantification. The objective of this study is to evaluate the use of BFP and compare detection of pathogens in lower respiratory samples with conventional cultures in children with suspected nosocomial pneumonia.

Methods: A retrospective study was conducted in Pediatric ICU (PICU), neonatal ICU (NICU), general pediatric department (GP), and pediatric oncology department from 2019 to 2020. Children were included if an appropriate lower respiratory tract specimen was obtained for clinical evaluation and assessed by BFP. Results were compared with conventional respiratory sample cultures.

Results: Forty samples from 37 patients (median age 18mo, IQR 76mo) were assessed; 20 in PICU, 9 in GP and 7 in NICU and 4 in pediatric oncology. BFP yielded a pathogen in 27 cases (2 cases included only viruses). In 27/40 (67.5%) cases BFP and culture were in agreement; in 15 cases no bacteria were detected and in 12 cases the same pathogen was detected. In 7 cases culture was negative, whereas BFP was positive with *Hemophilus influenzae* (4 cases), *Staphylococcus aureus* (2 cases), *Streptococcus pneumoniae* and *Pseudomonas aeruginosa* (1 case each). BFP found more or different pathogens than culture in 6 cases. A fair agreement was found (k score=0.35).

Conclusions: Assessment of BFP in children had a fair agreement with conventional cultures, but with greater sensitivity for bacterial pathogens. Rapid pathogen identification may facilitate antibiotic stewardship in patients with suspected nosocomial pneumonia.

Clinical Trial Registration: This is not a clinical trial

CORRELATION OF THROMBOCYTOSIS WITH LOWER RESPIRATORY TRACT INFECTION IN UNDER FIVE CHILDREN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - BACTERIAL PNEUMONIA

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Background: Thrombocytosis is a common finding in infection of lower respiratory tract and children with thrombocytosis have a more severe presentation at admission and have a protracted clinical course resulting in longer duration of hospitalization than those with normal platelet count. Platelet count could prove to be a useful marker in assessing the severity of lower respiratory tract infection patients and to anticipate complications during the course of illness and prioritize patients at a primary health setting.

Methods: Study site: Pediatrics Emergency, Government Multi Speciality Hospital Sector 16, Chandigarh, INDIA **INCLUSION CRITERIA** Total of 61 children <5 years presenting as pneumonia / severe pneumonia as per revised WHO classification, were classified into two groups on the basis of thrombocyte count (>4.5 Lakh/cmm) i.e., patients with or without thrombocytosis was further graded into mild 5-7 Lakh/ mm^3 , moderate 7-9 Lakh/ mm^3 and severe 9-10 Lakh/ mm^3 & extreme as > 10 lakh / mm^3 . **EXCLUSION CRITERIA** Anemia, ($\text{Hb} < 10\text{g/dl}$), neuroinfections, connective tissue disorders, or congenital heart diseases, immunocompromised states, stroke.

Results: Mean platelet count (lakh /mcl) in pneumonia and severe pneumonia cases was 4.67 ± 1.64 and 5.84 ± 1.38 respectively, and was significantly more in severe pneumonia cases. (P value= 0.016). With a cut off of platelet count (5 lakh/cumm), area under the curve of thrombocytosis for predicting severe pneumonia was 0.80. (95% C.I =0.68, 0.92; P value 0.0001). Our study found that Thrombocytosis is significant in cases with positive chest skiagram finding (infiltrates, lobar consolidation) in comparison to normal skiagram (P value 0.035).

Conclusions: Thrombocytosis (Platelet cut off 5lakhs/mcl) is a strong predictor of severity of lower respiratory tract infection in children under five years.

Clinical Trial Registration: Since it was observational study so registration was not done.

CLINICAL AND ROUTINE LABORATORY ANALYSIS DISTINGUISHING MULTISYSTEM INFLAMMATORY SYNDROME ASSOCIATED WITH COVID-19 (MIS-C) FROM KAWASAKI DISEASE

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

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Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is typically very mild and often asymptomatic in children. A complication is the rare multisystem inflammatory syndrome in children (MIS-C) associated with COVID-19. The pathogenesis of this condition, is unclear but has overlapping features with Kawasaki disease (KD). We aimed to analyze how routine laboratory findings were able to distinguish MIS-C from KD and SARS-CoV-2 infected children with mild symptoms (CoV2+).

Methods: We retrospectively collected laboratory characteristics of 12 MIS-C, 41 CoV2+, 28 KD, diagnosed in the pre-COVID-19 era, and 12 age-matched Healthy controls (HC) at the time of diagnosis. All CoV2+ tested positive by nasopharyngeal swab (NPS) at diagnosis. All MIS-C patients were tested for SARS-CoV2 Ab (Liaison, Diasorin).

Results: All MIS-C resulted positive for SARS-CoV2 Ab and only 2 out of 12 MIS-C resulted positive by NPS at diagnosis. MIS-C were significantly older compared to KD ($p=2.49 \times 10^{-6}$) and CoV2+ ($p=0.015$). No significant sex-differences were found among the groups. MIS-C had lower white blood cell counts as compared to KD ($p=0.001$). Lymphopenia showed to be a hallmark of COVID-19 and was more pronounced in MIS-C than in children with mild SARS-CoV-2 infection ($p=2.5 \times 10^{-5}$) or KD ($p=0.0005$). MIS-C patients also had markedly higher levels of ferritin compared to KD ($p=4 \times 10^{-5}$) and lower platelet counts as compared to both KD ($p=0.0001$) and CoV-2+ ($p=0.0002$). Albumin and hemoglobin resulted significantly lower in MIS-C compared to CoV2+ ($p=0.036$ and 0.04 respectively). As expected C reactive protein resulted significantly higher in MIS-C compared to CoV2+ and HC, no difference was found compared to KD.

Conclusions: These observations provide clinical and laboratory features that may help diagnosis of patients fulfilling clinical criteria for both MIS-C and KD.

Clinical Trial Registration: The present study is not a clinical trial.

EPIDEMIOLOGY OF EMOTIONAL DISORDERS DURING COVID-19 PANDEMIC ON CHILDREN WITH CHRONIC CONDITIONS WITH A FOCUS ON HIV: PRELIMINARY FINDINGS OF AN OBSERVATIONAL STUDY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

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Background: The direct and indirect psychological effects of the COVID-19 pandemic are pervasive and could affect mental health. Emotional and mood disorders are among the most frequent manifestations of psychological impairments in children during this period, especially for vulnerable groups. Aimed: Our study aims to observe the epidemiology of anxiety and depression in a sample of pediatric inpatients with chronic conditions during Covid-19 pandemic with a special focus on HIV

Methods: We screened 236 inpatients (148 F, 88 M; mean age: 16,6yy, SD: 1,84) with a diagnosis of a chronic condition. We administered GAD-7 and PHQ-9 questionnaires to assess anxious-depressive symptoms. Administration occurred during regular medical checks scheduled during COVID-19 pandemic period (March-October 2020) at the "Bambino Gesù" Children Hospital in Rome, Italy.

Results: General sample showed a prevalence of anxious-depressive symptoms (in a range from mild to severe) of 64% and 71% respectively. HIV patients (n=14) showed lower levels of emotional disorders: 43% and 57% respectively. No HIV patient report severe anxiety, while only n=1 HIV patient report severe depressive symptomatology. The most frequently observed symptomatology is a mild type (36% anxiety, 29% depression).

Conclusions: Our preliminary findings showed a high prevalence of emotional and mood disorders among children with chronic conditions during Covid-19 pandemic. Anyway, HIV pediatric patients showed lower levels when compared with general sample. Psychological screening and treatment should be promote and implement by central governors during pandemic. Further investigation about HIV pediatric patients' emotional response to the pandemic emergency may be needed.

Clinical Trial Registration: ClinicalTrials.gov 0123456789

COVID-19 CLINICAL AND LABORATORIAL MANIFESTATIONS IN A COHORT OF CHILDREN ADMITTED IN A PEDIATRIC HOSPITAL IN RIO DE JANEIRO, BRAZIL

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

Giulianna Lebreiro¹, Marianna Venceslau¹, Luisa Calvano², Ana Cristina Frota², Thalita Abreu², Thiago Anachoreta², Regina Cláudia Da Rocha², Fernanda Maciel², Catherine Cordeiro², Terezinha Marta Castiñeiras¹, Rafael Varela², Analucia Da Costa², Mariana Aires², Adriana Cristina Lopes², Ludmila Campos², Maria Angelica Guimarães¹, Cristina Hofer³

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Background: Although children present a better prognosis of SARS-CoV-2 infection than adults, the diagnosis of this infection in the pediatric population still poses a challenge. In this study we aimed to compare the clinical manifestations of COVID-19 between the children which tested positive and negative in nasopharyngeal qRT-PCR (NP-PCR) for SARS-CoV-2, admitted in a pediatric hospital, from April to November 2020.

Methods: Cohort study, with children admitted to the hospital with diagnosis of upper-airway infection, pneumonia, bronchiolitis, fever with rash, diarrhea, or encephalitis which were tested with nasopharyngeal swab for qRT-PCR for COVID-19. They were followed from admission up to 30 days. We compared clinical and laboratorial manifestations between children with positive and negative qRT-PCR for SARS-CoV-2, using logistic regression.

Results: A total of 247 children were enrolled, aged from 20 days to 16 years old (average 49 months), 116 (49%) were females. 33 (13%) had NP-PCR positive or indeterminate. 48 (19%) were admitted to the pediatric intensive care unit, and two patients died (one in each group). The variables associated with NP-PCR positive were: age>24 months (OR=3.4, 95%CI=1.4-8.3); domiciliary contact with an adult with COVID-19 diagnosis (OR=2.9, 95%CI=1.4-6.2); lack of cough at admission (OR=2.2, 95%CI= 1.0- 4.7); lack of nasal discharge at admission (OR=4.0, 95%CI= 1.7-9.3), tachypnea at admission (OR= 2.4, 95%CI=1.1-5.1), lower hemoglobin levels at admission (OR=0.8, 95%CI=0.8-1.0).

Conclusions: COVID-19 infection was not associated with death in this cohort study. Domiciliary contact with another case, older age, lack of upper respiratory infection symptoms, and tachypnea were associated with SARS-CoV-2 infection.

Clinical Trial Registration: this is a cohort study

COURSE OF COVID-19 DISEASE IN CHILDREN AT THE BEGINNING OF PANDEMIC IN UZBEKISTAN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

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Background: At the beginning of the coronavirus disease 2019 (COVID-19) pandemic, there was a tendency that older adults and those with comorbidities predominantly affected by SARS-Cov2 infection. However, the course of COVID-19 disease varies from the reports from country to country. The objective of the study was to determine the course of COVID-19 disease among patients 18 years old and younger.

Methods: This is a prospective Multi-Center observational cohort study with 30-days outcomes of 3467 consecutive patients younger than 18 years old with confirmed a SARS-CoV-2 PCR-positive throat- or tracheal-swab. Patients were initially seeking medical care, had the first medical contact, or were examined being close contacts to confirmed COVID-19 case in the outpatient State clinics of Tashkent, the capital of Uzbekistan, in April–September 2020.

Results: Out of 3467 patients, 2735 patients (78.9%) had no symptoms or very few symptoms. 559 (16.1%) had a mild course of disease with no signs of pneumonia. 124 patients (3.6%) had a mild course of pneumonia. Patients were hospitalized for up to 5 days. 16 patients (0.46%) had moderately severe pneumonia who were hospitalized with a mean of 10 days. All patients with pneumonia were 10-18 years old. Age was positively correlated with the incidence of hospitalization, Pearson $r=0.321$, $p<0.001$. There were no mortality cases within the observed 30-days of the follow-up.

Conclusions: Among children younger than 18 years old, 140/3467 patients (4%) had mild to moderate forms of pneumonia. There were no cases of pneumonia younger than 10 years old, showing that at the beginning of the pandemic kids had less severe course of the COVID-19 disease compare to adults.

Clinical Trial Registration: This is a prospective observational cohort study

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN TEMPORALLY ASSOCIATED WITH COVID-19 IN BIKANER, NORTHWESTERN INDIA

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

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Background: Although most children infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are reported as mild and resilient, a new and potentially life-threatening presentation, referred to as multisystem inflammatory syndrome in children (MIS-C) has been reported abundantly across the globe. We aimed to describe the clinical-laboratory presentation and outcome of children diagnosed with this novel hyperinflammatory condition from Bikaner, Northwestern India.

Methods: This observational study included 14 children of MIS-C temporally associated with SARS-CoV-2 infection admitted from June 2020 to December 2020. MIS-C was defined as per WHO criteria. Detailed demographics, history of contact with a positive patient, SARS-CoV-2 antigen or antibody positivity, clinical symptomatology, laboratory parameters, and outcomes were recorded. The outcome was classified as discharged or death. Other infective causes with similar presentation such as dengue shock syndrome and bacterial sepsis were excluded stringently prior to diagnosing the patient with MIS-C.

Results: The median age of patients was 8.4 years (range 3.4–12.8 years) and 64.3% of children were male. All 14 children were asymptomatic for SARS-CoV-2 infection but had positive antibodies for SARS-CoV-2 and negative RT-PCR at the time of MIS-C evaluation. The average length of hospital stay was 9.6 days. Fever was the most predominant presentation (92.8%, mean duration 7.8 ± 2.2 days), followed by non-specific abdominal pain (78.6%), diarrhea/vomiting (71.4%), rash (42.9%), and non-purulent conjunctivitis (35.7%). Serum inflammatory (CRP, procalcitonin, ferritin, interleukin-6), coagulative (d-dimer), and cardiac (troponin, brain natriuretic peptide) markers were significantly elevated. 2D echocardiography showed reduced ejection fraction in 92.8% of children. All children were treated with intravenous immunoglobulin and steroids with good short-term outcomes and only one death (7.1%).

Conclusions: The study describes MIS-C presentation from Northwestern India with short term outcome.

Clinical Trial Registration: Not reports the result of controlled trial

COVID-19 AND RHEUMATIC DISEASES: WHAT ABOUT CHILDREN? RESULTS FROM THE SPANISH NATIONAL COHORT EPICO-AEP IN THE FIRST WAVE

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

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Background: Studies in adults with rheumatic diseases (RD) and COVID-19 show that patients with poorly controlled disease or receiving corticosteroids may be at increased risk of serious disease. SARS-CoV-2 infection in children is relatively mild, with a small proportion needing hospitalization. About 25 to 60% of admitted children with COVID-19 have comorbidities. This study aimed to describe the prevalence of RD among children younger than 18 years old with SARS-CoV-2 infection admitted at the 49 hospitals included in the Spanish national cohort EPICO-AEP.

Methods: Prospective multicenter study including patients diagnosed with RD and COVID-19 in the Spanish EPICO-AEP registry, from March to June 2020. Clinical chart revision.

Results: By June 30th 2020, 350 children were admitted, of which 48 (13.7%) children required intensive care unit admission, and four (1.1%) died. Among the paediatric patients admitted with COVID-19, eight children (2.2%) had a history of RD (table 1). The median age was 12.1 years (IQR 8.3-14.5) and all were female. Clinical manifestations were pneumonia in four patients and a febrile syndrome and/or upper respiratory infection in four other cases. One patient (12.5%) died. She had severe juvenile dermatomyositis (JDM) with a rapidly progressive interstitial lung disease. In 5 of the 8 cases, the RD was not fully controlled and had been diagnosed a year before or less, in two cases coinciding COVID-19 with the onset of RD. All patients except one received corticosteroids.

CASE #	1	2	3	4	5	6	7	8
(years)	11.7	12.6	14.8	4.3	15.2	7.2	11.5	13.7
Gender	F	F	F	F	F	F	F	F
COVID19 close contact	Yes	No	No	No	Yes	No	Yes	Yes
Primary disease	JDM-antiMDAS with ILD	c-ANCA vasculitis	SJIA	SJIA	JIA oligo	PFAPA	Polyarteritis nodosa	Antiphospholipid syndrome. Suspicion of SLE
Time since RD diagnosis	4 months	1 year	Onset	2 months	10 years	2 years	6 years	Onset
Immunosuppressive treatment	Methylprednisolone pulses, tacrolimus, MMF, Cyclophosphamide, IVIG	Prednisone 1 mg/kg/day Azathioprine	Methylprednisolone pulses followed by Prednisone 1 mg/kg/day	Prednisone 1 mg/kg/day Canakinumab	MTX, infliximab	Prednisone 2 mg/single/dose if needed	Prednisone 2.5 mg/48h, MTX, colchicine, tocilizumab	Prednisone 0.5 mg/kg/day
Fever	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Cough	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Sore throat	Yes	Yes	Yes	No	Yes	No	No	No
Dyspnea	Yes	No	No	No	No	Yes	No	No
Lymphocytes/mm3 (min value)	0	380	1070	1080	2950	2300	2900	1200
D-Dimer ng/ml (normal 0-500) (Max value)	10200	1168	829	5953	142	-	174	1194
C-Reactive protein mg/L	41.4	9	103.8	341	3	12.1	0.3	33
Chest X-Ray	Bilateral infiltrates, pneumothorax, pneumomediastine, severe ILD	Focal infiltrate	Subtle ground-glass infiltrate unilateral	Lobar consolidation, pleural effusion	Normal	Bilateral infiltrates	Normal	Normal
Hospitalization (n° days)	33	7	9	12	3	6	2	30
Treatment	Antibiotics, HCQ, Remdesivir, Tocilizumab	Withdrawal of AZP, LPV/RTV, HCQ	HCQ	LPV/RTV, antibiotics	-	Antibiotics	HCQ	HCQ, enoxaparin
Complications	Mechanical ventilation, sepsis/shock, Multiorgan failure Disease	None	None	Femoral vein thrombosis catheter related.	None	None	None	Femoral vein thrombosis, adrenal hemorrhage

Conclusions: Children with RD from the Spanish national EPICO-AEP cohort have accounted for 2.2% of hospitalized patients with COVID-19. The disease outcome has been moderately favourable, with one fatality. Active COVID-19 disease and the use of corticosteroids could be considered as risk factors as well as in adults.

Clinical Trial Registration: No registration

CELL IMMUNOPHETYPING AND LEVELS OF SOLUBLE INFLAMMATORY CYTOKINES OF SARS-COV2 IN PREGNANT WOMEN AND UNINFECTED EXPOSED NEWBORNS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

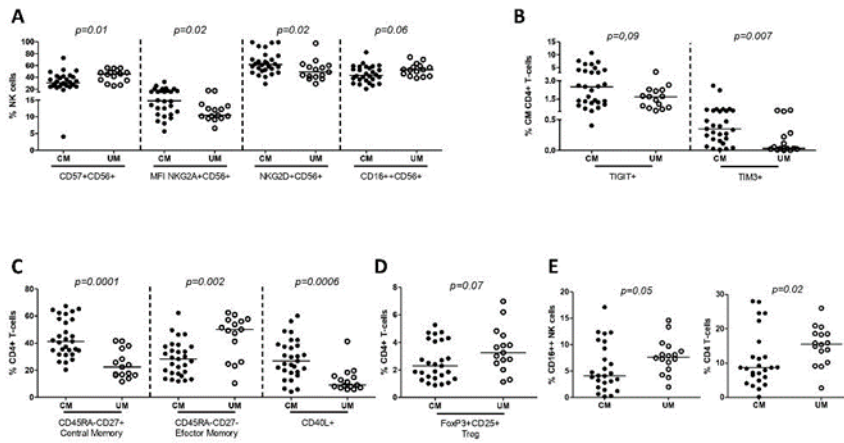
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Background: Knowledge of SARS-CoV2 infection in pregnancy and newborns is deficient. The **objective** of this study was to perform cell immunophenotyping and to determine soluble inflammatory cytokines in plasma of women infected by SARS-CoV2 during pregnancy and of their newborns

Methods: Women with confirmed SARS-CoV2 infection during pregnancy (positive RT-PCR or SARS-CoV2 anti-IgM/IgG) (COVID Mother, CM n=29) and their SARS-CoV2 exposed uninfected newborns, were selected from the Spanish multicentric cohort GESNEO-COVID. CM was compared to a healthy non-SARS-CoV2-infected mother group (Uninfected Mother, UM n=15 and their newborns) matched by age. The immunophenotyping of innate and adaptive immunity components (natural killer cells (NK) and CD4 and CD8-T cells, including T regulatory cells, Treg) was studied on cryopreserved peripheral blood mononuclear cells and cord cells by flow cytometry. Soluble inflammatory cytokines levels (TNFa, IL6, IL17 and IL10) were determined in plasma by ELISA assay

Results: CM shows lower CD57 and higher NKG2A and NKG2D expression on NK-cells, and lower frequency of CD16++ NK-subset compared to UM (FIG.A). Regarding CM activation and exhaustion T-cell markers, TIGIT, TIM3 and CD40L expression was higher compared to UM in all memory subsets (defined by CD45RA and/or CD27 expression) (FIG.B-C), same results were found in CD8-T cell subsets. The frequency of Treg (defined as CD4+CD25+FoxP3+) from CM was decreased compared to UM (FIG.D). CM shows increased TNFa and IL-10 soluble plasma levels. Regarding newborns, lower proportion of CD16++ NK-subset and CD4 T-cell subsets was observed compared with unexposed newborns (FIG.E) and no differences were observed comparing cord plasma from newborns groups



Conclusions: SARS-CoV2 infection during pregnancy leads to differences in activation and exhaustion immunological levels. Altered CD16++ NK-subset and CD4-T cell counts observed in newborns could have future clinical implications

Clinical Trial Registration: Our study is not a clinical trial.

OUTBREAK OF MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN IN UKRAINE

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

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Background: Unusual febrile inflammatory disease in children appeared after the peak of COVID-19 cases. The study was conducted to describe the clinical and epidemiological characteristics of hospitalized children with multisystem inflammatory syndrome in children (MIS-C) in Kyiv, Ukraine

Methods: This was an observational study of children with MIS-C (November 1, 2020, to January 15, 2021), in three pediatric hospitals in Kyiv. Demographic characteristics and epidemiological data, medical history, laboratory tests, cardiology evaluations, treatment, and clinical outcomes were analyzed.

Results: Twenty-five patients were admitted (median age 8.3, range 2–16 years). The duration of illness prior to presentation to the hospital was 4 days (range 3–8 days) and inflammatory markers were increased at admission. All children had evidence of COVID-19 (positive RT-PCR or serology). Clinical symptoms included fever (100%), skin rashes (72%), cardiovascular involvement (80%), conjunctivitis (76%) and gastrointestinal involvement (62%). Three patients (12%) underwent appendectomy because severe abdominal syndrome. Some patients had clinical features partially resembling Kawasaki disease (56%) and toxic shock syndrome (12%). Six of the 25 (24%) required intensive care unit admission; there were no deaths. All patients had no comorbidities. Echocardiography showed abnormalities (myocardial, pericardial, or coronary) in 20 patients (80%) during their hospital stay. Immune modulating treatment was used in all patients, including intravenous immunoglobulin (84%) and corticosteroids (96%).

Conclusions: This study describes the first series (n = 25) of children with MIS-C in Ukraine, showing favorable clinical outcomes. MIS-C may present with different phenotypes and all clinicians should be aware about early diagnosis and adequate treatment.

Clinical Trial Registration: Research study MOH Ukraine 52/2n

IL-10 AND PROINFLAMMATORY CYTOKINES AND CHEMOKINES AS EARLY BIOMARKERS FOR CRITICAL CARE REQUIREMENT IN CHILDREN WITH SEVERE COVID-19

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CLINICAL MANIFESTATIONS

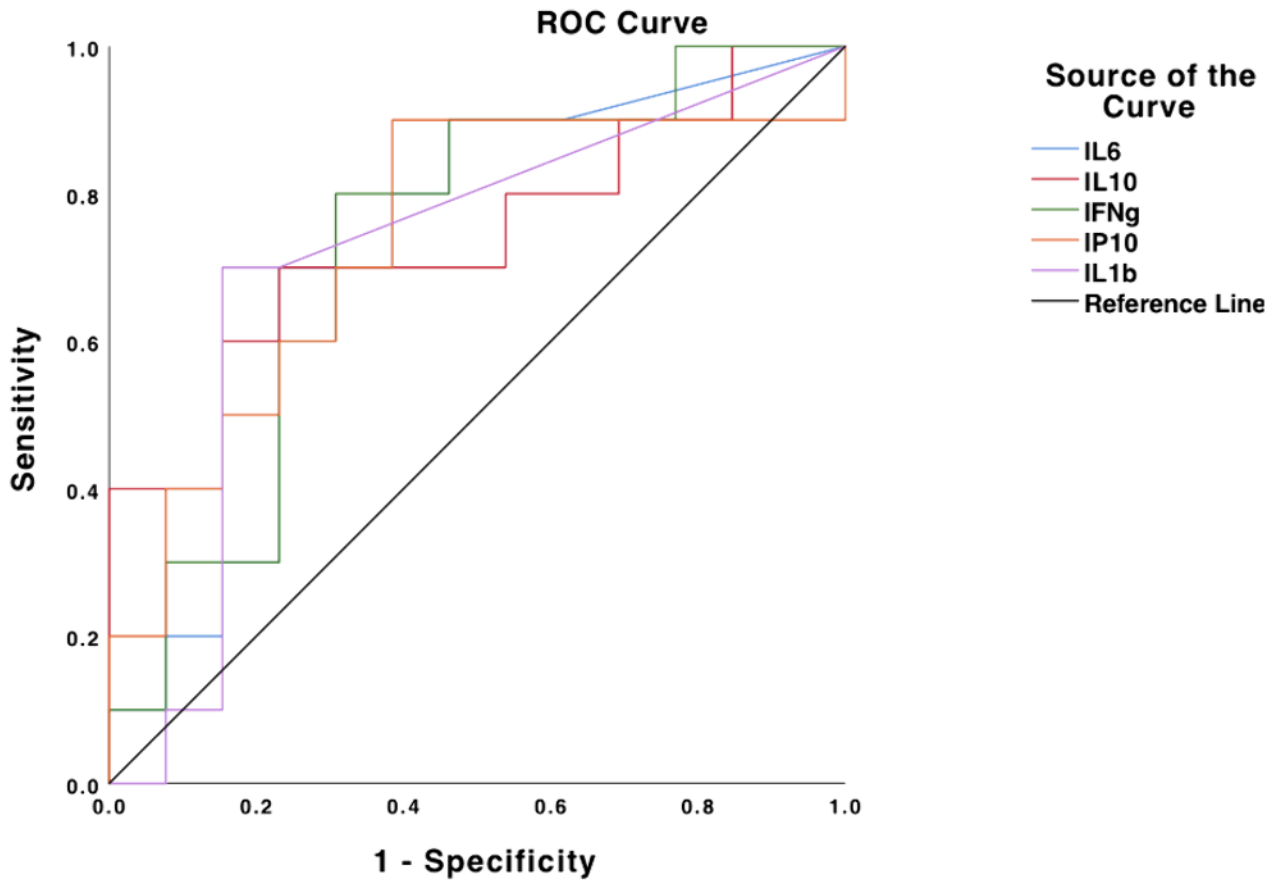
Gonzalo Valenzuela¹, Gonzalo Alarcón-Andrade¹, Tamara García-Salum¹, Jose Barriga², Pamela Cespedes³, Loreto Godoy⁴, Jorge Levican¹, Eileen Serrano¹, María Avendaño¹, Catalina Pardo-Roa¹, Monserrat Gutiérrez⁴, Sandra Bermudez⁴, Erick Salinas¹, Daniela Depaoli⁵, Javiera Aravena⁵, Rafael A. Medina^{1,6}

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Background: A proinflammatory immune profile is characteristic of severe COVID-19 in adults, with scarce reports in children. We aimed to identify immune biomarkers allowing early detection of paediatric patients at higher risk of critical care unit (CCU) admission.

Methods: We recruited inpatients under 18 years old with a positive real time polymerase chain reaction (RT-PCR) test for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), discharged between April and December 2020. Blood levels of chemokines and cytokines were measured at enrollment using Multiplex ELISA. Patients were classified in two groups according to admission to a CCU. Clinical, epidemiological and admission laboratory, PaO₂/FiO₂ (PaFi) and SpO₂/FiO₂ (SpFi) data was compared among both groups using non-parametric tests.

Results: A total of 23 patients were included. Eleven patients (47.8%) had severe COVID-19, with a median PIM-3 score of 2.9. Patients with severe COVID-19 were significantly older (median age 14.0 years, IQR 6.01-16.3, vs median age 1.3 years, IQR 0.4-10.6, P=0.023), with no difference in sex. Patients requiring admission to CCU and ventilatory support had a higher level of IL-6 (P=0.016), IL-1 β (P=0.023), IP-10 (P=0.013), IFN γ (P=0.013) and IL-10 (P=0.037). PaFi was inversely correlated with IL-8 (Spearman's coefficient -0.61, P=0.047), IL-12p70 (Spearman's correlation coefficient -0.82, P=0.002) and GM-CSF (Spearman's coefficient -0.65, P=0.03) levels. A similar immune profile was observed in patients requiring mechanical ventilation. IL-6, IL-1 β , IP-10, IFN γ , IL-10, lymphocyte count and PAFI performed an AUROC (>0.7) for ventilatory support (figure). **Figure. ROC Curves for cytokines and chemokines associated with ventilatory support.**



Conclusions: As observed in adults, children with severe COVID-19 requiring admission to CCU display high levels of IL-10 and a proinflammatory immune profile. Notably, a higher level of IFN γ was also observed in these severe patients.

Clinical Trial Registration: N/A

CEREBRAL ORGANIDS AS A MODEL FOR ENTEROVIRUS D68 INFECTION

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CNS INFECTIONS

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Background: Enterovirus D68 is a positive strand RNA, non-polio enterovirus that has caused several outbreaks of neurologic disease in the last decade. While it primarily infects the airways leading to respiratory distress, EV-D68 infection can infect the central nervous system (CNS) and cause polio-like acute flaccid myelitis (AFM) in children. The pathogenesis in the CNS is unclear and a vaccine or effective treatment is unavailable.

Methods: We used induced pluripotent stem cell (iPSC) derived cerebral organoids to investigate EV-D68 infection of the brain. We focused on EV-D68 cell tropism and receptor usage. The cerebral organoids consist of neuronal progenitor cells, neurons, and astrocytes. We infected human cerebral organoids of 45 days old and 150 days old, which represents different developmental stages, with EV-D68. We compared EV-D68 strains that either dependent solely on sialic acid binding for entry: 2042, or strains that use both sialic acid and heparin: 947 and 1348. We measured total viral particles in the cerebral organoid medium with qPCR and infectious particles with TCID₅₀. Cell tropism was studied using immunohistochemistry and confocal imaging.

Results: Our results show, that in 45 day old organoids, only EV-D68 2042 was able to replicate and produce infectious virus in the medium of cerebral organoids. In 150 day old organoids, however, we only observed replication of EV-D68 1348. The replication of EV-D68 1348 in 150 day old organoids was sialic acid and heparin dependent, since blocking of either of those receptors prevented infection. Confocal imaging of infected organoids showed that astrocytes are susceptible to EV-D68.

Conclusions: Our results demonstrate that cerebral organoids are a suitable human model to study EV-D68 tropism and receptor usage in the central nervous system.

Clinical Trial Registration: Not applicable

CHOROID PLEXUS ORGANOID FOR MODELLING VIRAL (MENINGO)ENCEPHALITIS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CNS INFECTIONS

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Background: Viral meningoencephalitis remains a life-threatening brain disease in both healthy persons and immunocompromised patients. Studying viral meningoencephalitis using patient material is restricted since this usually includes post-mortem material or cerebral spinal fluid (CSF) samples which give limited insights into disease pathogenesis and infection dynamics. CSF is produced by the choroid plexus (ChP) which acts as a blood-CSF-barrier between the bloodstream and the brain ventricles. A multitude of viruses can be found in CSF material of patients with viral meningoencephalitis, suggesting their abilities to traverse the blood-CSF-barrier. Viruses that are able to reach the CSF include herpes simplex virus 1, cytomegalovirus, enterovirus D68, and HIV. In this study we aim to develop and characterise a ChP model to study viruses causing meningoencephalitis.

Methods: The current study utilises a ChP organoid generation protocol that allows for an *ex vivo* approach for studying meningoencephalitis disease dynamics. ChP organoids were generated from induced-pluripotent stem cells using growth factors guiding them to a ChP fate. For organoid characterisation, stainings against aquaporin 1 (AQP1) and transthyretin (TTR) were performed around Day 90. Both markers are characteristic of ChP in humans.

Results: We were able to develop human ChP organoids derived from induced pluripotent stem cells which successfully generate AQP1 and TTR-positive cells. Similarly, these ChP cells organise into a distinctive single layer around vacuoles or at the perimeters of the organoid. Neural progenitor cells, neurons and astrocytes were also observed.

Conclusions: The presence and structural organisation of the barrier-forming ChP-like cells in our ChP organoids, confirm their utility as a ChP model for studying viral meningoencephalitis in humans. Our future research will apply this model to study the disease pathogenesis of the 4 abovementioned viruses in meningoencephalitis *ex vivo*.

Clinical Trial Registration: Not applicable

CENTRAL NERVOUS SYSTEM INFECTION INDUCED HYDROCEPHALUS IN CHILDREN WITH SPECIAL REFERENCE TO TUBERCULAR MENINGITIS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CNS INFECTIONS

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Background: Hydrocephalus is a medical condition in which there is an abnormal accumulation of cerebrospinal fluid (CSF) in the brain. This prospective hospital based observational study aimed to evaluate the infectious etiology of hydrocephalus in pediatric patients in Bikaner, Northwestern India.

Methods: The prospective study was conducted with 100 children admitted with hydrocephalus in the pediatric hospital and neurosurgery department of the hospital. The diagnosis of hydrocephalus was made by a non-contrast CT scan or MRI of the head after having clinical suspicion. The etiological diagnosis was evaluated as per protocol specific investigations.

Results: The majority of children were below 2 years with a male to female ratio was 1.4:1. Congenital causes were found in 48% of children while 52% had acquired causes of hydrocephalus. Out of 52% cases in acquired hydrocephalus, tubercular meningitis was the commonest infectious etiology (63.4%), followed by pyogenic meningitis (15.3%), post HIE (9.6%), post tumoural (7.6%), and post ICH (3.8%). Basal exudates (54%), lacunar infarct (38%), and tuberculoma (18%) were commonly associated presentation with tubercular meningitis. The Head circumference of 70% of children was >90th percentile. Malnutrition was associated with 60% of children who had weight and height (length) for age \leq 3 SD.

Conclusions: The most common cause of hydrocephalus was TBM, more than 70% were not vaccinated and diagnosed late. It can be minimized by strengthening BCG vaccination, early diagnosis, and treatment.

Clinical Trial Registration: not applicable

SEVERE RESPIRATORY DISORDERS OF INFECTIOUS AND NON-INFECTIOUS GENESIS IN FULL-TERM NEWBORNS FROM MOTHERS WITH TYPE 1 DIABETES

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CONGENITAL AND PERINATAL INFECTIONS

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¹Belarussian state medical university, 1st Department Of Children's Diseases, Minsk, Belarus, ²Belarus state medical university, Children Infection Diseases, Minsk, Belarus, ³Republican Research and Practical Center «Mother and child», Clinical Diagnostic Laboratory, Minsk, Belarus, ⁴Belarussian state medical university, 1st Department Of Children's Diseases,, Minsk, Belarus

Background: Newborns from mothers with diabetes 1 (T1DM) have a higher frequency of respiratory disorders associated with the characteristics of the immune and metabolic status of mothers, decrease in surfactant components and the number of producing cells.

Methods: Prospective single-center study was carried out at the Republican Research and Practical Center «Mother and child». We examined 20 full-term newborns born to mothers suffering from T1DM. Body weight (Me (Q25- Q75)) at birth was 3760 (3600–4120) g, body length 53 (51–57) cm. Large for gestational age are 10/20. Experience with diabetes in women was 12 (5-19) years.

Results: Within 1 hour after birth, 18 out of 20 newborns were transferred to ICU because of respiratory failure (RF). 16 children were born by caesarean section. Congenital pneumonia (CP) was diagnosed in 7 children, combination of CP with HMD - in 6, transient tachypnea - in 5 17 patients required mechanical ventilation (MV). The average duration of MV was 6 (4–36) hours. Most of the children (n = 15) required MV for less than 12 hours. 15 newborns required cardiotoxic support (dopamine, adrenaline).

Antibacterial drugs were prescribed to 18 patients, 14 monotherapies, combination of 2 antibiotics - 4.

Conclusions: T1DM in mothers is high-risk factor for the development of severe respiratory disorders, even in full-term newborns. Severity of condition often requires intensive therapy with MV. Features of the course of severe RF in full-term infants are frequent diagnostics of CP, deviations of physical development (large for gestational age) in children.

Clinical Trial Registration: ClinicalTrials.gov 0123456789

FEATURES OF CAUSATIVE AGENTS OF PERINATAL LISTERIOSIS DURING THE COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CONGENITAL AND PERINATAL INFECTIONS

Olga Voronina¹, Natalia Ryzhova¹, Marina Kunda¹, Ekaterina Aksenova¹, Anzhelika Kutuzova¹, Tatiana Karpova¹, Alina Melkumyan², Olga Orlova³, Igor Tartakovsky¹

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Background: Pregnant women have 10-24 times higher risk for invasive listeriosis compared to the general population. Previous viral infections damage the mucus layer of the gastrointestinal tract enhancing the likelihood of *Listeria monocytogenes* infection. We compared the genetic characteristics of perinatal listeriosis infection between the 2018-2019 period and the COVID-19 pandemic.

Methods: MultiLocus Sequence Typing and whole genome sequencing were used for *L. monocytogenes* analysis. The epidemic situation was characterized according to the Rospotrebnadzor Reports.

Results: The most cases of the perinatal listeriosis during November 2018 – January 2021 were in the cold period from late autumn to early spring. In 2018/2019 five cases of perinatal listeriosis fell on the peak of influenza and ARVI incidences in Moscow. All but one case were caused by autochthonous *L. monocytogenes* ST7 of the phylogenetic lineage (PL) II. Isolates of the spring-summer period had ST7 or ST6 (PL I). During the COVID-19 pandemic (September 2020 – January 2021) the spectrum of genotypes of the perinatal listeriosis pathogen has completely changed. *L. monocytogenes* ST21, 451 (PL II) and ST1 (PL I) were isolated. If ST21 is infrequent in humans, then ST451 is most frequent STs among the human isolates after ST1 and ST155 in Europe. Since Internalin A - E-cadherin interaction is exploited by *L. monocytogenes* for invasion of enterocytes and to cross the placental barrier, analysis of internalin A was performed. Isolate of ST451 had the same N187S substitution in LRR 5 domain as the strains of the PL I.

Conclusions: Our data confirmed the impact of the virus infections on the development of the perinatal listeriosis. The COVID-19 pandemic has led to a complete change in the spectrum of genotypes of *L. monocytogenes* infection.

Clinical Trial Registration: N/A, basic science study

SARS- COV- 2 INFECTIONS IN CHILDREN WITH ACUTE INFECTIONS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - COVID-19 CLINICAL AND TREATMENT

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¹University Children's Hospital Bochum, Paediatric Pneumology, Bochum, Germany, ²Ruhr-University Bochum, Epidemiology, Bochum, Germany

Background: The incidence of SARS- CoV- 2 infections in Germany was rising rapidly from October to December 2020. The role of children in this "second wave" is unclear. Risk factors for infection and transmission, viral load and typical symptoms need to be identified to improve infection control.

Methods: Data from an ongoing observational longitudinal study in Western Germany was included. In this collection clinical data and SARS- CoV- 2 PCR results of symptomatic children and adolescents who presented at private practices or paediatric emergency departments were analyzed.

Results: Data from 4748 children was analysed. 194 (4,1%) tested positive for SARS- CoV- 2. From April- September only 0,3% (1:355) tested positive, until December numbers rose to 8% (1:12). Adolescents were most affected (6,5%, OR 1,9 (CI 1,4-2,7)), preschool children the least (2,9%; OR 0,64 (CI 0,44-0,96)). Children < 3 years of age and adolescents had highest viral loads compared to preschool children (CT < 18; 39% vs 34% vs. 14%). Contact with SARS-CoV-2 positive family members increased the risk for infection significantly (1:2) whereas school contacts had less effects (1:14). Symptoms of children < 6 years with COVID 19 did not differ from other acute viral infections, in older children headache, myalgia and anosmia were specific (OR 5 (CI 3,5-9,7)) but not sensitive indicators.

Conclusions: SARS- CoV- 2 infections in symptomatic adolescents develop similarly to adults during the study period, but 2-3 fold less in children. COVID19 was not predominant in acute infections in children. Viral loads are highest in adolescents and young children. SARS- CoV-2 positive household contacts increase the risk of infection to 50%. Symptoms in preschool children do not differ from other infections, headache and anosmia are specific in older children.

Clinical Trial Registration: Does not apply

DOES SARS-COV-2-SPECIFIC ANTIBODIES' BINDING CAPACITY DIFFER BETWEEN HUMAN MILK AND SERUM FROM COVID-19-RECOVERED WOMEN?

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - COVID-19 CLINICAL AND TREATMENT

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Background: Human milk antibodies from coronavirus disease 2019 (COVID-19)-recovered women may prevent severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and provide long term immunity to neonates and young children. As convalescent plasma is already used as antibody therapy, this study aimed to compare the binding capacity of antibodies specific to receptor-binding domain (RBD) SARS-CoV-2 between human milk and serum from COVID-19-recovered women.

Methods: The area under the curve (AUC) for IgA, IgM, and IgG specific to RBD SARS-CoV-2 in human milk and sera samples were measured using ELISA. Milk samples were collected from 12 COVID-19-recovered women (confirmed +COVID-19 PCR test and symptoms reported) and sera samples were from 10 COVID-19-recovered women. The antibody concentrations were also determined.

Results: Our study reveals that RBD SARS-CoV-2-specific antibodies' titers differed between human milk and sera samples from COVID-19-recovered women. When the AUCs were not divided by the antibody concentration, RBD SARS-CoV-2-specific IgA, IgM, and IgG were higher in the sera group than the human milk group ($p < 0.001$, Fig. 1). However, the titers of RBD SARS-CoV-2 IgM (AUC/mg of IgM) and IgG (AUC/mg of IgG) were higher in human milk samples than sera samples ($p < 0.05$, Fig. 1). The titer of RBD SARS-CoV-2-specific IgA (AUC/mg of IgA) was higher in the sera group than the human milk group ($p < 0.01$, Fig. 1). The titers of RBD SARS-CoV-2 SIgA/IgA, IgM, and IgG in human milk were higher in the COVID-19-recovered mothers than in the unexposed mothers.

Conclusions: Human milk antibodies specific to RBD SARS-CoV-2 must be purified to obtain comparable binding capacity observed with RBD SARS-CoV-2-specific sera antibodies and provide passive immunity to the neonatal immature system.

Clinical Trial Registration: Institutional review board (IRB00012424) of Medolac Laboratories. Written consents to use their milk for research were obtained from all participants.

PRE-ADOLESCENT AND ADOLESCENT WITH PREVIOUS COVID19 INFECTION: EMOTIONAL SCREENING AND POST TRAUMATIC STRESS DISORDER (PTSD) EVALUATION

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - COVID-19 CLINICAL AND TREATMENT

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Background: Sars-Cov2 infected children and adolescent often need a recovery with clinical evaluation by pediatricians. To be infected by coronavirus and to be closed in a special ward with limited contacts could be a stressful experience and could cause anxious or sadness symptoms. Aims: The aim of this study was to assess the presence of anxiety, sadness, PTSD in an Italian cohort of pre-adolescent and adolescents. They were recovered in Palidoro Covid Center at Bambino Gesù Children Hospital in Rome for SarsCov2 infection diseases in the I, II and III phases of the pandemic.

Methods: We did a post recovery evaluation to all the 20 patients asking them to reflect about recent infection. The age range was 11-18 years. A psychology administered screening questionnaires: Impact of Event Scale-Revised (IES-R) to assess PTSD, Anxiety Disorder Questionnaire (GAD7) to assess anxiety symptoms and Patient Health Questionnaire-9 (PHQ9) to evaluate the presence of sadness or depression

Results: Our sample is made up of 9 females and 11 males with an average age of 14.6 years. We could observe: 7 (35%) showed clinical score for anxiety symptoms; 6 (30%) had sadness and depression positive symptoms; 2 (10%) showed a post-traumatic stress disorders; 1 (5%) had clinical scores in all the three areas (anxiety, depression, PTSD). Among the 13 patients with emotional disease there were 5 patients with both anxiety and depression symptom.

Conclusions: The impact of Covid19 infection in these adolescents life led them in 65% of case to report emotional problems: being nervous, irritable, unable to keep worries under control, feeling inappetent, reporting general feeling down. We can attest a great emotional impact and the urgency of a psychological treatment for some of them.

Clinical Trial Registration: Clinicalgov

SEROPREVALENCE OF CMV IN A PREGNANT POPULATION BEING SCREENED FOR INVOLVEMENT IN CLINICAL TRIALS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CYTOMEGALOVIRUS

Anna Calvert^{1,2}, Shari Sapuan^{1,2}, Robin Parsons^{1,3}, David Carrington⁴, Vanessa Greening^{1,3}, Paul Griffiths⁵, Danielle Hake^{1,3}, Asma Khalil^{1,3}, Caroline Star⁶, Sharon Wood⁶, Paul Heath^{1,2}, Chrissie Jones⁷

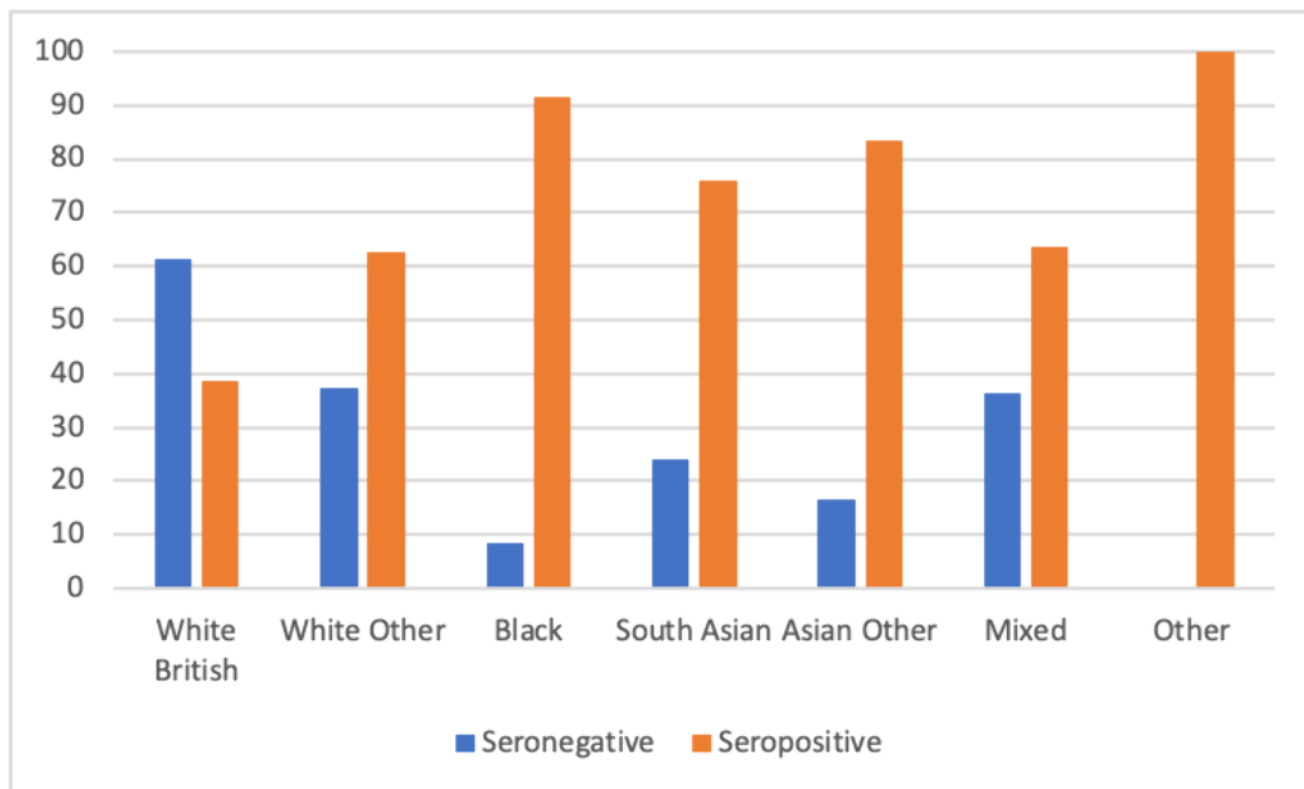
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Background: Congenital cytomegalovirus (cCMV) is the commonest congenital infection globally with a birth prevalence of 0.3-1%. cCMV can occur after a first infection with CMV during pregnancy (primary CMV infection), after reactivation of previous CMV (secondary CMV infection) or following reinfection with a different strain of CMV. We have recently performed two clinical trials investigating aspects of CMV infection in pregnancy which required the screening of CMV serostatus in participating women in early pregnancy. This allowed us the opportunity to review the seroprevalence data for our population along with the ethnicity of participants.

Methods: We approached women attending clinic in the first trimester of pregnancy and sought their consent to screen for CMV. Those who consented were asked for details of their ethnicity. The Roche Elecsys assay was used to determine the CMV IgM and IgG.

Results: We screened 1243 participants and ethnicity was recorded for 818 of these. Overall, 43.9% of those screened were seronegative and 56.1% seropositive; 2.2% of seropositive women had possible evidence of recent infection (n=15). The rates of seropositivity varied by ethnicity, with seropositivity being 38.6% in White British (n=165), 62.8% in White Other (n=91), 91.4% in Black (n=64), 76% in South Asian (n=98), 83.3% in Asian Other (n=20), 63.6% in Mixed (n=14) and 100% in Other (n=1). **Figure 1:**

Percentage of women who were seropositive and seronegative to CMV across different ethnicities



Conclusions: The overall seropositivity for CMV in our population was 56.1%, with significant differences in different ethnicities. Because of the eligibility requirements of the studies being recruited for, only women living with a child less than four years were screened, which may mean that this population is not completely representative of the whole pregnant population.

Clinical Trial Registration: ClinicalTrials.gov NCT03511274 and NCT04021628

NEURODEVELOPMENTAL OUTCOME IN CHILDREN WITH ASYMPTOMATIC CONGENITAL CYTOMEGALOVIRUS INFECTION: THE IMPORTANCE OF TESTING UNTIL 6 YEARS OF AGE TO DIAGNOSE AND SUPPORT

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CYTOMEGALOVIRUS

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Background: Almost 90% of children with congenital CMV (cCMV) infection were asymptomatic at birth but 5-15% of them will develop sequelae later on. Hearing loss is the most common late sequela seen in asymptomatic cCMV, but also neurocognitive and language delays can occur. **Aims:** The aim of this retrospective study is to evaluate the neurocognitive development in a cohort of asymptomatic cCMV children.

Methods: We used Bayley-III Scale[?] to observe verbal, motor and fluid intelligent abilities until 3 years of age; We used WPPSI-III Scale to ages 4-7 years to parameterized general language, verbal, fluid intelligence and processing speed. We consider similar constructs: Verbal Scale (Bayley-III)/General Language Scale(WPPSI-III); Cognitive Scale (Bayley-III)/Performance Scale(WPPSI-III); Motor Scale(Bayley-III)/Processing speed Scale(WPPSI-III).

Results: We evaluated 51 cCMV (6mths-7yrs) asymptomatic at birth:24 female and 26 male; 2 were premature babies; 9 were coming from migrant families. We administered Bayley-III to 34 children (mean age 18mths) and the WPPSI-III to 24 children (mean age 5yrs4mths). Mean results for Bayley-III were: Linguistic-Scale IQ 94; Motor-Scale IQ 94; Cognitive-Scale IQ 102. These results, although not abnormal, are in the lower part of the normal range supporting the idea that these children can benefit from specific intervention. WPPSI-III describes moderately higher averages but significant discrepancies inside each index. Verbal-Scale: 3/24 IQ range 70-83; Processing speed: 4/24 IQ range 67-82. Both tests were performed in 6 babies; interestingly 2 of them (35%) showed decrements of abilities above 4yrs ages.

Conclusions: Our data show that neurocognitive evaluation is crucial to detect minor sequelae, otherwise underestimates, in order to provide specific intervention to support intellectual processing in cCMV ; furthermore support the utility of follow up until primary school start age, so about 6 years of age.

Clinical Trial Registration: Clinical.gov 0123456789

CYTOMEGALOVIRUS SUBVERTS MACROPHAGE IDENTITY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - CYTOMEGALOVIRUS

Philipp Henneke, Sebastian Baasch
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Background: Cytomegalovirus (CMV) has co-evolved with its respective mammalian host for millions of years, leading to remarkable host specificity and high infection prevalence in the first year of life. Macrophages, which populate barrier tissues for CMV entry already in the embryo, in particular the lung and the intestine, are primary CMV targets. Macrophage differentiation is intertwined with tissue development at the beginning of life. Yet, the impact of CMV infection on tissue macrophage development is largely elusive.

Methods: Macrophages from mice infected intratracheally or ex vivo with reporter mouse CMV (MCMV) were subjected to flow cytometry, transcriptome, proteome and high resolution imaging. A two-tailed unpaired t-test was used for analysis.

Results: We found that CMV induces dynamic immunophenotypic and functional changes in fully differentiated macrophages from distinct tissues, e.g. lung and colon. CMV-infected macrophages show transcriptional and proteomic features of stemness and exhibit increased motility and invasiveness. Moreover, CMV exploits the MΦ cell cycle machinery at the expense of MΦ proliferation. Overall, this process shares similarities with the epithelial-mesenchymal-transition during embryogenesis and the initiation of metastasis in solid tumors, including upregulation of the transcription factors ZEB1 and SNAI2. Importantly, CMV primarily infects tissue-resident alveolar MΦ *in vivo*. Respiratory infection with CMV leads to a dichotomy of resident MΦ: transformed infected MΦ and activated bystander MΦ. The rewiring of MΦ identity-defining signaling processes increases susceptibility of mice against secondary infections.

Conclusions: CMV targets and reprograms tissue, e.g. alveolar macrophages, which alters lung physiology and facilitates both primary CMV and secondary bacterial infection by attenuating the inflammatory response. Thus, CMV profoundly perturbs macrophage identity beyond established limits of plasticity and rewires specific differentiation processes, allowing for immune evasion.

Clinical Trial Registration: Not applicable

COVID-19 DIAGNOSIS TESTS IN A COHORT OF CHILDREN ADMITTED IN A PEDIATRIC HOSPITAL IN RIO DE JANEIRO, BRAZIL

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

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¹UFRJ, Infectious Diseases, Rio de Janeiro, Brazil, ²UFRJ, Pediatrics, Rio de Janeiro, Brazil,

³Universidade Federal do Rio de Janeiro, Infectious Diseases, Rio de Janeiro, Brazil

Background: The immediate diagnosis of SARS-CoV2 infection in children, with nasopharyngeal swabs for RT-PCR tests, is difficult in the pediatric population due the collection technique, and to the possible lower viral load. In this study we aim to describe the performance of this test in addition to serological evaluation

Methods: Cohort study, from children admitted to a pediatric hospital with diagnosis of upper-airway infection, pneumonia, bronchiolitis, fever with rash, diarrhea, or encephalitis were tested with nasopharyngeal swab for RT-PCR for COVID-19. All children were followed until 30 days after admission, when the children returned to the hospital for a clinic visit and a sample for serological testing was then collected. Specific IgG antibodies against SARS-CoV-2 were tested using enzyme-linked commercial chemiluminescence immunoassay (CLIA platform Snibe, Maglumi). Serology was considered positive if IgG were detected according to the manufactures's instructions

Results: A total of 144 children were enrolled, aged from 20 days to 15 years old, among them 82 (56,9%) returned for the 30 day visit to collect the serological test. Among the 82 children, 31 (38%) had a positive test for SARS-CoV-2 (either qRT-PCR or serology) while 51 (62%) presented with both negative qRT-PCR and serology test. Of the 31 children that tested positive, ten (12%) presented both qRT-PCR and serological tests positive, 3 (4%) had positive qRT-PCR but negative serology, and 18 (22%) presented with negative qRT-PCR and positive serology. Of the 3 patients qRT-PCR positive/IgG non-reactive, 2 were being treated for hematological disease and had chemotherapy induced neutropenia

Conclusions: Nasopharyngeal qRT-PCR should not be considered the single diagnostic tool for COVID-19 in children. Since serology is based on retrospective diagnosis, a better diagnostic tool must be developed targeting this population

Clinical Trial Registration: This is a cohort study, not a clinical trial

IMMUNOPHENOTYPES OF NEWBORNS FROM SARS-COV-2 INFECTED MOTHERS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

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Background: Infections acquired during pregnancy can affect the differentiation and functioning of the newborn immune system. Little is known about the immunological and inflammatory response caused by SARS-CoV-2 infection acquired in the peripartum period. Here we present and analyze a cohort of 75 neonates from SARS-CoV-2 infected mothers.

Methods: Neonates born in or transferred to Luigi Sacco Hospital, Milan, Italy from March 16th to November 1st, 2020 were considered. Only term and late preterm newborns were included. SARS-CoV-2 infection was laboratory-confirmed with the real-time reverse-transcription–polymerase chain reaction (RT-PCR) tests performed on a nasopharyngeal swab (NPS). We recorded the immunophenotypes and SARS-CoV-2 specific IgA, IgM and IgG antibodies of the newborns. The neonatal laboratory and clinical data were obtained retrospectively from the medical records system. The study was approved by the ethical committees of the coordinating center in Milan (protocol number 2020/ST/070, of 21/04/2020).

Results: 75 newborns were enrolled. No death was reported. No adverse perinatal outcomes were reported. Ten (13,3%) out of 75 neonates had positive (NPS) for SARS-CoV-2, 18 of 75 (24%) were SARS-CoV-2 IgG seropositive, only one had positive NPS for SARS-CoV-2 and was SARS-CoV-2 IgG seropositive. All the newborns were SARS-CoV-2 IgA and IgM seronegative; all were asymptomatic. The count and proportion of lymphocytes, CD3, CD4, CD8, CD45, NK, and CD19 were all in the normal range, no statistical differences among groups were found (Table 1).

TABLE 1. Laboratory results of white blood cell count and lymphocyte subsets in 75 newborns

Test items	All Newborns				SARS-CoV-2 IgG seronegative newborns (n. 41)				SARS-CoV-2 IgG seropositive newborns (n.17)				IgG positive vs IgG negative newborns		RT-PCR NPS negative newborns (n.55)				RT-PCR NPS positive newborns (n.10)				NPS positive vs NPS negative newborns	
	Median		(95% IC)		Median		(95% IC)		Median		(95% IC)		p-value		Median		(95% IC)		Median		(95% IC)		p-value	
	# (10 ⁹ /L)	%	#	%	# (10 ⁹ /L)	%	#	%	# (10 ⁹ /L)	%	#	%	%	#	# (10 ⁹ /L)	%	#	%	# (10 ⁹ /L)	%	#	%	%	#
WBC count	17,41	-	16,06-18,75	-	17,76	-	16-19,59	-	16,24	-	13,25-18,23	-	-	0,39	17,82	-	16,35-19,30	-	14,7	-	11,91-17,49	-	-	0,07
CD3 T cells	2,95	75,67	2,72-3,18	74,19-77,25	2,93	74,41	2,67-3,18	73,13-75,70	3,16	79,56	2,41-3,91	76,55-82,58	0,005	0,56	2,96	75,9	2,70-3,22	74,25-77,54	2,88	74,21	2,37-3,39	71,18-77,24	0,35	0,78
CD4 T cells	2,18	55,92	2,01-2,36	54,21-57,62	2,17	55,13	1,98-2,36	53,12-57,13	2,31	57,99	1,75-2,87	55,21-60,78	0,11	0,64	2,21	56,47	2,01-2,40	54,60-58,35	2,04	52,35	1,70-2,38	49,14-55,56	0,04	0,42
CD8 T cells	0,74	18,58	0,66-0,82	17,47-19,68	0,73	18,34	0,64-0,83	16,69-19,98	0,81	20,17	0,61-1,02	18,63-21,71	0,11	0,5	0,73	18,3	0,64-0,81	17,16-19,44	0,81	20,34	0,61-1,01	16,66-24,02	0,32	0,46
CD4/CD8	3,24	-	2,98-3,51	-	3,34	-	2,94-3,74	-	2,96	-	2,67-3,25	-	0,19	-	3,31	-	3,02-3,60	-	2,83	-	2,16-3,50	-	0,22	
CD19 B cells	0,61	12,97	0,45-0,77	11,94-14,01	0,72	13,48	0,45-1,00	12,13-14,83	0,44	11,55	0,33-0,56	9,85-13,25	0,09	0,06	0,63	13,03	0,45-0,81	11,90-14,16	0,5	12,62	0,37-0,63	10,00-15,24	0,78	0,25
CD45	3,84	-	3,54-4,14	-	3,8	-	3,44-4,17	-	3,95	-	3,07-4,84	-	-	0,76	3,83	-	3,49-4,16	-	3,91	-	3,28-4,54	-	0,82	-
NK (CD3-CD16+, CD56+)	0,3	7,93	0,26-0,34	6,95-8,90	0,32	8,23	0,26-0,38	7,10-9,35	0,23	6,71	0,18-0,29	4,91-8,50	0,17	0,04	0,3	7,82	0,25-0,34	6,80-8,85	0,34	8,79	0,18-0,50	5,35-12,22	0,61	0,61

Conclusions: In our cohort there is no evidence of unbalanced differentiation of lymphocyte subsets; maternal infection by SARS-CoV-2 in the peripartum period seems to not affect structural and functional development of the newborn immune system. We speculate that the newborns with positive NPS for SARS-CoV-2 were contaminated rather than infected

Clinical Trial Registration: Clinical trial registration: N/A

SARS-COV-2 EPIDEMIOLOGY AND CLINICAL DETAILS OF COVID IN CHILDREN IN AN OUTPATIENT SETTING - RESULTS FROM A SENTINEL NETWORK OF PRIMARY CARE PEDIATRICIANS IN SWITZERLAND.

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

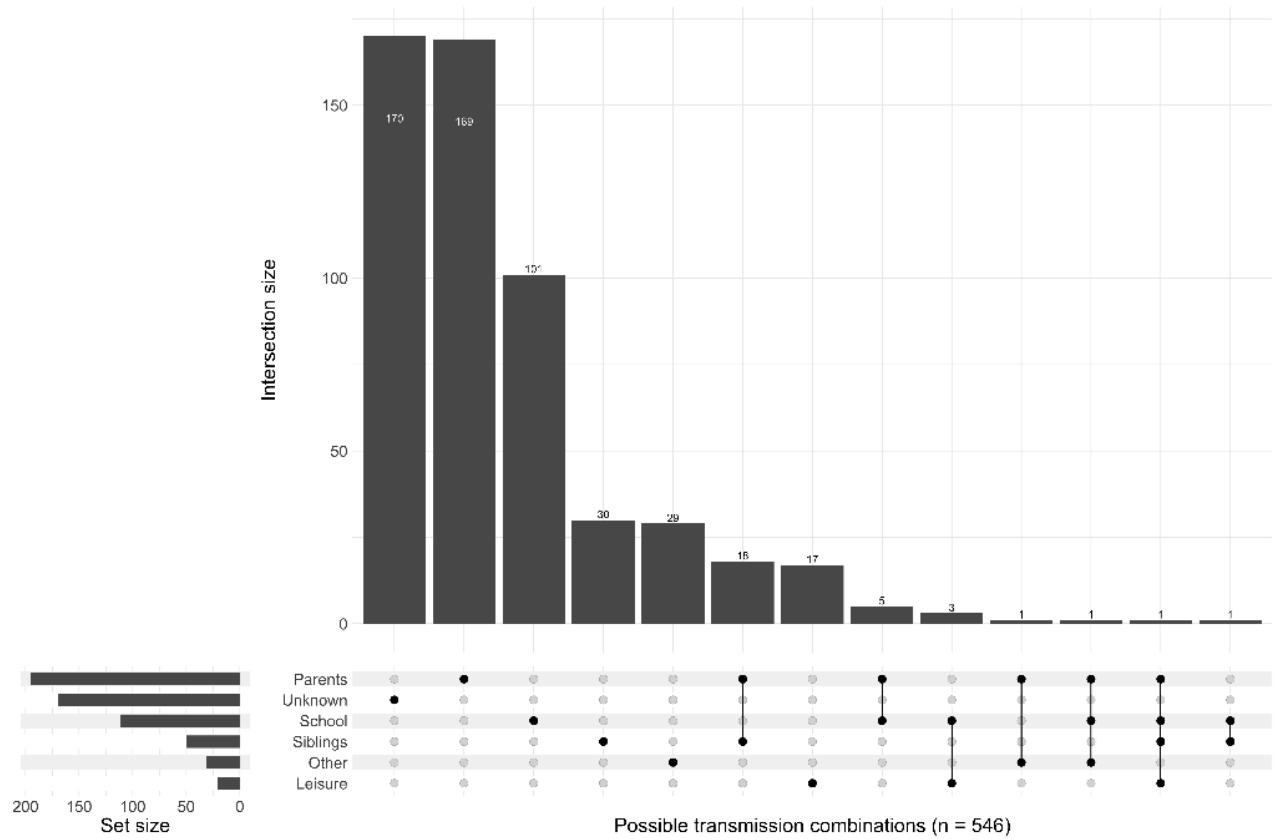
Johannes Trueck¹, Michelle Seiler², Anna Bewer Silvestri³, Christoph Berger⁴, X Sentiped Study Group¹, Michael Von Rhein⁵

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Background: Children are only mildly affected by the COVID-19 pandemic with small numbers of severe cases and low rates of complications. However, the contribution of children to population transmission is still debated and detailed epidemiological data on outpatient children are scarce.

Methods: By establishing a regional network of primary care Pediatricians, we were able to prospectively and longitudinally capture SARS-CoV-2 tests and additional clinical information on positive cases in outpatient children from early May 2020 to date.

Results: Tests were mainly performed based on clinical criteria with variable numbers per week and fluctuating positivity rates. Almost no pediatric cases were detected until October 2020 with positivity rates rapidly reaching 20% by mid-October. Not surprisingly, the reported symptoms in children were mainly fever and cough, as defined as "COVID symptoms" under the national testing strategy for children in Switzerland. However, detailed analysis of 114 SARS-CoV-2+ children demonstrated the presence of a variety of other symptoms and 12% of positive children were reported as asymptomatic. Overall, 61% of SARS-CoV-2+ children presented with fever or cough, while 27% had other symptoms. Analysis of 546 SARS-CoV-2+ cases showed that transmission was mainly reported to have occurred within households (parents 31%, siblings 5%) and schools (19%) while it was unknown in 31% of SARS-CoV-2+ children (Figure).



Conclusions: This ongoing work complements the limited information available on screening children in an outpatient setting and provides clinical as well as transmission details on SARS-CoV-2+ children. The established network has also been used to provide regular (weekly) updates on SARS-CoV-2 epidemiology in children through a systematic compilation of regional data. It thus represents a unique and promising contribution to future outpatient pediatric research in Switzerland.

Clinical Trial Registration: not applicable

SARS COV-2 CHILDHOOD INFECTION IMMUNOPATHOLOGY: THE COUNTERBALANCE OF TH2/TREG COMPARTMENT AND THE PROTECTIVE ROLE OF IMMUNOREGULATORY PROFILE.

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

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Background: The majority of children develop pauci-symptomatic or even asymptomatic SARS-CoV-2 infection and only a minority of them die. The reasons are not yet established.

Methods: sera and cellular samples collected from 38 children (<14 years old), evaluating the impact of COVID-19 infection on cytokines in sera and on Th1-Th2 balance and B cell subpopulations. We correlated results with clinical symptoms and compared them with infected adults and non-infected children.

Results: we found low levels of pro-inflammatory cytokines (IL1beta, IL6 and TNF) in COVID-19+ children and there was no correlation of them with disease severity. IL4 and IL2 showed an opposite pattern comparing both disease severity and age of COVID-19 patients, with higher levels among asymptomatic children ($p < 0,05$). These cytokines were not detectable in non-infected children and COVID+ adults. Infected children with mild-disease symptoms showed relatively increased levels of IL10 in sera, undetectable in others. Children presented greater amounts of Th and B cell subsets per mm^3 than adults and within the same group the greater as age decreased. Interestingly low numbers of IgD- B cells, and, more specifically among them, memory CD27+ B cells significantly correlated with absent/mild symptoms. Similarly, high amounts of FoxP3⁺/CD25^{high}/ CD127^{low}/Helios⁻ inducible T regs seem to play a protective role in COVID-19 immunopathology in the childhood.

Conclusions: Our study suggests that COVID-19 may be characterized by a more complex pattern of cytokine responses, that significantly changes according to age and disease severity. IL6 and TNF α do not represent good biomarkers of disease severity in childhood infection. IL4, was overexpressed in sera of asymptomatic children, suggesting a possible Th2-mediation in childhood immunopathology. IL10-producer children show a mild disease, suggesting that in early infected children immunoregulation could have a potential protective role.

Clinical Trial Registration: not registered

LYMPHOCYTE SUBSETS IN 32 PATIENTS WITH THE MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C)

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - DIAGNOSTICS (SCREENING AND TESTING)

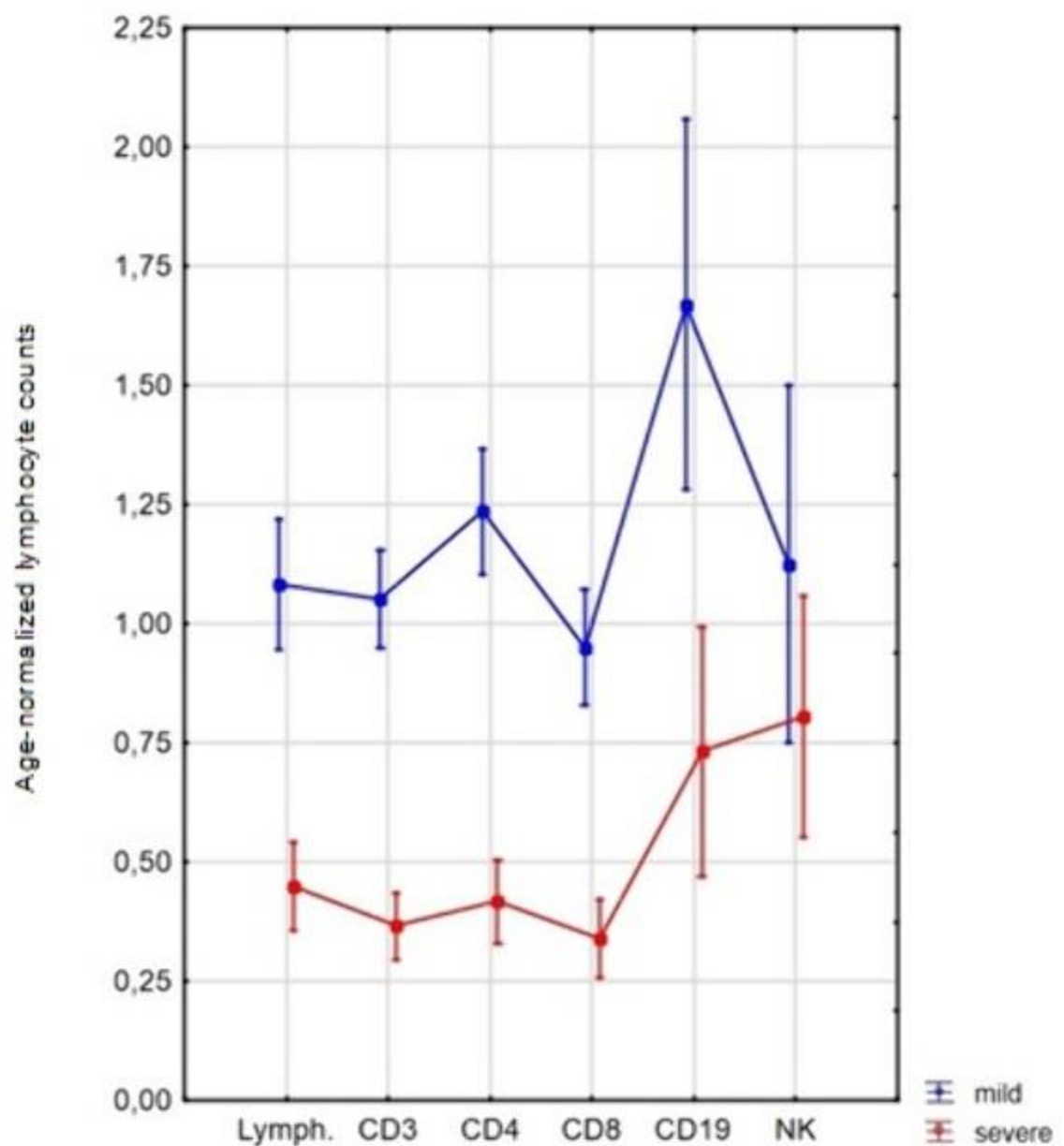
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¹Medical University of Warsaw, Department Of Pediatrics With Clinical Assessment Unit, Warsaw, Poland, ²Medical University of Warsaw, Department Of Laboratory Diagnostics And Clinical Immunology Of Developmental Age, Warsaw, Poland, ³Medical University of Warsaw, Faculty Of Health Sciences, Warsaw, Poland

Background: Lymphopenia is a hallmark of the multisystem inflammatory syndrome in children (MIS-C). We aimed to characterize lymphocyte subsets and their correlations with the other abnormalities of MIS-C.

Methods: We performed peripheral leukocyte phenotyping in 32 patients (22 boys, median age 10.6 years old) with MIS-C, diagnosed based on the WHO criteria. All patients were of white ethnicity. We analyzed lymphocyte subsets at three time-points of the disease: in an acute phase (A-32 patients), in a convalescent phase (B-27 patients), and 4-6 weeks later (C-27 patients). Absolute lymphocyte counts were age-normalized. We examined correlations between lymphocyte subsets and other clinical and laboratory markers.

Results: In phase A, 27 (84%) children had lymphopenia. Decreased absolute counts of CD3, CD4, and CD8 cells were observed in, respectively, 28 (88%), 23 (72%), and 27 (84%) patients. NKs were decreased in 20 (63%) and CD19 in 19 (59%) children. Based on age-normalized lymphocyte subset values, with the use of the k-means clustering method, we distinguished two groups of patients: the 'mild' and the 'severe' (Figure). The severe group had significantly higher procalcitonin and troponin I levels and lower thrombocytes and serum albumin. Moreover, the severe group had hypotension more frequently (71.4% vs. 27.3%, $p=0.03$). In phase B, all lymphocyte counts increased, and 10 (37%) children had lymphocytosis. The rise of CD3, CD4, and CD8 correlated with procalcitonin and NT-proBNP concentrations, but not with steroid use. In phase C, most children had normal lymphocyte counts.



Mean level of lymphocyte count with 95% confidence interval in two groups of patients ('mild' vs 'severe').

Conclusions: Lymphocytopenia in MIS-C most commonly regards CD3, CD4, and CD8, and it correlates with the severity of the other laboratory abnormalities and hypotension prevalence. The excessive rise in CD3, CD4, and CD8 in the convalescent phase correlates with some laboratory disease severity markers.

Clinical Trial Registration: Not applicable

VERY LOW PREVALENCE OF SARS-COV-2 INFECTION BUT HIGH PREVALENCE OF OTHER RESPIRATORY TRANSMITTED VIRUSES IN CHILDREN ADMITTED IN THE EMERGENCY DEPARTMENT

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Children seemed less infected by the SARS-CoV-2. However, children could be asymptomatic transmitters of the infection. Moreover, with distancing measures, the detection of other respiratory viruses could be limited. The aim of this prospective cohort study was to determine the prevalence of positive RT-PCR for SARS-CoV-2 and other respiratory viruses in children.

Methods: We did a prospective, multicenter, cohort study from April to July 2020 in pediatric emergency departments (PED) of eight University hospitals in France. All children admitted to the PED of these centres during working hours, with or without infectious symptoms, with a signed informed consent, were included. A nasopharyngeal swab was centralized to the virology laboratory for SARS-CoV-2 and multiplex RT-PCR for respiratory viruses. Under the worst-case assumption of a high prevalence of 10% (95% CI: 8-12), 914 children were needed to obtain this precision. The prevalence of positive RT-PCR for SARS-CoV-2 and other respiratory viruses were estimated by the observed frequency and its 95% CI using the exact Clopper-Pearson method.

Results: A total of 924 children <18 years of age have been included (mean age and sex ratio not yet available). The proportion of those with infectious symptoms are not yet known (analyses ongoing). Virological analyses showed a positive RT-PCR for SARS-CoV-2 in 3/906 children tested (0.3%). The multiplex RT-PCR for other viruses was positive for 123/781 children tested (15.7%). This RT-PCR was positive for: rhinovirus (9.7% of children), bocavirus (3.7%), adenovirus (3.2%), enterovirus (1.5%), parainfluenzae (0.6%), coronavirus NL63 (0.4%) and RSV (0.4%).

Conclusions: Our study showed a rare detection of the SARS-CoV-2 in children. Conversely, the detection of other respiratory viruses by RT-PCR remained important despite distancing measures.

Clinical Trial Registration: Clinical trial registration: NCT04336761 (ClinicalTrials.gov)

SEROPREVALENCE OF SARS-COV-2 INFECTION IN CHILDREN WITH SELECTED CHRONIC DISEASES IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL IN LATVIA

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Compared to the adult population, there are far fewer SARS-CoV-2 seroprevalence studies in children with chronic diseases. The main aim of this study was to determine the seroprevalence of SARS-CoV-2 infection in the only specialized children's hospital in Latvia.

Methods: The study design is the quantitative longitudinal study using convenience selection of the included children till 18 years in Children's Clinical University hospital (CCUH) in Latvia from September till December 2020. The study included children in 4 chronic disease groups - type 1 diabetes, bronchial asthma, cystic fibrosis and inflammatory bowel disease, who has no epidemiological, clinical or laboratory evidence of possible SARS-CoV-2 infection in the history. All the included patients were tested for seroprevalence of anti-SARS-CoV-2.

Results: All together 238 patients were included in the study in CCUH and serological testing of anti-SARS-CoV-2 was performed to 232 of patients. Number of patients included in the study depending on disease group - 12 patients with inflammatory bowel disease, 15 patients with cystic fibrosis, 103 patients with bronchial asthma and 108 patients with type I diabetes. From all the patients in the study who were serologically tested for SARS-CoV-2, only 3 of all had positive total anti-SARS-CoV-2 antibodies. The overall seroprevalence for children included in the study is only 1.3%. Total anti-SARS-CoV-2 positive patients were 1.9% (2 out of 103) in the group of bronchial asthma and 8.3% (1 out of 12) in the group of inflammatory bowel disease

Conclusions: Although overall anti-SARS-CoV-2 seroprevalence for children with chronic disease included in the study is low and only 1.3%, should be taken into account that the rate of new cases with COVID-19 increased rapidly in Latvia during the period of this study.

Clinical Trial Registration: N/A if not registered.

**SARS-COV2 IN IMMUNOCOMPROMISED CHILDREN, ARE THEY REALLY AT RISK?
SEROPREVALENCE AND CLINICAL CHARACTERISTICS OF COVID19 IN PEDIATRIC
RHEUMATOLOGY**

E-POSTER VIEWING

**TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - EPIDEMIOLOGY AND RISK
FACTORS**

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Background: Approximately 10% of identified cases of SARS-COV2 are pediatric, and seroprevalence in children in Spain ranges from 5 to 8,5%. Children with rheumatic diseases have been considered a population at risk for COVID19. However, there is little data on the characteristics of SARS-COV2 infection in this group of patients. The aim of this study is to describe the seroprevalence and clinical characteristics of infection by SARS-COV2 in children with rheumatic diseases from a tertiary hospital.

Methods: Hospital-based longitudinal descriptive study. Children diagnosed with JIA, connective tissue disease or PFAPA, followed up at pediatric rheumatology from september to december 2020 were included. At inclusion, serology of SARS-COV2 was performed and a specific questionnaire about symptoms and diagnosis of COVID19 was completed.

Results: 109 patients were recruited. Serology was performed in 86 patients. Seroprevalence using ELISA IgG positive test was 13,95%(12/86). SARS-COV2 infection was reported in 21 patients (19.2%): 10 PCR+, 3 antigenic test and 15 antibodies. The mean age was 11,1years, 66,6% girls. The underlying diagnosis was JIA (14/21), PFAPA (3/21), Lupus (2/12), uveitis (1/12) and vasculitis (1/21). 90% received immunosuppressive treatment. Three patients required hospital admission, none of them needing oxygen supplementation. The only complication was iliac thrombosis in a patient with antiphospholipid syndrome and suspicion of LES. All patients had favorable outcome. The most frequent symptom was fever (41%). 21% of the infections were asymptomatic. 61% did not require medical assistance.

Conclusions: In a cohort of pediatric patients with rheumatic disease and immunosuppressive treatment, SARS-COV2 infection was demonstrated in 19.2% and seroprevalence was 13,95%. The clinical manifestations were mild and there were no severe infections. Children with rheumatic diseases may not be considered at risk population for severe COVID19.

Clinical Trial Registration: No registration

**FOLLOW-UP OF CASES WITH TELEMEDICINE METHOD IN THE COVID 19 PANDEMIC:
REDUCTION OF HOSPITAL WORKLOAD**

E-POSTER VIEWING

**TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - EPIDEMIOLOGY AND RISK
FACTORS**

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Background: During epidemic periods, healthcare facilities are busy environments visited by many patients. Telemedicine, one of the methods that should be used to reduce this density, can be provided by telephone and may cause a decrease in hospital admissions.

Methods: This study was conducted in Dr. Behçet Uz Children Hospital, October-December 2020. Patients who applied to our hospital and were found to have SARS-CoV-2 PCR positive were included in the study. These patients were called by pediatric infection fellow, and the age, gender, contact status, symptoms, and the time spoke were recorded. Three different evaluations are made according to the symptoms. Patients without symptoms or with mild symptoms were not required. Cases with moderate symptoms were called again the next day and their symptoms were questioned again. Those with severe symptoms were invited to the hospital evaluated and were hospitalized according to their indications

Results: A total of 545 patients were included in the study. 509 (93.3%) of these patients were reached. Among 509 patients, 268 (52.7%) were females. The mean age was $10,8 \pm 5,5$ (range 1 months-17 years). 51 (10.1%) of these patients were under the age of 1. 86 (16.8%) were between the ages of 1-6, and 372 (73.1%) were between the ages of 6-17. When the phone call durations are evaluated; It was recorded that less than 3 minutes in 502 (98.6%) cases, and over 3 minutes in 7 (1.4%) cases. 12 (2.3%) of all cases were re-searched and their symptoms were questioned. It was observed that their symptoms improved and their follow-up was discontinued. 34 (6.6%) of the 509 cases were called to the hospital for evaluation, and 6 (1.6%) of these cases were hospitalized.

Conclusions: With an average of 3 minutes of interview with patients, it is possible to reduce the frequency of contact, hospitalization rates, and hospital workload of covid-positive cases

Clinical Trial Registration: Turkey's health ministry:-2021-01-08T12_28_47

UNDERSTANDING RESPONSES OF PAEDIATRIC EMERGENCY DEPARTMENTS TO THE FIRST WAVE OF THE COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - EPIDEMIOLOGY AND RISK FACTORS

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Background: Insights into the European Paediatric Emergency Department (PED) approach to organising health care for children with acute illness in response to infectious pandemics and global disasters are lacking. This study aimed to understand the types of changes in PED care which were implemented in response to the first wave of COVID-19.

Methods: This multinational, cross sectional European survey was distributed online via the Research Electronic Data Capture (REDCap) platform as part of the EPISODES study. The survey explored baseline hospital demographics and pre and during COVID-19 changes; focussing predominantly on service provision and referral pathways. Results are presented in descriptive formats.

Results: There were 39 study sites in 18 countries; 97% (n=38) of sites remained open during the pandemic. The capacity of 18/28 (68%) short-stay units decreased, in contrast 2 units increased their capacity. As a result of restructuring of local healthcare services 12/39 (31%) sites acted as referral units from other hospitals which treated paediatric patients in non-Covid times. There was minimal change to the availability of consultant telephone advice services, direct or indirect consultant supervision or responsible specialists within the emergency departments. There was an overall decrease of 8% (n= 3) in redirection of children with underlying co-morbidities away from ED during the pandemic. The number of changes implemented in the department was not directly related to the peak 14 day incidence of SARS-CoV-2 reported nationally during the first wave.

Conclusions: Overall, there was minimal change to service organisation or delivery across PEDs during the first wave of the COVID-19 pandemic. Combining the small changes made by some and learning from large scale changes adopted by a few may be essential in future pandemic response.

Clinical Trial Registration: ISRCTN Registry ISRCTN91495258

<https://doi.org/10.1186/ISRCTN91495258>

HUMAN PARECHOVIRUS INFECTION IN THE INTESTINAL EPITHELIUM

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - GASTROINTESTINAL INFECTIONS

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Background: Human parechoviruses (PeV-As) are viruses within the *Picornaviridae* family with the most often detected genotypes being PeV-A1 and PeV-A3. PeV-A1 is mainly a causing gastroenteritis in children, while PeV-A3 is linked to severe disease with neurological symptoms in infants. One of the entry sites for PeV-As is the gastrointestinal tract. In this study viral entry is further characterized using enteroid technology. Enteroids are 3D structures derived from primary intestinal material that are composed of intestinal epithelial cells. Fetal derived enteroids resemble the neonatal intestinal tract *in vivo*, and are therefore useful to study PeV-As infection.

Methods: To allow viral infection enteroids were broken and seeded into Transwell® inserts where cells differentiate into the different intestinal cell types. After infection with PeV-A1 and PeV-A3 clinical strains, analysis of the replication kinetics using quantitative PCR and viral titration was performed. Infected monolayers were imaged using confocal microscopy to determine the cell tropism.

Results: Infection with both genotypes was established in human fetal derived enteroids. PeV-A3 replication kinetics were slower compared to PeV-A1 (significant increase at day 4 for PeV-A3 versus day 2 for PeV-A1). Infection of both genotypes was preferentially from the basolateral side and virions were primarily released on the apical side. Infection was confirmed by confocal microscopy showing more infected cells for PeV-A1 as compared to PeV-A3.

Conclusions: These results show that both PeV-A1 and PeV-A3 can infect the gut from the basolateral side of the human fetal derived enteroids. This is remarkable as the human intestine is thought to be a main entry site for PeV-A1 and PeV-A3 with both viruses entering the mucosal layer via the apical side. Further studies are needed to characterize this entry mechanism.

Clinical Trial Registration: The submitted abstract is not related to a clinical trial

ANTIBIOTIC SENSITIVITY OF SALMONELLA IN CHILDREN WITH SALMONELLOSIS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - GASTROINTESTINAL INFECTIONS

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Background: To study the antimicrobial sensitivity pattern of such antimicrobials as cephalosporins and carbapenems against Salmonella spp. isolated from children with salmonellosis.

Methods: 3552 isolates of Salmonella obtained from children with salmonellosis and were evaluated for antimicrobial susceptibility testing by standard staging disk diffusion method and the use of devices for automatic registration of antibiotic susceptibility (Vitek ATB Expression (strip rapid ATB™ E4) firms «Biomeasure» (France)).

Results: For the period from 2014 to 2018, eight serotypes of Salmonella that cause morbidity among children were isolated. S. Enteritidis accounted for 88% of total isolates, followed by S. Typhimurium – 11% and all other serotypes accounted for only 1%. During this period, children's Hospital reported an increasing prevalence of S.Typhimurium and the decreasing prevalence of S. Enteritidis ($r = -0,94$; $p < 0,05$). In this study, S. Enteritidis isolates showed high sensitivity to third- and fourth generation cephalosporins (98% – 98,6%). However, our study showed reduced sensitivity of S. Typhimurium to Cefepime (100% – 95,8%, $p > 0,05$) and Ceftriaxone (100% – 97%, $p > 0,05$). There were no strains resistant to carbapenems including Imipenem and Meropenem.

Conclusions: 1. Among the children with salmonellosis hospitalized in Minsk the increasing prevalence of S. Typhimurium was marked, and the reduction of the role of S. Enteritidis was reported. 2. Salmonella has an increased rate of drug resistance to third- and fourth generation cephalosporins.

Clinical Trial Registration: ClinicalTrials.gov 0123456789

USING STEM CELL-DERIVED INTESTINAL ORGANOID AND MACROPHAGES TO INVESTIGATE THE INTERACTIONS OF S. TYPHI AND S. PARATYPHI A WITH THE HUMAN HOST

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - GASTROINTESTINAL INFECTIONS

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Background: S. Typhi and S. Paratyphi A are human-restricted enteric pathogens, responsible for a significant global disease burden. The intestinal 'organoid' system (iHO), wherein 3-D structures representative of the gut epithelium can be produced from induced pluripotent stem cells (hiPSC) and maintained in culture, provides opportunities to directly model the epithelial response to this pathogen. hiPSC-derived macrophages can be used to model the immune response which would occur following translocation of these pathogens into the bloodstream.

Methods: hiPSCs were differentiated to iHO via sequential culture with specific cytokines and placed into a Matrigel-based pro-intestinal culture system. hiPSC were differentiated into embryoid bodies and later macrophages via culture with specific cytokines. Organoids were microinjected and macrophages stimulated with S. Typhi (Quailes strain), S. Paratyphi A (NVGH308) or S. Typhimurium (SL1344), and underwent modified gentamicin protection assays. Intracellular CFU counts were compared between pathogens. RNA was extracted from infected samples for sequencing.

Results: S. Typhi, SL1344 and S. Paratyphi A all appeared to interact with and invade the intestinal epithelium, with significantly more S. Paratyphi and SL1344 recovered from within cells following inoculation ($p < 0.0001$). All pathogens were able to survive and replicate within macrophages, with maximum CFUs being recovered in cells stimulated with SL1344, followed by S. Paratyphi A and S. Typhi ($p < 0.0001$). RNA-Seq data revealed pathogen, and possibly Vi-specific signatures during infection.

Conclusions: This is the first demonstration that S. Typhi and S. Paratyphi are able to invade the iHO epithelium and allows detailed investigation of host response to these pathogens, both in gut and immune cells. I plan to use these methods to further investigate the role of Vi in local and systemic response to infection; bacterial transcriptomics could help identify novel vaccine targets.

Clinical Trial Registration: Not registered as a clinical trial.

SARS-COV2 SEROPREVALENCE IN A COHORT OF PERINATALLY HIV INFECTED CHILDREN AND YOUNG ADULTS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - HIV/AIDS

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Background: SARS-CoV2 is a new coronavirus which started spreading in December 2019 from Wuhan, China. The seroprevalence of SARS-CoV2 antibodies allows to define a better picture of the spread of SARS-CoV2 infection in the population. The duration of SARS-CoV2 antibodies in the healthy population as well as in immunocompromised patients is still a topic of debate. HIV-infected people are at increased risk of developing complications from contracting a viral illness. Furthermore, their ability to develop and maintain an optimal immunological response to any kind of pathogen appears to be reduced.

Methods: We analyzed the overall seroprevalence of SARS-CoV2 antibodies in 85 HIV infected-people on ART aged between 5 and 34 years old from May to January 2021. 88,2% of patients were in a good state of viroimmunological control: 23 showed a VL < 40 cp/ml and 52 had an undetectable VL. When positive for SARS-CoV2 serology, a confirmatory nasopharyngeal swab for PCR assessment and a second serological assay would be performed.

Results: Out of the 85 patients, 5 proved to be positive for SARS-CoV2 antibodies (rate of prevalence 5.8%). In all 5 cases the nasopharyngeal swabs were negative and the second assay for SARS-CoV2 antibodies performed in 4 out of 5 patients a week later was negative as well. The anamnestic recall brought no elements of suspicion for a past infection.

Conclusions: The duration of SARS-CoV2 antibodies after COVID19 disease is still poorly understood in healthy population and additional studies will be needed to define the durability of humoral responses in immunocompromised children and in particular in HIV infected children under effective ART. It is still unknown whether ART may in part mitigate the pathogenesis of SARS-CoV-2 infection. Also, it will be important to define an efficient vaccination plan in HIV infected patients with a satisfactory virological control.

Clinical Trial Registration: Not a clinical trial study, but a basic science study

INCREASED PLATELETS COUNT AMONG HIV-EXPOSED UNINFECTED INFANTS.**E-POSTER VIEWING****TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - HIV/AIDS**

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Background: The aim of the study was to understand how HIV exposure and antiretroviral therapy affect the blood components of infants.

Methods: 86 HIV-exposed uninfected (HEU) infants were included between 2014-2017. To establish HIV perinatal infection, peripheral blood was taken between 0-3 days, 2-3 weeks, 6-8 weeks and 3 months after delivery and tested for HIV RNA.

Results: Complete prophylaxis in the newborn was adapted in 91% of cases. 91% of women received antiretroviral treatment during pregnancy, in 9% of cases no prophylaxis during pregnancy was administered. 58% of women received antiretroviral therapy before pregnancy, 15% during 1st trimester, 10% during 2nd and 3% during 3rd. In 3% of women treatment information is unknown. 25% received ZDV during labor. The prophylaxis was administered in all newborns, 73% received only zidovudine, 20% received zidovudine+lamivudine+nevirapine regimen. Our studies found that the increased platelet count was the most common haematological abnormality associated with HEU infants (table 1). Table 1. Median, mean and ranges of platelet parameters measured in HEU infants.

	Time after delivery	Median	Mean	Min	Max	25% percentile	75% percentile
Platelets (x10 ³ /mm ³)							
	0-3 days	271,5	282,2	54,0	517,0	232,5	346,5
	2-3 weeks	482,0	469,1	237,0	777,0	359,3	553,3
	6-8 weeks	463,0	453,5	116,0	847,0	362,3	544,3
	3 monts	436,5	430,2	139,0	738,0	370,0	484,0
Mean platelets volume							
	0-3 days	9,4	9,4	6,1	12,4	8,4	10,3
	2-3 weeks	10,5	10,5	7,2	13,0	9,9	11,3
	6-8 weeks	10,2	10,3	8,7	13,0	9,6	10,8
	3 monts	9,8	10,0	8,2	12,2	9,4	10,5

Conclusions: Our results show significantly higher platelets count in HEU infants. Further studies are needed to identify other potential causes of thrombocythemia and to separate the effect of HIV-exposure from the effect of antiretroviral therapy exposure on infant.

Clinical Trial Registration: not applicable

EP400 / #1501

METABOLIC REWIRING OF MACROPHAGES DRIVES IMMUNITY IN STAPHYLOCOCCAL SKIN INFECTION

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - HOST-PATHOGEN INTERACTION

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Background: The skin needs to balance tolerance to the colonizing microflora with high alert for the invasion of potential pathogens. Conceptionally, a flexible response machinery is required to accommodate the dynamic challenges of efficient antimicrobial defence and restoration of tissue homeostasis. Dermal macrophages critically provide immunity against the skin colonizer and opportunistic pathogen *Staphylococcus aureus*. Here, we dissected cell-intrinsic mechanisms and micro-environmental cues, which tune macrophage signalling in localized dermal infection in the mouse ear.

Methods: An intradermal *S.aureus* infection model (ear pinna) lasting for a maximum of four weeks was analyzed by combining immune cell phenotyping in and ex vivo including high dimensional transcriptomics and metabolomics.

Results: We found that early in staphylococcal skin infection GM-CSF produced by gamma-deltaT-cells and hypoxia condition the dermal microenvironment, diverting macrophages away from the homeostatic M-CSF dependent program. Thus, macrophages are metabolically rewired for a glycolytic response, which is mediated by GM-CSF, and at the same time upregulate the expression of IRG1 and generate itaconate. This multifactorial program of macrophage rewiring is required for the timely clearance of bacteria and propagation of temporal immune memory.

Conclusions: In summary, during bacterial skin infection dermal macrophages receive complex exogenous and endogenous cues that allow for cycling between fierce antimicrobial activity, resolution of inflammation and reestablishment of barrier tissue homeostasis.

Clinical Trial Registration: This was not a clinical trial

FEVER IN HIGH-RISK PAEDIATRIC PATIENTS PRESENTING TO EUROPEAN EMERGENCY DEPARTMENTS: THE PERFORM EXPERIENCE

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Background: In high-risk children (due to underlying illness or immunosuppressive therapy), fever is often the only sign of serious bacterial infection (SBI). Biomarkers commonly used in emergency departments (EDs) do not predict SBI well, therefore most high-risk children are admitted and treated with IV antibiotics, awaiting final microbiological results. We describe current management and aetiology across Europe.

Methods: High-risk children, presenting with fever/suspected infection and requiring blood investigations, were prospectively recruited, upon informed consent, in the Personalised Risk assessment in Febrile illness to Optimise Real-life Management across the European Union (PERFORM) study across 16 European centres between June 2016 and June 2019. Demographic, presenting features, microbiological, treatment, and outcome data were collected. Patients were assigned final phenotype diagnoses as per PERFORM protocol.

Results: 529 children were recruited of whom 56% had malignancies. 92.5% (n=490) had blood cultures taken with a positive yield of 16.1% (n=79), including 14 contaminants. 27.8% (n=146) had bacterial phenotypes, 22.4% (n=116) viral, and 31.7% (n=161) were unknown viral/bacterial. Only 12.4% (n=65) were definite bacterial and 9.70% (n=51) definite viral infections. In ED, only ill appearance was associated with bacterial infection (p<0.001); vital signs and neutropenia were not. 82% (n=432) had antimicrobials started on admission, and were treated for median 7 days (IQR 3-10 days). Mortality was

1.7%, and 85.7% made full recovery, without difference between bacterial or viral phenotypes. Bacterial phenotype was associated with PICU admission ($p=0.014$).

Conclusions: Fever remains a major challenge in high-risk children. Ill appearance was the only feature in ED associated with bacterial phenotypes. The low yield of microbiological diagnostics supports the urgent need for new biomarkers.

Clinical Trial Registration: This project received funding from the European Union's Horizon2020 programme under grant agreement 668303.

CHANGES IN THE FAECAL MICROBIOME DURING ENGRAFTMENT AFTER ALLOGENEIC STEM CELL TRANSPLANTATION (ALLOHSCT) IN CHILDREN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - INFECTIONS IN PEDIATRIC TRANSPLANT MEDICINE

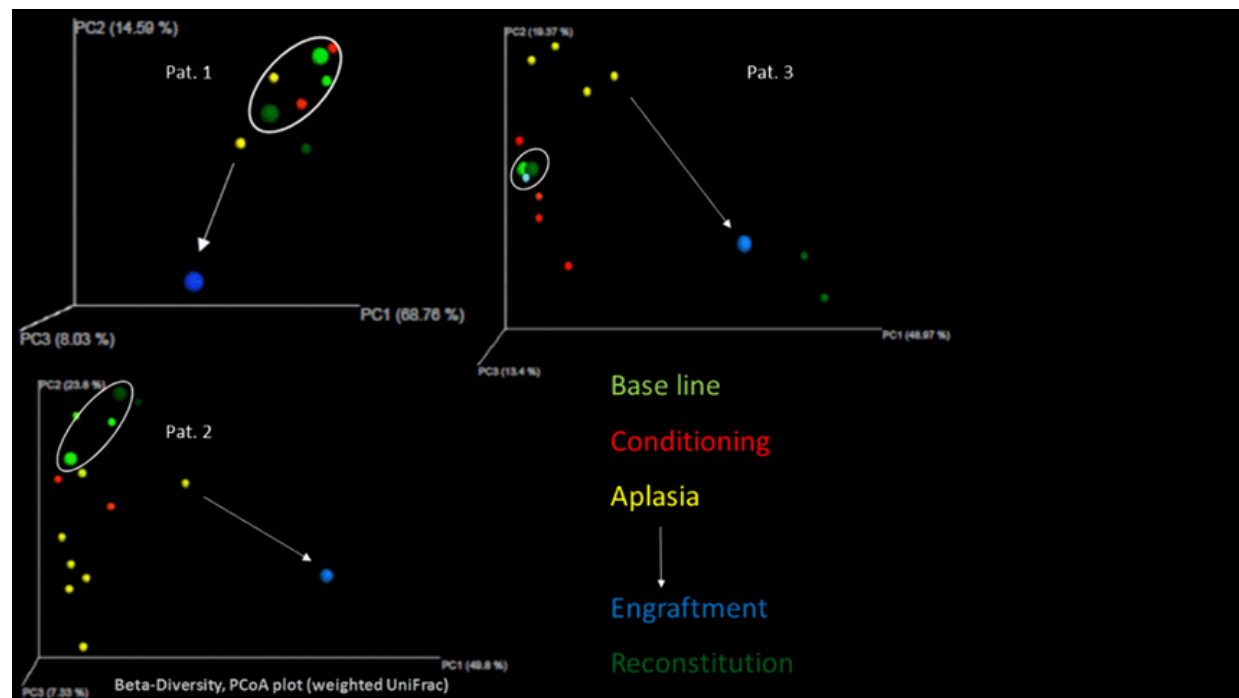
Volker Strenger¹, Daniela Sperl¹, Wolfgang Schwinger¹, Herwig Lackner¹, Christian Urban¹, Martin Benesch¹, Gregor Gorkiewicz²

¹Medical University Graz, Dep. Of Paediatrics And Adolescent Medicine, Graz, Austria, ²Medical University Graz, Diagnostic And Research Institute Of Pathology, Graz, Austria

Background: While associations between faecal microbiome and acute intestinal GvHD following alloHSCT are described and can be explained by interactions between microbiome and the immune system, data on changes of the microbiome during engraftment following alloHSCT are scarce. This, however, might have impact on the development of intestinal GvHD.

Methods: In 3 paediatric patients (male, 4.6a; female 8.6a; male 11.8a), we collected stool before and after alloHSCT for non-malignant haematological diseases at least 2 times a week until engraftment (defined as WBC >1.000/μl) and sporadically, thereafter. Faecal microbiome was characterized by 16S rRNA gene analyses.

Results:



As expected, a quick decline in diversity and richness of the faecal microbiome was observed during conditioning therapy and broad spectrum antibiotic prophylaxis. While composition of the faecal microbiome was only altered slightly during bone marrow aplasia after conditioning therapy and broad spectrum antibiotic prophylaxis, we observed an abrupt, yet reversible, change (arrows in Fig. 1) in the days after engraftment in all 3 patients with decrease of the *Bacteroidetes* – mainly of the genus *Bacteroides* (-89.2 to -95.1%) – and an increase of *Firmicutes* – mainly of the family of the *Streptococaceae* (+60.3 to +48,700%, “engraftment microbiome”). At different paces and possibly

influenced by different post-alloHCST courses (with heterogeneous lengths of antibiotic treatments, but no GvHD), microbiomes approximated the pre-alloHSCT appearance in their composition (2 weeks to >2 months after engraftment) and their richness (up to the second half-year post-alloHSCT, Fig. 1, ellipses).

Conclusions: The observed “engraftment microbiome” cannot exclusively be explained by conditioning and broad spectrum antibiotics. Early re-establishment of the mucosal immune system, mucosal regeneration after drug induced mucositis and engraftment associated cytokine release might be possible explanations for the observed phenomenon.

Clinical Trial Registration: Clinical trial registration: ClinicalTrials.gov N/A

GUT AND AIRWAYS MICROBIOTA PROFILES IN PRE-SCHOOL CHILDREN WITH RECURRENT RESPIRATORY TRACT INFECTION: IS THERE A PLACE FOR MICROBIAL DERIVED PRODUCTS IN DYSBIOSIS?

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - MICROBIOLOGY

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Background: Respiratory tract infections (RTIs) are common in childhood and a better understanding of the inter-talks between human immune components and microbiota as well as their role in respiratory morbidity is necessary for an improved care. The aim of our work was to identify sign of dysbiosis associated to recurrent RTIs in pre-school children and any effects on microbiota by a bacterial lysate (OM-85) given as prophylaxis.

Methods: OM-85- Pediatric rRTIs (OMPeR) study participants (n=288) faecal and nasopharyngeal samples were collected for microbiome essays at baseline and at the end of the study (16s Illumina MiSeq, Mobio, CA, USA). Alpha-diversity was calculated and adjusted per influencing factors. Paired and unpaired analysis were performed and non-parametric Wilcoxon's rank sum statistical tests applied.

Results: Our preliminary findings showed a higher abundance of *Firmicutes* and *Bacteroidetes* in the gut and *Proteobacteria*, *Firmicutes*, *Actinobacteria* in the nasopharynx. At gut level, the relative abundance of *Firmicutes*, *Actinobacteria* and *Proteobacteria* as well as *Bifidobacterium* and *Ruminococcus* genera in children <2 or ≥2 years old were significantly different. At nasopharynx *Moraxella* was more enriched in the patients with < 3 RTIs in the previous 6 months. The first intra-group analysis in all patients receiving OM-85 (n=50) did not show significant differences in relative abundance (%). On the contrary, a significant reduction of *Bacteroides* genus was observed in the placebo group (n=48).

Conclusions: The microbiota profiles were in line with what reported in the literature and influenced by age. *Bacteroides* reduction is known to be associated with an increased risk of atopy and asthma in children. The use of microbial-derived products might play a role in dysbiosis. There is need for larger clinical trial in infants with both microbiological and immunological endpoints.

Clinical Trial Registration: EudraCT: 2016-002705-19

EXPRESSION OF THE HOMEOSTATIC ANTI-INFLAMMATORY PROTEIN DEL-1 IN NEONATAL MONOCYTES

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - NEONATAL SEPSIS

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Background: Neonatal monocytes have an anti-inflammatory phenotype that renders them less responsive against inflammatory stimuli. The molecules that mediate and/or promote this anti-inflammatory phenotype in neonates remain elusive. DEL-1 is a homeostatic protein, that promotes resolution of inflammation. To further understand the anti-inflammatory components of neonatal immunity, we evaluated DEL-1 expression and secretion by neonatal monocytes.

Methods: Cord and peripheral blood samples were obtained from healthy human donors after informed consent. Mononuclear cells were isolated by Ficoll - Hypaque centrifugation. Naïve monocytes were selected by immunomagnetic separation, placed on culture and stimulated with *E. coli* lipopolysaccharide (LPS) or treated with recombinant IL-10.

Results: In total, 12 umbilical cord blood samples from healthy term-pregnancies and peripheral blood from 14 healthy adult donors were included. DEL-1 mRNA levels were significantly higher in neonatal monocytes compared to adult ones under normal conditions (3-fold, p 0.03). During LPS stimulation, DEL-1 was suppressed in adult monocytes, but it remained upregulated in LPS stimulated neonatal monocytes compared to adult ones (3.8-fold, p.0.02) Upon normal conditions, DEL-1 expression was associated with upregulation of CEBP-beta, a transcription factor known to promote monocyte inactivation. IL-10 that significantly promotes CEBP-beta transcription, also resulted in DEL-1 upregulation in monocytes (4.7-fold, p < 0.01).

Conclusions: DEL-1 is elevated in neonatal monocytes and is upregulated by the transcription factor CEBP-beta and the anti-inflammatory cytokine IL-10. As DEL-1 is a secreted protein that promotes resolution of inflammation, it may be essential to prevent from excessive inflammation and maintain homeostasis upon inflammatory stimuli in the susceptible neonatal hosts.

Clinical Trial Registration: Not Applicable

REGULATION OF TLR-4 SIGNALING PROMOTES ENDOTOXIN TOLERANCE IN NEONATAL MONOCYTES

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - NEONATAL SEPSIS

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Background: Activation of TLR signaling is important to mount an inflammatory response. However, neonatal monocytes have an anti-inflammatory phenotype that renders them hypo-responsive to inflammatory stimuli. The molecules that mediate this anti-inflammatory phenotype in early life have not been characterized. In this study, we aimed to characterize differences in the regulation of TLR-4 responses in neonatal monocytes compared to adults signaling.

Methods: Cord and peripheral blood samples were obtained from healthy human donors after informed consent. Mononuclear cells were isolated by Ficoll - Hypaque centrifugation. Naïve monocytes were selected immunomagnetic separation, placed on culture and stimulated with *E. coli* lipopolysaccharide (LPS). Expression of genes of interest were determined by qPCR. . Two and four hours following LPS stimulation, mRNA levels of IRAK-1, IRAK-2, TRAF-6, and IRF-5 (positive regulators of TLR response) as well as IRAK-M, IRF-4, CEBP-beta and PPAR-gamma (that negative regulate TLR signaling) were evaluated.

Results: In total, 12 umbilical cord blood samples from healthy term-pregnancies and peripheral blood from 14 healthy adult donors were included. mRNA levels of CEBP-beta, a transcription factor that promotes monocyte inactivation, was 1.8 fold higher in neonatal monocytes compared to adults (p 0.03). Upon basal conditions and LPS stimulation, IRAK-M mRNA, a hallmark of endotoxin tolerance that inhibits downstream TLR4 signaling, was higher in neonatal macrophages compared to adults (3.3-fold, p 0.01). No difference was noted in the rest of the TLR regulators.

Conclusions: Epigenetic transcriptional regulation of CEBP-beta and IRAK-M is critical in promoting hypo-responsiveness to endotoxin in neonatal monocytes. Our results indicate that neonatal monocytes are re-programmed to exhibit tolerance to endotoxin, a mechanism that is essential to prevent excessive inflammation and maintain homeostasis in these susceptible young hosts.

Clinical Trial Registration: Not Applicable

SERUM PROCALCITONIN AS A NOVAL DIAGNOSTIC AND PROGNOSTIC MARKER IN BACTERIAL MENINGITIS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - NOVEL DIAGNOSTICS

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Background: Bacterial meningitis is a serious pediatric emergency with high mortality and morbidity. Because early clinical recognition of bacterial versus non-bacterial meningitis is crucial for the prompt initiation of treatment, a reliable method could help clinicians to limit inappropriate antibiotic treatment. Several studies have demonstrated the raised values of serum procalcitonin (S-PCT) in bacterial infections including meningitis but without definite cut-off guidelines. Hence, this study was conducted to evaluate S-PCT as a biomarker to differentiate bacterial versus non-bacterial meningitis in children and assess its efficacy in the prognosis of bacterial meningitis also.

Methods: This prospective cohort study enrolled 108 admitted children (aged 3 months to 15 years) with suspected meningitis after excluding other non-CNS bacterial infections. Children were classified into bacterial (n=52) and non-bacterial meningitis (n=56) according to clinical & cerebrospinal fluid analysis. The S-PCT level was sent at the start of treatment and repeated after 72 hours in those cases who had raised the level of it ($>0.5\text{ng/dl}$).

Results: S-PCT levels were significantly higher (cut-off level 0.5 ng/ml) in bacterial meningitis group ($7.15\pm 2.21\text{ ng/ml}$) compared with non-bacterial meningitis ($0.15\pm 0.11\text{ ng/ml}$) ($p<0.001$). The sensitivity and specificity of serum PCT in the diagnosis of bacterial meningitis were 95.45% and 84.61% respectively. Procalcitonin showed a maximum area under receiver operating characteristics (ROC) curve 0.991 ($0.974\text{--}1.00$) ($p<0.001$) compared to total leukocyte count and CSF cytochemistry. After 72 hours of antibiotic treatment in the bacterial meningitis group, 86.5% (45/52) of children had their S-PCT level below the cut-off level with a favorable outcome.

Conclusions: Hence S-PCT has high sensitivity and specificity for early diagnosis of bacterial meningitis; it can be a useful adjunct in differentiating bacterial and non-bacterial meningitis for prompt and better management of the children.

Clinical Trial Registration: not applicable

PEDIATRIC ROUTINE VACCINATIONS IN THE COVID 19 LOCKDOWN PERIOD: THE SURVEY OF THE ITALIAN PEDIATRIC SOCIETY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

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Background: . COVID-19 pandemic was responsible for disrupting routine immunization activities all over the world. Aim of the study was to investigate the reduced adherence to the national children vaccination schedule during the lockdown period in Italy.

Methods: Materials and methods. Through social channels, the Italian Pediatric Society conducted a survey among Italian families on children vaccination during lockdown period. The study period ranged from 28th April 2020 to 8th June 2020.

Results: In the study period, 1474 responders were collected. More than one third (34%) of them skipped the vaccine appointment as they were afraid of SARS-CoV-2-virus (44%), vaccination services postponed the appointment (42%) or was closed to public (13%).) Even if COVID-19 pandemic emergency involved North Italian regions more than South ones, the proportion of parents who missed children's immunization appointment during lockdown was slightly higher in the South (40% versus 34% in the North and 26% in the Center). The reasons for missing vaccine appointments were investigated. In 46% of cases, families declared not to have received enough information on national and local preventive measures including physical distancing, handwashing, and proper coughing/sneezing hygiene. As a consequence, they felt overwhelmed with worries concerning immunization in the lockdown period.

Conclusions: Reduction in routine immunization coverage may represent a serious life-threatening problem for unvaccinated or under-vaccinated children. Information on national and local preventive measures including physical distancing, handwashing, and proper coughing/sneezing hygiene should be spread among families in order to contrast vaccine hesitancy and maintain adequate coverage levels during COVID19 pandemic period.

Clinical Trial Registration: Not applicable

INVASIVE PNEUMOCOCCAL DISEASE IN CHILDREN AGED UNDER 18 YEARS OLD BEFORE AND AFTER ROUTINE VACCINATION WITH 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN CATALONIA, SPAIN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

Mariona De Sevilla¹, Pilar Ciruela², Cristina Esteva³, Johanna Martínez-Osorio¹, Sebastià González-Peris⁴, Alvaro Díaz⁵, Fernando Moraga-Llop⁴, Conchita Izquierdo², Magda Campins⁶, Lluís Salleras⁷, Angela Domínguez⁷, Carmen Muñoz-Almagro³, Juan José García García¹

¹Hospital Sant Joan de Deu, Paediatrics, Esplugues de Llobregat, Barcelona, Spain, ²Generalitat de Catalunya, Sub-direcció General De Vigilància I Resposta A Emergències De Salut Pública Catalunya, Barcelona, Spain, ³Hospital Sant Joan de Déu, Microbiology, Esplugues de Llobregat, Barcelona, Spain, ⁴Hospital Vall d'Hebron, Paediatrics, Barcelona, Spain, ⁵Hospital de Nens, Paediatrics, Barcelona, Spain, ⁶Hospital Vall d'Hebron, Public Health Medicine, Barcelona, Spain, ⁷Universitat de Barcelona, Unitat De Medicina Preventiva I Salut Pública, Barcelona, Spain

Background: This study compares the incidence, characteristics and serotype distribution of invasive pneumococcal disease (IPD) before and after 13-valent pneumococcal conjugate vaccine (PCV13) was included in the systematic vaccination in July 2016.

Methods: Patients younger than 18 years of age, with IPD diagnosed by culture and/or PCR in sterile fluid and admitted to three referral hospitals in Catalonia, Spain, were prospectively included from January-2012 to June-2016 (PCV13 pre-vaccination period: PCV13 only available for children with risk factors and in the private market), and January-2018 to December-2020 (PCV13 vaccination period).

Results: 398 cases were identified, 263 in the first period and 135 in the second period. IPD rates in population under 18 years of age were 16.8 per 100000 inhabitants in 2012, 13.1 in 2013, 9.7 in 2014 and 12.3 in 2015. In the second period rates were: 10.7 in 2018, 13.6 in 2019 and 4.3 in 2020. The main clinical manifestation in both periods was complicated pneumonia (n:151, 57.4% vs n:65, 48.1%, p>0.05). Comparing both periods, there was a significant increase in the proportion of necrotizing pneumonia (n:35, 13.3%, vs n:34, 25.8%, p<0.05). There were significant differences in the vaccination coverage with PCV13 (45 (17.2%) of fully vaccinated vs 41 (53.9%), p>0.05). Serotype 3 was the main cause of IPD in both periods (n:53, 20.2% vs n:38, 28.1%, p>0.05) and was responsible for most of vaccine failures (17/20, 85%, vs 27/32, 84%, p>0.05). IPD caused by PCV13 serotypes has declined significantly between 2 periods (161, 61.2%, vs 53, 42.4%, p<0.05).

Conclusions: After PCV13 routine vaccination a significant reduction of PCV13 serotypes have been observed, however serotype 3 continues to be the main cause of IPD. The impact of COVID-19 pandemic should be considered in the remarkable reduction observed in 2020.

Clinical Trial Registration: My study is not a clinical trial

INTESTINAL AND NASOPHARYNGEAL MICROBIOTA ANALYSIS OF CHILDREN WITH SEPSIS IN PEDIATRIC INTENSIVE CARE UNIT: INMACS-PICU STUDY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

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Background: Microbiota composition might play a role on pathophysiology and course of sepsis and understanding the dynamics is of clinical interest. There is a limited information about the microbiota composition in children with sepsis. In this study, we plan to evaluate intestinal and nasopharyngeal microbiota composition of children with sepsis.

Methods: In this prospective, multi-center study, 14 children diagnosed with sepsis (excluding meningococemia) and 10 age-matched healthy controls were included. Nasopharyngeal and fecal samples have been obtained at the admission to intensive care unit and Day 10. Microbial composition was characterized by 16S rRNA gene sequencing.

Results: At the time of admission, intestinal and nasopharyngeal microbiota composition in patients with sepsis was found to be significantly different from healthy children. While there is an increase in *Escherichia-Shigella*, *Enterococcus*, *Anaerococcus*, *Coprococcus*, *Peptonihilus*, *Staphylococcus*, *Acinetobacter*, *Acidibacter*, *Stenetrophomonas* at the genus level in sepsis cases, *Faecalibaceburia*, *Faecalibacterium*, *Bifidobaceterium*, *Roseburia* and *Blautia* were decreased. It was observed that alterations of microbiota composition became more pronounced in the follow-up of patients with sepsis. It was also observed that the nasopharyngeal microbiota composition at the time of admission and follow-up in patients with sepsis was significantly different from that of healthy children.

Conclusions: In patients with sepsis, we observed that the intestinal and nasopharyngeal microbiota composition was deteriorated in the early period. The infection itself or the other interventions care caused changes on the microbiota composition during the follow-up period. Further studies to evaluate the reason for the change in microbiome composition in patients with sepsis, its role in pathophysiology, the effects of medications and nutrition during follow-up, needed. The evaluation of microbiome composition, may be guiding for potential new microbiome-targeted therapies.

Clinical Trial Registration: Not available.

THE PARENTAL EXPERIENCE OF PROPHYLACTIC ANTIBIOTICS (PEPPA)

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

Simon Hardman¹, Fiona Shackley¹, Alison Condliffe², Kelechi Ugonna³, Andrew Lee⁴

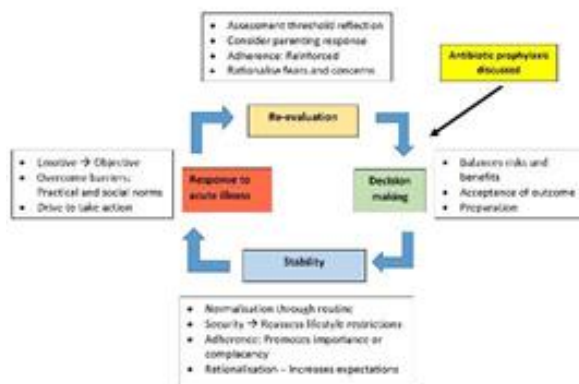
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Background: Long-term prophylactic antibiotics are often used to prevent bacterial infections. However, supporting evidence for this is not always robust. Including parents in decisions relating to medication is key to medicines optimisation. Parental concern regarding medication is a major determinant of poor adherence. This study explores parental experiences of having a child prescribed prophylactic antibiotics and how that affects their antibiotic behaviour use.

Methods: We conducted a prospective, single-centre, exploratory, qualitative study at Sheffield Children's Hospital. Through 15 face-to-face interviews, involving 18 participants, we explored parental 'lived experiences' and attitudes towards azithromycin prophylaxis prescribed for various respiratory conditions. An iterative approach was taken building on emerging themes from previous interviews. Thematic analysis was conducted.

Results:

Figure 1: A behavioural model illustrating the parental experience of having a child prescribed prophylactic antibiotics.



Legend: The phases parents cycle through once antibiotic prophylaxis has been discussed and the decision to take them is accepted.

The overriding factor influencing parental decisions about the uptake of antibiotic prophylaxis was wanting their child to be well now. The main concern voiced by parents was that of antibiotic resistance given their children were high users of antibiotics. This was however seen as a problem for the future, not the present. Preparing families adequately helps prevent practical difficulties relating to medication. Facilitating 'normalisation' of prophylaxis through daily routines and minimising disruption to the family environment may reduce parental anxiety, promote adherence and result in easing of potential restrictions to the child's daily activities. Grounded in our deeper understanding, we propose a behavioural model that describes phases parents go through while having a child on prophylactic antibiotics (Figure 1).

Conclusions: Time invested in holistically addressing the parental experience and having an awareness of potential issues parents face, may facilitate medication adherence, reduce anxieties and improve doctor-parent relationships. We acknowledge the parents and carers who took part in the interviews and the charity Antibiotic Research UK (ANTRUK) for supporting the research.

Clinical Trial Registration: Clinical Trial registration: N/A

INVASIVE MENINGOCOCCAL DISEASE IN ITALY: AN ANALYSIS OF NATIONAL SURVEILLANCE DATA IN THE PEDIATRIC POPULATION FROM 2015 TO 2018.

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

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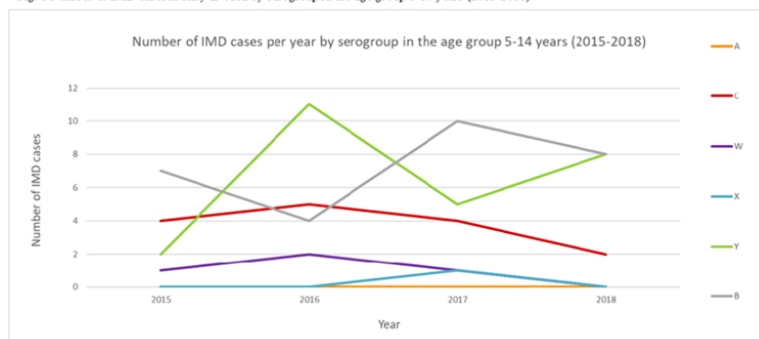
³University of Florence, Department Of Health Sciences, Florence, Italy, ⁴University of Sassari, Department Of Medical Sciences, Sassari, Italy, ⁵Local Health Unit Taranto, Department Of Prevention, Taranto, Italy, ⁶Local Health Unit Reggio Calabria, Hygiene And Public Health Unit And Department Of Prevention, Reggio Calabria, Italy, ⁷University of Genova, Department Of Health Sciences, Genova, Italy, ⁸Local Health Unit Benevento, Maternal And Child Unit, Benevento, Italy, ⁹University of Palermo, Department Promise, Palermo, Italy

Background: Invasive Meningococcal Disease (IMD) is one of the most severe vaccine-preventable disease, with high fatality rates and severe sequelae. MenB vaccine and MenC and MenACWY conjugate vaccines are available in Italy, but specific vaccine recommendations vary among regions and targeted ages. The aim of this study is to describe the epidemiology of IMD to better inform the vaccination strategy.

Methods: Italian surveillance data for IMD among children (0-14 years) during the period 2015-2018 was obtained from the Italian National Health Institute. Excel was used to present trend analysis, stratified by age and serogroups.

Results: In the study period, IMD was mainly caused by serogroup B, C and Y. In children older than 1 year, the pooled incidence of ACWY strains increased, surpassing the incidence of MenB in some years (70% of cases in 2016, 52% in 2017). IMD caused by serogroup Y increased in 1-14 year-olds, from 6 cases in 2015 to 11 in 2016; 8 cases were registered in 2017 and 2018. Since some Italian Regions already switched from MenC to MenACWY vaccine for toddlers in 2014, we looked at IMD cases in the age range 5-14 years. Serogroup Y cases increased from 0 in 2015 to 11 in 2016, 5 in 2017, and 8 in 2018; MenC cases were steady with 2-3 cases per year and MenB cases ranged between 4 and 10 cases per year (Fig.1).

Fig. 1 Number of IMD cases in Italy divided by serogroup in the age group 5-14 years (2015-2018)



Conclusions: National surveillance reports show the increased importance of Y serogroup among children in Italy. Our analysis highlights the need of broader protection with a fullswitch to MenACWY vaccine in toddlers. To prevent AWY cases among children vaccinated only against MenC, policy makers should consider adding a childhood cohort to receive MenACWY vaccination.

Clinical Trial Registration: Not applicable for registration

SIGNIFICANCE OF PSOFA AND PELOD SCALES FOR ASSESSING ORGAN DYSFUNCTION IN SEPSIS IN CHILDREN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

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Background: Timely diagnosis, early start and effectiveness of therapy are the key to successful treatment and the outcome of the septic process.

Methods: The study included 154 patients diagnosed with sepsis. The patients were divided into 2 groups: group 1 – n=69)-patients with sepsis and septic shock, group 2 (n=85) – with sepsis and without septic shock. All patients were evaluated for organ dysfunction using the pSOFA and PELOD-2 scales.

Results: The median number of points on the pSOFA scale was 6 (3-10), which almost completely corresponds to the points on the PELOD scale-6 (4-8). Intragroup analysis showed that all calculated indicators were significantly higher ($p < 0.001$) in the group of patients with sepsis and septic shock than in the group without shock. Thus, the median scores on the pSOFA scale in group 1 were 9 (7-13), on the PELOD scale-2-8 (7-10) and in group 2 – 4 (3-6) and 4 (3-5), respectively. To assess the informational value of the pSOFA and PELOD-2 scales in the diagnosis of sepsis, a ROC analysis was performed. Sensitivity and specificity, the area under the ROC curve of the pSOFA scale in the diagnosis of sepsis was 77.8% (95% CI 39,9 – 97,2%), 82,9% (95% CI 48.7 – 98.7%) and AUC 0.788 (95% CI 0.636 – 1,000), respectively, PELOD scales 74.8% (95% CI 36,4 – 95,2%), 71,7% (95% CI 34.9 – 93.5%) and AUC 0.741 (95% CI 0.507 – 0.978), respectively. According to the results of our preliminary research on the informational significance of these scales in children with sepsis, the area under the ROC curve is relatively high and comparable: SOFA-0.788, PELOD-2-0.741, $p=0.09$.

Conclusions: The use of diagnostic scales improves the diagnosis of organ dysfunction in patients.

Clinical Trial Registration: ClinicalTrials.gov 0123456789)

USE OF THE PROCALCITONIN TEST IN DIFFERENTIAL DIAGNOSTICS OF INFECTIOUS MONONUCLEOSIS AND BACTERIAL INFECTIONS IN CHILDREN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

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Background: The relevance of studying infectious mononucleosis in children is due to its widespread distribution, an increase in morbidity, a variety of symptoms, difficulties in clinical diagnosis due to the similarity of manifestations with other infectious diseases, therefore, the purpose of our study was to assess the possibility of using a procalcitonin test for differential diagnosis of infectious mononucleosis and bacterial infection.

Methods: We examined 40 patients with infectious mononucleosis at the age from 1 to 14 years, who were inpatient treatment at the children's hospital in Minsk (Belarus) in 2018.

Results: With long-term fever, tonsillitis with plaque, adenoiditis, lymphadenopathy, children with infectious mononucleosis often develop a systemic inflammatory response syndrome, manifested by hematological changes (neutrophilic leukocytosis, leukocyte shift, increased ESR and C-reactive protein) characteristic of the bacterial infection process. For the differential diagnosis of infectious mononucleosis and bacterial infection it is proposed to use the procalcitonin test. An increase in the concentration of C-reactive protein and inflammatory changes in the general blood test are not sufficient grounds for prescribing antibiotics. In the ordinary course of infectious mononucleosis in children without concomitant bacterial infection, the content of procalcitonin is typically less than 2 ng/ml. In patients with the disease at a concentration of procalcitonin of more than 2 ng/ml high probability of having a bacterial infection, which is the basis for prescribing antibiotics.

Conclusions: The use of determining the level of procalcitonin in children with infectious mononucleosis is economically justified and will optimize antibacterial therapy in this category of patients.

Clinical Trial Registration: ClinicalTrials.gov 0123456789

GENETIC DIVERSITY OF DENGUE VIRUS IN MYANMAR,2017-2019

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHER

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Background: The epidemiological and molecular characteristics of the dengue virus (DENV) in dengue and severe dengue patients in Myanmar was evaluated in this study during 2017 - 2019. A total of 1235 samples were collected from Yangon General Hospital and Yangon Children Hospital during April 2017 to December 2019.

Methods: (1) Serological Analysis Dengue NS1 antigen test was performed by using SD BIOLINE Dengue NS1 Ag test kit (Standard Diagnostic Inc., Korea) according to the instruction of the manufacturer. In-house anti-DENV IgG and IgM ELISA system was used according to the Inoue S, *et al*(2010). (2) Quantification of Viraemia Level -By plaque Assay Plaque Assay on Fcy RIIA-expressing BHK cell line and Fcy RIIA non-expressing BHK cell line. -ByQuantitation of DENV genome level by Real Time RT-PCR (3)Whole genome sequencing and Phylogenetic analysis By using Illumina Miseq Sequencing Platform

Results: A total of 1235 samples were collected from Yangon General Hospital and Yangon Children Hospital during April 2017 to December 2019. Among them, there were 912 NS1 positive samples. A total of 203 dengue virus strains (DENV-1=64, DENV-2=7, DENV-3=90 and DENV-4=42) were isolated by using *Aedes albopictus* cell clone, C6/36. Among the patients, 764(83.7%) patients were positive for DENV IgM antibodies. A total of 264 patients had primary DENV infection (28.9%) and 648 patients had secondary DENV infection (71.1%). Among 2017 dengue isolates, DENV-1 and DENV-4 belonged to genotype-1 respectively.

Conclusions: The DENV-3 isolates belonged to genotypes -1 and -3, in which genotype-1 has not been detected previously in Myanmar. The high proportion of DENV-3 cases were detected starting from 2017 epidemic and epidemic patterns revealed continued circulation of both existing genotypes and a newly introduced DENV-3 genotype.

Clinical Trial Registration: Medical Research including Human Subjects, Department of Medical Research, Myanmar approved number is Ethics/DMR/2017/068

HANDWASHING SAVES RESPIRATORY INFECTIONS: A COST-EFFECTIVENESS ANALYSIS IN CHILDREN ≤ 3 Y/O

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - OTHERLeticia García-Mochón¹, Cristina Bueno-Rebollo², Javier Díez Domingo³, Ernestina Azor-Martínez²¹CIBER en Epidemiología y Salud Pública (CIBERESP), -, Almería, Spain, ²Centro de Salud Virgen del Mar Almería, Pediatrics, Almería, Spain, ³FISABIO Public Health, Vaccine Research Department, Valencia, Spain**Background:** Assess the cost-effectiveness of hand hygiene educational programs on respiratory infections (RI) in children attending day care centres (DCC) and homes ≤ 3 y/o.**Methods:** A cluster, randomized, controlled and open study of 911 children ≤ 3 y/o, attending 24 DCCs in Almería (Spain, November 2013-June 2014). Two intervention groups of DCCs-families performed educational measures and hand hygiene, one with soap-and-water (SW) and another with hand sanitizer (HS). The control group followed usual handwashing procedures. RI episodes including symptoms, treatments, medical contacts, complementary analyses, and absenteeism were parent-reported. Direct cost related to RI: hygiene programs, general practitioner visits, emergency department visits, treatments and medical test were considered. Indirect cost included private consultancy, and parents leave work.**Statistics:** Bayesian cost-effectiveness model. Cost was modelled by a log-normal regression adjusted by pneumococcal vaccination hospitalization, and previous history of asthma. RI events were analysed by a linear regression adjusted by the smoking habit, previous history of asthma and the number of siblings. Interaction between costs and RI was considered.**Results:** There were 5201 RI episodes related to 911 children. The mean estimated RI adjusted cost per children were 521.83 € (95%CI: 441.61-612.66) for control group, 1219.63 € (889.94-1678.95) for HS group and 504.00 € (95%CI: 427.81-587.69) € for SW. Cost and effectiveness differential are shown in Table 1 and cost-effectiveness plane in Figure 1:

	Cost differential (€) (95%CI)	Effectiveness differential (RI episodes averted) (95%CI)
HS vs Control	-109.28 € (-183.18, -37.67)	1.38 (1.87, 0.88)
HS vs SW	-90.29€ (-166.69, -19.55)	0.84 (0.4, 1.41)
SW vs Control	-17.83 € (-98.07, 64.34)	0.47 (-0.003, 0.98)

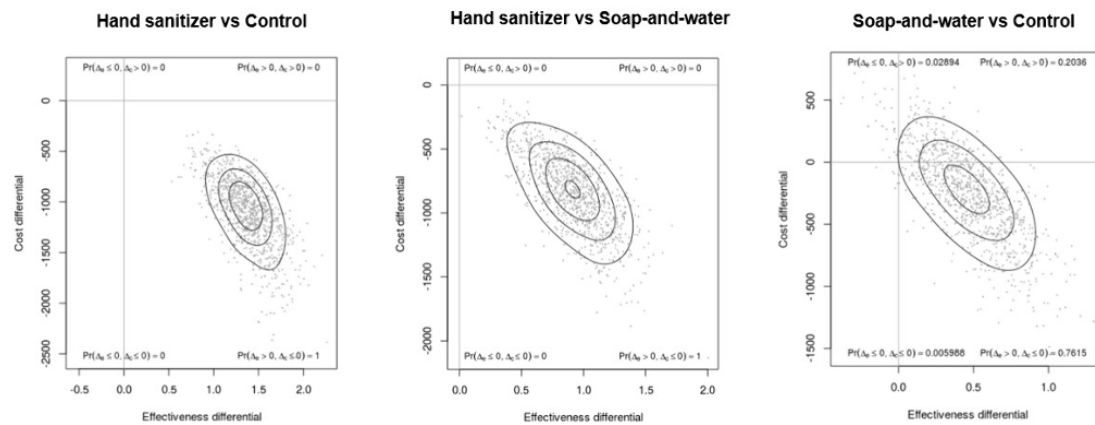


Figure1: Cost-effectiveness plane.

Conclusions: HS hygiene reduces the occurrence of RI episodes and save money in ~109 €

Clinical Trial Registration: N / A non registration

VANCOMYCIN DOSE ADJUSTMENT FOR TARGET ATTAINMENT IN CRITICALLY ILL SEPTIC PAEDIATRIC PATIENTS AGAINST STAPHYLOCOCCUS SPP MIC 1 MG/L WAS EXTENDED UP TO 2 MG/L

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - PHARMACOLOGY

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Background: Vancomycin initial dose regimen is recommended for septic paediatric patients with bloodstream infection caused by gram-positive strains. Drug effectiveness must be guaranteed by the area under the curve/MIC ratio: $AUC^{ss}_{0-24}/MIC \geq 400$. Rational of this study was to evaluate if dose adjustment must be done for target attainment against gram-positive strains based on pharmacokinetics-pharmacodynamics (PK/PD) approach by comparison of burns with non-burns paediatrics.

Methods: 33 septic paediatric patients (11F/22M), CLcr >210ml/min (Schwartz equation); 5-10 years, 16-22 kg body weight (quartiles) were included in the study. Patients were investigated in two sets after the empiric daily dose (set 1) and after dose adjustment (set 2), one hour pump infusion. Therapy started with 40-60 mg/kg daily and dose was adjusted based on PK/PD target, $AUC^{ss}_{0-24}/MIC \geq 400$. Blood was sampling (1.5 mL/each) at the 3rd and 5th hr of the starting of infusion; serum levels were obtained by liquid chromatography and immunoassay.

Results: Significant difference between empirical and adjusted doses was obtained in both groups. Target was attained by dose adjustment up to MIC 1 mg/L for all patients. Then, the target attainment was extended against strains up to MIC 2 mg/L in 65% (13/20) of burn patients and in 46% (6/13) of non-burns, against *Staphylococcus spp* including *epidermidis* and *coagulase negative species* (MIC 2mg/L). Desired outcome was reached with clinical cure for all patients investigated after vancomycin dose adjustment.

Conclusions: Since the target was attained initially for all ICU paediatric septic patients just against MIC 0.5 mg/L strains, the dose must be adjusted soon to eradicate gram-positive susceptible strains in both burn and non-burn patients. Finally, PK/PD approach done in a real time permits an earlier clinical intervention to reach the desired clinical outcome with cure of infection.

Clinical Trial Registration: There is no trial registration

VANCOMYCIN AUC/MIC TARGET ATTAINMENT IN PEDIATRIC PATIENTS AGAINST STAPHYLOCOCCUS SPP.

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - PHARMACOLOGY

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Background: Vancomycin is largely prescribed to critically ill patients with *Staphylococcus* infections. This study aims to assess the percentage of vancomycin area under the curve/minimum inhibitory concentration (AUC/MIC) target attainment in pediatric patients after the empirical dose regimen against *Staphylococcus spp.* strains.

Methods: Six septic pediatric patients with *Staphylococcus* infections and preserved renal function were included. Vancomycin therapy started with 40-60mg/kg daily, one-hour infusion. Blood was sampling at 2nd and 6th hour of the starting of infusion. The one-compartment model with first-order kinetics was used to estimate the pharmacokinetic parameters. Therapeutic target was defined as $AUC^{ss_{0-24}}/MIC \geq 400$.

Results: The patients had a median age of 6.7 (interquartile range 1.1- 14.3) years. *Staphylococcus aureus* was isolated in 5 patients from tracheal aspirate (n=3), blood (n=1) and cerebrospinal fluid (n=1). *Staphylococcus epidermidis* was isolated in one patient from tracheal aspirate. The empirical dose regimen guaranteed the coverage of 100% of strains with MIC 0.5 mg/L (3/3); 50% of strains with MIC 1 mg/L (1/2) and none with MIC 2 mg/L (0/1). For those who did not reach the therapeutic target with the empirical regimen, we adjusted the dose based on their pharmacokinetic parameters and then all of them reached the target. Clinical cure occurred for all patients.

Conclusions: The vancomycin empirical dose regimen may not be enough to ensure antimicrobial coverage against *Staphylococcus spp.* with MIC 1 mg/L or above in pediatric patients. In addition, the vancomycin monitoring based on PK/PD approach permits real time dose adjustments based on individuals' pharmacokinetic parameters and should be implemented to maximize antimicrobial effectiveness.

Clinical Trial Registration: There is no clinical trial registration

VERTICAL TRANSMISSION OF HIV INFECTION IN AN UNIVERSITY HOSPITAL IN ROMANIA – A 36 MONTHS SURVEY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: HIV infection remains a major public health problem in the entire world. In Europe, Romania was among the first places in terms of the number of HIV/AIDS-infected children.

Methods: The study was conducted using comparative and statistical analysis on the HIV positive pregnant women registered in an University Hospital from the North-East of Romania on a period of 36 months.

Results: The highest rate of HIV/AIDS infection in children, was reported at the end of 1988, beginning of the 1990s, when Romania had 60% of the total of paediatric HIV/AIDS patients in Europe. More than 50% of the cases detected in the 1990s are alive thanks to modern treatments. In the Hospital of Infectious Diseases "Sf. Parascheva" Iasi, Romania, are registered more than 1400 HIV positive patients, from whom 46% are female. In the studied period, 101 females were pregnant. Most of them (77,3%) had between 26-35 years old, longterm survivors of HIV infection with poliexperimental treatments. The pregnancy evolved normaly in all cases, in 98.01% was practiced caesarean section and 1.98% were delivered in natural way. All newborns received postexposure prophylaxis for a 6 weeks period. Two children had detectable viremia at birth and four (3.96%) remained positive at 18 months. The monitoring of HIV positive mothers and prophylaxis of newborns during the mentioned period was according to the WHO protocol.

Conclusions: The management of HIV positive pregnant women is essential in preventing the transmission of the infection. Adjustice medication and regular monitoring, make a HIV positive pregnant women to deliver a healthy child. The implamantation of programs of preventing the vertical transmission, is a success for decresing the rate of HIV positive newborns.

Clinical Trial Registration: ClinicalTrials.gov 0123456789

PNEUMOCOCCAL NASOPHARYNGEAL CARRIAGE OF FULLY VACCINATED CHILDREN IN ENGLAND, SEVEN TO TEN YEARS FOLLOWING THE INTRODUCTION OF PCV13

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - POPULATION STUDIES AND SURVEILLANCE

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¹Oxford Vaccine Group Centre for Clinical Vaccinology and Tropical Medicine (CCVTM), Paediatrics, Oxford, United Kingdom, ²St George's University of London, Infection And Immunity Research Institute, London, United Kingdom, ³National Institute for Public Health and the Environment (RIVM), Centre For Infectious Disease Control, Bilthoven, Netherlands

Background: Since the introduction of the 13-valent pneumococcal conjugate vaccine (PCV13) into the UK immunisation schedule in April 2010, there has been a reduction in invasive pneumococcal disease (IPD) caused by PCV13 serotypes, but an increase in non-PCV13 IPD. Here we compare two cross-sectional pneumococcal nasopharyngeal (NP) carriage studies of children in the Thames Valley region in 2014/15 and 2017/20.

Methods: NP swabs were taken from healthy 13-48 month-olds in 2014/15 and 2017/20 who had received a full course of PCV13 (at 2, 4 and 12 months of age). Molecular serotyping by microarray analysis was performed on 'sweeps' of selective culture plates from swabs with pneumococcal-presumptive growth, based on optochin susceptibility and bile solubility.

Results: In total 988 and 795 children aged 13-48 months in 2014/15 and 2017/20 respectively were swabbed. The pneumococcal carriage rate in children aged 13-48 months was similar in 2017/20, 51.8% (95% CI 48.3-55.3), and 2014/15, 47.9% (95% CI 44.7-51.0). There were no significant changes in the odds or probability of carriage of PCV13 [RK1] serotypes between the two time periods. Serotype 19A carriage among children aged 13-48 months in 2017/20 was 6/795, 0.75% (95% CI 0.28-1.64) compared with 10/988, 1.01% (95% CI 0.49-1.85) in 2014/15. The majority of serotypes identified (>95%) were non-vaccine types, most commonly 23B, 21, 15B, 10A and 11A. The latter three are contained in the investigational PCV20; the additional seven serotypes contained in PCV20 comprised approximately one third (33% in 2014/15, 31% in 2017/20) of total isolated serotypes.

Conclusions: Serotype 19A continues to circulate in the UK ten years after the introduction of PCV13. Carriage of several of the most common serotypes isolated in this study would be directly impacted by the introduction of PCV20.

Clinical Trial Registration: Clinicaltrials.gov identifier NCT03102840 ClinicalTrials.gov Identifier: NCT01996007

INVASIVE PNEUMOCOCCAL DISEASE AMONG CHILDREN IN GERMANY, EFFECTS OF CONJUGATE VACCINATION AND COVID PANDEMIC

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: Childhood PCV vaccination was generally recommended in Germany in 2006. In 2009, two higher-valent PCVs (PCV10, PCV13) were licensed. Since March 2020, a COVID pandemic has strongly deregulated daily life. Here, we present data on invasive pneumococcal disease (IPD) cases in the era of conjugate vaccination during a worldwide pandemic.

Methods: IPD in children in Germany has been monitored since 1997. Isolates were serotyped using the Neufeld Quellung reaction.

Results: From July 2019 to June 2020, the GNRCS received 108 IPD isolates from children <2 years, of which 16 had PCV13 serotypes. Seven of these were from unvaccinated children, five from incompletely vaccinated children. The case number represents a 30% reduction compared to 2005-2006 (n=154), but an increase since 2011-2012 (n=75). However, the PCV13 proportion has decreased from 88% prior to vaccine introduction (2005-2006), to 69% at the introduction of higher-valent vaccines (2009-2010), to 15% in 2019-2020. Future vaccines would increase coverage considerably (PCV15: 25%, PCV20: 47%). From Jan-Mar 2020 75 cases of IPD were received compared to 52 and 49 in the same period in 2018 and 2019, respectively. However, from Apr-Dec 2020 only 57 cases were received, compared to 127 and 150 in the two previous years. Reduced numbers seems to be due to social distancing measures, and not to decreased reporting, as reported Group B *Streptococcus* cases showed no effect.

Conclusions: Eleven years after the introduction of higher-valent vaccines, PCV13 serotypes have been reduced among children, with most vaccine type cases persisting in non- or incompletely vaccinated individuals. Future vaccine formulation would considerably increase serotype coverage. The COVID pandemic has had a strong reducing effect on IPD, most probably through reduced respiratory transmission.

Clinical Trial Registration: Not a clinical trial

THE IMPACT OF THE FIRST NATIONAL LOCKDOWN DUE TO COVID-19 ON PAEDIATRIC EMERGENCY ATTENDANCES AND INPATIENT ADMISSIONS IN NORTH-WEST LONDON

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The Whole Systems Integrated Care (WSIC) dataset collects the electronic records of 2.3 million (95%) registered patients in North-West (NW) London. It links primary, secondary and tertiary care; emergency departments, and other community care data. WSIC was used to explore how childhood acute illness, as measured in NW London paediatric emergency usage was affected by Covid-19 as declines in ED use have been widely reported.

Methods: Emergency department (ED) attendance and subsequent admission data of people under 17 years old, between 2015 and 2020, were extracted from WSIC in February 2021 for initial descriptive analysis preceding time-series analysis. This period contained the first UK national lockdown: 23rd March to 4th July, 2020. This data was stratified by age groups and four selected ICD10 categories: infections; neoplasms, injuries and mental health.

Results: There were 612,665 ED attendances with 56,432 emergency inpatient stays/admissions. 1 in 7 admissions (7,786) were considered severe: admitted for over 48h.

ED attendances dropped 85% between December 2019 and April 2020; the latter representing 3,547 attendances: the lowest recorded monthly usage. Emergency admissions due to infections maintained a low plateau below 150 admissions per month throughout the lockdown period into August.

For those aged below 12 months, the lowest number of cases (34) was reached in May. Injuries and mental health diagnoses took precedence in school-aged children (infections made up 23% of admissions during lockdown in those aged over 5; injuries contributed 42% and mental health 27%).

Conclusions: The amplified post-winter drop in paediatric attendances and admissions is likely multifactorial, including capacity and staff protection policies, and altered parent/guardian behaviour. The low rates for admissions with infections may have resulted from effective social-distancing and hygiene measures.

Clinical Trial Registration: Not applicable

INFLUENCE OF RESTRICTIONS DUE TO SARSCOV-2 PANDEMIC ON THE INCIDENCE OF CONTAGIOUS RESPIRATORY VIRAL INFECTIONS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: The incidence of respiratory viral infections has decreased worldwide among children mainly due to measures against SARSCoV-2 transmission, such as hand hygiene, use of masks and social distancing. We studied the magnitude of that decrease in our region and searched if school closure has further contributed to it. Measures against SARSCoV-2 pandemics were first implemented on March 2020 in Greece.

Methods: The number of admissions in Paediatric department due to viral bronchitis, viral pneumonia, RSV bronchiolitis and influenza were recorded from 1st September 2020 to 28th February 2021, when all measures against SARSCoV-2 transmission were in force but schools remained open, and was compared with the number of admissions at the same time period one year before. The same comparison was made for admissions during March, April and May 2020, when schools and kindergartens were closed along with all the other measures, and March, April, May 2019.

Results:

pandemic measures and restrictions	period	Cases of respiratory viral infection admitted (n)	Reduction compared with the previous year
none	Sept 2019-Feb 2020	48	
in force	Sept 2020-Feb 2021	9	81%
none	Mar -Apr 2019	31	
in force plus <u>closed schools and kindergartens</u>	Mar- Apr 2020	6	80,6%

Conclusions: Respiratory viral infections of pediatric population proved to have been significantly decreased during SARSCoV-2 pandemics in our region as globally is observed and expected. School and kindergarten closure has not contributed to the decrease that can be mainly attributed to the strict application of hygiene measures and social distancing. Measures against transmission seem to be a cost effective way of contagious infections prevention and could be thoughtful to preserve them to an extent after pandemics, knowing that contacts in schools and kindergartens are safe with precautions.

Clinical Trial Registration: Not results of a controlled trial

DIFFERENCES BETWEEN CHILDREN WITH COMMUNITY ACQUIRED METICILLIN-RESISTANT S.AUREUS (CA-MRSA) INFECTIONS AND THOSE ASYMPTOMATICALLY COLONIZED FROM THE COMMUNITY IN SPAIN.

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - POPULATION STUDIES AND SURVEILLANCE

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Background: To compare epidemiological and microbiological factors between children with CA-MRSA infections and those colonized in the community reported by the COSACO Nationwide Study.

Methods: Children with CA-MRSA infections treated in a tertiary hospital in Madrid during 2018-2020 were retrospectively recruited. Epidemiological data, antimicrobial susceptibility and Panton-Valentine leucocidin (PVL) production were analysed and compared with those data obtained in the COSACO prospective study from Spanish colonized children from the community (ESPID Small Grant; doi:10.2147/IDR.S282880).

Results: Forty-four CA-MRSA infections were included and compared with the 27 CA-MRSA colonized children from the COSACO Study (1876 screened children; 1.4% CA-MRSA colonized). Median age in the infection group was 7.05 vs. 8.22 years in the colonization group ($p < 0.001$). Children with CA-MRSA infections were more frequently immigrants than colonized ones (69% vs. 11%; $p < 0.001$); mainly from Latin-America or Philippines. In contrast, colonized children had more frequently pets than infection cases (55% vs. 16%; $p = 0.003$), and lived more frequently in rural areas (33% vs. 13%; $p = 0.06$). Rural residence was the only factor associated with CA-MRSA colonization in the COSACO study (OR 3.62; 95CI 1.57–8.36). No other differences were observed between groups regarding sex, previous skin infections in children or household members, number of siblings, previous antibiotic treatments or previous hospital admissions. PVL was positive in 53% of CA-MRSA strains in infected children and in 0% in those colonized ($p < 0.01$). No differences in antimicrobial susceptibility in both groups were observed.

Conclusions: Spanish children suffering from CA-MRSA infection are younger and more frequently immigrants than those asymptomatically colonized in the community, while colonized children live more frequently in rural areas and have pets. PVL is frequently produced by strains causing infections, but not by those colonizing Spanish children.

Clinical Trial Registration: No Clinical Trial The study has been supported by a ESPID SMALL GRANT AWARD

EFFECT OF LOCAL ANESTHETICS AND ANTISEPTIC DECAMETHOXINE ON BIOFILM FORMATION OF ACINETOBACTER BAUMANNII

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - RESISTANCE

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Background: Background. About 60% of all nosocomial infections are caused by microorganisms found in biofilms. *Acinetobacter baumannii*, as a pathogen of nosocomial infections, occur more frequently in surgical hospitals. **The aim of the study** was to study the *in vitro* formation of *A. baumannii* monotype biofilms under the influence of local anesthetics within the current concentrations and when adding subinhibitory concentration of antiseptics to anesthetics.

Methods: Materials and methods. In clinical strains of *A. baumannii* (n=44), we studied the ability to produce biofilms in the presence of active concentrations of anesthetics (0.25-0.5%, bupivacaine, 2.0% lidocaine, 0.75% ropivacaine) and together with decamethoxine at 1 / 4 minimum bacteriostatic concentration (subinhibitory).

Results: Results. The effect of local anesthetics on the formation of strains of "young" biofilm had a dose-dependent effect ($p < 0,05$). Culture control OD = 0.244-0.250, under the influence of lidocaine 1% - 0.222-0.205, with the addition of bupivacaine 0.125% OD- 0.222-0.218. When the dose of anesthetics was halved, the OD of the biofilm did not differ from the control values. At any concentration of ropivacaine there was an increase in the OD of the "young" biofilm, which indicates the ability of the drug to stimulate the formation of biofilm *A.baumannii*. The highest inhibitory activity against "young" biofilms was found in the combined action of the antiseptic decamethoxine (in concentrations not exceeding 3.9 µg / ml) and anesthetics (OD-0,199-0,223) ($p < 0,05$).

Conclusions: Conclusions. Scientific research on various aspects of the formation (or destruction) of bacterial biofilms is a promising area. The results of studies of local anesthetics and antiseptics on biofilm production of *A.baumannii* indicate the relative effectiveness of these drugs in the early stages of biofilm formation, as an alternative to perioperative infection prevention.

Clinical Trial Registration: registration of the experimental test: ClinicalTrials.gov 0117U006903

ANALYSIS OF THE USE OF ANTIBIOTICS IN CHILDREN WITH BRONCHIOLITIS AND PNEUMONIA DURING HOSPITALIZATION

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - RESISTANCE

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Background: Given the threat of the spread of antibiotic-resistant bacterial strains, it is important to control the use of antibiotics in clinical settings. The purpose was to analyze the compliance of the antibiotic therapy in children with lower respiratory infections to existing protocols.

Methods: A retrospective descriptive analysis of all hospitalizations at Ternopil Children's Hospital in 2016-2017 was conducted. 199 patients under 3 yrs diagnosed with bronchiolitis and pneumonia with a mean age of (15.85 ± 1.23) months were selected.

Results: Bronchiolitis was diagnosed in 9 cases (4.5%). 4 (44.4%) children had respiratory failure of the first degree, and 3 (33.3%) – second degree. It was found that 5 (55.6%) patients were prescribed with antibiotic therapy; 5 (55.6%) received mucolytics; inhaled ipratropium bromide with fenoterol was prescribed to 1 patient. While oxygen therapy was not prescribed to any of the patients, suctioning of the upper airways was performed in 2 cases. Pneumonia was found in 189 (95.5%) patients, of whom 54 (28.6%) had unilateral and 132 (71.4%) – bilateral pneumonia. In 69 (36.5%) children, pneumonia was complicated by bronchoobstructive syndrome. In 17 (8.9%) clear radiological criteria for pneumonia were not detected on chest X-rays. Analysis of the antibiotic prescription revealed that most of patients (148 (78.3%)) received 3rd generation cephalosporins, 36 (19.04%) were treated with protected ampicillins and 2 (1.05%) with amoxicillin. 96 (50.79%) patients were administered mucolytics, while only 5 (2.65%) received oxygen therapy.

Conclusions: The study has demonstrated that diagnostics of bronchiolitis was rare due to the overdiagnosis of pneumonia. Even when diagnosed with bronchiolitis, the treatment prescribed to patients does not comply with modern protocols. Excessive use of antibiotics and mucolytics, which are not pathogenetically justified in these patients, was observed.

Clinical Trial Registration: Clinical trial registration: N/A

OSTEOARTICULAR INFECTIONS IN MONGOLIAN CHILDREN

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Background: Osteoarticular infections (OI) cause significant hospitalizations and morbidity in children with associated long-lasting sequelae. Data on risk factors, incidence rates as well as antimicrobial resistance in central/east Asia are very limited and missing in Mongolia. A research cooperation (SMoPP-*Swiss Mongolian Pediatric Project*) was established supporting this study with the aim to evaluate clinical features and identify responsible pathogens of OI treated at the 700-pediatric-beds National Maternal and Child Health Center (NCMCH), the only state children's hospital in Mongolia, located in Ulaanbaatar (capitol).

Methods: Children (<18 years) with suspicion of OI were eligible for inclusion. This analysis includes children recruited 09/2019 to 02/2021 and is ongoing. Documentation of baseline data, diagnosis and risk factors using SecuTrial is done after patient consent. Pathogens are cultured from aspirated joint fluid and from bone punctures inoculated into BD Bactec™ bottles.

Results: Fifty-two OI were included. 34 presented with septic arthritis (SA), 6 with osteomyelitis (OM) and 12 with SA associated with OM (SA-OM). Median age was 26.9 months (range 0.07-208.5). 50% were males. Fever was the most frequent symptom in OM (100%), movement restriction in SA (97%) and swelling and movement restriction in SA-OM(97%). 46 joint fluids and 6 bone punctures were collected. A pathogen could be identified in 22 (42%) children: MSSA(n=4), MRSA(n=14), *Klebsiella spp*(n=3) and *Candida albicans*(n=1). Ultrasound had the highest yield for diagnosis of SA (91%). 5 children with OM, 18 with SA and 7 with SA-OM had surgery. 27% of all OI cases had complications or sequelae and one died. Further data (**table 1**).

Table 1: Clinical and biological data of osteoarticular infections in Mongolian children			
	Septic arthritis (SA) n=34	Osteomyelitis (OM) n=6	SA associated with OM (SA-OM) n=12
Sex ratio (F/M)	14/20	4/2	8/4
Median age at diagnosis in months, (range)	37.4 (0.07-208.5)	49.22 (0.33-163.3)	17.6 (0.17-124.3)
Anatomical site of infection			
Proximal femur/distal femur	n/a	2/1	5/1
Proximal tibia	n/a	1	1
Proximal humerus	n/a	3	2
Proximal fibula	n/a	3	4
Shoulder/Hip/Knee/Ankle	6/18/9/3	n/a	2/5/5/0
Clinical features			
Fever	25	6	10
Redness/ Swelling	8/20	4/5	7/11
Movement restriction	33	5	11
Elevated CRP	27	3	11
Elevated WBC count	31	4	12
Radiology features			
Positive ultrasound signs	31	2	11
Positive X-ray signs: 1 st day/4 th day/14 th day	0/4/5	1/3/2	2/4/3
Bacteriology features			
Pathogen identified	10	6	6
	MSSA- 2		MSSA- 2
	MRSA- 6	MRSA- 5	MRSA- 3
	<i>Klebsiella spp-</i> 2	<i>Klebsiella spp-</i> 1	<i>Candida-</i> 1
Outcome			
Healed/Chronic/Died	28/5/1	2/4/0	7/5/0

Conclusions: This study is ongoing and will serve to build strategies, strengthening microbiological diagnostics and develop an appropriate empirical antibiotic therapy and recommendations for OI in children for Mongolia.

Clinical Trial Registration: Not controlled trial

MODELING HIV-1 NEUROPATHOGENESIS USING IPSC-DERIVED BRAIN ORGANOIDs AND IPSC-DERIVED MICROGLIA

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - TB AND HIV

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Background: Despite high prevalence of HIV in both children and adults, the underlying molecular and cellular events leading to curative strategies remain elusive due to the lack of representative models for human-specific viral pathologies. The inflammatory response to HIV infection is thought to be mediated by an increased release of inflammatory factors (IL1 β and TNF- α) by microglia in the brain. In this study we will develop a in-vitro model representing the HIV infected human brain by combining iPSC-derived brain organoids and microglia. These complex brain organoids will enable us to evaluate the inflammatory response in the brain upon HIV infection and elucidate the role of microglia in this process.

Methods: Human iPSC-derived brain organoids are directly infected with viral strains or co-cultured with HIV-1 infected iPSC-derived microglia. Supernatant and organoids are harvested at several time points up to 15 days. A viability assay, and TCID₅₀ assays are performed to assay the susceptibility of the different cell types in cerebral organoids. Immunocytochemistry and Flow Cytometry are performed to assess the pathological effect of the HIV infection on the cellular characteristics.

Results: The expected results will show the susceptibility of different cell types present in brain organoids (e.g. neural progenitor cells, neurons, astrocytes and microglia) to HIV infection. Our data will elucidate the role of microglia in the neuropathological effect on the brain due to the expected comparative data of direct infection of the brain organoids, or infected microglia co-cultured with the brain organoids.

Conclusions: The model in this study contains cell types that play an important role in the HIV neuropathogenesis in a 3-Dimensional setting. Mimicking this environment, this model enables us to elucidate the viral tropism and neuropathogenesis of HIV-1.

Clinical Trial Registration: This study was not a Clinical Trial study

COVID-19 PANDEMIC MENTAL HEALTH IMPACT ON ADOLESCENTS-YOUNG ADULTS WITH HIV INFECTION AND THEIR PARENTS: PRELIMINARY FINDING

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - TB AND HIV

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³L.U.M.S.A. University, Human Sciences Unit, Rome, Italy, ⁴Bambino Gesù Children's Hospital, Social Service Department, Rome, Italy

Background: In February 2020 Italy was the first European country to deal with Covid19. Measures taken by the government to contain the virus were based mainly on quarantine and social distancing. Many infected people were scared and afraid of social judgment. The study of emotional reaction and traumatic feelings of people that coexist with a chronic viral infection like HIV appeared important. **Aims:** We would study emotions and traumatic trigger inside people with HIV infection during Covid19 pandemic

Methods: We proposed to 59 adolescents and young adults Bambino Gesù Children's Hospital patients (ages 12yrs-31yrs), 15 parents HIV infected. A time-line devised 2020: I phase March-May (Italian's lockdown); II phase July-August; III phase September-November; IV phase December-February. During I phase we sent PHQ9, GAD7 (questionnaires to assess anxious-depressive symptoms) in an on-line digital format and a proposal to telehealth psychological support. Medical advice was also possible. II, III and IV phases provide subsequent assessment (PHQ9-GAD7) with implementation of IES-R (test to assess PTSD) administration during follow-up. At the end of each, we compared the emotions of anxiety-depression collected about the same during 2019.

Results: 55 patients and 11 parents (ages 31yrs-65yrs) decided to be enrolled. In the I phase 34 patients and 6 parents accepted, 13 patients and 2 parents decided to activate psychological support. Preliminary data analysis shows there were cut off above normal for sadness in 30/40 patients and for anxiety in 17/40 in I phase. The scores tendencies were to be mild/moderate. Only 3/40 severe cases of anxiety and depression symptoms that involved in PTSD, 1/40 severe case of depression, 3/40 severe cases of anxiety with panic. The flow of the time-line made possible to observe lowered score for anxiety and depression in 75% of people.

Conclusions: Covid19 required to study to deepen the resilience of people that coexist with HIV.

Clinical Trial Registration: Clinicalgov

SCABIES MANAGEMENT IN CHILDREN IN SWITZERLAND

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - TROPICAL/PARASITE INFECTIONS & TRAVEL MEDICINE

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Background: Scabies is a neglected disease with major global health concern, particularly in young children. Highest incidences occur in developing countries, however scabies is encountered globally. Management guidelines are rare and availability of therapeutic agents differ by region. Ivermectin is not licensed in children (<15kg). We reviewed management in Switzerland among different specialties (paediatricians (P), general practitioners (GP), dermatologists (D), paediatric dermatologists (PD), tropical medicine (TM), paediatric ID (PID)).

Methods: A total of 237 physicians including P (n = 141), GP (n = 28), D (n = 45), PD (n = 6), TM (n = 7), PID (n = 10) completed the national online survey (05 to 08/2020; 36 questions; 15 minutes) asking management, approximate cases seen and research priorities.

Results: Reported cases see **Figure**. Distribution Swiss vs. migrant were equal. Diagnostic criteria were diverse: 84% of P and 65% of GP rely on history and visual skin examination alone. 83% of PD use at least dermoscopy. D (47%) use laboratory diagnostics. 37%, 44%, 40% and 30% of P, D, PD and TM respectively will not use Ivermectin in <15kg as it is off-label. GP (53%) fear adverse reactions. Improved diagnostic tools are important research priorities for 68% and 47% of the P (incl. PID) and GP respectively. Reviewing Ivermectin in <15kg would be priority for 83% of PD, 64% of D and 42% of GPs. 54%, 58% of D (incl. PD) and P (incl. PID) respectively prioritize optimized dosing and treatment protocols.

Reported scabies cases in children <5 y (01.2019-04.2020)						
	<5 cases	6-10 cases	11-25 cases	26-35 cases	35-50 cases	>50 cases
GP	30	1	1	1	3	0
P (incl. PID)	430	49	9	0	0	0
D (incl. PD)	140	13	7	5	0	0

Reported scabies cases in children <12 y (01.2019-04.2020)						
	<5 cases	6-10 cases	11-25 cases	26-35 cases	35-50 cases	>50 cases
GP	24	1	1	0	1	4
P (incl. PID)	183	22	5	0	0	0
D (incl. PD)	81	15	3	3	0	0

Conclusions: Relevant scabies cases occur in migrant and Swiss populations equally. Management is heterogeneous as non-dermatologists use Ivermectin reluctantly. Research priorities include convenient diagnostic tools, a child-appropriate, oral Ivermectin formulation and optimized dosing and treatment protocols.

Clinical Trial Registration: Survey. Not a controlled trial

COMPARISON OF DIAGNOSTIC TESTS INVITRO AND INVIVO WITH THE MUTUAL INFLUENCE OF SPECIFIC TUBERCULOUS INFLAMMATION AND INFECTIOUS-INFLAMMATORY PROCESS IN THE LUNGS IN CHILDREN.

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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²НМИЦ ФПИ МИНЗДРАВА РОССИИ, Pediatric, MOSCOW, Russian Federation

Background: Актуальной проблемой детской пульмонологии являются хронические неспецифические заболевания легких. Наличие неспецифических воспалительных процессов в дыхательной системе - фактор риска туберкулеза легких. Однако текущей информации недостаточно для оценки чувствительности, специфичности и воспроизводимости IGRA у детей с хроническими неспецифическими заболеваниями легких.

Methods: В исследование включены 62 ребенка в возрасте от 1 до 17 лет. Из них 40 (64,5%) детей с туберкулезом органов дыхания, 22 (35,5%) детей с хроническими неспецифическими заболеваниями легких. Все дети обследованы с использованием трех методов: сначала QFT, DST и проба Манту.

Results: Анализ реакции на DST показал результаты: на Диаскинтест положительные реакции у 38 из 40 обследованных с туберкулезом органов дыхания (95%), сомнительные - у 2 пациентов (5%). У детей с хроническими неспецифическими заболеваниями легких - 1 из 22 имеет положительную реакцию (4,5%), 21 из 22 (95,4%) - отрицательную. По результатам теста QuantiFERON положительные реакции наблюдались у 38 из 40 обследованных больных туберкулезом органов дыхания (95%), отрицательные - у 2 (5%) пациентов. В группе хронических неспецифических заболеваний легких положительная реакция была получена у 1 из 22 детей (4,5%), а отрицательная - у 21 (95,4%). Результаты тестов Диаскин и КвантиФЕРОН оказались положительными у 36 из 40 больных туберкулезом органов дыхания (90%).

Conclusions: The sensitivity and specificity of the samples with Diaskintest and QuantiFERON are 95% and 95.4%, respectively, and are considered high. But with 100% sensitivity of the Mantoux test, specificity is only 70% when evaluated in children with chronic non-specific lung diseases.

Clinical Trial Registration: нет клиническое испытание

IN SILICO ANALYSIS OF CITRATE SYNTHASE I IN MYCOBACTERIUM TUBERCULOSIS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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²Mekelle University, Department Of Microbiology And Immunology, Division Of Biomedical Sciences, Mekelle, Ethiopia

Background: New approaches are needed to facilitate, expedite and streamline drug discovery and development, save time, money and resources, and as per pharma mantra “fail fast, fail early”.

Methods: Disease Selection Template Selection Building of Homology Model Analysis Binding Site Prediction Receptor- Ligand Interaction Selection of Drugs Toxicity studies

Results: In this approach the 3-D structure of citrate synthase from *M. tuberculosis* was predicted with 13 binding sites. The drugs Isoniazid, Ethambutol, Rutin, Quercetin and Astilbin were successfully docked. Isoniazid had shown a high dock-score and rutin with the least score among them. Isoniazid and ethambutol are currently used drugs for this disease and hence can be illustrated that their anti-mycobacterial effect may be by docking this protein. The protein model can also be used for future studies to analyse its properties and to screen for newer drugs.

Conclusions: The ultimate prediction of 3-D structure of a Citrate synthase 1 protein in tuberculosis disease's infection will shed lights on the diagnostic and therapeutic approaches for the infectious disease *Mycobacterium tuberculosis*. Citrate synthase 1 is a novel protein from the *Mycobacterium tuberculosis* has a vital role in glyoxalate pathway, essential for the infection. It catalyzes the synthesis of citrate from oxaloacetate and acetyl-CoA. The Accelrys Discovery Studio modeling suite was used to build, refine and validate homology models of this target protein using BLAST, ALIGN STRUCTURES, BUILD HOMOLOGY MODEL and MINIMISATION protocols. The binding sites were predicted and ligands were assessed for their activity in the protein using LIGANDFIT. The drug properties were analysed by ADMET, TOPKAT and PHARMACOPHORE GENERATION.

Clinical Trial Registration: ClinicalTrials N/A

AN INVESTIGATIONAL RESPIRATORY SYNCYTIAL VIRUS (RSV) MATERNAL VACCINE IN NON-PREGNANT WOMEN IS WELL TOLERATED WHEN (CO-)ADMINISTERED AT DIFFERENT DOSE LEVELS WITH DIPHTHERIA-TETANUS-PERTUSSIS VACCINE (DTPA)

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE DEVELOPMENT (PHASE 1-2) – VIRAL

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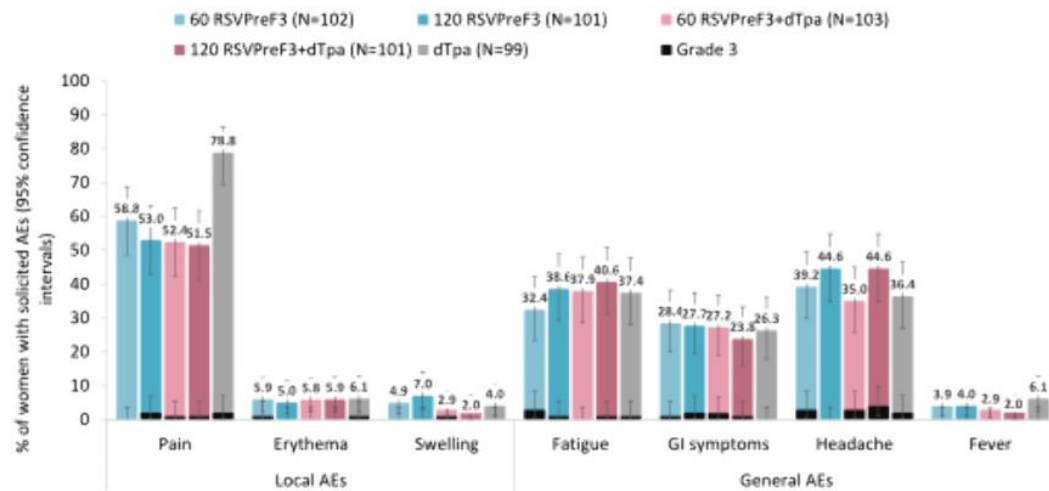
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Background: We developed an investigational RSV maternal vaccine (RSVPreF3) that could prevent RSV-associated infections in infants through maternal antibody transfer. Here we present the reactogenicity and safety of 2 RSVPreF3 dose levels administered alone or with dTpa within 180 days post-vaccination.

Methods: This phase II, observer-blind, placebo-controlled study (NCT04138056) was conducted in Belgium, Canada and the United States. Healthy, non-pregnant women, 18–45 years of age were randomized (1:1:1:1:1) to receive 1 of 2 RSVPreF3 dose levels (60 and 120 µg) with placebo (60/120 RSVPreF3) or RSVPreF3 co-administered with dTpa (60/120 RSVPreF3+dTpa) or dTpa with placebo (dTpa). Adverse events (AEs) were collected within 7 days (solicited AEs), 30 days (unsolicited/medically attended AEs) and up to 180 days (serious AEs, pregnancies) post-vaccination.

Results: 509 women were enrolled and included in this analysis. Solicited AEs were reported in a similar proportion for both RSVPreF3 dose levels whether given alone or with dTpa (Figure). Injection site pain and headache were the most common local and general solicited AEs. Overall, Grade 3 solicited AEs were infrequently reported. The unsolicited AEs were balanced across groups, 166 (32.6%) women reported unsolicited AEs of which 11 (2.2%) experienced Grade 3. Medically attended unsolicited AEs were reported for 24 (4.7%) women. The most commonly reported unsolicited AEs were upper respiratory tract infection (27 women, 5.3%), headache (19 women, 3.7%) and nasopharyngitis (12 women, 2.4%). At 89 days post-vaccination, 1 woman reported 3 serious AEs (radius, ulna and wrist fracture) not related to vaccination. Three pregnancies, with no safety concerns, were reported.

Figure. Percentage of women with solicited AEs, 7 days post-vaccination (solicited safety set)



N, maximum number of women with available results; GI, gastrointestinal; fever, temperature $\geq 38.0^{\circ}\text{C}$. Grade 3, significant pain at rest that prevents normal everyday activities, diameter $>100\text{ mm}$ (redness and swelling), preventing normal activities (fatigue, GI symptoms, headache), $>39^{\circ}\text{C}$ (fever).

Note: RSVPreF3 vaccine or placebo doses were administered in the left arm while dTpa or placebo doses were administered in the right arm. Local AEs presented here are associated with RSVPreF3 vaccine (RSVPreF3 groups) on the left arm and dTpa (dTpa group) on the right arm. dTpa had different aluminum concentrations (300 μg [in the United States] and 500 μg [outside the United States]) but we did not observe any difference in the responses between the 2 formulations and here we present the pooled results for both dTpa formulations.

Conclusions: The safety profile of both RSVPreF3 dose levels is similar when administered alone or with dTpa. RSVPreF3 and dTpa (co-)administered in non-pregnant women were well tolerated. **Funding:** GlaxoSmithKline Biologicals SA
Clinical Trial Registration: ClinicalTrials.gov 04138056

IMMUNOGENICITY OF MEN B VACCINATION GIVEN TO PRETERM BABIES ACCORDING TO TWO SCHEDULES: THE RESULTS OF THE BEAR MEN B STUDY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

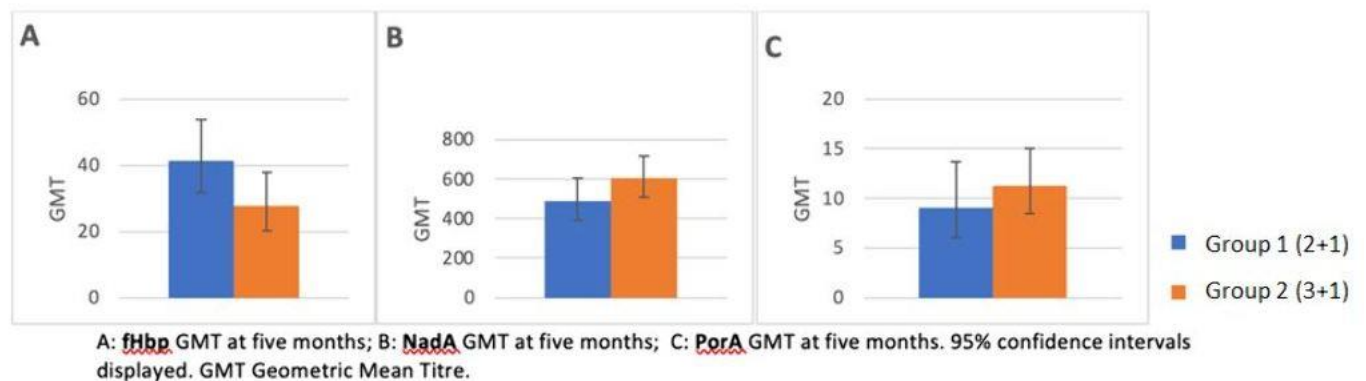
Anna Calvert^{1,2}, Nick Andrews³, Ray Borrow⁴, Paul Clarke^{5,6}, Andrew Collinson⁷, Abdelmajid Djennad³, Chrissie Jones⁸, Shamez Ladhani^{1,2,9}, Jennifer Louth⁴, Kirsty Le Doare^{1,2}, Tim Scorrer¹⁰, Matthew D Snape¹¹, Paul Heath^{1,2}

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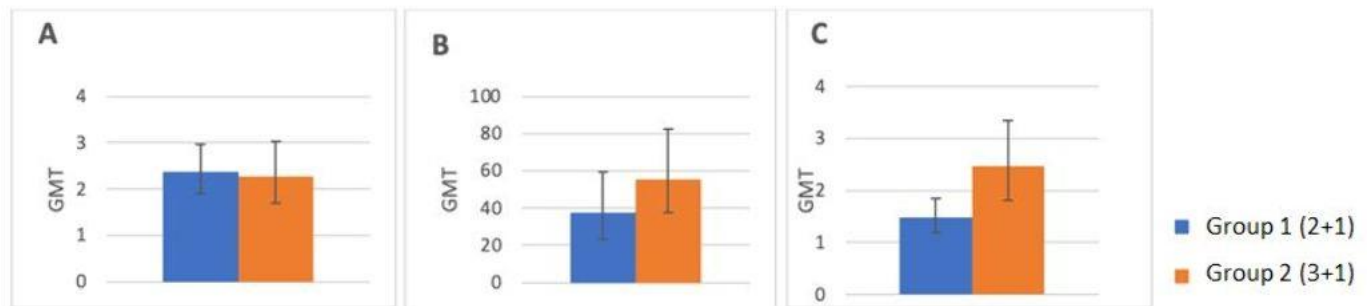
Background: Meningococcal B vaccination was introduced in the UK in 2015 using a reduced two-dose priming schedule. The immunogenicity of this schedule in preterm infants is unknown.

Methods: Babies <35 weeks were randomised to receive Bexsero according to a 2+1 or 3+1 schedule. Blood sampling was performed at 5, 12 and 13 months. Laboratory analysis used serum bactericidal antibody assays (SBA). Geometric Mean Titres (GMTs) and proportions with titres $\geq 1:4$ were compared using an unpaired t-test and Fisher's exact test respectively.

Results: We recruited 136 babies; results from 129 babies were analysed. There were no significant differences between groups in GMTs at five months (figure 1). Infants in group 2 were significantly more likely to have a Por A titre $\geq 1:4$ ($p=0.03$). **Figure 1: GMTs for fHbp, NadA and Por A at 5 months**

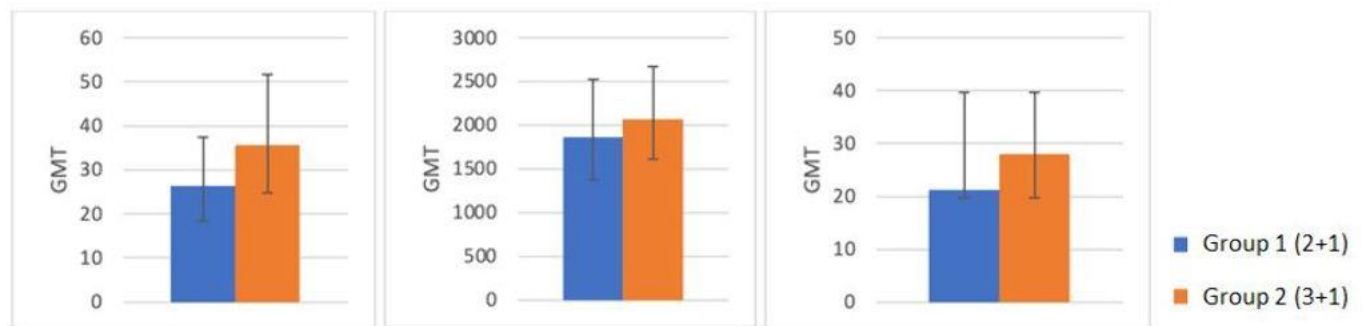


At 12 months, there was a significant difference between groups for PorA: group 2 had higher GMTs ($p=0.01$) (figure 2) and a higher proportion of infants with titres $\geq 1:4$ ($p<0.01$). **Figure 2: GMTs for fHbp, NadA and Por A at 12 months**



A: fHbp GMT at twelve months; B: NadA GMT at twelve months; C: PorA GMT at twelve months. 95% confidence intervals displayed. GMT Geometric Mean Titre.

At 13 months there were no differences in GMTs between groups for any of the antigens tested (figure 3) and no difference between study groups in proportions with titres $\geq 1:4$. **Figure 3: GMTs for fHbp, NadA and Por A at 13 months**



A: fHbp GMT at thirteen months; B: NadA GMT at thirteen months; C: PorA GMT at thirteen months. 95% confidence intervals displayed. GMT Geometric Mean Titre.

Proportions with titres $\geq 1:4$ were combined into a clinical cut-off ($\geq 1:4$ for $\geq 2/3$ tested antigens) at each time point. There were no differences between groups.

Conclusions: Bexsero is immunogenic in preterm infants using a 2 or 3 dose schedule, although there were differences in responses between groups. When a clinical cut off was used, there were no significant differences in proportions protected at any point.

Clinical Trial Registration: ClinicalTrials.gov NCT03125616

IMMUNOGENICITY AND SAFETY OF A QUADRIVALENT MENINGOCOCCAL CONJUGATE VACCINE ADMINISTERED AS A BOOSTER DOSE IN CHILDREN VACCINATED AGAINST MENINGOCOCCAL DISEASE 3 YEARS EARLIER AS TODDLERS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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Background: Booster doses of meningococcal conjugate vaccines may induce long-term protection against invasive meningococcal disease. MenACYW-TT [MenQuadfi®] is a quadrivalent meningococcal conjugate vaccine, licensed for use in ages 12 months and older in EU and some other countries. Safety and immunogenicity of MenACYW-TT were evaluated when administered as a booster dose in children primed 3 years earlier as toddlers (12-23 months).

Methods: In an earlier Phase II study from Finland, 188 meningococcal vaccine-naïve toddlers randomly received a single dose of either MenACYW-TT or MCV4-TT [Nimenrix®]. Herein we report the results from a follow up Phase III study, where participants from the Phase II study received a booster dose of MenACYW-TT, 3 years after priming vaccination. A total of 91 pre-school children (4-5 years old) were vaccinated. Serum bactericidal assays with human complement (hSBA) and baby rabbit complement (rSBA) were used to measure antibodies against vaccine serogroups at baseline (Day 0) and 30 days post-vaccination (D30). Safety data were collected up to 30 days post-vaccination.

Results: Serogroup C hSBA geometric mean titers (95% CIs) were higher in the MenACYW-TT-primed vs MCV4-TT-primed group at D0 [106 (73.2, 153) vs 11.7 (7.03, 19.4)] and D30 [5894 (4325, 8031) vs 1592 (1165, 2174)]. Similar results were observed using rSBA. At D30, nearly all participants achieved hSBA and rSBA titers $\geq 1:8$, which were higher or comparable to those observed post-primary dose, suggesting booster responses. At D0, all hSBA and rSBA titers were higher than those observed pre-primary dose, suggesting persistence of immunity. The MenACYW-TT booster dose was well-tolerated and had similar safety profiles regardless of the priming vaccine.

Conclusions: MenACYW-TT elicits robust booster responses in pre-school children primed three years earlier with MenACYW-TT or MCV4-TT.

Clinical Trial Registration: EudraCT# 2017-001993-40

SAFETY AND IMMUNOGENICITY OF A QUADRIVALENT MENINGOCOCCAL CONJUGATE VACCINE (MENACYW-TT; MENQUADFI®) ADMINISTERED IN HEALTHY MENC VACCINE PRIMED TODDLERS (12-23 MONTHS)

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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Background: MenACYW-TT (MenQuadfi®) is a quadrivalent meningococcal conjugate vaccine licensed for use in individuals 12 months of age and older in EU and certain other countries. We evaluated the safety and immunogenicity of MenACYW-TT compared to a licensed quadrivalent conjugate meningococcal vaccine (MCV4-TT; Nimenrix®) in toddlers in Europe.

Methods: In a modified double-blind Phase III study, 306 MenC vaccine (NeisVac-C® or Menjugate®) primed toddlers from Spain and Hungary were randomized to receive one dose of either MenACYW-TT or MCV4-TT. Serum bactericidal assays with human (hSBA) and baby rabbit (rSBA) complement were used to evaluate antibodies against vaccine serogroups at baseline (Day 0) and 30 days post-vaccination (D30). Safety data were collected up to 30 days post-vaccination.

Results: At D30, seroprotection rates (hSBA $\geq 1:8$) for MenACYW-TT vs MCV4-TT, were comparable (overlapping 95% confidence intervals) for all four serogroups [A (89.8% vs 98.0%); C (99.0% vs 98.0%); W (86.7% vs 85.7%) and Y (95.9% vs 91.9%)]. Comparable post vaccination hSBA GMTs and vaccine seroresponse rates for serogroup C were observed in toddlers who received the MenACYW-TT vaccine vs the MCV4-TT vaccine. Percentages of participants with post vaccination rSBA $\geq 1:128$ were comparable between the study groups for all four serogroups. For serogroup C, trends for rSBA GMTs and vaccine seroresponse rates were similar to those observed with hSBA. The safety profiles of MenACYW-TT and MCV4-TT were generally comparable. Post-vaccination rates of severe reactions were low for both vaccines. There were no vaccine-related serious adverse events reported from the study.

Conclusions: MenACYW-TT vaccine was well tolerated and demonstrated a strong immune response when administered as a single dose to MenC vaccine primed toddlers, regardless of the nature of the priming vaccine.

Clinical Trial Registration: EudraCT# 2016-000749-30

ESTABLISHMENT OF SEROTYPE-SPECIFIC IMMUNOLOGICAL MEMORY BY DIFFERENT INFANT IMMUNIZATION SCHEDULES WITH PCV13

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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Background: Three different infant immunization schedules for the 13-valent pneumococcal conjugate vaccine(PCV13) are currently in use worldwide:3+0,2+1&3+1.The ability of each schedule to induce Memory B Cells(MBCs) may correlate with the longevity of immunity.Different MBC subsets have distinct roles in the immune memory to vaccine antigens:IgM MBCs are thought to continuously proliferate to maintain the MBC pool whereas switched Ig(swIg) MBCs differentiate into plasma cells upon antigen re-challenge.Here,we compare the immunogenicity and MBC phenotype induced by the three PCV13 immunisation schedules.

Methods: Thirty infants(2-15months) were stratified into 3 groups:3+0(n=14),2+1(n=7),3+1(n=9).Peripheral Blood Monocyte Cells(PBMCs) and serum were collected before&28days after the final dose.Antibodies were assessed by ELISA.Pneumococcal-serotype(PS)-specific IgM, switched Ig(swIg) and extra-germinal-center(extra-GC) MBCs were enumerated by Flow-Cytometry.

Results: Schedules 2+1&3+1 induced higher antibody levels than 3+0:[GMT(mg/dl)3+0vs2+1vs3+1,PS1:7.9vs19.5vs6.8,p=.24,PS3:1.7vs3.8vs7.8,p<.05,PS9V:13.6vs31.2vs25.5,p=.12].**swIg-MBCs** increased from baseline to D28 for schedules 2+1(%within total MBCs:20.9%vs26.5%,p=0.07) and 3+1(21.6%vs26.6%,p=0.2) but remained stable for the 3+0 schedule(8%vs7,7%).**IgM-MBCs** increased for all schedules(2+1:19.5%vs22.8%p=0.2,3+1:15.1%vs17.6p=0.5,3+0:11.3%vs14.8%,p<0.05).Two-dose priming(2+1 schedule) leads to expansion of PS-specific swIg-MBCs(26%pre-vs45%post-booster,p<0.05),whereas 3-dose priming(3+1 schedule) expands the PS-specific IgM-MBCs(13% pre-vs29%post-booster,p=0.28).The 3+0 schedule resulted in significantly higher PS-specific **extra-GC-MBCs** compared to the other groups(3+0vs2+1vs3+1:77.6%vs52%vs52.6%,p<0.05).

Conclusions: The schedules including a booster dose(2+1;3+1) resulted in higher antibody levels at one month post-final dose than the 3+0 schedule.The 3+1 schedule induced a higher IgM MBC response compared to the 2+1 schedule, suggesting that a 3-dose primary series may lead to a richer antigen-specific MBC pool and therefore increased longevity of protection.The 3+0 schedule,where the last dose has been given at 6 months, failed to expand the GC-derived(IgM&swIg)MBC pool and induced predominantly extra-GC MBCs, which are thought to be short-lived and have decreased affinity.These findings support a significant effect of number of doses,intervals between doses and age at vaccination on the induction of immunological memory following vaccination.

Clinical Trial Registration: ClinicalTrials.gov NCT03405805

IMMUNIZATION SERVICES DURING COVID-19 PANDEMIC IN AN URBAN HEALTHCARE CENTER IN PORTUGAL

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE HESITANCY

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Background: Vaccination saves millions of lives every year, being undeniable its role in reducing infectious diseases morbidity and mortality. The vaccination coverage in Portugal is one of the largest in Europe, reaching a 95% rate of vaccination against measles, mumps, and rubella. The COVID-19 pandemic may have disrupted immunization services worldwide, threatening the achievements in the eradication and elimination of vaccine-preventable diseases (VPD). The consequences may be greater for children under the age of 1 who are at risk for serious illness.

Methods: This retrospective observational study included all children followed in an urban healthcare center in Portugal who were to be vaccinated between March and December 2020, according to the Portuguese Immunization Schedule. The vaccine doses and dates were retrieved to detect delays and failures in vaccination.

Results: We included 459 children aged 0 to 10 years, of which 49,9% were male. At the time of this study, 394(85.8%) were fully immunized, 64(14%) were partially vaccinated (missed one or more vaccines) and, 1(0.2%) was not vaccinated. Vaccination in the first year at 2, 4, 6, and 12 months was performed at a median of 3(IQR 0-19), 4(IQR 0-25), 5(IQR 0-99) and, 5(IQR 0-47) days after the recommended date, respectively. At 18 months the median of days was 6(IQR 0-29). At 5 and 10 years of age, vaccination took place at a median of 18.5(IQR 0-190) and 21.5(IQR 0-185) days after, respectively.

Conclusions: We confirmed Portuguese confidence and adherence to vaccination despite the pandemic context. The delay in vaccination was more frequent in older children, having been rare in the first year. Immunization services are essential during the COVID-19 pandemic to protect children and prevent outbreaks of VPD.

Clinical Trial Registration: No clinical trial registration.

COMMUNITY PERCEPTIONS AND KNOWLEDGE LEVELS OF HPV AND HPV VACCINATION IN HONG KONG: A QUALITATIVE STUDY

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE HESITANCY

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Background: Despite national rollouts and years of promotion, global HPV vaccine uptake levels remain low. A major factor in the persistence of vaccine hesitancy is inadequate knowledge and misinformation among vaccine recipients and potential facilitators. Educational interventions aiming to increase HPV-related knowledge levels have been shown to have positive effects on boosting vaccine uptake levels. This study was thus conducted to identify the knowledge needs of various stakeholders involved in HPV vaccination decision-making so as to facilitate the development of a novel HPV education program in Hong Kong.

Methods: A qualitative study with semi-structured interviews was conducted. A total of 26 participants including eight female adolescent-mother dyads, four secondary school teachers, two school principals, three social workers, and one school nurse were interviewed. All interviews were audio recorded and analysed thematically.

Results: Participants showed a notable lack of understanding regarding HPV and HPV vaccination. Female adolescents were particularly short on knowledge regarding associated diseases and were uninformed of the high risk of infection. Most participants had misconceptions about the virus, including misinformation regarding transmission routes and associated diseases. Attitudes towards HPV vaccination were generally positive but most participants did not perceive an immediate need for vaccination. Factors affecting vaccine uptake included risk perception, vaccine availability, and cost. It was recommended that the educational program highlight the high risk of infection to generate audience interest in the topic and convince them of the urgency and need for early vaccination.

Conclusions: Findings suggest that there is a clear need for an educational program which can address the specific needs of various stakeholders in order to boost HPV knowledge and encourage the uptake of HPV vaccination in the population.

Clinical Trial Registration: Not applicable.

HEXAVALENT VACCINATION IN FRANCE: WHAT IS THE MAGNITUDE OF DELAYED AND VACCINES INTERCHANGES IN REAL-LIFE?

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINE HESITANCY

Robert Cohen¹, Stéphane Béchet², Nathalie Gelbert², Régis Verdier³, Bruno Frandji⁴, François Vie Le Sage², Georges Thiebault², Fabienne Kochert², Fabienne Cahn-Sellem², Andreas Werner², Florence Boissnard⁵, Naim Ouldali¹, Corinne Levy^{2,6}

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Background: In France, infant vaccination against 11 diseases is mandatory since January 2018. Hexavalent vaccines are to be given at 2, 4 and 11 months of age, three hexavalent vaccines are available, Infanrix Hexa®, Hexyon® and Vaxelis® since April 2018. Data on interchangeability of these vaccines are scarce while this may occur in practice with parents bringing to the pediatrician the vaccine delivered by pharmacy or during shortage issue. Here, we used the vaccination data of the Pediatric and Ambulatory Research in Infectious diseases (PARI) network to evaluate vaccination timeliness and the magnitude of vaccines interchanges.

Methods: Between January 2018 and December 2019, we prospectively collected anonymized vaccination data of children less than 24 months old in 101 primary-care-pediatricians using the same software (Axi5-Infansoft®, CompuGroup Medical).

Results: Data on n=20,816 hexavalent vaccinations given to 9,340 infants (including 7% preterm infants [<37 weeks GA]) were analyzed; vaccinations were performed with Hexyon (66.4%), Infanrix hexa (24.7%) and Vaxelis (8.9%). Delayed immunization (i.e. recommended age >15 days) accounted for 19.9% for the first dose and 23.4% for the second dose while delayed immunization (i.e. recommended age >2 months) accounted for 3.2% for the third dose. Among the 3,619 children who received the first 2 doses of hexavalent vaccine, interchanges (i.e. use of 2 different vaccines in the same series) accounted for 3% with the 6 different combinations observed. Among the 3,792 children who received 3 doses of hexavalent vaccine, interchanges accounted for 6% with 16 different combinations observed.

Conclusions: This large study evaluating real practices following implementation of mandatory vaccinations in France showed an important proportion of delayed vaccinations and rare occurrence of interchanges between hexavalent vaccines.

Clinical Trial Registration: NCT04471493

COVID19 AND VACCINATION OF CHILDREN AND ADOLESCENTS - CAREGIVERS' PERSPECTIVE

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VACCINES

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Background: The rapid worldwide spread of the SARS-COV-2 infection justifies the efforts that have been made to develop a vaccine. This study aims to assess the parents' opinion regarding this vaccine in pediatric age, to identify fears and ways to overcome them.

Methods: Analytical and cross-sectional observational study, with data collection through an online self-completed questionnaire released during December 2020 via social networks and contacts using the snowball technique. The data were analyzed with the software SPSS 25.0®.

Results: Agreed to participate 2174 caregivers. Regarding this vaccine, 65.4% (n = 1422) has already received information and 12.2% (n = 174) acquired it from Health Professionals. Of these, 92% (n = 160) trust the information. When asked about their children's vaccination, when it becomes available, 51.6% (n = 1121) has not yet decided whether to do it and 13.6% (n = 295) answered "no" to this question. Analyzing how they feel about this vaccine, 68.5% (n = 1490) feels insecure. Consequently, when asked what they would like to see clarified, 42.5% (n = 633) and 17.5% (n=261) want to know more about adverse reactions in the short and long term, respectively, 14.5% (n = 216) want to know more about the vaccine's effectiveness, 8.5% (n = 126) would like to clarify questions about the immunity, 7.0% (n = 104) have doubts regarding the safety, 52 (3.5%) questions the interference with chronic diseases and 546 (36.6%) need more information.

Conclusions: Since most caregivers felt insecure about the vaccine and have not yet decided whether they will do it in their children, it is essential to understand what they would like to see clarified, in order to create strategies to promote that information and increase the adherence.

Clinical Trial Registration: Not applicable

THE ROLE OF RESPIRATORY VIRUSES IN CHILDREN WITH ATAXIA-TELANGELECTASIA

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: The impact of respiratory virus infection on patients diagnosed with AT has not been well-studied.

Methods: A prospective case-control study was performed in a National Reference Unit for Primary Immunodeficiency in Spain (November 2018-July 2019), including patients younger than 20 years. Symptoms' questionnaires and nasopharyngeal swabs for multiple respiratory viruses PCR were monthly collected, and in case of symptoms between visits.

Results: Twenty-two cases were included (11 patients/11 controls); 164 samples were obtained (81 patients; 84 controls). Patients presented more frequently respiratory symptoms in comparison with controls (26.5% vs, 3.5%; $p<0.01$). In patients, viral detection was observed in 23 episodes (27.3%), while in controls in 15 (17.8%) ($p=0.1$). Rhinovirus was the most frequent virus (60% and 53.3% respectively). Episodes with positive viral detection associated symptoms in 54% of patients and 18% of controls ($p=0.07$). However, patients with AT presented similar rate of symptoms during episodes with positive and negative viral detection (26% vs 27%). Their median questionnaire's punctuation during symptomatic episodes with negative viral detection was 13/23 points and 7.5/23 points during symptomatic positive ones ($p=0.1$). In the control group, all but two were asymptomatic during positive viral episodes (score 2/23 and 3/23 points). Symptomatic viral episodes were associated with lower IgA titers and higher lymphocyte counts ($p<0.05$). When these episodes were moderate/severe, lower IgA, higher IgM titers, and higher CD8+ counts were observed ($p<0.05$). Symptomatic episodes with negative viral detection were also associated with lower IgA and higher IgM titers, and higher CD8+ counts ($p<0.05$).

Conclusions: AT patients present more frequently symptomatic viral infections than controls, especially those with lower IgA and higher IgM titres and higher CD8+ counts. More studies are needed to analysed the role of respiratory viruses in AT.

Clinical Trial Registration: Not aplicable

WHICH ARE THE MOST FREQUENT COMORBIDITIES IN CHILDREN UNDER 5 YEARS OF AGE HOSPITALIZED DUE TO RESPIRATORY DISEASE?

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - VIRAL RESPIRATORY INFECTIONS

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Background: Presence of comorbidities is clearly associated with risk of complications and poor clinical outcomes related to respiratory illnesses. However, available data often focus on adult population. We analysed the presence of chronic underlying conditions in hospitalized children less than 5 years old admitted with respiratory complaints during 9 seasons, from 2011/2012 to 2019/2020, and explored complications during admission.

Methods: Annually, the Valencia Hospital Network for the Study of Influenza (VAHNSI) conducts a prospective, active-surveillance hospital-based study on respiratory viruses. All admissions with a suspicion of respiratory illness fulfilling the inclusion criteria were swabbed. Samples were tested by real-time RT-PCR for influenza, RSV, rhinovirus, adenovirus, coronavirus, bocavirus, metapneumovirus and parainfluenza. Patient information was obtained from legal tutors and/or from clinical records review. Complication was defined as the presence of any discharge diagnosis other than the main one.

Results: A total of 5,754 children were included in the study. Among them, 12.24% had some chronic conditions (11.27% one comorbidity and 0.97% more than one). Most common comorbidities were bronchitis (n=419, 7.28% of included children), cardiovascular disease (n=115, 2.00%), asthma (n=71, 1.23%), neuromuscular disorder (n=42, 0.73%), anaemia (n=36, 0.63%) and renal disease (n=33, 0.57%). PCR positivity rate, for any respiratory viruses, was 58.10% in children with no comorbidities vs. 52.84% in children with comorbidities. Complications during hospitalization were detected in 77.81% of children with no comorbidities vs. 92.16% in those children with comorbidities.

Conclusions: Chronic underlying conditions were present in 1 out of 8 children under 5 years old admitted with diagnoses possibly related to a respiratory infection, being bronchitis the most common. Around 9 out of 10 children with comorbidities experienced complications during hospitalization.

Clinical Trial Registration: Prospective epidemiological study (not Clinical Trial)

"WE NEED PEOPLE TO COLLABORATE TOGETHER AGAINST THIS DISEASE": A QUALITATIVE EXPLORATION OF PERCEPTIONS OF DENGUE FEVER CONTROL IN CAREGIVERS' OF CHILDREN UNDER 5 YEARS, IN THE PERUVIAN AMAZON

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Background: Dengue fever presents a significant burden of disease to endemic countries. This qualitative study explored perceptions of dengue control in caregivers' of children under 5 years in Peru, to direct future mosquito control strategy.

Methods: Eighteen semi-structured interviews were conducted in one health centre in Iquitos, Peru. Interviews were audio-recorded, transcribed and translated by an independent translator. Data were analysed using an inductive thematic approach.

Results: Three core analytic themes were interpreted: (1) awareness of dengue and its control, (2) perceived susceptibility of children, rural riverside communities and city inhabitants, and (3) perceived responsibility of vector control. Participants were aware of dengue symptoms, transmission and larvae eradication strategies. Misconceptions about the biting behaviour of the *Aedes aegypti* mosquito and confusion with other mosquito-borne diseases influenced preventative practice. Community-wide lack of cooperation was recognised as a key barrier. This was strengthened by attitudes that the government or health centre were responsible for dengue control and a belief that the disease cannot be prevented through individual actions. Participants felt powerless to prevent dengue due to assumed inevitability of infection and lack of faith in preventative practices. However, children and rural communities were believed to be most vulnerable.

Conclusions: Perceptions of dengue control amongst caregivers to under 5's were important in shaping their likelihood to participate in preventative practices. There is a need to address the perceived lack of community cooperation through strategies creating a sense of ownership of community control and enhancing social responsibility. The belief that dengue cannot be prevented by individual actions in a community also warrants attention. Specific misconceptions about dengue should be addressed through the community health worker system and further research directed to identify the needs of certain vulnerable groups.

Clinical Trial Registration: Qualitative original research study This was not a Clinical Trial

THE IMPACT OF DENV-1 GENOTYPES ON THE IMMUNE RESPONSE OF NATURAL HOMOTYPIC INFECTIONS

E-POSTER VIEWING

TYPE 3: CLINICAL TRIAL/STUDY OR BASIC SCIENCE STUDY - ZOOONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Background: The dengue virus (DENV) consists of four antigenically distinct serotypes (DENV 1-4) that cause a wide spectrum of clinical manifestations from a self-limited dengue fever to a life-threatening dengue hemorrhagic fever/dengue shock syndrome, wherein a large proportion of those affected are children. Infection with one serotype confers long-term protection against the same serotype, but not against the other remaining serotypes. Majority of DENV research is currently focused on developing a tetravalent vaccine that confers balanced immunity to all four serotypes. However, as each serotype has multiple genotypes with genetic and antigenic variations, there is a need to determine the depth of cross-protective immunity after infection and vaccination. In this context, we aim to evaluate the biological significance of antibodies that arise after natural infection with one DENV genotype.

Methods: We used a replicon-based DNA technology to generate a panel of DENV-1 single-round infectious particles (SRIPs) that differs by the surface proteins, precursor membrane (prM) and envelope (E) proteins. These antigens are responsible for inducing antibodies that are associated in DENV neutralization and enhancement. We tested the ability of different monoclonal antibodies and convalescent patient sera from primary and secondary DENV-1 Genotype I infections to neutralize and enhance each DENV-1 genotypic variant.

Results: We observed large differences in the ability of monoclonal antibodies and convalescent patient sera from primary and secondary DENV-1 Genotype I infections to neutralize and enhance the DENV-1 genotypic variants.

Conclusions: These findings suggest that prM and E variations modulate differential neutralizing and enhancing activity to DENV genotypes. Overall, genotype-dependent infection may trigger distinct responses in DENV neutralization and enhancement, which could in turn, potentially affect the evaluation of coverage and safety of candidate dengue vaccines.

Clinical Trial Registration: Not applicable

NEUROLOGICAL COMPLICATIONS IN NEONATAL AND INFANT BACTERIAL MENINGITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - CNS INFECTIONS

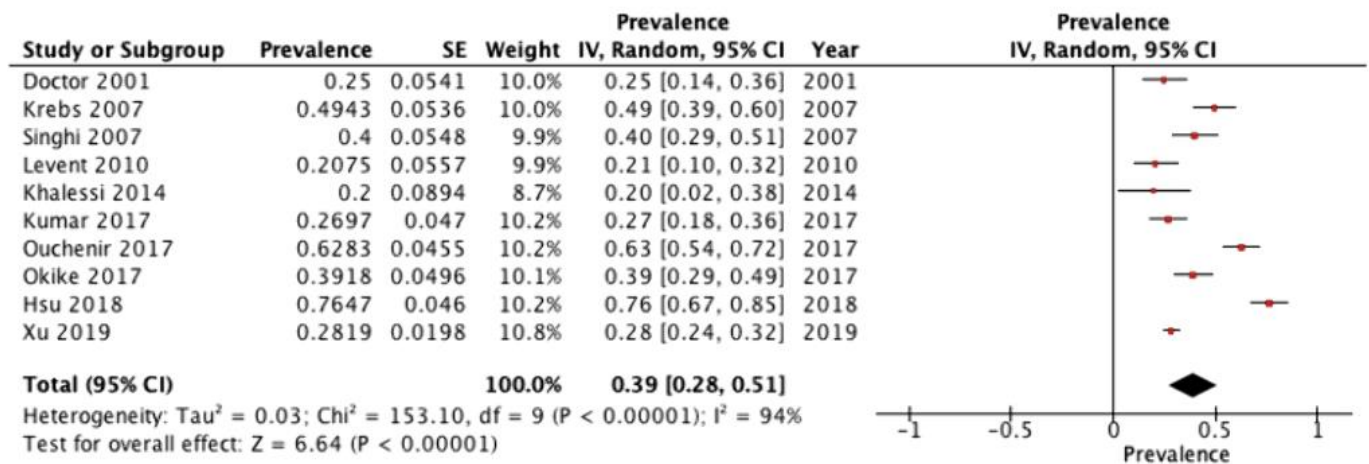
Leong Tung Ong

University of Malaya, Faculty Of Medicine, Kuala Lumpur, Malaysia

Background: Bacterial meningitis in neonates and infants is associated with high morbidity and mortality. The incidence of bacterial meningitis has decreased in developed countries due to the use of conjugates vaccines but the incidence is still high in developing countries. Neurological complications after bacterial meningitis in neonates and infants can cause long-term sequelae such as neurodevelopmental delay and motor and psychometric impairment. The aim of this study is to investigate the prevalence of neurological complications in neonates and infants diagnosed with bacterial meningitis.

Methods: Systematic electronic searches were conducted in EMBASE, MEDLINE, and Google Scholar from January 2000 to December 2020 to identify relevant studies. The quality of studies was assessed using the Newcastle-Ottawa-Scale. The random-effect model was used to calculate the pooled prevalence.

Results: A total of 10 studies involving 1206 patients were included in this systematic review. Five studies were conducted in developing countries while five studies were conducted in developed countries. The overall prevalence of neurological complications in neonates and infants was 39.0% (95% CI 0.28-0.51). The most common neurological complication was hydrocephalus (11.5%, n=139) followed by seizure (9.5%, n=114), intracranial haemorrhage (9.1%, n=110), subdural effusion (6.8%, n=82), ventriculitis (4.6%, n=55), brain abscesses (4.2%, n=51), and brain infarct (3.1%, n=37). The common organisms from cerebrospinal fluid culture or blood culture were Group B *Streptococcus* (n=260), *Escherichia coli* (n=124), coagulase-negative *Staphylococcus* (n=78), *Haemophilus influenzae* (n=16), *Neisseria meningitidis* (n=11), and *Listeria monocytogenes* (n=10).



Conclusions: Neurological complications are frequently developed in neonates and infants diagnosed with bacterial meningitis. Awareness of neurological sequelae is essential for planning clinical management to improve patient outcomes. Frequent clinical follow-up with comprehensive neurological and developmental assessment is needed after the disease to identify any complications.

Systematic Review Registration:

CONGENITAL CYTOMEGALOVIRUS INFECTION: DO PREGNANT WOMEN AND HEALTHCARE PROVIDERS KNOW ENOUGH? A SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - CONGENITAL AND PERINATAL INFECTIONS

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Background: Cytomegalovirus (CMV) is the most frequent cause of congenital infection worldwide causing serious morbidity in newborns, infants, and children. Despite the clinical importance of congenital CMV infection (cCMV), studies conducted so far conclude that there is limited awareness in both the medical community and the public in the field. The aim of this systematic review was to assess the knowledge and awareness of cCMV among pregnant women and healthcare providers during the last decade.

Methods: A literature search was performed in PubMed and Scopus. Eligibility criteria included articles published between 2011 and 2020, focusing on pregnant women or healthcare providers and reporting data about cCMV awareness. We included cross-sectional and interventional studies. Study quality was assessed using the Study Quality Assessment Tools by National Institute of Health.

Results: Overall, 23 studies fulfilled the inclusion criteria, 13 studies referred to pregnant women and 10 to healthcare providers. A total of 6521 pregnant women and 3609 healthcare providers were included. The level of awareness of pregnant women about cCMV was low to moderate. However, pregnant women showed willingness to adopt hygiene strategies following interventional-educational practices. Concurrently, awareness among healthcare providers varied depending on the specialty. Nonetheless, a great proportion admitted feeling inadequate in advising pregnant women for cCMV screening and prevention.

Conclusions: The role of healthcare providers in growing the awareness among pregnant women is of paramount importance. Due to the lack of an effective vaccine as yet, education of women regarding hygiene measures appears to be currently the best strategy to prevent cCMV infection. The implementation of educational public health interventions may reduce the disease burden.

Systematic Review Registration: Systematic review protocol registration: PROSPERO (CRD42021227051)

SYSTEMATIC REVIEW OF MRI STUDIES IN PERINATALLY HIV-INFECTED INDIVIDUALS

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - CONGENITAL AND PERINATAL INFECTIONS

Manuela Martin-Bejarano Garcia¹, Beatriz Ruiz Saez², Ana Martinez De Aragón³, Helena Melero⁴, Berta Zamora³, Norberto Antonio Malpica⁴, Jose Tomas Ramos Amador⁵, María Isabel González Tomé³

¹Fundación Investigación Biomédica Hospital Clínico San Carlos, Pediatría, Madrid, Spain, ²Hospital Reina Sofía, Paediatrics, Córdoba, Spain, ³Hospital Universitario Doce de Octubre, Paediatrics, Madrid, Spain, ⁴Universidad Rey Juan Carlos, "", Madrid, Spain, ⁵Clinico San Carlos University Hospital, Pediatrics, Madrid, Spain

Background: Neuroimaging studies have been performed in youth with perinatally acquired HIV (PHIV) to study the impact of HIV infection on the central nervous system (CNS) but no recent reviews have been published. This review aims to identify which brain areas have greater impact considering demographic, behavioural and clinical characteristics in PHIV infected patients.

Methods: A systematic PubMed and Medline search was carried out using the preferred reporting keywords, including structural (brain morphometry and diffusion tensor imaging, DTI) and functional magnetic resonance imaging (fMRI) neuroimaging studies from 2010 to April 2020. The discussion of the results is described first by demographic and behavioral characteristics, second by HIV medical measures and finally by neuroimaging findings.

Results: 26 articles met the inclusion criteria (brain morphometry n=13; DTI n=10; fMRI n=3) involving 1.182 PHIV+ and 1.194 controls).

Number of patients on cART was found in the 88%, actual CD4 count in 80%, patients with undetectable VL in 70%, initiation of cART in 20% and age at diagnosis in 11%. Reduce grey matter volumes, cortical surface area, decreased gyrification, reduction on fractional anisotropy and increase in mean diffusivity was described in the PHIV-infected group. Preliminary evidence suggest resting-state fMRI is sensitive to detect functional alterations in this population.

Conclusions: Evidence has been provided of HIV effects on brain structure. However, information recorded in the studies are commonly incomplete and results are sometimes contradictory. To future improvements, the inclusion in these studies of data related to HIV infection itself including clinical and immunovirological characteristics as well as detailed information about antiretroviral treatment such as age at ART initiation may be of vital importance to better understand the impact of the disease on CNS.

Systematic Review Registration:

THE ASSOCIATION BETWEEN CONGENITAL CYTOMEGALOVIRUS INFECTION AND CEREBRAL PALSY: A SYSTEMATIC REVIEW AND META-ANALYSIS

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - CONGENITAL AND PERINATAL INFECTIONS

Leong Tung Ong

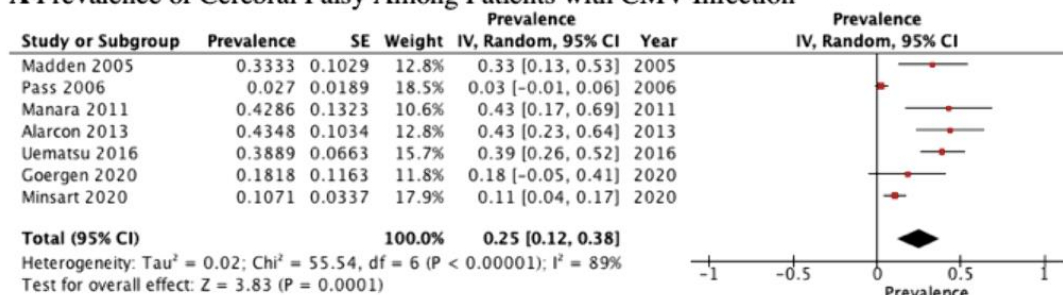
University of Malaya, Faculty Of Medicine, Kuala Lumpur, Malaysia

Background: Cytomegalovirus (CMV) is the most common cause of congenital infection, affecting 0.6% of all live births. Symptomatic and asymptomatic congenital CMV infections are frequently associated with neurodevelopment impairment, motor, and cognitive deficits. Intrauterine infection such as CMV infection is a risk factor for developing cerebral palsy, which is one of the most common physical disability in children. This study aims to investigate the association between congenital CMV infection and the development of cerebral palsy.

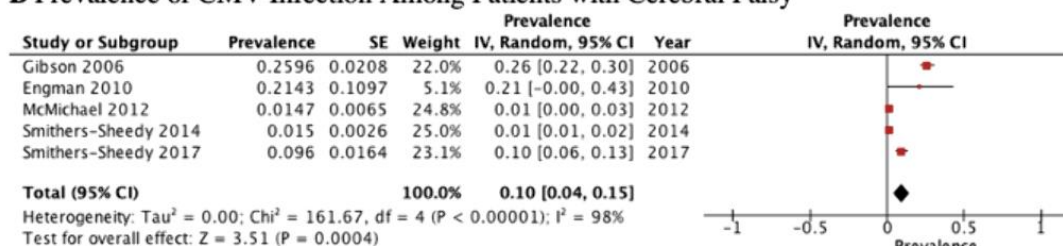
Methods: A systematic literature search was conducted in EMBASE, MEDLINE, and Google Scholar from January 2000 to December 2020 to identify relevant studies. The quality of studies was assessed using the Newcastle-Ottawa-Scale. The random-effect model was used to calculate the pooled prevalence. Statistical analysis was conducted using the generic inverse variance method in Cochrane Review Manager v5.4.

Results: A total of 12 studies involving 3665 patients were included in this systematic review and meta-analysis. The overall pooled prevalence (random effect) of cerebral palsy among patients diagnosed with congenital CMV infection was 25.0% (95% CI, 0.12-0.38). The overall pooled prevalence (random effect) of congenital CMV infection among patients with cerebral palsy was 10.0% (95% CI, 0.04-0.15). The most common type of cerebral palsy caused by CMV infection in children was spastic, followed by ataxic, dyskinetic, and hypotonic.

A Prevalence of Cerebral Palsy Among Patients with CMV Infection



B Prevalence of CMV Infection Among Patients with Cerebral Palsy



Conclusions: CMV infection is significantly associated with the development of cerebral palsy in children. Early neonatal and pregnancy screening of CMV is essential to improve the outcome of CMV infection. Moreover, children diagnosed with CMV infection require regular clinical follow-up and comprehensive neurological examination for early detection of cerebral palsy.

Systematic Review Registration:

ROTAVIRUS DISEASE AND HEALTH CARE UTILISATION AMONG CHILDREN UNDER 5 YEARS OF AGE IN HIGHLY DEVELOPED COUNTRIES: A SYSTEMATIC REVIEW AND META-ANALYSIS

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - GASTROINTESTINAL INFECTIONS

Cristina Ardura-Garcia¹, Christian Kreis¹, Milenko Rakic¹, Manon Jaboyedoff², Maria Christina Mallet¹, Nicola Low¹, Claudia Kuehni¹

¹University of Bern, Institute Of Social And Preventive Medicine, Bern, Switzerland, ²Lausanne University Hospital and University of Lausanne, Department Women-mother-child, Lausanne, Switzerland

Background: Rotavirus (RV) infection is the leading cause of diarrhoea-associated morbidity and mortality globally among preschool children. RV vaccination is available, but has not been implemented in many national immunisation plans. This systematic review aimed to estimate the prevalence and incidence of health care use for RV gastroenteritis (RVGE) among children aged under 5 years in highly developed countries without routine RV vaccination.

Methods: We searched MEDLINE and Embase databases from 2000 to 2018 for publications reporting on incidence or prevalence of RVGE-related health care use in children below 5 years of age: primary care and emergency department (ED) visits, hospitalisations, nosocomial infections and deaths. We included only studies with laboratory-confirmed RV infection, undertaken in highly developed countries with no RV routine vaccination plans. We used random effects meta-analysis to generate summary estimates with 95% confidence intervals (CI) and prediction intervals.

Results: We screened 4033 abstracts and included 74 studies from 21 countries. Average incidence rates of RVGE per 100 000 person-years were: 2484 (95% CI 697-5366) primary care visits, 1890 (1597-2207) ED visits, 500 (422-584) hospitalisations, 34 (20-51) nosocomial infections and 0.04 (0.02-0.07) deaths. Average proportions of cases of acute gastroenteritis caused by RV were: 21% (95% CI 16-26%) for primary care visits; 32% (25-38%) for ED visits; 41% (36-47%) for hospitalisations, 29% (25-34%) for nosocomial infections and 12% (8-18%) for deaths. Results varied widely between and within countries, and heterogeneity was high ($I^2 > 90\%$) in most models.

Conclusions: RV in children under 5 years causes many healthcare visits and hospitalisations, with low mortality, in highly developed countries without routine RV vaccination. The reported health care use estimates for RVGE can be used to model RV vaccine cost-effectiveness in highly developed countries.

Systematic Review Registration: Systematic review registration: PROSPERO CRD42019118069

THE EFFECT OF EXCHANGE TRANSFUSION ON MORTALITY IN NEONATAL SEPSIS: A META-ANALYSIS

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - NEONATAL SEPSIS

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Background: The role of exchange transfusion on mortality in neonatal sepsis, as well as on immunoglobulin, complement and neutrophil levels and assess its complications remains unknown.

Methods: Databases searched include PubMed, NCBI, Google scholar, CINHALL, Ovid and Scopus. Additional sources comprised references of relevant articles and authors' personal archives. Controlled and uncontrolled observational studies and trials reporting mortality data from using ET in neonatal sepsis were included. Studies with additional interventions, non-sepsis indications for ET and populations aged >28 days were excluded. Data extracted include demographics, features of study, sepsis and ET, as well as mortality rates, immunological changes and complications. Analyses using L'Abbé plots, risk ratios, risk of bias, funnel plots, sensitivity, quality and heterogeneity estimates were performed on the controlled and uncontrolled observational studies and trials separately as well as through pooled estimates.

Results: This individual participant meta-analysis of 14 studies (3 RCTs, 11 controlled observational studies) revealed a mortality benefit in septic neonates who underwent ET - RR 0.72 (CI: 0.61 – 0.86, $p = 0.01$) with no significant differences in immunoglobulin, complement or neutrophil levels compared to controls. However, these significant differences disappeared when the RCTs and observational studies were analysed separately. The descriptive analysis also included 9 uncontrolled observational studies (Figure 1). The most commonly reported complication of the procedure were thrombocytopenia, hypothermia, and poor neurological outcomes. Moderate-high risk of bias was largely due to inadequate sample sizes and follow-up durations.

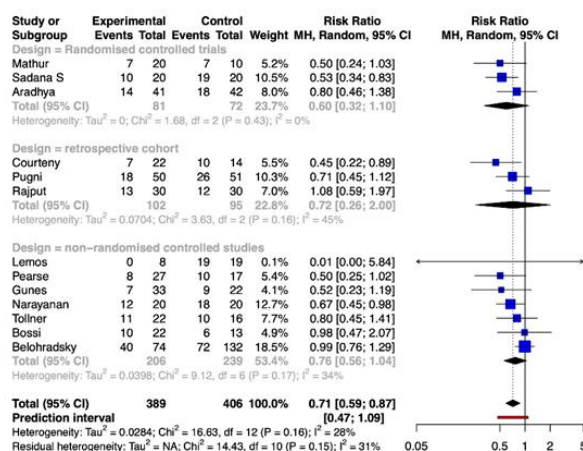


Figure 1. Forest plot of the included studies stratified by study design

Conclusions: This analysis suggests a mortality benefit in using ET for severe neonatal sepsis. The requirement for robust data is evident from the low certainty of evidence, inadequate power, and moderate-high risk of bias and heterogeneity.

Systematic Review Registration: Meta-analysis review registration: PROSPERO 2020 CRD42020176629

TRANSLATING RESULTS ON POLIOVIRUS PATHOGENESIS FROM LABORATORY ANIMALS TO HUMANS: A SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - OTHER

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Background: Animal models are extensively being used in research, but the translatability of results from animal models to humans is unknown. In this study, we aim to systematically review the translation of poliovirus infection, causing human poliomyelitis, as this virus has been widely studied with the use of animal models. We investigated, for the first time, how poliovirus infection in animals compares to infection in humans in terms of route of infection, cell entry, replication sites and, neurovirulence.

Methods: We identify animal model studies and human reviews by searching Medline and Embase online databases through OVID interface on December 29th and 30th 2020 respectively. We compared data on route of infection, replication sites, cell entry, and neurovirulence between animal and human data. Quality was assessed using the SYRCLE's risk of bias for animal studies.

Results: We selected 34 articles on polio animal studies and 17 reviews on human polio infections. All included articles had a high risk of selection, performance, and detection bias. Animal studies were poorly designed and conducted: animal baseline characteristics were diverse, animal allocation and housing were never blinded or randomized. 27 different animal models were used and results of animal and human studies on polio route of infection, cell entry, replication sites and, neurovirulence were incongruent.

Conclusions: The lack of standardization of animal polio studies and the use of a wide variety of animal models led to little similarities between animal and human data and poor translation of animal models results to human disease. It was striking and unexpected that a well-known and well-studied disease as poliovirus infection is missing a proper standardization. This could reflect the low predictive value of results from animal models into human poliovirus disease.

Systematic Review Registration: N/A

ROTAVIRUS IMMUNIZATION MAY REDUCE THE EFFECTIVENESS OF LGG IN CHILDREN WITH ACUTE DIARRHOEA

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - OTHER

Maria Laura Conelli¹, Maria Cristina Fedele², Sara Maria Scarano¹, Dario Bruzzese³, Alfredo Guarino¹, Andrea Lo Vecchio¹

¹University of Naples, Federico II, Department Of Translational Medical Sciences - Section Of Pediatrics, Naples, Italy, ²University of Campania Luigi Vanvitelli, Department Of Woman, Child And General And Specialized Surgery, Naples, Italy, ³University of Naples Federico II, Department Of Public Health, Naples, Italy

Background: Strong evidence showed the efficacy of Lactobacillus rhamnosus GG (LGG) in reducing the duration of diarrhoea, with main efficacy in rotavirus infection (2-days reduction). Metanalyses published in the last 10 years reported a progressive reduction in the effect size and recent evidence showed lack of efficacy. We tested the hypothesis that Rotavirus Immunization (RVI) may affect the efficacy of LGG.

Methods: We conducted a systematic review (up to Oct 2020) with meta-analysis of RCTs investigating the effect of LGG versus placebo in children with acute diarrhoea. After study selection, we reviewed the year of introduction of RVI and the overall RVI coverage for each country during patients enrolment. Missing data were obtained from trials' authors. The Cochrane handbook was used to assess the risk of bias and the duration of diarrhoea was identified as primary outcome

Results: Among the 16 RCTs included, only 5 showed no or low-risk of bias. The majority of trials (14/16) were conducted before the introduction of RVI. In those trials, LGG showed a significant effectiveness in the reduction of diarrhoea compared with placebo or no treatment (-23.29 hours [-37.98; -8.60], I²=98%). Only 2 RCTs reported data of population partially immunized against rotavirus with 44% and 67.1% coverage, respectively. In those studies, LGG showed no efficacy in reducing the duration of diarrhoea [-5.34 [-14.04; 3.37], I²=0%].

Conclusions: LGG may have a reduced or non-significant efficacy in paediatric populations largely immunized against rotavirus. The lack of efficacy showed by recent evidence in developed countries has been ascribed to the increased quality of data. However, a change in the paediatric population and local epidemiology might affect results. Implementation of RVI might have substantial implication in therapeutic approach to acute diarrhoea

Systematic Review Registration:

IMPACT OF NEONATAL ANTIMICROBIAL STEWARDSHIP PROGRAMS ON LENGTH OF STAY, MORTALITY, AND COST: A SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - POPULATION STUDIES AND SURVEILLANCE

Ioannis Kopsidas^{1,2}, Christos Triantafyllou², Grammatiki-Christina Tsopela², Angeliki Liosi², Eleni Kourkouni², Nikos Spyridis¹, Theoklis Zaoutis²

¹National and Kapodistrian University of Athens, Second Department Of Pediatrics, Children's Hospital 'p. And A. Kyriakou', Athens, Greece, ²Center for clinical epidemiology and outcomes research, Cleo, Athens, Greece

Background: Antibiotics are frequently used in neonatal intensive care units (NICUs) and their use can lead to development of resistance. Antimicrobial stewardship programs (ASP) are a key intervention to reduce consumption and address high rates of multi-drug resistance bacteria. The aim of this systematic review was to present the impact of ASP in NICUs on length of stay, mortality and cost.

Methods: A systematic review of studies published up to January 2021 in PubMed and Scopus databases was conducted, with the following keywords: "antibiotic stewardship", "antimicrobial stewardship", "NICU", "neonatal intensive care unit", "mortality", "cost", "cost-effectiveness", "length of stay", "LOS" and "outcome*". The keywords were searched in the title and abstract of the studies, while the filters "human" and "English language" were used. Studies were excluded if they were not published in English language, were conducted on animals, were case studies, editorials, reviews and letters to the editor, and the full text did not provide data for at least one of the following: mortality, healthcare cost or length of stay.

Results: Of 139 papers identified in the search, 7 were included. All studies were conducted within the last 10 years, 4 since 2016. Length of stay was presented in 6, mortality in 7 and cost in 2 studies. Length of stay significantly decreased in 1/6 and increased in 1/6; 4 showed decrease but did not reach statistical significance. Mortality decreased significantly in 1/7. Regarding cost, 2/2 studies documented decrease but without statistical significance (Table 1).

Table 1. Main characteristics and outcomes of the included studies.

Country	Bassiouny, 2019	Tolia, 2016	Chunnet, 2018	Abd El-Baky, 2020	Thamgi, 2019	Gustavsson, 2020	Canterly, 2016
Centers	Egypt 1 Surgical NICU (18 incubators)	USA 1 NICU (150 beds)	China 1 Level 3-4 (150 beds)	Egypt 1 NICU	USA Level 2-3 NICU (55 beds)	Sweden 3 Level III (38 beds+14 ICUs)	USA 3 Level III (90 beds)
Period Pre	01/2016-09/2016	2 years before 01/2015-05/2016	01/2015-05/2016	08/2016-04/2017	09/2011-10/2017	1/2014 to 12/2014	10/2011-11/2012
Period Post	10/2016-03/2017	2 years starting 12/2013	06/2016-05/2017	06/2017-02/2018	10/2012-11/2013	9/17-06/18	03/2013-11/2013
Population	All neonates	VLBW (<1500) born or transferred in within 24 hours of birth	13540 infants receiving antibiotics	all admitted, excluding any neonate "showing signs of infection at the time of admission" or "died or discharged before 48 hrs."	All admissions non-surgical	GA ≥28	All admissions
Population Pre	60	313	7754	462	854	82	1007
Population Post	150	361	5786	617	716	63	895
Intervention	Guidelines for antibiotic use in Surgery NICU developed and distributed for clean and clean contaminated operations. Clinical pharmacist attended patient care rounds.	Automatic Stop Order at 48 hours for antibiotics started on admission in VLBW infants	"Prospective Audit" - Automatic discontinuation of empiric. All therapy for rule-out sepsis at 48hrs, 5 days treatment for culture negative sepsis and pneumonia	"culture-guided antibiotic policy with strict infection control strategies	Prospective Audit and Feedback in a week for any patient on AB / "Neonates who were being considered for antibiotic treatment were not reviewed."	"updated local guidelines with a focus on shortened and standardized treatment duration plus increased access to infectious disease consultant advice"	"empirical antibiotic therapy was discontinued automatically at 48 hrs unless re-ordered by a provider" "duration of 5 days was recommended for suspected pneumonia or culture-negative sepsis"
LOS - Pre	X	X	7(6-20)*	X	9 (4-23)*	33 (11-127)	7 (3-33)*
LOS - Post	mean decrease 2.5 d	X	7(3-18)*	lower percentages of LOS > 7 d	8.5 (4-25)*	23 (11-140)	8 (4-22)*
p-value	0.027	X	0.9	X	1	0.33	0.003
Mortality - Pre	X	12.1%	6.1 (3.6-8.6)**	14.3%	3.7%	3%	6.1% (3.3-9.3)*
Mortality - Post	Survival increase +13.4%	10.7%	6.7 (3.6-9.6)**	9.5%	3.8%	10%	6.8% (3.5-11.1)*
p-value	0.05	0.64	0.79	X	1	0.84	0.60
Cost - Pre	3657.4 EGP (210.6 \$)	X	X	"resulting in the decrease of the overall cost for neonates"	X	X	X
Cost - Post	1185.97 EGP (115 \$)	X	X	therapy during hospital stay"	X	X	X
p-value	0.734	X	X	X	X	X	X

*X not specified ** median, IQR *** 95% (CI) *\$ death in infants GA<32 *GA: Gestational age
*0, days; EGP, Egyptian Pounds; LOS, Length of Stay *Statistically Significant p-values shown in bold

Conclusions: ASPs in NICUs can lead to decrease in length of stay, mortality, and cost but studies available lack the power to provide solid evidence. Future studies need to adopt robust designs to address these outcomes.

Systematic Review Registration:

IMPACT OF ANTIMICROBIAL STEWARDSHIP PROGRAMS ON LENGTH OF STAY, MORTALITY, READMISSIONS AND COST IN PEDIATRIC INTENSIVE CARE UNITS: A SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - POPULATION STUDIES AND SURVEILLANCE

Ioannis Kopsidas^{1,2}, Christos Triantafyllou¹, Grammatiki-Christina Tsopela¹, Angeliki Liosi¹, Athanasia Eleftheria Liapodimitri¹, Eleni Kourkouni¹, Nikos Spyridis², Theoklis Zaoutis¹

¹Center for clinical epidemiology and outcomes research, Cleo, Athens, Greece, ²National and Kapodistrian University of Athens, Second University Department Of Pediatrics, 'p. And A. Kyriakou' Children's Hospital, Athens, Greece

Background: Antibiotics are frequently used in pediatric intensive care units (PICUs). Antimicrobial stewardship programs (ASP) are known to reduce consumption. The aim of this systematic review was to present the impact of ASP in PICUs on length of stay, readmissions, mortality and cost.

Methods: A systematic review of studies published up to January 2021 in PubMed and Scopus databases was conducted, with the following keywords: “antibiotic stewardship”, “antimicrobial stewardship”, “PICU”, “paediatric intensive care unit”, “pediatric intensive care unit”, “mortality”, “cost”, “cost-effectiveness”, “re-admission”, “length of stay”, “LOS” and “outcome*”. The keywords were searched in the title and abstract of the studies, while the filters “human” and “English language” were used.

Studies were excluded if they were not published in English language, were conducted on animals, were case studies, editorials, reviews and letters to the editor, and the full text did not provide data for at least one of the following: mortality, healthcare cost, length of stay(LOS) or re-admission rate.

Results: Of 49 papers identified in the search, 5 were included. 4 studies were conducted within the last 5 years, 1 in 2012. LOS and mortality were presented in 4 studies, cost in 2 and re-admissions in 1. One study showed statistically significant decrease in LOS and 2 in overall drug costs reductions. The rest didn't show significance. Considerable variation was found in metrics used (Table 1).

Table 1. Main characteristics and outcomes of the included studies.

	Stecker, 2012	Aizawa, 2018	Lee, 2016	Wassef, 2020	Haque, 2018
Country	UK	Japan	USA	Egypt	Pakistan
Centers	1 PICU cardio-respiratory care 700 admissions per year.	1 PICU (22 beds)	20-bed PICU 10-bed cardiac ICU [CVICU], 60-bed neonatal ICU [NICU]	1 PICU (12 beds) Tertiary teaching hospital	Cardiothoracic PICU
Period Pre	04/2010 - 06/2010	04/2010-09/2011	09/2010-11/2011	04/2016-09/2016	01-03/2016
Period Post	10/2010 - 02/2011	10/2011-12/2015	09/2012-08/2013	01/2017-06/2017	04-06/2016
Population		All patients	All patients	All admissions	All admissions
Population-Pre	174	X	X	151	135
Population-Post	185	X	X	161	127
Intervention	"a mandatory checklist requiring indication and recording likelihood of infection at start of antibiotic therapy and a review of the continuing need for therapy at 48 h and 5 days, reasons for continuation and possible target pathogen."	For select AB: - preauthorization needed - restrictive - susceptibility reporting - therapeutic drug monitoring, and molecular microbiological testing for viruses and bacteria that prove difficult to isolate by culture.	Guidelines for empiric treatment 48hr re-assessment Prospective audit and feedback	New Guidelines Prior authorization Pre-approved indications for selected agents Antibiotic 48 hrs time-out Education and training PICU antibiogram	Prospective audit feedback "selection of agent, de-escalation or discontinuation at 48hrs, recommendations on interactions and monitoring of therapy"
LOS - Pre	X	5.4 days (5.0-5.7) *	3.4* (Only PICU)	10.66 days ± 6.00 [§]	492 patient days Calc: 3.64 patient days/patient
LOS - Post	X	5.4 days (5.1-5.6) *	3.6*	9.16 days ± 5.00 [§]	557 Calc: 4.39 patient days/patient
p-value	X	0.563	X	0.047	X
Mortality - Pre	0 deaths	1.1 (0.2-2.1)**	X	31.1%	16.2%
Mortality - Post	3 deaths (not infection related)	1.6 (1.1-2.1)**	X	24.8%	15.7%
p-value	0.25	0.556	X	0.203	X
Readmissions Pre	X	1.6(0.4-2.7)**	X	X	X
Readmissions Post	X	0.9 (0.3-1.4)**	X	X	X
P value	x	0.497	X	X	X
Cost - Pre	X	X	X	68164.94LE (drug costs) Calc: 451.23 LE/patient	2212468 PKR(221255US) Calc: 16389 PKR/patient
Cost - Post	X	X	X	54764.96LE -19.7% Calc: 340.15LE /patient (-25%)	929568 PKR (-58%) (92965US) Calc: 7319 PKR/patient (-55%)
p value	X	X	X	0.01	<0.0001

X: not specified; PICU: pediatric intensive care unit; **: 95% (CI); \$: mean ± SD; *: Average monthly length of stay; Calc: calculated by reviewers with presented data; LE: livre égyptienne / Egyptian Lira; PKR Pakistani Rupee; 1 "mean numbers of infection-related deaths per 1000 patient-days"; 2- "Mean Readmissions within 48 hours per 1000 patient days"; hrs: hours

Conclusions: Even though antibiotic stewardship programs in PICUs are known to be successful in lowering injudicious antibiotic use, there is still paucity of data on their impact in length of stay, readmissions and cost. Future studies need to address these aspects as well.

Systematic Review Registration:

IMPACT OF ANTIMICROBIAL STEWARDSHIP PROGRAMS IN LENGTH OF STAY, MORTALITY, COST AND READMISSIONS ACROSS PEDIATRIC HEMATOLOGICAL/ONCOLOGICAL PATIENTS: A SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - POPULATION STUDIES AND SURVEILLANCE

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Background: Antibiotics are frequently used in the management of children with cancer. Antimicrobial stewardship programs (ASP) are a key tool to reduce antibiotic exposure and decrease morbidity. The aim of this systematic review was to evaluate the impact of ASP on length of stay(LOS), mortality, cost and readmissions in pediatric oncology.

Methods: A systematic review of studies published up to January 2021 in PubMed and Scopus databases was conducted, with the following keywords: "antibiotic stewardship", "antimicrobial stewardship", "child*", "adolescent*", "infant*", "neonate*" "mortality", "hematology", "hematology/oncology", "oncology", "cancer", "cost", "cost-effectiveness", "length of stay", "LOS", "re-admission" and "outcome*". The keywords were searched in the title and abstract of the studies, while the filters "human" and "English language" were used. Studies were excluded if they were not published in English language, were conducted on animals, were case studies, editorials, reviews and letters to the editor, and the full text did not provide data for at least one of the following: mortality, healthcare cost, length of stay or re-admission rates.

Results: Of 44 papers identified in the search, 2 were included, both conducted in 2017 and included haematology/oncology(ONC) and hematopoietic stem cell transplantation (HSCT) settings. LOS decreased in ONC in one study and in both, ONC and HSCT, in the other. Mortality rates did not differ significantly across periods in both studies. One study documented significant decrease by 20% in the total cost of all antifungal agents and by 27% of all antibacterial and antifungal agents, equal to a savings of \$59,905 USD annually (Table 1). None had information on re-admissions.

Table 1. Main characteristics and outcomes of the included studies.

	Wattier, 2017		Horikoshi, 2017
Country	USA		JAPAN
Centers	academic pediatric hospital ONC and HSCT services		Children's Hospital, hematology-oncology ward (23beds) & HSCT unit (3 beds)
Period pre	10/2011-08/2013		04/2010 - 09/2011
intervention period	Phase1(P1): 09/2013 - 06/2015 Phase2(P2): 07/2015 - 06/2016		10/2011 - 09/2015
population pre	ONC: 629	HSCT: 121	total patient days (ONC & HSCT): 13,492 (SD 710)
population intervention	P1:539 - P2:357	P1: 107 - P2:73	total patient days (ONC & HSCT): 36,150 (SD 753)
intervention	<p>Phase 1: update of the institutional febrile neutropenia(FN) guideline for the pediatric oncology service, recommending 1st line-b-lactam monotherapy rather than routine use of 2 gram negative agents.</p> <p>Phase 2: included updating the HSCT service FN guideline and engagement with a new pediatric antimicrobial stewardship program</p>		<p>➤ preauthorization of carbapenem</p> <p>➤ prospective audit with feedback</p> <p>➤ a weekly luncheon meeting among physicians</p> <p>➤ consensus on febrile neutropenia management</p> <p>➤ implementation of viral molecular diagnostics</p>
LOS-pre (days)	ONC: 7.0	HSCT: 37	(ONC & HSCT): 72.5 (SD 47.5)
LOS-post(days)	P1: 6.1 - P2: 5.5	P1: 60 - P2: 42	(ONC & HSCT): 62.1 (SD 34.9)
<i>pvalue</i>	X	X	0.66
Mortality-pre	1.1 %*	5.8%*	M1: 0.228 - M2: 0.076
Mortality-post	P1: 2.0% - P2: 1.4% *	P1: 6.5%~ - P2: 2.7% *	M1: 0.221 - M2: 0.11
<i>p-value</i>	0.40	0.60	1.00 for both
Cost -pre	X	X	X
Cost-post	X	X	<p>Decrease of total cost of:</p> <p>➤ antifungal agents: 20%</p> <p>➤ antibacterial and antifungal: 27%</p> <p>equal to a savings of \$ 59,905 USD annually</p>
<i>p-value</i>	X	X	Antifungals 0.036

ONC= oncology; **HSCT**=hematopoietic stem cell transplantation; SD =standard deviation; * in hospital mortality, only; **P1**: Phase1; **P2**: Phase2

M1: All caused mortality rate/ 1,000 patient-days (ONC & HSCT);

M2: Infection -related mortality at 30 days / 1,000patient-days (ONC & HSCT)

Conclusions: A limited number of studies in pediatric ONC and HSCT settings show promise that ASPs can decrease length of stay and cost. Further studies are needed to be able to draw safe conclusions.

Systematic Review Registration:

PNEUMOCOCCAL VACCINATION IN NATIONAL IMMUNIZATION PROGRAMS IN LATIN AMERICA: A LITERATURE REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - POPULATION STUDIES AND SURVEILLANCE

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Background: Pneumococcal vaccination has been shown to reduce the morbidity and mortality caused by pneumococcal disease (PD). This study aims to describe the main characteristics of pneumococcal vaccination in national immunization programs (NIP) for children, populations at increased risk for PD, and older adults in Latin America (LATAM).

Methods: Targeted literature searches were performed using six databases (MEDLINE, Lilacs, Scopus, Embase, CENTRAL, and CDRS) and gray literature from January 2007-December 2020 to identify studies that reported pneumococcal vaccination program characteristics in 22 countries in LATAM.

Results: A total of 136 documents were identified, 59(43.4%) from peer-reviewed journals and 77(56.6%) from gray literature. As of 2020, 20 of the 22(90.9%) countries introduced childhood pneumococcal vaccination in NIPs and most were primarily publicly funded. Fourteen countries adopted a 2+1 schedule PCV, five countries used a 3+0 schedule and only one a 3+1 schedule. Thirteen(59%) countries included one or more high-risk groups for PD as eligible populations in publicly funded NIPs. Regarding older adult pneumococcal vaccination, 11(50%) countries introduced it in NIPs: seven adopted PPSV23 alone and three used a sequential regimen with PCV13/PPSV23(Fig 1). The mean regional childhood vaccination coverage rate (VCR) for ≥3 doses from 2015-2019 was ≥85%. VCR for older adults were reported in four countries, only Chile and Puerto Rico had open data available on official websites. Fifteen studies from Argentina, Brazil, and Mexico reported VCR for one or more high-risk populations.

Figura 1. Summary of the main characteristics of pneumococcal vaccination in National immunization programs in Latin America (calendar year 2020)

country	Children			At increased risk ≥2 years old		Older adults (≥ 60 or 65 years old)		
	vaccine type	Schedule (months)	VCR - D3 (%) ^a	vaccine type	VCR (%)	vaccine type	Eligible age group	VCR (%)
Argentina	PCV13	2,4,12	80	PCV13/PPSV23	12.9-14.5% ^c	PCV13/PPSV23	≥ 65	16.2
Belize	—	—	—	—	—	—	—	—
Bolivia	PCV13	2,4,6	75	—	—	—	—	—
Brazil	PCV10	2,4,12	74	PPSV23 ^d	2.5-58% ^e	—	—	—
Chile	PCV13	2,4,12 ^b	95	PPSV23	—	PPSV23	≥ 65	33.1
Colombia	PCV10	2,4,12	93	—	—	i	—	—
Costa Rica	PCV13	2,4,15	95	PCV13/PPSV23	—	PCV13/PPSV23	≥ 65	—
Dominican Republic	PCV13	2,4,12	93	—	—	—	—	—
Ecuador	PCV10	2,4,6	83	—	—	—	—	—
El Salvador	PCV10	2,4,12	82	PCV13/PPSV23	—	PPSV23	≥ 60	—
French Guiana	PCV13	2,4,11	not reported	PCV13/PPSV23	—	—	—	—
Guatemala	PCV13	2,4,12	88	—	—	—	—	—
Guyana	PCV13	2,4,6	98	PPSV23 ^f	—	—	—	—
Honduras	PCV13	2,4,6	88	—	—	—	—	—
Mexico	PCV13	2,4,12	86	PPSV23	34.7% ^g	PPSV23	≥ 65	45-52%
Nicaragua	PCV13	2,4,6	112	PPSV23 ^h	—	PPSV23	—	—
Panama	PCV13	2,4,12	96	PCV13/PPSV23	—	PCV13/PPSV23	≥ 60	—
Paraguay	PCV13	2,4,12	74	PPSV23	—	PPSV23	≥ 60	—
Peru	PCV13	2,4,12	80	—	—	PCV13	≥ 60	—
Puerto Rico	PCV13	2,4,6, 12	76	PCV13/PPSV23	—	PPSV23	≥ 65	33.7%
Suriname	—	—	—	—	—	—	—	—
Uruguay	PCV13	2,4,12	95	PCV13/PPSV23	—	PPSV23	≥ 65	—

VCR: vaccination coverage rate; D3: third dose; PCV: pneumococcal conjugate vaccine; PPSV23: 23-valent pneumococcal polysaccharide vaccine. ^aData reported by PAHO or WHO; ^b 3+1 schedule for premature infants; ^c National survey < 65 years old with risk factors; ^d PCV13/PPSV23 available only for very high risk group ≥ 5 years old; ^e Data from studies with different underlying diseases and methods (interview/database); ^f ≥ 19 years old; ^g HIV population; ^h ≥ 50 years old risk with chronic diseases; ⁱ older adult vaccination with PPSV23 only available in Bogota.

Conclusions: Childhood pneumococcal vaccination programs have been successful with sustained and high VCR since introduction in NIPs. There are gaps in pneumococcal vaccination access and coverage for populations at higher risk of PD and older adults and in LATAM. Effective strategies need to be developed to address these deficiencies.

Systematic Review Registration: N/A

SYSTEMATIC REVIEW OF CONGENITAL CYTOMEGALOVIRUS INFECTION IN LATIN AMERICA AND THE CARIBBEAN

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - POPULATION STUDIES AND SURVEILLANCE

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Background: Recent studies suggest that the impact of congenital cytomegalovirus (cCMV) in high CMV maternal seroprevalence populations may be greater than previously thought. The objective was to provide an overview of epidemiological patterns, economic and humanistic burden of cCMV in Latin America and the Caribbean (LAC).

Methods: We conducted a systematic literature review on cCMV using six peer-reviewed databases (PubMed, EMBASE, Cochrane, SciELO, LILACS, and Scopus) from June 1999 to August 2020. Grey literature was screened for relevant studies. Primary studies from LAC reporting epidemiological population-based data or economic and humanistic burden of cCMV were considered for inclusion.

Results: The search identified 30 studies from six countries in LAC, most studies were conducted in public health facilities (n=27). Half of them were published in the authors' native language (Portuguese or Spanish). All included articles reported epidemiological data. CMV seroprevalence among women of reproductive age, reported by 19 studies, ranged from 65.6% to 99.1%. Thirteen studies reported CMV birth prevalence that ranged from 0.5% to 1.2% of all live births. Among cCMV-infected newborns, 4%-16.7% were defined as symptomatic cases. Nine studies reported hearing assessment follow-up from six to 84 months among children with cCMV. Only one study compared effectiveness of hearing screening in infected and non-infected newborns to detect sensorineural hearing loss (SNHL), reporting cCMV-related SNHL in 0.7 per 1000 live births and no late onset SNHL during a median follow-up of 36 months.

Conclusions: Despite the high CMV maternal seroprevalence, the cCMV-related SNHL seems to be like those in populations with low to middle seroprevalence. These findings highlight the need to better understand the cCMV disease impact and potential effective interventions in LAC, studies assessing economic and humanistic burden of infants' sequelae are lacking.

Systematic Review Registration: N/A

COVID-19 INFECTION MEASURES IN CHILDREN AND PREPARATION FOR SCHOOLS RE-OPENING IN THE PANDEMIC ERA

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - PREVENTION OF TRANSMISSION

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Background: COVID-19 pandemic has led to quarantines and school closures worldwide. Despite a much lower prevalence in children, the role of children as source of transmission is still not yet established. Indonesia contributed 11.8% of 1,089,308 of total COVID cases in the country as in January 2021. Although schools have been closed for almost a year, children continued to be affected.

Methods: This study was conducted as a systematic review with the aims of determining COVID-19 infection control in children as part of the preparation for schools re-opening during the pandemic. Literatures published between January 2020 and January 2021 were selected and being reviewed.

Results: Most of children infected with COVID-19 are asymptomatic. Children without significant symptoms of infection and children with mild symptoms without any signs of danger can undergo self-isolation at home for 14 days. The keys to effective COVID-19 management is identification through tracing and patient isolation as early as possible. Meanwhile, some measures should be taken before re-opening of schools including local prevalence of COVID-19, mass screening of students and staff including the family, limiting numbers of students and study hours, hygiene measures and physical distancing measures, closure of canteen and playground area, collecting comorbidity data of students and staff, and school plans when a COVID-19 case occur.

Conclusions: Conclusion Although school closures was important as part of COVID-19 control, however the impact for children in developing countries were not only on learning interruption, but also increased violence at home, rise in dropouts, involvement in risky behaviours, and poor nutrition. However, there are many requirements to be fulfilled before schools can be considered to be reopened.

Systematic Review Registration:

SAFETY AND IMMUNOGENICITY OF A TETANUS TOXOID CONJUGATED QUADRIVALENT MENINGOCOCCAL VACCINE (MENACYW-TT) IN HEALTHY MENINGOCOCCAL VACCINE-NAÏVE TODDLERS (12-23 MONTHS OF AGE)

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - VACCINE EFFICACY (PHASE 3) AND EFFECTIVENESS – BACTERIAL AND ALL NON-VIRAL

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Background: MenACYW-TT [MenQuadfi®] is a quadrivalent meningococcal conjugate vaccine, licensed for use in ages 12 months and older in EU and certain other countries. Safety and immunogenicity of MenACYW-TT were evaluated when administered as a single dose in meningococcal vaccine-naïve toddlers.

Methods: We report the results pooled from three randomized studies. In a Phase II study from Finland, 188 toddlers received either MenACYW-TT or MCV4-TT [Nimenrix®]. A Phase III study conducted in Germany, Spain, Finland and Hungary, evaluated 609 naïve toddlers who received either MenACYW-TT or MCV4-TT. A second Phase III study conducted in South Korea, Thailand, Russia and Mexico, evaluated 1183 toddlers who received either MenACYW-TT administered alone, or MenACYW-TT co-administered with routine pediatric vaccines, or routine pediatric vaccines alone. Serum bactericidal assays with human complement (hSBA) and baby rabbit complement (rSBA) were used to measure antibodies against vaccine serogroups at baseline (Day 0) and 30 days post-vaccination (D30). Safety data were collected up to 30 days post-vaccination.

Results: In the pooled population at D30, the majority (≥ 91.5%) of toddlers who received MenACYW-TT had hSBA titers ≥ 1:8 (seroprotection). Higher seroprotection rates for serogroups C, W and Y and comparable rates for serogroup A were observed in toddlers who received MenACYW-TT compared to those who received MCV4-TT. At D30, hSBA GMTs in the MenACYW-TT group were higher than those in the MCV4-TT group for serogroups C (47.4 vs 26.8), W (40.6 vs 20.5) and Y (78.9 vs 39.1) and comparable for serogroup A (34.8 vs 33.4). The safety profiles of MenACYW-TT and MCV4-TT vaccines were comparable.

Conclusions: MenACYW-TT vaccine was well tolerated and demonstrated a robust immune response when administered as a single dose to meningococcal vaccine naïve toddlers.

Systematic Review Registration: EudraCT# 2018-001472-38, EudraCT# 2016-000749-30, EudraCT# 2017-001993-40

GLOBAL MOLECULAR EVOLUTION OF RESPIRATORY SYNCYTIAL VIRUS INTO CONTEXT: A SYSTEMATIC REVIEW

E-POSTER VIEWING

TYPE 4: FORMAL SYSTEMATIC REVIEW OR META-ANALYSIS - VIRAL RESPIRATORY INFECTIONS

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Background: Respiratory syncytial virus (RSV) is a major worldwide cause of morbidity and mortality in children under five years of age. Although the RSV landscape has rapidly expanded with currently 17 vaccine candidates and 2 monoclonal antibodies (mAbs) in clinical development, sequencing data of circulating RSV strains remain essential to possibly identify substitutions that globally emerge over years leading to escape mutants. The World Health Organization (WHO) considers the spatial-temporal evolution of RSV strains to be important, and supports studies on the possible relationship between evolution of strains and vaccine effectiveness.

Methods: As molecular epidemiology of RSV is a rapidly evolving research field, we put the most recent studies on RSV sequences into context. In this systematic review, we provide a comprehensive overview of the RSV strains during the past five years. In addition to information on RSV subtyping, genotyping, clinical data and sequencing details, we summarize the amino acid polymorphisms in the antigenic sites of the F protein.

Results: The initial search yielded 799 records, of which 734 remained after duplicate removal. We performed a full text screening on 144 studies. In total, 102 studies finally met the inclusion criteria for qualitative analysis. Studies were published between January 1st, 2015 and December 31st, 2020. As the data extraction is still ongoing at the moment of writing, more results will be available later.

Conclusions: The field of RSV molecular epidemiology has evolved rapidly with around 20-30 published manuscripts per year. We summarized all these studies to give an overview of circulating RSV strains during the past five years.

Systematic Review Registration:

IS IT POSSIBLE TO PREVENT SEVERE HA-MRSA INFECTIONS?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - BACTERIAL PNEUMONIA

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Title of Case(s): IS IT POSSIBLE TO PREVENT SEVERE HA-MRSA INFECTIONS?

Background: *Staphylococcus aureus* (SA) is a commensal bacteria but up to 30% of the population is colonized with nasal SA, that could cause community and hospital-acquired infections. Pantone–Valentine–Leukocidin (PVL) is a virulence factor of SA, associated with life-threatening infections and mostly produced by Methicillin- Resistant SA (MRSA) strains.

Case Presentation Summary: A 11-year-old-boy with a cognitive impairment for an autoimmune encephalitis with recurrent relapses, was admitted after 2 days of fever. Physical examination revealed diminished breath sounds of the right lung base. Inflammatory indices were increased (C-Reactive Protein-CRP=30mg/dL, White Blood Cell Count=39000/mm³ with 80% of neutrophils). Chest X-Ray showed pneumonia of the lower lobe of the right lung with pleural effusion. A treatment with Piperacillin/Tazobactam 230mg/kg/die was started. The blood culture resulted positive for MRSA and Vancomycin 40mg/kg/die was added. MRSA nasal-swab screening was negative. Due to the lack of clinical improvement after 3 days of treatment, a chest computed tomography (CT) scan was performed and revealed a necrotizing pneumonia with multiple cavities. A chest tube was placed but due to the little fluid drainage, a thoracoscopic debridement was performed. The polymerase chain reaction revealed a PVL-producing MRSA strain and a treatment with Ceftaroline 30mg/kg/die, Daptomycin 10mg/kg/die and Clindamycin 30mg/kg/die was started. Clinical conditions and CRP values improved in the following 2 days. At the end of the 8-week antibiotic's course, both the inflammatory indices and blood culture were negative, a new CT scan showed a reduction of the effusion.

Learning Points/Discussion: PVL-MRSA causes severe infections that might be prevented by testing patients before starting therapies. The screening for MRSA-carriage should be extended on the admission of individuals with history of recurrent hospitalization. A prompt identification of MRSA may be useful for an early treatment.

THE ASSOCIATION OF VITAMIN D INSUFFICIENCY WITH PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA AMONG CHILDREN AGED TWO MONTHS TO FIVE YEARS OLD AT THE EAST AVENUE MEDICAL CENTER

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - BACTERIAL PNEUMONIA

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Title of Case(s): THE ASSOCIATION OF VITAMIN D INSUFFICIENCY WITH PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA AMONG CHILDREN AGED TWO MONTHS TO FIVE YEARS OLD AT THE EAST AVENUE MEDICAL CENTER

Background: Pneumonia is the leading cause of mortality in children worldwide. Studies have reported that Vitamin D may have a protective role against respiratory tract infections. The study aimed to determine the association of Vitamin D insufficiency with the risk of pediatric community-acquired pneumonia (PCAP) among children ages two months to five years old admitted at East Avenue Medical Center (EAMC). It also compared the demographic, clinical characteristics and Vitamin D levels of well pediatric participants with the patients admitted for PCAP.

Case Presentation Summary: This study utilized a case-control design initially involving 50 pediatric participants ranging from 2 months to 5 years old. Patients admitted at the EAMC for PCAP were designated as cases while well pediatric participants from the community were assigned as controls. Descriptive statistics, Chi-square test and Independent T test were used for the interpretation of results. One pair of participants had invalid test results and were excluded in the data interpretation. Only 48 participants were included in the final interpretation of the results. There was a significant difference in the vitamin D levels, sunlight exposure, and family members with history of respiratory tract infections between two groups. Majority of the cases (58.13%) had low levels of Vitamin D (<51 nmol/L), has skin type III (83.3%), and had family members with history of respiratory tract infections (p=0.019). On the other hand, the control group had higher sunlight exposure (p=0.009), has skin type IV (41.67%) and had higher Vitamin D levels ranging from 51 to 80 nmol/L (58.3%) followed by Vitamin D levels greater than 80 nmol/L (37.5%).

Table 5: Clinical characteristics of pediatric participants

Clinical Characteristics	All n (%)	Case group (with PCAP) n(%)	Control group (Well) n(%)	p-value
Immunization history, n (%)				
Current	11 (22.9%)	6 (25%)	5 (20.8%)	0.731284
None/Incomplete	37 (77.1%)	18 (75%)	19 (79.2%)	
Type of Clothing, n (%)				
Group I (Legs, arms and face uncovered)	44 (91.7%)	21 (87.5%)	23 (95.8%)	0.817094
	2 (4.2%)	1 (4.2%)	1 (4.2%)	
Group II (arms and face uncovered)	2 (2.1%)	2 (8.3%)	0	
Group III (face and hands uncovered)				
Supplements				
Iron	0	0	0	0.525358
Vitamin D	0	0	0	
Fluoride	0	0	0	
Vitamin B12	0	0	0	
Multivitamins	34 (70.8%)	18 (75%)	16 (64%)	
None	14 (29.2%)	6 (25%)	8 (36%)	
History of respiratory tract infection in family members, n (%)				
Yes	20 (41.7%)	14 (58.3%)	6 (25%)	0.019172
No	28 (58.3%)	10 (41.7%)	18 (75%)	
Exposure to sunlight (10am-4pm), n (%)				
Yes	27 (56.3%)	9 (37.5%)	18 (75%)	0.008829
-Duration:				
> 25 minutes	25 (52.1%)	9 (37.5%)	16 (66.7%)	
< 25 minutes	2 (4.2%)	0	2 (8.3%)	
-Frequency:				
> 3 times per week	27 (56.3%)	9 (37.5%)	18 (75%)	
< 3 times per week	0	0	0	
No	21 (43.7%)	15 (62.5%)	6 (25%)	
Breastfeeding history, n (%)				
Never, less than 4 months	26 (54.2%)	10 (41.7%)	16 (79.2%)	0.082194
Current, minimum of 4 months	22 (45.8%)	14 (58.3%)	8 (20.8%)	
Nutritional Status:				
Obese	5 (10.4%)	3 (12.5%)	2 (8.3%)	0.734007
Overweight	7 (14.6%)	4 (16.7%)	3 (12.5%)	
Risk for overweight	8 (16.7%)	3 (12.5%)	5 (20.8%)	
Normal	24 (50%)	1 (4.2%)	13 (54.2%)	
Wasted	4 (8.3%)	3 (12.5%)	1 (4.2%)	
Severely wasted	0	0	0	
Skin Type, n (%)				
I	0	0	0	0.007581
II	0	0	0	
III	30 (62.5%)	20 (83.3%)	10 (41.67%)	
IV	13 (27.1%)	2 (8.3%)	11 (45.8%)	
V	5 (10.3%)	2 (8.3%)	3 (12.5%)	
VI	0	0	0	

Table 6: Correlation of the average vitamin D content and status of pediatric participants

Variables	All N=	Case Group (With PCAP)	Control Group (Well)	p-value
Average vitamin D content in 3-day food consumption	Mean = 7.87 SD = 8.09	Mean = 7.76 SD = 9.22	Mean = 7.98 SD = 6.98	0.1893
Vitamin D (ng/mL), n (%)				
< 51 nmol/L	15 (31.3%)	14 (58.3%)	1 (4.2%)	0.00024
51-80 nmol/L	21 (43.7%)	7 (29.2%)	14 (58.3%)	
> 80 nmol/L	12 (25%)	3 (12.5%)	9 (37.5%)	

Learning Points/Discussion: Sufficient levels of Vitamin D may reduce the risk of pediatric community-acquired pneumonia among children two months to five years of age.

SEVERE BORDETELLA PERTUSSIS DISEASE IN MONOZYGOTIC TWINS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - BACTERIAL PNEUMONIA

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Title of Case(s): Severe Bordetella pertussis disease in monozygotic twins

Background: *Bordetella pertussis* is a highly contagious, vaccine-preventable infectious disease. The spectrum of clinical manifestations ranges from mild respiratory symptoms to a severe illness including apnea, seizures, respiratory distress, pulmonary hypertension and death. There is a disproportionately high incidence of hospitalization, pertussis-associated complications and mortality in infants, especially in those less than 3 months of age.

Case Presentation Summary: We report a case of 2 young infants, monozygotic twins, born to an unvaccinated mother and living with unvaccinated household members. They presented two weeks apart, with a history of paroxysmal cough, cyanosis and posttussive emesis. They were initially admitted to the pediatric ward and diagnosed using polymerase chain reaction (PCR, Multiplex respiratory panel). Twin A, a 22-day-old girl, developed pertussis pneumonia. She was transferred to the pediatric intensive care unit (PICU) because of respiratory failure, where she was treated with intravenous antibiotics and supplemental oxygen. Twin B had already received post exposure prophylaxis with azithromycin upon admission. Nevertheless, she developed seizures and respiratory compromise with prolonged apnoeic episodes and bradycardia, requiring transfer to the PICU, mechanical ventilation and inotropic support. Furthermore, bilateral pleural effusions were detected that were drained with chest tubes. Twin B was treated with intravenous antibiotics, dexamethasone and intravenous immunoglobulin (IVIG). Due to the need for a high level of ventilatory support and significant leukocytosis, blood exchange transfusion was performed. Eventually both twins recovered fully and returned to the pediatric ward to complete their treatment.

Learning Points/Discussion: The most common source of pertussis infection in infants is typically a household contact. Cocooning, in combination with maternal vaccination during pregnancy and administering the childhood vaccine series on schedule, provides the best protection to the infant. Thus, it is highly imperative to optimize vaccination as a definite preventive strategy against most severe cases of infant pertussis.

ANOTHER COMMENSAL GOING ROGUE? OSTEOARTICULAR INFECTION CAUSED BY MORAXELLA SPP.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - BONE AND JOINT INFECTIONS

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Title of Case(s): Another Commensal Going Rogue?

Background: *Moraxella* spp. are aerobic Gram-negative diplococci that colonise the upper respiratory tract of around half of pre-school aged children. Invasive disease is rare and in particular there few reports of *Moraxella* spp. osteoarticular infection in children in the literature. We report *Moraxella* spp. bacteraemia associated with septic arthritis and osteomyelitis in a pre-school child.

Case Presentation Summary: A 2-year-old boy presented with a 2-day history of limp and right ankle swelling. There was no history of trauma. He was afebrile and systemically well, with a normal peripheral white blood cell count and a C-reactive protein of 12 mg/L. On examination, he had a right ankle joint effusion, with full range of movement of his ankle and foot. Blood culture grew *Moraxella* spp. sensitive to amoxicillin-clavulanic acid. It was not possible to speciate the isolate due to the phenotypic similarities within *Moraxella* spp. Magnetic resonance imaging of his right ankle showed a joint effusion suggestive of septic arthritis with osteomyelitis of the talar neck. He underwent joint aspiration and washout, which yielded 3.5ml pus. Culture of pus and washout fluid was negative, but he had already received intravenous amoxicillin-clavulanic acid. Antibiotic treatment was continued for 4 days intravenously, and then orally to complete 4 weeks total. Four weeks after initial presentation, he was mobilising normally and examination was normal.

Learning Points/Discussion: 1) *Moraxella* spp. is an unusual cause of bacteraemia and septic arthritis in an otherwise well and immunocompetent child. 2) Children may appear systemically well with no fever and normal inflammatory markers in bacteraemic septic arthritis associated with *Moraxella* spp. 3) This case further supports the use of amoxicillin-clavulanic acid as empiric treatment for osteoarticular infection in pre-school children.

ALWAYS THINK COVID-19 OR PIMS-TS UNTIL PROVEN OTHERWISE...IS THIS RIGHT?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Always think COVID-19 or PIMS-TS until proven otherwise...is this right?

Background: Paediatric multisystem inflammatory syndrome temporally associated with COVID-19 (PIMS-TS) is a novel clinical condition that was first reported in April 2020. A surge of cases presented at Evelina London Children's Hospital(ECH) at the time.

Case Presentation Summary: We are presenting a four year-old boy, previously fit and well, that was transferred from his local hospital to ECH with a five-week history of fever and worsening bilateral leg pain for two weeks. He was admitted to his local hospital one week prior to transfer, where he was initially treated with IV ceftriaxone and clarithromycin for suspected sepsis. Blood culture, urine, CXR, abdominal ultrasound and echocardiogram were normal. On day 6 of admission, due to high inflammatory markers and persistence of fever, he was treated as suspected PIMS-TS with IVIG, high dose aspirin and omeprazole. The next day, he was transferred to ECH where he received IV methylprednisolone. On arrival, he was febrile (T 39.6) and his CRP was 246 g/dl. On day 10, he was clinically improved, afebrile, and inflammatory markers and pain had subsided. He was ready for discharge, but the next day ferritin increased remarkably (901-1925) and he started spiking fever again. Blood film was leucoerythroblastic. The following days, diffuse body pain was the main problem. On day 13, a further septic screen was performed and antibiotic treatment with piperacillin-tazobactam/gentamycin was administered (new onset of fever and CRP rise to 311). On day 14, bone marrow aspiration was carried out, that was persistent with acute leukemia. The patient was referred to a haematology/oncology centre. On day 18 he was transferred to St George's hospital. The patient had positive EBV viral load and his diagnosis was Burkitt's leukemia.

Learning Points/Discussion: During COVID-19 pandemic and surge of patients with PIMS-TS, broad mind about diagnosis should be kept as PIMS-TS has overlapping features with many other conditions.

COVID-19 TRIGGERED AUTOIMMUNITY?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): COVID-19 TRIGGERED AUTOIMMUNITY?

Background: The SARS-CoV-2 infection seems to cause a variable inflammatory response in different patients and there is some evidence that it can set off autoimmunity.

Case Presentation Summary: An 11-year-old girl presented with a month-long history of wrists and fingers arthralgia and morning stiffness. Two weeks after, she developed dry cough and chest pain and was medicated with azithromycin, acetaminophen and ibuprofen. Due to persistent symptoms and appearance of low-grade fever for two days, she was admitted. She was febrile (38°C), eupnoeic, with decreased right lower vesicular murmur, and wrists, 2nd and 3rd metacarpophalangeal and interphalangeal symmetric arthritis. Leukocytes were 4.500/μL, C-reactive protein 13,9 mg/L, sedimentation rate 46 mm/h, and sterile leukocyturia (74/μL), without proteinuria. Nasopharyngeal RT-PCR for SARS-CoV-2 was positive (Ct 32). The chest radiography showed a pleural effusion. Other infections were excluded. HLA-B27, Rheumatoid Factor and antibodies against SARS-CoV-2 were negative. She had ANA (1:640), anti-dsDNA antibody (385,3 UI/mL), anti-nucleosome antibodies (215,00 U/mL) and anti-histones positive; coombs was weak positive. The pleural fluid analysis was an exudate, without neoplastic cells and negative culture, pleural biopsy revealed non-specific inflammation. She was treated with amoxicillin clavulanate for eight days and non-steroidal anti-inflammatory drugs. According to EULAR 2019 criteria, she could be classified as systemic lupus erythematosus (SLE) for ANA positivity, joint involvement and pleural effusion. She started prednisone and hydroxychloroquine, with progressive clinical improvement, stopping steroids after five months, with no relapsing at 8 months follow-up, but maintaining positive ANA and anti-nucleosome antibodies at a lower titer.

Learning Points/Discussion: We report an adolescent fulfilling SLE criteria in the context of a SARS-COV2 infection. Whether this represents a COVID induced or a primary Juvenile SLE time will tell.

SOME THINGS ARE NOT BETTER IN PAIRS: DIPLOPIA AND A SARS-COV-2 DILEMMA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Some things are not better in pairs: diplopia and a SARS-CoV-2 dilemma

Background: The spectrum of COVID-19 neurological manifestations is expanding and clinicians struggle to diagnose its uncommon forms. Diplopia and ophthalmoplegia have been rarely described in the setting of SARS-CoV2 infection.

Case Presentation Summary: 9-year-old girl with SARS-CoV-2 infection one month before presenting with 3-day long fever, vomiting and bilateral conjunctival injection. Nine days later, she was complaining of diplopia on right gaze. At this moment, there was no fever or red eyes, headache, pain with eye movements or impairment of visual acuity. Neurological examination was positive only for limited right eye abduction. Brain and orbit CT and MRI revealed no structural abnormalities. The ophthalmological examination disclosed bilateral optic disk oedema and OCT was consistent with bilateral papilledema. There was no visual acuity deficit or indirect inflammatory signs. Lumbar puncture opening pressure was 22cmH₂O, and there was no CSF pleocytosis, elevated protein or intra-thecal synthesis of immunoglobulin. Comprehensive blood chemistry revealed an erythrocyte sedimentation rate of 98mm/h without other markers of systemic inflammation. Nasal swab SARS-CoV2 PCR was negative but antibodies were present in both serum and CSF. Other infectious aetiologies were excluded. We decided a 7-day course of oral prednisolone 1mg/kg/day. The girl recovered completely within one month.

Learning Points/Discussion: The case presented fulfils American Academy of Neurology criteria for probable Pseudotumor Cerebri Syndrome (PTCS) and this diagnosis would explain transient papilledema without visual impairment and VI nerve palsy. Although it is true that the absence of headache is unexpected for this syndrome, the alternative diagnosis of bilateral optic neuritis without visual impairment seems more unlikely. The complete recovery after corticosteroids adds little to the diagnosis, considering that most secondary PTCS resolve after resolution of its cause or after lumbar puncture.

A RARE PRESENTATION OF COVID-19: INTUSSUSCEPTION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): A rare presentation of COVID-19

Background: Most children with COVID-19 have mild or no symptoms. However, some children may experience serious illnesses due to COVID-19. The most common symptoms seen in children with COVID-19 are fever, cough, fatigue and shortness of breath. Reports of patients with gastrointestinal symptoms have gradually increased since the outbreak began. Patients generally have abdominal pain, diarrhea and vomiting, while intussusception is very rare. In the literature, 6 patients with SARS-CoV-2 PCR positivity have been reported. We present a 5.5-month-old patient with intussusception with SARS-CoV-2 PCR positivity.

Case Presentation Summary: A 5.5-month-old male patient was admitted to the hospital with complaints of restlessness, vomiting and fever. There was abdominal distention and tenderness in the physical examination of the patient. Intussusception was observed in the 3.5 cm ileocolic segment on abdominal ultrasonography (USG). The nasopharyngeal swab sample of the patient, whose invaginated segment was opened by hydrostatic reduction, was found to be SARS-CoV-2 PCR positive. The SARS-CoV-2 PCR result of the mother and father was also positive. The patient, whose oral intake was stopped and intravenous hydration, ampicillin-sulbactam and metronidazole treatments were administered, was followed up with pediatric surgery. The patient, who started oral feeding after two days, vomiting did not recur. The patient, who did not develop complications during follow-up, recovered.

Learning Points/Discussion: COVID-19 in children is usually asymptomatic or mildly symptomatic. Especially in patients without respiratory symptoms, findings related to COVID-19 may be overlooked. Six cases of intussusception with positive SARS-CoV-2 PCR have been reported in the literature. More research is required to determine whether intussusception in infants is part of the clinical spectrum of COVID-19. This case is the first SARS-CoV-2 PCR positive intussusception case reported from Turkey.

CLINICAL PRESENTATION IN SARS-COV-2 POSITIVE NEWBORNS, A CASE SERIES.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

Margherita Calia, Maria Luisa Ventura, Valeria Cavalleri, Mariateresa Sinelli
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Title of Case(s): Clinical presentation in SARS-CoV-2 positive newborns, a case series

Background: Starting from February 2020, Lombardy region was hit particularly hard by COVID-19 pandemic. Since then, several neonatal cases have been reported, with different degrees of severity. It is debated how this disease affects newborns and what is the best practice to manage them. We retrospectively reviewed data of neonatal patients exposed at birth to COVID-19 and of those with confirmed COVID-19.

Case Presentation Summary: Between Mar 1st 2020 and Jan 15th 2020, 17 newborns were hospitalized due to COVID-19. Nine newborns from 139 (6.5%) mothers testing positive for COVID-19 at delivery, turned positive during the follow-up and, according to our hospital policy, were admitted to NICU. During hospitalization, all of them remained asymptomatic, with normal chest x-ray and blood tests, except for two presenting mild and self-resolving leukopenia. Only one neonate, born from a mother developing COVID-19 after the delivery, presented moderate symptoms, with respiratory distress on day 5 of life, requiring non-invasive respiratory support for few days. He was later discharged with no further complications. Seven additional neonates, self-referred to our emergency department, were hospitalized due to symptomatic COVID-19. Common symptoms were fever (1/7[14%]), cough (6/7[85%]), feeding difficulties (6/7[85%]) and rhinitis (7/7[100%]). All patients had moderate leukopenia and neutropenia, with normal biochemistry profiles and negative chest x-ray. Babies were discharged home when asymptomatic. The mean duration of the hospitalization was 4 days [range: 3-16]. The mean time to first negative nasopharyngeal swab was 15 days [range: 4-30].

Learning Points/Discussion: COVID-19 seems to be a benign infection in neonatal age, that can cause, in few cases, mild symptoms, rarely requiring medical support. It seems reasonable to monitor asymptomatic babies at home instructing parents to report any symptoms attributable to COVID-19.

A RETROPHARYNGEAL PHLEGMON AS A PRESENTATION OF MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): A retropharyngeal phlegmon as a presentation of multisystem inflammatory syndrome in children

Background: Multisystem inflammatory syndrome in children (MIS-C) is a complication of COVID-19. Patients with MIS-C may present with a wide variety of clinical features, but fewer information exists in literature about atypical presentations of MIS-C.

Case Presentation Summary: A 12-year-old african male presented with one week of fever, sore throat, neck pain, vomiting, neck stiffness, torticollis and tonsillar hypertrophy, with white blood cell count 10200/mcL, neutrophil count 82% and C-reactive protein (CRP) 127 mg/L. Throat culture was negative for Group A Streptococci. Neck CT scan showed a retropharyngeal phlegmon with bilateral cervical adenopathies and he started penicillin and clindamycin. Fever persisted and bilateral conjunctival hyperemia was noted. Subsequent workups revealed lymphopenia 540/mcL, D-dimer 2704 g/L, albumin 23,7 g/L, CRP 256.9 mg/L, procalcitonin 6.25 ng/mL, erythrocyte sedimentation rate 76 mm/HR, interleukin-6 214,30 pg/mL, amyloid A protein 420 mg/L, ferritin 720 ng/mL and cardiac involvement (troponin I 45,9 ng/mL, NT-proBNP 5144 pg/mL). SARS-CoV-2 RT-PCR and serology were positive (193,00 U/mL). The echocardiogram showed ectasia of left coronary artery and anterior descending artery (z-score +4.78 and +4.95, respectively). Also, the pulmonary CT scan showed ground glass opacities in both inferior lobes and bilateral pleural effusion. The diagnosis of MIS-C was made and he was given IV immunoglobulin 1 g/kg 2 days, methylprednisolone 40 mg bid, acetylsalicylic acid 30 mg/kg and prophylactic enoxaparin. There was completely resolution of fever and additional workups improved, especially laboratory findings of inflammation and the coronary ectasia.

Learning Points/Discussion: A retropharyngeal phlegmon, already described in Kawasaki disease, doesn't exclude the possibility of MIS-C. The absence of improvement with antibiotics, the persistent elevation of inflammatory markers and multiorgan involvement put us on the trail of another diagnosis.

PAEDIATRIC INFLAMMATORY MULTISYSTEM SYNDROME WITH KIDNEY INJURY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Paediatric Inflammatory Multisystem Syndrome with kidney injury

Background: In most children, SARS-CoV-2 is responsible for either mild or moderate disease. However, cases of paediatric inflammatory multisystem syndrome temporally associated with COVID-19 (PIMS-TS) have been reported and have raised major concerns among the medical community. We report a case of a 15-month-old boy with PIMS-TS associated with kidney injury.

Case Presentation Summary: A previously healthy 15-month-old boy presented to the emergency service with a 3-day history of fever, vomiting, and anorexia. On examination he had low blood pressure, bilateral non-purulent conjunctivitis and periorbital edema, bilateral edema and erythema of the extremities, cheilitis, macular rash, and mild hepatomegaly. One month earlier his grandmother had been diagnosed with COVID-19 and no symptoms were reported in the child. Investigations at admission revealed anemia, lymphopenia, thrombocytopenia, elevated inflammatory markers (ESR, c-reactive protein, procalcitonin, fibrinogen, ferritin), low albumin, coagulopathy, and markers of myocardial dysfunction (elevated troponin and NT-proBNP), with echocardiogram showing septal hypokinesia and left ventricle dysfunction. Although kidney function was normal, urinalysis showed significant proteinuria (spot urine protein to creatinine ratio of 98 mg/mmol) and microscopic hematuria. Renal parenchymal hyperechogenicity was found on ultrasound. SARS-CoV-2 nasopharyngeal swab was positive and serology showed evidence of previous infection. Because of clinical deterioration, he needed to be admitted to the intensive care unit. Treatment included intravenous immunoglobulin, high-dose steroids, acetylsalicylic acid and inotropic support. The outcome was good.

Learning Points/Discussion: Although PIMS-TS might involve multiple organ dysfunction, it rarely affects the kidney. This case highlights the importance of careful multisystem monitoring, including renal function, and follow-up of possible long-term sequelae.

PERICARDITIS AS THE MAIN CLINICAL MANIFESTATION OF COVID-19 IN ADOLESCENTS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): PERICARDITIS AS THE MAIN CLINICAL MANIFESTATION OF COVID-19 IN ADOLESCENTS

Background: Children and adolescents with COVID-19 usually have a milder illness, lower mortality rates and may manifest different clinical entities compared to adults. Acute effusive pericarditis is a rare clinical manifestation in patients with COVID-19, especially among those without concurrent pulmonary disease or myocardial injury.

Case Presentation Summary: A 14.5-year-old boy presented with a 2-week history of progressive chest pain worsened in supine position, during deep inspiration and coughing and 3-days low-grade fever. The physical examination revealed muffled heart sounds and friction rub. Laboratory investigation showed elevated CRP:36mg/l, ESR:100mm, D-dimer and fibrinogen. RT-PCR for SARS-CoV-2 was positive. Chest X-ray revealed cardiomegaly. Electrocardiogram (ECG) showed T-wave inversion in anteroseptal leads (III,V3,V4) and transthoracic echocardiogram (TTE) revealed only mild to moderate pericardial effusion of 10mm. A 15.5-year-old obese girl presented with a 6-hours history of chest pain that worsened during deep inspiration and coughing and fever. Laboratory investigation revealed mildly elevated CRP:14mg/l and ESR:25mm. RT-PCR for SARS-CoV-2 was positive. Chest X-ray was normal, ECG showed T-wave inversion in inferolateral leads (III,aVF,V5,V6) and TTE echo contrast pericardial effusion. In both cases, treatment with oral colchicine and ibuprofen was initiated and the clinical course was favorable with complete clinical and laboratory resolution.

Learning Points/Discussion: These cases highlight the importance to include pericarditis in the differential diagnosis of adolescents with cardiac symptoms, ECG or TTE abnormalities, in order to prevent potential complications and enhance rapid symptom resolution with appropriate management.

COAGULOPATHY AND THROMBOSIS IN CHILDHOOD WITH COVID-19 : A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

Ourida Gacem, Lamia Labboun, Manel Gherbi, Lamia Amirat, Nadia Ayad, Saliha Guers, Lydia Mansouri, Mohamed Chouli, Kahina Abba, Moussa Achir, Mohamed Samir Ladj
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Title of Case(s): Coagulopathy and thrombosis in childhood with COVID-19: A case report

Background: COVID-19 can be considered a prothrombotic disease which appears to be a significant problem in children contaminated with severe forms of this virus.

Case Presentation Summary: 12-year-old girl who was referred for inaugural diabetic ketoacidosis. The patient had no particular personal medical history but with a significant family autoimmune diseases (Diabetes, Behçet, Hypothyroidism). During her hospitalisation she showed signs of neurological disorders (somnia, intense headaches and blurred vision). The patient's further exploration found a present of papillary oedema and cerebral venous thrombosis (Torcula thrombosis of the left lateral sinus to the jugular vein with extension to the right transverse sinus with signs of intracranial hypertension (IH) on neuro imaging. The possibility of autoimmune diseases has been discarded by a non-contributory autoimmune assessment. Inaugural diabetes post COVID 19 with extensive cerebral venous thrombosis has been identified and confirmed due to recent family contagion COVID 19, and testing positive for SARS-CoV-2 (positive Polymerase Chain Reaction test, serology testing detected IgM antibodies), lymphopenia and high level of D Dimer ($> 2,5$ fold of the upper limit of normal). The patient received a heparin therapy with a relay of antithrombotic K in addition to the treatment of diabetic ketoacidosis. Regarding IH, a cure of Diamox has been prescribed. A Follow-up brain imaging (a month later) revealed almost total repermeabilization of the thrombosed sinuses of dura mater and significant regression of any signs of IH.

Learning Points/Discussion: SARS CoV-2 could induce certain neurological complications in children including venous thrombosis. Hereby, we have featured a paediatric case who was requiring urgent heparin therapy. A better understanding of COVID-19 pathogenesis, in particular haemostatic disorders, will help to choose appropriate therapeutic strategy in the child to improve survival rates.

EP474 / #615

RADIOLOGICAL PICTURE OF BILATERAL MULTIFOCAL PNEUMONIA IN A SARS-COV2 POSITIVE THREE-YEAR-OLD GIRL - PEDIATRIC INFECTIOUS DISEASE UNIT - CHILDREN HOSPITAL GIOVANNI XXIII, BARI, ITALY

E-POSTER VIEWING

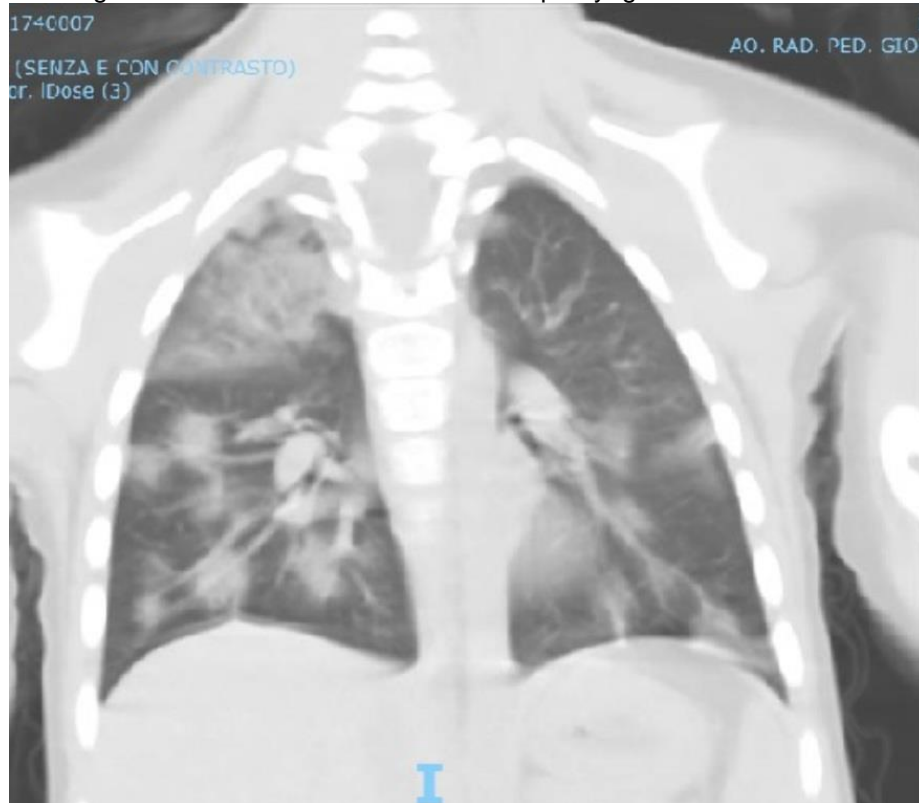
TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

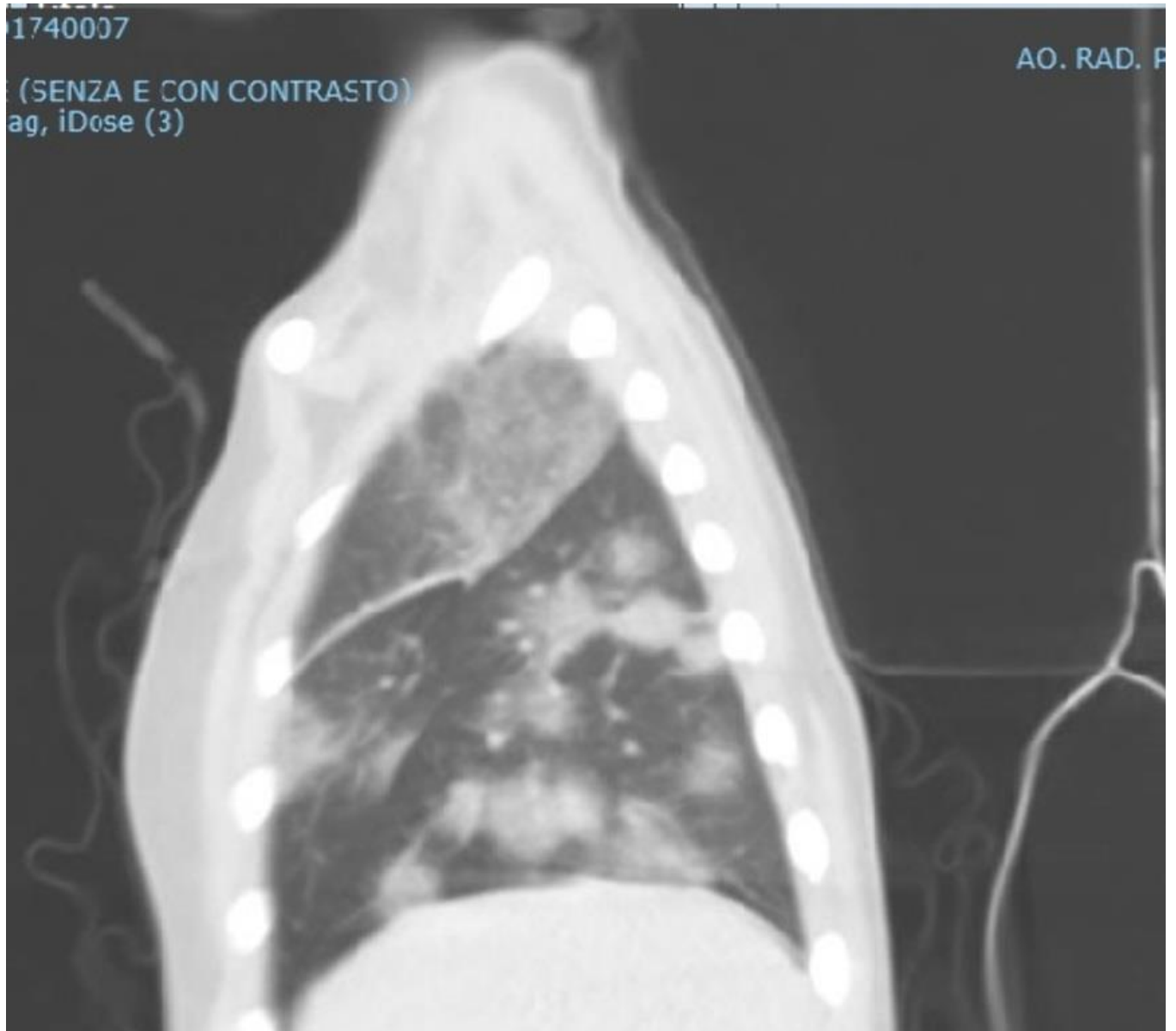
Rita Grandolfo, Valentina Santoiemma, Amalia Amoroso, Pasqua Massagli, Anna Maria Giannini, Domenico Tricarico, Francesco Tansella, Maurizio Carone, Desiree Caselli
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Title of Case(s): RADIOLOGICAL PICTURE OF BILATERAL MULTIFOCAL PNEUMONIA IN A SARS-COV2 POSITIVE THREE-YEAR-OLD GIRL

Background: Children usually develop a mild form of COVID-19, rarely requiring high-intensity medical treatment. We aim to describe a typical clinical and radiological picture of severe acute respiratory syndrome from SARS-COV2 in a young girl.

Case Presentation Summary: We report the case of a three-year-old girl who came to our observation for persistent fever for six days in association with cough and positivity for SARS-COV2. During the hospitalization, the child was subjected to blood tests showing lymphopenia with modest alteration of the inflammatory indices and contextual compromise of the respiratory picture and general conditions, documented by the state of suffering, desaturation and dehydration, directing the execution of chest X-ray and chest CT scan demonstrating the presence of bilateral multifocal pneumonia (Image 1). The child was then subjected to therapy with Oxygen, Steroid and Clarithromycin with gradual improvement of the clinical picture and resolution of the radiological one in about a week. In a follow-up, one month after discharge, the patient was in good general condition, in the absence of symptoms and late clinical signs, with negative molecular PCR control on nasopharyngeal swab at SARS-COV2.





Learning Points/Discussion: The description of the clinical and radiological picture of bilateral multifocal pneumonia in a SARS-COV2 positive three-year-old girl constitutes an important differential diagnostic tool with other pictures related to different microbial agents by age.

EP475 / #727

VASODILATORY SHOCK IN 15 YEARS OLD GIRL IN BULGARIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Vasodilatory shock in 15 years old girl in Bulgaria

Background: Multisystem Inflammatory Syndrome in children related to COVID-19 (MIS-C) is a new condition the aftermath of which is yet to be studied both in Bulgaria and globally. Up to mid December 2020, world COVID-19 fatalities are put at 1 582 674, according WHO statistics.

Case Presentation Summary: We present a 15 years old patient with MIS-C, diagnosed with acute abdomen, operated and consequently treated for septic shock syndrome. The current situation represents a major clinical challenge in part due to the complex differential diagnosis involved: acute abdomen, septic shock, autoimmune diseases (Lupus erythematosus, Juvenile idiopathic arthritis, Kawasaki disease, Acquired immune deficiency, Crohn`s disease, Ulcer colitis), acute myocarditis. At the same time, other symptoms observed in children with COVID-19 such as skin rashes, lymphadenopathy, conjunctivitis are not exhibited by our patient. We did not observe any myocardial injury, however she went into an acute vasodilatory shock with tachycardia, reduced kidney perfusion pressure and oliguria.

Learning Points/Discussion: Effects of SARS-CoV-2 on patients falling under the scope of pediatrics are just now starting to be the subject of analysis and clinical research. Differentiation of the multisystem inflammation syndrome, clinical theater experience and clear therapeutic strategies are the key to reducing mortality, intensive care cases, and long-term consequences in the affected patients.

ASYMPTOMATIC AND SYMPTOMATIC CASES OF COVID-19 IN NEWBORNS.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): ASYMPTOMATIC AND SYMPTOMATIC CASES OF COVID-19 IN NEWBORNS

Background: Due to unknown reasons, children with COVID-19 appear to have a milder clinical course compared to adults, and reports of death are scarce. Neonates also are susceptible to SARS-CoV-2 infection. The symptoms in neonates were milder and outcomes were less severe compared to adults. Intrauterine vertical transmission is not impossible but direct evidence is still lacking.

Case Presentation Summary: The newborn full-term girl was under inpatient observation from 4th to 17th days of life. The girl was born from SARS-CoV2 positive and COVID-19 respiratory symptomatic mother (by RT-PCR). The child's grandmother was the first member suffered from pneumonia caused by SARS-CoV2, who was the source of novel coronavirus infection in the family. Immediately after birth, nasal and oral swabs were taken, the result gRT-PCR RNA-SARS-CoV-2 was positive. During the observation, the child was breastfed and showed signs of physiological adaptation of the newborn without health abnormalities. Cells blood count (CBC) was within normal ranges, also C-reactive protein (CRP) level didn't elevated. Another full-term breastfed newborn was hospitalized with mild respiratory symptoms (coryza, dry cough and pharyngitis) and low grade fever on the 24th day of life (2nd day of disease onset). The child's mother had the same symptoms. Swab's results of mother and newborn (gRT-PCR RNA-SARS-CoV-2) were positive. CBC and CRP level were within normal ranges. All symptoms were reduced in 5 days. In both cases the mothers and children received two negative gRT-PCR RNA-SARS-CoV-2 results.

Learning Points/Discussion: The presented cases demonstrated the asymptomatic COVID-19 in early neonatal period where child was born from a symptomatic PCR confirmed COVID-19 mother; and mild symptomatic COVID-19 in a child that was infected by symptomatic mother in late neonatal period.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C) WITH PERFORATED APPENDICITIS : A CASE-REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C) WITH PERFORATED APPENDICITIS : A CASE-REPORT

Background: More than 80% cases of Multisystem Inflammatory Syndrome in Children (MIS-C) involves prominent gastrointestinal symptoms; part of them were severe, such as: appendicitis, peritonitis, or gut perforation. This case report aims to describe the clinical characteristics of a child with MIS-C and perforated appendicitis.

Case Presentation Summary: A 9-year-old boy complained of severe abdominal pain and fever for 4 days. Physical examination revealed diffuse muscular tenderness of abdomen. Other physical findings were skin rashes, conjunctivitis, and multiple stomatitis. The previous contact history of COVID-19 was unclear. Ultrasound examination revealed free-fluid suspected gut perforation. Antibody and PCR examination of SARS-CoV-2 was positive. Initial laboratory assessment showed increase in inflammatory markers such as CRP (12.1 mg/dL), procalcitonin (7.94 ng/mL) and ferritin (7674 ng/mL). There were also increase of myocardial dysfunction marker, i.e.: CK-MB 71U/L. In addition, some markers of coagulopathy were increased, i.e.: partial thromboplastin time 2 times higher than normal and elevated D-dimer (14.18 mg/L). Intraoperatively, the perforation at appendix base and intra-abdominal pus was found. Post-surgery, he had respiratory failure and septic shock which required mechanical ventilation and vasopressors. Remdesivir 5 mg/kg and azithromycin 10 mg/kg was added. After 14 days, PCR of SARS-CoV-2 was negative. However, patient's condition worsened due to refractory shock; then passed away after 29 days of PICU care.

Learning Points/Discussion: This case highlighted severe gastrointestinal symptoms with MIS-C which should always be considered by physician during this evolving pandemic situation. However, further investigation is strongly needed to understand the correlation between those events. The infection of SARS-CoV-2 may develop into appendicitis through the inflammatory mechanisms associated with viral entry in the intestinal area in relation with abundant viral receptors. Complications involving other organs especially cardiorespiratory system, lead to poor prognosis.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN: FIRST CASE IN SURABAYA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN: FIRST CASE IN SURABAYA

Background: Indonesia is severely hit by Covid-19. The overall morbidity and mortality were high. Several cases of one unique spectrum in children, multisystem inflammatory syndrome in children (MIS-C) have also been found. The aim of this report is to present the first case of MIS-C in Surabaya.

Case Presentation Summary: A previously healthy boy, 2.5 years old, came to hospital with six days of fever, rash, dry and cracked lips, and hyperemic eyes. Many people in his neighborhood suffered from Covid-19, but none in his home. He was born spontaneously, breastfed for two years, received all vaccines according to the national immunization scheme, and has a normal growth pattern. Physical examination revealed an alert boy with normal nutritional status, blood pressure 90/60 mmHg, pulse 116 x/m, RR 28 x/m, and t 37.8oC, and SpO2 98%. There was lymph node enlargement on the right neck, red lips and tongue, and reddish eyes. The heart and lungs were normal. Laboratory tests results were Hb 10.3 g/dl, WBC 16 000/mm³, platelet 287 000/mm³, neutrophil 80%, lymphocyte 15.8%, ESR 102/1 hour, CRP 45 mg/L, D-Dimer 8677.93 ng/ml, negative IgM and positive IgG of SARS-CoV-2. The PCR swab for SARS-CoV-2 was negative. Echocardiography showed the diameter of the left main coronary artery 2.5 mm and right coronary artery 2.5 mm. The diagnosis was MIS-C (Kawasaki). The treatment consisted of intravenous immunoglobulin (IVIG) and aspirin. The boy was hospitalized for seven days and returned home in good condition.

Learning Points/Discussion: The MIS-C spectrum in children has become more common, although the absolute number was still relatively low. For Kawasaki-like disease, the main treatments were IVIG and aspirin. Most of the patients survived in good condition.

FOR A 13-YEAR-OLD BOY COVID 19 BECAME THE CAUSE OF THE ONSET OF ACUTE LEUKEMIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): FOR A 13-YEAR-OLD BOY COVID 19 BECAME THE CAUSE OF THE ONSET OF ACUTE LEUKEMIA

Background: Covid 19 pandemic has placed the world against new challenges. The disease presents in patients in all age groups and the multispectral clinical course is characteristic to it, according to the organism in which it starts to develop. Immunocompromised persons are especially at risk, specifically the patients with acute leukemia. The protocol of care of the patients with acute leukemia was reviewed during Covid 19 pandemics.

Case Presentation Summary: Previously healthy 13y.o. Male developed fever, sore throat, difficulty in swallowing and difficulty in breathing through nose and cough on 26.11.2020. CBC showed the elevated markers of bacterial infection. For 5 days the patient had been treated with antibiotics as an outpatient, but the child's condition worsened he started vomiting, had chills, temperature was hectic. The test for Covid-19 was positive. Diagnosis: COVID19, polyserositis, pneumonia, anemia. The patient desaturated and required oxygenation. CBC: leukocytosis, anemia, thrombocytopenia, neutropenia, lymphopenia, monocytosis (35%), elevated ESR, 17 times raised CRP level from the normal range, 4 times elevated LDH, 4 times elevated D-dimer, ferritin was raised 5 times, decreased folic acid level and elevated paracalcitonin level 0.83. ($N < 0.007$). The patient was given intravenous antibiotics, hormone and other symptomatic treatment. From the 8th day of the disease the patient's condition slightly improved. The levels of the inflammatory markers normalized, but on 14.12.20 the condition worsened drastically: high leukocytosis, monocytosis, neutropenia, thrombocytopenia, anemia, blasts in periphery blood smear 24%. Skin was pale and he developed pityriasis-like macule patches on torso. He was diagnosed with acute leukemia. The immunophenotype analysis of blast cells revealed AMLM5b. Molecular-genetic testing did not reveal any genetic aberrations. With cytogenetic examination the sample was cellular, mostly mitotic and each analysed metaphase was diploid. On 18.12.-25.12.20 the patient was given polychemotherapy AML, BFM 2004 program induction therapy AIE. On the 15th day of treatment the clinical and hematologic remission was achieved, blast cells in bone marrow 0.75%.

Learning Points/Discussion: COVID 19 contributed to the reveal of acute leukemia in 13y.o. previously healthy person, which in turn was the reason for the infection's severe course.

ACUTE CARDIOVASCULAR FEATURES IN CHILDREN WITH MULTISYSTEM INFLAMMATORY SYNDROME ASSOCIATED WITH SARS-COV-2 INFECTION IN LATVIA: A SINGLE-CENTRE STUDY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Acute cardiovascular features in children with multisystem inflammatory syndrome associated with SARS-CoV-2 infection in Latvia: a single-centre study

Background: Multisystem inflammatory syndrome in children (MIS-C) is a severe clinical condition after SARS-CoV-2 infection with substantial cardiovascular implications. The aim of this case series was to describe the features of cardiovascular involvement, investigation data, and treatment management of the included 11 children with MIS-C.

Case Presentation Summary: Median age of patients were 96 (25th-75th percentile [Q1-Q3] 79-152) months, 81.8% (n=9) were boys. Acute cardiovascular manifestations included pleural effusion (63.6%, n=7), pericardial effusion and ascitis (18.2%, n=2), hypotension (27.2%, n=3). Inflammatory markers were raised with median C-reactive protein 167.9 (Q1-Q3 132.2-237.8) mg/l and median serum ferritin 583.2 (Q1-Q3 384.8-861.1) ng/ml. Cardiac troponin I was elevated in 72.7% (n=8) of patients with median 77.4 (Q1-Q3 36.4-128.5) ng/ml, but N-terminal pro B-type natriuretic peptide was increased in all cases with median 5544 (Q1-Q3 2228-20199) pg/ml. Pathological changes on echocardiography were observed in 72.7% (n=8) patients, most common findings were valvular insufficiency (63.6%, n=7): mitral (45.5%, n=5), tricuspidal (63.6%, n=7), aortal (18.2%, n=2); pericardial effusion (18.2%, n=2), decreased LV ejection fraction (9.1%, n=1). On ECG various changes of ST-segment or T-wave (81.8%, n=9), bradyarrhythmias (54.5%, n=6), tachyarrhythmias (54.5%, n=6), intraventricular conduction defects (54.5%, n=6) were observed. One patient (9.0%) had an AV dissociation. Three patients (27.3%) were diagnosed with myocarditis. All patients were treated with intravenous immunoglobulins and glucocorticosteroids (81.8% low dose, 18.2% pulse therapy), one patient received IL-1 receptor antagonist. Two (18.1%) patients required inotropic support with norepinephrine for average 2.1 days, in one case (9.1%) hypotension was corrected with a bolus of saline.

Learning Points/Discussion: Patients with MIS-C syndrome should always be carefully monitored for cardiovascular function as the majority of them have significant manifestations such as arrhythmias, shock and myocarditis.

HEMOPHAGOCYTOSIS IN BONE MARROW ASPIRATES IN MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Hemophagocytosis in Bone Marrow Aspirates in Multisystem Inflammatory Syndrome in Children

Background: Multisystem inflammatory syndrome in children (MIS-C) is a serious disease with different and various clinical presentations. We define it as a “game changer” syndrome. Individual clinical entity is seen in each patient and challenge each clinician. We have seen that patients with perforated appendicitis findings on physical examinations who may require urgent surgery recover with steroids or immunomodulators. Therefore, treatment must be tailored to each patient individually. Being a newly described entity, the treatment and approach for MIS-C may have various points in different studies.

Case Presentation Summary: Herein we describe unique cases of MIS-C with hemophagocytosis on bone marrow aspirates. Recent reports suggest that the cytokine storm caused by SARS-CoV-2, has significant similarities with the clinical and laboratory findings of hemophagocytic lympho-histiocytosis (HLH) and macrophage activating syndrome (MAS). Cases have raised concerns about a hyperinflammatory process associated with COVID-19 in children, defined as MIS-C. Most children had fever lasting more than four days, and common presenting symptoms such as rashes, conjunctival injection, gastrointestinal symptoms and lethargy. Cardiac manifestations especially left ventricular failure and organomegaly may occur. Unlike other MIS-C patients that we followed up, ferritin and D-dimer levels were quite high in these three cases. Thrombocytopenia and lymphopenia were also prominent. Therefore, bone marrow aspiration was performed to exclude any hematological malignancy and hemophagocytosis was observed.

Learning Points/Discussion: Hemophagocytosis has been reported for adults in association with severe COVID-19 disease however there are no reported data for children demonstrated by bone marrow aspiration¹⁰. Being a newly described entity, every patient may have different presentation and clinical course therefore treatment must be tailored to each patient individually. These cases highlight that hemophagocytosis may be present on bone marrow aspiration in patients with MIS-C.

BRADYCARDIA AND MULTISYSTEMIC INFLAMMATORY SYNDROME IN CHILDREN (MIS-C): AN UNUSUAL ASSOCIATION.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Bradycardia and Multisystemic Inflammatory Syndrome in Children (MIS-C): an unusual association.

Background: Multisystem inflammatory syndrome in children (MIS-C) is a rare but potentially fatal condition characterized by fever, increased inflammatory markers, multiple organ dysfunction and temporal correlation with SARS-CoV-2 infection. Cardiovascular system is frequently involved, in the form of myopericarditis, tachyarrhythmias, coronary aneurysms, hypotension and shock. Data about diagnosis and management in children are scarce. We describe two cases of myocarditis in MIS-C complicated by severe bradycardia.

Case Presentation Summary: Two previously healthy, both 12-year-old, girls were admitted with fever, asthenia, dehydration, abdominal pain and diarrhea. At admission HR, RR and SatO₂ were normal. Laboratory tests showed significant increase in acute phase and myocardial injury markers (highly sensitive cardiac Troponin, Brain Natriuretic peptide BNP, NT-pro-BNP). Echocardiography revealed moderate systolic dysfunction (EF 36%) in patient 1, normal in patient 2, with no EKG alterations. Both patients showed positive serology, but only one still had positive RT-PCR for SARS-CoV-2 on nasopharyngeal swab. Other infectious and non-infectious etiologies were excluded. Methylprednisolone, IVIg and enoxaparine were administered with poor effect; enalapril was also started to reduce cardiac workload. Despite laboratory tests improvement, asymptomatic bradycardia (lower HR 35 and 42 bpm, respectively) was observed in both patients during continuous cardiac monitoring and confirmed by 24-hour Holter EKG. In the suspicion of myocarditis poorly responsive to steroids / IVIg, anakinra was started, with a subsequent rapid normalization of HR and systolic function. Cardiac MRI showed a sub-acute myocarditis, with sub-epicardial involvement of left ventricle in both patients.

Learning Points/Discussion: Bradycardia appears to be a late and often asymptomatic manifestation of cardiac involvement during MIS-C. Cardiac monitoring is recommended even in asymptomatic patients to find out cardiac rhythm abnormalities. Early diagnosis and timely treatment could reduce cardiac injury progression and enhance a rapid recovery.

GASTROINTESTINAL (GI) INVOLVEMENT IN CHILDREN WITH SARS-COV2 INFECTION: A RETROSPECTIVE ANALYSIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Gastrointestinal (GI) involvement in children with SARS-CoV2 infection: a retrospective analysis

Background: Intestine is a frequent target of SARS-CoV2 infection in children. Diarrhea and vomiting have been reported in about 8-9% of cases, reaching more than 20% in some studies, and gastrointestinal (GI) complications have been described in children with Multisystem inflammatory syndrome (MIS-C) associated with COVID-19. We conducted a retrospective analysis of 101 SARS-CoV-2-infected children admitted to our Unit, from March '20 to January '21.

Case Presentation Summary: GI involvement was observed in 24 out 101 children infected by SARS-CoV2 (23.7%); 15 males (62,5%), median age of 0.8 years (IQR 0.18-4, range 0.1-17), of which 14 (58.3%) were < 1 year of age. Main GI symptoms observed were diarrhea (87.5%), decreased feeding (66.6%), abdominal pain (37.5%) and nausea/vomiting (20.8%); 66.6% developed fever. 11 children with abdominal pain required an abdominal ultrasound scan, which showed mesenteric thickening and lymphadenitis in 8 patients, multiple intramesenterial collections in 4 patients and intussusception in 1 patient. 4 patients with abdominal pain and diarrhea had a severe inflammatory response and were diagnosed as MIS-C. Diarrhea and reduced feeding without major abdominal pain were associated with mild course and spontaneous resolution. 13 patients did not require specific therapy, 7 patients received empiric antibiotic treatment for suspected bacterial infection, 4 patients with MIS-C were treated with intravenous immunoglobulin and corticosteroids. One patient underwent surgery due to intestinal occlusion, 23/24 were discharged without complications.

Learning Points/Discussion: GI symptoms are relatively common and generally mild and self-limiting in children with SARS-CoV-2 infection. Ileal thickening and lymphadenitis are frequent but do not require specific therapy and resolve spontaneously. Presence of GI involvement in children >1 year of age associated with an increase of inflammatory markers should be considered at risk for severe systemic complications as MIS-C.

A NEW CLINICAL DIAGNOSIS IN TIMES OF PANDEMIC COVID-19

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): A NEW CLINICAL DIAGNOSIS IN TIMES OF PANDEMIC COVID-19

Background: Late in the course of SARS-CoV-2 (severe acute respiratory syndrome -coronavirus 2) infection, some patients may present Multisystemic Inflammatory Syndrome in Children (MIS-C). MIS-C is characterized by fever, inflammation and multiorgan dysfunction, overlapping with diseases like Kawasaki. We're reporting a MIS-C case in a boy with previously asymptomatic SARS-CoV-2 infection.

Case Presentation Summary: A six years-old boy without any prior relevant diagnosis, observed in the emergency room due to 24-hour fever and rash. Laboratory study revealed increased inflammatory markers. Real-time PCR-based SARS-CoV-2, syncytial respiratory virus and Influenza detection was negative, Epstein-Barr and Cytomegalovirus serologies were negative. In reassessment on 3rd day of symptoms, he maintained fever, rash and diarrhea, presenting extensive skin lesions, conjunctivitis, flushed oropharynx and cervical lymphadenopathy. Hospitalization was decided with samples collected for microbiological test, viral serologies, immunological study and empirical antibiotic therapy started. During hospital stay he presented swollen hands. In time anti-SARS-CoV-2 IgG antibody came positive and mother's real-time PCR-based SARS-CoV-2 was positive. MIS-C was assumed. The child was always hemodynamically stable, cardiologic involvement was excluded, and, because he was afebrile at that time, he initiated low dose acetyl-salicylic acid and completed 10-days of antibiotic. At discharge, he was afebrile with resolution of clinical findings and inflammatory markers diminishing.



Learning Points/Discussion: MIS-C is an important late manifestation of SARS-CoV-2 infection with uncertain prognosis. The overlap with other known conditions like Kawasaki and toxic shock syndrome disease are frequent. The multidisciplinary approach is essential and therapeutic choices for MIS-C are dependent on the presenting phenotype, high-risk features and severity of disease. The link with SARS-CoV-2 infection isn't always clear, a high level of suspicion is determinant for early diagnosis and therapeutic success.

ISQUEMIC VASCULAR CEREBRAL STROKE IN A PEDIATRIC MULTISYSTEM INFLAMMATORY SYNDROME (PIM-S)

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): ISQUEMIC VASCULAR CEREBRAL STROKE IN A PEDIATRIC MULTISYSTEM INFLAMMATORY SYNDROME (PIM-S)

Background: Since the first cases of Sars-Cov-2 have been published it's been notable that it didn't affect the paediatric population as the other viruses. Most of the children were asymptomatic and there is still a lot to learn. On the other hand there has been reported a "Pediatric Multisystem Inflammatory Syndrome(PIM-S) associated with Covid-19". The first cases were described in the UK and since then it's been seen worldwide.

Case Presentation Summary: A 8 year girl, previously healthy, developed an ischemic cerebral stroke in a multisystem inflammatory syndrome. She had a 7 day history of fever associated with neck pain. On the second day after the symptoms started she was diagnosed with tonsillitis and discharged with amoxicillin. On the 7 day of antibiotic she maintained the previous symptoms and started with hemiplegia of the left side. She was transferred to our service in hypovolemic shock, which was refractory to volume and a vasoactive drug was required at the emergency room. The initial hypothesis was meningitis however after being performed a brain CT scan, hypoattenuating lesions were seen over the right parietal lobe and nucleo capsular region characterizing an ischemic stroke. Her father had covid-19, confirmed by PCR, 40 days prior to the start of her symptoms. On laboratory findings she also had elevated C-reactive protein, troponin and D-dimers. No pathological organisms were identified. Antibiotic cover including ceftriaxone and clindamycin were given in the first 24h. Anticoagulation also was started in the same period. Immunoglobulin (2g/kg) was given on day 3 of hospitalization. The patient maintained fever after IVIG infusion and it only ended after introduction of corticosteroids. Serology for Covid was positive (IgG and neutralizing antibodies), RT-PCR was negative. She was discharged after 17 days of hospitalization. Anticoagulation was maintained for 6 months.

Learning Points/Discussion: Pediatric Multisystem Inflammatory Syndrome(PIM-S) associated with Covid-19 is a new reality for paediatricians and should always be considered as differential diagnosis.

ADOLESCENT WITH SARS-COV-2 INFECTION PRESENTED WITH DEEP VEIN THROMBOSIS AND PULMONARY EMBOLISM.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Adolescent with SARS-CoV-2 infection presented with deep vein thrombosis and pulmonary embolism.

Background: Thrombotic complications of SARS-CoV-2 have been increasingly recognized as an important component of COVID-19 in adults; however, they have been less evident in children.

Case Presentation Summary: A 15-year-old male presented with a four-day history of pain of the right lower limb in the absence of any injury. On admission, he had fever and exhibited pain in the right hip with limited mobility. An MRI of the hip and a triplex ultrasound of the right lower extremity depicted an extended DVT, from the external iliac vein to the great saphenous and popliteal vein. Laboratory investigations were undertaken, including SARS-CoV-2 RT-PCR. Initial management consisted of antibiotic therapy and anticoagulation treatment with LMWH. Laboratory tests revealed deranged coagulation parameters (high D-dimers and Factor VIII and low antithrombin). Within the first hours, he developed hypotension, tachycardia, reduced urine output and hypoxemia. CTPA demonstrated embolus in the left pulmonary artery, whereas the SARS-CoV-2 RT-PCR revealed high viral load. The patient was transferred to the ICU for 72 hours where dexamethasone and a single dose of antithrombin concentrate was added to his treatment. Returning at COVID-19 ward, a total of ten days of dexamethasone was completed and LMWH was substituted by warfarin. Clinical condition and hemostatic parameters gradually improved and patient was discharged 34 days after admission. SARS-CoV-2 RT-PCR was regularly evaluated and genetic testing for hereditary thrombophilia was scheduled. Underlying prothrombotic risk factors included dehydration as the patient reported diarrhea two weeks earlier, obesity and aromatase inhibitor treatment that was receiving in the last two years.

Learning Points/Discussion: Paediatric patients with SARS-CoV-2 infection, can develop serious VTE in the co-existence of underlying prothrombotic risk factors and COVID-19 associated coagulopathy could benefit from anticoagulant prophylaxis.

CASES OF MIS-C IN THE LARGEST GREEK TERTIARY CHILDREN'S HOSPITAL DURING THE FIRST YEAR OF SARS-COV-2 PANDEMIC

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Cases of MIS-C in the largest Greek tertiary children's hospital during the first year of SARS-CoV-2 pandemic

Background: During the first year of the pandemic, a total of 112 children were hospitalized for COVID-19 in the largest Greek tertiary children's hospital and 3(2.9%) cases of MIS-C were detected.

Case Presentation Summary: A 2-month infant presented with 24-hour fever, diarrhea and rhinorrhea. On the 5th day, while he was afebrile for 3 days, he experienced high fever, respiratory distress and grumbling. Laboratory tests showed anemia(Hb 10.4 mg/L) hypoalbuminemia(3.2 g/dL), hypoxemia(pO₂ 60 mmHg) and increased inflammatory markers(CRP 119 mg/L, PCT 83 ng/dL, D-dimers 3.2 µg/mL, troponin 27.8 ng/mL, ferritin 247 µg/L, fibrinogen 529%). Chest CT revealed ground glass opacity. He was administered antibiotics, oxygen supply, intravenous fluid and, as his clinical condition deteriorated, he received immunoglobulin, dexamethasone, remdesivir, prophylactic anticoagulation and was transferred to the ICU. After 24 hours, he returned to COVID-19 ward and his clinical condition gradually improved. A 10-month infant with endogenous obesity presented with 24-hour fever and diarrhea. On the 3rd day upon admission, he experienced high fever, rash, grumbling, irritability, non-itchy rash, red lips and conjunctivitis. Laboratory exams revealed increased inflammatory markers(WBC 14710/µL, CRP 116 mg/L, PCT 10.05 ng/dL, D-dimers 35 µg/mL, fibrinogen 476%), hypoalbuminemia(2.9 g/dL), anemia(Hb 7.9 mg/L), proteinuria and hematuria. Patient received intravenous antibiotics, immunoglobulin, methyl-prednisolone, prophylactic anticoagulation and his clinical condition gradually improved. A 19-month infant presented with 5-day fever, rash on the trunk and extremities, conjunctivitis, diarrhea and anorexia. Laboratory exams revealed increased inflammatory markers(WBC 15810/µL, CRP 89.8 mg/L, PCT 16.51 ng/dL, D-dimers 4.3 µg/mL, fibrinogen 649%, ferritin 357 µg/L), hypoalbuminemia(3 g/dL), anemia(Hb 9.9 mg/L) and pyuria. Patient received intravenous antibiotics, immunoglobulin, methyl-prednisolone and his clinical condition gradually improved.

Learning Points/Discussion: We described the first 3 cases of patients with MIS-C in the largest Greek tertiary children's hospital with favorable outcome. Education and alerts are required for clinical teams to establish an early diagnosis and prompt treatment.

ACUTE SURGICAL ISSUES IN SIX CHILDREN WITH SARS-COV-2 INFECTION; COINCIDENCE OR COMPLICATION?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Acute surgical issues in six children with SARS-CoV-2 infection; coincidence or complication?

Background: COVID-19 infection is often asymptomatic and atypical in children, while overlapping presentations with other more serious infectious diseases generate additional diagnostic challenges. We describe 6 children with SARS-CoV-2 infection who demanded acute surgical intervention.

Case Presentation Summary: A 4-year-old boy presented with 24-hour fever, sore throat and voice change and was admitted to COVID-19 ward due to positive RT-PCR for SARS-CoV-2. Laboratory tests revealed increased inflammatory markers (WBC 15350/ μ L, CRP 46 mg/L) and chest X-ray showed diffuse interstitial infiltration. However, a lateral cervical spine x-ray demonstrated parapharyngeal abscess and a surgical intervention was scheduled immediately. The patient remained hospitalized for 5 days in order to receive the necessary post-surgery treatment. Four children aged from 7 to 15 years old presented with fever, abdominal pain, decreased appetite, diarrhea and vomiting and were admitted to COVID-19 due to positive RT-PCR for SARS-CoV-2. Laboratory tests revealed increased inflammatory markers to all patients. As the pain was localized to the right iliac fossa (RIF), ultrasound was performed and revealed appendicitis. Surgical removal of the appendix was performed and patients' clinical condition improved significantly. A 10-year-old girl experienced fever, abdominal pain, diarrhea and vomiting and was admitted to COVID-19 ward due to positive RT-PCR for SARS-CoV-2. Patient became afebrile on the 2nd day upon admission; however, the pain became localized at the (RIF) and inflammatory markers increased significantly. CT scanning reveal ovarian torsion and patient undergone operation immediately.

Learning Points/Discussion: Many reports have highlighted the adverse outcomes arising from delays in surgical issues during the pandemic. However, it is believed that gastrointestinal infections like appendicitis may have a plausible association with COVID-19.

A NEW CHALLENGE IN APPROACHING THE FEBRILE CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): A new challenge in approaching the febrile child.

Background: Approaching the child with fever nowadays may be challenging.

Case Presentation Summary: A novel strain of coronavirus, SARS CoV2 triggered a worldwide COVID-19 pandemics. COVID-19 in children is usually mild. However, in rare cases, a severe inflammatory syndrome, sometimes meeting Kawasaki disease criteria, was reported since early 2020, in different parts of the world. This was named MIS-C. The criteria used by health agencies for defining MIS-C slightly differs, but all include fever, elevated inflammatory markers, at least two organs impairment and evidence for SARS CoV2 infection/exposure. We report the case of a previously healthy 6-year old girl, brought to ED for a 3-day history of abdominal pain, vomiting, diarrhea and one day history of high fever. She had an ill-appearance, was febrile, slightly tachycardic and with normal BP. Clinical findings included non-purulent conjunctivitis, sore tongue and pharynx, blanching macular erythema, palms and plants included, abdominal tenderness. A fever work-up was performed according to NICE guidelines. Elevated inflammatory markers, thrombocytopenia and prolonged PT, together with the physical exam, raised the suspicion of MIS-C. Further management was initiated according to WHO definition and supported the diagnosis (elevated troponin and BNP); IVIG was started at a rate of 2g/kg. In spite of the rapid initiation of treatment, the patient condition further deteriorated, requiring intensive care admission as she developed myocarditis, pneumonia, pleural effusion and acute pancreatitis. Meanwhile, SARS CoV2 antibodies became positive. PICU treatment included inotropes, vasopressors, methylprednisolone and IVIG. In the fourth week of treatment the patient condition improved and she was safely discharged.

Learning Points/Discussion: Approaching the child with fever nowadays should include a high awareness for MIS-C, since even with rapid recognition and treatment initiation, the disease evolution may be challenging.

WHAT IS ESSENTIAL IS INVISIBLE TO THE EYE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): What is essential is invisible to the eye

Background: Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is characterized by respiratory symptoms that are generally less severe and associated with lower case fatality in children than in adults. 'Silent hypoxia' is characterized by significant hypoxia without important signs of respiratory distress and has been described in adults but not in pediatric age.

Case Presentation Summary: We report the case of an obese female adolescent with COVID-19, admitted with few initial symptoms but with fast progression to silent hypoxia and severe disease. She was admitted with fever, dry cough, rhinorrhea and chest pain, without hypoxia or signs of respiratory distress. She was diagnosed with SARS-CoV-2 pneumonia with superinfection and was admitted for therapy and surveillance. She then developed anosmia and progressive worsening hypoxia (PaO₂ 66 mmHg, FiO₂ 0,24) without proportional signs of respiratory distress. Computerized tomography scan showed bilateral ground-glass opacification with multifocal and confluent parenchymal densification. Clinical deterioration occurred with the necessity of non-invasive ventilation (CPAP). She completed 5 days of remdesivir, 8 days of dexamethasone and a course of antibiotics, with clinical improvement and discharge from hospital after 9 days.

Learning Points/Discussion: Children with COVID-19 who require hospitalization are still a minority, especially during the symptomatic phase. This case demonstrates that an acute severe infection with SARS-CoV-2 is also a possibility in pediatric age, and that certain risk factors may play an important role, namely obesity. We also highlight the 'silent hypoxia' as a possible presentation of COVID-19 in pediatric age, with rapid progression to severe disease, which displays the importance of careful clinical examination and surveillance, in order to permit early identification of this subset of pediatric patients.

PERSISTENT SYMPTOMS OF COVID-19 FOUR MONTHS FROM THE ONSET OF ILLNESS IN A PREVIOUSLY HEALTHY CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): PERSISTENT SYMPTOMS OF COVID-19 FOUR MONTHS FROM THE ONSET OF ILLNESS IN A PREVIOUSLY HEALTHY CHILD

Background: Due to the progressive pandemic of coronavirus disease caused by SARS-CoV-2, additional understanding and knowledge of the virus is needed and as one of the reasons is to provide more targeted assistance to patients with subacute and chronic COVID-19. Therefore, an outpatient service with further follow-up for children who have had COVID-19 has been established at Riga Children's Clinical University Hospital.

Case Presentation Summary: A previously healthy 8-year-old boy tested positive for SARS-CoV-2 RNS by PCR in September 2020. Over the acute phase of the disease he had a fever up to 40.0 °C, cough, increased sneezing, myalgia, severe headache that interfered with sleep and accompanied by photophobia, and severe fatigue. Moreover, the boy complained of chest pain, nausea and abdominal pain. 55 days later from the onset of illness the boy turns to a pediatrician as a part of an outpatient service. Boy's general condition at the time was unchanged and complaints persisted - he maintained daily subfebrility up to 38,0° C, headache, joint pain, chest pain, severe fatigue, weakness, intolerance of physical activity, increased sweating and slight cough. There was not any pathological finding in laboratory or instrumental examination - chest X-ray, chest CT, joint USG, head MRI, ECG, EchoCG, Holter monitor. 120 days after the onset of illness remained complaints about subfebrility, headache and stomach ache.

Learning Points/Discussion: This case report demonstrates that long-term COVID-19 also affects children and a multidisciplinary approach to health recovery is needed.

PIMS-TS IN A NORTHERN PORTUGUESE TERTIARY HOSPITAL: CASE SERIES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): PIMS-TS IN A NORTHERN PORTUGUESE TERTIARY HOSPITAL: CASE SERIES

Background: Pediatric COVID-19 generally presents as asymptomatic or mild disease. However, some cases progress to a potentially severe multisystemic inflammatory disease. We included all cases admitted to our hospital since November 2020 until now, that fulfilled the RCPCH definition: persistent fevers, inflammation (neutrophilia, elevated CRP and lymphopenia), evidence of single or multi-organ dysfunction; and positive SARS-CoV2 IgG serology.

Case Presentation Summary: 6 cases were diagnosed: 4 males and 2 females, with a median age of 6 years (5–17yrs). All presented with fever and gastrointestinal symptoms (abdominal pain: 67%, diarrhea: 67%, vomiting: 50%). 3 had rash and 2 odynophagia. 4 presented cardiac dysfunction, but none had coronary enlargement (Z score ≥ 2). 3 were admitted to intensive care with shock requiring inotropic support. Concerning laboratory features, median maximum CRP was 278mg/L (192-332mg/L), ferritin ranged between 199 and 1930ng/mL, 5 had mild AST elevation; median D-dimers were 4,7mcg/mL (3,88–6,62) and fibrinogen 622mg/dL. 5 had elevated cardiac injury biomarkers: maximum troponin 4399ng/L and maximum BNP 909pg/mL. All were treated with intravenous immunoglobulin 2g/kg, except one that received 1g/kg, after median 5,5 days of symptoms. 4 received glucocorticoid pulses. Aspirin was used in all patients, as well as antibiotics. All improved with no apparent sequelae, after a maximum follow-up of 6 weeks.

Learning Points/Discussion: When dealing with a new disease it is paramount to establish surveillance mechanisms, adopting the most recent clinical guidance at hospital level with flexible updates. Prompt diagnosis and treatment will likely improve outcomes and reduce potential sequelae. Long-term follow-up will be fundamental.

POST COVID-19 VASCULITIS IN AN INFANT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Post COVID-19 vasculitis in an infant

Background: Coronavirus disease 2019 (COVID-19) is an illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2). The disease was first reported in December 2019 and spread throughout the world. The World Health Organization declared a global pandemic on March 11, 2020. Children are infected similar to adults, are more likely to be asymptomatic or have less severe disease. These differences are thought to be as the result of changes of both immune function and the angiotensin-converting enzyme(ACE)2 receptor, used by the virus to enter type II pneumocytes in the lung.

Case Presentation Summary: A 21 months old female girl presented at the University Hospital Center of Tirana with a vasculitis rash, palpable, non-pruritic plaques purple-colored in center, spread over the trunk, extremities and face. She had a family history of COVID-19 infection 3 months ago. On physical examination appeared irritable with moderate fever, colored lips and a strawberry tongue. She was positive for SARS-Cov-2 IgG 8,88(<0,8), Reactive C Protein 7.38mg/L(<5mg/L), D-dimer 7.10ug/mL(<0.5ug/mL). Radiologic examination of the lungs and heart were normal. After a 5-day course of oral prednisolone the rash faded and inflammatory parameters were normalized.

Learning Points/Discussion: Children of any age may be infected with SARS-Cov-2, with reduced frequency and severity compared to adults. Multi-systemic inflammatory response is the most feared complications in children ranging from septic shock, Kawasaki-like syndrome, vasculitis. It may happen 1-6months after primary infections, implicated mechanisms are: viral mimicry, formation of immune complexes, and host immune cell activation due to viral super-antigen sequences. As the pandemic continuous to evolve it is still hard to fully assess or forecast the mid and long-term effects on child health and well-being.

COVID-19 INFECTION IN A 56-DAY-OLD INFANT WITH SEVERE NEUTROPENIA AND SPONTANEOUS REMISSION: CLINICAL PRESENTATION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): A CASE OF A COVID 19 INFECTION IN A 56 DAYS OLD INFANT WITH SEVERE NEUTROPENIA AND SPONTANEOUS REMISSION: CLINICAL PRESENTATION

Background: COVID-19 can affect all pediatric age-groups, presenting with varying-degree of seriousness. Herein we report the first case of severe neutropenia in a 56-day-old female infant diagnosed with COVID-19 infection in order to draw attention in this serious complication.

Case Presentation Summary: The infant was referred for low-grade-fever without respiratory or flu-like symptoms. Clinical examination revealed normal chest auscultation and heart sounds, without obvious source of illness. Family history was suspicious for COVID-19 infection, since father was a confirmed COVID-19 contact, presented with anosmia and ageusia two days ago. Clinical signs on arrival were: HR 115 bpm, RR 40 bpm, SpO₂100% and temperature of 37.6 °C. Infant's nasopharyngeal swap PCR was tested COVID-19 positive as well as her father's, while mother's PCR was negative despite the infant being fully-breastfed. Additionally, ABG, CBC, CRP, Basic Metabolic Panel, LFTs, LDH, SPA Urinalysis and Culture, Peripheral Blood Culture were within normal range. The rest of the laboratory examinations revealed Hb of 9.7g/dl, WBC of $4.8 \times 10^3/\mu\text{L}$, ALC of $2.2 \times 10^3/\mu\text{L}$ and moderate neutropenia of $0.78 \times 10^3/\mu\text{L}$. Coagulation-panel and troponin-tests revealed markedly elevated D-dimers (779 $\mu\text{g/L}$) while troponin levels were at the upper-normal range (58.4 pg/ml) for the age. Gradually, ANC dropped further in severe-neutropenia levels ($0.2 \times 10^3/\mu\text{L}$). During course of the disease, the infant had low-grade-fever for 5 days, nasal congestion, bilateral non-purulent conjunctivitis, livedo reticularis and four episodes of diarrhoea. She was treated supportively, continuing the breast feeding and all-symptoms had spontaneous remission. The infant discharged on day 7th of hospitalization, while ANC, D-dimers and troponin levels were gradually normalized.

Learning Points/Discussion: Acquired severe neutropenia and elevated D-dimers can be observed in infants with COVID 19 infection even in cases with mild-manifestations and require specific attention for treating threatening complications.

A CASE SERIES OF SUSPECTED COVID 19 INFECTIONS IN CHILDREN IN GREECE BEFORE THE OFFICIAL INITIATION OF THE PANDEMIC.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): A CASE SERIES OF SUSPECTED COVID 19 INFECTIONS IN CHILDREN IN GREECE BEFORE THE OFFICIAL INITIATION OF THE PANDEMIC.

Background: First COVID 19 case in Greece was officially reported at 26 February 2020. Nevertheless before that day and during influenza epidemic period in Greece in December 2019 to January 2020 there were cases of preschool to school age children which were admitted in our pediatric department with moderate to severe symptoms of a febrile viral like illness with lower respiratory tract infection and which were tested negative for influenza virus.

Case Presentation Summary: During December 2019 to January 2020 five children (3 boys and 2 girls) were admitted with a viral like illness, symptoms of the lower respiratory tract infection and negative nasopharyngeal PCR test for influenza virus. All children presented in poor medical condition, weakness, difficulty with feeding, high fever up to 40⁰ C with shivering and frequent intervals and vomiting. Chest X ray revealed non specific findings with lobar consolidation in some cases. Laboratory tests revealed increased CRP and WCC with lymphopenia, except in one case. In almost all cases there was a positive family history of an adult with lower respiratory tract infection, treated with macrolides as an outpatient prescription by the family doctor. All cases had been discussed during ward rounds in view of their non specific presentation of the lower respiratory tract and the poor medical condition specifically commented that the viral like diseases was not etiologically related to any of the tested upper or lower respiratory tract viruses.

Learning Points/Discussion: These cases resemble of a COVID 19 infection presented before the first confirmed case in Greece. Therefore we present them in order to add to other descriptions of possible initiation of COVID 19 epidemic in EUROPE and thus to understand virus behavior and outburst of the disease more precisely.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN ASSOCIATED WITH CORONA VIRUS DISEASE 2019: A SINGLE-CENTRE CASE SERIES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN

Background: Multisystem Inflammatory Syndrome in Children (MIS-C) is a newly recognized pediatric illness associated with coronavirus disease 2019 (COVID-19). According to the Center for Disease Control and Prevention (CDC) definition, it includes patients under 21 years of age with fever, laboratory evidence of inflammation, severe illness needing hospitalization and involvement of two or more organ systems, with positive testing for SARS-CoV-2 indicating current or recent infection or COVID-19 exposure.

Case Presentation Summary: We report six pediatric patients (mean age 6.75 years), presenting with features of MIS-C to a tertiary-care hospital in Thessaloniki, Greece from March 1st 2020 to January 31st 2021. All patients were previously healthy and presented with multisystem disease with elevated inflammatory markers, consistent with the CDC case definition. SARS-CoV-2 testing by RT-PCR was positive in 3/6 (50%) and/or serology testing was positive in 3/6 (50%) patients. Clinical presentation included fever and rash in 6/6 (100%), diarrhea in 4/6 (67%) and respiratory symptoms in 2/6 (33%) patients. Two patients developed pericardial effusion while one showed coronary artery dilatation and moderate mitral insufficiency which persisted during the two-month follow-up. Therapy consisted of intravenous immunoglobulin (IVIG) at 2 g/Kg and methylprednisolone (2 mg/kg/day) in all patients, while aspirin (50 mg/kg/day) was administered in 5/6 (83%) of them. Broad-spectrum antibiotics were administered in 3/6 (50%) patients. Two of them (33%) with respiratory symptoms required oxygen support. No patient was admitted to the Intensive Care Unit. Mean duration of hospital stay was 9.1 days.

Learning Points/Discussion: A high index of clinical suspicion is considered mandatory for early recognition and prompt treatment of MIS-C. Despite the need for prolonged hospitalization, outcome was favorable in all cases.

TRANSIENTLY ELEVATED TROPONIN, AST AND ALT LEVELS IN A 13-YEAR OLD MALE WITH ACUTE COVID-19 DISEASE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): TRANSIENTLY ELEVATED TROPONIN, AST AND ALT LEVELS IN A 13-YEAR OLD MALE WITH ACUTE COVID-19 DISEASE

Background: Cardiac troponin elevation is a marker of myocardial injury and is commonly identified in adult patients hospitalized with COVID-19, but the causes of troponin elevation have not been fully elucidated. It is known in adults that elevated troponin and proBNP in hospitalized adult patients are associated with higher mortality. Limited data exists on the frequency of troponin elevations in asymptomatic or mildly symptomatic patients with SARS-CoV-2 infections.

Case Presentation Summary: Background: In children the coronavirus disease 2019 (COVID-19) is generally mild compared to adults. Limited data exists on the laboratory findings, typical laboratory findings are increased or decreased lymphocyte counts, mildly elevated inflammatory markers, liver enzymes, creatine kinase, lactate dehydrogenase or D-dimers. Elevated CK-MB in mild pediatric COVID-19 is indicative of possible cardiac injury. Case Presentation Summary 13-year old male was admitted to hospital after one day of vomiting. Other symptoms of COVID-19 were absent before and during hospital stay. Laboratory findings showed elevated AST (6,25 μ kat/L), ALT (14,97 μ kat/L) and troponin (229 ng/L). Other cardiac biomarkers (CK-MB, proBNP) were negative. There were no changes in electrocardiogram, abdominal ultrasound, or 2D echocardiogram. Biofire respiratory 2.1 panel was positive for SARS-CoV-2, IgA and IgG antibodies were negative. Serology for hepatitis viruses was negative, CMV and EBV serology showed past infection. After three days AST and ALT levels decreased, troponin levels after five days. Follow-up cardiac biomarkers and 3D echocardiogram will be performed. Learning Points/Discussion Should cardiac biomarkers be routinely tested in hospitalized pediatric patients?

Learning Points/Discussion: In pediatric patients with mild COVID-19 cardiac biomarkers are not routinely screened. It is known that elevated CK-MB levels in children with COVID-19 suggest the possibility of cardiac injury. What is the importance of other cardiac biomarkers? Further investigation in future studies is needed.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN: CASE SERIES IN A TERTIARY PEDIATRIC HOSPITAL IN PORTUGAL

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CLINICAL MANIFESTATIONS

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Title of Case(s): Multisystem inflammatory syndrome in children: case series in a tertiary pediatric hospital in Portugal

Background: Multisystem inflammatory syndrome in children (MIS-C), is a rare and severe manifestation of coronavirus disease 2019 (COVID-19). We aim to describe the characteristics of children admitted to a tertiary pediatric hospital in Portugal.

Case Presentation Summary: We report 14 cases of MIS-C, between March 2020 to January 2021. The median age was 9,5 years old (IQR 4,75 – 12,25 years), 10 patients were male, eight were previously healthy and four had African ancestry. Six had positive SARS-CoV-2 rRT-PCR, nine positive serology and 11 known epidemiological context. All patients presented fever and organ system involvement including cardiovascular (14), gastrointestinal (14), mucocutaneous (14), hematologic (13), respiratory (9), renal (3) and neurologic (2). One patient had distributive and cardiogenic shock and four a distributive shock. Coronary-artery aneurysms (z scores ≥ 2.5) were documented in two patients (14%), and Kawasaki's disease-like features were documented in four children (29%). The median maximum values of inflammation biomarkers were PCR 254,95mg/L (IQR 199,93 - 370,50), IL-6 220,25pg/mL (IQR 82,88 - 469,75), ferritin 650,35ng/mL (333,95 - 1266,10) and the median maximum values of cardiac biomarkers were troponin 214,00ng/mL (IQR 37,33 - 813,65), NT-pro-BNP 5331,00pg/mL (IQR 2496,75 - 12762,25). Intravenous immunoglobulin and methylprednisolone were used in all patients. Five patients needed intensive care, one mechanical ventilation and five vasoactive support. The complications included macrophage activation syndrome (1), cytomegalovirus reactivation (1), hypertension induced by glucocorticoid (2) and weight loss greater than 10% (4). There were no fatalities. Three months after discharge, two children showed myocardial fibrosis in cardiac magnetic resonance.

Learning Points/Discussion: MIS-C has the potential to lead to serious life-threatening illness and sequelae in previously healthy children and adolescents.

EP500 / #1076

SPINAL EPIDURAL ABSCESS IN IMMUNOCOMPETENT CHILD: A CASE REPORT AND REVIEW OF LITERATURE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): Spinal Epidural Abscess in Immunocompetent Child: A Case Report and Review of Literature

Background: Spinal epidural abscess (SEA) is an uncommon and rare condition in the immunocompetent population and even more rare in the pediatric group.

Case Presentation Summary: An 11-year-old healthy girl presented with a week history of fever, chest and back pain. She was seen in a local health center and was managed as a case of upper respiratory tract infection conservatively. She was investigated there and discharged on oral antibiotics with the impression of pneumonia. Two days later she was called as her labs showed positive culture methicillin-sensitive *Staphylococcus aureus*. There was tenderness in the lumbar spinal region, unsteady gait, and lower extremity weakness with power 4 right side and 3 on the left. Planter flexion 1/5 on both sides. Her white blood cell 15,500/100ml³, absolute neutrophil count 10, and C-reactive protein 500 mg/L. Repeated blood cultures were taken. Lumbar puncture was not performed as the parents were totally refusing this test. She was started on IV ceftriaxone 2 grams twice daily and 1 gram daily. The whole spine-MRI was performed and showed a heterogeneous enhancing collection in the posterior epidural space from the level of T2 vertebra to T10 vertebra (Figure 1). On the third day following antibiotics, her weakness started to improve. She continued the same antibiotic for six weeks. She was discharged home clinically and vitally stable.

Learning Points/Discussion: SEA is a rare condition that requires prompt diagnosis and initiation of treatment for an optimal outcome. Despite a low incidence of SEA, clinicians must maintain low thresholds of suspicion for the spinal epidural abscess to diagnose and treat prior to the development of irreversible deficits. MRI is the study of choice for detecting spinal epidural abscesses.

ACUTE EXTERIORIZED ETHMOIDITIS IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): Acute exteriorized ethmoiditis in children

Background: Acute ethmoiditis is the most common sinusitis in children under 3 years old. It is rare but potentially serious. here is a retrospective study during 14 years (2007-2020) including all the cases that were hospitalized for acute exteriorized ethmoiditis

Case Presentation Summary: These were 37 cases. The average age was 5 years 8 months, with 13 girls and 24 boys. Palpebral edema (62%) and fever (64%) were the two most frequent reasons for consultation. The involvement was unilateral in 34 cases and bilateral in 3 cases. Exophthalmos was noted in 3 patients. Orbital and cerebral scan performed on 36 patients showed preseptal cellulitis in 24 cases, orbital cellulitis in 6 cases, 3 cases of intraorbital abscess; 5 cases of subperiosteal abscess, 2 cases of cavernous sinus thrombosis; 2 cases of subdural empyema and osteitis in one case. All children received intravenous antibiotic combining a C3G (ceftriaxone and cefotaxime), metronidazole ± aminoglycoside or amoxicillin–clavulanate. The outcome was favorable in 32 patients who received only medical treatment and 4 patients underwent surgical drainage.

Learning Points/Discussion: Acute exteriorized ethmoiditis is a severe infection requiring urgent diagnosis and treatment due to the risk of ophthalmologic and endocranial complications. Treatment is mainly based on broad-spectrum antibiotic therapy. CT scan will be requested if there is any clinical doubt to verify the existence or not of complications. Surgery is indicated in cases of subperiosteal or intra-orbital abscess.

RETROPHARYNGEAL ABSCESS IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): Retropharyngeal abscess in children

Background: Retropharyngeal abscess is an uncommon, potentially fatal condition found more frequently in children than adults. Prompt diagnosis and surgical management of this condition is imperative to prevent complications including airway obstruction and mediastinitis. Few studies have been dedicated to paediatric retropharyngeal abscess. Here we reported all the cases that were hospitalized for retropharyngeal abscess from January to December 2019

Case Presentation Summary: There were five boys and four girls involved in the analysis. Their ages ranged from 2 to 12 years (mean 5 year 6 months). Median consultation delay was days. Common - presenting symptoms included acute febrile torticollis (6 cases), dysphagia (3 cases), neck swelling (3 cases). Physical examination showed trismus (1 case), satellite lymphadenopathy (3 cases). Posterior pharyngeal wall swelling was present in all cases. Respiratory compromise with stridor was noted in 7 cases. In 8 children retropharyngeal abscesses were attributed to antecedent upper respiratory tract infections treated with non-steroidal anti-inflammatory drugs. CT scan of the neck with intravenous contrast was performed to confirm the diagnosis and evaluate the size and location of the abscess. All patients had received intravenous empiric antimicrobial therapy including cefotaxime vancomycin and metronidazole (5 cases) and amoxicillin-clavulanic acid (4 cases). Seven cases were managed with surgical drainage. There was no mortality. Sigmoid sinus thrombosis associated with internal jugular venous thrombosis occurred in one patient. Mean hospital stay was 13 days. No other serious complications occurred.

Learning Points/Discussion: Retropharyngeal abscess should be considered in all children presenting with neck pain and dysphagia. Prompt diagnosis and institution of appropriate medical and surgical therapy is imperative to prevent complications such as airway obstruction. The management of this condition should occur in a pediatric institution with appropriate medical, surgical and intensive care - facilities.

EP503 / #1127

RECURRENT MENINGITIS FOLLOWING HEAD HUNTING RIFLE SHOOTING

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): Recurrent meningitis following head hunting rifle shooting

Background: Bacteria migration, along congenital or acquired pathways from the skull or Spinal dural defects should be taken into consideration when children had recurrent bacterial meningitis. Here, we report a school-age girl who showed relapse of pneumococcal bacterial meningitis due to osteo dural defect caused by head hunting rifle shooting.

Case Presentation Summary: A 11-year-old girl with history included right upper limb hemiparesis following accidental hunting rifle shooting two years ago. She developed pneumococcal meningitis 3 times, at ages, 9, 10, and 11. Intracranial examination revealed frontal metallic foreign body with left periventricular porencephalic cavity and cribriform plate defect. A planned surgical repair of the defect was performed and patient was stable on regular follow up.

Learning Points/Discussion: Recurrent meningitis in children is a rare condition that should be recognized since if a cause can be found , further complications can be avoided.

HUMAN HERPESVIRUS-6 MENINGITIS IN THREE HEALTHY CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): Human herpesvirus-6 meningitis in three healthy children

Background: Human herpesvirus-6 is recognized as a central nervous system pathogen and encephalitis is associated with high mortality and morbidity, especially in immunocompromised patients. We describe three previously healthy children with human herpesvirus-6 meningitis.

Case Presentation Summary: Case 1: A 18- month-old boy brought with fever and vomiting. There was no significant finding on physical examination. Laboratory findings: leucocyte:16.500/mm³, C-reactive protein: 82 mg/dL, cerebrospinal fluid glucose was 48 mg/dL, protein concentration was 92 mg/dL while serum glucose was 78 mg/dL. cerebral spinal fluid revealed human herpesvirus-6 and all cultures were negative. He was treated with only symptomatic treatment without antibiotics. Case 2: A 17-month-old girl was brought with restlessness, decreased nutrition, and high fever. Physical examination and laboratory findings were unremarkable. A lumbar puncture was performed because there was no fever focus. Human herpesvirus-6 was amplified from cerebrospinal fluid by a polymerase chain reaction. She was successfully discharged after antipyretic and fluid support. Case 3: A 2 month-old boy was brought with fever and decreased breastfeeding. Physical examination was normal except for tension in the anterior fontanel. Her cerebrospinal fluid glucose was 42 mg/dL, protein concentration was 102 mg/dL while serum glucose was 93 mg/dL. Firstly cefotaxime and ampicillin treatment was started. Cerebrospinal fluid revealed human herpesvirus-6 and stopped antibiotics. He was treated with only symptomatic treatment and discharged successfully.

Learning Points/Discussion: Human herpesvirus-6 is a common virus that can cause nearly universal infection in children. It typically manifests as an acute febrile illness. However, it should not be forgotten that it can be presented with meningoencephalitis.

HUGE BRAIN ABSCESES IN A CHILD WITH DIGEORGE SYNDROME

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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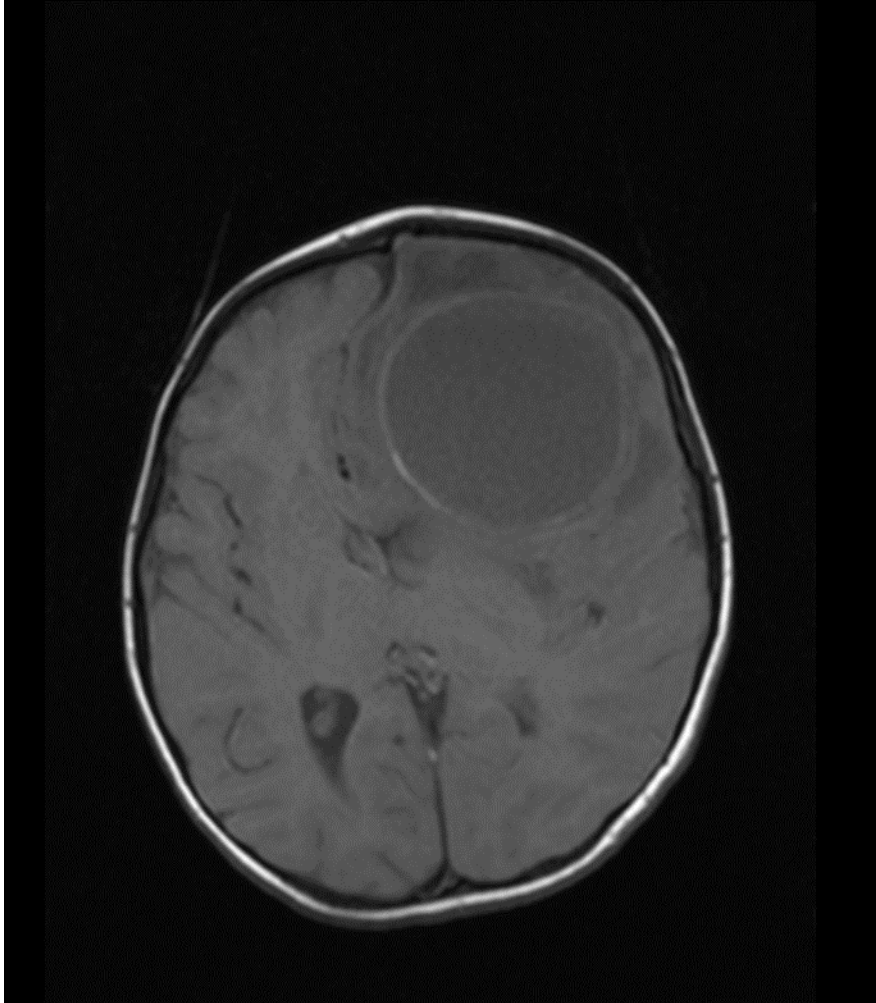
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Title of Case(s): Huge brain abscesses in a child with DiGeorge syndrome

Background: DiGeorge syndrome is characterized as medical problems commonly associated with 22q11.2 deletion syndrome include heart defects, poor immune system function, a cleft palate, and delayed development with behavioral and emotional problems. Although it is uncommon, pediatric brain abscess remains a serious, life-threatening problem. Those with congenital heart disease, an ongoing infection, or an immunocompromised state are particularly at risk.

Case Presentation Summary:



A four-year-old boy diagnosed with Di George syndrome, who has multiple cardiovascular anomalies and immune deficiency (take intravenous immunoglobulin treatment because of low serum immunoglobulin levels) patient brought with fever and headache. First laboratory test, hemoglobin 13.3 g/dL, leukocyte $16.300/\text{mm}^3$ (neutrophil $13.500/\text{mm}^3$, lymphocyte $1200/\text{mm}^3$), platelet $201.000/\text{mm}^3$, C-reactive protein 104 mg/L, erythrocyte sedimentation rate 48 mm/h, procalcitonin 0,3 ng/mL. There are no pathological signs except for flexor spasticity in bilateral lower extremities and tonsillar erythema and enlargement. Because of unknown origin fever, lumbar puncture was planned and before the process, a cranial computer tomography was done. In tomography, a huge hypointensity lesion is seen in the frontal brain lobe and cranial MRI was planned, and supratentorial 5.5 x5.5x5 cm lesion was seen on frontal brain lobe, and around of lesions, vasogenic edema was seen. In T2A imaging hyperintensity, in T1A imaging low intensity thought abscess. The abscess was drained, aerobic and anaerobic culture samples were taken from the abscess content. Vancomycin, cefotaxime, and metronidazole treatment were given. Streptococcus constellatus was detected abscesses culture.

Learning Points/Discussion: Early diagnosis, reasonable surgical intervention, and adequate duration of treatment with effective antibiotics are critical for treating brain abscesses, especially in immunocompromised patients.

SKULL BASE OSTEOMYELITIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): SKULL BASE OSTEOMYELITIS

Background: Skull base osteomyelitis is a rare condition, especially in the paediatric population. Most of the cases described develop as a complication of malignant otitis externa but can also be related to non-otogenic conditions such as fungal infection, immune-mediated inflammatory diseases, radiotherapy induced and even idiopathic.

Case Presentation Summary: 8 year old girl, previously healthy, who developed a skull base osteomyelitis. She presented to the emergency room after being referred by the health center for possible arthritis of the temporomandibular joint. She had no trauma involved or any other condition. 1 month earlier she started with difficulty to chew and had limitation to open her mouth. A week later she developed a front-temporal edema and started with fever. Initially after the symptoms started she presented to the emergency room and was discharged with a prescription of sulfamethoxazole trimethoprim for 10 days. The size of the front-temporal lesion decreased but the patient remained with difficulty chewing and opening her mouth, she had no history of fever after the last day of antibiotic. Around 20 days later after finishing the treatment she returned to the emergency room because of the maintenance of the symptoms. A computed tomography of head and face with contrast was performed and showed a small empyema and temporomandibular erosion consistent with Osteoarthritis (OA) of the temporomandibular joint. An MRI confirmed the diagnosis. She was treated for 3 weeks with ceftriaxone plus clindamycin and was switched to ciprofloxacin. The total time of treatment was 5 months.

Learning Points/Discussion: Skull base osteomyelitis is not a common condition and it is usually associated as a complication of otogenic, sinogenic, odontogenic and rhinogenic infections. Long term administration of antibiotics is the standard treatment and surgery is indicated depending on the location of the infection and in those patients who are unresponsive to antibiotic treatment.

AN UNUSUAL CASE OF POST-OPERATIVE VENTRICULITIS DUE TO CORYNEBACTERIM STRIATUM IN A TERTIARY CARE PEDIATRIC HOSPITAL IN MUMBAI.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): AN UNUSUAL CASE OF POST-OPERATIVE VENTRICULITIS DUE TO CORYNEBACTERIM STRIATUM IN A TERTIARY CARE PEDIATRIC HOSPITAL IN MUMBAI.

Background: Corynebacterium striatum, one of the more commonly isolated but under reported human pathogenic Corynebacteria, and the infections are mostly nosocomially acquired, involve colonization of indwelling prostheses, catheter tips, ventilator tubes, feeding tubes, previous chronic wounds and the conjunctiva in both immunocompetent and immunocompromised hosts.

Case Presentation Summary: A 1 year old female, post-operative c/o Astrocytoma. The child developed ventriculitis and was brought to ER with neurogenic stridor, hyponatremia, decreased feeding, hypotension on Meropenem, Voriconazole, and Amlodipine, higher functions like absent cognition, hypertonia, muscle wasting found, without meningeal signs. The child had underwent surgery for Astrocytoma followed by ventriculitis, cerebral venous thrombosis, hypotension and CSF leak from the suture site. Presented with severe respiratory distress, focal seizures and pupillary dilatation and later developed non obstructive hydrocephalus and Pseudomeningocele, she was ventilated. Treatment included adding salt to her feeds to correct hyponatremia, amlodipine, glycerine suppository, Vancomycin, Meropenem, Teicoplanin, and Voriconazole and once daily CSF drainage of 10 ml through the Ommaya reservoir, if there was an anterior fontanelle bulge on examination. CSF - WBC count of 300 cells (75% polymorphs and 25% lymphocytes), Gram stain- occasional pus cells and few gram positive bacilli. Culture- Blood agar showed grey, smooth surface colonies. Identification of isolate done by MALDI as Corynebacterium striatum, sensitive to Vancomycin, Linezolid, and Teicoplanin. Antimicrobial susceptibility done by PHOENIX and reported as per CLSI M45 guidelines. VP shunt surgery was done once CSF cultures became negative. The patient expired 2.5 months post infection.

Learning Points/Discussion: Corynebacterium . striatum can cause life-threatening infections. Early identification and diagnosis, early administration of susceptible antibiotics, and treatment of complications will be beneficial in patients with C. striatum-related infection. In our case, the patient did not survive due to the underlying tumour condition and associated ventriculitis.

BEWARE OF THE DOG!

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CNS INFECTIONS

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Title of Case(s): Beware of the dog!

Background: *Pasteurella multocida* is a gram negative cocco-bacillus that is found in gastro-intestinal tract of dogs and cats. Zoonotic transmission to humans is caused by the bite or the lick of animals. Vertical transmission from a colonised mother is possible. It generally causes soft tissue infections but invasive diseases such as meningitis are rarely reported in immunocompromised patients, elderly and neonates.

Case Presentation Summary: We present the case of a 30-day-old baby admitted to our hospital with fever and irritability. On physical examination, he was irritable but consolable and anterior fontanelle was bulging. Laboratory tests showed high C reactive Protein and procalcitonin (32.8 mg/dl, 30.2 ng/mL respectively). Analysis of the infant's cerebrospinal fluid (CSF) showed 10651 white blood cells per μ L, with 72% neutrophils, protein concentration 306 mg/dL, and glucose concentration 1 mg/dL (normal 60–80). Treatment with ampicillin-sulbactam and gentamicin was started. Blood culture was negative and CSF cultures grew *Pasteurella multocida* sensitive to penicillin, ampicillin, and ceftriaxone. Gentamicin was stopped and treatment with ampicillin-sulbactam was continued for 14 days with complete resolution of his symptoms. Further history revealed that the family had a dog that used to lick the baby face. Brain ultrasound at the diagnosis and after 3 months was negative and hearing test was normal. Seric immunoglobulins and lymphocytes subpopulations were in range.

Learning Points/Discussion: *Pasteurella multocida* is an unusual but serious cause of meningitis in children. The mortality rate for neonatal meningitis is 20%. Increased neonatal mortality is associated with disease onset occurring during the first days of life. Sequelae, mostly hearing loss, may occur in 20-30% of survivors. It is potentially preventable by the avoidance of contact with the saliva of household pets.

NEONATAL DERMATITIS: FAMILY MATTERS.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): NEONATAL DERMATITIS: FAMILY MATTERS.

Background: Scabies is a parasitic infection that affects the superficial layers of the skin, resulting in an inflammatory dermatitis with intense itching. The predominant route for transmission is direct body contact, making family outbreaks frequent. Although it is a common and well-known disease in adults and older children, scabies in neonates is an infrequent entity with its own clinical distinctive features.

Case Presentation Summary: A 28-day-old male neonate presented to the emergency department with a generalized exanthema and irritability. The mother referred a 15-day history of progressive erythematous papules, starting in the lower limbs and extending to the trunk, arms, scalp, face, palms and soles. He presented a generalized papulopustular rash, with hemorrhagic crusts in the lower limbs and meliceric crusts in the right palm. He had no fever or weight loss. Neonatal impetigo was the initial diagnosis so he was admitted with intravenous cephazolin. Detailed history revealed that his mother and grandmother had scratching lesions, but the mother related her pruritus to the diagnosis of cholestasis during pregnancy. Examination with dermoscopy revealed a curvilinear shaped burrow and a dark triangular structure at its end, corresponding to the “delta jet wing” sign that confirmed scabies diagnosis. Treatment consisted in 2 applications of 5% permethrin cream, one week apart. All family members followed the same topical treatment.



- **Figure 1.** Physical examination revealed a rash consisting of desquamation, disseminated papulonodular lesions with central crust, acral pustules and numerous furrows affecting the face, upper trunk and limbs, including palmoplantar area. Dermoscopy of the palm showed a curvilinear burrow with a dark triangular structure at the end, corresponding to 'delta wing jet' sign.

Learning Points/Discussion: Neonatal scabies diagnosis is challenging and it can be misdiagnosed as psoriasis, seborrhoeic dermatitis, Langerhans cell histiocytosis, or lymphoproliferative dermatosis. Involvement of the palms and soles, as well as scalp and face, has demonstrated to be by far more common in newborns. The frequency of lesions in lower limbs is inversely related to age. Clinicians should consider scabies in any pruritic dermatosis, especially when other family members are affected.

UNEXPLAINED RECURRENT FEVER: THINK ABOUT AUTO INFLAMMATORY DISEASES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): Unexplained recurrent fever: Think about auto inflammatory diseases

Background: Mevalonate kinase deficiency (MKD) is a rare hereditary auto inflammatory syndrome. It is an autosomal recessive disorder caused by mutations in the MVK gene leading to impaired enzyme activity. Hypergammaglobulinemia D is one of the phenotypes of this disease.

Case Presentation Summary: A 26 month old boy who had a personal medical history of recurrent high fever episodes with a family history of unexplained relapsing fever (mother, uncles). He first developed symptoms when he was about 2 months old with febrile attacks ranging from 38.0°C to 39.8°C, lasting 7-9 days, once a month or bimonthly. These episodes that required several hospitalisations, were accompanied by chills, cervical and inguinal lymphadenopathy, abdominal pain, vomiting and diarrhoea and sometimes the occurrence of mouth ulcers, arthralgia of large joints and arthritis. Laboratory testing revealed increased erythrocyte sedimentation rate, positive protein C reactive and hyperleukocytosis during these febrile episodes. Immunoelectrophoresis found high level of immunoglobulin A and normal immunoglobulin D. Taking into account the disease history, the family antecedents, the character of the febrile episodes and the major inflammatory syndrome; MKD deficiency (hyper IgD syndrome) was strongly evoked and confirmed by a positive urinary mevalonic acid excretion. Genetic testing is underway for a further confirmation. The patient received a symptomatic treatment based on non-steroidal anti-inflammatory drugs then short-term corticosteroid therapy and currently under biotherapy.

Learning Points/Discussion: HyperIgD syndrome is an inflammatory syndrome marked by feverish peaks occurring most often in the neonatal period and early childhood where they are often considered infectious episodes. However, urinary excretion of mevalonic acid during febrile seizures is a good tool for the positive diagnosis of suspected patients, but it is primarily a mean for patients' selection for MVK gene analysis or enzymatic dosage.

CONGENITAL CYTOMEGALOVIRUS INFECTION AND HEART DEFECTS: AN OCCASIONAL FINDING OR AN UNDERDETECTED CORRELATION?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): CONGENITAL CYTOMEGALOVIRUS INFECTION AND HEART DEFECTS: AN OCCASIONAL FINDING OR AN UNDERDETECTED CORRELATION?

Background: Congenital cytomegalovirus (cCMV) infection is the most common congenital viral infection with a poor rate of awareness reported worldwide. Intrauterine transmission can occur in pregnant women either with primary or non-primary infection. Neurological and audiological impairment represents its most frequent and most severe expression. However also congenital heart defects (CHDs) have been anecdotally associated with cCMV in literature. We report the case of a cCMV infected newborn presenting with signs of heart failure.

Case Presentation Summary: A seven-day-old male newborn was brought to our Pediatric Infectivology Department for a documented history of maternal CMV seroconversion during the first trimester of pregnancy. Fetal ultrasound (US) and MRI examinations were normal; CMV-DNA was detected on amniotic fluid. He was born at home from a term eutocic delivery with an appropriate for gestational age birth weight. At first examination a grade 3 pan-systolic heart murmur with signs of respiratory distress was detected. Echocardiography showed a perimembranous doubly-committed ventricular septal defect (VSD) and a reduced aortic isthmus diameter (2.8mm). An autologous-pericardium patch VSD surgical repair and a heterologous-pericardium patch aortic reconstruction were performed. CMV-DNA detection on blood and urine collected at seven days of life confirmed a strongly positive viral load: 2643 IU/ml and 3035101 IU/ml respectively. Brain MRI, abdominal ultrasound, audiology tests, and ophthalmologic examination came out normal; no antiviral treatment was started.

Learning Points/Discussion: Considering a possible correlation between cCMV and CHD, as more solidly documented for other congenital viral infections, in pregnancies with early CMV seroconversion, a US fetal heart screening and a heart evaluation after birth should be considered. Moreover, in newborns with isolated CHD, CMV-DNA detection could be significant as part of the diagnostic process.

EP512 / #977

A CONGENITAL SYPHILIS CASE PRESENTED WITH RASHES AND FEVER

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): A congenital syphilis case presented with rashes and fever

Background: Syphilis is a bacterial infection caused by *Treponema pallidum* that results in substantial morbidity and mortality. Congenital syphilis is usually devastating to the fetus if the maternal infection is not detected and treated sufficiently early in pregnancy. The burden of morbidity and mortality due to congenital syphilis is high.

Case Presentation Summary:





A forty-two days old girl brought with fever, exfoliating fingertips, and circular erythematous lesions on extremities and body surface. It's learned that her mother was drug-addicted. Laboratory examination showed hemoglobin 7.8 g/dL, leukocyte 16.400/mm³, C-reactive protein 60.2 mg/L, Treponema pallidum total antibody 27.47 (0,99-1), Treponema pallidum blotting test positive. With this clinical situation, congenital syphilis was thought of as a diagnosis. Before the antimicrobial treatment, lumbar puncture for cranial involvement and Treponema pallidum blotting test for the cerebrospinal fluid sample was positive but protein and glucose level couldn't be evaluated because of the traumatic procedure. Penicillin G 50.000 unit/dose three times a day was given to the patient for ten days. In clinical observation, the patient's exanthems were gone, the fever did not see after treatment. Eye examination, hearing test, and cranial ultrasonography were planned. Six months after treatment, it was planned to take lumbar puncture again for central nervous system involvement.

Learning Points/Discussion: Typical signs and symptoms may occur in infants with congenital syphilis or they may be completely asymptomatic at birth. In the first few months of life, clinical results may become noticeable; however, the infection may remain undetected in some of these children until the symptoms of late congenital syphilis are apparent.

LATE DIAGNOSIS OF CONGENITAL TOXOPLASMOSIS. ¿IS AVIDITY TESTING A RELIABLE TECHNIQUE?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): LATE DIAGNOSIS OF CONGENITAL TOXOPLASMOSIS. ¿IS AVIDITY TESTING A RELIABLE TECHNIQUE?

Background: Congenital toxoplasmosis (CT) occurs when the fetus is infected with *Toxoplasma gondii* by transplacental transmission after primary maternal infection. It is possible to decrease mother-to-child transmission through prompt identification of acutely infected pregnant women followed by appropriate treatment. Correct interpretation of serology tests allows to determine the moment of maternal infection and better decision-making.

Case Presentation Summary: We present the case of a 9-month-old female infant who was diagnosed with CT. When the patient was 5 months old, her mother had a second pregnancy and her 1st trimester *Toxoplasma* serology showed positive IgM/IgG and low IgG avidity. Serology was performed on the 5-month-old girl, given the proximity of the previous pregnancy and the lack of third trimester serology (1st and 2nd trimester serologies were negative). IgG was detected. CT was diagnosed at 9 months due to a 4-fold increase in the initial value of IgG. Ophthalmological and neurological exams were normal. She was treated for 4 months with pyrimethamine, sulfadiazine and folinic acid. Serial serologies were performed on the mother, persisting low IgG avidity for 13 months, when intermediate IgG avidity was detected. The mother received spiramycin until amniocentesis in the second pregnancy with negative *Toxoplasma* PCR. All the complementary tests at birth were normal. Both children are healthy, and the girl undergoes regular ophthalmology check-ups uneventful to date.

Learning Points/Discussion: Antibody avidity is a complementary test that helps determine whether the patient has a recent or past toxoplasmosis. Sometimes, low avidity persists longer than 4-6 months, so result interpretation must be rigorous until diagnosis is reached. *Toxoplasma* serology should be performed in all 3 trimesters of pregnancy in order to diagnose as soon as possible to start treatment and reduce sequelae.

FOLLOW-UP OF NEWBORNS WITH SUSPECTED CONGENITAL TOXOPLASMOSIS: THE EXPERIENCE IN THE LAST 8 YEARS IN A SECONDARY LEVEL NEONATAL UNIT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): FOLLOW-UP OF NEWBORNS WITH SUSPECTED CONGENITAL TOXOPLASMOSIS: THE EXPERIENCE IN THE LAST 8 YEARS IN A SECONDARY LEVEL NEONATAL UNIT

Background: Acquired Toxoplasmosis is a common adult disease, estimated as the main parasite infectious disease in Europe. When acquired during pregnancy, an accurate diagnosis and treatment are necessary to reduce the possibility of mother to child transmission and to perform an adequate prenatal counseling. In the last eight years (from 2013 to 2020) all clinical notes of infants born from mothers with acquired Toxoplasmosis who referred to the Pediatric Infectious Diseases Outpatient Service of our hospital were reviewed.

Case Presentation Summary: From 2013 to 2020, 16 infants were born from mothers with acquired/suspected Toxoplasmosis during pregnancy. In 9 pregnancies the seroconversion was diagnosed in the first trimester, 2 in the second and 3 in the third (in 2 cases data wasn't reported). All the infants undergo clinical investigations after birth to evaluate a possible congenital infectious localization. All these tests were negative in each patient, and the dosage of anti-Toxoplasma antibodies didn't show any infected newborn (all had negative IgA/IgM and IgG were positive as expression of maternal IgG through immunoblotting test). The follow-up was characterized by the dosage of antibodies each month in the first three months, and then every 2-3 months up to the first year of age: none of these patients was diagnosed as congenitally infected, and all who completed the follow-up showed a progressive decrease of IgG up to normalization in 6-8 months.

Learning Points/Discussion: Congenital Toxoplasmosis is a rare but invalidating disease. When Toxoplasmosis is acquired during pregnancy, an accurate follow-up is necessary to start a specific treatment to avoid vertical infection, and to perform an adequate counseling to possible newborn risks. Newborns from mothers with infection during pregnancy require a strict follow-up to get an early diagnosis and avoid sequelae.

SEVERE FETAL INTRACRANIAL HEMORRHAGE: CONGENITAL CYTOMEGALOVIRUS INFECTION MAY PLAY A ROLE? A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): SEVERE FETAL INTRACRANIAL HEMORRHAGE: CONGENITAL CYTOMEGALOVIRUS INFECTION MAY PLAY A ROLE? A CASE REPORT

Background: Cytomegalovirus (CMV) is the most common cause of congenital infection. Cerebral calcifications, cerebellar hypoplasia and cortical dysplasia are quite common neurological manifestations, while intraventricular hemorrhage (ICH) is rare.

Case Presentation Summary: MR was born at term, small for gestational age, Apgar score was 8 at 1', 9 at 5'. ICH was suspected during a prenatal ultrasound and confirmed with Magnetic Resonance Imaging (MRI) at 25 weeks. At birth, he was admitted to Neonatal Intensive Care Unit for further investigations. Physical examination revealed low birth weight, micro-purpuric elements on face and thorax, microcephaly, upper limbs muscular hypertonicity, jaundice. Complete blood count, wide spectrum coagulative profile, liver and kidney function tests, metabolic exams were negative. Cranial ultrasound and postnatal MRI confirmed prenatal findings, showing a malacic cavity in the right front-temporal and insular zone, enlargement of the right lateral ventricle, polylobate appearance of right frontal cortex and increased number of turns, confirming the micropolygyria. Mother was immune for rubella at the beginning of pregnancy; Toxoplasmosis tested always negative. Tests for CMV at 11 weeks revealed positive IgG and negative IgM. Fever in peri-conceptive period was reported; no history of maternal trauma, drugs or abuse. Considering the micropolygyria, real-time PCR for CMV-DNA on urine and blood was performed and resulted positive. The patient received diagnosis of congenital CMV infection and started treatment with oral valganciclovir.

Learning Points/Discussion: ICH affects 3.5% of term infants and in 25% causes cannot be defined. It could be a rare complication of congenital CMV, probably due to direct neuronal damage or as cause of vasculitis triggering thrombotic or haemorrhagic processes. This case highlights the importance of testing for CMV infection in case of unexplained fetal intracranial bleeding as a possible etiology.

NEONATAL FINDINGS OF INFANTS BORN TO MOTHERS WITH TOXOPLASMA SEROCONVERSION: A SINGLE CENTER EXPERIENCE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

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Title of Case(s): NEONATAL FINDINGS OF INFANTS BORN TO MOTHERS WITH *TOXOPLASMA* SEROCONVERSION: A SINGLE CENTER EXPERIENCE

Background: *Toxoplasma gondii* (TG) infection during pregnancy causes severe congenital infection, *in-utero* abortion, fetal death, systemic disease or neuro-ophthalmological disorders.

Case Presentation Summary: In this case series, we aimed to identify the clinical characteristics and outcomes of newborn infants born to mothers with *Toxoplasma* seroconversion during a six-year period in our hospital. 13 mothers and 15 newborn infants were presented here as a single-center experience. The mean gestational age was 36.4 ± 2.06 wk and the mean birth weight was 2,749 ± 748 g, with eight born prematurely. Apgar scores were >8 at 5 minutes in all. Physical examinations revealed respiratory distress in preterm infants, neurologic findings in one infant. The mean gestational age at diagnosis during pregnancy was 14.1 ± 8.3 wk. All of the mothers received treatment for TG. Prenatal PCR diagnosis via amniocentesis was carried out on six mothers (40%), with one positive case (6.6%). Morphological ultrasound scanning revealed ventriculomegaly in this positive fetus. After birth, this infant was diagnosed with congenital toxoplasmosis according to cranial and eye features but no neurologic finding was detected. The repeated serological results revealed that Toxoplasma Ig M (-), IgG (+), Avidity was in the grey zone. This infant received treatment for TG for 13 months. One infant who was not infected with TG was diagnosed with hyperekplexia. The audiometric evaluation was normal in all infants.

Learning Points/Discussion: Seroconversion may not be detected in the neonatal period, ophthalmologic, neurologic, and radiological evaluations are supportive for diagnosis in the absence of PCR. The time of treatment in pregnancy seems important for transmission. The initiation of treatment was at 28th gestational age in one infant with congenital toxoplasmosis among 15 newborns who received TG treatment in-utero.

RECURRENT TOXOPLASMA CHORIORETINITIS COMPLICATED BY SULFADIAZINE-INDUCED RENAL CALCULI

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL AND PERINATAL INFECTIONS

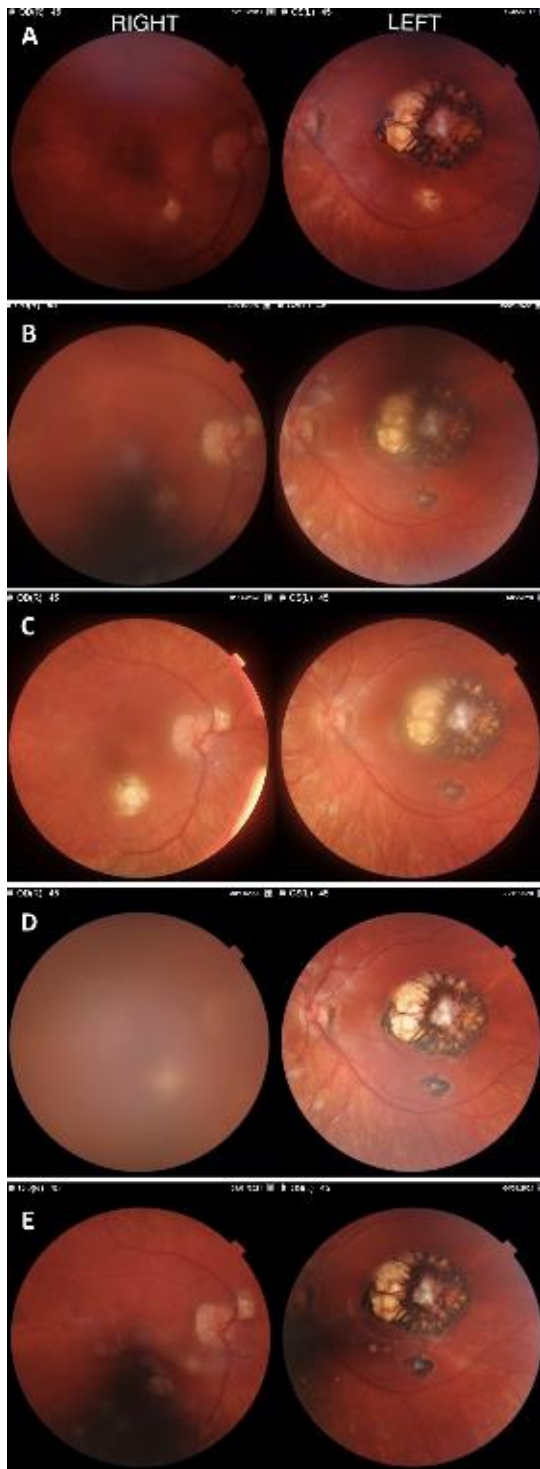
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Title of Case(s): RECURRENT CHORIORETINITIS COMPLICATED BY TREATMENT-INDUCED RENAL CALCULI

Background: Congenital toxoplasmosis affects 0.3 per 1,000 live births and ocular manifestations are most common. If untreated, up to 80% of children develop ocular lesions with 50% progressing to blindness and reactivation of chorioretinal disease is not uncommon. There is great variability in the treatment of toxoplasma chorioretinitis, particularly in prophylaxis therapy using cotrimoxazole.

Case Presentation Summary: A 12-year-old female was diagnosed with congenital toxoplasmosis localised to the eyes at 8-months-of-age, following identification of right-sided cataract and left-sided macular scarring which was fully treated. Her toxoplasma IgG was positive. She suffered significant visual impairment which was stable, however 11 years later, she developed right-sided blurred vision with right eye vitritis and 'fog-in-the-headlight' appearance consistent with reactivation of toxoplasmosis chorioretinitis. She was treated with pyrimethamine, sulfadiazine and systemic prednisolone for 6 weeks which resolved her symptoms. Near the end of treatment, she developed renal colic with a right-sided ureteric calculus which was self-excreted without complication. Six months following treatment, whilst undergoing cotrimoxazole prophylactic therapy, she developed another reactivation of the right eye warranting retreatment (Figure 1). She again developed symptomatic renal calculi near the end of treatment which resolved following hyperhydration and urinary alkalisation therapy.



Learning Points/Discussion: 29% of children with retinochoroidal lesions related to congenital toxoplasmosis develop ophthalmic reactivation. Recurrence risk is greatest immediately after an episode and in younger patients. Cotrimoxazole prophylaxis is shown to reduce recurrence but failed in our patient. Sulfadiazine-induced renal calculi are rarely reported in children. Sulfadiazine has low solubility in acidic urine, leading to precipitation and calculus formation. Insufficient fluid intake and long duration of therapy with high-dosing are risk factors which often results in drug cessation. Using urinary alkalisant agents and switching to sulfadiazine-sparing regimens are potential therapeutic options.

THE FIRST CHIKUNGUNYA NEONATAL INFECTION BY VERTICAL TRANSMISSION IN CAMBODIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - CONGENITAL INFECTIONS

Sakviseth Bin

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Title of Case(s): The first Chikungunya neonatal infection by vertical transmission in Cambodia

Background: In Cambodia, there was an outbreak in 2012 in a province where 190 people were tested positive. However, there were no case of neonatal infection. This report will demonstrate the first serologically confirmed case of Chikungunya in a Cambodian newborn, infected during pregnancy from a mother coming from a high-risk province of mosquito-borne infection, with flu-like syndrom.

Case Presentation Summary: A boy, term, was born by vaginal delivery. Amniotic fluid was green. Good adaptation at birth. His mother, 26-year-old, had fever with headache, myalgia, arthralgia and then skin rash 3 days before delivery. The boy was treated for Suspected Neonatal Sepsis. After 48h, the clinical examination was unremarkable and the investigation was normal: CBC within normal range, CRP negative and hemoculture negative. The boy was discharged. At D4 of life, the boy was re-admitted to NICU ward for isolated high-grade fever (38.7). Physical examination was unremarkable. The empiric antibiotic treatment was started with Cefotaxime and Amikacin. Initial investigations showed decreased lymphocytes (1.28 Giga/L) and platelets 120 Giga/L. CRP was 16.3 mg/dL. With background from a geographic high-risk dengue region (a coastline province): PCR Chikungunya was requested. The boy was afebrile after 24h of admission; antibiotics stopped at 48h as hemoculture was negative and CHIKV PCR was confirmed. The boy was discharged at D3 after admission with mild thrombopenia (platelets 94G/L, no bleeding signs).

Learning Points/Discussion: Chikungunya rate of mother-child transmission is high (48.7%). The diagnosis tests should be considered in newborns born to mothers, with onset of fever near delivery and with background from mosquito-borne diseases regions. The CHIKV IgM is positive mostly after D5 of infection; the treatment is only supportive and the onset was early, to be economical, we requested only PCR.

INFECTION FROM SARS-COV2 AMONG CHILDREN. KAWASAKI-LIKE SYNDROME AS A COMPLICATION OF THE DISEASE. CASE REPORTS OF TWO CHILDREN(ROMA), WERE HOSPITALISED IN A REGIONAL-HOSPITAL (CENTRAL-GREECE)

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - DIAGNOSTICS (SCREENING AND TESTING)

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GENERAL VOLOS HOSPITAL, ACHILLOPOULEIO, Paediatric Department, ANAVROS, Greece

Title of Case(s): INFECTION FROM SARS-COV2 AMONG CHILDREN. KAWASAKI-LIKE SYNDROME AS A COMPLICATION OF THE DISEASE. CASE REPORTS OF TWO CHILDREN(ROMA), WERE HOSPITALISED IN A REGIONAL-HOSPITAL (CENTRAL-GREECE)

Background: Children can be spreaders of covid-19, to adults and elderly. The majority of these are carriers of SARS-COV2, without clinical-manifestations. It is more difficult for them to abide by safety-regulations and that is why vigilance is required to try to eliminate transmission. 2 case-reposts are described below.

Case Presentation Summary: The first child-male, 4-years old, presented with fever (from 24 hours - max 39°C/6 hours) accompanied by sore-throat, rhinitis-cough and cervical-lymphadenopathy. Nasopharyngeal swab specimen was taken for RT-PCR for SARS-COV2, from the child (and his mother), along with laboratory tests. Although the child tested negative-PCR, he was admitted (to our department), because of the high inflammation-markers from his lab-test-results, his clinical-features and his mother's positive-PCR. He was set on a course of antibiotic therapy (cefotaxime-clindamycin). RT-PCR was repeated (4th day) and was positive. Therefore, he was referred to a Tertiary-hospital to continue his treatment. The second child, male-6.5-years old, presented with fever (from 3 days - max 40°C), with shiver/3-4 hours, periodical frontal-lobe headache as well as a non-itchy rash (inner surface: both-arms-thighs and the perineum). The laboratory results showed high levels of inflammatory markers and he was also admitted, for further investigation and treatment (cefotaxime, vancomycin). However, hemodynamic instability was noted (cefotaxime was replaced by meropenem) and there was imperative need to be referred to the nearest Tertiary-hospital, because of the clinical-laboratory features and his parents' history: (coronavirus-disease, one-month ago). There, COVID-19-IgG-antibody testing was positive(+), so along with that, the clinical manifestations lead to Kawasaki-like syndrome.

Learning Points/Discussion: It is necessary to sensitize the pediatricians about Coronavirus-disease and the late complications in children who had no symptoms. So, it should be taken into consideration, if there was COVID-19 in the family environment, in order to be able to diagnose and manage the patient effectively and on time.

A CASE OF PEDIATRIC FEVER OF UNKNOWN ORIGIN WITH HIGH INFLAMMATORY EXPRESSION AND MULTISYSTEMIC INVOLVEMENT IN 2020

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - DIAGNOSTICS (SCREENING AND TESTING)

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Title of Case(s): A CASE OF PEDIATRIC FEVER OF UNKNOWN ORIGIN WITH HIGH INFLAMMATORY EXPRESSION AND MULTISYSTEMIC INVOLVEMENT IN 2020

Background: A new hyperinflammatory syndrome has been linked to SARS-CoV-2 infection in children, named Pediatric Inflammatory Multisystem Syndrome temporally associated with SARS-CoV-2 (PIMS-TS). As an emerging clinical entity, there's still an intense ongoing investigation. We aim to report a pediatric case of fever of unknown origin with a multisystemic involvement in the COVID-19 global pandemic setting.

Case Presentation Summary: A previously healthy 8-year-old boy was observed with a 5-day history of high-grade fever, headache, interscapular pain, and a vomiting episode. His physical exam showed lower right quadrant abdominal pain. Laboratory tests were significant for mild anemia, neutrophilia, lymphopenia, elevated CRP, transaminases and LDH, and leukocyturia. Abdominal ultrasound showed enlarged mesenteric ganglia, small volume ascites, enlarged and hyperechoic kidneys, and thickened bladder wall. Abdominopelvic computed tomography scan added additional findings of hepatosplenomegaly and heterogeneous uptake of contrast by both kidneys. He was admitted with a provisional diagnosis of acute pyelonephritis with suspected impending sepsis, under antibiotic therapy with ceftriaxone. Regarding the current pandemic situation and the clinical picture of fever with high inflammatory expression and multisystemic involvement, additional investigations revealed elevation of procalcitonin, ferritin, fibrinogen, D-dimer, and pro-BNP. An echocardiogram showed mild tricuspid valve regurgitation. A wide range of microbiologic testing was negative, including blood and urine culture, polymerase chain reaction for SARS-CoV-2 in nasopharyngeal and stool samples and SARS-CoV-2 antibodies (IgG). Given the clinical improvement, hemodynamic stability, and laboratory and imaging findings exhibiting a favorable course, he was kept under supportive care.

Learning Points/Discussion: PIMS-TS patients manifest a wide spectrum of symptoms and disease severity. There isn't always evidence of infection or history of contact with COVID-19 patients. With this in mind, laboratory evaluation and imaging findings can play an important role in diagnosis and decision making.

RETROPHARYNGEAL ABSCESS IN AN UNVACCINATED CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - ENT INFECTIONS

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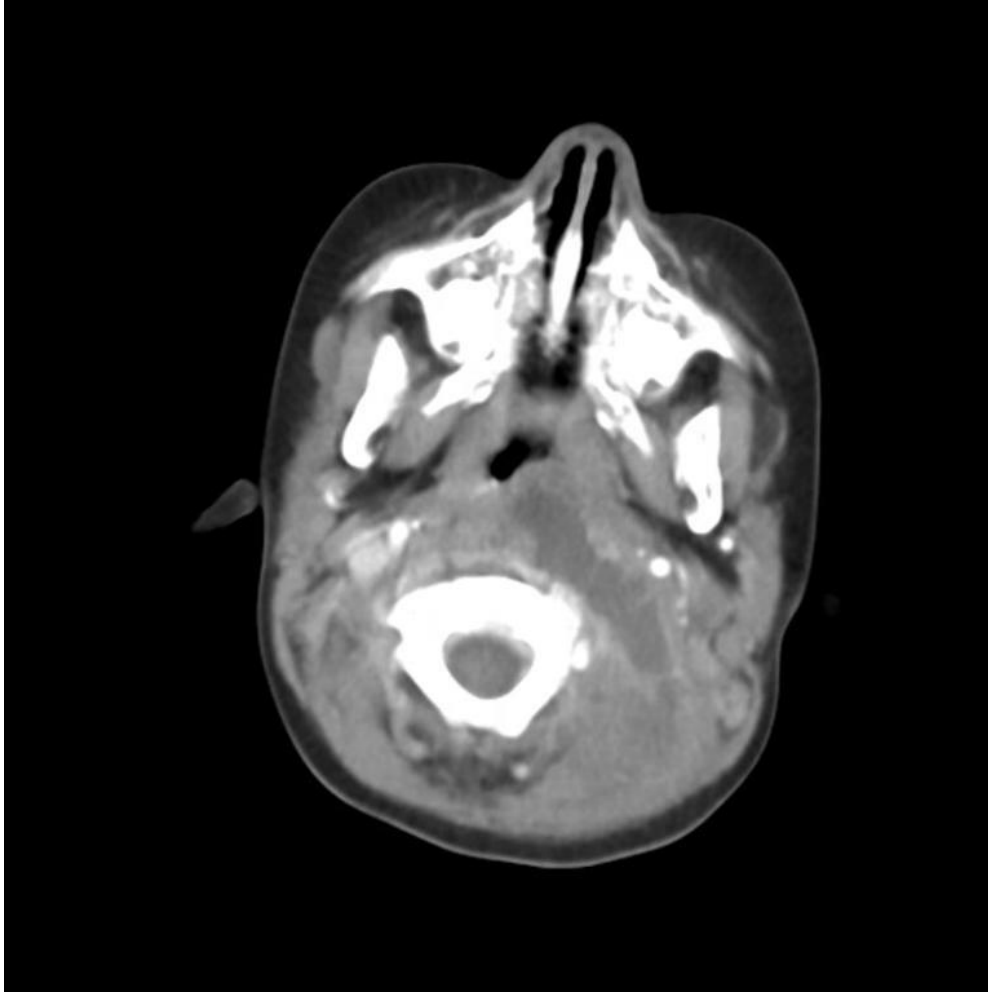
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Title of Case(s): Retropharyngeal abscess in an unvaccinated child

Background: Retropharyngeal abscess is an infrequent but serious condition. Early diagnosis can help prevent the potential consequences of airway compromise, sepsis, and extension to contiguous structures. The peak incidence occurs in 3- to 5-year-olds. Here in we discuss a case of retropharyngeal abscess in an unvaccinated child.

Case Presentation Summary: A 2.5-year-old boy was brought with a fever, difficulty swallowing, and swelling in the neck. He received 5 days of ceftriaxone and clindamycin treatment for left cervical lymphadenopathy, but the swelling in the neck increased and difficulty swallowing occurred. It was learned from his history that no vaccines had been administered so far. On physical examination, there was approximately 5x5 cm swelling in the left cervical region and difficulty in swallowing. Initial laboratory tests showed leucocyte 18.850/mm³ (neutrophils 85%), hemoglobin 12.5 g/dL, C-reactive protein 145 mg/dL. Emergency neck computed tomography showed an enhanced large abscess cavity posterior to the left retropharyngeal space, and a low-density area surrounded by an area without contrast enhancement in the posterior neck. And he was urgently operated on by the otolaryngologist. The patient was placed under observation with postoperative administration of meropenem and vancomycin. The culture of the abscess fluid was positive for penicillin-resistant *Streptococcus viridans*. The patient improved clinically and was subsequently discharged on day 7 of admission.



Learning Points/Discussion: Although retropharyngeal abscess is rare in childhood, it can be severe and fatal. It is very important to diagnose and treat this cause early. In this case, we shared an emergency operated case on a pediatric patient who had never been vaccinated before.

PEDIATRIC ONCOLOGIC PATIENTS AND COVID-19: SERIES OF CASES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - EPIDEMIOLOGY AND RISK FACTORS

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Title of Case(s): Pediatric oncologic patients and COVID-19: series of cases

Background: Reports of SARS-Cov2 infection show less severity in children when compared to adults. However, some risk groups, such as children with onco-hematological diseases, could present a more critical clinical picture. To date, there is no scientific evidence regarding the prevalence and prognosis of COVID-19 in this group of patients.

Case Presentation Summary: Data were collected from medical records of patients admitted to a pediatric infectious disease ward from March / 2020 to September / 2020, researching clinical-epidemiological-laboratory data. 04 male patients; median age 10 years (3-12 years); 03 with acute lymphocytic leukemia (ALL), 01 with ependymoma and the other with neuroblastoma; the 03 with ALL, undergoing chemotherapy. Regarding the initial symptoms, everyone had fever; 03 dyspnea requiring oxygen therapy, 02 had abdominal pain; 02 evolved with signs of shock; Predominantly used medications were ivermectin in 03 patients and azithromycin. None did hydroxychloroquine. Laboratory: the median absolute leukocyte count (cells / uL) = 10,570, neutrophils = 2,929, lymphocytes = 1,154 and platelets 154,000; PCR = 59.9 (reference value <5), DHL = 471.9; ferritin > 2,000 in 03 patients and normal in one; High D-dimer in 03 cases. 02 patients were still hospitalized at the end of data collection, and the other 03 were discharged.

Learning Points/Discussion: Patients did not present serious outcomes associated with COVID-19 and corroborate findings that adults with cancer are more severe than children. As for laboratory evaluation, the recommended with clinical or epidemiological suspicion of children with onco-hematological diseases is to be tested for SARS-Cov2. Unlike some reports that bring the use of hydroxychloroquine related to good outcomes, this medication was not used. For ivermectin, it was not possible to correlate the outcomes reported here with its use. The management of COVID-19 should always be focused on preventing infection and controlling the disease.

SARS-COV2 CLINICAL CASES IN A PAEDIATRIC INFECTIOUS DISEASES UNIT - CHILDREN HOSPITAL GIOVANNI XXIII, BARI, ITALY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - EPIDEMIOLOGY AND RISK FACTORS

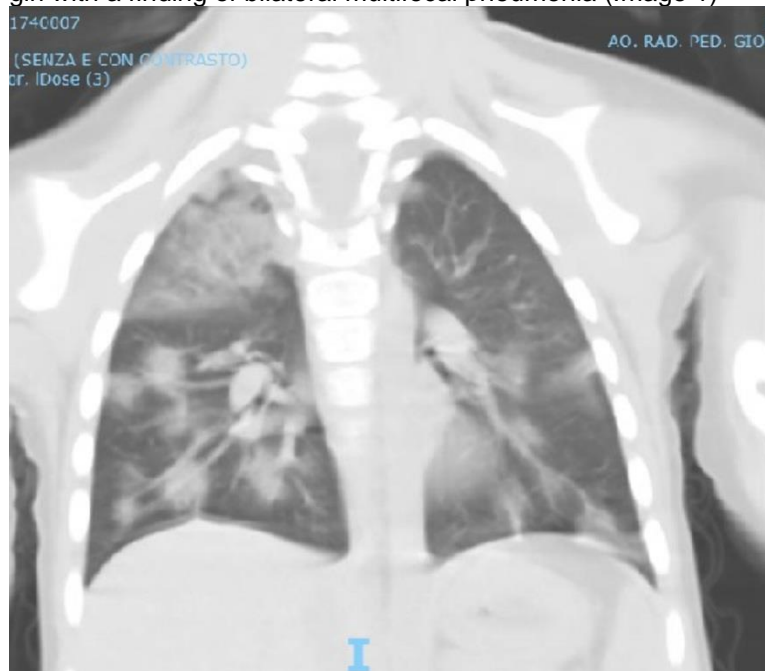
Rita Grandolfo¹, Valentina Santoiemma¹, Amalia Amoroso¹, Pasqua Massagli¹, Anna Maria Giannini¹, Domenico Tricarico¹, Francesco Tansella¹, Maurizio Carone¹, Marta Pensa², Desiree Caselli¹

¹POLICLINICO BARI, Pediatric Infectious Diseases, Bari, Italy, ²POLICLINICO BARI, Pediatrics, Bari, Italy

Title of Case(s): SARS-COV2 CLINICAL CASES IN A PAEDIATRIC INFECTIOUS DISEASES DEPARTMENT

Background: Children usually develop a mild form of COVID-19, rarely requiring high-intensity medical treatment in Pediatric Intensive Care Unit. The severity of the disease is conditioned by the presence of comorbidities.

Case Presentation Summary: We report 67 cases of SARS-COV2 infection from March 2020 to January 2021 admitted to the Covid Regional Center Pediatric Infectious Disease Department. The age detected, ranged from 20 days to 18 years. 53 cases described were asymptomatic or paucisymptomatic; 14 had fever and moderate to severe respiratory symptoms with radiological picture suggestive of pneumonia. Severe cases observed were 7, 5 were patients with associated chronic diseases (Cystic Fibrosis, Down syndrome with West syndrome, ALL with Down syndrome, Nephropathy, Medulloblastoma), a 3-year-old girl with a finding of bilateral multifocal pneumonia (Image 1)



and a 12-year-old boy hospitalized for head trauma with simultaneous multidrug-resistant *Acinetobacter* infection. 5 were treated with Oxygen, Steroid, Heparin, Remdesivir and 3 of these required resuscitation care. Death occurred in the case with Medulloblastoma.

Learning Points/Discussion: From our Pediatric clinical experience we have confirmed that the increased severity of SARS-COV2 disease has been expressed in patients with comorbidities.

**DISCORDANT DISTRIBUTIONS BY AGE GROUPS OF ELEVATED LIVER
ALANINAMINOTRANSFERASE IN PRESCHOL CHILDREN DISCHARGED FROM A COVID-19
HOSPITAL FROM BUCHAREST ROMANIA**

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - EPIDEMIOLOGY AND RISK FACTORS

Niculae Ion Nedelcu, Petre Iacob Calistru

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Title of Case(s): Discordant distributions by age groups of elevated liver alaninaminotransferase in preschool children discharged from a Covid-19 hospital from Bucharest Romania

Background: Aim - Pediatric cases of the coronavirus disease 2019 (COVID-19) are generally mild or asymptomatic, and are usually detected by virological examination following close contact with COVID-19 patients, often the children's parents. The detailed clinical features and virological data of pediatric patients with COVID-19, particularly young infants, remain unclear. In this study we calculated risk ratio (RR) aiming to explore the association of abnormal liver biochemical tests with preschool age groups of patients infected with SARS-CoV-2.

Case Presentation Summary: Methods - Clinical records and laboratory results were obtained from 417 patients with laboratory-confirmed SARS-CoV-2 consecutively admitted from March 13 to September 30, 2020, to our first line Covid 19 hospital. Results - In the study cohort high aspartate aminotransferase (AST) values ($> 40\text{U/L}$) were found in 76.9% of infants aged 0-2 years but in only 29.6% of children aged 3-5 years (RR: 2.59; 95% CI: (1.60 – 3.96); $p < 0.0001$). Another finding was that the prevalence of children with elevated d-dimer levels ($\geq 0.50\text{ mg/L}$) was significantly higher in children aged 0-2 years (32.2 %) than in children aged 3-5 years (15.4 %) (RR: 2.09; 95%CI: (1.14 – 3.84); $p < 0.0148$).

Learning Points/Discussion: Comment: It might be speculated that a more immature liver predisposes to higher risk of abnormal liver enzymes and potential more severe evolution (see d-dimer above), among children aged < 3 years infected with SARS – CoV – 2 although further researches is required to corroborate this hypothesis. Since SARS-CoV-2 infection is likely to persist in the general population worldwide, physicians should be aware that younger children may also be affected by COVID-19 related abnormal liver enzymes with potentially liver sequella.

COVID-19 INFECTION. THE RISK OF COAGULATION DISORDERS IS LOWER IN CHILDREN THAN IN ADULTS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - EPIDEMIOLOGY AND RISK FACTORS

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Title of Case(s): Covid-19 infection. The risk of coagulation disorders is lower in children than in adults

Background: Aim: analyze the distribution by age group of the abnormal coagulation biomarkers detected at hospital admission of patients infected with SARS-CoV-2 agent in a first line Covid 19 hospital.

Case Presentation Summary: Methods:– in the study were included on one hand all 34 subjects aged < 19 years (Junior group) and on other hand all 28 subjects aged > 64 years (Senior group); both groups being part of a cohort of 289 of patients hospitalized in the period 3-28 March, 2020, in our clinic designed by Government for care of patients detected positive for SARS-CoV-2” . The coagulation markers at hospital admission were retrieved from patient’s electronic medical files and the prevalence of the subjects with abnormal values were compared between the two age groups using the χ^2 test or Fisher exact test; statistical significance has been set at $p < 0.05$. Results – With no exception the prevalence of subjects having abnormal biomarkers of coagulation was significantly ($p < 0.05$) higher in the Senior group than in Junior one including for Quick time (44.0% vs. 11.5 %), INR (32.0 % vs. 3.8%), platelet number (53.6 % vs. 5.9%) or prothombine index (32.0% vs. 3.8%).

Learning Points/Discussion: Conclusions – our results validated the observations of other authors with regards of the existence at the pediatric patients infected with Covid-19 of a significantly lower risk of disorders of blood coagulation, disorders that in older people eventually might progress to disseminated intravascular coagulation (DIC). However since the haemostatic system is very different in early life and changes dramatically with age, creating a variety of challenges for the clinician, we need to keep in mind that the delay in the diagnosis of DIC can happen until overt DIC is evident.

SELF-LIMITED SARS-COV-2 INFECTION IN TWO GREEK ADOLESCENTS WITH X-LINKED AGAMMAGLOBULINEMIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - EPIDEMIOLOGY AND RISK FACTORS

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Title of Case(s): SELF-LIMITED SARS-COV-2 INFECTION IN TWO GREEK ADOLESCENTS WITH X-LINKED AGAMMAGLOBULINEMIA

Background: Humoral immunity plays pivotal role in viral clearance, including SARS-CoV-2. Consequently, X-linked agammaglobulinemia (XLA) may pose a risk of severe COVID-19. However, data demonstrating the outcome of COVID-19 disease in XLA patients are limited.

Case Presentation Summary: We describe two unrelated Greek male patients with XLA, aged 15 and 18 years old, with mild self-limited SARS-CoV-2 infection. Both patients had complete absence of peripheral B-cells, no history of bronchiectasis and received regularly subcutaneous immunoglobulin replacement therapy. In both cases, COVID-19 disease, as diagnosed by positive SARS-CoV-2 RT-PCR nasopharyngeal swabs, presented with 1-2 days of low-grade fever, mild asthenia, headache and rhinorrhea. Both adolescents were treated symptomatically at home without administration of antibiotics, antiviral and/or immunomodulatory drugs. Neither patient required oxygen support and/or hospitalization. In both cases, SARS-CoV-2 RNA became undetectable on day 15 after symptom onset. They remained asymptomatic throughout the follow-up. **Learning Points/Discussion** Our cases suggest that COVID-19 in XLA children might have a mild course with favorable outcome, conforming recent studies. BTK deficiency, also affecting myeloid cells, might provide an advantage in XLA patients with COVID-19 by disrupting BTK-dependent IL-6 production by macrophages, preventing a disastrous cytokine storm.

Learning Points/Discussion: To our knowledge, this is the first report of self-limited SARS-CoV-2 infection in XLA patients. The significance of our observation cannot be extrapolated to all XLA patients, such as adults and patients with bronchiectasis or co-morbidities, or subjects with different primary antibody deficiencies. Further investigation is essential to define risk groups. Hence, the report of uncomplicated cases of COVID-19 in patients with inborn errors of immunity is important in determining prognosis of SARS-CoV-2 infection in these subjects, avoiding reporting biases and unveiling the determinants of immune protection against SARS-CoV-2.

CLINICIANS IN SPIRALING CONFUSION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - FEVER OF UNKNOWN ORIGIN

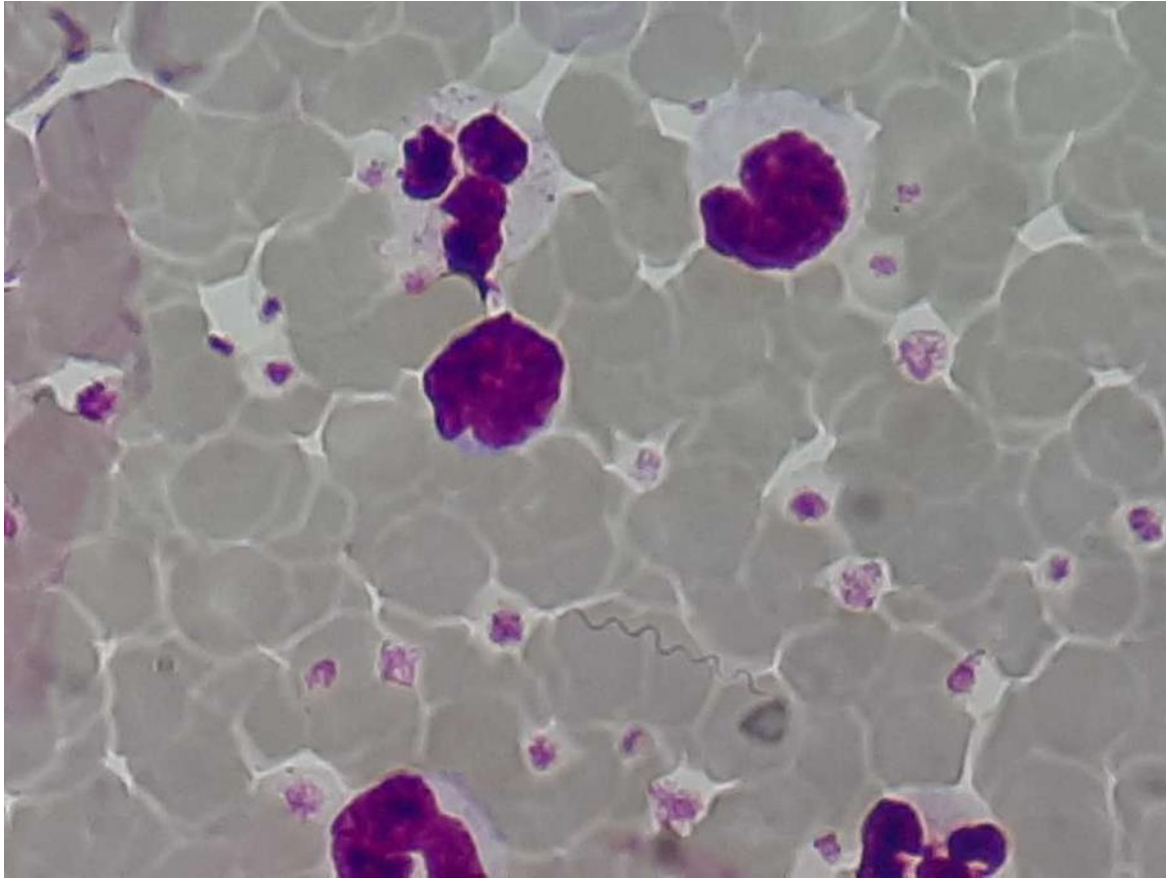
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Title of Case(s): CLINICIANS IN SPIRALING CONFUSION

Background: Tick-borne relapsing fever (TBRF) is an arthropod-borne infection caused by *Borrelia ssp.*, present worldwide but rare in urban areas. As most patients present with nonspecific symptoms, high suspicion is warranted to achieve diagnosis, for which epidemiological data is important. In Europe, the Iberian Peninsula is the highest endemic area.

Case Presentation Summary: A 12-year-old male patient, with unremarkable past medical history, presented in 08/2020 at the emergency room of a tertiary Hospital in Southern Spain with 72-hour high fever, arthralgia and vomiting. As relevant epidemiological data, he lived in the countryside, had ferrets, horses and a dog and used to accompany his father hunting on the weekends. At physical examination, he had jaundice, splenomegaly and petechiae over his chest. Blood test showed lymphopenia, thrombocytopenia, mixed hyperbilirubinemia, and high acute phase reactants. Abdominal ultrasound showed homogeneous splenomegaly. Clinical symptoms resolved and blood tests normalized during admission. Blood serology was positive for CMV IgM/IgG. During the next 3 weeks, he suffered from two similar self-limited clinical episodes. Third episode prompted readmission and a work-up for recurrent fever syndromes including molecular and serology tests. 3 weeks after discharge, he presented again with same symptoms; at that time, Microbiology Lab informed of a positive *Borrelia* IgG from last admission serology (IgG from first admission was negative). Blood smear with Giemsa stain was performed and confirmed the diagnosis (Image). Treatment with doxycycline was started and resulted in a Jarisch-Herxheimer reaction after the first dose. Subsequently therapy was continued during 10 days with no further complications resulting in complete clinical recovery.



Learning Points/Discussion: TBRF diagnosis can be challenging. High suspicion is needed, and key epidemiological data should alert clinicians. Diagnosis delay may defer treatment, leading to unnecessary tests and hospitalizations.

SCRATCHING BELOW THE SURFACE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - FEVER OF UNKNOWN ORIGIN

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Title of Case(s): SCRATCHING BELOW THE SURFACE

Background: Fever of unknown origin is a common presentation to paediatrics. Despite diagnostic advances, a significant proportion remains undiagnosed. Correct formulation of differential diagnosis and targeted investigations are essential for timely diagnosis and treatment.

Case Presentation Summary: A thirteen-year-old boy presented with a ten-day history of fever. He reported no travel or sick contacts. His family had a kitten, but denied any bites or scratches. He had a unilateral cervical lymphadenopathy and splenomegaly. The rest of his clinical examination was unremarkable. High-grade night-time fevers with right-sided lumbar back pain were recorded. He had a normal blood count and a CRP of 19mg/l. Multiple blood cultures, serologies and blood PCRs including *Bartonella henselae* were negative, as was the Interferon-gamma-release Assay. Abdominal ultrasound revealed multiple nodules within the spleen and the liver. A spinal MRI visualized multifocal bony lesions within the lumbar spine and iliac bones, compatible with possible disseminated malignancy. An ultrasound-guided biopsy of his cervical lymphadenopathy yielded a small tissue sample unsuitable for histological analysis to rule-out possible malignancy. While the patient was rescheduled for a nodal biopsy under general anaesthesia, the sample was tested for *Bartonella* by PCR which came back positive. The child was diagnosed with disseminated cat-scratch disease. Treatment with doxycycline and gentamycin switched to oral doxycycline and rifampicin upon defervescence for a total of 6 weeks achieved a near total regression of the lymphadenopathy, the hepatic and splenic granulomas, and the bony lesions. He remains afebrile and pain-free.

Learning Points/Discussion: Disseminated disease caused by *Bartonella henselae* remains rare, but should be considered as differential diagnosis of prolonged fever of unknown origin. The diagnostic yield of serology, blood cultures and blood PCR is low. Nodal biopsy with PCR should be performed wherever possible.

GASTROENTERITIS REVEALING AN INTESTINAL DUPLICATION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): Gastroenteritis revealing an intestinal duplication

Background: Intestinal duplications (ID) are rare birth defects, accounting for 0.2% of congenital malformations. They occur on any segment of the digestive tract, from the oral cavity to the anus. The most common location is the small intestine. They are often diagnosed before the age of 1 year. We report a case of ID revealed by an episode of gastroenteritis at the age of 2 years.

Case Presentation Summary: A girl, aged 2 years and 4 months, with no personal or family history was admitted for a fever of 39 ° C, with abdominal pain and diarrhea, since 5 days. No improvement was noticed despite symptomatic treatment. Upon examination, the patient was eutrophic, non-pyretic, and had a renitent mass in the hypogastrium and the right iliac fossa. Biological investigations were normal except for normochromic normocytic anemia at 10 g/dl. The abdomino-pelvic ultrasound showed a cystic formation in the right iliac fossa measuring 25 x 10 mm, with a thick, well-defined, stratified cyst wall, suggestive of a digestive wall. The content was echogenic with debris. It communicated with the ileum and demonstrated peristaltic contractions in favour of ID. The patient underwent surgery. The 3 cm ileal cystic duplication located on the mesenteric edge was resected. The aftermath of the surgery was uneventful. The child was asymptomatic, had normal bowel movements and had a normal growth during the following 6 months.

Learning Points/Discussion: ID remains a rare pathology, with diverse symptomatology which depends on the size, location and anatomical variety. The treatment is surgical based on a resection of the lesion. The prognosis is good if the diagnosis is made early in the absence of extensive forms or other severe malformations.

ACUTE ACALCULOUS CHOLECYSTITIS: A RARE ASSOCIATION WITH A COMMON INFECTION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): ACUTE ACALCULOUS CHOLECYSTITIS: A RARE ASSOCIATION WITH A COMMON INFECTION

Background: Hepatitis A is a common disease in childhood, usually presented as a benign viral infection of the liver. Recognized complications of hepatitis A include cholestasis, prolonged and relapsing disease, fulminant hepatitis, and triggering of chronic active autoimmune extrahepatic disease. The authors report three cases of acute acalculous cholecystitis due to hepatitis A, which is a rare complication of common viral hepatitis.

Case Presentation Summary: The authors present three patients (9-years-old female from Guinea-Bissau, 11-years-old and 16-years-old portuguese males), one with history of autosomal dominant polycystic kidney disease and epilepsy. All patients presented with severe abdominal pain at the right hypochondrium and mild jaundice, while two also complained of anorexia, nausea and vomiting, and one with a low fever. Laboratory investigation revealed normal white blood count and C-reactive protein, and elevated liver transaminases (AST 586-4044 U/L, ALT 716-4108 U/L), GGT (72-293 U/L) and total bilirubin (2.10-5,84 mg/dL). Abdominal ultrasound presented gallbladder wall thickness (5-10 mm) in the absence of calculous or sludge, in all patients. Serological tests revealed acute hepatitis A infection, while other causes were excluded (CMV, EBV, HBV, HCV, HIV, *Salmonella spp.* and other bacterial infections). Patients received conservative treatment (antibiotic therapy and general measures), with progressive clinical improvement.

Learning Points/Discussion: Acute acalculous cholecystitis related to acute hepatitis is a challenging diagnosis, since the clinical presentation is unspecific and laboratory findings can be overlapping due to intrahepatic cholestasis present in hepatitis A. Abdominal ultrasound is key to establish a diagnosis, showing wall thickness >3.5 mm. Distinct than in adults, conservative therapy seems to be adequate in the majority of pediatric patients with acalculous cholecystitis.

PYOGENIC LIVER ABSCESS IN A HEALTHY 11-YEAR-OLD GIRL

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): Pyogenic liver abscess in a healthy 11-year-old girl

Background: Pyogenic liver abscesses are rare and fatal in children. In pediatric patients, altered host defenses seem to play an important role. However, pyogenic liver abscess also occurs in healthy children. We experienced a case of pyogenic liver abscess in a healthy immunocompetent 11-year-old-girl.

Case Presentation Summary: An 11-year-old previously healthy girl was brought with prolonged fever and right abdominal pain. Fever did not decrease, despite 7 days of treatment with ceftriaxone and amikacin in the previous center. Physical examination was normal except for fever and hepatomegaly. Initial laboratory tests showed leucocyte 12.850/mm³ (neutrophils 72%), hemoglobin 8.5 g/dl, C-reactive protein 63 mg/dL, and erythrocyte sedimentation rate 109 mm/h. Aminotransferase levels were within the normal ranges. Abdominal ultrasonography showed a 6.5 cm-sized peripherally enhancing, centrally hypoattenuating lesions, consistent with abscess. A computed tomography scan of the abdomen with IV contrasts showed large hepatic abscesses in segments 6 and 7. The patient was started ceftriaxone, vancomycin, and metronidazole and underwent ultrasound-guided percutaneous drainage of the largest hepatic abscess by interventional radiology and pediatric surgery specialist. Staphylococcus aureus grew in the pus culture. The patient improved clinically and was subsequently discharged on day 14 of admission. The patient's control ultrasonography showed that the abscess was resolved in polyclinic controls.

Learning Points/Discussion: A rare cause of prolonged fever and fever of unknown origin in children is the pyogenic liver abscess. This report describes a case of a pyogenic liver abscess caused by penicillin-resistant Staphylococcus aureus in a healthy 11-year-old girl. The patient was successfully treated with intravenous administration of antibiotics and percutaneous drainage of the abscess.

LIVER ABSCESS IN CHILDREN: A CASE REPORT IN A 7-YEAR-OLD BOY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): FEVER, VOMITING, ABDOMINAL PAIN AND THROMBOCYTOPENIA IN A CHILD WITH ACUTE ABDOMEN

Background: Liver abscess is a relatively uncommon disease in children. The majority of liver abscesses in children are pyogenic (80%), followed by amebic (21-30%) and fungal. *Staphylococcus aureus* is the most common pathogen isolated from liver abscesses worldwide. Other common pathogens are *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter* and *Pseudomonas*. Anaerobes, including microaerophilic *Streptococci*, also account for a significant proportion of pyogenic liver abscesses (30%). Many cases are classified as cryptogenic since no apparent cause is found.

Case Presentation Summary: A previously healthy 7-year-old boy presented to the emergency department with a history of fever, vomiting, diarrhoea and periumbilical abdominal pain. Laboratory tests showed leukocytosis, thrombocytopenia, elevated C-reactive protein and procalcitonin levels, low albumin, normal total bilirubin and slightly elevated aspartate aminotransferase, alanine aminotransferase and international normalized ratio. The abdominal ultrasound revealed a fluid-containing lesion in the right hepatic lobe. The MRI and the needle biopsy confirmed the suspect of hepatic abscess. Intravenous antimicrobial therapy with piperacillin-tazobactam, gentamicin and metronidazole was started. The fluid culture isolated a *Streptococcus intermedius*, susceptible to penicillin, so antibiotic therapy was continued with piperacillin-tazobactam alone. Other site of infection, such as oral cavity, heart and abdomen, were not found. A total of five weeks of antibiotic therapy was completed, leading to resolution of the lesion.

Learning Points/Discussion: *Streptococcus intermedius* is a highly pathogenic streptococcus that has the propensity to cause complicated abscesses in children. Liver abscess must always be taken into consideration in the differential diagnosis of children who present with persistent fever and abdominal pain. Imaging and biopsy with fluid culture are the gold standard for diagnosis. Percutaneous drainage combined with prolonged antimicrobial therapy is the best treatment option.

ABDOMINAL ANGIOSTRONGYLIASIS: A RARE (AND SEVERE) PRESENTATION OF ACUTE ABDOMEN IN YOUNG INFANTS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): ABDOMINAL ANGIOSTRONGYLIASIS: A RARE (AND SEVERE) PRESENTATION OF ACUTE ABDOMEN IN YOUNG INFANTS

Background: The nematode *Angiostrongylus costaricensis* causes human abdominal angiostrongyliasis in Latin America and the Caribbean, but rarely in young children. Following the ingestion of the larvae, invasion of intestinal tissues and egg deposition in the mesenteric arteries results in clinical signs that resemble those of intestinal perforation. We describe a case of abdominal angiostrongyliasis in an infant whose clinical and laboratory evolution overlapped a CMV infection, until the final anatomopathological result.

Case Presentation Summary: A healthy 14-months-old girl, born and living in the São Paulo Metropolitan area, was admitted with a fever of undetermined origin for 40 days, sporadic diarrhea, and progressive abdominal distention. The initial laboratory evaluation was unremarkable except for hypereosinophilia (42%). Pneumoperitoneum was identified at the abdominal radiography and urgency laparotomy was performed: purulent secretion and multiple intestinal wall perforations (terminal ileum, cecum, transverse colon, and sigmoid) were seen. Enterectomy, total colectomy, and ileostomy were performed without complications. Empirical gancyclovir was given as urinary PCR was positive for CMV. Ten days later, the histopathologic analysis of the surgical specimen revealed no viral inclusion but intestinal infarction with multiple perforations, and the presence of parasitic structures associated with thrombosis and foreign body granuloma - characteristics that resembled *Angiostrongylus costaricensis* infection. No epidemiological link to mucosal contact or consumption of mollusk was found. The patient was treated with albendazole for 14 days and discharged from the hospital after 64 days for follow-up at the outpatient clinic.

Learning Points/Discussion: Angiostrongyliasis can mimic other infections that cause intestinal perforation and lacks available and validated diagnostic tests. The combination of abdominal pain, hypereosinophilia, and clinical signs resembling intestinal perforation suggest abdominal angiostrongyliasis. Microscopically, the definition of intestinal infection relies on thrombotic phenomena, massive eosinophilic infiltration of the intestinal wall.

HSV ESOPHAGITIS IN IMMUNOCOMPETENT CHILD: A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): infectious esophagitis in immunocompetent child

Background: Herpes simplex virus (HSV) is a cause of severe erosive esophagitis in immunocompromised hosts. Although herpes infection is common in immune competent individuals, herpes simplex esophagitis (HSE) is rare.

Case Presentation Summary: A previously healthy 12-year-old male was admitted due to odynophagia, dysphagia with solids and liquid, heartburn, and retrosternal pain the last 2 weeks. An upper endoscopy was performed and revealed a severely inflamed esophagus with multiple ulcers in the distal esophagus. Histopathology showed mucosal infiltrate with active inflammation with locally eosinophilic infiltrate, raising the suspicion of eosinophilic esophagitis. The diagnosis of HSE was confirmed by detection of herpes virus DNA. Testing for HSV immunoglobulins (IgM and IgG) were positive. The HIV serology was negative and immunological workup was normal including immunoglobulins and flow cytometry to evaluate specific cell populations and subpopulations. The patient was treated with per os acyclovir (400mg x 3) for 7 days. The patient improved significantly, and symptoms resolved completely. He continued per os PPIs therapy for 2 months. A repeat upper endoscopy after 3 months showed an improved histopathology, without eosinophilic infiltrate. On follow up (18 months) the patient showed no recurrence of symptoms.

Learning Points/Discussion: HSE is rare in immunocompetent patients. This may reflect a lack of awareness of the condition or the self-limiting nature of the disease in most instances. Although HSE is a self-limiting condition, antiviral treatment may shorten the illness, and reduce patients' suffering.

ANTIMICROBIAL RESISTANCE AND VIRULENCE GENE PROFILE OF A MULTI-DRUG RESISTANT (MDR) SHIGELLA FLEXNERI STRAIN CAUSING BACTEREMIC GASTROENTERITIS IN A CHILD WITH CYANOTIC CONGENITAL HEART DISEASE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): ANTIMICROBIAL RESISTANCE AND VIRULENCE GENE PROFILE OF A MULTI-DRUG RESISTANT (MDR) *SHIGELLA FLEXNERI* STRAIN CAUSING BACTEREMIC GASTROENTERITIS IN A CHILD WITH CYANOTIC CONGENITAL HEART DISEASE

Background: *Shigella* is the second leading cause of bacterial gastroenteritis worldwide and a priority pathogen as per WHO' Global Antimicrobial Resistance Surveillance System. Bacteremia is extremely rare (0.4%) in shigellosis and risk factors include young age, malnutrition and immunosuppression. Here we describe a rare case of bacteremic gastroenteritis caused by MDR *Shigella flexneri* strain in a child with cyanotic heart disease.

Case Presentation Summary: A 2-year-old female child with cyanotic congenital heart disease (double outlet right ventricle with ventricular septal defect and severe pulmonary stenosis) was referred with complaints of recurrent cyanotic spells. Within 36 hours of admission, the child had episodes of watery mucus diarrhea with occult blood. Patient isolation and contact precautions were initiated. Laboratory investigations revealed lactic acidosis, raised CRP and procalcitonin with deranged electrolytes. Corrective measures for metabolic acidosis and electrolyte imbalance were initiated and the child was empirically started on IV ceftriaxone and metronidazole after collecting blood and stool samples for culture. Culture of blood and stool showed growth of *Shigella flexneri* type 2 and phenotypic antimicrobial susceptibility testing (EUCAST,2021) revealed multidrug resistance (Resistance to ampicillin, cotrimoxazole, tetracycline, ciprofloxacin and ceftriaxone) and hence the antibiotic was escalated to intravenous meropenem. Molecular characterization revealed the following virulence (*ipaH*, *virF*, *ial*, *sen*, *set1A*, *set1B* & OMPA) and antimicrobial resistance (*dhfr*, *gyrA*, *gyrB*, *parC*, *parE*, *qnrS*, *mdfA*, *blaCMY-2*, *blaACT* and *blaCTX-M825*) genes. The patient underwent Bidirectional-Glenn Procedure for cyanotic spells. The child had persistent diarrhoea and was discharged when the blood and stool culture reports turned negative.

Learning Points/Discussion: Emergence of MDR *Shigella* limits the treatment options for invasive infections. Prompt identification, public-health notification, isolation with contact precautions and multidisciplinary team approach is required to treat and prevent spread of such invasive MDR *Shigella* infections.

SUBMANDIBULAR TUMEFACTION - A RARE UNDERLYING CONDITION IN EARLY INFANCY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): Submandibular tumefaction - a rare underlying condition in early infancy

Background: Acute suppurative parotiditis (ASP) is a rare condition in early infancy. It usually presents unilaterally, with inflammatory signs of the parotid gland and non-specific systemic symptoms. Several risk factors have been described. Staphylococcus aureus is the most causative agent. Adequate antibiotic treatment should be instituted early, and surgical drainage may be necessary.

Case Presentation Summary: A previously healthy 57-day-old female is presented with a left submandibular tumefaction and fever beginning on the day of admission. The objective examination revealed a painful and stiff left submandibular tumefaction and the clearance of the jaw angle, without output of purulent content stenon ipsilateral. An ultrasound demonstrated the presence of a phlegmon of the left parotid. Endovenous empirical antibiotic therapy was started. It was isolated a staphylococcus aureus sensitive to flucloxacillin. On the sixth day, due to worsening of inflammatory signs on the left and new appearance on the right, ultrasound was repeated which revealed nodular areas of necrotic content bilaterally. Drainage of abscess collections was made. After that, she completed 7 days of flucloxacillin and 4 days of gentamicin, with complete resolution. An immunological study was performed, which proved to be normal.

Learning Points/Discussion: Although a rare infection in early infancy, ASP should be considered in the differential diagnosis of parotid gland enlargement. Prompt recognition and early treatment are keys to a good prognosis. In our case, even with adequate antibiotics to the isolated agent, there was no clinical response. In this situation, ultrasound is essential to identify the presence of abscesses and the subsequent need for surgical drainage. The immunological study is mandatory, especially in such a bilateral and exuberant presentation and in the absence of the risk factors.

ACUTE APPENDICITIS IN YOUNG INFANTS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): ACUTE APPENDICITIS IN YOUNG INFANTS

Background: Acute appendicitis (AA) is extremely rare in infants (0.38%). Association with viral infection has been reported.

Case Presentation Summary: A 4-month-old male was admitted to our hospital with a 24-hour history of febrile illness, irritability, non-bloody loose stools, poor feeding and vomiting. He was a late preterm (35 weeks) born from a twin pregnancy without perinatal complications. He had received a second dose of RV vaccine the day before (18 weeks of age) and had a 3 years-old sister with coryza. On physical examination, he looked ill, had fever (39°C), heart rate of 174 bpm, respiratory rate of 20 breaths/min. The abdomen was distended with diminished bowel sounds. The white cell count was 9 780/μL (neutrophils 6650/μL) and a C reactive protein (CRP) of 263 mg/dL. He had pyuria (96 leucocytes/μL) and a positive nasopharyngeal respiratory syncytial virus (RSV). The ultrasonography showed a dilated appendix (9 mm), enlarged adjacent mesenteric lymph nodes and a thin layer of hyperechogenic free-fluid. The laparotomy revealed a perforated retrocecal appendix with an appendicular abscess and appendicectomy was performed. Histopathology confirmed the diagnosis and revealed glandular atrophy and corion fibrosis of the mucosa compatible with an ischemic aetiology. Reverse transcription-polymerase chain reaction and immunohistochemistry to detect RV is being processed. Stools weren't available for testing. He completed 7 days of intravenous antibiotics with an uneventful recovery, besides a VSR bronchiolitis at day 5.

Learning Points/Discussion: In our patient, one could theorize that lymphoid hyperplasia after a viral infection, RV or even RSV, determined appendicular luminal obstruction, or that an ischemic event, in particular an intermittent intussusception after RV vaccine, could have resulted in wall oedema and obstruction.

SEVERE ACUTE PANCREATITIS DUE TO COXACKIE INFECTION IN A 9-YEAR-OLD GIRL - A CASE REPORT.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - GASTROINTESTINAL INFECTIONS

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Title of Case(s): Severe acute pancreatitis due to Coxackie infection in a 9-year-old girl - a case report.

Background: The Coxackie virus belongs to the Picornaviridae family. The most famous disease is the disease of the hands, feet and mouth. Most often, diseases caused by Coxackie viruses are asymptomatic. Coxackie B virus can also cause pancreatitis, myocarditis and / or pericarditis.

Case Presentation Summary: We present a case of a 9-year-old girl who was transferred to the PICU Department of the Upper Silesian Child Health Center in Katowice from a regional hospital due to cardiopulmonary insufficiency, which occurred in the course of acute pancreatitis with a very severe course. The girl was previously hospitalized in the pediatric surgery department and operated on with suspected acute appendicitis - intraoperative acute pancreatitis with extensive necrosis was demonstrated. For 20 days, the patient required hospitalization in the PICU Department. The patient was in a very severe general condition, initially mechanically ventilated, the treatment was performed with broad-spectrum antibiotics, proton pump inhibitors, analgetic medications, parenteral nutrition, and then enteral nutrition for the Treitz ligament. In the girl, autoimmune, bile, toxic and genetic factors (mutations in the SPINK and PRSS genes) of acute pancreatitis were excluded. However, the presence of IgM antibodies against Coxackie B in the blood serum was found. During hospitalization in the Department of Gastroenterology, subileus symptoms of the gastrointestinal tract (vomiting, abdominal pain) caused by the growing peripancreatic fluid cisterns (diameter about 10cm) were observed. The patient underwent urgent surgical operation - Jurasz's, procedure was uneventful. After 70 days of hospitalization, she was discharged home in good general condition, with the recommendation of further outpatient care.

Learning Points/Discussion: In our report, we wanted to highlight a rare cause of acute pancreatitis, Coxackie virus infection. In our patient, this infection was extremely severe.

A DIAGNOSIS THAT SHOULD NOT BE MISSED

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - HIV/AIDS

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Title of Case(s): A DIAGNOSIS THAT SHOULD NOT BE MISSED

Background: Human Immunodeficiency Virus (HIV) causes dysregulation and depression of immunity, increasing susceptibility to infections. Transmission occurs through 3 routes: sexual intercourse (the most common in adults), vertical transmission (mother-to-child, the most frequent in children), and transfusion of contaminated blood products. Sometimes it may be difficult to establish the way of transmission. Clinical presentation may be variable. Therefore suspicion should be high.

Case Presentation Summary: A thirteen-year-old girl was referred for severe Atopic Eczema. She was born in Angola and moved to Portugal at age 10, presenting previous episodes of Malaria and Typhoid fever. On physical examination she had dry white peeling on the scalp and keloids on the trunk. Laboratory tests revealed a hypochromic microcytic anaemia and severe TCD4 lymphopenia. HIV 1 serology was positive. Viral load was 81 200 cp/ml. CD4: 194/mm³. She begun TARc with dolutegravir, emtricitabine and tenofovir and prophylactic cotrimoxazole with favourable evolution. The mother and two sisters were negative. The father lives in Cuba and has no contact with the family. She had not begun sexual activity, no sexual abuse was reported, gynaecological exam was normal and she did not use IV drugs. As she had several malaria episodes with hospital admission the hypothesis of contaminated blood transfusion would be possible but the mother could not precise it and had no clinical reports.

Learning Points/Discussion: Our patient presented with Atopic Eczema, a very unspecific symptom but she presented a high viral load and severe immunodepression. In this age group HIV infection should always be in our mind. However, HIV way of transmission is not clear, as we see in this case. The hypothesis of a contaminated blood transfusion in Angola during a severe malaria crisis is possible.

HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS TRIGGERED BY CMV INFECTION IN AN INFANT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - HOST-PATHOGEN INTERACTION

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Title of Case(s): HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS TRIGGERED BY CMV INFECTION IN AN INFANT

Background: Haemophagocytic lymphohistiocytosis (HLH) is a rare life-threatening systemic hyperinflammatory syndrome that can be caused by inherited immune defects or acquired triggering factors such as cytomegalovirus (CMV). HLH triggered by CMV infection in infancy is very rare and the diagnosis challenging. In this case report, an infant is presented with anaemia and severe hepatitis and early HLH induced by CMV infection.

Case Presentation Summary: This 2-month-old boy was admitted with low grade fever and bloody mucoid stools. These symptoms self-resolved 5 days later. During hospitalisation the child was found to have raised ALT 300U/L but he remained clinically well. The parents wished to leave the hospital at this stage. One week later a repeat testing revealed an increase in the ALT 1100U/L, AST 972U/L, normal INR and albumin. Ferritin levels increased to 2189ng/ml. Liver Function Tests (LFTs) continued to increase (ALT:1600U/L, AST:2275U/L) and lactic dehydrogenase (LDH) reached 3613U/L. Additionally, haemoglobin dropped to 8,2g/dL and the spleen was enlarged. There were concerns that he was at the early stage of an HLH. All modified criteria were fulfilled. CMV-DNA in urine and blood were found positive. Due to the rapid clinical and laboratory deterioration of the patient, Gancyclovir(GCV) iv was administered. He began to recover impressively and ferritin, LFTs and LDH quickly declined. Haemoglobin returned to normal. Gancyclovir/valgancyclovir therapy continued for a total of 6 months.

Learning Points/Discussion: HLH induced by CMV infection in an immunocompetent infant is very rare. Despite a rather low viral load in urine, CMV could trigger hepatitis as well as a hyperinflammatory condition (HLH) via a possible immune dysregulation and not by direct action. Treatment of the triggering agent was sufficient to treat HLH in the patient and immunosuppressive treatment was not required.

EPSTEIN-BARR VIRUS: FAR MORE THAN INFECTIOUS MONONUCLEOSIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - HOST-PATHOGEN INTERACTION

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Title of Case(s): EPSTEIN-BARR VIRUS: FAR MORE THAN INFECTIOUS MONONUCLEOSIS

Background: Epstein-Barr virus (EBV) infection is common in pediatric age, generally with a mild and self-limited presentation. However, it can lead to potentially life-threatening complications.

Case Presentation Summary: Four-year-old boy, with trisomy 21, surgically corrected congenital atrioventricular septal defect, presented with a 9-day history of fever, anorexia, hepatosplenomegaly, anasarca and epistaxis. The EBV viral load was positive (viral load of 4,8 log) in the presence of positive VCA IgG, negative VCA IgM and negative EBNA IgG. He fulfilled the hemophagocytic lymphohistiocytosis (HLH) criteria: hemoglobin 8.7 g/dL, platelets 39000/uL, hypofibrinogenemia (0.3 g/L) and hypertriglyceridemia (414 mg/dL), hyperferritinemia (3637,7 ng/mL), bone marrow hemophagocytosis and elevated sCD25 (46000 pg/mL). He also presented hypoalbuminemia, hyperbilirubinemia and a massive activation of T CD8+ cells (91.4%). Clinical improvement followed without any targeted therapeutic intervention. Interestingly, a monoclonal population of CD8+CD5- T cells was identified in the bone marrow and in the peripheral blood. An EBV-related T-cell lymphoproliferative disease (LPD) related to an active EBV infection was assumed. The perforin, XIAP e SAP expression was normal, as was the degranulation and cytotoxicity. As the patient presented progressive clinical and analytical improvement, only careful monitorization was undertaken.

Learning Points/Discussion: EBV-related T-cell LPD are rare and, in many cases, fatal. We present a case of auto-limited T-cell LPD, probably related to the EBV-HLH immunodysregulation. A conservative wait and see approach was adopted and led to full resolution.

HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS AND VISCERAL LEISHMANIASIS IN PEDIATRIC AGE: A DIAGNOSTIC CHALLENGE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - HOST-PATHOGEN INTERACTION

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Title of Case(s): HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS AND VISCERAL LEISHMANIASIS IN PEDIATRIC AGE: A DIAGNOSTIC CHALLENGE

Background: Leishmania, which is transmitted to human by infected sandflies is endemic in many European countries. Visceral leishmaniasis-related hemophagocytic lymphohistiocytosis (VL-HLH) is a severe, sometimes fatal, disease caused by a cytokine storm in response to an intracellular pathogen. Rapid and accurate identification of leishmania is crucial for clinical strategies, especially in low-incidence areas.

Case Presentation Summary: A 14-months-old boy from non-consanguineous parents, presented with persistent fever for 2 weeks, pancytopenia, and hepatosplenomegaly. One week earlier he presented a maculopapular rash with plantar involvement. Upon admission, an infectious cause for his disease was not identified despite a thorough investigation. He fulfilled criteria for HLH (elevated ferritin; hypertriglyceridemia, hypofibrinogenemia; elevated soluble CD25s and massive CD8 activation) and the bone marrow aspiration showed hemophagocytic macrophages but did not identify Leishmania (including negative Leishmania PCR). Serology for Leishmania was negative. Dexamethasone and immunoglobulin were initiated leading to clinical and laboratory improvement. Citotoxicity and degranulation were normal and no mutation was identified in the HLH-related genes. Two months after, one week after stopping steroids, he again presented with fever and hepatosplenomegaly. Indirect immunofluorescence test for Leishmania showed a titer of 1:256, and a diagnosis of Visceral leishmaniasis (VL) with secondary HLH was made. He was then treated with liposomal amphotericin B (cumulative dose 35mg/kg) but also required prednisolone (20mg/day) and cyclosporine (3mg/kg/day), leading to complete recovery which is sustained for the last 10 months.

Learning Points/Discussion: Visceral leishmaniasis is a well-known trigger for HLH but its diagnosis can be very difficult and a very high index of suspicion is required. Early diagnosis and treatment with amphotericin B is the standard of care but in some cases corticosteroids and other immunosuppressive drugs can be required to halt the inflammation-driven damages.

CYTOMEGALOVIRUS: SO FAR BEYOND A VIRAL INFECTION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - HOST-PATHOGEN INTERACTION

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Title of Case(s): Cytomegalovirus: so far beyond a viral infection

Background: Cytomegalovirus is a common virus that belongs to the herpesvirus family. Clinical manifestations have a broad spectrum, although most infections in immunocompetent hosts are asymptomatic. Association with the onset or exacerbation of autoimmune diseases and CMV infection has been reported. The subjacent trigger for systemic lupus erythematosus (SLE) remains unknown for most of the cases and contribution of genetic and environmental factors leads to a multifactorial etiology.

Case Presentation Summary: A 17-years-old female, with no history of systemic illness, is presented with asthenia and anorexia with a month of evolution and progressive worsening associated with weight loss and night sweats. She denied rash, morning joint stiffness or raynaud phenom. The objective examination revealed palid mucosas, hepatosplenomegaly, abdominal pain and widening of the interphalangeal proximal joints. The analytic study revealed a pancytopenia, sedimentation rate elevated, cANCA e pANCA negative, CMV IgM e IgG positive, EBV IgG positive and IgM negative. Further study demonstrated positive antinuclear antibody, dsDNA, anti-Sm/RNP, anticardiolipine, lupus anticoagulant and anti-B2-glicoprotein IgG and IgM positive, with decreased complement. Computed tomography revealed hepatosplenomegaly and millimetric lymph nodes in greater numbers than usual in the axillary and retroperitoneum regions. No evidence of proteinuria, pleuritis or pericarditis was found. It was assumed the diagnosis of SLE and treatment with hydroxychloroquine and prednisolone was started, with positive clinical and analytic response.

Learning Points/Discussion: In this case, given the constitutional syndrome, the hypothesis of a lymphoproliferative or autoimmune disease cannot be excluded, even with a confirmed CMV infection. The role of cytomegalovirus in triggering SLE has been proposed and the subjacent mechanism of activating autoimmunity in susceptible individuals is still in debate. The clinical response to the treatment confirms the diagnosis of SLE triggered by CMV infection.

MEASLES PNEUMONIA IN AN IMMUNOCOMPROMISED CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTION AND IMMUNE COMPROMISED HOST

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Title of Case(s): MEASLES PNEUMONIA IN AN IMMUNOCOMPROMISED CHILD

Background: Complications from measles can occur in almost every organ system. Pneumonia, croup, and encephalitis are common causes of death. Encephalitis is the most common cause of long-term sequelae. Complication rates are increased by immune deficiency disorders, malnutrition, vitamin A deficiency.

Case Presentation Summary: HIV-infected preschool age girl with measles was under supervision. The girl is hospitalized on the 4th day of the disease (2nd day after the appearance of the rash) in the intensive care unit in a severe condition. HIV-infected from birth, not vaccinated. On the 1st day of in-patient treatment the patient was lethargy, had a respiratory failure (chest retraction, moist rales), dry cough, macula-papular rash, physical development retardation. Leukocytosis and neutrophilosis were detailed in count blood cells. X-ray of the chest demonstrated infiltration of the pulmonary tissue, more in the right lung. Girl was treated by oxygen therapy, Zidovudine, Kaletra (lopinavir+ritonavir), Lamivudine, Piperacillin-Tazobactam, Amikacin, Retinol, Fluconazole. On the 6th day of in-patient treatment, the girl was transferred to the infectious department, on the 13th day she was discharged home (received antiretroviral therapy, cefixime, co-trimoxazole).

Learning Points/Discussion: Measles is often fatal for immunocompromised hosts. Measles pneumonia in immunocompromised HIV-infected patients has viral-bacterial etiology and requires aggressive combination of antibiotic therapy in combination with enhanced antiretroviral therapy. Protective immunity against measles has been studied but still not fully understood for HIV-infected patients.

A RARE CASE OF CANCRUM ORIS IN A CHILD WITH PRIMARY IMMUNO DEFICIENCY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTION AND IMMUNE COMPROMISED HOST

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Title of Case(s): A Rare case of cancrum oris in a child with primary immuno deficiency

Background: X-linked agammaglobulinemia (**XLA**) is a rare genetic disorder of immune system. A mutation occurs at the Bruton's tyrosine kinase (Btk) gene leads to a severe block in B cell development and a reduced immunoglobulin production .. Patients typically present in early childhood with recurrent infections, especially with extracellular, encapsulated bacteria.. XLA is deemed to have a relatively low incidence of disease, with an occurrence rate of approximately 1 in 200,000 live births . XLA presenting as Cancrum oris is an uncommon presentation

Case Presentation Summary: 7 years old boy presented with on and off fever , joint pain - past 2 months, pedal edema , abdominal distension -2 months, ulcers over the left corner of mouth, , medial aspect of right 3rd toe& left 4th toe, dorsum of right hand -20 days. History of Recurrent upper & lower respiratory tract infections since 6 months of age .History of drainage of abscess abdominal wall done one year back. Pallor(+)icterus(+)Ulcers over left corner of mouth extending to chin, tip of tongue . Hepatosplenomegaly(+).Surgical scar left iliac fossa . joint tenderness (+).Bilateral pedal edema .Left leg& thigh surgical scar(+)lateral aspect .Ulcers over medial aspect of right 3rd toe& left 4th toe . , CMV: positive (viral load: 32420/ml) . Pus culture grew Pseudomonas aeruginosa. Started on, cefoperazone-sulbactam , fluconazole ,ganciclovir .. PID panel showed 0 B cells, very low Ig. IVIG was given. HRCT showed bilateral lower lobe bronchiectasis , right middle lobe involvement. Improved advised Iv immunoglobulin once in 3 weeks Genetic studies confirmed X linked agammaglobulinemia.

Learning Points/Discussion: This is an uncommon presentation of X linked Agamma,globulinemia , presented with cancrum oris Suspect immunodeficiency disorders in any child presenting with unusual infection in unusual site, evaluate and treat the same.

FULMINANT SEPTIC SHOCK BY STREPTOCOCCUS PNEUMONIAE IN INFANT.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): Fulminant septic shock by *Streptococcus pneumoniae* in infant.

Background: I think the case is interesting because when a child have a history of serious infections of pyogenous bacteria we have to request a complete immunodeficiency study. When the results are normal we have to request a genetic study to diagnose the disease. Also, this case shows that shock septic in a immunosuppressed patient can be lethal in spite of a good treatment.

Case Presentation Summary: Eleven-month-old female infant with a history of complicated acute appendicitis at 6 months, cytomegalovirus enteritis, abscess and *Pseudomonas aeruginosa* surgical wound infection. Cell and humoral immunodeficiency study were normal. She was taken to the hospital because of fever of short evolution and vomiting. In the exploration stands out regular general condition. Influenza PCR and systematic urine were negative. She was admitted to Observation Unit and received antibiotherapy with cefotaxime. She presented rapid deterioration with fluctuation of the level of consciousness, pale-yellow coloration, slow capillary filler and tendency to bradycardia and hypotension four hours later. So she was intubated, fluids and inotropic support are administered. The blood test highlighted pancytopenia (Hb 8.5 g/dl, 3.500 leukocytes/mm³ with 520 neutrophils and 35.000 platelets/mm³). Hypertransaminasemia (AST 1.341 U/L, ALT 465 U/L), hypernatremia (151 mmol/L), hypoglycemia (26 mg/dL), PCR 66 mg/L and PCT > 100 ng/ml. Despite optimizing supportive therapy and adding vancomycin and metronidazole, the patient died within 22 hours of admission. Two blood samples are previously extracted for immunodeficiency study. Gene sequencing analysis identified homozygosis mutation for MyD88. *Streptococcus pneumoniae* was isolated in the blood cultures postmortem and *Klebsiella pneumoniae* in the uroculture.

Learning Points/Discussion: We should request a complete immunodeficiency study when a patient had an history of recurrent or severe infections by pyogenous bacteria. Diagnosis allows family studies to carry out genetic counseling.

EVALUATION OF THE IL-12/IFN-GAMMA AXIS IN TWO PATIENTS WITH SUSCEPTIBILITY TO DISSEMINATED NON-TUBERCULOUS MYCOBACTERIAL INFECTION AND RECURRENT INVASIVE NON-TYPHOIDAL SALMONELLOSIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): EVALUATION OF THE IL-12/IFN- γ AXIS IN TWO PATIENTS WITH SUSCEPTIBILITY TO DISSEMINATED NON-TUBERCULOUS MYCOBACTERIAL INFECTION AND RECURRENT INVASIVE NON-TYPHOIDAL SALMONELLOSIS

Background: The functional integrity of the IL-12/IFN- γ axis is essential to host defense against intracellular pathogens. Defects in this signaling pathway, responsible for Mendelian Susceptibility to Mycobacterial Disease (MSMD), increase susceptibility to non-tuberculous mycobacteria (NTM), *M. tuberculosis*, *Salmonella* spp. and *Candida* spp. The interleukin-12 receptor β 1 (IL-12R β 1) deficiency is the most common genetic defect among MSMD patients.

Case Presentation Summary: We describe two Greek patients with suspected MSMD from two unrelated non-consanguineous families. **Case1:** A 5-year-old boy presented with a history of five episodes of invasive *S. enteritidis* infection with concurrent leucocytoclastic vasculitis, cervical and inguinal lymphadenitis. All episodes were treated with intravenous ceftriaxone administration. **Case2:** A 29-year-old male patient, with histopathological diagnosis of Crohn's disease at the age of 24, presented with fever unresponsive to antibiotics and corticosteroids while under anti-TNF treatment. *Mycobacterium avium* was isolated from blood, bone marrow, sputum and lymph node cultures and the patient received proper anti-mycobacterial treatment (AMT) for 2 years. One year after treatment completion a clinical recurrence of NTM infection, unresponsive to AMT, occurred. He was started on IFN- γ in addition to AMT, showing gradual clinical improvement. Flow cytometry showed normal expression of IFN- γ R1 in both patients, while expression of IL-12R β 1 was significantly decreased. In both cases, the LPS-based IL-12/IFN- γ assay, a reliable alternative to BCG stimulation, due to lack of evidence of immunity to *Mycobacteria*, demonstrated diminished production of IFN- γ after stimulation with LPS+IL-12.

Learning Points/Discussion: In patients with unusual susceptibility to intracellular pathogens and suspected MSMD, the assessment for IFN- γ R1 and IL-12R β 1 surface expression by flow cytometry combined with the study of IL-12/IFN- γ circuit integrity by cytokine production assays is a useful immunological approach, further enabling targeted genetic analysis.

DISSEMINATED TUBERCULOSIS IN A CAR-T CELL RECIPIENT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): DISSEMINATED INFECTION IN A CAR-T CELL RECIPIENT

Background: Chimeric antigen receptor T (CAR-T) cell therapy can be a promising alternative for certain relapsed or refractory hematological diseases. Active screening of infectious diseases is key in the management of immunocompromised patients.

Case Presentation Summary: A nine year-old girl, born in Pakistan but living in Spain for the past 3 years, was diagnosed of a B-cell acute lymphoblastic leukemia. Conventional chemotherapy was given as first line treatment. Disease progression was diagnosed three months after starting treatment. She was refractory to a second-line chemotherapy regimen, so CAR-T CD19 immunotherapy was indicated. After infusion, dexamethasone, tocilizumab, siltuximab and anakinra were used because of a cytokine release syndrome and a hemophagocytic lymphohistiocytosis-like syndrome. Two months after CAR-T cell infusion, the patient had a complete remission with incomplete hematological recovery and she started with a cough. A thoracic CT-scan revealed small adenopathic, pleural and pulmonary bilateral calcifications, with septal thickening and ground-glass opacities. Bronchoalveolar lavage (BAL) was performed: acid-fast bacillus (AFB) smear and PCR for *Mycobacterium tuberculosis* were negative; IGRA test was indeterminate; cultures were negative and other potential bacterial, viral and fungal infections were also ruled out. Three weeks later, the patient was admitted due to pneumonia. BAL was repeated and AFB smear revealed a positive result. PCR for tuberculosis was positive in BAL and bone marrow samples. She started isoniazid, rifampin, ethambutol and pyrazinamide; finally drug-susceptible *M. tuberculosis* was isolated.

Learning Points/Discussion: Tuberculosis is a rare infection in CAR-T recipients. We recommend tuberculosis screening for children receiving CAR-T, especially those who come from high burden countries. Tuberculin skin test and IGRA testing can be indeterminate in immunocompromised patients, so more aggressive tests may be required for diagnosis.

INVASIVE PULMONARY ASPERGILLOSIS IN A NEWBORN AS INDEX INFECTION FOR CGD, PLUS 2 FURTHER CASES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): severe lung infection in a newborn term baby, plus 2 further cases

Background: I present the rare case of a very early presentation of a neonate with severe invasive aspergillosis leading to the diagnosis of CGD and our difficulties in reaching sufficient voriconazole levels 2 further cases in older children with CGD are presented illustrating the broad range of acute - protracted clinical presentation

Case Presentation Summary: A 3 week old near-term neonate was referred with progressive respiratory failure due to necrotizing pneumonia, not improving under broad spectrum antibiotics and Amphotericin treatment. 2 weeks later lung biopsy revealed aspergillus fumigatus and granulomatous lesions leading to the diagnosis of chronic granulomatous disease. Liposomal Amphotericin B treatment was continued and Voriconazole added, but no sufficient serum levels were reached despite repeated dose adjustment; under dual treatment lung function gradually improved and the child was transferred to stem cell transplantation without additional oxygen requirement after 5 months of treatment. 2 brothers with known CGD under Itraconazole prophylaxis presented a few weeks apart; one with peracute respiratory failure with need for mechanical ventilation for 3 days, the older brother with more subtle signs of interstitial pneumonia. In both, lung biopsy revealed Aspergillus fumigatus, sensitive to Amphotericin but resistant to Azoles and other antifungals. Vital capacity was <40%; both received daily Amphotericin B for > 4 months with full recovery of lung function in the younger brother and improvement to 67% VC in the older brother. SCT is planned.

Learning Points/Discussion: In immunodeficiency, especially in CGD, lung biopsy is regularly needed to retrieve relevant pathogens, since tracheal aspirates/ BAL usually do not safely identify all relevant pathogens, especially fungi. Invasive pulmonary aspergillosis in a neonate is an exceptional rare entity and is complicated by the difficulty of finding adequate doses with sufficient drug levels.

ROTAVIRUS MONOVALENT VACCINE STRAIN SYSTEMIC INFECTION IN A CHILD WITH SEVERE COMBINED IMMUNODEFICIENCY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): Rotavirus Monovalent Vaccine Strain Systemic Infection in a Child with Severe Combined Immunodeficiency

Background: Rotavirus (RV) is a leading cause of severe gastroenteritis in children. The incorporation of live-attenuated RV vaccines as part of routine childhood vaccination schedules has declined the rates of hospitalizations of RV infections. However, it may cause severe infection in immunocompromised patients, like children with severe combined immunodeficiency (SCID).

Case Presentation Summary: A full-term 9-month-old boy, born of unrelated parents, with irrelevant past medical history was admitted at a tertiary hospital with acute respiratory failure and pneumonia. *Pneumocystis jirovecii* was identified in bronchial secretions and subsequently SCID was diagnosed (homozygous CD3 δ mutation). After admission, due to persistent nonbloody diarrhea, stool specimens were collected and RV was the only pathogen identified. He had been vaccinated with RV monovalent attenuated vaccine (RV1, Rotarix®) at 2 and 3 months of age. The detection of RV RNA and further sequence and phylogenetic analysis proved to be the RV1 strain. RV1 was also detected in a peripheral blood sample. He underwent allogeneic hematopoietic cell transplantation (HCT) from non-related cord blood at the age 13 months, with a medullary response 16 days after HCT. The child maintained nonbloody diarrhea for 4 months after transplantation, and Rotavirus was still positive in stool samples during this period. After that time, diarrhea improved and the patient gained weight. At 12 months post HCT, RV was no longer detected in stool samples.

Learning Points/Discussion: Since the diagnostic screening of SCID is not available in our country and the rotavirus vaccine is administered early in life, the immunodeficiency may not yet have been diagnosed at the time of vaccination. With this case, we present a rotavirus vaccine strain systemic infection and persistent gastroenteritis in a child with SCID. The infection resolved after successful allogeneic HCT.

CHRONIC ACTIVE EPSTEIN-BARR VIRUS INFECTION: SUCCESSFUL HAPLOIDENTICAL STEM CELL TRANSPLANTATION OF TWO CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): CHRONIC ACTIVE EPSTEIN-BARR VIRUS INFECTION: SUCCESSFUL HAPLOIDENTICAL STEM CELL TRANSPLANTATION OF TWO CHILDREN

Background: Chronic active Epstein-Barr virus (CAEBV) disease is a rare disorder of unknown aetiology in which patients are unable to control EBV. Proliferation of EBV-infected T and/or NK-cells and elevated peripheral blood EBV-DNA is found in apparently immunocompetent individuals with persistent/recurrent infectious mononucleosis-like symptoms. Prognosis is poor due to progressive immunodeficiency, opportunistic infections, hemophagocytic lymphohistiocytosis (HLH), or associated malignancies. Hematopoietic stem cell transplantation (HSCT) is curative, however no standard treatment approach has yet been established. Hence we report on a successful HSCT with alternative haploidentical donors in two children with CAEBV.

Case Presentation Summary: Patients were diagnosed with CAEBV according to international guidelines. Disease onset, EBV-infected cells, viral loads, clinical manifestations and HSCT details are summarized in **Table 1**. Haploidentical HSCT was performed after an unsuccessful search for HLA-matched family or unrelated volunteer donors.

Table 1. Summary of two CAEBV patients treated with haploidentical stem cell transplantation

Patients					Regimens of HSCT								
Gender	EBV+ DNA in lymphocyte subsets	Clinical manifestations	EBV viral load (copies/ml blood)	Therapy pre-transplant	Reduced Toxicity Conditioning regimen (RTC)	Donor	HLA matched	Donor and Recipient EBV / CMV Serostatus	Cell numbers in transplant (cells/kg)	GvHD prophylaxis	Engraftment (d)	Chimerism (d)	Complications
Age (y) at disease onset / HSCT							Blood type			Infection prophylaxis			
Female													
7 / 7.5	T (CD4+, CD8+) NK (CD56+)	Fever, abdominal pain, hepatosplenomegaly, lymphadenopathy	Max. 50 x 10 ⁵ 0 from d+12	VP-16, RTX, DEX for fulminant necrotizing EBV hepatitis and HLH	FLU total 150 mg/m ² TREC total 42 g/m ² THIO total 10 mg/kg	Related haplo-identical	HLA 8/12 haplo-identical (mother)	Donor: CMV IgG+ EBV VCA IgG+, IgM-, EBNA+ Recipient: CMV IgG+ EBV VCA IgG+, IgM-, EBNA+	17.65 x 10 ⁸ CD34+ (+ 0.7 x 10 ⁸ CD3+ cell addback)	Post CY total 100 mg/kg CsA MMF GITD with COL, VANC, GENT, AMPH, ACYC (from d+11), ITTRA (from d+18), TMP/SMX (from d+18), IVIG	ANC (>0.5 G/L): d+17 (G-CSF from d+13) Platelet (>50 G/L): d+30	VNTR >99% donor cells (d+18 and d+41)	Haemorrhagic cystitis (I ¹ to CY; d+6) Mucositis III* (d+11) GvHD I* (skin; d+29)
Male													
2.5 / 3	T (CD4+, CD8+) NK (CD56+)	Fever, lymphadenopathy, tonsil enlargement, hepatosplenomegaly, polyserositis	Max. 3.3 x 10 ⁵ 75044 d+8 1500 from d+60	VP-16, RTX, DEX for EBV-triggered HLH	FLU total 150 mg/m ² TREC total 42 g/m ² THIO total 10 mg/kg	Related haplo-identical	HLA 8/12 haplo-identical (mother)	Donor: CMV IgG+ EBV VCA IgG+, IgM-, EBNA borderline Recipient: CMV IgG+ EBV VCA IgG+, IgM-, EBNA+	11.7 x 10 ⁸ CD34+ (+ 7 x 10 ⁷ CD3+ cell addback)	Post CY total 100 mg/kg CsA MMF GITD with COL, VANC, GENT, AMPH, ACYC (from d+1), ITTRA (from d+17), TMP/SMX (from start conditioning), IVIG	ANC (>0.5 G/L): d+16 Platelet (>50 G/L): d+21	FISH 100% donor cells (d+33)	HHV8 reactivation (d+2, → GAN) Fever and increase of EBV copies (d+8 max. 75044 copies/ml → DEX and RUX) CMV reactivation (d+70, max. 2036 copies/ml → VALGAN)

ACYC, acyclovir; ANC, absolute neutrophil count; AMPH, oral amphotericin B; COL, colistin; CsA, cyclosporine A; CTL, cytotoxic T lymphocyte; CY, cyclophosphamide; d, day; DEX, dexamethasone; FISH, fluorescence in situ hybridization; FLU, fludarabine; (VAL-)GAN, (val-)ganciclovir; GENT, gentamycin; GITD, gastrointestinal decontamination; GvHD, graft-versus-host disease; HLH, hemophagocytic lymphohistiocytosis; ITTRA, itraconazole; NK, natural killer cells; RTC, reduced-toxicity conditioning; RTX, rituximab; RUX, ruxolitinib; T, T lymphocyte; TMP/SMX, trimethoprim-sulfamethoxazole; THIO, thiopeta; TREC, treosulfane; VANC, vancomycin; VNTR, variable number of tandem repeats; VP-16, etoposide; y, years

Learning Points/Discussion: CAEBV is a high-mortality, high-morbidity disease with life-threatening complications. Chemotherapy according to HLH-2004 protocol (including etoposide) rendered the disease vastly inactive pre-transplant, however rituximab response was insufficient. Reduced toxicity conditioning (RTC) and haploidentical HSCT eradicated EBV-infected cells and achieved engraftment without severe regimen-related toxicity, EBV-reactivation or chronic GvHD. Post-transplant EBV reactivation was successfully treated with the JAK-inhibitor ruxolitinib. Favorable outcome is explained by early intervention with etoposide-containing protocols, few RTC-related complications, the use of EBV-positive, haploidentical donors with T-cell replete grafts and regular monitoring of EBV-load post-transplant to steer immunosuppression.

A CLINICAL CASE OF X-LINKED HYPER-IGM SYNDROME

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): A clinical case of X-linked hyper-IgM syndrome

Background: Some primary immunodeficiencies (PID) and intestinal diseases in children have similar phenotypic manifestations. IBD are complex multigenic disorders, but certain forms may be a manifestation of PID, respectively, the correct diagnosis is important for treatment.

Case Presentation Summary: A boy aged 1 year 4 months sought medical help With complaints of fever, the child refuses to eat, diarrhea. On clinical examination, aphthae were present on the oral mucosa. As a result of the examination: neutropenia, CRP 31 mg/l. Against the background of the treatment (antibiotic therapy, octagam), a slight improvement in the condition of the boy was noted, however, after a short period of relief, complaints again appeared about fever, diarrhea, aphthous stomatitis, weight loss. Despite the therapy, the manifestations of aphthous stomatitis, enterocolitis, recurrent fever persisted for 3 months, and protein-energy deficiency increased. As a result of examinations, the toxins of Clostridium Difficile A and B were positive, calprotectin - 223-1000 µg / kg. According to the immunogram, a decrease in IgG levels of 1.7 g / l., IgA 0.05 g / l. Colonoscopy: erosive-ulcerative ileo-colitis. Biopsy: focal active intermittent colitis without signs of chronicity. NGS: A Variant c. 430G> A (p. Gly144Arg), was identified in CD40LG(hemizygous). The CD40LG gene is associated with X-linked hyper-IgM syndrome (HIGM).

Learning Points/Discussion: Since primary immunodeficiency states can manifest themselves with malabsorption syndrome, diarrhea, IBD, pediatricians should be more alert and take into account in the differential diagnosis of these conditions and the choice of treatment regimens.

COVID-19 IN MYD88-DEFICIENCY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): COVID-19 in MYD88-deficiency

Background: Defects in myeloid differentiation factor 88 (MyD88) impair toll-like and interleukin-1 receptor mediated immunity, leading to high infection-related mortality (around 50%) in the first decade of life. Patients with MyD88-deficiency are specifically prone to invasive bacterial infections and resistance to viruses seems normal. In contrast, MyD88 is required to protect mice from lethal infection with a mouse-adapted SARS-Coronavirus (SARS-CoV). The role of MyD88 in infections with the currently circulating SARS-CoV-2, which in children is mostly associated with a mild course is currently unknown.

Case Presentation Summary: A female 9-year old girl with a known p.E53del loss-of-function mutation of MyD88, which led to multiple invasive bacterial infections in the past, presented in the emergency department with fever, pharyngitis and mild respiratory distress, while otherwise clinically stable. At this stage the patient was on regular antibiotic prophylaxis without immunoglobulin therapy. SARS-CoV-2 RT-PCR from a nasopharyngeal swab was positive (Ct 25), while the further laboratory results showed inflammation. Since invasive bacterial infections could not be excluded antibiotic treatment with piperacillin/tazobactam was initiated and the patient was transferred to intensive care. On day 4 she became oxygen-dependent and chest X-ray revealed bilateral alveolar consolidations with peripheral distribution, which was reminiscent of ARDS in COVID-19. Subsequently remdesivir 100mg (2,5mg/kg) once daily for 4 days and on day 4 convalescent-plasma was administered. Repeated blood cultures remained sterile. Supportive dexamethasone and heparin were given. The patients condition improved. She was transferred to a regular ward on day 8, and discharged on day 11 with prophylactic low molecular-weight heparin and sultamicilline and cotrimoxazole.

Learning Points/Discussion: MyD88-deficiency may be a risk factor for severe COVID-19 in children. The therapeutic potential of antibiotics for bacterial coinfection, steroids, remdesivir, convalescent plasma and monoclonal antibodies remains unclear.

FATAL DISSEMINATED INFECTION FROM FUSARIUM PROLIFERATUM IN A CHILD WITH ACUTE MYELOID LEUKEMIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): Fatal disseminated infection from a hyphomycetes in a child with acute myeloid leukemia

Background: We describe an interesting infection, from *Fusarium proliferatum*, in an immunocompromised patient who died despite the appropriate treatment with antifungal agents he received. This infection is really rare worldwide even in children suffering from hematological malignancies. The exact diagnosis depends on the laboratory isolation of the mold. .

Case Presentation Summary: Introduction. *Fusarium* spp. are hyphomycetes that cause superficial, locally invasive and disseminated infections in immunocompromised patients. **Intervention.** An 8-year-old boy with undifferentiated M0 AML, monosomy 7 and CD33 +, resistant in the initial treatment AML BFM 2004, MRD 50%, was treated with fludarabine, idarubicin, cytarabine and gemtuzumab-ozogamicin. After the second cycle due to severe neutropenia voriconazole was administered at a prophylactic dose. During prolonged severe neutropenia (ANC: 0 cells/cu.mm) he had a febrile episode with symptoms and findings from the respiratory system. Chest CT showed pleural fluid, diffuse nodular and fibrotic lesions, and blurred glass image on both sides. The dose of voriconazole was increased to 15 mg/kg/day while liposomal amphotericin B was added at a dose of 5 mg/kg/day, simultaneously with antibiotics. Days later, while was still febrile, skin lesions appeared as erythematous maculopapular eruption with a necrotic center and 3-20mm in diameter, with rapid dissemination throughout the body. *Fusarium proliferatum* was isolated from the culture of the lesions. The value of 1,3b-d glycan in 2 measurements was abnormal (360 ng/ml). Neutropenia persisted despite daily G-CSF administration and the patient died, although the fungus was in vitro sensitive to the antifungal drugs administered. .

Learning Points/Discussion: *Fusarium* spp. are rare causes of invasive fungal infections, with very high mortality, in patients with hematological malignancies. Corticosteroid use and prolonged neutropenia are negative prognostic factors, while prophylactic use of antifungals seems not to be effective

CUTANEOUS MUCORMYCOSIS IN A 10-YEAR-OLD FEMALE WITH ACUTE LYMPHOBLASTIC LEUKEMIA (ALL)

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - INFECTIONS IN IMMUNOCOMPROMISED PATIENTS

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Title of Case(s): A RARE CUTANEOUS FUNGAL INFECTION IN A 10-YEAR-OLD FEMALE WITH ACUTE LYMPHOBLASTIC LEUKEMIA (ALL)

Background: Mucormycosis is a life-threatening infection in immunocompromised patients, especially those with hematologic malignancies. Cutaneous mucormycosis is caused by fungal spore inoculation into the dermis. The rapid expansion of the infection reflects the formation of tissue infarcts by hyphal infiltration of the microvasculature.

Case Presentation Summary: We report a case of a 10-year old female with common (CALLA+) Acute Lymphoblastic Leukemia {Immunophenotype: CD19+, cCD79a+, CD10+, cμ-, TdT+, cytogenetic analysis of blasts: normal, FISH analysis: absence of TEL-AML1[t(12;21)], AF-4/MLL[t(4;11)], BCR/ABL, MLL(11q23) rearrangements: absent}. On d1 of hospitalization, she underwent a vigorous Hickman catheter placement. On d28, she developed an erythema, along the subcutaneous tunnel of the catheter, which rapidly progressed into a dark-colored lesion. On d31, during the care of the catheter exit site, a dark-colored necrotic eschar was detached. Cutaneous mucormycosis was suspected and liposomal amphotericin B (LAmB) (8mg/Kg/d) was immediately initiated. On d35, the girl underwent a Hickman catheter replacement. During catheter removal, necrotic tissue was once more detached, this time along the catheter's subcutaneous tunnel. The procedure was followed by aggressive surgical debridement with clean margins. The detached tissue and the Hickman catheter's tip were cultured. On d41, molecularly identified *Rhizopus microsporus* was isolated (MIC 0.5mg/L for LAmB and 1mg/L for Posaconazole). The patient continued receiving LAmB and underwent repeated surgical debridement of the lesion until healing. From then on, she received LAmB as secondary prophylaxis during severe neutropenia, until the complete remission of the primary disease. Posaconazole was not preferred for the prophylaxis regimen, due to the relatively increased MIC value (1mg/L).



Learning Points/Discussion: The complete resolution of the infection in this case reflects the importance of prompt diagnosis and timely administration of high-dose appropriate antifungal treatment, together with aggressive surgical debridement in immunocompromised hematologic patients with cutaneous mucormycosis.

SALMONELLA ENTERICA MENINGITIS IN A 4-MONTH OLD INFANT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MENINGITIS/ENCEPHALITIS

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Title of Case(s): *Salmonella enterica* meningitis in a 4 month old infant.

Background: *Salmonellae* are gram negative, facultatively anaerobic *Enterobacteriaceae* that consist of two species, *Salmonella enterica* and *Salmonella bongori*. Invasive disease, such as meningitis, results in hospitalization, short and long term complications and high mortality rate.

Case Presentation Summary: A four month old girl was admitted to a district hospital because of diarrhea and fever. Laboratory tests, including stool cultures did not reveal any abnormality. She was treated with ceftriaxone for 3 days and discharged on oral antibiotics for 5 days. At the end of the treatment she was readmitted with fever, diarrhea, vomits and irritability. Cerebrospinal fluid examination revealed pleocytosis (2900 cells) with predominance of polymorphonuclears, and *S. enterica* was isolated. Empirical therapy with ceftriaxone (100mg/kg OD), amikacin and dexamethasone was started. Because of signs of intracranial hypertension, she was transferred to our tertiary pediatric department. Cerebral MRI revealed subarachnoid space dilatation. Repeated lumbar puncture showed decrease of cells number and negative cultures. Due to persistent fever, amikacin was stopped and ciprofloxacin was added. Increased head circumference led to a new cerebral MRI, in which ventricular dilatation and extraparenchymal subdural collection were noted. Ceftriaxone was changed to cefotaxime (300mg/kg/day in 4 divided doses). She remained clinically well and her cerebral MRI a week later showed mild improvement of the subdural collection. She completed 6 weeks of IV antibiotics. She is due to have an immunodeficiency work-up.

Learning Points/Discussion: *Salmonella* meningitis is very uncommon in industrial countries nowadays and the optimal management is yet not well established. Early recognition of complications is warranted and long term follow up of these children is necessary.

CEREBRAL VENOUS THROMBOSIS AND PNEUMOCOCCAL MENINGITIS IN A 4-YEAR-OLD CHILD AFTER ACUTE OTITIS MEDIA: A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MENINGITIS/ENCEPHALITIS

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Title of Case(s): CEREBRAL VENOUS THROMBOSIS AND PNEUMOCOCCAL MENINGITIS IN A 4-YEAR-OLD CHILD AFTER ACUTE OTITIS MEDIA: A CASE REPORT

Background: Venous thrombosis of the cerebral sinuses is rare in children and its incidence is estimated at 0.67 cases/100000 children per year. The most common predisposing factors in previously healthy children, are acute otitis media and acute mastoiditis. In these cases, it is described as otogenic venous thrombosis and refers to the formation of thrombi in the sigmoid or transverse sinus (OLST), with possible extension to the internal jugular vein. Although the incidence of OLST is low, in 9-29% of cases, its consequences are severe as well as life-threatening.

Case Presentation Summary: We describe a case of a 4-year-old boy, who presented pneumococcal meningitis and cerebral venous thrombosis, after an episode of acute otitis media. The boy was fully vaccinated for his age and he had received 4 doses of conjugated 13-potency pneumococcal vaccine. The child came to the hospital for further investigation, due to continuation of fever and severe frontal headache, while he was receiving 4 days of cefprozil orally for acute otitis media. At the time of admission, he showed clinical signs of meningitis with cervical stiffness. Laboratory confirmation of meningitis was performed with lumbar puncture, where it was detected- in a sample of cerebrospinal fluid- *Streptococcus pneumoniae*, using the molecular test PCR FilmArray Meningitis/Encephalitis Panel. The child was treated with intravenous ceftriaxone. Due to the complicated acute otitis media, a magnetic resonance imaging of the brain was performed, where cerebral venous sinus thrombosis was found. He received a 6-month course of anticoagulant treatment.

Learning Points/Discussion: Cerebral venous thrombosis is a rare condition in children and difficult to be suspected, but pediatricians have to be alert in order to early diagnose and treat the patients properly, avoiding its severe and life threatening complications.

THE SIGNIFICANCE OF USING GREEN COCONUT WATER (*COCOS NUFERA L.*) TO AVOID THE INCIDENCE OF SEVERE DEHYDRATION IN THE PEDIATRIC PATIENT WITH PROFUSE DIARRHEA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MODELLING STUDIES

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Title of Case(s): The Significance of Using Green Coconut Water (*Cocos Nufera L.*) to Avoid The Incidence of Severe Dehydration in The Pediatric Patient with Profuse Diarrhea

Background: In Indonesia, green coconut water is very easy to find. Besides being delicious and refreshing, the benefits of green coconut water can be used as body rehydration In pediatrics comes from several ingredients in coconut water, namely calcium, magnesium, chloride, potassium, phosphorus, and phosphate. Its delicious taste is very appropriate to use to relieve symptoms of nausea and vomiting that commonly accompany patients with profuse diarrhea and mother with hyperemesis gravidarum. In Islam, the benefits of green coconut water has mentioned in hadist and Qur'an Surah Ibrahim: 26.

Case Presentation Summary: Methods: patients with prolonged diarrhea accompanied by nausea and vomiting who came to our general practitioner were divided into 2 groups. The first group used ORS and the second with green coconut water.

Result: 9 children with dehydration due to gastroenteritis showed improvement in their condition after 4-6 days of ORS administration, while 10 children experienced improvement on the 1-3 days of giving green coconut water. From the significance test, the result was the significant value $t < 0,05$. So that there is a significant value from 2 different treatments.

Learning Points/Discussion: Conclusion: There is an accelerated improvement in the body condition of children who are given green coconut water such as, crown, eyes, capillary refill time, and skin turgor accompanied by improvements in electrolyte levels, namely sodium, potassium, calcium, magnesium, chloride, and phosphate which occur in pediatric patients with dehydration due to profuse diarrhea compared to those given ORS. So the researchers suggest shifting the chosen ORS to coconut that more promising and challenging to face severe dehydration in emergency cases.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN ASSOCIATED WITH COVID-19, RELAPSE AFTER WITHDRAWAL OF STEROIDS TREATMENT?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C)

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Title of Case(s): MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN ASSOCIATED WITH COVID-19, RELAPSE AFTER WITHDRAWAL OF STEROIDS TREATMENT?

Background: MIS-C an uncommon complication of COVID-19 has similar presentation to Kawasaki disease or toxic shock syndrome, is a process with delayed immune activation leading to cytokine burst. In recent months, multiple case series have been published. However, little is known about the evolution in a long term. It's necessary to study possible relapses after withdrawal of immunosuppressants used in the acute phase. We present 8-year-old patient who showed MIS-C and after withdrawal of steroid treatment, he'd a new episode of fever, ileitis and increased blood cardiac and inflammatory parameters.

Case Presentation Summary: We present 8-year-old patient who was diagnosed of MIS-C, which started with fever, diarrhea, macular exanthema, ileitis, splenomegaly and shock. In the blood test, he showed anemia, low platelet, increased CRP, IL6 and D-Dimer. Echocardiography was normal. He required admission in PICU where received inotropics, antibiotics, single dose of immunoglobulins and steroids (2mg/kg/day). Steroids were maintained for 14 days until normalization of inflammatory parameters (BNP, CRP, D Dimer) with progressive declining in 3 weeks. At 72 hours after finishing treatment, fever, abdominal pain, ileitis, splenomegaly and hypotension appeared again. In blood analysis was verified increase of CRP, IL6, D-Dimer and BNP. We started with iv corticosteroids with clinical improvement 24h later. A cardiac MRI was made with normal result. Prior to discharge on the sixth day, blood tests and abdominal ultrasound were normal

Learning Points/Discussion: The prognosis of MIS-C is uncertain and long-term follow up studies are lacking. IVIg, iv steroids or biologics are used for treatment. It's unknown the treatment in case of relapse, nevertheless we want to reflect the good and early answer in our patient only with the use of steroids. Further studies are required to evaluate these treatment options.

A CASE SERIES OF MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN WITH FAVORABLE OUTCOMES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C)

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Title of Case(s): Favorable outcomes with basic immunomodulatory treatments in MIS-C

Background: In children, COVID-19 is usually mild. However, in April of 2020, reports from the United Kingdom documented a presentation in children similar to incomplete Kawasaki disease or toxic shock syndrome. The condition has been termed multisystem inflammatory syndrome in children (MIS-C). We report 12 children diagnosed with MIS-C until February 2021, in Dokuz Eylül University Hospital.

Case Presentation Summary: The median age was 7 (min-max: 4-17) years, 58% were male. Seven (%58,3) reported contact with a symptomatic individual presumptive of Covid-19. Time interval from contact to MIS-C diagnosis was 4 to 8 weeks. All patients were febrile. Ten patients had gastrointestinal (%83) and 4 patients (%33) had respiratory tract infection symptoms. All cases were SARS-CoV-2 PCR negative. All except one were SARS-CoV-2 IgG/IgM positive. One patient met Kawasaki Disease criteria. Five cases had heart failure and shock. Two patients experienced cardiac arrhythmia (sinus bradycardia, first degree AV block). One per each developed acute renal and respiratory failure. One patient was misdiagnosed initially as acute appendicitis but pathologic examination showed only lymphoid hyperplasia. One patient developed encephalopathy which presented with headache, hallucinations and transient paralysis on the right arm. Eight patients needed inotropic agents. One patient needed invasive and two needed noninvasive mechanical ventilation. Two children received only intravenous immunoglobulin, one child only received methylprednisolone and eight patients received both. The mean total length of hospital stay was 10,7 ($\pm 1,4$) days. No mortality was observed. All patients were in a good condition without morbidities at discharge.

Learning Points/Discussion: The time interval between the contact and MIS-C diagnosis may be longer than the diagnostic criteria. Acute appendicitis might be a misdiagnosis initially. The outcome of MIS-C is usually favorable despite critical illness.

A CHALLENGING CASE OF SEVERE BILATERAL PNEUMONIA, MYOCARDITIS AND PROLONGED FEVER IN A PATIENT WITH DOCUMENTED SARS-COV-2 INFECTION.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C)

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Title of Case(s): A Challenging Case of Severe Bilateral Pneumonia, Myocarditis and Prolonged Fever in a Patient with Documented SARS-CoV-2 Infection.

Background: Since October 2020 cumulative incidence of Coronavirus disease had risen rapidly in Latvia; first cases of COVID-19 associated Multisystem Inflammatory Syndrome in Children (MIS-C/PIMS-TS) were documented in December 2020.

Case Presentation Summary: Eight years-old patient presented with unremitting fever and worsening respiratory distress(RD) on day 15 of illness. Chest X-Ray(CXR) showed bilateral pneumonia, blood tests revealed CRP of 198mg/L, lymphopenia, thrombocytopenia, anaemia. Patient had episodes of fever of unknown origin in 2016 and bilateral pneumonia with prolonged fever in 2018 without laboratory evidence of immunodeficiency(ID). On day 16 patient had positive SARS-CoV-2 RNA test and severe RD requiring supplementary oxygen. He received cefotaxime, clindamycin and azithromycin with minimal decrease in inflammatory markers and no clinical improvement. Repeated blood, urine cultures were negative. Low-dose dexamethasone and prophylactic enoxaparin were added. Persistent high CRP, lymphopenia, minor skin and mucosal changes, decreasing Hb and albumin, elevating pro-BNP, D-Dimer and fibrinogen levels were observed. Myocarditis signs on ECG and MRI, mesenteric lymphadenitis, hepatosplenomegaly developed. On day 24 IVIG (2g/kg total dose) was started because of suspected MIS-C. A marked decrease of RD and improvement on CXR followed, but fever remained. Fluconazole was added due to candiduria and positive Candida Ag in blood. On day 32 low-dose aspirin and anakinra were added (4mg/kg/day s/c increasing to 7mg/kg, then tapering; 15 days total). Cefuroxime added because of rising CRP, later switched to ciprofloxacin. Methylprednisolone 2mg/kg/day was initiated on day 39 (tapering over 30 days) with rapid clinical and laboratory improvement. Discharged on day 47.

Learning Points/Discussion: The clinical course had some features of MIS-C and Kawasaki-disease, however, without a desired effect after IVIG and anakinra administration. With previous history of fevers, underlying autoinflammatory syndrome/occult ID syndrome is also possible.

AN UNUSUAL DERMATOLOGICAL MANIFESTATION OF POST COVID SYNDROME

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C)

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Title of Case(s): Unusual Dermatological manifestation of Post Covid syndrome

Background: : SARS COV-2 although known to affect pulmonary system, can also affect other systems including cardiovascular, gastrointestinal , Renal , coagulopathies, cutaneous manifestations and multi system inflammatory syndrome .We present a post COVID-19 case that had features of Toxic epidermal necrolysis (TEN) without any other systemic complications. TEN is a life threatening systemic disease caused by immune system hypersensitive reactions.This case is an unusual dermatological manifestation of post covid syndrome ,not reported in literature till date

Case Presentation Summary: 15 years old male presented with fever of 15 days . On day 8 , developed vesiculobullous lesions over entire body including palms and soles, oral and nasal mucosa. He was treated with IV methylprednisolone, IV amoxicillin , without response Physical examination -generalized facial bulla, large areas of erosions over face, neck and trunk with purulent discharge involving >60% BSA. Targetoid lesions were present on palms, soles, skin tenderness was present in uninvolved areas. Oral, nasal mucosa was ulcerated. Eye examination showed diffuse conjunctival congestion, bilateral corneal epithelial defect. Diagnosis of Toxic epidermal necrolysis (TEN) was made ,but no drug triggers. started IV Ig . Covid RT PCR was negative . Had new onset fever, high grade; hypotension, Pus culture grew klebsiella pneumoniae ,. Anti-SARS CoV Antibodies were positive (29.94 COI), Mycoplasma IgM antibodies negative. . Blood counts -, thrombocytosis and lymphopenia, inflammatory markers were elevated with CRP: 79.9, d Dimer-2.15 ng/ml, IL-6-117pg/ml, LDH: 397 IU/L, Ferritin: 734.9 ng/ml. He responded well, skin lesion healed,

Learning Points/Discussion: Covid 19 associated Skin manifestations reported so far include morbilliform rash, urticarial, vesicular eruptions, acral lesions and livedoid eruptions and they are direct consequences of the infection. TEN as a manifestation of post covid syndrome has not been reported till date

HIGHLY VARIED CLINICAL SPECTRUM OF MIS-C AND ITS OUTCOME BASED ON TIMING OF INITIATION OF TREATMENT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C)

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Title of Case(s): Clinical spectrum of MIS-C and outcome in children: a single center study

Background: Multisystem inflammatory syndrome in children (MIS-C) is a rare and serious COVID 19 manifestation characterized by generalized inflammatory response including inflammation of heart, blood vessels, lungs, kidneys, brain, skin, eyes and gastrointestinal system. We present our case series of varied clinical spectrum of MIS-C, which is unique in age of presentation, systems involved other than commonly reported in literature and outcome. In this COVID-19 pandemic our study will add in previous knowledg regarding MIS-C.

Case Presentation Summary: There were six cases of MIS-C in children admitted in pedatric department ,children hospital ,pakistan institute of Medical sciences Islamabad. These 6 cases fullfilled the criteria for MIS-C. Mean age of presentation was 7.66 + 3.83 years (1-12 year), male predominant with M:F 5:1. Two of them presented with typical MIS-C having fever, rash,conjuctiviitis, desquamating peri-ungula rash carditis. one of them presented as systemic onset juvinile idiopathic arthritis,one as meningo-encephalitis, one with post-viral encephalopathy and one pancreatitis and diabetic ketoacidosis. Two of them were COVID PCR positive,three had positive antibodies and one had infected parents.Two out of them were unfortunately expired ,one with severe myocarditis and other with severe pancreatitis with multiorgan failure. One of them is live with coronary aneurysm and rest three are living without complications. All of them were given IVIG at different stages of diseases, steroids annd supportive symptomatic care.

Learning Points/Discussion: MIS-C is a serious consequence of the covid 19 in pediatric age group. Carditis and coronary artry involvement were not only life threatening presentation. CNS involvement ,arthritis, and pancreatitis can be sole presenttion in MISC. Timing of IVIG and steroids therapy make agreat difference in reducing mortality & morbidity in MIS-C

DISSEMINATED TUBERCULOSIS WITH FOCAL ADHESIVE PERITONITIS IN A PREVIOUSLY HEALTHY ADOLESCENT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MYCOBACTERIA

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Title of Case(s): Disseminated tuberculosis with focal adhesive peritonitis in a previously healthy adolescent

Background: Tuberculosis (TB) is the most common cause of infection-related death worldwide. Disseminated TB is rare in children and adolescents. Abdominal involvement may occur, but focal adhesive peritonitis is less common.

Case Presentation Summary: A previously healthy, 15-year-old boy from Angola presented with a 2-month evolution of fever, abdominal pain, diarrhoea and 20% weight loss. He was previously admitted in another hospital with diagnosis of septic shock of abdominal origin and received intravenous antibiotic therapy. Physical examination revealed an emaciated appearance and moderate sarcopenia, pale mucous membranes, submandibular adenopathy, abdominal distention, pain on palpation, palpable mass, and little depression in the left quadrants. He had a hypochromic microcytic anaemia (Hb 6,3g/dL), leukocytosis (19400/uL) with neutrophilia, hypoalbuminemia and increased sedimentation rate (89mm/h) and C-reactive protein (104,6mg/L). CT-scan revealed mediastinal adenopathic conglomerates, right pleural infiltrative nodularity, hepatomegaly, thickening of peritoneum and small intestine and a localized hydropneumoperitoneum. Contained intestinal perforation was assumed and started therapy with cefotaxime, gentamicin and metronidazole. Because of severe malnutrition parenteral nutrition was necessary. Tuberculin skin test was positive (15mm), IGRA quantiferon inconclusive, IGRA T-SPOT negative and *Mycobacterium tuberculosis* complex was isolated from a submandibular adenopathy. HIV infection was excluded. Diagnosis of disseminated TB was assumed and started on isoniazid, rifampicin, pyrazidamine and ethambutol. Due to lack of improvement after 23 days, levofloxacin was added. The patient showed slowly but marked recovery after 3 months of levofloxacin and anti TB therapy. He is currently asymptomatic under anti TB therapy.

Learning Points/Discussion: Diagnosis of disseminated TB can be difficult, and a high index of suspicion on a severely debilitated patient allows prompt initiation of empirical therapy. The resolution of disseminated tuberculosis is slow, however the prognosis is excellent with early diagnosis and adequate therapy.

BONE TUBERCULOSIS IN PEDIATRIC POPULATION IN A TERTIARY CARE HOSPITAL: A 13 YEAR REVIEW

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MYCOBACTERIA

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Title of Case(s): BONE TUBERCULOSIS IN PEDIATRIC POPULATION IN A TERTIARY CARE HOSPITAL: A 13 YEAR REVIEW

Background: The WHO estimates 10 million newly diagnosed tuberculosis (TB) cases in 2019, 12% in children under 15 years. Extrapulmonary disease accounts for 16%, 10-35% showing musculoskeletal involvement. Bone TB is rare in developed countries, with limited data, especially in pediatric population. We performed a retrospective observational study in all pediatric patients (0-18 years old) diagnosed with bone TB in a 13-year period (from 2008 to 2020) in a tertiary-care hospital, in Lisbon. We aim to assess epidemiology changes and clinical characteristics.

Case Presentation Summary: We identified 18 patients with a median age of 10 years (6-14.8), 66.7% male. 88.9% were foreign-born, most from portuguese-speaking african countries. Chronic disease was present in 5.6% and none had HIV. The mean time until diagnosis was 14 months. The most common symptoms were pain (77.8%), fever (50%) and established deformity (44.4%), 27.7% reporting abnormal gait. Vertebral TB was present in 72.2%, 46.2% being multifocal. Extra-vertebral bone TB affected 55.6%, which 50% showed concomitant vertebral involvement. 11.1% had pulmonary TB. Diagnostic positive procedures included TST (50%), IGRA (55.6%), compatible histology (33.3%), positive polymerase chain reaction in 44.4% and Mycobacterium tuberculosis isolation (38.9%), with 28.6% resistant to isoniazid. All patients completed antituberculous drugs for a median of 12 months (12-13), of which 11.1% showed toxicity, and 61.1% were submitted to surgery (45.5% vertebral stabilization). The mean follow-up time was 32.5 months. Local acute complications occurred in 83.3% and sequelae at 12 months follow-up were 50%, of which 55.5% were foreign-born sent to Portugal to receive medical treatment.

Learning Points/Discussion: Pediatric bone TB is a rare but significant entity with high morbidity, requiring long-term follow-up. Over the last decade, foreign-born TB seems to be increasing, with more acute complications and sequelae.

ASCITES...IT NEVER RAINS BUT IT POURS.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - MYCOBACTERIA

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Title of Case(s): Ascites...It never rains but it pours.

Background: Tuberculosis(TB) is the most prevalent infectious disease, affecting a third part of the world population. Abdominal TB, which is not as common as pulmonary, is a rare pulmonary TB complication.

Case Presentation Summary: A 17-year-old Moroccan girl presented to the emergency room with an exacerbation of four months abdominal pain and fever during 24 hours. She emigrated one year ago. She lost 10kg and she explained feeling liquid in her abdomen. Physical examination revealed ascites with peritoneal irritation in an hemodynamically stable patient. Laboratory findings were C-reactive protein 8,63mg/dL, Hemoglobin 10,6g/dL, Leukocytes 9,03x10³_u/mc (84,9% neutrophils), negative HIV. Abdominal ultrasound and CT showed intra-abdominal free liquid with retroperitoneal and mesenteric adenopathies compatible with carcinomatosis versus tuberculosis. Diagnosis paracentesis reported yellow liquid with glucose 45mg/dL, protein 5.9g/dL, ADA 145.5UI/L, serum-ascites albumin gradient <1.1g/dl. These findings including tuberculin skin test of 20mm and positive IGRA were consistent with peritoneal TB. Chest x-ray showed images suggestive of mediastinal lymphadenopathies and CT confirmed pulmonary affection. *M. tuberculosis* PCR in gastric aspirate, blood and ascitic fluid were negative. However, *M. tuberculosis* complex was isolated in ascitic fluid culture. Therefore, quadruple treatment was initiated. She persisted febrile during two weeks, until steroid therapy was started with progressive improvement. After one month of treatment, she was admitted because of vomiting and headache and the cerebral MRI reported an intracranial sinus thrombosis. Consequently, anticoagulant treatment was started. Currently, the patient is doing well.

Learning Points/Discussion: Symptoms of abdominal TB can be nonspecific and can simulate an acute abdomen, that can make the identification a challenge. Delaying the diagnosis causes an increase of morbimortality. The use of steroids in abdominal TB is controversial. Intracranial thrombosis is an exceptional TB complication.

TERM DCDA TWINS- PULMONARY HAEMORRHAGE,HYPOFIBRINOGENEMIA AND SUSPECTED SEPSIS AFTER REGULAR DISCHARGE FROM MATERNITY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NEONATAL SEPSIS

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Title of Case(s): Term DCDA twins- pulmonary haemorrhage,hypofibrinogenemia and suspected sepsis after regular discharge from maternity

Background: Pulmonary haemorrhage is an acute severe condition that is characterized by blood being discharged from the lungs, the upper respiratory tract and the trachea.

Case Presentation Summary: I am presenting term(37+5) DCDA twin males,with background of uncomplicated pregnancy,birth and postnatal period,that were both admitted to hospital on day 3 of life.Twin 2 underwent out-of-hospital arrest and was brought in emergency department(ED) via ambulance.At ED,resuscitation continued and during intubation attempts,large pulmonary haemorrhage was detected.Tranexamic acid was subsequently administered,along with septic screen and intravenous antibiotics.After intubation,he was transferred to PICU and his state was critical.He required high frequency oscillator and nitric oxide and remained intubated for ten days.CXR revealed bilateral changes consistent with pulmonary hemorrhage.The echocardiogram was normal and initial CT brain showed a right subdural hemorrhage with no neurological concerns.The patient developed AKI that resolved spontaneously and received five days of IVABx with infection screen being negative(TORCH, blood and urine culture,low CRPs,afebrile).In terms of haematology,initially he presented with coagulopathy(prolonged INR and hypofibrinogenemia),requiring multiple transfusions(FFP,platelets),fibrinogen,cryoprecipitate and tranexamic acid administration, along with vitamin K supplementation.Metabolic screen was normal.Twin 1 was also hospitalised in the paediatric ward with suspected sepsis as he was lethargic and had swallow breathing that day. Septic screen was performed and IVABx treatment was administered.He had low fibrinogen and prolonged INR as well and received fibrinogen concentrate and vitamin K supplements.Both neonates improved gradually and were discharged home having returned back to normal baseline.Haematology team explained that hypofibrinogenemia could be physiological due to age and both patients would be followed up by this team.

Learning Points/Discussion: Large pulmonary haemorrhage is a life-threatening condition that can occur abruptly too.Sepsis is a cause that should be always on the differential,even if it is not proven.

ENDOGENOUS ENDOPHTHALMITIS DUE TO *PSEUDOMONAS AERUGINOSA* BACTERAEMIA IN A GAMBIAN PRETERM NEONATE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NEONATAL SEPSIS

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Title of Case(s): Severe ophthalmic bacterial disease as a presentation of late-onset sepsis in a Gambian preterm neonate

Background: Endogenous endophthalmitis is a suppurative inflammation of the inner eye structures and an ophthalmic emergency. Although rare in neonates, the most common bacterial aetiology is *Pseudomonas aeruginosa* and the ophthalmic presentation may precede or accompany neonatal sepsis. Recognising the clinical appearance of endophthalmitis should prompt high index of suspicion for *Pseudomonas* infection and prompt empirical anti-pseudomonal antibiotics with urgent ophthalmology review.

Case Presentation Summary: A 32 week gestation neonate was born at a Gambian regional hospital with birth weight 1202g, following an uncomplicated twin pregnancy and vaginal delivery. He was transferred to the national neonatal unit at Edward Francis Small Teaching Hospital aged 4h for management of respiratory distress, feeding support and kangaroo care. Serous discharge from the left eye began at age 10 days. Despite application of tetracycline eye ointment, profuse serosanguineous suppuration progressed with swollen eye-lids, conjunctival hyperaemia and oedema, corneal haze and altered clarity of the ocular media of the left eye. He rapidly deteriorated with fulminant septic shock and died 48h after eye symptoms first began, despite high dose ceftriaxone, gentamicin, fluid resuscitation and oxygen support. Leucopaenia (5.6×10^9), anaemia (8.3g/dL) and thrombocytopaenia ($48 \times 10^9/\mu\text{L}$) were present. Blood and eye swab cultures isolated *Pseudomonas aeruginosa*, susceptible to Gentamicin, Ciprofloxacin and Ceftazidime on disc diffusion testing.

Learning Points/Discussion: The classical external signs of endophthalmitis should prompt high index of suspicion for this potentially fatal condition. *Pseudomonas aeruginosa* is a common bacterial cause of endophthalmitis with high virulence due to lipopolysaccharides. Systemic anti-pseudomonas antibiotics and urgent ophthalmology review to consider intra-vitreous antibiotics and vitrectomy should be promptly initiated.

MIXTA GAVINIAE CAUSING NEONATAL SEPSIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NEONATAL SEPSIS

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Title of Case(s): An unusual gram-negative causing neonatal sepsis

Background: *Mixta gaviniae*, previously classified as *Pantoea gaviniae*, is a gram-negative, facultatively anaerobic, rod-shaped bacteria within the family Enterobacteriaceae. It was initially identified from infant formula and its production environment. It has not previously been associated with human infection.

Case Presentation Summary: This patient was born prematurely at 24+6 weeks following spontaneous preterm labour. He was intubated for respiratory distress syndrome and received surfactant therapy. Empiric antibiotics for possible early-onset sepsis were commenced but ceased at 36 hours following negative blood cultures. Following establishment of enteral feeds with expressed breast milk, he had an unsuccessful trial of extubation on day 9. On day 10, with increased lethargy, pallor, and tachycardia, antibiotics (flucloxacillin and gentamicin) were commenced for late onset sepsis. Blood gas demonstrated mixed acidosis of pH 6.79, pCO₂ 80mmHg, HCO₃ 12mmol/L, lactate 17mmol/L, BE -23mmol/L. Full blood count showed anaemia, leukopenia with neutropenia (0.44x10⁹/L), and thrombocytopenia (platelets 38x10⁹/L); CRP was 309mg/L. Blood culture and umbilical skin swab grew *Mixta gaviniae* resistant to amoxicillin but sensitive to ciprofloxacin, gentamicin and meropenem. Antimicrobial cover was changed to meropenem, and fluconazole was added to cover for possible candida infection with persistent thrombocytopenia and hypotension. Repeat blood culture was negative. Due to worsening multi-organ dysfunction (hypotension, acute kidney injury, respiratory failure), refractory seizures, and cranial imaging demonstrating significant cerebral oedema and parenchymal white matter changes, care was re-directed on day 14.

Learning Points/Discussion: There was no history of exposure to infant formula or fortifier, nor any indwelling lines at time of deterioration. There was skin colonization with *Mixta gaviniae*. Due to concerns of inducible β -lactamase-mediated resistance to third-generation cephalosporins characteristic of Enterobacteriaceae, meropenem was selected, with negative blood culture after treatment. *Mixta gaviniae* can cause opportunistic infection in neonates.

ENDOGENOUS ENDOPHTHALMITIS RESULTING IN EVISCERATION AS A GRAVE SEQUEL OF NEONATAL SEPSIS DUE TO ROTHIA DENTOCARIOSIA INFECTION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NEONATAL SEPSIS

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Title of Case(s): Endogenous Endophthalmitis resulting in Evisceration as a grave sequel of Neonatal Sepsis

Background: Systemic bacteremia is a risk factor for endogenous endophthalmitis with devastating sequelae resulting in blindness and loss of the eyeball. We report a 2 week old neonate with sepsis with an inherited bleeding disorder complicated by endophthalmitis resulting in evisceration of the affected eye due to *Rothia dentocariosa*.

Case Presentation Summary: We report a 2-week old male neonate, with family h/o congenital hypofibrinogenemia, who presented with spontaneous umbilical-stump bleeding. Baby was febrile, pale with Hb 7g/dl, WBC 16x10⁹/L, C-Reactive Protein 115 mg/dl. Coagulation was deranged (PT > 300 sec, APTT >180 sec, fibrinogen level 0.8 mg/dL) confirming *congenital hypofibrinogenemia*. Cefotaxime and cloxacillin were initiated with cryoprecipitate and packed-red-blood-cell transfusions. Within 24 hours, blood culture isolated *E. coli*. Gentamicin was initiated. (Cloxacillin discontinued). Cryoprecipitate was regularly administered (fibrinogen>100-120 mg/dL). No further bleeding occurred. On fifth day, neonate developed left eye redness and swelling. Ophthalmologic evaluation revealed diagnosis of endogenous endophthalmitis-panophthalmitis. Topical fortified eye drops were used. Antibiotics were upgraded (Meropenem, Vancomycin). Eye discharge revealed no growth. MRI brain/orbit confirmed the diagnosis (Figure 1A&B) and revealed presence of subdural empyema (Figure 2). Bifrontal craniotomy with evacuation of subdural empyema was done. Blood culture grew *Gram-positive bacillus Rothia dentocariosa* (sensitive to Clindamycin, Vancomycin) on sixth day. Eye symptoms showed gradual resolution. The cornea perforated spontaneously with partial extrusion of intraocular contents on thirteenth day. A week later, evisceration of left eye with prosthetic eye replacement was done.

Learning Points/Discussion: A high index of suspicion is required to diagnose endophthalmitis. Association of bleeding disorder with sepsis in neonates might add to risk of progression of endophthalmitis with guarded prognosis. This report adds further evidence that *Rothia dentocariosa* can cause serious invasive disease.

COMPASSIONATE USE OF CEFIDEROCOL FOR VIM METALLO-BETA-LACTAMASE-PRODUCING PSEUDOMONAS AERUGINOSA INFECTION IN A TODDLER WITH BURKITT LYPHOMA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL ANTIMICROBIAL TREATMENTS

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Title of Case(s): *Pseudomonas aeruginosa* bloodstream infection: what to do when there are no options

Background: Multidrug-resistant bacterial infection is a challenge for clinicians, especially in Pediatrics due to the lack of effective therapy available for children. We present the case of a child with a VIM Metallo- β -lactamase-producing *Pseudomonas aeruginosa* bloodstream infection.

Case Presentation Summary: Two-year-old girl admitted due to febrile neutropenia. She had been diagnosed with stage IV Burkitt lymphoma five months before, complicated with pulmonary tuberculosis one month later. She was receiving chemotherapy and tuberculostatic treatment (isoniazid, pyrazinamide, ethambutol and levofloxacin; rifampicin was discontinued due to liver toxicity). One month before admission, she had experienced an episode of bacteremia caused by VIM Metallo- β -lactamase-producing *P.aeruginosa* following a chemotherapy cycle. Despite *in-vitro* resistance to all antibiotics tested (cephalosporins, piperacillin/tazobactam, quinolones, aminoglycosides, colistin, carbapenems, and also the combination of aztreonam with ceftazidime-avibactam), the patient received high-dose colistin for 14 days and the infection was controlled. In this episode of febrile neutropenia, she initially received cefepime, colistin, and granulocyte colony stimulating factor. After 5 days, fever persisted so cefepime was switched to high-dose meropenem and teicoplanin. One day later, she developed a skin lesion suggestive of ecthyma, and treatment was changed to cefiderocol (60 mg/Kg/8 hours) because of suspected uncontrolled bloodstream infection. The day after starting cefiderocol, she became afebrile and neutrophil count increased over 500/mL within the following 48 hours. She completed 7 days of treatment uneventfully. VIM-producing *P.aeruginosa* grew from the eschar, which was sensitive to cefiderocol (cefiderocol disk 30 μ g revealed 22 mm).

Learning Points/Discussion: Data about cefiderocol use in children are scarce, although it can be useful in severe infections caused by multidrug-resistant organisms. In this case, ecthyma was controlled when cefiderocol was started, but coincident with neutrophil recovery. More information is needed about novel antibiotics in pediatrics.

TREATMENT OF PROSTHETIC VALVE ENDOCARDITIS USING FOSFOMYCIN-BASED COMBINATIONS: THE EXPERIENCE OF A SINGLE CENTRE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL ANTIMICROBIAL TREATMENTS

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Title of Case(s): Treatment of prosthetic valve endocarditis using Fosfomycin-based combinations: the experience of a single centre

Background: Fosfomycin is a broad-spectrum bactericidal antibiotic. In vitro studies have reported a synergistic effect with many antimicrobials and an effective biofilm penetration. It is suggested as part of a combination therapy in prosthetic valve endocarditis (PVE). We describe our experience in the use of intravenous fosfomycin for PVE.

Case Presentation Summary: Between June and October 2020 we employed Fosfomycin-based combination therapy for PVEs. All patients had a congenital cardiac defect for which they required a prosthetic pulmonary valve. They developed late PVEs. We used the dosage of 100 mg/kg tid (maximum dose 4 g tid). Patient A had a teicoplanin-resistant *S. epidermidis* endocarditis; he received a combination of daptomycin and fosfomycin based on the susceptibility. Patient B had a MSSA PVE with pulmonary embolization which did not respond to first line treatment; he was switched to tigecycline plus fosfomycin. Patients C and D received empirical treatment with meropenem and fosfomycin. All patients had a favorable outcome and no one had side effects. One patient required valve substitution surgery because of residual dysfunction.

	A	B	C	D
Sex	Male	Male	Male	Male
Age	5 ys	12 ys	22 ys	30 ys
Cardiopathy	Transposition of the great arteries	Pulmonary atresia	Transposition of the great arteries	Tetralogy of Fallot
Causative agent	<i>S. epidermidis</i>	MSSA	/	/
Treatment	F + daptomycin	F + tigecycline	F + meropenem	F + meropenem
Outcome	Negative cultures	Negative cultures	Negative PET/CT	Reduced uptake on PET/CT
Surgery	no	no	no	yes

Learning Points/Discussion: Fosfomycin-based combinations were effective in treating PVEs. In our

experience fosfomycin is a versatile molecule, which can be used in different clinical settings including PVEs. More studies are needed to optimize combinations of fosfomycin and other antimicrobials in PVEs in pediatrics.

TREATMENT OF CHRONIC HEPATITIS C USING DIRECT ACTING ANTIVIRALS IN TEENAGERS WITH HIV COINFECTION.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL ANTIMICROBIAL TREATMENTS

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Title of Case(s): TREATMENT OF CHRONIC HEPATITIS C USING DIRECT ACTING ANTIVIRALS IN TEENAGERS WITH HIV COINFECTION.

Background: No data on the efficacy, safety, and tolerability of ledipasvir/sofosbuvir (LDV/SOF) in children and adolescents with hepatitis C virus (HCV) and human immunodeficiency virus (HIV) coinfection are available. The aim of this report was to present the effects of LDV/SOF treatment in two teenagers with HIV/HCV coinfection.

Case Presentation Summary: Among our patients qualified for the *real-life* therapeutic program with LDV/SOF, there were two male patients aged 15 and 16 years, vertically coinfectd with HIV and HCV genotype 4. Patient 1 had a history of ineffective previous treatment with interferon and ribavirin, and presented with compensated cirrhosis (Child-Pugh score A). Patient 2 had an evidence of previous HBV infection (detectable anti-HBc total antibodies). Efficacy of the treatment with LDV/SOF was assessed as sustained viral response 12 weeks after the end of the treatment (SVR12). Both patients were qualified for a 12-week therapy with the fixed daily dose of LDV/SOF (90/400 mg). After the first 4 weeks of the treatment, HCV viral load was below the lower limit of detection in Patient 1, and undetectable in Patient 2. At the end of the treatment, as well as 12 weeks later, the HCV RNA testing was negative in both cases, which confirmed that both patients achieved the SVR12 and eliminated the HCV infection. Patient 1 complained of a mild headache, which responded well to ibuprofen. No other adverse events were reported.

Learning Points/Discussion: The chronic HCV infection in the presence of HIV coinfection may be associated with a higher risk for progressive liver disease compared to patients with mono-infection. 12-week treatment with LDV/SOF in two HIV/HCV-coinfectd teenagers was safe and effective. Our experience may encourage other clinicians to start antiviral treatment with LDV/SOF in their patients.

SIGNIFICANCE OF BLOOD CULTURE IN DIAGNOSIS OF SEPTICEMIA WITH AN UNUSUAL PATHOGEN IN A PEDIATRIC CARDIAC PATIENT.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL DIAGNOSTICS

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Title of Case(s): SIGNIFICANCE OF BLOOD CULTURE IN DIAGNOSIS OF SEPTICEMIA WITH AN UNUSUAL PATHOGEN IN A PEDIATRIC CARDIAC PATIENT.

Background: Probiotics have been defined by WHO/FAO/ UNO as “live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.” Components of probiotics consist of single or multiple strains of bacteria like Lactobacilli, Bifidobacterium, Bacillus, or fungi like Saccharomyces boulardi . Cases of septicaemia due to probiotics like Lactobacillus and Saccharomyces have been reported. We now describe a case of blood stream infection with *Bacillus clausii* in a pediatric patient who had received probiotics. Prehospitalisation, he was treated with antibiotics and probiotic Enterogermina.

Case Presentation Summary: The patient was a four-month-old male infant, diagnosed with congenital heart disease ie corrected Transposition of Great Arteries (TGA) secondary to severe subvalvular pulmonary stenosis and underlying VSD. Prehospitalisation, he was treated with antibiotics and probiotic Enterogermina. . Three blood cultures were done by the BACTEC FX 40 system (BD). All three blood cultures showed Gram positive bacilli in the Grams stain and grew Bacillus species on culture. These were hemolytic on 5% sheep blood agar and motile. The isolate was identified by MALDI TOF as *Bacillus clausii*. This was sensitive to Penicillin and Vancomycin by the E test(Biomerieux France) according to the CLSI M45 guidelines.

Learning Points/Discussion: While the probiotics has been proven to be useful in a number of cases, episodes of sepsis have been reported sporadically. Immunocompromised individuals experience benefits due to probiotics; but they have a decreased capacity to eliminate exogenous bacteria and thus have side effects. Usually Bacillus species isolated from a single blood culture are often dismissed as contaminants. It would be advisable to send multiple blood cultures in septicaemic patients before dismissing the isolates as contaminants.

AN EMERGING PATHOGEN IN A PAEDIATRIC INTENSIVE CARE UNIT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL DIAGNOSTICS

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Title of Case(s): AN EMERGING PATHOGEN IN A PAEDIATRIC INTENSIVE CARE UNIT

Background: A yeast-like fungus *Kodamaea ohmeri* is a very rare cause of fungemia with high mortality especially in immuno-compromised patients. We report a rare case of *K. ohmeri* fungemia in a paediatric patient which was successfully treated with liposomal amphotericin B. The case emphasizes the need for high index of suspicion and timely intervention to diagnose this fungal infection in septic patients who are not responding to antibiotic therapy in the intensive care unit.

Case Presentation Summary: The patient was a four year 11 month old male child, diagnosed with super refractory status epilepticus. He was admitted with history of fever, abdominal pain, vomiting diagnosed as viral Hepatitis A for 10 days, with an episode of convulsions seven days prior to admission. He was started on multiple anti-epileptics- phenytoin, phenobarbitone and valproate. Blood analysis showed elevated counts, CRP was elevated, CSF culture was negative. Two blood cultures were done by the BACTEC FX 40 system (BD). Both the blood cultures drawn from the white lumen showed Gram positive budding yeast cells in the Grams stain and grew white colonies on culture. These were non-hemolytic on 5% sheep blood agar. Microbiological workup was done with BioMerieux VITEK II compact automated system using Vitek 2 YST card for identification and AST YS06 card for antifungal susceptibility test confirmed the yeast isolate as *Kodamaea ohmeri*.

Learning Points/Discussion: *Kodamaea ohmeri* is a rare clinical isolate that has recently become known to cause various human infections. This yeast is commonly used in the food industry for its fermentation properties in pickles. Review of literature reveals that immunocompromised state especially with breakdown of the skin mucosal barrier, presence of invasive devices and prematurity are risk factors for this infection.

EP577 / #1145

SIGNIFICANCE OF GRAM STAIN MICROSCOPY IN RAPID AND COST EFFECTIVE IDENTIFICATION OF COAGULASE NEGATIVE STAPHYLOCOCCI SPECIES IN BLOOD CULTURES IN PAEDIATRIC PATIENTS WITH THE NOVEL FOUR LEAF CLOVER (FLC) SIGN.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL DIAGNOSTICS

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Title of Case(s): SIGNIFICANCE OF GRAM STAIN MICROSCOPY IN RAPID AND COST EFFECTIVE IDENTIFICATION OF COAGULASE NEGATIVE STAPHYLOCOCCI SPECIES IN BLOOD CULTURES IN PAEDIATRIC PATIENTS WITH THE NOVEL FOUR LEAF CLOVER (FLC) SIGN.

Background: The use of continuously monitored blood culture systems has reduced the time taken to detect positive blood cultures in the critically ill patients which helps in identification and establishment of their susceptibility profile for treatment. Once a positive blood culture is detected, presumptive identification of the organism relies on direct Gram stain of the inoculated blood culture broth.

Case Presentation Summary: Here we present case series of around 20 cases in which Gram stain was imperative in making the preliminary diagnosis of CONS in the blood culture. This distinction is important given the differences in virulence, and the relatively high frequency that coagulase negative staphylococci are isolated as contaminants.. Staphylococcus aureus bacteremia is associated with high mortality and morbidity. The rapid identification between Staphylococcus aureus or Coagulase negative staphylococci (CoNS) from positive blood culture is important.

Learning Points/Discussion: Here we discuss about our experience with the typical Four leaf clover sign which is seen in CONS in the Gram stain where the main characteristics considered are the size of the bacterial cells, the number of cells in a typical cluster, and knowledge about whether the Gram stain was made from an anaerobic or aerobic blood culture bottle in an extremely time effective manner which helped in rapid identification of CONS.

NEUROLISTERIOSIS IN AN 8-YEAR-OLD IMMUNOCOMPETENT GIRL

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - NOVEL DIAGNOSTICS

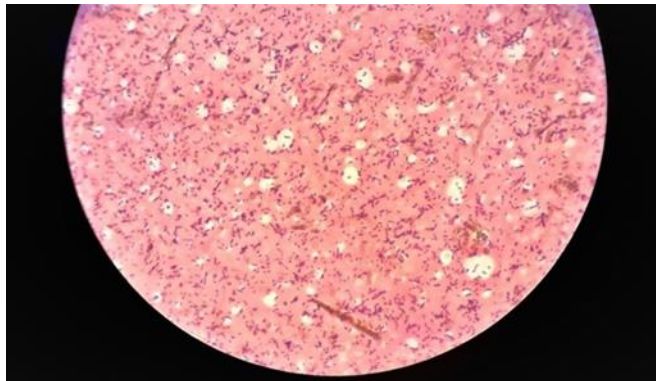
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Title of Case(s): NEUROLISTERIOSIS IN AN 8-YEAR-OLD IMMUNOCOMPETENT GIRL

Background: *Listeria monocytogenes* is a well-recognized cause of early-onset sepsis and severe central nervous system (CNS) infection among neonates and immunocompromised individuals. However, reports of CNS disease in immunocompetent children have been increasingly described in literature. We report a case of neurolisteriosis in an immunocompetent girl, where early microbiology findings contributed to prompt diagnosis and management.

Case Presentation Summary:



An 8-year-old previously healthy girl presented with fever, neck pain, severe headache and vomiting. Neurological examination revealed positive Kernig's and Brudzinski's signs and laboratory investigations revealed WBC count of 15800/ μ L (Neu 93.5%) and CRP of 300 mg/L. Cerebrospinal fluid (CSF) analysis yielded 500 cells/ μ L (Neu 56%, Ly 35%), protein of 96 mg/dl and glucose of 15 mg/dl. Gram stain of the patient's CSF revealed gram (+) coccobacilli resembling diphtheroids. Following this finding, CSF polymerase chain reaction (PCR) was performed that proved positive for *L.monocytogenes*. Initial empirical antibiotic therapy with Ceftriaxone was adjusted to ampicillin and gentamicin that the patient received for 21 and 7 days, respectively. *L.monocytogenes* was isolated from CSF and blood cultures 24h following admission. Immunological workup was unremarkable. Our patient had an uneventful recovery and remained well and asymptomatic at two-months follow up.

Learning Points/Discussion: *Listeria meningitis* is a rare diagnosis that can be missed in older immunocompetent children. Clinical signs of meningitis with no evidence of common CNS bacterial pathogens from the gram stain, should raise physicians awareness for an unusual diagnosis. Microbiologists' alertness is critical in order to recognize the atypical coccobacillus morphology of *Listeria* and swiftly proceed to PCR. Early administration of targeted antibiotics is linked to improved outcome.

EP579 / #851

FEVER: THE NEONATAL CHALLENGE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): Fever: the neonatal challenge

Background: fever in neonatal cases presented the difficulties in etiological diagnosis, The aim of this work is to determine the epidemiological, clinical, paraclinical and etiological aspects of newborns admitted to the pediatric emergency department for fever and to propose a course of action to be taken in front of a febrile newborn.

Case Presentation Summary: We conducted a retrospective study on all admitted to the pediatric emergency department of the Mohamed VI University Hospital in Marrakech, over a period of 6 months , We collected 40 newborns. The age was less than or equal to 3 days in 55% of cases, between 3 and 10 days in 25% of cases, and between 10 and 28 days in 20%. Intake temperatures ranged from 38 to 39°C in 65% of cases. Fever was tolerated in 85% of cases. Further investigations included a CBC and CRP in all cases. At least one blood culture was performed in 14 newborns (35%); urine examination was requested in 34 cases (85%); lumbar puncture (LP) in 6 cases (15%).

An infectious etiology was retained in the majority of cases, including 35 % of causes due to urinary infection ; meningitis and bacteremia each present 15% of the etiologies. However 30% of the cases presented with an isolated fever without determined etiological diagnosis .

Learning Points/Discussion: In febrile neonates without a clear source of illness, distinguishing between those with self-limiting versus life-threatening infection is challenging ,that is why Any febrile newborn should be hospitalized for at least monitoring and a check-up.

MYOCARDITIS AS THE INITIAL PRESENTATION OF EPSTEIN-BARR VIRUS INFECTION IN A 13-YEAR-OLD MALE PATIENT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): MYOCARDITIS AS THE INITIAL PRESENTATION OF EPSTEIN-BARR VIRUS INFECTION IN A 13-YEAR-OLD MALE PATIENT

Background: Myocarditis in children and adolescents is rare and it can have a variety of presentations ranging from subclinical to severe cardiac dysfunction. Among the etiologies of myocarditis are viruses including Epstein-Barr virus (EBV), although it rarely presents with cardiac involvement in immunocompetent hosts.

Case Presentation Summary: A previously healthy 13-year-old boy was admitted because of acute angina chest pain from 48 hours previously. His medical history was unremarkable. He was taking no medication. Physical examination findings did not reveal any problems. Chest X-ray was normal. Electrocardiogram showed sinus tachycardia with ST elevation. Two-dimensional echocardiography was normal. Troponin-hs was 15059pg/mL (normal<34pg/mL), creatinine-phosphokinase(CPK)was610U/L, LDH was 465IU/l and SGOT was 93IU/l. The angina pain stopped in the second day and the troponin-hs and CPK returned to normal values gradually. On the 6thday he complained about sore throat, difficulty in swallow and developed fever(38.2°C). Pharyngitis with enlarged palatine tonsils and swelling of cervical lymph nodes were detected. There was no elevation of the liver enzymes, while atypical lymphocytes were observed on blood smears. TSH was normal. Antinuclear antibodies and results of serologic studies for hepatitisA,BandCvirus,HIV, toxoplasma and cytomegalovirus were negative. IgM Epstein-Barr virus viral capsid antigen was positive. The patient was treated with ibuprofen systematically for 36 hours and β -blocker. ST-segment elevation returned to the baseline in a few days. Repetitive echocardiograms remained normal. He recovered uneventfully and nine days after admission left hospital programmed for cardiac MRI.

Learning Points/Discussion: EBV infection is common in the general population and has diverse clinical manifestations and occasional complications. However, cases of clinically significant cardiac disease as acute myocarditis as the first manifestation of EBV infection are rarely described in the immunocompetent pediatric population.

AN ATYPICAL CAUSE OF COMPLICATED PAROTITIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): An atypical cause of complicated parotitis

Background: Cat scratch disease (CSD) is a zoonotic infection caused primarily by *Bartonella henselae*. Typically, CSD manifests with a sub-acute regional lymphadenopathy accompanied by fever and other systemic symptoms.

Case Presentation Summary: We report a previously healthy 13-year-old girl who presented to the Emergency Department (ED) with complains of a right cervical swelling for about 1 month, with no fever. Previous analytical study showed no abnormalities and a cervical ultrasound revealed two nodular formations with 16x10mm and 9x6mm. She had been taking amoxicillin with clavulanic acid at a therapeutic dose for 6 days with no improvement. She referred having a cat with 18 months but she didn't recall any scratch or bite. Her mother worked in a nursing home and referred contact with a patient being treated for tuberculosis. Physical examination showed a painful cervical tumefaction with 3cm of wider diameter and smaller tumefactions palpable in adjacent regions, with no other findings. An MRI showed right parotitis complicated with an abscess, cellulitis and myositis of the sternocleidomastoid muscle with several local nodular formations, the largest with a diameter of 18 mm. Intravenous ceftriaxone and clindamycin and oral azithromycin were started.

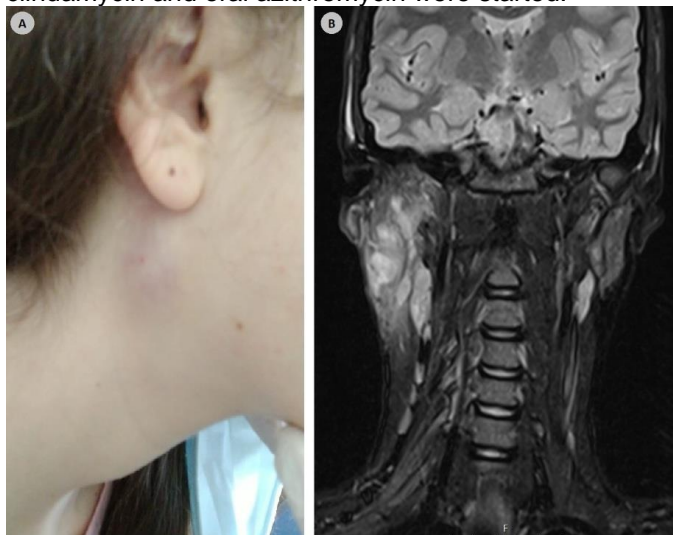


Figure 1 – Physical examination's findings (A) and magnetic resonance imaging's findings (B)

Due to the appearance of cutaneous inflammatory signs and tumefaction's fluctuation, aspiration puncture was performed, which purulent content's bacterial DNA was positive for *Bartonella henselae*.

Learning Points/Discussion: CSD is a common cause of lymphadenopathy. Typical presentation is of a papule at the cat's scratch site and ipsilateral regional lymphadenopathy. Involvement of the parotid gland is rare. High suspicion is required, especially in atypical cases like this. In this case contact with a cat allowed clinical suspicion, demonstrating the importance of a detailed epidemiological contextualization.

ACTINOTIGNUM SCHAALII: AN UNDERESTIMATED UROPATHOGEN IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): An underestimated uropathogen in children

Background: *Actinotignum schaalii* (*A. schaalii*) is a gram-positive rod, that can be found in the normal bladder microbiome, but is also associated with uropathology causing mostly urinary tract infections (UTI) in the elderly and small children. It may be easily missed as it grows slowly on blood-enriched media and in an anaerobic or 5% CO₂ environment. Without Gram staining and the newest molecular and mass spectrometry techniques of identification, *A. schaalii* may be overlooked. Here we report a rare but typical presentation in a pediatric patient.

Case Presentation Summary: A 15 year-old Caucasian male with bilateral megaureter, a non-functioning left kidney and a neurogenic bladder with overflow urinary incontinence, presented with a high fever and raised CRP of 249 mg/l. Using laboratory techniques favourable for the detection of *A. schaalii*, an initial urine sample was found to be positive for leucocytes, negative for nitrites and an initial culture identified mixed growth. Given fever persistence despite spontaneous CRP improvement, repeat urine analyses were performed, which subsequently showed significant growth of *A. schaalii*. This was treated with 10 days of intra-venous and oral co-amoxiclav, to good effect. Despite a paucity of published literature, our case reflects current knowledge of this unfamiliar and potentially troublesome cause of UTI in children with uropathology.

Learning Points/Discussion: Paediatricians should be alert to signs of infection of unclear origin in children with underlying urinary tract dysfunction, who may benefit from a more rigorous approach to isolate this uropathogen. It can go unnoticed on urine dipsticks as it lacks nitrate reductase activity. It requires specific laboratory techniques i.e. prolonged incubation in blood-enriched media and an anaerobic or 5% CO₂ environment, gram staining and molecular or mass spectrometry techniques for identification. *A. schaalii* may be overlooked or considered a contaminant, and negative urine cultures are common in children with uropathology.

OVERLAPPING HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH) AND DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS) - REGARDING A CLINICAL CASE.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): Overlapping hemophagocytic lymphohistiocytosis (HLH) and drug reaction with eosinophilia and systemic symptoms (DRESS) - regarding a clinical case.

Background: The constellation of symptoms and laboratory abnormalities seen in drug reaction and eosinophilia with systemic symptoms (DRESS) overlap with hemophagocytic lymphohistiocytosis (HLH), leading to a diagnostic challenge. HLH is a rare but fatal condition caused by inappropriate activation of macrophages against one's blood cells. This condition is usually secondary to infection, autoimmune disorder, or malignancy. Here, we present a rare case of HLH as a complication of DRESS in a previously healthy patient, submitted to idiopathic scoliosis surgery.

Case Presentation Summary: We report a case of a 17-year-old girl who developed DRESS and HLH syndrome after long cycles of multiple antibiotics. The patient presented with characteristic drug hypersensitivity-related febrile exanthema, and subsequently, developed cytopenias that are not usually part of this syndrome. It is suggested that cell destruction by cytotoxic antibodies and a reversible depression of stem cell activity with myeloid maturation blockade contribute to the pathophysiology of the cytopenias. Drug hypersensitivity results in hypercytokinemia, leading to uncontrolled activation of benign scavenger macrophages and development of hemophagocytosis in the reticuloendothelial system.

Learning Points/Discussion: This entity is probably underdiagnosed because both syndromes share nonspecific symptoms, bone marrow biopsies are not usually part of the diagnostic work-up in a classic drug hypersensitivity syndrome, and hemophagocytosis pathology can be missed on bone marrow aspiration. This report underscores the importance of recognizing the rare association of DRESS with HLH.

HERPES ZOSTER OPHTHALMICUS (HZO) IN A PREVIOUSLY HEALTHY VZV-VACCINATED TODDLER

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): HERPES ZOSTER OPHTHALMICUS (HZO) IN A PREVIOUSLY HEALTHY VZV-VACCINATED TODDLER

Background: HZO is rare in otherwise healthy pediatric population (1/1000 patient-years). It presents either after natural infection or immunization. Due to its bivalent aetiology, attributed both to the direct effect of varicella reactivated virus as well as immune-mediated sequelae, treatment guidelines are not clearly set. There is scarce evidence on the management of such pediatric cases compared to adults, where a debate still exists on whether they should receive antiviral chemoprophylaxis to prevent future recurrence. We report a case of HZO in a previously healthy, vaccinated against varicella, toddler.

Case Presentation Summary: A 3-year old boy presented in the emergency room, with a 3-day history of vesicular rash in left forehead and periocular area, Hutchinson sign, and injected left eye. He had received 2 doses of varicella live vaccine, at 12 months, and a booster administered 2 months before presentation. His basic immunology work up was normal. Eye examination revealed rapidly evolving punctate keratitis, 2 nummular keratitis foci and amblyopia. There were no signs of CNS disease. His lesions' PCR showed wild-type VZV, and treatment with intravenous aciclovir, topical ganciclovir and topical steroids was initiated. Due to concerns of recurrence and slow recovery, he was put on aciclovir prophylaxis throughout the steroids course (4 months) and is still under close follow-up, 8 months after discharge.

Learning Points/Discussion: Although HZO incidence is lower in vaccinated than in unvaccinated children, presentation and sequelae can be chronic and debilitating. There is scarce evidence on the management of pediatric cases compared to adults and an ongoing Randomised Clinical Trial (ZEDS) will shed some light on the benefits of chemoprophylaxis on HZO clinical course. Further studies are needed to better understand the impact of vaccination on HZ rates in children.

PULMONARY CONSOLIDATION AS INITIAL PRESENTATION OF KAWASAKI DISEASE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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¹University of Cyprus, Medical School, Nicosia, Cyprus, ²Archbishop Makarios Hospital, Paediatrics, Nicosia, Cyprus

Title of Case(s): PULMONARY CONSOLIDATION AS INITIAL PRESENTATION OF KAWASAKI DISEASE

Background: Kawasaki disease (KD) is a systemic vasculitis. Treatment before day 10 of the illness with high dose intravenous immunoglobulin (IVIG) can decrease the risk of complications. Pulmonary consolidation is a very rare manifestation of KD and may lead to delayed diagnosis and treatment. We present a case of pulmonary consolidation as the initial manifestation of KD in a young infant.

Case Presentation Summary: This 3.5-month-old male infant was referred to our hospital because of unresolving pneumonia and deterioration in his clinical condition despite antimicrobial treatment. The disease started with fever and diarrhoea for the last 4 days before admission. His blood (x3) cultures were negative. A chest x ray on day 3 of disease revealed consolidation of the Rt middle lobe. The PCR test on his respiratory secretions was negative for SARS CoV2, and various other viruses. On day 4 of disease the child became lethargic, refused feeding and developed oedema of the extremities. A second chest x ray revealed extension of the consolidation. He also developed bilateral non-exudative conjunctivitis, erythema of palms and soles, a maculopapular rash and glossitis. CRP was 254mg/L and ESR 43mm. An echocardiogram performed on day 6 of the disease revealed ectasias of both coronary arteries. IVIG infusion at 2g/Kg resulted in clinical and laboratory improvement. Periungual desquamation of fingers also developed on the 10th day of illness.

Learning Points/Discussion: Pulmonary involvement in KD has been attributed to vascular permeability, as in other vasculitides. Pulmonary consolidation at the initial stages of KD, is very rare and can lead to a delay in administration of IVIG especially if not accompanied by the typical clinical features of KD. KD should be in the differential diagnosis of an unresolving pneumonia with prolonged fever.

PROLONGED FEVER AND DYSPNEA AFTER RICE FIELD WATER SUBMERSION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

Sam Lyvannak

Angkor Hospital for Children, Pediatric, Siem Reap, Cambodia

Title of Case(s): Prolonged fever and dyspnea after rice field water submersion

Background: Melioidosis, infection by *Burkholderia pseudomallei*, is an important but frequently under-recognized cause of morbidity and mortality in Southeast Asia and elsewhere in the tropics where infection is thought to be acquired after environment exposure by ingestion, inoculation or inhalation. The clinical presentation is highly variable and ranges from a mild localized infection to acute fulminant sepsis with widespread bacterial dissemination.

Case Presentation Summary: A 19-month-old girl presented with fever, cough, and runny nose for 7 days, she was diagnosed with pneumonia and prescribed Amoxicillin. The symptoms did not improve, she developed mild dyspnea and abdominal pain. Her parents are farmers and she was submerged in field water a few days before symptoms started. She was previously healthy. She had fever and looked toxic, mild subcostal retraction with crackles bilaterally. Abdominal examination revealed 1 cm hepatosplenomegaly. The lab revealed WBC: 11.0×10^9 , Hb: 11.3mg/dl, Platelet: 236×10^9 , ANC: 7.7×10^9 , Na: 135mmol/L, K: 4.8mmol/L, CRP: 157mg/L, ALT: 21U/L, AST: 61U/L, negative blood culture and Malaria. Her CXR showed bilateral opacity. She was diagnosed with bacterial pneumonia, and treated with IV Ceftriaxone. After 5 days, she still had fever, mild dyspnea and worse abdominal pain. Septic and melioidosis screen were done. They revealed positive throat swab with *Burkholderia pseudomallei* and abdominal ultrasound showed hepatosplenic abscesses. She was treated with 4 weeks ceftazidime, followed up with weekly abdominal US and switched to oral cotrimoxazole for another 4 weeks.

Learning Points/Discussion: Melioidosis following aspiration or a near-drowning episode is well recognized especially in Cambodia. Given the high mortality associated with bacteraemic infection, there is an urgent need for greater awareness amongst healthcare professionals in Cambodia and other countries where melioidosis is known or suspected to be endemic area. Empiric treatment guidelines should ensure suspected cases are treated early with appropriate antimicrobials.

THORACIC EMPYEMA DUE TO ACUTE APPENDICITIS IN CHILDREN: AN UNUSUAL PRESENTATION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Fatouma Bourguiba hospital of Monastir, Department Of Paediatric Surgery Tunisia, Monastir, Tunisia

Title of Case(s): Introduction: Thoracic empyema and acute appendicitis are commonly diagnosed in children but are rarely presented together. A few number of cases have previously been reported. In this case report, simultaneous occurrence of thoracic empyema was presented in a non-immunocompromised child who had acute appendicitis. **Case report:** A 3-year-old boy was admitted for abdominal pain, nausea and vomiting. Physical examination noted tenderness in the right lower quadrant.

Ultrasonography showed a right subphrenic abscess with a fecalith in the enlarged appendix, in the right lower quadrant of the abdomen. Exploratory laparotomy was performed. It revealed a subhepatic perforation of the appendix. Appendectomy and drainage of the abscess were performed. The bacteriologic cultures of the abscess grew *E. coli* specie. At postoperative 4th day, his body temperature increased to 39°C.. Furthermore, physical examination revealed a significant decrease in breath sounds on the left hemithorax and a dullness in percussion. Chest X-ray showed a large left pleural effusion . CT scan revealed no abnormal findings in the abdomen but massive pleural effusion was detected in the left hemitorax. Thoracentesis removed purulent fluid with 80% polymorphonuclear. Bacteriologic culture of the pleural fluid grew the same with the appendicular abscess ones, *E. coli*. The management option was to stabilize the patient with intravenous antibiotics. However, he continued to have quotidian fever with other symptoms such as lethargy, arthralgia and a migratory erythematous rash, but there had been no abdominal symptoms. He was diagnosed with Macrophage activation syndrome due to *E.coli* infection, with regressed completely after an appropriate treatment. The treatment duration was 21 days.

Conclusion: A thoracic empyema caused by an abdominal infection is a rare entity, especially as a consequence of acute appendicitis. So, when an abdominal infection is established, it may eventually compromise the thoracic cavity by contiguous spread or due to bacterial translocation.

Background: This is a rare case in paediatric surgery but very interesting

Case Presentation Summary: A 3-year-old boy was admitted for abdominal pain, nausea and vomiting. Physical examination noted tenderness in the right lower quadrant. Ultrasonography showed a right subphrenic abscess with a fecalith in the enlarged appendix, in the right lower quadrant of the abdomen. Exploratory laparotomy was performed. It revealed a subhepatic perforation of the appendix.

Appendectomy and drainage of the abscess were performed. The bacteriologic cultures of the abscess grew *E. coli* specie. At postoperative 4th day, his body temperature increased to 39°C.. Furthermore, physical examination revealed a significant decrease in breath sounds on the left hemithorax and a dullness in percussion. Chest X-ray showed a large left pleural effusion . CT scan revealed no abnormal findings in the abdomen but massive pleural effusion was detected in the left hemitorax. Thoracentesis removed purulent fluid with 80% polymorphonuclear. Bacteriologic culture of the pleural fluid grew the same with the appendicular abscess ones, *E. coli*. The management option was to stabilize the patient with intravenous antibiotics. However, he continued to have quotidian fever with other symptoms such as lethargy, arthralgia and a migratory erythematous rash, but there had been no abdominal symptoms. He was diagnosed with Macrophage activation syndrome due to *E.coli* infection, with regressed completely after an appropriate treatment. The treatment duration was 21 days.

Learning Points/Discussion: In this case report, simultaneous occurrence of thoracic empyema was presented in a non-immunocompromised child who had acute appendicitis.

DIAGNOSTIC AND THERAPEUTIC CHALLENGES OF A MYCOPLASMA HOMINIS MEDIASTITIS AND PULMONARY INFECTION IN A HEART-LUNG TRANSPLANT RECIPIENT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): Diagnostic and therapeutic challenges of a *Mycoplasma hominis* mediastinitis and pulmonary infection in a heart-lung transplant recipient

Background: Mediastinitis and pulmonary infections by *Mycoplasma hominis* in heart-lung transplant recipients are rare and potentially severe complications. *M. hominis* is not detectable by Gram staining and grows slowly and with difficulty on standard culture plates. These characteristics account for a difficult and often late diagnosis. We describe a child who underwent double lung and heart transplantation and developed *M. hominis* mediastinitis and pulmonary infection.

Case Presentation Summary: A 14-year old boy with pulmonary hypertension in heterotaxy syndrome received a double lung and heart transplant. Eighteen days later he developed a severe mediastinitis, sternal osteomyelitis and respiratory failure. Broad spectrum antibiotic therapy with Vancomycin, Rifampicin and Meropenem was started. Blood cultures and sternal surgical site swabs were initially negative, but after 10 days three swabs, a bronchoalveolar lavage and a biopsy resulted positive for *M. hominis*. Starting from the colonies, we utilized matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) as a reliable method for identifying *M. hominis*. The MS results were confirmed by PCR amplification of 16S rDNA and sequencing. Treatment with clindamycin and tigecycline was started, which was changed according to antibiogram into doxycycline. As a result inflammatory markers decreased, the surgical site cleaned up and further swabs were negative. The patient had also developed organ rejection and remained in critical conditions; he deceased after 3 weeks despite effective treatment.

Learning Points/Discussion: An early diagnosis of *M. hominis* infections in transplant recipients is of the utmost importance since antibiotics routinely administered for surgical prophylaxis and mediastinitis are not effective. There is some evidence suggesting that this infection might be donor-transmitted. Since microbiological diagnosis is difficult, we suggest screening donors in advance for *M. hominis* in order to ease therapeutic decisions.

SEVERE NEUROLOGIC ABNORMALITIES IN A NON-PRIMARY CMV INFECTION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): SEVERE NEUROLOGIC ABNORMALITIES IN A NON-PRIMARY CITOMEGALOVIRUS INFECTION

Background: Cytomegalovirus (CMV) infection is one of the most common congenital infections and is the leading cause of sensorineural hearing loss (SNHL) and neurodevelopmental sequelae during childhood. The transmission is intrauterine and occurs in women with primary (PI) or non-primary (NPI) CMV infection during pregnancy. Some authors support the idea that maternal PI is associated with more severe consequences for the infant but it's still uncertain if this theory is actually right.

Case Presentation Summary: We present a male newborn whose prenatal ultrasound detected ventriculomegaly and periventricular leukomalacia. The mother was screened for congenital infection and had an immune status for CMV, other serologies were negative. Amniocentesis was not performed. The baby was delivered via cesarean section at 36 weeks of gestation due to malformation and intrauterine growth restriction. The baby's weight was 2,390 kg, 42 cm of length, head circumference of 28,5 cm (microcephaly) and APGAR 6/8. Computed tomography scan of the brain was performed and it showed periventricular calcification. He also failed on hearing screening. The diagnosis of congenital CMV was confirmed with CMV PCR on urine. The baby was treated initially with ganciclovir and continued with valganciclovir. He has been followed in an outpatient unit since he was discharged from hospital. He is already 6 months old and has an important developmental delay. No ophthalmological disorders have been identified.

Learning Points/Discussion: Non-primary infection can also lead to severe consequences such as neurodevelopmental delay and hearing loss.

IMMUNE THROMBOCYTOPENIC PURPURA ASSOCIATED WITH SEVERE THROMBOCYTOPAENIA, SECONDARY TO CMV: A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): Immune thrombocytopenic purpura associated with severe thrombocytopaenia, secondary to CMV: a case report

Background: Immune thrombocytopenic purpura (ITP) is a syndrome in which antibodies coat the antigens on the platelet surface leading to splenic sequestration and phagocytosis, which results in an isolated low platelet count, a characteristic red or purple bruise-like rash and an increased risk of bleeding. If platelet levels fall below 10,000/uL, there's an increased risk of spontaneous bleeding. ITP could be classified as primary or secondary, for example to an infectious cause, such as cytomegalovirus (CMV).

Case Presentation Summary: Our report is based on a clinical presentation of a 10-months-old boy complaining with petechiae, fever, rhinorrhea and a platelet count of <10.000/uL. The infectious laboratory workup detected recent CMV infection (positive IgM and IgG). Urinary CMV PCR was also positive. Treatment with intravenous immunoglobulin (IVIG) 10% (1g/Kg) improved platelet count to 234.000/uL after 72 hours, and the petechial hemorrhages practically resolved during this time. After two weeks, platelet count was stable (281.000/uL).

Learning Points/Discussion: CMV is a rare pathogen causing ITP in childhood, even in immunocompetent children. With this case we want to increase awareness for less frequent causes of ITP. Although in this case there has been a favorable response to IVIG, further research is needed in order to establish general treatment guidelines for ITP induced by CMV.

A CASE OF MENINGOENCEPHALITIS IN A CHILD WITH MUMPS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): A case of Meningoencephalitis in a child with MUMPS

Background: Mumps is a contagious acute viral infection. It is characterized for painful enlargement of the salivary gland, especially parotid gland. It spreads from the human reservoir by direct contact or airborne droplets. Mumps virus is a RNA virus. The causative agent is myovirus parotidis. It commonly occurs between the age 5 and 15 years.

Case Presentation Summary: An 10 year-old boy was brought to the Emergency Department with the complaint of fever since 5 days, moderate to high degree, intermittent in nature, swelling on both cheeks since 3 days. He developed swelling first on the right side below the ear lobe and after 48 hours on the left side. He has pain, stiffness on opening the mouth and difficulties to talking. **Past history of the patient:** His mother refers that the boy had not been immunized, due to religious reasons. On the second day of hospitalization the case was complicated with tonic-clonic seizure that lasted over 20min, followed by fever 39.5°C. The seizure was not controlled with rectal diazepam so continuous therapy with phenobarbital was administered for 24 hours. On the third day of hospitalization the clinical conditions of the patients were progressing, with vomiting, headache, malaise, neck stiffness, lethargy and mental confusion. **Laboratory Findings:** showed leukopenia $3 \times 10^3/\text{mm}^3$, with relative thrombocytosis 500×10^3 , amylase 350 U/L, enzyme immunoassay (EIA) IgM positive, culture of saliva positive for mumps. CSF found pleocytosis of 400/u with a predominance of lymphocytes, glucose 30mg/dl, protein 0.2g/dl, viral culture of spinal fluid was positive, enteroviruses and bacterial cultures of CSF, blood and urine were negative. The patient recovered spontaneously without sequelae. There was no specific treatment, bed rest, pain relievers and antipyretics, fluids to avoid dehydration. **Diagnosis at**

discharge: Meningoencephalitis from Mumps

Learning Points/Discussion: Meningoencephalitis is a rare complication of Mumps. The cases should be isolated till the clinical manifestation subsides. Active immunization with the combined MMR vaccine can provide a high protection against mumps in children.

WHEN KITTENS ARE NOT YOUR BEST FRIEND

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): When kittens are not your best friend

Background: Bartonella SP (BSP) is cause of a broad number of emerging infectious diseases. Cat-scratch disease (CSD), caused by *Bartonella henselae*, is transmitted when infected kittens bite or scratch humans. Clinical manifestations depend on the implicated BSP and the immunity of the host. CSD course is typically benign with the appearance of regional lymphadenopathy, fever, fatigue and resolution within 2 to 8 weeks. Severe complications such as encephalitis can occur, usually in immunocompromised patients

Case Presentation Summary: In 2020, three girls, aged 8, 11 and 13, all immunocompetent, were referred from a primary clinic to our ER department and diagnosed with BSP infection by serology. All of them had a previous history of exposure to kittens or cats. The first-one presented with a tender, unilateral, axillary lymphadenopathy, which was treated with azithromycin for 5 days and surgical drainage. The second-one referred a history of persistent (3 months) lymphadenopathy of the neck and jaw, treated with amoxicillin/clavulanic and also with eventual surgical drainage. The last patient presented initially with prolonged fever of unknown origin, followed by sudden onset of encephalitis that required ICU management. Disseminated visceral involvement was noted, with hepato and splenomegaly, as well as liver and splenic abscesses. She has been treated with rifampicin and doxycycline for 4 months, as well as piperacillin/tazobactam/vancomycin during the initial 21 days of hospital admission. All 3 girls are now asymptomatic.

Learning Points/Discussion: In the atypical presentations, the pathophysiology of the encephalopathy is unknown. There is no one single universal therapy for this infection, and treatment should be tailored individually. BSP is responsible for potentially serious clinical scenarios. Thus, a high index of clinical suspicion and a prompt diagnosis and treatment are of essence to yield a better outcome

WHEN COMMON SYMPTOMS MEAN RARE DIAGNOSIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): When common symptoms mean rare diagnosis

Background: Herpetic esophagitis is a common disease in immunosuppressed patients, but it is seldom described in healthy individuals, in whom it is usually caused by *Herpes simplex* type 1 primoinfection. It is characterized by fever, sore throat and acute onset chest pain. Upper endoscopy is the gold standard for the diagnosis of this disease.

Case Presentation Summary: Case 1: Male, 6 years old, previously hospitalized for late neonatal sepsis. Admitted to the emergency department complaining of abdominal pain, fever for the last 5 days and anorexia. The patient was started on antibiotics two days before due to a diagnosis of strep throat, with no improvement. Physical examination revealed pain upon palpation of the upper abdominal quadrants. Case 2: Female, 4 years old, previously healthy, was admitted to the emergency department complaining of sore throat, fever, chest pain and anorexia. Physical examination and blood work were normal. Case 3: Male, 9 years old, with a history of autism spectrum disorder, complaining of sore throat and fever was diagnosed with strep throat and medicated with antibiotics. The patient was then reevaluated and maintained the same symptoms; furthermore, he had started chest pain and anorexia. These three patients underwent upper endoscopy, which revealed friable mucosa and longitudinal ulcerations covered with fibrin widespread throughout the esophagus. Biopsies were performed and PCR was positive for *Herpes simplex*, which confirmed the diagnosis of herpetic esophagitis. Treatment was promptly started with acyclovir and omeprazole and the symptoms were completely resolved.

Learning Points/Discussion: The association of fever, sore throat, chest pain and anorexia of sudden onset should raise the suspicion for this disease, even in healthy children. Macroscopic features are suggestive, allowing the presumptive diagnosis and immediate treatment. Prognosis is excellent, with clinical and endoscopic resolution.

ULCERATIVE ORAL MUCOSITIS AND “WALKING PNEUMONIAE”-A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): ULCERATIVE ORAL MUCOSITIS AND “WALKING PNEUMONIAE”- A CASE REPORT

Background: *Mycoplasma pneumoniae*-associated mucositis (MPAM) is an extra-pulmonary manifestation of *M. pneumoniae* infection and may present as isolated mucosal lesions (i.e. oral, ocular and urogenital) or as a combination of mucocutaneous lesions. History of present illness (with cough or fever) may help to differentiate MPAM from other mucocutaneous eruptions: erythema multiforme (EM) and life-threatening conditions such as *Stevens-Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN)*. Key features that help to distinguish MPAM from herpes-related EM or drug-induced SJS/TEN include young patients, the predominance of mucosal involvement, variable though relatively sparse cutaneous involvement, and excellent prognosis.

Case Presentation Summary:



We present a 16-year-old girl who presented with classic clinical manifestations of MPAM, mild fever and cough. A previously healthy teenage-girl presented initially with severe oral mucositis with haemorrhagic vesiculobullous eruptions and exudate over the swollen lips, buccal mucosa, the soft palate and tonsils but not the gingiva (Fig. 1). Bilateral injected conjunctivitis and erythema on palms and soles were observed. On auscultation crepitations were present. Laboratory tests revealed a white blood cell count of 12.1 K/ μ L with elevated CRP (59 mg/l; N<10 mg/l). Serology for *M. pneumoniae* IgM was positive. HSV, HIV infection was ruled out. The chest radiograph showed infiltration of the left lung. She was diagnosed with atypical pneumonia. Supportive therapy including intravenous fluids and analgesics was given. Treatment with azithromycin improved her symptoms.

Learning Points/Discussion: 1. Differentiate MPAM from other mucocutaneous eruptions: erythema multiforme (EM) and life-threatening conditions such as *Stevens-Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN)*. 2. Exclude viral-associated EM (mainly due to HSV infection) and drug-induced SJS. 3. Prior *M. pneumoniae* infection along with a mild course of disease with positive serology and/or PCR results is suggestive of MPAM

EP595 / #1149

MYCOPLASMA ASSOCIATED STEVEN JOHNSON SYNDROME (SJS)/ TOXIC EPIDERMAL NECROLYSIS (TEN) IN A CHILD: A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): A blistering child with high grade fever

Background: Stevens Johnson Syndrome (SJS) and Toxic epidermal necrolysis (TEN) are rare and debilitating mucocutaneous diseases with high mortality. SJS/TEN is commonly triggered by drugs, but infectious pathogens such as Mycoplasma pneumonia or Herpes simplex virus may associated with this syndrome, thus, a detailed drug history or potential infection sources should be explored. Our aim is to report a case of SJS/TEN associated with Mycoplasma infection in a child

Case Presentation Summary: A 7 year old boy came with chief complaint of blistering all over the body, including his lips with difficulties in swallowing since 1 day before. He had hyperpyrexia, sore throat, pain in both eyes, dry cough and rhinorrhea since 1 week before, so his father gave him amoxicillin and antipyretic. The boy had history of SJS 3 years ago, and there was family history of allergy. There were bilateral blepharoconjunctivitis and pruritic hyper-pigmented plaques with papulo-vesicular eruptions at the center (bullous target lesions). Laboratory examination on admission showed leukocytosis, very high CRP, and positive IgM Mycoplasma pneumonia (1/1800). Diagnosis of SJS/ TEN was made, thus IVIG, azithromycin, and supportive treatment were given. He was treated for 16 days and discharged in good condition.

Learning Points/Discussion: SJS/TEN is commonly triggered by drugs, but infectious pathogens such as Mycoplasma pneumonia or Herpes simplex virus may associated with this syndrome. The detailed drug history or potential infection sources should be explored

THORACALGIA IN AN ADOLESCENT MALE- A DIFFERENTIAL DIAGNOSIS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): THORACALGIA IN AN ADOLESCENT MALE- A DIFFERENTIAL DIAGNOSIS

Background: Although pericarditis is uncommonly diagnosed in pediatric patients it may lead to potentially life-threatening complications.

Case Presentation Summary: A 15-year-old male adolescent presented to our emergency department with a 3-day history of pleuritic chest pain and cough. He also reported abdominal pain and vomiting in the past two weeks. He denied fever or dyspnea. Upon presentation, he was febrile (39°C). Heart rate and oxygen saturation were normal. On cardiac auscultation, heart sounds were muffled. Complete blood count showed leukocytosis ($24.4 \times 10^9/L$) with neutrophilia ($18.5 \times 10^9/L$), elevated C-Reactive-Protein (134.2 mg/L) and B-type natriuretic peptide (34.6 mg/L). ECG was unremarkable. Chest radiograph showed a lung consolidation of the left base and increased cardiothoracic ratio. These findings motivated urgent evaluation by a pediatric cardiologist. Transthoracic echocardiogram confirmed a moderate pericardial effusion. A regimen of intravenous ceftriaxone, azithromycin and ibuprofen was started. The patient was discharged following 10 days of ceftriaxone and ibuprofen with favorable clinical response. Serum HSV-2 IgM was found positive and IGRA test was inconclusive. Absolute rest was recommended for one month and physical activity restrictions for six months. At fifteen days follow-up, on reevaluation by his pediatric cardiologist, he was asymptomatic and there were no signs of pericardial effusion on echocardiogram.

Learning Points/Discussion: Pericarditis with pericardial effusion is a serious condition. Its late diagnosis can lead to life-threatening cardiac tamponade. In many cases idiopathic effusions are presumed to be viral or postviral. Although thoracalgia is a common manifestation of pneumonia it is also a hallmark of pericarditis and its diagnosis should not be overlooked. In this case the cardiothoracic ratio was also increased and the heart sounds muffled, which raised the suspicion. Urgent referral to a pediatric cardiologist should be considered for early diagnosis and treatment.

FATAL PNEUMOCOCCAL DISEASE IN THE ERA OF PNEUMOCOCCAL CONJUGATE VACCINE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): FATAL PNEUMOCOCCAL DISEASE IN THE ERA OF PNEUMOCOCCAL CONJUGATE VACCINE

Background: Invasive pneumococcal disease (IPD) is a serious illness with potentially devastating outcomes. We report a case of IPD in a three-year-old girl, due to *Streptococcus pneumoniae* serotype 24F, a non-pneumococcal vaccine serotype.

Case Presentation Summary: A three-year-old girl, previously healthy, with three doses of 13-valent pneumococcal conjugate vaccine (PCV13), was admitted to the emergency department with two-day history of high fever (up to 39,4°C), vomiting, productive cough and rhinorrhea.

On physical examination, she was febrile, tachycardic, hypotensive, prostrated, with poor peripheral perfusion and petechial rash. Intravenous ceftriaxone and fluid resuscitation were immediately started on the assumption of septic shock.

Routine laboratory tests revealed a pancytopenia, high lactate dehydrogenase, prolonged prothrombin and activated partial thromboplastin time, elevated C-reactive protein and metabolic acidosis.

Despite supportive treatment, clinical deterioration was irreversible and the patient progressed to cardiac arrest and subsequent death. Blood and cerebrospinal fluid cultures were positive for *Streptococcus pneumoniae* serotype 24F sensitive to ceftriaxone.

Learning Points/Discussion: With the appearance of 13-valent pneumococcal conjugate vaccine (PCV13) the incidence of IPD has decreased dramatically, but at the same time serotype replacement was observed, with the appearance of new pneumococcal serotypes not included in the vaccines. Serotype 24F is an emerging non-pneumococcal vaccine serotype that can have an aggressive clinical evolution as described in this case. Investigation and surveillance of this serotype are necessary.

A CASE OF OSTEOMYELITIS IN A CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): A case of Osteomyelitis in a child

Background: Osteomyelitis is an infectious process that usually starts in the spongy or medullary bone and then extends to involve compact or cortical bone. It may occur as a result of direct invasion from the outside through a penetrating wound or open fracture, but hematogenous spread of infection is more common. The lower extremities are most affected, and it is often associated with a history of trauma. Osteomyelitis may occur at any age, but it is more common between 3-12 years, especially among boys.

Case Presentation Summary: A 6-year old boy came to the Emergency Department with the complaint of fever since 6 days, limping of the right leg since 4 days. He has so much pain in the right leg at the ankle joint that he started to limp while walking or refuse to bear weight. The clinical conditions of the patient were progressing with swelling at the right leg and localized area was more warmer. He has decreased movement and couldn't keep down the involved leg. Fever was of moderate to high degree, sometimes associated with chills and rigor. **Objective examination:** febrile, right inguinal lymphadenitis, tenderness at the right leg, toxic facies. **Laboratory findings:** *Leukocytosis* 20 x 10³/UL, *ERS* 60 mm in first hour, *CRP* 60mg/L, *blood culture* negative, *X-ray chest* normal, *MRI* normal, *X-ray of the long bone:* moth-eaten destruction, cortex is thickened and lamellated. **Treatment:** Ceftriaxone 100mg/kg twice a day, Piperacillin 250mg/kg every 8 hours, pain relievers, antipyretics. The patient recovered without sequelae. **Diagnosis at discharge:** Osteomyelitis

Learning Points/Discussion: Osteomyelitis should be diagnosed clinically before significant X-ray findings are present. It has an excellent prognosis when the early diagnose is done and antibiotic therapy is begun. If the process has been unattended for more than a week, there is almost always some permanent loss of bone structure, as well as the possibility of growth abnormality. The sequelae of osteomyelitis depends on age at onset, site of infection.

ASPERGILLUS FLAVUS INFECTION IN A NEWBORN WITH GIANT OMPHALOCELE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): *Aspergillus Flavus* Infection In A Newborn With Giant Omphalocele

Background: *Aspergillus* is among the most common fungi that found in soil, on plants, in dust, on food, in the air. These fungi can cause localized infections in the lungs, sinuses, and other areas (Intravenous catheter insertion sites, surgical wound sites, and burn sites). *Aspergillus* causes serious infections in newborns. We report *Aspergillus* infection in a newborn with giant omphalocele. To our knowledge, this is the first report of *Aspergillus* infection in a newborn with giant omphalocele.

Case Presentation Summary: A baby boy was born to seventh gravida mother at 37 weeks of gestation. Omphalocele was detected antenatally. Physical examination showed an ruptured omphalocele sac. The surgeon sutured the edges of the ruptured sac. His abdominal defect measured >10 cm and contained liver, stomach, spleen, small and large intestines. Attempts to reduce the organs into the abdomen were unsuccessful due to the extremely small abdominal cavity and associated pulmonary hypoplasia. To protect the organs and prevent abdominal infections, the organs were covered by a mesh on postnatal 11th day and fungal lesions detected during surgery (Picture 1). Amphotericin B treatment was empirically initiated on 11th day. *Aspergillus flavus* was detected in wound and tissue biopsy cultures. Voriconazole was initiated to his treatment. Tracheostomy was carried out because of the prolonged tracheal intubation and unsuccessful extubation attempts. The patient is 4 month old. Galactomannan antigen testing is still positive, therefore antifungal treatments are continued.



Picture 1.

Learning Points/Discussion: Newborns with abdominal wall defects have increased risk of various infections due to prolonged hospitalizations. *Aspergillus* infection was observed in our case with giant omphalocele. *Aspergillus* is rarely seen in newborns and is one of the important causes of morbidity and mortality.

POTT'S PUFFY TUMOR: A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): POTT'S PUFFY TUMOR: A CASE REPORT

Background: Pott's puffy tumor is a rare condition defined as osteomyelitis associated with subperiosteal abscess of the frontal bone. Most common symptoms are swelling, fluctuation and redness of the forehead, fever, headache, purulent nasal swelling and periorbital edema. It may occur due to chronic sinusitis, trauma, intranasal use of cocaine, fungal infections, insect bites and some other external interventions such as surgical operations. CT and MRI are the useful diagnostic radiological imaging methods. Early diagnosis and treatment are important to reduce complications and the treatment modalities are based on surgical operation and antibiotherapy.

Case Presentation Summary: An 8-year-old male patient was admitted to the emergency room with swelling on forehead, headache, sore throat and fever. Physical examination revealed swelling, pain and warmth on the glabella. No signs of meningeal irritation was detected. Cranial MRI showed right frontal sinusitis, collections under the skin close to sinusitis, millimetric empyema areas localized to the frontal bone and subdural space, and increased contrast enhancement in the duramater. The empyema was drained by the neurosurgeon but the causative microorganism could not be isolated from the abscess material. After 2 weeks of intravenous vancomycin and cefoperazone-sulbactam treatment, the total treatment was completed to 6 weeks with oral clindamycin and amoxicillin-clavulanate.

Learning Points/Discussion: Pott's puffy tumor is associated with complications resulting high morbidity and mortality such as meningitis, epidural abscess, subdural empyema, venous thrombophlebitis. For early diagnosis and successful treatment, clinicians should be aware of Pott's puffy tumor's clinical findings.

SEVERE BACTERIAL INFECTION IN AN INFANT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): Severe bacterial infection in an infant

Background: Differential diagnosis of bacterial processes could be difficult in some cases.

Case Presentation Summary: A 9-month girl was admitted to the hospital with symptoms of acute laryngotracheitis, respiratory failure, febrile fever. The girl is from the 3 pregnancy, 2 delivery was born at 37 weeks. 2400g/47cm. Apgar 5/7. At 1 month mother noticed a rounded bulge the size of a quail egg near thoracic spine. Surgeon diagnosed spinal dysraphism. After 2 weeks, the formation reduced on its own. The girl condition was normal. At 8 months, she suffered from respiratory infection (ARI) treated with ampicillin. The condition improved, however, there was a decrease in appetite, fatigue. At 9 month she presented with fever, shortness of breath. ARI was diagnosed. After 5 days cyanosis and abdominal distension presented, the child was admitted to the ICU. 39°C, intoxication, mechanical ventilation was required. No neurologic symptoms. Leukocytes 23.6x10⁹/L, CRP 275,4mg/l. Chest x-ray - right-sided upper lobe pneumonia. MRI - paravertebral mass covers vertebral bodies from C7 to Th12 with destructive changes in Th7, Th8 bodies with accumulation of fluid in the epidural space, spreads to the posterior mediastinum and upper retroperitoneal space. Neuroblastoma was suspected. Her condition worsened, lower paraparesis began. CT scan revealed pyothorax on both sides. Prevertebral, from C7 to Th12, the fluid component is determined, at the Th7 there is a compression of the dural sac of the spinal cord. Large amount of purulent discharge was obtained from the pleural cavities and mediastinum,. The child's condition normalized.

Learning Points/Discussion: A complication of viral infection was bacterial inflammation of the area of congenital anomaly of the spine. The features of the clinical picture and additional examination do not always unambiguously allow differentiating a bacterial infection from neoplasms.

15-YEAR-OLD BOY RETURNING FROM THAILAND WITH FEVER AND RASH

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): 15-year-old boy returning from Thailand with fever and rash

Background: Dengue is a viral, mosquito-spread disease with high abundance in tropics and subtropics. Secondary and subsequent infections tend to manifest as a dengue hemorrhagic fever (DHF) or even dengue shock syndrome (DSS). With increasing popularity and affordability of exotic holidays the disease is becoming a worldwide problem.

Case Presentation Summary: A 15-year-old boy presented with high fever, headache and muscle pain. The symptoms appeared 5 days after his return from the family holidays in Thailand. He was initially suspected of influenza and received a 5-days course of oseltamivir prescribed by his GP. He gradually developed skin rash, mild hepatosplenomegaly, episodic gingival bleeding and mild symptoms of plasma leakage in the form of palms swelling, and was referred to the hospital. The laboratory results revealed leukopenia and thrombocytopenia with increasing hematocrit. Dengue virus infection was confirmed by simultaneous detection of NS1, IgM and IgG. He met the clinical criteria of dengue hemorrhagic fever and displayed warning signs for severe dengue. The clinical manifestations strongly suggested the consecutive infection with one of dengue virus subtypes. During the 24-36-hour critical (afebrile) phase of illness the patient was closely monitored. He was treated empirically with satisfactory outcome.

Learning Points/Discussion: Affordability of travelling to the exotic destinations results in wide spread of tropical diseases outside of their endemic prevalence. Mild symptoms of dengue: fever, headache, muscle pain can be easily confused with other common illnesses like influenza. Patient's history taking in regard to recent trips and destinations is crucial in differential diagnosis.

ACUTE CHOLESTATIC HEPATITIS, WITH DIRECT HYPERBILIRUBINEMIA AND JAUNDICE, AS A RARE MANIFESTATION OF EPSTEIN BARR VIRUS (EBV) PRIMARY INFECTION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - OTHER

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Title of Case(s): ACUTE CHOLESTATIC HEPATITIS, WITH HYPERBILIRUBINEMIA AND JAUNDICE, AS A RARE MANIFESTATION OF A VIRAL PRIMARY INFECTION

Background: While transaminasemia due to **EBV primary infection** is a common clinical condition, **direct hyperbilirubinemia and jaundice are rare** complications in children. EBV cholestasis is induced by generation of free radicals that are toxic on the bile ducts. Moreover, these immune mechanisms disrupt the transmembrane transport systems of the bile acids into the bile. Our purpose is to describe such a case, our diagnostic approach and its favorable outcome.

Case Presentation Summary: A 15-year old female presented with **fever** (up to 39.5°C) lasting 5 days, **dark-colored urine** noticed during the last 3 days, **jaundice and fatigue** during the last 24 hours.

Physical examination revealed **jaundice**, observed both on the skin and sclerae, **cervical lymphadenopathy** and **hepatosplenomegaly**. Laboratory results were WBC: 15400 (Lymph: 61%-**reactive: 17%**), AST:102(max:31), ALT:94(max:34), γ-GT:42(max:38), ALP:173, **TBIL:15 (DBIL:9.76 >20%TBIL)**, **presence of cold sensitive antibodies**, liver synthetic function within normal range, absence of G6PD deficiency. **Anti-EBV antibodies: IgM>160U/mL (positive>40). Anti-CMV antibodies: IgM>22.7U/mL (positive>22). PCR-blood: EBV detected, PCR-CMV (blood-urine): not detected.** During the course of the disease, the patient developed **pharyngalgia, tonsillar exudate, general lymphadenopathy, liver enzyme elevation** and gradual decrease of serum bilirubin levels [AST:121(max:31), ALT:130(max:34), γ-GT:80(max:38), ALP:293, **TBIL:6.75(DBIL:4.56)**]. During hospitalization, only supportive treatment was provided to the patient and, gradually, both clinical condition and **laboratory results** improved, with the latter **returning to normal 3 weeks later** [AST:33(max:31), ALT:38(max:34), γ-GT:21(max:38), ALP:107, TBIL:1.85 (DBIL:1.1). **Anti-EBV antibodies: IgM>160U/mL, IgG:26.2U/mL (positive>20)**].

Learning Points/Discussion: EBV infection should be considered in the differential diagnosis of children with cholestatic jaundice, **even when the specific signs of infectious mononucleosis are absent**. This approach, may not only accelerate the diagnosis but also limit the performance of unnecessary examinations, with consequent reduction of the diagnostic expenses.

A MORBILLIFORM ERUPTION ON AN ADOLESCENT.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - PHARMACOLOGY

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Title of Case(s): A MORBILLIFORM ERUPTION ON AN ADOLESCENT.

Background: Penicillin allergy is the most commonly reported medication allergy. Delayed reactions are more common than immediate reactions. Delayed reactions to amoxicillin classically start on 7-10th day of treatment and may even begin 1-3 days after cessation of treatment. An example is discussed below.

Case Presentation Summary: A previously healthy 17-year-old boy presented to outpatient clinic with a painful erythema and swelling of the proximal and lateral nail folds of left middle finger. The complaints had been started 8 days ago. As that lesion had been present for <6 weeks, the patient was diagnosed with acute paronychia. Treatment with antiseptic soaks (povidone-iodine) and topical antibiotic (chloramphenicol) yielded no clinical improvement. Oral antibiotic was added. We chose Amoxicillin 1000mg BID to cover bacteria of skin flora (*S.aureus*, *S.pyogenes*) which usually inoculate the periungual tissues after nail fold barrier disruption. During the next days inflammatory changes of the periungual region diminished.

On the 10th day of antibiotic therapy the patient came to the office with numerous nonpruritic erythematous macules and papules on face, trunk and extremities.

The involved areas expanded over several days. Vital signs were normal and he has no complaint but loss of smell. The patient's vaccination status was up-to-date, there were no travel history and close contact with animal during the past year.

SARS-CoV₂ RT-PCR was negative.

Clinical diagnosis: delayed maculopapular (morbilliform) cutaneous eruption associated with Amoxicillin.

Symptomatic therapy was administered and the rash disappeared 13 days later.

Learning Points/Discussion: It can reasonably be assumed that the patient had a delayed maculopapular cutaneous eruption if the history clearly suggests: 1) lesions limited to the skin +/- pruritus, 2) the rash began >1 hour after the last administered dose, 3) did not feature urticaria or angioedema, systemic symptoms, or warning signs of the more severe forms of delayed drug reactions.

METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS ERADICATION AFTER VANCOMYCIN AREA UNDER THE CURVE TARGET ACHIEVEMENT: A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - PHARMACOLOGY

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Title of Case(s): Methicillin-resistant *Staphylococcus aureus* eradication after vancomycin area under the curve target achievement: A case report

Background: The 2020 consensus guideline for vancomycin monitoring recommends switching from trough-based to area under the curve (AUC)-based monitoring. However, the evidence correlating the AUC target attainment with clinical outcomes in pediatric patients is limited.

Case Presentation Summary: A 15-year boy, hospitalized for 7 months for treatment of a X-linked lymphoproliferative disease, presented signs of bacteremia. Blood culture reported methicillin-resistant *Staphylococcus aureus* (MRSA) with vancomycin MIC 1 mg/L. Two blood samples were collected: at 2nd and 6th hour of starting the infusion after steady-state achievement. The one-compartment model with first-order kinetics was used to estimate the pharmacokinetic parameters and vancomycin AUC was estimated by logarithmic trapezoidal rule. Vancomycin therapy started with 40mg/kg daily empirical dose, one-hour infusion, resulting estimated AUC was 223 mg/L.h. We increased the dose to 60 mg/kg/day due to the increased vancomycin volume of distribution. Serum levels were rechecked after steady-state and the patient achieved an AUC of 447 mg/L.h, keeping an AUC of 457 mg/L.h seven days later with the same dose. The patient's general condition gradually improved, with a drop in body temperature to normal values and a decrease in plasma levels of inflammatory parameters. The blood culture became sterile after 14 days and the vancomycin was discontinued. The patient remained hospitalized for treatment of the underlying disease.

Learning Points/Discussion: The vancomycin monitoring based on PK/PD approach, keeping AUC/MIC target between 400 to 600 mg/L.h, ensured the eradication of MRSA. The monitoring based on PK/PD approach permits specific dose adjustments based on individuals' pharmacokinetic parameters and should be implemented to maximize antimicrobial effectiveness and minimize drug-associated toxicity.

PERSISTENT FEVER IN AN 8-YEAR-OLD BOY – A CASE REPORT.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - PIMS-TS / MIS-C

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Title of Case(s): Persistent fever in an 8-year-old boy – a case report.

Background: Pediatric inflammatory multisystem syndrome-temporally associated with SARS-CoV-2 (PIMS-TS), is a newly recognized inflammatory disease. First-line treatments are immunoglobulins, second-line therapy comprises steroids. A few children require biological agents (anakinra, infliximab) due to persistent hyper-inflammation resistant to first- and second-line treatment.

Case Presentation Summary: We admitted an 8-year-old boy on the seventh day of fever with abdominal pain. On admission, the boy appeared unwell and presented with a red throat, coated tongue, cervical lymphadenopathy, macular rash, chapped lips, hyperesthesia, nuchal rigidity, involuntary leg flexion. Laboratory tests revealed elevated CRP (37,5mg/dl), ferritin (12811ng/ml), NT-proBNP (2981ng/ml), and D-dimers (19582ug/L). SARS-CoV-2 status: PCR (-), IgM, IgG antibodies (+). Cerebrospinal fluid results: cytosis 24,70% of polymorphonuclear cells. ECG and echocardiography were normal. He received ceftriaxone. The patient met criteria for PIMS-TS. On day ninth, we administered immunoglobulins. After transient improvement, we observed strawberry tongue, erythema, hyperesthesia with a rise of inflammatory markers. On days 11-13, he received pulsed methylprednisolone followed by immunoglobulins (day 14). After two days, the boy's condition deteriorated again with fever and abdominal pain. Chest and abdomen CT revealed ascites, mesenteritis, pleural effusion, and pulmonary consolidations. He received infliximab (day 16). After two days of improvement, abdominal pain and erythema multiforme returned. The patient was consulted by a surgeon, rheumatologist, and oncologist (normal bone marrow biopsy). Meropenem was administered with three pulses of methylprednisolone (days 26-28), followed by oral prednisone. The patient recovered.

Learning Points/Discussion: PIMS-TS is an acute disease with excellent response to immunomodulatory treatment in most children, and hospitalization lasts usually 7-10 days. However, some children might be particularly resistant to treatment. In such cases, while searching for an effective anti-inflammatory agent, one must thoroughly consider the differential diagnosis, including infectious, oncologic, and rheumatologic disorders.

PEDIATRIC HOSPITALIZATION FOR VARICELLA IN THE ACUTE PHASE: HOW MUCH DOES IT COST?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - POPULATION STUDIES AND SURVEILLANCE

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Title of Case(s): Pediatric hospitalization for varicella in the acute phase: how much does it cost?

Background: *you may wonder how much varicella hospitalization costs*

Case Presentation Summary: Varicella is a very common infection in children. Even if it has generally a benign course, it may require hospitalization due to complications. Aim of our study was to estimate the costs of hospitalization for varicella in the acute phase in a pediatric population. Methods: We calculate the costs for the hospitalization of patients admitted for varicella at Bambino Gesù Children Hospital from 1st November 2005 to 30th June 2019. Results: In the study period, 794 pediatric patients affected by varicella were hospitalized for an average of 8.8 days. The total cost for varicella acute hospitalization was of € 3.142.382, with an average cost of € 3.957,7 for each patient. Considering the medium cost of hospitalization in the acute phase, varicella is an important expense for the national health system. It should be prevented by high vaccination coverage in the susceptible population. Conclusions: hospital costs are an important economic and health assessment point and can be useful for improving vaccination strategies and management of the acute disease.

Learning Points/Discussion: This higher cost reported may be related to the rate of complicated patients (70%) admitted to hospital, with in some cases (25%) developed more than one complication, who required a prolonged hospitalization stay. Out of note, no patient included in the sample size had been previously fully vaccinated against varicella. Moreover, in our study, 40% of patients were unvaccinable due to either their age (287) or their immunodepression status. They would have benefited of a herd immunity, reducing also the AHC cost to 1.668.604 euro, with 1.473.777 euro saving.

EARLY HEPATOBILIARY CLINICAL INVOLVEMENT AS A POTENTIAL COMORBID FACTOR IN CHILDREN WITH KAWASAKI DISEASE: RESULTS FROM ACTIVE SURVEILLANCE IN TWO DIFFERENT LATIN AMERICAN HOSPITALS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - POPULATION STUDIES AND SURVEILLANCE

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Title of Case(s): Early hepatobiliary clinical involvement as a potential comorbid factor in children with Kawasaki Disease: Results from active surveillance in two different Latin American Hospitals

Background: In recent years, there has been an increasing report of Hepatobiliary complications(HBC) in Kawasaki Disease(KD) up to 14.5%. Early clinical HBC may delay treatment of KD, which could further increase the risk of coronary aneurysms. Five patients from Buenos Aires, Argentina, and Tijuana, Mexico, (part of the REKAMLATINA Study Group-Network), were seen with KD and HBC between January/2016 and April/2020, as a result of active/prospective surveillance.

Case Presentation Summary: Five children were included, from which 4 were male. Median age was of 55.8(20-60) months, median length of hospitalization was of 5(3-8) days. At admission: Fever and cervical lymphadenopathy (5), conjunctival injection and cheilitis (4), maculopapular rash (3), limbs edema, "strawberry" tongue, cracked lips, inflammation of BCG scar and testicular edema (2), anal desquamation and coluria/acolia (1). Typical KD: 4. Median white blood cells: 12,654/mm³ (12000-14550), neutrophils: 75.5 % (53-98), platelets: 246.740/mm³ (147000-372700), AST: 198 UI/L (10-382), ALT: 179 UI/L (23-458), GGTP: 87 UI/L(9-143), total bilirubin: 1.33 mg/dl(0.5-4), direct bilirubin: 1mg/dl(0.16-3.3). Coagulogram, liver and biliary functions returned to normal values in all patients within the first 15 and 30 days after Intravenous Immunoglobulin (IVIG) administration. Serology for Hepatitis A, B, C were all negative.

Learning Points/Discussion: Abdominal ultrasound showed cholecystitis signs in all patients with distended gallbladder and enlarged intrahepatic ducts. Echocardiogram was performed (5/5), with pericardial effusion and coronary ectasia found(2). All patients received IVIG (2mg/kg/day). Two children also required a second dose of IVIG, none needed steroids or monoclonal antibodies. All received aspirin(80 mg/kg/day) until 48-72 hs afebrile, and continued for 6 weeks(3-5 mg / kg /day).Conclusions:Children with KD may present either clinical/laboratory findings of HBC. HBC may delay KD diagnosis and treatment, and need to be considered within the KD spectrum.

TREND OF GASTROENTERITIS FROM 2015-2020 AND IMPACT OF LOCKDOWN IN A PEDIATRIC WARD OF NORTHERN ITALY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - POPULATION STUDIES AND SURVEILLANCE

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Title of Case(s): TREND OF GASTROENTERITIS FROM 2015-2020 AND IMPACT OF LOCKDOWN IN A PEDIATRIC WARD OF NORTHERN ITALY

Background: Gastroenteritis (GE) remains an important cause of hospital admissions worldwide, with particular severity in infancy and developing countries. Rotavirus is the main cause of GE in children. Such as many infectious diseases, trend of GE admitted had benefit from health measures performed during 2020 to contrast COVID19 pandemic. In a 6 years retrospective study, data regarding all patients admitted to GE have been collected from the Pediatric Ward of the Hospital G. Fornaroli of Magenta (Milan, Italy).

Case Presentation Summary: From 2015 to 2020, 672 patients were admitted to gastroenteritis (10.5% of total pediatric admissions to medical diagnosis). Rotavirus resulted the main cause of infectious GE in our center (22.1% of gastroenteritis admitted, 2.3% of all the admissions), followed by Salmonella, Campylobacter and Adenovirus. Considering 2020 data, total number of medical admissions drastically declined (1153 average number of yearly admissions during 2015-19 vs 634 during 2020) and rate of GE reduced too (120,8 average yearly number of gastroenteritis admitted during 2015-19 and 68 during 2020). Proportionally, also number of many causes of gastroenteritis reduced during 2020: Rotavirus (29 patients on average each year during 2015-2019 vs 4 during 2020), Salmonella (14,8 vs 6) and Adenovirus (6 vs 3), with only exception of Campylobacter gastroenteritis (9,8 patients admitted yearly during 2015-2019 vs 10 during 2020).

Learning Points/Discussion: Gastroenteritis, and in particular Rotavirus GE, remain an important cause of morbidity and hospital admissions worldwide. During 2020, health measures performed to contrast COVID 19 pandemic (social distancing, lockdown, improvement of hand washing, use of facial mask) had also a significant impact on this important disease. Implementation of Rotavirus vaccination in early life should be considered to prevent one of the most important cause of GE.

**COMPARISON OF ROTAVIRUS GASTROENTERITIS DURING 2015-2020 BETWEEN CENTERS:
EXPERIENCE AMONG ITALY AND PORTUGAL**

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - POPULATION STUDIES AND SURVEILLANCE

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Title of Case(s): COMPARISON OF ROTAVIRUS GASTROENTERITIS DURING 2015-2020 BETWEEN CENTERS: EXPERIENCE AMONG ITALY AND PORTUGAL

Background: Rotavirus (RV) is an important and severe etiologic cause of acute gastroenteritis (AGE) among children, accounting an important rate of hospital admissions worldwide. In a retrospective analysis, prevalence of RV AGE has been compared from 2015 to 2020 between two pediatric centers: the Hospital G. Fornaroli of Magenta (Italy) and the Centro Hospitalar Tâmega e Sousa of Penafiel (Portugal).

Case Presentation Summary: In a 6 years retrospective data collection, from 2015 to 2020, 149 patients were admitted to RV AGE in the Hospital of Magenta and 154 in the Hospital of Penafiel. They accounted respectively 2.3% and 3.4% of total admissions, and 22.1% and 23.8% of total AGE admitted during the study period. RV resulted endemic during winter/spring months: 119 (79.8%) cases from January to May in Magenta and 115 (74.6%) cases from December to May in Penafiel, with a peak on March in both centers. The rate of RV AGE drastically decreased during 2020 in consequence of COVID-19 pandemic and improved health care (4 admissions in Magenta and 2 in Penafiel).

Learning Points/Discussion: Despite the availability of two vaccines, RV remains an important cause of morbidity. In our data comparison, RV had an important impact on hospital pediatric admissions. A multi-country data comparison could better emphasize this public health problem, with the aim to improve and sensitize physicians on RV vaccination, actually offered actively and free of charge to all newborns from 2018 in Italy and included in national immunization program from October 2020 only to risk groups in Portugal.

CYSTIC ECHINOCOCCOSIS IN TWO ASYMPTOMATIC ADOLESCENTS FROM SYRIA.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - REFUGEES AND MIGRANTS

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Title of Case(s): Cystic mass lesion in two asymptomatic adolescents from Syria

Background: Infection with *Echinococcus granulosus* can lead to cystic echinococcosis (CE), predominantly in liver (65%) and lungs (25%). CE is a major public health problem in endemic areas such as South America and the Middle East but can occur in any part of the world, especially due to international migration.

Case Presentation Summary: We report two cases of CE in male adolescent refugees from Syria who were referred to our centre because of suspected tuberculosis (TB) after chest x-ray for TB screening showed a solitary cystic mass in the lungs. At the time of presentation both patients were asymptomatic. Infection with *E. granulosus* could be confirmed with serology. Both patients underwent surgery but only patient 1 received albendazole 1 week prior to surgery. While patient 1 had a cardiopulmonary arrest during right middle lobe lobectomy, most likely due to rupture of the cyst, in patient 2 the cyst was resected en-bloc without rupture. PCR from the cyst fluid was positive for *E. granulosus* in patient 1, while in patient 2 histology of the cyst showed the typical PAS (periodic acid-Schiff) positive laminated layer. Both patients survived and showed good response to treatment.

Learning Points/Discussion: CE is a serious infection and important differential diagnosis in patients presenting with cystic lesions, especially in liver and lungs. Risk-benefit of preoperative albendazole treatment must be assessed stringently. Early diagnosis is key to prevent severe sequelae. Due to the lack of standardised screening protocols for refugees in many countries, cases stay undetected for a long time.

RAOULTELLA PLANTICOLA URINARY TRACT INFECTION IN A YOUNG, ANTI-HCV POSITIVE, FEMALE PATIENT FROM THE RECEPTION AND IDENTIFICATION CENTRE OF LEROS ISLAND, GREECE, IN JANUARY 2021

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - REFUGEES AND MIGRANTS

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Title of Case(s): Case report of *R.planticola* UTI in a young, anti-HCV positive, refugee female from the Reception and Identification Centre of Leros island, Greece, in January 2021

Background: *Raoultella planticola* is a gram-negative, oxidase-negative, catalase-positive, aerobic, non-motile bacteria within the Enterobacteriaceae family. This bacterium was initially classified in the genus *Klebsiella* as *K.planticola*, until the creation of the genus *Raoultella* in 2001. It is considered to be an environmental organism commonly found in fish, water and soil. Due to its ability to convert histidine to histamine, it has been associated with histamine poisoning in humans. Although it is a rare cause of human infections, in recent years the frequency of *R.planticola* infections reported has increased.

Case Presentation Summary: A young female from the refugee camp of the isle of Leros presented to the National Health Center-General Hospital-Mental Institution of Leros, for standard check-up. Haematological and biochemical blood test parameters were at normal reference range, while immunological control was positive for anti-HCV antibodies. Urine analysis revealed moderate pyuria (deep stick proved positive for leucocyte esterase (+) and microscopy showed 20-25 leucocytes/hpf). Urinary culture that followed the next day revealed mono-cultural gram-negative bacterial growth > 100000 CFU/ml at McKonkey agar. The identification and the antibiogram that resulted the day after that, showed *Raoultella planticola*, fortunately sensitive to a lot of antibiotics, including Cefuroxime. The patient, although asymptomatic, was treated for prevention with Cefuroxime, in form of Cefuroxime axetil, per os.

Learning Points/Discussion: *Raoultella planticola*, although a relatively rare, opportunistic pathogen, is an emerging entity in human infections (some of them serious and even, potentially fatal), with multi-drug resistant strains being increasingly reported and with several reports of virulent infections in comorbid at-risk patients. To the best of our knowledge this was the first case of *R.planticola* UTI in an anti-HCV positive patient and the first incident of *R.planticola* infection in insular Greece.

LARGE PULMONARY CYSTIC LESION IN A MIGRANT CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - REFUGEES AND MIGRANTS

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Title of Case(s): LARGE PULMONARY CYSTIC LESION IN A MIGRANT CHILD

Background: Cystic echinococcosis, also called hydatidosis, is caused by infection with *Echinococcus granulosus* (*E. granulosus*). It is considered a neglected zoonotic parasitic infection by the WHO, with more than 1 million people affected worldwide. It is relatively uncommon in children. The two most common locations of hydatid cyst are liver and lung. Clinical presentation depends on the site and size of the lesion, from asymptomatic to life-threatening conditions such as anaphylactic shock.

Case Presentation Summary:



A 5-year-old boy with a Moroccan rural origin was referred to our hospital. A chest X-ray was performed as part of a residence visa residence protocol, with an incidental finding of a cystic mass in the right lung. He has a pet dog. The child was asymptomatic except for decreased appetite. P.E. showed hypoventilation of the right hemithorax, without other findings. A chest CT scan confirmed the finding of a right parahilar cystic mass of 95x54 mm that contacted the right ventricle, superior cava vein, and the right upper lobe bronchus. The images were highly suggestive of the diagnosis of hydatid cyst. Successive blood tests were normal, and also abdominal and cardiac ultrasounds. Treatment was started with Albendazole (14 mg/kg/day). *Echinococcus granulosus* serology was positive: 1/1280. Surgery was performed and evolution was favorable. The diagnosis was also proved by histology.

Learning Points/Discussion: Hydatid cysts in children involves more commonly lungs than liver. Prevention (deworming dogs, slaughterhouse hygiene, and public education.) is the main method for its eradication but still having great limitations in underdeveloped areas. European epidemiology in children is difficult to assess because of under-reporting, but is increasing, because of high immigration flows from endemic countries. With appropriate combination of pharmacological and surgical treatment it has a good prognosis.

EP614 / #787

WHY NOT CHLORAMPHENICOL?

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - RESISTANCE

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Title of Case(s): Why not Chloramphenicol?

Background: Chloramphenicol is a broad-spectrum antibiotic with excellent penetration in different body tissues including the Central Nervous System (CNS) and an oral bioavailability that is superior to the intravenous formulation. Though exceedingly rare, its hematological toxicity has conditioned a progressive abandonment of this drug in developed countries. In an era of increasing multidrug resistant bacteria and few viable new options, there is a renewed interest in reviving old antibiotics.

Case Presentation Summary: We present a case of an 8-month-old infant with an *E. coli* subdural empyema with severe beta-lactam hypersensitivity after 28 days of treatment. Intravenous chloramphenicol was initiated at a starting dose of 100 mg/Kg that was reduced to 80 mg/kg due to transient neutropenia. There was a favorable outcome, and no other side effects were observed on the follow up.

Learning Points/Discussion: Chloramphenicol may be considered as a second line option for the treatment of susceptible CNS infections. Also, some recent studies have proven the susceptibility of multidrug resistant *Enterobacteriaceae* to Chloramphenicol. In addition to the intravenous formulation, the now unavailable oral formulation would allow earlier hospital discharge in patients with CNS infection. Due to its low price though, it may not be attractive to the pharmaceutical industry. Thus, it should be up to the medical community to encourage its revival.

TRAVELING BACTERIA: BEWARE OF WHERE THEY COME FROM

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - RESISTANCE

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Title of Case(s): TRAVELING BACTERIA: BEWARE OF WHERE THEY COME FROM

Background: Typhoid fever is a potentially severe systemic illness caused by *Salmonella enterica enterica* serovar Typhi (S. Typhi). Incidence is highest among children and young adults in low to middle income countries, especially in South Asia. In Europe, most cases are imported from endemic countries. Treatment has been based on third-generation cephalosporins and azithromycin. Since November 2016, a large outbreak of extensively drug-resistant (XDR) S. Typhi has emerged in Pakistan, challenging current empiric therapeutic strategies.

Case Presentation Summary: One day after arrival from Pakistan, a healthy 4-year-old girl presented to the hospital with a 4-day history of high-grade fever, abdominal pain and vomiting. On admission she was acutely ill, febrile, pale, dehydrated and tachycardic, with no signs of focal infection. Laboratory evaluation revealed hemoglobin 7.5 g/dL, leukocytes 5900/μL, CRP 24.76 mg/dL, ALT 71 UI/L, AST 101 UI/L, normal renal function, urinalysis and coagulation profile, and negative rapid test for *Plasmodium spp.* Abdominal ultrasound and chest radiograph were normal. Considering a recent history of swimming in a still water lake in Pakistan, enteric fever was presumed and intravenous hydration and ceftriaxone were started. After two days without significant improvement, antibiotherapy was switched to meropenem. Meanwhile, blood cultures grew XDR S. Typhi susceptible to azithromycin and carbapenems. Fever subsided, laboratory results normalized and complete recovery was achieved after 14 days of meropenem therapy. Bacterial genome was sequenced and integrated with other genomes present in public databases.

Learning Points/Discussion: With globalization and increasing ease of international travel, physicians must be aware of possibly imported infectious diseases and resistance profiles. The growing incidence of XDR S. Typhi has implications on the choice of antibiotherapy in patients traveling from Pakistan, since the standard empiric ceftriaxone may be ineffective against these strains.

SUCCESSFUL TREATMENT OF TRICHOSPORON ASAHII FUNGEMIA IN IMMUNOCOMPROMISED PEDIATRIC PATIENT: A CASE REPORT AND LITERATURE REVIEW

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SEVERE/SYSTEMIC FUNGAL INFECTIONS

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Title of Case(s): Successful Treatment of *Trichosporon asahii* Fungemia in Immunocompromised Pediatric Patient: A Case Report and Literature Review

Background: *Trichosporon* spp. are yeast-like anamorphic organisms that belong to the basidiomycetes yeasts, they are widely distributed in nature and isolated from soil, wood, and seawater. *Trichosporon Asahii* (*T. asahii*) is the cause of disseminated infection in neutropenic patients with underlying hematological malignancy or receiving immunosuppressive therapy. Disseminated disease (trichosporonosis) is often fatal with a mortality rate as high as 64%. Managements remains a challenge because of limited data on the in vitro and in vivo activities of antifungal drugs.

Case Presentation Summary: We report a case of a 15-year-old boy newly diagnosed acute myeloid leukemia (AML) with central nervous system involvement. After the second chemotherapy cycle, he presented with neutropenic fever started on Piperacillin/Tazobactam and Gentamicin. Second day after admission, central and peripheral blood cultures grew yeast in which Liposomal amphotericin B was added. Final yeast identification and susceptibility testing showed *Trichosporon asahii* (*T. asahii*) which is sensitive to Liposomal amphotericin B (MIC 0.5) and Voriconazole (MIC < 0.12), but resistant to Micafungin (MIC > 8) and Caspofungin (MIC > 8). Subsequently, Intravenous voriconazole was added. The central venous catheter removed within 48h after microbiological culture results, however, the patient persistently febrile with persistently positive blood cultures, the first negative blood culture was 10 days after the central line removal. Imaging studies for the lungs and abdominal organs were negative for deep seated fungal infections. The patient completed four weeks on dual antifungal therapy, recovery was full with no relapse after six months of follow-up.

Learning Points/Discussion: Although rare, *Trichosporon asahii* fungemia can be disseminated and fatal. We emphasize the importance of early diagnosis and surgical removal of the infected venous catheter combined with initiation of appropriate antifungal therapy to achieve a successful outcome .

RENAL ASPERGILLOSIS IN A 10-YEAR-OLD BOY WITH RELAPSED ALL AFTER HSCT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SEVERE/SYSTEMIC FUNGAL INFECTIONS

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Title of Case(s): RENAL ABSCESS IN A 10-YEAR-OLD BOY WITH RELAPSED ALL AFTER HSCT

Background: Invasive aspergillosis (IA) is a mold infection with high mortality and morbidity seen in immunocompromised individuals. Due to inhalation of conidia, infections often occur in the lungs and sinuses. Extrapulmonary involvement is less common in IA. We here report renal aspergillosis in a 10-year-old boy with relapsed ALL after HSCT.

Case Presentation Summary: A 10-year-old-boy who developed relapsed ALL after allogeneic HSCT due to T-cell lymphoma was admitted to the Pediatric Hematology Clinic for chemotherapy. He was receiving liposomal amphotericin B as prophylaxis. During the prolonged and profound neutropenia period, fever was observed and empirical antibiotic therapy was initiated. Physical examination was normal. Blood and urine cultures showed no growth of either bacteria or fungus. Galactomannan levels were increased. Thoracic CT, sinuses CT, and cerebral MRI did not show any abnormalities for IA. Abdominal ultrasonography showed a hypoechoic lesion in the right kidney parenchyma and it was evaluated in favor of perinephric abscess. Abscess drainage was performed by interventional radiology. Histopathology revealed narrow-angle and septate fungal hyphae structures with necrosis in tissue areas consistent with *Aspergillus* spp. The patient was initially treated with voriconazole and galactomannan levels and lesion sizes were monitored radiologically. The lesion was surgically removed due to the absence of regression in the lesion on abdominal CT. Galactomannan was negative ten days after the surgery. No new lesion was observed during follow-up.

Learning Points/Discussion: In individuals at high risk for IA, *Aspergillus* species can involve extrapulmonary organs by hematogenous spread from the lungs and angioinvasion to many organs, including the brain, eye, liver, and kidneys. Isolated renal aspergillosis is extremely rare in children. Medical treatment is adequate for small abscesses. Surgical removal may require in cases that do not regress despite antifungal therapy.

DISSEMINATED BLASTOMYCOSIS IN CHILD WITH APLASTIC ANEMIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SEVERE/SYSTEMIC FUNGAL INFECTIONS

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Title of Case(s): DISSEMINATED BLASTOMYCOSIS IN CHILD WITH APLASTIC ANEMIA

Background: Blastomycosis is a fungal infection caused by *Blastomyces* spp, it occurs sporadically in our country. Symptoms of blastomycosis are non specific and there is often a delay in diagnosis. Mortality remains high in immunocompromised host. This report describes a case of disseminated blastomycosis in a 4-years-old boy with severe aplastic anemia.

Case Presentation Summary: A 4-year-old child with idiopathic severe aplastic anemia presented with prolonged fever, enlarged spleen, scattered violaceous skin nodules in abdomen and legs and cervical lymphadenopathy. Chest and abdominal CT scan showed a tree-in-bud pattern in the inferior lobe of the right lung, mediastinal lymphadenopathy and hepatosplenomegaly. Diagnosis of blastomycosis was confirmed by histopathologic examination of skin and lymphadenopathy biopsy. He received liposomal amphotericin B for a period of three months followed by voriconazole. Allogeneic hematopoietic stem cell transplantation from matched donor was performed after one month of antifungal therapy. He has improved partially.

Learning Points/Discussion: Blastomycosis is characterized by variable manifestations but lung and skin are mostly involved. It is associated with high morbidity and mortality in immunocompromised patients.

ATYPICAL ETIOLOGY AS A COMPLICATION OF THE SURGICAL WOUND

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SKIN INFECTIONS

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Title of Case(s): ATYPICAL ETIOLOGY IN A COMPLICATED SURGICAL WOUND

Background: Ecthyma gangrenosum(EG) is an atypical manifestation of *Pseudomonas aeruginosa*(PsA) infection, infrequent in children. Generally in the context of sepsis, non-bacteremic form are possible. We present a case of EG development in a surgical wound, secondary to a CSF fistula. Few cases of EG have been described as a complication of surgical site but none previously associated with CSF fistula.

Case Presentation Summary: A 4-year-old patient underwent scheduled resection of a midbrain pilocytic astrocytoma and placement of external ventricular drainage. Postoperative period complicated with catheter-related sepsis-meningitis due to *S.epidermidis*, treated with vancomycin, and CSF fistula through the surgical wound, resolved with suture. On the 25th postoperative day, circular crusty lesions were observed in the occipital area, the two larger ones in the surgical scar, and a satellite one in the parietal area. A pressure ulcer was suggested as the first diagnostic possibility due to a long-term bed rest and the location in a declining area. However, the rapid progression of the lesion (within 24 hours) raised clinical suspicion of EG, subsequently confirmed with positive cultures in local exudate and in the tip of ventricular drainage. He presented good response to ceftazidime and debridement cures with silver-sulfadiazine.



Learning Points/Discussion: Our case presents a very atypical form of EG at the surgical wound as a complication of a CSF fistula, in a non-septic patient. It should be considered in the differential diagnosis of pressure ulcers, and suspected early in crusty lesions with necrotic background in the surgical site, especially if its time of establishment is abnormally fast, if CSF fistula is suspected, or if the patient has risk factors for PsA infection. Due to the potential severity of this infection, early suspicion may improve the patient prognosis.

GLUTEAL ABSCESS IN AN 8 YEARS OLD GIRL WITH CHRONIC RENAL FAILURE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SKIN INFECTIONS

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Title of Case(s): Gluteal abscess in an 8 years old girl with chronic renal failure

Background: Infections are a major contributor to morbidity and mortality in end-stage renal disease patients. It should be noted that the immune dysfunction in uremia is associated with alterations in the two major branches of the immune system, innate and adaptive immunity.

Case Presentation Summary:



An 8-year-old girl with chronic renal failure caused by vesicoureteral reflux and is undergoing peritoneal dialysis, brought with fever, erythema, and pain in the gluteal area. Blood tests showed leukocyte $18.900/\text{mm}^3$, C-reactive protein 239 mg/L, procalcitonin 9.41 ng/mL. Left gluteal skin and lower skin tissue were edematous and 57x24 mm abscess formation was seen in ultrasonography. Intravenous ampicillin-sulbactam and clindamycin treatment was given to the patient. In a clinical follow-up, gluteal erythema became larger on physical examination, leukocytosis was detected in peritoneal dialysis sample and thought peritonitis. Widespread inflamed tissue including left obturator muscle, presacral area, mesorectal fascia, and 8x5x6 cm abscess formation leading from left ischioanal area to left gluteal area was seen in magnetic resonance imaging with contrast. The abscess was drained by a pediatric surgeon. Treatment was changed as intravenous vancomycin and meropenem, intraperitoneal cephazolin, and ceftazidime. After drainage and broad-spectrum antimicrobial treatment, rapid remission was seen and the patient was discharged after the 10th day of hospitalization.

Learning Points/Discussion: Immune dysfunction according to renal failure increased the risk for infections for patients. The abscess is an uncommon clinical situation, near location to the peritoneal area should thought us peritonitis.

CERVICAL LYMPHADENITIS IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): Cervical lymphadenitis in children

Background: Cervical lymphadenitis is a common clinical presentation in the pediatric age group and it is largely inflammatory and infectious in etiology. It is a serious condition requiring urgent diagnosis and treatment. Here we reported all the cases that were hospitalized for cervical lymphadenitis in our pediatric department over a period of 3 years (2017-2019).

Case Presentation Summary: thirty-five children were hospitalized with a median age of 3 year 6 months. Twenty-nine patients had received prior inadequate antibiotic treatment for angina associated with non-steroidal anti-inflammatory drugs (self-medication). Common clinical feature was : unilateral febrile painful laterocervical mass (longest diameter ranged from 2 to 8 cm). Physical examination revealed inflammatory skin (6 cases), febrile torticollis (4 cases) satellite lymphadenopathy (16 cases). Ultrasound scan was performed as the first-line imaging tool in 33 cases. Only one patient had developed acute mastoiditis. Homolateral Internal Jugular veinous thrombosis occurred in one patient. First-line empirical antibiotic therapy involved intravenous amoxicillin-clavulanic acid. Surgical drainage was performed in 6 patients in whom the cervical CT scan showed abscess requiring cefotaxime vancomycine and metronidazole. Bacteriological samples were sterile 5 cases and were positive for Mycobacterium tuberculosis in only one case. Mean hospital stay was 6 days. No serious complications occurred and there was no mortality.

Learning Points/Discussion: Lymphadenitis is a serious condition requiring urgent diagnosis and treatment. Failure to respond to empiric antibiotics should trigger a diagnostic re-evaluation to determine the need for surgical intervention and/or the possibility of alternative microbiologic diagnoses.

A RARE CASE OF MULTIPLE ABSCESSSES IN A YOUNG BOY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): A RARE CASE OF MULTIPLE ABSCESSSES IN A YOUNG BOY

Background: Due to limited therapeutic options, vancomycin resistant *Enterococcus faecium* (VREF) is of great clinical significance. Rising proportions of VREF infections have been reported worldwide. We describe the case of a boy with multiple abscesses by VREF and multi-drug resistant *Escherichia coli*.

Case Presentation Summary: A previously healthy 17-years-old boy was admitted for painful scrotal swelling. At presentation, the patient was pale and sick. Investigations revealed a white blood cell count (WBC) of 15880/mm³, with 93% neutrophils and C-reactive protein (CRP) 26 mg/dL (vn < 0.5 mg/dL). A surgical drainage revealed an abscess, whereby meropenem was started. On fourth day of hospitalization, dyspnea and fever (39 °C) appeared and a total-body computerized tomography (CT) showed multiple lung and abdominal abscesses. Thus, segmental resection of a necrotic area of sigma was necessary; at the same time, a diaphragmatic fistula was detected during the removal of the thoracic abscesses. Due to relapse of multiple abscesses that required re-aspiration, worsening of clinical conditions and persistence of high CRP values, an antibiotic regimen with clindamycin, vancomycin and piperacillin/tazobactam was introduced. Intraoperative cultural specimens revealed VREF and multi-drug resistant *Escherichia coli*. Therefore antibiotic therapy was replaced with linezolid plus ertapenem and continued for 6 weeks. Clinical and radiological improvement was obtained, as well as normalization in CRP values. To exclude immunological disorders, immunoglobuline serum levels, complement system and oxidative burst assays were performed: all these investigations resulted negative. Finally, the patient was discharged in good clinical conditions.

Learning Points/Discussion: VREF may cause severe infections that require complex treatment, including long course antibiotic therapy and sometimes also surgery, with a high morbidity. Further epidemiological studies are needed to understand the community incidence and spread of VREF.

WHAT TO CONSIDER WHEN THINGS HEAT UP: A RARE CAUSE OF FUO

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): What to consider when things heat up: a rare case of FUO.

Background: Fever of unknown origin is a common conundrum for the pediatric specialist. Differential diagnosis includes infectious and non-infectious causes. We present an unusual cause of FUO.

Case Presentation Summary: A 15-year-old female with no significant past medical history presented with 7 weeks of daily high

fever, intermittent rash, vomiting, and malaise. She was treated with Augmentin for 1 week at the beginning of her illness and symptoms subsided, but returned shortly thereafter.

Physical exam was unremarkable. Labs

were remarkable for leukocytosis with left shift, microcytic anemia, elevated LDH and ferritin above 20,000 ng/ml. On imaging, abdominal CT showed a 6.4cm right adnexal

teratoma. Patient underwent laparoscopic excision, removing purulent and foul-smelling mass which subsequently grew

pansensitive pseudomonas aeruginosa on tissue culture; Biopsy confirmed mature cystic

teratoma. Patient's course was further complicated by hemorrhagic ascites and

anemia. Patient was stabilized and fevers resolved with removal of mass and course of antibiotics. Upon 18 month followup, she

was doing well without continued medical issues.

Learning Points/Discussion: In females with chronic fever of unknown origin, when other sources of fever have been ruled

out, it is important to consider rare causes that can include ovarian masses.

A VERY RARE INFECTIOUS AGENT IN A CHILD: LECLERCIA ADECARBOXYLATA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): A Very Rare Infectious Agent in a Child: *Leclercia adecarboxylata*

Background: *Leclercia adecarboxylata* is an extremely rare gram-negative bacillus in humans which belongs to the *Enterobacteriaceae* family. Transmission of infection usually occurs after the wound comes into contact with infected water. It is more common in individuals with underlying immunodeficiency. In recent literature, it has also been reported in patients with intestinal pathologies, in immunocompetent adults and children, reveals the importance of this pathogen and the need for further investigation.

Case Presentation Summary: A 15-months-old female patient admitted to the emergency room with fever, constipation and decreased oral intake. Physical examination revealed no pathological finding, except for oropharyngeal hyperemia. In her medical history, it was learned that she was operated for craniosynostosis, had a constipation problem for a long time, had been treated for chronic constipation, and therefore she is still under examination. After the yield of gram-variable bacillus in the blood culture, ceftriaxone treatment was initiated. Blood culture yielded *Leclercia adecarboxylata*. The ceftriaxone therapy was changed to ampicillin according to the antimicrobial susceptibility test results. Under this treatment, the fever decreased, her general condition improved, and control blood culture was sterile. She was discharged on the 10th day of her hospitalization without any complication.

Learning Points/Discussion: In conclusion, *Leclercia adecarboxylata* is an opportunistic pathogen that is increasingly seen in individuals with immune deficiencies or soft tissue / bone infections. It should be kept in mind that it may cause bloodstream infections in children with chronic bowel problems. In our patient, fever following the constipation episodes suggested that there may be a bacterial translocation from the bowels. Our patient differs from other pediatric cases in the literature in that there is no known underlying immunodeficiency and no recent muscle-bone damage or infection.

A CASE SERIES OF FUSOBACTERIUM INFECTIONS IN CHILDREN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): A case series of *Fusobacterium* infections in children

Background: *Fusobacterium* family is a non-spore forming anaerobe present on the oropharynx's normal flora. *Fusobacterium necrophorum* and *Fusobacterium nucleatum* are the most common and virulent. It's a rare cause of disease in pediatric patients presenting with severe suppurative manifestations. Its incidence is increasing worldwide.

Case Presentation Summary: We report five pediatric cases between 3-17 years old with *Fusobacterium* infection over a period of 2 years (2019-20). Four had predisposing factors like dental cavities. All children presented with prolonged fever and negative blood cultures. Two patients presented meningitis associated with pansinusitis and otomastoiditis, one patient pneumonia with empyema, one patient osteomyelitis complicated with septic arthritis, pyomyositis and femoral head necrosis and one patient a retropharyngeal abscess complicated by Lemierre syndrome and septic shock. *Fusobacterium* was identified in cerebrospinal fluid culture in one patient and four were identified by 16s PCR: *Fusobacterium necrophorum* (3) and *Fusobacterium nucleatum* (2). The average length of stay and of antibiotic therapy were 65 and 62 days, respectively. Coinfections with *Candida albicans*, *Staphylococcus lugdunensis*, *Streptococcus constellatus* infections were observed in 3 patients. The most frequent combination of antibiotics was meropenem with clindamycin or metronidazole. One patient needed hyperbaric oxygen therapy. All patients required surgical interventions. Three patients required intensive care. None of the patients died but all presented sequelae as hypoacusis, movement limitation and long-term respiratory disfunction.

Learning Points/Discussion: *Fusobacterium* infections were associated with extended hospital stay, prolonged antibiotic therapy, and surgical intervention. As anaerobic cultures have low sensitivity, 16s PCR is a helpful but more costly option in these situations to establish the etiological agent and adjust antibiotic therapy. Despite no mortality in this series, *Fusobacterium* infections are known to be aggressive with high morbidity and short-to-medium-term sequelae.

INFREQUENT LOCATION OF BONE INFECTION: PRIMARY STERNAL OSTEOMYELITIS WITH PREESTERNAL ABSCESS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): INFREQUENT LOCATION OF BONE INFECTION: PRIMARY STERNAL OSTEOMYELITIS WITH PREESTERNAL ABSCESS

Background: Primary acute sternal osteomyelitis (OM) is a rare entity (0.2% of hematogenous OM). It's usually transmitted by the hematogenous route and the most common etiology is *S. aureus*, although other microorganisms may be involved.

Case Presentation Summary: We present the case of a 9-month-old male infant who consulted for recent-onset mid-thoracic tumor and 4 days fussiness that increased in supine position requiring analgesia on several occasions. He also had catarrhal symptoms and low-grade fever for 3 days and respiratory distress in the last few hours. Unremarkable past medical history. **PHYSICAL EXAMINATION:** Intermittent crying, superficial tachypnea, expiratory wheeze. Tumor of bony consistency, hot, erythematous, non-fluctuating and very painful on palpation, diameter of about 4 cm on the central sternal region. **SUPPLEMENTARY TESTS:** he had elevated acute phase reactants, normal peripheral blood smear, 0 mm Mantoux and no pathological findings on chest X-ray. A chest MRI was performed, which showed images suggesting sternal OM and preesternal abscess. Given the favorable evolution after the first hours of antibiotic therapy with IV cefuroxime, conservative management was decided. The patient had favorable evolution with complete symptom resolution. IV cefuroxime was maintained for 6 days, followed by 10 days PO cefadroxil.

Learning Points/Discussion: Primary sternal OM is a rare entity, presenting with subtle symptoms that delay its diagnosis and treatment. MRI is mandatory to evaluate the extent of the infection and to rule out complications. The isolation of other microorganism than *S. aureus* or a poor response to conventional treatment forces us to rule out other causes or underlying diseases such as TB, sickle cell disease (*Salmonella typhi*) and leukosis / immunodeficiencies (opportunistic).

PEDIATRIC PARINAUD OCULOGLANDULAR SYNDROME - A PEDIATRIC CASE SERIES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): PEDIATRIC PARINAUD OCULOGLANDULAR SYNDROME - A PEDIATRIC CASE SERIES

Background: Parinaud oculoglandular syndrome (POS) is characterized by unilateral granulomatous conjunctivitis and ipsilateral (pre-auricular or submandibular) lymphadenitis, with variable etiology. Among the most common causes are *Bartonella henselae* and *Sporothrix schenckii*. The diagnosis is based on clinical and epidemiological findings, and serological tests to confirm the causing agent. We described three cases of POS due to infection caused by these microorganisms.

Case Presentation Summary: Case 1: A healthy 3-year-old boy was admitted with hyperemia, edema, pruritus, and purulent secretion in the right eye for one month, associated with a nodular lesion in the malar region and cervical inflammatory lymph nodes on the same side. There was recent intimate contact with a domestic cat with sporotrichosis. Culture-confirmed sporotrichosis was treated with itraconazole for 6 months and symptoms improved after 2 months. Case 2: A healthy 13-year-old boy was admitted with hyperemia, edema, pruritus, and purulent secretion in the left eye for eight days, associated with ipsilateral cervical, retro auricular, and submandibular inflammatory lymph nodes. There was recent intimate contact with domestic cats. Serology-confirmed bartonellosis was treated with azithromycin for 14 days. Case 3: A 10-year-old boy presented with a tumor on his left lower eyelid for 2 weeks, followed by a new non-pruritic, painless lesion in the left pre-auricular region and isolated fever. There was recent intimate contact with domestic cats. Serology-confirmed bartonellosis was treated with clarithromycin for 14 days.

Learning Points/Discussion: POS is a rare, atypical, and non-specific presentation of several bacterial, viral, and fungal infections. The clinical suspicion, in addition to an active epidemiologic evaluation, is essential to an adequate and rational laboratory investigation. Treatment is curative and sequelae are infrequent.

6-YEAR-OLD CHILD WITH STEVENS-JOHNSON SYNDROME ASSOCIATED WITH BLOOD PCR-CONFIRMED ADENOVIRUS INFECTION.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): CHILD WITH STEVENS-JOHNSON SYNDROME

Background: Stevens-Johnson Syndrome (SJS) is a rare, life-threatening condition, characterized by extensive epidermal necrosis and detachment, with mucocutaneous involvement. Many believe the existence of virus-induced SJS. Adenovirus is reported as a possible trigger of SJS. There are 4 published cases suggesting an association between adenovirus and SJS in the pediatric population, with not always definite documentation of the acute infection.

Case Presentation Summary: A 6-year-old boy was admitted due to fever, rash and respiratory distress. He developed bilateral conjunctivitis and photophobia. He had been treated with desloratadine, levocetirizine, inhaled salbutamol, paracetamol and ibuprofen. The rash initially presented on his face and expanded over his trunk and limbs. On the patient's trunk the rash was macular with blisters at the beginning and evolved into vesicular with red purpuric base. There was positive Nikolsky sign with prominent epidermis detachment, mainly on patient's face. Mouth, nose, eyes and urethral meatus were affected. The body surface affected was approximately 9%. He was treated appropriately (IVIG, methylprednisolone, supporting treatment) and his symptoms gradually resolved. However, he is suffering from bronchiolitis obliterans. Cold agglutinins, serum antibodies and nasal secretions PCR (FilmArray for multiple pathogens) for M. Pneumoniae were negative. Blood PCR was positive for adenovirus. IgG antibodies for adenovirus were negative on disease day 4 and positive on day 19.

Learning Points/Discussion: Adenovirus can be an infectious cause of SJS and therefore should be included in the screening in all suspicious cases. Its true incidence might have been underestimated, as many cases are not tested for a wide range of infections.

"DOCTOR, I CANNOT OPEN MY MOUTH": A CASE REPORT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): TETANUS IN AN UN-VACCINATED 8-YEAR-OLD BOY. CASE REPORT.

Background: Tetanus is a life-threatening disease. Despite medical advances, it is still associated with significant morbidity and mortality worldwide. Elderly people, diabetics, drug users, and unvaccinated population are at high risk for infection.

Case Presentation Summary: An 8-year-old boy presented at the emergency department with neck and back pain and inability to open his mouth and swallow liquids (lockjaw). A nail injury at his right foot had been reported 7 days ago. His vital signs were initially within normal limits with a GCS 15, but saturation rapidly dropped. He received basic life support and was subsequently admitted to ICU in order to secure his airway and improve oxygenation. Clinical presentation with opisthotonos, trismus and risus sardonicus, lack of vaccination and preceding trauma history pointed to a diagnosis of tetanus. The patient remained heavily sedated and intubated for 14 days. He received cefotaxime and metronidazole for suspected aspiration pneumonia. He failed intubation due to recurrent muscle contractions and rigidity at sedation withdrawal. His cardiological evaluation revealed a structurally heart with good function and sinus tachycardia. Due to presumed diagnosis of tetanus, tetanus antitoxin was administered and patient was vaccinated for tetanus. The patient received intensive courses of physiotherapy for improving mobility and strengthening pelvic floor muscle function, after prolonged sedation and urinary bladder catheterization. He was discharged after 5 weeks without residual signs or symptoms with a catch up vaccination plan.

Learning Points/Discussion: Despite timely diagnosis and proper treatment, tetanus can be fatal. Routine vaccination is paramount; therefore awareness should be raised in targeted high risk unvaccinated populations. The diagnosis of tetanus, albeit rare, should be considered in the differential diagnosis of unvaccinated patients presenting with muscle rigidity following recent trauma.

FROM NAIL TO BONE: HEMATOGENOUS OSTEOMYELITIS IN THE BIASED ERA OF SARS-COV-2

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): From nail to bone: Hematogenous osteomyelitis in the biased era of SARS-CoV-2.

Background: Osteomyelitis is caused by bacteria that enter the bone by direct inoculation, contiguous invasion or hematogenous spread. The authors highlight the importance of minute semiology during a time where most fever presentations are labelled as suspected SARS CoV-2 infection.

Case Presentation Summary: A previously healthy, 11-year-old boy presented to the paediatric urgency with fever for 3 days and was diagnosed with acute pharyngitis and suspected SARS-CoV-2 infection. He returned 3 days later due to persistent fever and intermittent pain in the right arm. Physical examination revealed point tenderness in the upper arm and small whitlow on the 3rd finger of the ipsilateral hand. Unremarkable orthopaedic observation prompted imagiology workup. Right arm radiograph and CT scan were normal. Blood test showed an elevated level of C- reactive protein (8.36 mg/dl). Epstein-Barr serologies, group A *streptococcus* swab and SARS- CoV-2 were negative. *Staphylococcus aureus* was isolated from blood cultures and immediately initiated parenteral flucloxacillin 150 mg/kg/daily. Subsequent MRI revealed osteomyelitis of the right proximal humerus with extension of the inflammatory process to the aponeurotic muscles attached. He was discharged after 10 days of parental treatment, with symptom resolution, and continued oral flucloxacillin for 6 weeks. Follow-up paediatric outpatient visit at 4 weeks confirmed resolution of symptoms without any apparent sequelae.

Learning Points/Discussion: In this case, the index of suspicion based on clinical presentation was fundamental for the outcome, associated to bacteraemia, confirming the diagnosis. Timely diagnosis and early institution of antibiotics reduce hospital stay and sequelae. Follow-up is important to promptly diagnose relapses. During a pandemic time, where health care systems are focused in SARS-CoV-2 infections, it is crucial to search for the correct diagnosis.

LEPTOSPIROSIS ASSOCIATED KAWASAKI DISEASE. DIFFERENTIAL DIAGNOSIS OR DISEASE ASSOCIATION? A CASE REPORT.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): A 4 year old presenting with a fever, rash, lymphadenitis, conjunctivitis and proteinuria.

Background: Kawasaki disease (KD) is a systemic vasculitis which affects medium-sized arteries. Although diagnostic and classification criteria exist, differentiation from other diseases can be difficult. KD has often been suspected to be either caused by an infectious agents or triggered by an infection. Different pathogens have been suspected and described, i.e. adenovirus. There are only 2 reported cases of leptospirosis-associated kawasaki disease, though the symptoms overlap significantly - underlying infection might often be overlooked.

Case Presentation Summary: In our patient conjunctivitis, rash, fever, cervical lymphadenopathy, palmar swelling, exanthema were seen, indicating all criteria for complete KD. She was treated with IVIG, ASS and Prednisolone, and her symptoms resolved after 24 hours. A comprehensive serology tests for different possible viruses including COVID-19 were negative. The urinalysis at presentation showed mild proteinuria (Protein/Creatinin-Ratio 0,9). Due to the mother's report on mouse contact and the described symptoms in combination with nephritis, leptospirosis examinations were ordered revealing a positive PCR-result, IgG titers were negative. The patient was started on a 2 week course of Penicillin. In a follow-up after 2 weeks her Leptospiriosis-IgG was high, and desquamation of the fingers and toes occurred.

Learning Points/Discussion: There is a broad overlap between KD and Leptospiriosis as all the signs and symptoms can be seen in both diseases. Leptospiriosis can lead to vasculitis either due to a direct effect of the pathogen or related to antigen-antibody complexes.

To distinguish between KD, leptospirosis and leptospirosis associated KD a proper history taking is fundamental as well as thorough clinical and cardiac examinations in the course of the disease. While diagnostic procedures and observation might take time, treatment of acute KD should not be delayed.

A RARE CAUSE OF LIMP IN CHILDHOOD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): A rare cause of limp in childhood

Background: Pelvic osteomyelitis is a rare form of childhood osteomyelitis. *Salmonella* rarely causes osteomyelitis in non-sickle cell disease children. We present an unusual case of a 6-year-old healthy girl with a right ischiopubic ramus osteomyelitis, originating from the ischiopubic synchondrosis, caused by *Salmonella enterica*.

Case Presentation Summary: A previously healthy 6-year-old girl presented with a 2-day history of right-sided thigh pain, limp and fever. There was no history of trauma or recent infection. On examination, the child had fever (39,5°), right-sided groin pain, no signs of inflammation or localized tenderness. Laboratory tests showed neutrophilic leucocytosis and high CRP and ESR. A pelvic X-ray was normal. A right hip ultrasound showed some effusion in the hip joint. A presumptive diagnosis of right hip septic arthritis was made and the child was started on IV amoxicillin/clavulanate. A pelvic MRI, performed two days after the admission, showed an area of altered signal intensity of the right ischiopubic ramus near the ischiopubic synchondrosis with edema of adductor and obturator muscles. Blood cultures resulted positive for *Salmonella enterica*, sensitive to amoxicillin/clavulanate and gentamycin. IV gentamicin was added to therapy for 5 days. The child had an excellent clinical response after 48 hours and improvement of the inflammatory markers. She was discharged after three weeks of IV therapy, with oral amoxicillin/clavulanate for three additional weeks. The pelvic MRI, performed before discharge, showed marked improvement.

Learning Points/Discussion: *Salmonella* pelvic osteomyelitis can occur even in immunocompetent children. Ischiopubic osteomyelitis arising from the synchondrosis is very rare but has to be recognized in order to avoid misdiagnosis and delay in treatment. In these cases, MRI is the imaging modality that can provide a more precise assessment of the size and location of the infection.

CATHETER RELATED BLOOD STREAM INFECTION DUE TO BREVIBACTERIUM CASEI IN A CHILD WITH APLASTIC ANAEMIA

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): CATHETER RELATED BLOOD STREAM INFECTION DUE TO BREVIBACTERIUM CASEI IN A CHILD WITH APLASTIC ANAEMIA

Background: Brevibacteria, part of normal skin flora has been reported as opportunistic pathogens in immunocompromised patients. We report a catheter related BSI with Brevibacterium casei in a 7yr child in aplastic anaemia. It is rare and generally may be dismissed as contaminant.

Case Presentation Summary: The patient, a 7 yr child, with aplastic anaemia admitted for Matched Sibling Donor Bone Marrow Transplant. Post-transplant he developed Grade 3 mucositis. He developed fever on day 6 with hypotension. Blood cultures sent from the red & white lumen of the catheter and I.V. meropenem and amikacin. Both blood cultures (BACTEC FX 40) showed Gram positive bacilli and grew non-haemolytic colonies on 5% sheep blood agar. The isolate was identified (PHOENIX machine) as Brevibacterium species confirmed as *Brevibacterium casei* by MALDI MS. Antibiotic susceptibility done as per CLSI M45 A3 guidelines¹. **Discussion** *B casei*, an uncommon bacteria has been isolated from both immunocompetent and immunocompromised patients. Our patient developed the infection when he was immunocompromised & neutropenic and cleared the infection when the central line was removed. Thereafter, he recovered and had no further complications.

Learning Points/Discussion: Conclusion: The skin commensal may be a cause for catheter related infection or even sepsis. Treating physicians of immunocompromised patients need to be watchful and should consider treating *B casei* and not dismiss it as commensals. Treatment with antibiotics along with removal of the catheter generally results in complete cure of the infection.

FEVER AND NECK PAIN AS A MANIFESTATION OF A RARE DISEASE IN PEDIATRICS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - SYSTEMIC AND MULTI-ORGAN INFECTIONS

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Title of Case(s): Fever and neck pain as a manifestation of a rare disease in pediatrics

Background: Despite being an uncommon agent of disease in children, *Fusobacterium necrophorum* can have a severe course and the laboratorial identification is challenging.

Case Presentation Summary: A previously healthy 11-year-old girl presented with a 4-day history of fever, upper cervical pain, dysphagia and nuchal rigidity. Laboratory evaluation showed leukocytosis ($17.56 \times 10^9/L$), neutrophilia ($12.650 \times 10^9/L$), CRP (56 mg/L, NR < 5) and ESR elevation (69 mm/h, NR < 16). CT scan showed hypodensity of transverse processes of C7. Spondylodiscitis was assumed, and flucloxacillin and clindamycin were started. Worsening neck pain and rising of inflammatory markers led to CT reassessment, showing retropharyngeal phlegmonous collection and synovial effusion of the atlanto-occipital joint. Flucloxacillin was switched to cefotaxime and methylprednisolone was started. Nevertheless, the patient developed septic shock and required inotropic support. All cultures were negative. On the 4th day, MRI showed multiple abscesses (left longus colli muscle, retrocaval pharyngeal, pre and retro-clival), C0-C1 synovitis with effusion, and pus-fluid levels in occipital horns. Vancomycin and meropenem were started. Emergent surgical drainage of the retropharyngeal abscess was necessary twice. On day 6, a molar caries was identified and treated. CT scan on day 10 identified a thrombus on the left internal jugular vein, therefore enoxaparin was started. On day 15, 16s rDNA PCR from pus collected during surgical drainage identified *Fusobacterium necrophorum*. She was discharged after 39 days, and presented no sequelae on follow-up five months later.

Learning Points/Discussion: *Fusobacter necrophorum* is an emerging agent and cause severe disease, with long length of stay, long antibiotic therapeutic regimens and the difficulty identifying this agent.

THE CHALLENGES OF THE MANAGING OF THE CHILD WITH PIMS.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TREATMENT

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Title of Case(s): THE CHALLENGES OF THE MANAGING OF THE CHILD WITH MIXIN INFLOMATORY SYMPTOMS

Background: The worldwide clinicians observed a cluster of children with unexplained inflammation. during the COVID 19 pandemic the children appear with of various autoimmune and autoinflammatory diseases, including paediatric inflammatory multisystemic syndrome (PIMS) majority children are required the PICU admission. However it's the challenging situation to manage child at the general district hospital

Case Presentation Summary: The 7 years old boy presented to hospital with history of 4 days been unwell, temperature raised to 40.5. He had 4 episodes of vomiting and one episode of diarrhoea, he had conjunctivitis He was lethargic had heart rate elevated to 130/min, blood pressure 80/41 mmHg. His tonsils were congested, mildly increased, no pus inside. He had right side otitis media. His abdomen was tender all over and was some active guardian. Blood tests were largely abnormal CRP 139 mg/L, lymph 0.6x 10⁹/L, PLT 81x10⁹/L , BNP 2452 pg/mL, d-dimers 112753 ng/mL. COVID 19 swab was negative He had positive antibody responses to SARS-CoV-2 infection He had deterioration while in the department HR 119/min and the blood pressure 68/41 mmHg He received 30 ml/kg the fluid bolus received ceftriaxone 100 ml/kg, clindamycin, enoxaparin in prophylactic dose, aspirin, methylprednisolone He was commenced on adrenalin 0.01 mccg/kg/min and transferred to tertiary centre for further treatment The child was discussed with few tertiary centres re management and treatment

Learning Points/Discussion: The PIMS-TS is remined rare condition, however its emergency condition with quick deterioration and the doctors should be suspicious in case of mixing symptoms, high CRP and low lymphocytes and act promptly . The importance of a multidisciplinary team in decision making for children with PIMS is focusing protocol, the recommended treatment options, including supportive care, intravenous immunoglobulin, methylprednisolone, and biological therapies.

TROPICAL SYNDROME PRESENTING AS MULTIPLE INFECTIONS IN AN ADOLESCENT GIRL

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TROPICAL INFECTIOUS DISEASES

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Title of Case(s): Tropical syndrome presenting as multiple infections in an adolescent girl

Background: Every year Indian subcontinent is hit by seasonal fevers in the post monsoon period. These fevers include Dengue, Malaria, Scrub Typhus, Leptospirosis, Typhoid fever and some other fevers leading to very high morbidity and mortality. A large number of these patients require intensive care unit (ICU) care. The clinical picture of these diseases is so overlapping that it is almost impossible to achieve differential diagnosis of these diseases when the time available for intervention is limited. It is rare to encounter multiple causes of tropical fever syndrome in same patient.

Case Presentation Summary: A 15 year old adolescent girl was admitted with chief complaints of fever X 7 days, vomiting and pain abdomen for last one day. On arrival child's vitals were PR-115/mt, low volume, regular, CFT-3 seconds and peripheries warm, respiratory rate of 26 breaths/mt, B.P. 111/76 mmHg. Treatment was started as a case of tropical fever syndrome with shock. Initial lab reports revealed a platelet count of 20000/dl and 2 units of RDPs were transfused. Patient was also worked up for other causes of tropical fever. Scrub seology and leptospira serology were reactive so doxycycline and cefotaxime were added. Blood culture sent on day 1 of admission grew *Stenotrophomonas maltophilia* sensitive to doxycycline. Patient continued to be on inotropic support for 7 days after which inotropes were tapered off and stopped. Child's fever started coming down and was discharged on day 14 of hospitalisation in a stable condition.

Learning Points/Discussion: Presentation of tropical fever syndrome can be varied. Those children who require ICU care need to be worked up for different causes at the beginning only as time could be a limiting factor in sick children. A 'syndromic approach' to diagnosis and treatment of critical tropical infections should be adopted for better outcome.

PERSISTENT LUNG LESION IN A PARAGUAYAN 11-YEAR-OLD BOY.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TROPICAL INFECTIOUS DISEASES

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Title of Case(s): PERSISTENT LUNG LESION IN A PARAGUAYAN 11-YEAR-OLD BOY

Background: Obese (BMI 32.41kg/m²), 11 year-old boy born and raised in a rural area of Paraguay who moved to Spain 5 years ago. No relevant personal history; BCG vaccinated at birth. Two months before admission, he presented with 1 week of fever, cough and 2 weeks of chest pain; X-ray showed an infiltrate in the right upper lobe. It was considered a community-acquired bacterial pneumonia so he received 7-days of oral amoxicillin with resolution of fever and chest pain, but persistence of asthenia.

Case Presentation Summary: A follow-up chest X-ray showed persistence of the imaging, the patient referred right shoulder pain. At admission, physical examination showed right upper lobe hypoventilation. Blood tests yielded normal blood cell count and increased CRP (22.99mg/dL) and ESR (≥ 120 mm/h). TST and HIV were negative. Chest CT and MRI revealed right upper lobe condensation with ipsilateral first rib involvement and multiple enlarged lymphadenopathies. Bronchoscopy showed obstruction of the right upper bronchus due to a polypoid lesion that was removed. Serum beta-D-glucan was positive (30.630pg/ml) and PAS and silver methenamine-positive spores (3 microns) were found in the pathology examination. Although serology and cultures for dimorphic fungi were negative, histoplasmosis was considered the most probable diagnosis and a therapeutic trial with liposomal amphotericin B (L-AMB) (3mg/kg per real weight) was started. After 16 days, treatment was switched to oral itraconazole due to transient renal failure (urea 87mg/dl, creatinine 1,78mg/dl) attributed to L-AMB. Three weeks later, he was asymptomatic, analytical and radiological tests improved significantly. He is in a 3-months course of oral itraconazole. Immunological study is ongoing.

Learning Points/Discussion: Is the diagnosis reassuring? If yes, can we classify it as disseminated histoplasmosis? Should we dose L-AMB based on optimal weight rather than real one despite current recommendations?

PRIMARY DENGUE FEVER LEADING TO KIKUCHI-FUJIMOTO DISEASE AND HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS. A SRI LANKAN EXPERIENCE.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TROPICAL INFECTIOUS DISEASES

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Title of Case(s): Primary Dengue fever leading to Kikuchi-Fujimoto disease and Haemophagocytic Lymphohistiocytosis. A Sri Lankan experience.

Background: Kikuchi-Fujimoto disease(KFD) is a benign condition of self-limiting subacute necrotizing lymphadenitis typically affecting the lymph nodes of young females. Haemophagocytic Lymphohistiocytosis(HLH) is a potentially fatal disorder characterised by a histiocytic proliferation with marked hemophagocytosis in the background of a systemic infection. KFD is rarely reported to be complicated with HLH. Out of these only a few cases have proven the etiological agent, and those were ParvoB-19 virus, Respiratory Syncytial Virus and Epstein Barr Virus. However there were no reported cases of both KFD and HLH occurring following dengue viral infection.

Case Presentation Summary: We present a 13 year old Sri Lankan girl presented with fever for 5 days, arthralgia, myalgia, loss of appetite and headache. On examination she was ill looking and febrile. There was bilateral tender cervical lymphadenopathy with the largest node being 1.5cm*1cm. Other system examinations were unremarkable. During the hospital stay she was managed as primary dengue fever with dengue IgM being positive with a negative IgG. With the persistent fever she developed splenomegaly, elevated serum ferritin and hypertriglyceridemia, and bone marrow biopsy revealed hemophagocytosis, fulfilling the criteria for HLH. Cervical lymph node biopsy proved KFD. The patient recovered with supportive care alone without requiring Intravenous immunoglobulins or steroids.

Learning Points/Discussion: HLH should be considered in the differential diagnosis of children with prolonged fever following any dengue infection. Prompt recognition and early institution of appropriate therapy may result in good outcome, particularly in infection-associated HLH KFD and HLH independently or together can occur following viral infections which are not recognised commonly as etiological agents. Awareness about these rare possibilities, would be helpful in successful patient management with minimal interventions especially in tropical countries

EP639 / #1400

LUNG CYST - DILEMMA IN MANAGEMENT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TROPICAL INFECTIOUS DISEASES

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Title of Case(s): Lung cyst -Dilemma in management

Background: Hydatid cysts are one of the common causes of cysts in lungs especially in tropical countries. Management of such cysts always complicated by several issues. Complications are likely during the management

Case Presentation Summary: 7 years girl, complaints of cough on and off - 1 month, fever -9 days, hurried breathing - 20 days, increased since last 4 days. Pets-dog and cat at home, Child on presentation Tachypneic, Air entry reduced right mammary, inframammary area and infraaxillary area. Liver palpable 3 cm below costal margin, non tender, liver span -normal. Xray done was suggestive of homogenous opacity in right upper zone and left lower zone, MRI, suggestive of multiple well defined cystic lesions in right upper lobe measuring about 10x7.4 cm and left lower lobe measuring 7.7x5.5 cm in size with multiloculated pleural effusion in the left side. .. Excision of cyst, decompression of cyst with ICD insertion left side, developed air leaks and broncho pleural fistula and right side cyst decompression, Intraoperatively, had problems with ventilation, oxygenation and hypotension, child was started on adrenaline infusion and kept spontaneous breathing avoiding muscle paralysis, required high Fio2 hypotension, inotropes, single lung ventilation was tried in view of left sided bronchopleural fistula, under bronchoscopic guidance. Developed right sided bronchopleural fistula. ECMO team was activated and VV ECMO was started. underwent bilateral thoracotomy and cyst excision. ECMO flows gradually weaned and child was extubated, was uneventful. Albendazole was started. Developed right lower limb edema. Doppler was suggestive of thrombosis of common femoral and superficial femoral vein thrombosis and low molecular weight heparin was restarted for the same. The child improved well

Learning Points/Discussion: Cyst in lungs are diagnostic dilemma Management is associated with complications Proper and timely management saves life

CUTANEOUS LEISHMANIASIS TREATED BY INTRA-LESIONAL MEGLUMINE ANTIMONIATE IN A 21-MONTH-OLD INFANT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TROPICAL/PARASITE INFECTIONS & TRAVEL MEDICINE

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Title of Case(s): Cutaneous leishmaniasis treated by intra-lesional meglumine antimoniate in a 21 month old infant

Background: Cutaneous Leishmaniasis is a parasitic disease transmitted by the sting of a vector. It is a disease described in some regions. Cases are frequently reported among farmers and breeders.

Management of the infantile forms remains a challenge due to the toxicity of the available drugs. We report one case in a 21-month-old infant treated by intralesional injection of meglumine antimoniate.

Case Presentation Summary: A 21 month old boy live in Nara, 400 kilometers from Bamako, was admitted in Dermatology for five ulcero-crust lesions on the ankles, right leg and right forearm. This condition had been evolving for 5 months. He received several antibiotics, wound care and cataplasms. Due to the persistence of the lésions, he consults in Dermatology. The smear found bodies of Leishman. The meglumine antimoniate was used for weekly local infiltration around the lésions. Complete healing was achieved after three infiltrations sessions.

Learning Points/Discussion: Cases in infants can be explained by intra-home exposure to the vector. Intra lesional injection of Meglumine antimoniate is a crédible therapeutic option in the management of cutaneous leishmaniasis in the infant.

CONGENITAL TUBERCULOSIS (TB) USE OF SECOND-LINE MEDICATION AND THERAPEUTIC DRUG MONITORING

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Use of second-line medication and therapeutic drug monitoring

Background: Diagnosis and treatment of congenital TB in premature infants are challenging due to limited data on medication management and extremely high mortality.

Case Presentation Summary: A male infant was born at 33 weeks of gestational age to a mother admitted with progressive respiratory illness, who died soon after delivery from disseminated TB. The infant's symptoms were slowly progressive over the first month of life. The presence of mycobacteria in the placenta prompted the initiation of anti-TB treatment in the neonate, and the diagnosis was confirmed by positive MTB PCR in gastric and tracheal aspirate; and growth of MTB from gastric aspirate and bronchoalveolar lavage cultures. Initial treatment included Isoniazid (INH) 10mg/kg/day, Rifampin (RIF) 15mg/kg/day, Pyrazinamide (PZA) 35mg/kg/day, and Ethambutol 20mg/kg/day. The clinical course was complicated with worsening respiratory distress and abdominal distention raising the possibilities of drug resistance (sensitivity to INH, RIF, and PZA later confirmed), malabsorption in the context of abdominal TB, or the natural progression of the disease. Initially, INH and Rifampin serum levels were low and INH dose was increased to 15mg/kg/day and RIF to 20mg/kg/day. Repeat serum levels were still low for RIF due to RIF-induced vomiting but increased after treating nausea. Ethambutol was replaced by Levofloxacin 15mg/kg/day, due to concerns about Ethambutol toxicity and unreliable therapeutic levels in this age group. Because of lack of clinical improvement, a paradoxical hyperinflammatory reaction to TB treatment was suspected, prednisone was prescribed for 4 weeks. From age 2 months the patient improved progressively

Learning Points/Discussion: In premature neonates, TDM may be necessary to optimize therapy, and the use or addition of second-line medications should be considered due to limited dosing information for some first-line drugs and the aggressive nature of congenital TB.

A RARE CASE OF PRIMARY SINONASAL TUBERCULOSIS PRESENTED WITH PHLYCTENULAR KERATOCONJUNCTIVITIS IN A PEDIATRIC PATIENT: A CASE REPORT AND LITERATURE REVIEW

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Phlyctenular keratoconjunctivitis in a pediatric patient.

Background: Tuberculosis is a common cause of phlyctenular keratoconjunctivitis, especially for patients who live in a high endemic area of tuberculosis. We reported a rare case of pediatric phlyctenular keratoconjunctivitis associated with primary sinonasal tuberculosis.

Case Presentation Summary: A seven-year-old boy presented with a five-month history of redness of the left eye accompanied by mild visual impairment. Physical examination revealed elevated pinkish-white nodules with a circumcorneal hypervascularized lesion on the left conjunctiva. Computed tomography revealed an enhancing soft tissue mass in the left maxillary sinus with bone destruction. Histopathology of maxillary tissue showed chronic inflammation without granuloma. Special stain, culture and polymerase chain reaction (PCR) for mycobacterium was initially unremarkable. However, because the ocular findings were suggestive of PKC and a strong suspicion of TB, formalin-fixed paraffin-embedded maxillary tissue was re-sent for *M. tuberculosis* PCR. This was positive for *M. tuberculosis* complex. Two months of oral isoniazid, rifampicin, pyrazinamide and ethambutol, followed by ten months of oral isoniazid and rifampicin without topical eye drops agent were prescribed. Two months after initiation of treatment, the phlyctenular lesion had significantly improved. A follow-up computed tomography showed a significant reduction in the maxillary sinus lesion size and the extent of adjacent bone destruction.

Learning Points/Discussion: Primary maxillary sinonasal tuberculosis is a rare cause of phlyctenular keratoconjunctivitis in children. In patients with unusual manifestations or when microbiological and histopathological evidence is absent, PCR analysis has a crucial role in the diagnosis of tuberculosis.

A CASE OF SPINAL TUBERCULOSIS: A CHALLENGE DURING THE COVID-19 PANDEMIC

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): A case of spinal tuberculosis: a challenge during the COVID-19 pandemic

Background: Skeletal tuberculosis is found in nearly 10% of patients with active pulmonary disease; about 50% of these had spine involvement. Prompt diagnosis of active tuberculosis has paramount importance to reduce TB morbidity and mortality.

Case Presentation Summary: At the beginning of COVID-19 pandemic, a 16-year-old boy from Pakistan, unaccompanied minor from two years in refugee camp in Greece, was brought to our attention with a 5-days history of paraplegia and sphincteric incontinence. Almost a month prior to presentation, he began experiencing unspecified back pain, weight loss and recurrent fever. He reported no recent history of cough. On admission, he presented complete paralysis of the lower limbs. A MRI of the spine revealed a 4 centimeters long epidural oval-shaped mass at the T9-T10 level, with significant spinal cord compression extended at the T11 level. After contrast dye injection, the lesion had a prevalent peripheral-enhancement with evidence of intralesional necrotic changes. A total-body computed tomography scan showed multiple nodular lung images that were suggestive of septic emboli or secondary lesions. In addition, a fluid formation (10 cm x 7,3 cm x 4 cm) compatible with an expansive abscess was found within the iliopsoas muscle. A surgical removal of the epidural mass was performed. Direct microscopy, polymerase chain reaction and cultures from surgical specimens were positive for *Mycobacterium tuberculosis* complex. Histopathological studies identified the presence of acid-fast bacilli by Ziehl-Neelsen stain and granulomatous inflammatory reaction with Langhans giant cells. The same results were obtained from the iliopsoas abscess, that was surgically drained. Meanwhile, Mantoux tuberculin skin test and Interferon- γ release assays were positive.

Learning Points/Discussion: Screening for latent tuberculosis infection in immigrant population can reduce the morbidity, mortality and spread of *Mycobacterium tuberculosis* even during a COVID-19 pandemic.

TWO CASES OF ABDOMINAL TUBERCULOSIS IN CHILDREN PRESENTING WITH ACUTE SURGICAL ABDOMEN

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Two cases of abdominal tuberculosis in children presenting with acute surgical abdomen

Background: Abdominal tuberculosis (TB) is rare in children, especially in developed countries. The nonspecific presentation can mimics other conditions resulting in diagnostic delays. We present two pediatric cases of acute abdomen who underwent intestinal surgery with post-operative diagnosis of abdominal TB.

Case Presentation Summary: *Case 1:* A 15-years-old boy from Philippines, BCG vaccinated, was admitted to our hospital because of 2-months history of abdominal pain, weight loss and rapid worsening of the abdominal pain. He appeared pale, cachectic with a distended abdomen. Abdomen radiograph showed signs of intestinal obstruction. An explorative laparoscopy was performed, showing small white nodules over the mesentery and the ileum, with numerous adhesions between intestinal loops (Fig). A small-bowel resection with stoma creation was performed. QuantiFERON test was indeterminate. Acid-fast bacilli and TB PCR from intestinal biopsies, sputum, peritoneal fluid and stool were negative. Histopathology revealed necrotizing granulomatous inflammation, consistent with peritoneal TB. Waiting for cultures, isoniazid (INH), ethambutol (ETB), rifampin (RIF) and pyrazinamide (PZA) were started. *Case 2:* A 10-years-old girl from Romania, BCG vaccinated, underwent emergency explorative laparoscopy for suspected acute appendicitis. At the time of exploration, a mass-forming lesion of the ileocecal region was found and an intestinal resection with primary anastomosis was performed. QuantiFERON test was negative. Ileal biopsy showed acid-fast bacilli and histopathology on bowel and lymph node biopsies showed necrotizing granulomas. Stool sample, sputum and urine specimen were negative on the Ziehl-Neelsen stain and TB PCR. Based on the histological result a therapy with INH, ETB, RI and PZA was started.



Learning Points/Discussion: Abdominal TB in children may be fatal, especially with delayed diagnosis. Since therapy is effective, early diagnosis is crucial. A high index of suspicion must be maintained in children with unexplained abdominal complaints and constitutional symptoms.

MULTIDRUG RESISTANT TUBERCULOSIS IN A ONE YEAR OLD BOY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Persistent cough in a one year old boy

Background: Tuberculosis (TB) is still one of the main causes of infectious death. Multi-drug resistant (MDR) TB, defined by resistance to both Rifampicin and Isoniazid, is emerging at an alarming rate over the last years and little data is available on the occurrence of MDR-TB in children.

Case Presentation Summary: M. male, 1 year and 3 months of age. Persistent cough in the last 2 months. Mother with recently diagnosed pulmonary tuberculosis in India. Chest X-ray and CT scan evidence of right apical pulmonary involvement associated with mediastinal adenopathy with positive tuberculin skin test. Confirmed diagnosis with Polymerase Chain Reaction (PCR) and culture positivity for *Mycobacterium tuberculosis* from gastric aspirate smear; therapy was promptly started with Isoniazid, Rifampicin, Ethambutol and Pyrazinamide. During treatment, resistance to Rifampicin and Isoniazide was documented in his sample, and no resistance to second-line drugs was reported. Current therapy has been switched with Levofloxacin, Linezolid, *Para*-Aminosalicylic Acid and Delamanid, for an expected total duration of 12-18 months. PCR and cultural exam of gastric aspirate smear was negative after 15 days of therapy. After 10 months of treatment, there have been no adverse reaction to drugs. Chest CT scan showed improvement of pulmonary lesions and mediastinic adenopathy.

Learning Points/Discussion: The main obstacle in facing MDR TB is the long and expensive treatment, with frequent appearance of adverse effects, drug interactions and high rates of therapeutic failure. Delamanid, despite limited data available on its use in infants under 2 years old, showed good tolerability and efficacy in our experience.

ERYTHEMATO-EDEMATOUS PATCHES AND GAIT DISTURBANCE AS GUIDE SIGNS TO DIAGNOSE LEPROSY IN A BRAZILIAN BOY.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): ERYTHEMATO-EDEMATOUS PATCHES AND GAIT DISTURBANCE AS DIAGNOSTIC GUIDE SIGNS IN A BRAZILIAN BOY.

Background: Leprosy is a chronical granulomatous infection caused by *Mycobacterium leprae* (ML). Outside endemic areas, the rate of infected children remains low. We consider this case compelling since both leprosy and lepra reactions are exceptional in European pediatric population.

Case Presentation Summary: A 14-year-old Brazilian boy was remitted to our department due to an outbreak of cutaneous lesions for the last six months. These were erythematous-edematous patches, located initially on the right foot, with subsequent extension onto both inferior extremities, forearms and face. He associated intense pain on the right leg with gait disturbance. The histopathological study revealed clusters of vacuolated cytoplasm histiocytes, surrounded by perivascular, perineural and perianaxal lymphocytes. Ziehl-Nielsen and Fite-Faraco stains identified isolated ML-like bacilli. Consequently, an electromyogram was performed, showing severe motor and sensitive neuritis affecting posterior tibial and external sciatic popliteal territories. Thus, borderline leprosy, along with type-1 lepra reaction was diagnosed. Treatment with rifampicin, clofazimine and dapsone led to remission of neurological symptoms and cutaneous lesions. Unfortunately, after 7 months, follow up of the patient was discontinued.

Learning Points/Discussion: Leprosy presents two polar forms, tuberculoid and lepromatous leprosy. Among those poles, borderline leprosy is found, presenting with single or multiple hypochromic macular lesions associating neural damage. It displays a higher risk of developing type-1 lepra reactions. These are type-IV hypersensitivity reactions, causing oedema and erythema of the cutaneous lesions along with neuritis. Concerning its treatment, anti-inflammatory agents are recommended to control the pain. In severe cases, systemic corticosteroids along with neurological evaluation, immobilization of the limbs and rehabilitation should be needed. Treatment of leprosy infection must be strictly followed.

PERITONEAL TUBERCULOSIS ON PREVIOUSLY HEALTHY CHILDREN: VARIABLE PRESENTATION, CHALLENGING DIAGNOSIS, AND UNPREDICTABLE OUTCOMES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): PERITONEAL TUBERCULOSIS ON PREVIOUSLY HEALTHY CHILDREN: VARIABLE PRESENTATION, CHALLENGING DIAGNOSIS, AND UNPREDICTABLE OUTCOMES

Background: Peritoneal tuberculosis (PT) is an extrapulmonary form of tuberculosis and may involve various abdominal structures. Its clinical manifestations can vary widely. Pediatric diagnosis is a challenge, with microbiology and histopathology confirmation being the gold standard.

Case Presentation Summary: Case 1: A healthy 14-year-old boy was admitted with diarrhea and fever for 2 weeks, weight loss (20kg), and significant ascites. Abdominal CT scan revealed peritoneal thickening and intestine biopsy was positive for acid-fast bacilli (AFB). Rifampicin, isoniazid, pyrazinamide, and ethambutol (RIPE) were introduced, but due to intestinal malabsorption an alternative IV treatment with amikacin, linezolid and levofloxacin was introduced. After 21 days, the patient died due to severe malnutrition. Case 2: A healthy 11-year-old girl was admitted with ascites for the past 5 months. Abdominal CT scan revealed peritoneal thickening and the tuberculin skin test was 10mm. The analysis of the ascitic fluid showed serum-ascites albumin gradient <1,1 mg/dl, ADA=46 IU/L, AFB not identified, and negative PCR for *Mycobacterium tuberculosis*. Peritoneal biopsy showed chronic granulomatous inflammation. RIPE was initiated, followed by progressive clinical improvement. Case 3: A healthy 7-year-old boy was admitted with abdominal bloating and pain for 7 weeks. Abdominal CT scan revealed peritoneal nodules and the tuberculin skin test was 20mm. AFB and PCR for *Mycobacterium tuberculosis* were negative in the ascitic fluid, but the biopsy of a mesenteric lymph node revealed caseous necrosis. There was a domiciliar epidemiology link with pulmonary tuberculosis. RIP was initiated, followed by progressive clinical improvement.

Learning Points/Discussion: In TB endemic countries, a strong clinical suspicion is necessary to begin the etiological evaluation. Uncertain diagnosis, however, should not delay the introduction of treatment in order to improve outcomes.

PLEURAL EFFUSION IN PEDIATRIC AGE: TWO CASES PRESENTATION

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Pleural effusion in pediatric age: two cases presentation

Background: Pediatric tuberculosis (TB) remains a major world health problem with two periods of higher incidence: toddlerhood and adolescence.

Case Presentation Summary: We present two cases of previously healthy adolescents with fever, cough and thoracalgia. They received BCG vaccine at birth. Case 1: female, 16 years, symptomatic for 4 days associated with fatigue for 2 months. Chest radiography showed pleural effusion (PE). She was hospitalized under ceftriaxone therapy, without improvement. The effusion was a lymphocyte-predominant exudate with increased adenosine deaminase (ADA) levels, although culture and PCR were negative for mycobacteria. Due to clinical suspicion, anti-tuberculous drug therapy (ATT) was initiated. Case 2: male, 15 years, symptoms' duration of 14 days, without improvement after amoxicillin and azithromycin. Chest radiography showed a consolidation. He was hospitalized under ceftriaxone with clinical improvement. Two days after finishing the antibiotic course, symptoms relapsed, and CT scan presented a large PE. Ceftriaxone and vancomycin were associated. PE was similar to case 1, but M. tuberculosis's PCR was positive. ATT was started, associated with corticosteroids because of large PE. Both cases showed clinical and radiological improvement after ATT. Afterwards, a positive IGRA test was known. Concerning epidemiologic link, case 1 mother's showed positive tuberculin and IGRA test, while no positive contacts were tracked in case 2.

Learning Points/Discussion: During adolescence, TB mainly presents as PE, due to a delayed hypersensitivity reaction to the rupture of a subpleural focus. Lymphocyte-predominant exudate effusion with increased ADA levels is common, as reported in our cases. Microbiological analysis is often negative because of paucibacillary forms. Both cases highlight the importance of clinical suspicion of TB when a PE is not responsive to conventional treatment, even if no epidemiologic link is identified.

A CASE OF TUBERCULOSIS WITH A SPECIFIC DRUG SENSITIVITY PROFILE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): A case of tuberculosis with a specific drug sensitivity profile

Background: *Mycobacterium bovis* (*M.bovis*), a member of *Mycobacterium Tuberculosis Complex* (*MTBC*), is the main causative agent of bovine tuberculosis worldwide. It is also responsible for human tuberculosis, especially in endemic areas. The main mechanism of contagion in humans is the consumption of unpasteurized dairy products, although airborne transmission has also been reported. This germ is mainly associated with extra-pulmonary forms of disease. There is no clinical, radiological nor microbiological distinction possible between infection with different members of the *MTBC*, therefore diagnosis relies on cultures and genotyping. *M. bovis* is intrinsically resistant to Pyrazinamid (PZA).

Case Presentation Summary: A 13-year-old boy, originating from Burundi, presented with a right pre-auricular mass increasing in size over the last two weeks. There was no sign of local inflammation and no potential entry point had been identified. Weight loss was reported but not quantified. No pyrexia, no cough, no history of contagion were to be noted. Medical history was unremarkable. Physical examination revealed bilateral sub-centimetric cervical lymphadenopathies. Biology showed microcytic anemia and an inflammatory syndrome with high ESR. CT-scan showed right temporomandibular osteoarthritis with abscess. Tuberculosis skin test came back positive, as well as Xpert MTB-RIF Ultra performed both on articular puncture and gastric lavage. Classical quadritherapy for tuberculosis was started on an empiric basis, while awaiting definitive culture results. Culture came back positive for *MTBC* and culture-based drug sensitivity testing (DST) revealed monoresistance to PZA, raising the suspicion of *M. bovis* as the causative pathogen. Conversely, subsequent whole-genome sequencing detected wild type *M.tuberculosis*.

Learning Points/Discussion: This case could serve as a basis to discuss diagnosis of osteoarticular TB, interpretation of discrepancies between culture-based phenotypic DST and genotypical identification of a member of the *MTBC*.

MILIARY TUBERCULOSIS AND LARYNGEAL TUBERCULOSIS REQUIRING TRACHEOSTOMY IN A CHILD WITH DOWN SYNDROME

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Miliary tuberculosis and laryngeal tuberculosis requiring tracheostomy in a child with Down Syndrome

Background: In 2019 about 10 million people fell ill with tuberculosis (TB). Of these, 12% were children. Due to immature immune system, children are more susceptible to disseminated forms, such as miliary TB. Laryngeal TB was very common in the early 20th century. Its incidence has drastically decreased to 0.8-1% of total cases after the introduction of antibiotic therapy. We describe a case of a child affected by Down syndrome with miliary and laryngeal TB who developed progressive airway obstruction requiring tracheostomy.

Case Presentation Summary: A 13-year-old girl with Down Syndrome, was referred to our department for 2-months history of progressive hoarseness, cough and weight loss. Physical examination revealed intermittent stridor. QuantiFERON test resulted positive. Chest radiograph and CT-scan showed bilateral micronodular infiltrates and mediastinic node involvement, consistent with miliary TB. Acid-fast bacilli smear and TB polymerase chain reaction (PCR) from three further samples of sputum were positive. The patient was promptly treated with four-drug anti-TB regimen. In the following days, she showed severe respiratory distress, with worsening of the inspiratory stridor and apnea episodes. Bronchoscopy showed edema of epiglottis and arytenoids, mucosal irregularities of anterior side of true vocal cords and a subglottic nodule. Corticosteroid therapy was started to decrease airway obstruction and inflammation. Due to non-invasive ventilation failure she underwent tracheostomy with resolution of apnea episodes. After 3 months of anti-tubercular and steroid therapy the bronchoscopy showed significant reduction of laryngeal edema. Fig 1



Learning Points/Discussion: In conclusion, tracheostomy in laryngeal TB is only occasionally described in children. In this patient with Down Syndrome anatomical factors predisposing to obstructive sleep apnoea, like mid-face hypoplasia, tongue enlargement and laryngomalacia, worsened the airway obstruction. Early diagnosis and treatment are crucial in preventing complications of laryngeal tuberculosis.

STEROIDS REVEAL UNEXPECTED CONTAGIOUSNESS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): STEROIDS REVEAL UNEXPECTED CONTAGIOUSNESS

Background: Tuberculosis (TB) is a major cause of childhood morbidity and mortality worldwide.

Children have a higher and more rapid risk of progression to disease following infection and are more likely to develop severe or disseminated TB than adults. Endobronchial TB is an uncommon presentation, nevertheless is highly contagious and delayed diagnosis and treatment can lead to complications as tracheobronchial stenosis.

Case Presentation Summary: We describe a six-month-old boy who received a diagnosis of latent TB infection based on positive Tuberculin Skin Test and Interferon-gamma Release Assay, negative chest X-Ray and exposure to mother's pulmonary TB. After one month of isoniazid treatment, he presented with fever, dyspnea and mediastinal right shift to chest X-Ray. Left bronchial compression secondary to large mediastinal lymphadenopathy was seen to the chest CT and confirmed by bronchoscopy. Microbiological investigations on gastric lavage showed positive Xpert MTB (no rifampin resistance), negative Ziehl-Neelsen and culture. Steroids were added to the standard 4-drugs anti-tubercular treatment (rifampin, isoniazid, pyrazinamide, ethambutol) for 4 weeks with a progressive clinical and radiological improvement. After 4 months, the bronchoscopy showed opening of the left bronchus with presence of cheesy-like vegetation and consequential positivization of smear. A 12-months treatment led to complete clinical, microbiological and radiological resolution with no relapse at 24-months follow-up.

Learning Points/Discussion: Young children often rapidly progress to severe disease requiring longer treatment following infection. The diagnosis of latent TB should be always considered with caution in infancy and impose a close follow-up. Infants are rarely smear-positive and contagious, and endobronchial diseases is one of that cases. The children reported became smear-positive after resolution of mediastinal adenopathy and the opening of the bronchus, despite the ongoing treatment.

BCG INDUCED COLD ABSCESS, A CASE SERIES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Anterior thigh Abscess with a rare micro-organism

Background: There are possible local and systemic complications following the BCG vaccine injection. The abscess also can be a result of incorrect intramuscular BCG vaccine injection. This complication is not common and its diagnosis requires strong clinical suspicion .

Case Presentation Summary: **Case 1:** A four month old girl was admitted due to right thigh swelling. Anterior surface of the thigh was swollen with no tenderness. There was a 5*7 cm fluctuating mass with sharp borders. Ultrasound demonstrated a collection of thick fluid (49*29*32 mm) in the depth of anterior thigh muscle. Needle aspiration was done. Gram staining and routine culture were negative. Acid fast staining and culture were both positive for mycobacterium tuberculosis and PCR test was positive for BCG. The patient received INH, RIF, and ETB and there was no improvement after three weeks so, clarithromycin was added and the patient improved significantly. **Case 2:** An eight months old girl was admitted due to left thigh swelling since vaccine injection after birth. There was a swelling sized 7*7 on the lateral side of left thigh. Ultrasound demonstrated an echo-free zone with thick wall (41*65*39 mm) containing of faint debris in the depth of left thigh muscle. Needle aspiration was done and PCR test was positive for BCG .

Learning Points/Discussion: The BCG vaccine is given Intradermal with a dose of 0.05 ml at birth. If instead of the DTP vaccine, 0.05 mg of BCG vaccine (ten times of normal dose) injected into the anterior muscle of the thigh, it may cause an abscess. In these patients, two types of Immunization error-related reactions have occurred simultaneously; Reconstitution error and incorrect site. Immunization errors are preventable so identification of these incorrect practices are of great importance.

ABDOMINAL TUBERCULOSIS IN CHILDREN: THE ROLE OF BIOPSY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): Abdominal tuberculosis in children: the role of biopsy

Background: Abdominal tuberculosis (TB) in children is a rare condition in low incidence regions. Diagnosis is challenging because of its insidious nature and poor sensitivity of diagnostic tests on abdominal biologic samples.

Case Presentation Summary: We describe 4 cases diagnosed at a tertiary paediatric hospital in Italy. All patients were from countries with a high incidence of TB. The main symptoms/signs were abdominal pain, asthenia, fever, weight loss and abdominal distention. At the onset of disease, all had positive tuberculin skin test and 3 had positive interferon-gamma release assay (IGRA). One patient showed positive IGRA after 5 months. All were HIV negative. Ultrasound and computed tomography (CT) showed enlarged mesenteric lymph nodes in all patients, omental and mesenteric thickening in 3 children, intestinal involvement in 2, ascites in 2 and hepatic nodule in 1. In all patients microscopic and culture for mycobacteria were negative on stools and urine samples. In two patients with also pulmonary TB, gastric aspirates were negative for mycobacteria. Ascitic fluid was collected in two patients and resulted negative for mycobacteria. In one child colonoscopy showed ileo-cecal oedema and one cecal pseudopolyp. Bioptic samples were collected with histologic and microbiological studies are still pending. Three patients underwent abdominal lymph-node biopsy and histology showed necrotizing granulomatous inflammation. In one patient nucleic acid amplification test and culture for mycobacteria led to microbiological confirmation.

Learning Points/Discussion: In our experience histological and microbiological studies on mesenteric lymph-nodes helped the diagnosis of abdominal TB. These data agree with literature and highlight that biopsy/excision of abdominal lymph-nodes should be considered, according to the benefit/risk ratio of each case. Whether biopsy/excision is not possible, after oncologic risk-assessment, empiric anti-tubercular therapy might be an option.

TUBERCULOUS GUMMA IN AN INFANT IN ITALY: OLD FRIENDS ALWAYS COME BACK

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): TUBERCULOUS GUMMA IN AN INFANT IN ITALY: OLD FRIENDS ALWAYS COME BACK

Background: Cutaneous tuberculosis (TB) is an unusual presentation in developed countries.

Case Presentation Summary: We report the case of an 18-month-old male, with an unremarkable past medical history, born in Italy from Polish parents. He presented with a red nodule on the upper surface of his right foot, that soon developed redness, swelling and soreness in the surrounding area (**Fig.1A**). Systemic symptoms were absent and blood tests showed only mild inflammation. Oral and parenteral antibiotics were administered, with partial improvement (**Fig.1B**). Foot magnetic resonance imaging (MRI) described 3 oval-shaped subcutaneous abscesses without bone involvement. Surgical drainage was performed with partial resolution. Cultures of drained material resulted negative. Six months later, MRI findings were unchanged; therefore, the child was transferred to our tertiary care pediatric hospital, where a biopsy of the lesion was performed. Pathology showed necrotizing and exudative inflammation. Importantly, molecular test for *Mycobacterium tuberculosis* resulted positive, while microscopy was negative for acid-fast bacilli. Both tuberculin skin test and Interferon-gamma release assay resulted positive. Molecular tests for TB were positive also on gastric aspirates, while chest computed tomography scan showed a 4mm calcific nodule in the middle lobe and fine hilar calcifications in the right lung. Low levels of IgM and IgA were found, and further immunological investigations are currently underway. In light of the limb localization and the plausible metastatic origin, a diagnosis of tuberculous gumma was made and a 4-drug anti-TB regimen was started, with good clinical response (**Fig.1C**). Four weeks later, culture of the skin sample revealed drug-sensitive *Mycobacterium tuberculosis* colonies.

Learning Points/Discussion: Mycobacteria should always be suspected as a possible cause of antibiotic-resistant skin lesions, even in countries where TB is not endemic.

A RARE PRESENTATION OF MYCOBACTERIUM INTRACELLULARE INFECTION IN A 5 YEAR-OLD CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): A Rare Presentation of *Mycobacterium intracellulare* infection in a 5 Year-Old child

Background: Among nontuberculous mycobacteria (NTM), MAC (specifically *M. avium* and *M. intracellulare*) is the most common cause of pulmonary disease worldwide. Here we present a 5 years old child without HIV infection who was suspected of lymphoma but received a diagnosis of disseminated NTM infection.

Case Presentation Summary: A 5 year-old girl with a history of BCG lymphadenitis when she was 6 months old presented with intermittent fever and rash during the last 3 months. She had received prolonged course of systemic antibiotics with a diagnosis of pneumonia but no radiologic improvement was achieved. On admission she had no fever and lung sounds were normal. However clubbing of fingers and exanthematous xerotic plaques over the tibial skin were noted. Chest radiology showed a 5 cm mass like lesion in the left lung. Histopathological examination of the pulmonary lesion identified giant cells, spindle shaped histiocytes but no necrosis. Gastric aspirate acid-fast bacilli (AFB) stains were negative, induration was measured as 17 mm by tuberculin skin test (TST). Quantiferon test was negative. Cultures of gastric aspirate and lung lesion revealed *Mycobacterium intracellulare*. Clarithromycin, ethambutol, rifampicin, and amikacin were initiated pending susceptibility results. Serum levels of immunoglobulins were IgG:1905 mgdl, IgA:45 mgdl and IgM:77 mgdl. Genetic testing for defects in the IFN-gamma/IL-12 pathway are still pending.

Learning Points/Discussion: Pulmonary disease caused by nontuberculous mycobacteria (NTM) is a relatively rare occurrence in immunocompetent children. But pediatricians should be increasingly aware of NTM in the differential diagnosis of persistent pulmonary disease in previously healthy children.

MILIARY TUBERCULOSIS AND TUBERCULOSIS MENINGITIS IN A 8.5-MONTH OLD INFANT

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): MILIARY TUBERCULOSIS AND TUBERCULOSIS MENINGITIS IN A 8.5-MONTH OLD INFANT

Background: Tuberculosis is still a global health problem, especially in lower-middle-income countries. Around 1 million children get ill each year, while 210,000 die. Miliary tuberculosis occurs when massive numbers of tubercle bacilli are released into the bloodstream, affecting 2 or more organs. It is a rare form of disease and most common in infants and young children. It usually complicates the primary infection, occurring the first 6 months of the infection. We report a case of an infant hospitalized in our department with miliary tuberculosis and tuberculous meningitis.

Case Presentation Summary: An 8.5-month old male Roma infant was admitted due to a lower respiratory infection- possible miliary tuberculosis. The infant had not been vaccinated with BCG at birth and Mantoux was positive (9 mm). Due to the radiological picture, chest CT was performed with findings compatible with miliary tuberculosis. Lumbar puncture findings were compatible with tuberculous meningitis and brain MRI showed multiple small nodules. Gastric fluid PCR confirmed *M. tuberculosis* infection without mutations for isoniazid and rifampicin resistance. The patient was treated with quadruple anti-tuberculosis treatment (isoniazid, rifampicin, pyrazinamide and ethambutol) and dexamethasone. The infant remained in excellent condition with symptoms mainly from the lower respiratory tract. The source of the infection was not identified. As for the rest of the family, the father and one brother received treatment for pulmonary tuberculosis and the other brother had no evidence of disease, so he received only chemoprophylaxis.

Learning Points/Discussion: Miliary tuberculosis and tuberculous meningitis are rare, but quite serious manifestations. High suspicion, early diagnosis and treatment, along with BCG vaccination in infancy in high-risk groups can be life-saving.

POTT'S DISEASE: AN UNCOMMON CAUSE OF BACK PAIN IN THE MIGRANT CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Title of Case(s): POTT'S DISEASE: AN UNCOMMON CAUSE OF BACK PAIN IN THE MIGRANT CHILD

Background: Pott's disease (PD) or spinal tuberculosis (TB) is a rare condition that accounts for less than 1% of total TB cases. In Europe, most cases of spinal tuberculosis are seen primarily in immigrants from endemic countries. There is often a delay in pediatric diagnosis due to its non-specific symptoms.

Case Presentation Summary:



An 11-year-old male, originally from Morocco, was referred to our hospital, with a history of 6 months of back pain. During the last two months, he also presented weight loss, asthenia, and hyporexia. He started with difficulty standing up and walking symptoms. Mantoux: 13 mm. A CT scan revealed osteolytic changes in the vertebral body of T5 and T6. Spinal MRI confirmed spondylitis, with paravertebral abscess, which was suggestive of PD. It also showed consolidations in both upper lobes and mild pleural effusion. No history of exposure to TB was referred. Anti-tuberculosis treatment was initiated (Isoniazid, Rifampin, Ethambutol, and Pyrazinamide). QuantiFERON-TB Gold test resulted positive. Percutaneous drainage of the abscess was performed. The spine biopsy showed colonies of *Mycobacterium tuberculosis* (MT), with a PCR positive for MT. No mutations corresponding to rifampin or isoniazid resistance were identified. The patient was noticed to have significant clinical improvement of symptoms.

Learning Points/Discussion: Early diagnosis and prompt treatment are necessary to prevent permanent neurological disability and bone destruction. A high degree of clinical suspicion is required if patients present with chronic back pain, even in the absence of neurological symptoms and signs. History of exposure to TB and radiologic findings can help make the diagnosis. Surgical intervention is necessary for advanced PD. It affects mainly children and young people, so efforts should be made for its effective prevention, by controlling the spread of TB.

CONSERVATIVE TREATMENT IN PAEDIATRIC PYONEPHROSIS : TWO CASE REPORTS

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - UROGENITAL INFECTIONS

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Title of Case(s): Conservative treatment in pyonephrosis – two case reports

Background: Pyonephrosis is a rare cause of increased morbidity and mortality in children, if not promptly diagnosed and treated. Urological anomalies are the most commonly reported predisposing factor. We present 2 cases conservatively managed in our clinic.

Case Presentation Summary: The first case is a 7 year old boy who presented with pyrexia and severe abdominal pain. High inflammatory markers were noted on admission, blood and urine cultures were positive for multi-sensitive *Klebsiella oxytoca*. Abdominal ultrasound scan revealed a left horseshoe kidney with hydropyonephrosis. The second case is a 22 month old girl hospitalized for prolonged pyrexia, despite oral antibiotic treatment for urinary tract infection. Initial work up revealed high inflammatory markers, abdominal ultrasound showed left sided hydro-pyonephrosis with variable size calculi. The urine culture was positive for multi-sensitive *Proteus* spp. Both patients received a 10 day course of intravenous cefotaxime and amikacin, subsequently switched to intravenous cefuroxime for a total of 21 days. Urine cultures became sterile at seven days from treatment onset. Following multi-disciplinary discussion, no urgent surgical intervention was deemed necessary, regular ultrasound follow up was decided. Symptoms gradually improved in both patients. They were discharged on chemoprophylaxis, in anticipation of later stage reparative surgical intervention, depending on further imaging and assessment of kidney function.

Learning Points/Discussion: In contrast to adults, a relatively small percentage of children with pyonephrosis require CT-guided percutaneous/open drainage or nephrectomy, in addition to prompt antibiotic regimen. Published studies are retrospective, limited by small patient numbers and lack of longitudinal patient data and outcomes. In conclusion, prospective case studies with multidisciplinary involvement are required, in order to construct an evidence based management approach for interventional versus conservative management in paediatric patients with pyonephrosis.

ARE ANTIBIOTICS NECESSARY FOR PEDIATRIC EPIDIDYMITIS ?!

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - UROGENITAL INFECTIONS

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Title of Case(s): Introduction: Whereas testicular appendix and testicular torsions are the most common causes of scrotal pain, acute epididymitis is considered to have an important role in children. Previous studies have demonstrated that enteric organisms are a common cause of epididymitis in adults.

However, the causes of epididymitis in children have not been fully elucidated. The objectives of this study were to review our experience with boys presenting to our department with acute, non-traumatic epididymitis and to review the published evidence on the pathogenesis and management of acute epididymitis in children. **Methods:** We retrospectively reviewed the medical records of 40 young boys (<10 years) diagnosed with acute epididymitis from 2008 to 2018. All patients underwent physical examination and immediate color Doppler ultrasonography. **Main results:** Ages ranged from 2 months to 10 years, with a median age of 23 months. All children presented with scrotal pain and scrotal erythema. Five patients were febrile. However, parents did not report a history of fever at home in all cases. An ultrasound was performed and was consistent with epididymitis in 22 cases. These results were first read by the on-call radiologist and subsequently by a senior radiologist. In case of obvious suspicion of testicular cord torsion, eighteen cases were operated. Urine culture results were positive in 4 boys. They received empiric treatment of urinary tract infection. all patients were discharged home with a favourable evolution and disappearance of fever and pain within 10 days. **Conclusion:** Epididymitis is described as an ascending bacterial urinary infection via urinary reflux. However, recent studies found that the most common cause of epididymitis in children was idiopathic. So, literature have suggested that routine antibiotics may be not required in children with epididymitis and even prophylactic antibiotics may not be necessary to treat idiopathic epididymitis without urological tract anomaly.

Background: acute epididymitis is a common affection in paediatric population and the use of antibiotics is still a controverse .We wanted to rapport our experience in the paediatric surgery department in Monastir

Case Presentation Summary: Ages ranged from 2 months to 10 years, with a median age of 23 months. All children presented with scrotal pain and scrotal erythema. Five patients were febrile. However, parents did not report a history of fever at home in all cases. An ultrasound was performed and was consistent with epididymitis in 22 cases. These results were first read by the on-call radiologist and subsequently by a senior radiologist. In case of obvious suspicion of testicular cord torsion, eighteen cases were operated. Urine culture results were positive in 4 boys. They received empiric treatment of urinary tract infection. all patients were discharged home with a favourable evolution and disappearance of fever and pain within 10 days.

Learning Points/Discussion: We retrospectively reviewed the medical records of 40 young boys (<10 years) diagnosed with acute epididymitis from 2008 to 2018. All patients underwent physical examination and immediate color Doppler ultrasonography

SUCCESSFUL MANAGEMENT OF A RENAL FUNGUS BALL IN A CHILD WITH UROPATHY: PELVIS IRRIGATIONS AND TDM ARE THE KEY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - UROGENITAL INFECTIONS

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Title of Case(s): Successful management of a renal fungus ball in a child with uropathy: pelvis irrigations and TDM are the key

Background: Fungus ball (FB) is a cluster of fungal mycelia that colonizes an anatomical cavity, such as the renal pelvis, without invading adjacent tissue. This infection poses a therapeutic challenge for clinicians. We describe the case of a child with bilateral renal FB who was successfully treated with a combination of systemic antimycotic therapy and intermittent instillations of fluconazole through nephrostomy.

Case Presentation Summary: A 12 year-old boy affected by neurofibromatosis, uropathy with kidney failure, was admitted in our hospital because of decreased urinary output. Kidney ultrasound showed a bilateral increase of the known hydronephrosis associated with a dense, echogenic and corpuscle material compatible with FB. Urine examination was suggestive of infection and urine culture was positive for *Candida albicans*, susceptible to fluconazole. Systemic IV treatment with fluconazole was started and bilateral nephrostomies were placed. In order to increase the local antimycotic concentration, irrigations via the nephrostomy tubes were started: fluconazole and saline solution (0.3 mg/ml) were flushed four times a day closing the nephrostomy for 30 minutes after each instillation. The aim was to reach a fluconazole urinary concentration 60 times the steady-state minimal effective serum concentration (3 mg/l). Renal function, fluconazole serum and urine concentration were monitored constantly. After 7 days of systemic and local therapy, we obtained negative urine culture. Kidney ultrasound performed during the recovery showed a progressive reduction until disappearance of the corpuscle material. The complete resolution of FB was obtained after 14 days of systemic and local instillation of fluconazole.

Learning Points/Discussion: Few pediatric cases of FB are reported in the literature treated with local instillation of antifungal agent. Therapeutic drug monitoring (TDM) and the measurement of antifungal concentration in urine might be helpful to achieve the goal treatment.

AN UNCOMMON ADVERSE EVENT AFTER IMMUNIZATION WITH A MENINGOCOCCAL SEROGROUP B VACCINE.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - VACCINE SAFETY (POST LICENSURE)

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Title of Case(s): An uncommon adverse event after immunization with a meningococcal serogroup B vaccine.

Background: A hypotonic-hyporesponsive episode (HHE) is described as a sudden onset of hypotonia, hyporesponsiveness, and pallor or cyanosis within 48 hours after immunizations in children. It is rare and severe adverse effect, mainly associated with pertussis-containing vaccines. In this case the HHE occurred after administration of a meningococcal serogroup B vaccine.

Case Presentation Summary: We present the case of a 3-month old infant, previously healthy, with no history of adverse effects to immunization. Ten hours after the administration of the first dose of 4CMenB (Bexsero, GSK), the patient developed generalized hypotonia, hyporesponsiveness and perioral cyanosis. At the admission, the patient was afebrile, reactive with normal tone, color and vital signs. The blood exams showed neutrophilic leucocytosis and increased values of CRP and procalcitonin. Empyric antibiotic therapy was started and continued until chest X-ray, blood and urine cultures resulted negative. In the following four days the boy underwent a neurological evaluation and a 24 hours cardiorespiratory monitoring, which showed no alteration. He was discharged in good clinical conditions. Due to the normal results of the assessments and the temporal relation with the administration of 4CMenB, the HHE diagnosis was considered. The HHE was notified to the immunization center and pharmacovigilance department, through an Adverse event following immunization (AEFI) questionnaire. The patient completed the normal vaccinal schedule and didn't show any sequelae related to HHE.

Learning Points/Discussion: HHE is a benign and auto-limited event that medical staff must know in order to educate families, since these events might discourage infant vaccination. The interaction between inflammation and autonomous nervous system activity could play a role in the pathogenesis. The proper notification of HHE to the monitoring authorities is of the utmost importance for the pharmacovigilance of authorized vaccines.

VIRAL EXANTHEMATIC CHILDHOOD DISEASES DUE TO CYTOMEGALOVIRUS IN A COHORT OF PATIENTS EVALUATED FOR MEASLES

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - VIRAL RESPIRATORY INFECTIONS

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Title of Case(s): Viral exanthematic childhood diseases due to Cytomegalovirus in a cohort of patients evaluated for measles

Background: During 2019, São Paulo city has experienced a measles outbreak that reached 50.000 suspected cases, with 14.000 confirmed. Cytomegalovirus (CMV) infection can resemble e measles since it can curse with exanthema and fever. We objective to present pediatric patients with suspected measles in 3 medical centers in the North-Central region of Sao Paulo diagnosed with CMV infection.

Case Presentation Summary: The primary clinical diagnosis was based on the history of fever, respiratory symptoms, and exanthema in a pediatric patient under 17 years old. We have performed to all patients suspected of measles PCR to measles and other exanthematic virus-like Cytomegalovirus and Herpesvirus 6 by RT-PCR in urine, blood, or saliva.

Learning Points/Discussion: Results: Among the 343 suspected cases (135 cases under 12 months; 145 between 12-59 months and 58 patients over 60 months. Ninety-three patients were confirmed as measles, and 55 were confirmed as CMV infection by positive PCR in the urine sample. All patients had fever and rash. The predominant clinical symptoms in the CMV cases were: cough associated with a runny nose (41/55) conjunctivitis (10/66). Among the 93 measles confirmed cases, 20 required clinical support, but none of the patients confirmed as CMV infection required hospitalization.

PEDIATRIC HOSPITALIZED BRONCHIOLITIS: THE ROLE OF THE RESPIRATORY SYNCYTIAL VIRUS

E-POSTER VIEWING

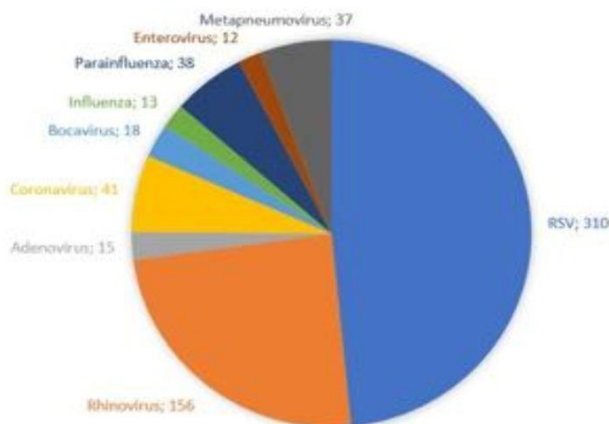
TYPE 5: CASE REPORT OR CASE SERIES - VIRAL RESPIRATORY INFECTIONS

Elena Bozzola, Claudia Ciarlito, Anna Chiara Vittucci, Donato Amodio, Livia Schettini, Annalucia Piscitelli, Alberto Villani
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Title of Case(s): Pediatric hospitalized bronchiolitis: the role of the respiratory syncytial virus

Background: This study confirms the high incidence of RSV, which was the main infective agent responsible for hospitalized bronchiolitis. Vaccination strategies are urgently needed, such as the extension of immunoprophylaxis to infants

Case Presentation Summary: Respiratory syncytial virus (RSV) is the most common viral cause of bronchiolitis. The purpose of the study was to evaluate the epidemiology of bronchiolitis in children aged 1 month-1 year hospitalized at IRCCS Bambino Gesù Children Hospital, Rome, Italy. The period study ranged from January 1st till December 31 th 2017. In the study period, 531 patients were enrolled. The main etiologic agent causing bronchiolitis was RSV, accounting for the 58.38% of infections (310 patients). Out of them, 41.24% of infants were affected by just RSV, while 17.14% by RSV plus one more virus. Figure 1 summarizes bronchiolitis etiology in term of different viruses isolated by the Multiplex-PCR. Children affected by RSV and by other viruses have the same age ($77,98 \pm 58,02$ and $78,80 \pm 64,16$ respectively). In children affected with RSV the length of hospitalization was significantly longer ($4,98 \pm 2,18$ days) than in those infected with other viruses ($4,22 \pm 2,16$ days) ($p < 0.001$). Moreover, children affect by RSV more frequently require intensive care assistance (4,19% vs 2,3%) This study confirms the high incidence of RSV, which was the main infective agent responsible for hospitalized bronchiolitis. Vaccination strategies are urgently needed, such as the extension of immunoprophylaxis to infants. Figure 1. Bronchiolitis etiology: frequency of single viruses isolated by the Multiplex-PCR panel



Learning Points/Discussion: RSV was the main infective agent responsible for hospitalized bronchiolitis. Vaccination strategies are urgently needed, such as the extension of immunoprophylaxis to infants. Children affected with RSV may require a long hospitalization

RESPIRATORY THILOMATOSIS IN A 15-MONTH-OLD JUVENILE: PRESENTATION OF A RARE CASE

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - VIRAL RESPIRATORY INFECTIONS

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Title of Case(s): A 15-month-old juvenile presented with recurrent episodes of inspiratory wheezing and laryngitis.

Background: Recurrent respiratory papillomatosis (RRP) is a disorder caused by the human papilloma virus (HPV) and characterized by the development of small, wart-like growths (papillomas) in the respiratory tract. RRP has a bimodal age distribution and manifests commonly in children younger than 5 years [juvenile-onset RRP (JORRP)] or in persons in the fourth decade of life (adult-onset RRP). JORRP is the most common and severe form and is due to the HPV exposure during the peripartum period. Local surgical or endoscopic interventions were for years the only treatment options for RRP.

Case Presentation Summary: A 15-month-old juvenile was presented to the pediatric department of a tertiary hospital due to recurrent episodes of inspiratory wheezing, that were treated mostly as recurrent episodes of laryngitis. Two successive bronchoscopies were performed. Both of them showed wart-like growths in the trachea and main bronchi. Endobronchial biopsies were taken and the pathology confirmed the diagnosis of papillomatosis. The Real-time Polymerase-Chain-Reaction that was performed in the biopsy specimens detected HPV type 16. Despite the fact that mother's recent PAP-test was negative to HPV infection and the patient was born to cesarean section, the diagnosis of JORRP was made and anti-vascular endothelial growth factor (anti-VEGF) therapy (bevacizumab) was initiated. The patient remained free of symptoms after the first dose of bevacizumab. In the bronchoscopy that was performed after the third dose there was a dramatic regression of papillomas.

Learning Points/Discussion: RRP is a severe disease, that may respond remarkably well to anti-VEGF treatment.

IMPACT OF COVID19 RESTRICTIONS ON RESPIRATORY SYNCYTIAL VIRUS (RSV) BRONCHIOLITIS IN A SECONDARY LEVEL PEDIATRIC WARD OF NORTHERN ITALY

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - VIRAL RESPIRATORY INFECTIONS

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Title of Case(s): IMPACT OF COVID19 RESTRICTIONS ON RESPIRATORY SYNCYTIAL VIRUS (RSV) BRONCHIOLITIS IN A SECONDARY LEVEL PEDIATRIC WARD OF NORTHERN ITALY

Background: Respiratory Syncytial Virus (RSV) is an important cause of lower respiratory tract infection worldwide, with particular importance in infants due to its morbidity and severity in the first months of life. Health measures performed to contrast COVID19 pandemic had an important and positive impact on yearly admissions to RSV bronchiolitis. We described the rate of admissions to RSV bronchiolitis/pneumonia in the pediatric ward of the Hospital F. Fornaroli of Magenta (Milan, Italy) in the last 3 years (from 2018 to 2020).

Case Presentation Summary: From 2018 to 2020, 2907 patients were admitted to medical diagnosis in the Pediatric Ward of the Hospital G. Fornaroli of Magenta. During this period, 125 patients (4.3% of all the admissions) were admitted to RSV bronchiolitis/pneumonia: 38 during 2018, 58 during 2019 and 29 during 2020. Most of these cases have been reported from November to March (124 patients, only one admitted on April 2018). During 2020 the rate of RSV bronchiolitis drastically decreased from March, in concomitance with health advertisements performed to contrast COVID19 pandemic: only 2 patients were admitted to this infectious disease in the beginning of March and no patients at all in the following months, in particular during November/December 2020. Considering the two previous years (2018/2019), 6 patients were admitted on average each month (November and December) to RSV bronchiolitis.

Learning Points/Discussion: Health measures performed to contrast COVID 19 pandemic (social distancing, lockdown, improvement of hand washing, use of facial mask) had an important impact on different infectious diseases. After the first lockdown (23rd of February in Lombardy, 11th of March in Italy) the rate of RSV bronchiolitis admitted in our pediatric ward drastically decreased up to no cases at all diagnosed during 2020/2021 autumn/winter months.

A RECURRENT MULTIFOCAL OSTEOARTICULAR INFECTION IN A CHILD

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - ZOOONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Title of Case(s): A RECURRENT MULTIFOCAL OSTEOARTICULAR INFECTION IN A CHILD

Background: Q-fever osteomyelitis has been rarely reported in children. This infection has an unclear pathophysiology and optimal therapy. We report a 2-year-old girl with *Coxiella burnetii* recurrent osteomyelitis with multifocal disease. This report shows the complicated diagnosis and management of this case and the importance of considering Q-fever in children with chronic-recurrent multifocal osteomyelitis.

Case Presentation Summary: A 2-year-old girl was admitted with right femur arthritis drained (culture and bacterial-PCR: negative). Mantoux-test and serology were negative. She was readmitted with skin fistulization and swelling on her right foot. Ultrasound and MRI showed bone involvement in the right first metatarsal and femur. A scintigraphy showed an increased activity in the talo-calcaneal. The patient had been exposed to goats so *Coxiella burnetii* serology was ordered: phase I IgG (1/1600), IgA (1/50); phase II IgG (1/100). Due to the epidemiology, *C. burnetii*-PCR was performed being positive. Rifampin and ciprofloxacin were initiated but the child continued having more relapses: right foot (first metatarsal, cuneiform), left calcaneus and ankle. She was treated with doxycycline and rifampin, and finally levofloxacin and rifampicin. Because she continued with recurrent abscess formations, subcutaneous INF- γ was added. When azithromycin and trimethoprim-sulfamethoxazole were added she experienced an improvement, without more surgery. She received antibiotics for 48 months and 7 more months of INF- γ once off antibiotics. Currently, she remains asymptomatic, without sequelae.

Learning Points/Discussion: Q-fever osteomyelitis is a rare although likely underreported disease. The diagnosis should be considered in osteoarticular infections with negative culture, multifocal or chronic relapsing despite antibiotic therapy, particularly if there is an exposure to farm animals or if granulomatous inflammation is evident. Surgical debridement and prolonged antibiotic may be important, although the optimal therapy remains unclear. Recent therapies with INF- γ have shown some effectiveness.

AN EMERGING CASE OF PULMONARY PARASITIC DISEASE IN A 13-YEAR-OLD GIRL WITH EMPYEMA.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Title of Case(s): An emerging case of pulmonary parasitic disease in a 13-year-old girl with empyema.

Background: Hydatidosis is a zoonosis caused by different species of Echinococcus which represent a substantial burden on humans. According to WHO, despite the applied control and eradication programs, the incidence of the cystic form of the disease remains high in the Mediterranean countries. Pulmonary localization is common in children and in most cases is asymptomatic until compression of adjacent structures or coinfections occur, which makes the diagnosis all the more difficult.

Case Presentation Summary: A 13-year-old, unvaccinated girl, living in a rural area in nomadic conditions, with a history of chronic cough presented to our clinic with high fever and respiratory distress. Initial X-Ray and US revealed right mediastinal shift by a hydropneumothorax and empyema with septations of the pleural effusion. Thus, a percutaneous drainage was performed. The culture of the pleural effusion came positive for multisensitive H.influenzae. The patient was treated with intravenous Cefotaxime. Despite the resolution of clinical symptoms, the pleural effusion persisted, after nine days of treatment. Therefore, a chest CT was performed revealing in the left lower lung a 6cm diameter cyst with a thick wall containing micro cysts. Serologic testing for echinococcus was highly positive. The patient received a 12 day regimen with albendazole and then surgery was performed with no spillage. A full recovery occurred after a treatment of 3month albendazole.

Learning Points/Discussion: Our case of a bacterial coinfection over a pulmonary hydatid cyst is a challenging diagnosis. In Greece, hydatidosis control programs aren't yet systematically applied, even though the incidence of the disease remains high. In complicated pulmonary infections, if the evolution isn't typical, clinicians should proceed to further investigations taking in consideration the local epidemiology.

AN UNUSUAL CASE OF ENCEPHALITIS. DON'T FORGET THE MOSQUITOES!

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - ZOOONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Title of Case(s): An Unusual Case of Encephalitis. Don't forget the mosquitoes!

Background: Usutu virus (USUV) is an emerging flavivirus initially identified in South Africa. Similarly to West Nile virus (WNV), the USUV enzootic transmission cycle involves *Culex* mosquitoes as vectors, and birds as amplifying reservoir hosts, with humans and other mammals likely being dead-end hosts. USUV infection can occur in humans, who can be asymptomatic or develop systemic (e.g., fever, rash, and hepatitis) or neuroinvasive (e.g., meningitis and encephalitis) disease.

Case Presentation Summary: We report the case of 8-year-old boy admitted to our hospital with fever, severe headache and muscle aches. At neurological examination, the child seemed drowsy and had oro-facial dyskinesias, hallucinations and left-sided myoclonus. Routine blood tests showed an increase of C-reactive protein and procalcitonin. Cranial computerized tomography was unremarkable.

Electroencephalogram reported an occasional delay of brain electrical activity, especially on anterior regions of the left hemisphere. Cerebrospinal fluid (CSF) showed 186 white blood cells per μL (61% monocytes), glucose concentration 98 mg/dl and normal protein concentration. Therapy with acyclovir, ceftriaxone, vancomycin and dexamethasone was initiated. Screening with the FilmArray Meningitis/Encephalitis panel excluded the presence of common pathogens that cause central nervous system infections, so vancomycin and acyclovir were stopped. The real-time RT-PCR for Tick-borne encephalitis virus, WNV, USUV in blood and CSF was negative. Titres of USUV-neutralising antibody were positive. This patient had also positive WNV IgM but WNV-neutralisation test was negative.

Learning Points/Discussion: In literature only few cases of USUV in children have been reported. Nowadays, USUV is now circulating throughout parts of Africa, the Middle East and Europe, including Italy. Thus, it is important to raise clinicians awareness of USUV in areas where virus circulate in humans or animals.

LYMPHANGITIS-ASSOCIATED RICKETTSIOSIS. A PEDIATRIC CASE SERIES IN SPAIN.

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - ZOOONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Title of Case(s): LYMPHANGITIS-ASSOCIATED RICKETTSIOSIS. A PEDIATRIC CASE SERIES IN SPAIN.

Background: Rickettsiosis are zoonoses prevalent in the Mediterranean regions. In recent decades, thanks to new molecular microbiology techniques, new species and clinical forms (considered as emerging Rickettsiosis) have been described. *Rickettsia sibirica mongolotimonae* (*R. sibirica mongolotimonae*) was first isolated in 1991 in Mongolia. Fewer than 60 cases have been reported worldwide. Different clinical manifestations of the infection have been described, such as tick-borne lymphadenopathy (TIBOLA) and mainly, lymphangitis-associated rickettsiosis (LAR). Its main vector is considered to be species of the genus *Hyalomma*.

Case Presentation Summary:



We present three cases of lymphangitis-associated rickettsiosis (LAR) caused by *R. sibirica mongolotimonae*. They represent the first reported cases in children. The three of them were detected in late spring and early summer, in rural areas. In all cases fever was present and there was a history of playing in areas with weeds, and contact with dogs. Tick bite sites were detected in extremities, all of them with associated lymphangitis. Serological detection for *Rickettsia conorii* and *Borrelia burgdorferi* was negative. Two of them received empirical treatment with doxycycline and the other one with azithromycin. In all the cases, *R. sibirica mongolotimonae* was detected by a PCR in the biopsy of the skin scar dermonecrotic lesion.

Learning Points/Discussion: Rickettsiosis are challenging infections in children. In Spain, a progressive increase in the population of *Hyalomma* species has been reported. The change in climatic conditions seems to play an important role in this. There are other potential risks associated with *Hyalomma* ticks: in Spain, the human transmission of other life-threatening zoonotic agents such as Crimean-Congo virus and *Coxiella burnetii* has already been reported. This emphasizes the importance of the development of new prevention strategies and the evaluation of this threat to public health.

VISCERAL LEISHMANIASIS: A CASE SERIES IN A SECONDARY HOSPITAL

E-POSTER VIEWING

TYPE 5: CASE REPORT OR CASE SERIES - ZOOONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

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Title of Case(s): Visceral leishmaniasis: a case series in a secondary hospital

Background: Visceral leishmaniasis (VL) is a vector-borne disease caused by *Leishmania donovani* and *Leishmania infantum*. It is endemic in some regions of Portugal and requires high clinical suspicion since it is characterized by unspecific symptoms. We aim to characterize our experience in a secondary pediatric hospital in Beja, Portugal, with patients diagnosed with VL.

Case Presentation Summary: Between January 2013 to December 2020 a total of 5 patients were diagnosed with VL, 4/5 were female, median age 1 year old (9 months – 14 years), 1 had a primary immunodeficiency, 3/5 had recognized contact with dogs. Regarding first symptoms 3/5 had fever, 5/5 had splenomegaly and/or hepatomegaly and 5/5 had ≥ 2 cytopenias. Median time since first clinical symptoms until confirmed diagnosis was 22 days (10 – 30 days). Laboratory evaluations revealed the following median minimum values during hospitalization: hemoglobin 6.6 g/dL (5.7 – 8.2 g/dL), leukocytes $4.13 \times 10^9/L$ ($2.04 - 4.53 \times 10^9/L$), platelets $27 \times 10^9/L$ ($11 - 111 \times 10^9/L$). Diagnosis of VL was confirmed in all patients by PCR of bone marrow aspirate and 3 patients performed a serology test that revealed presence of antibodies. All patients received amphotericin. As for complications 2 patients had hemophagocytic lymphohistiocytosis according to HLH-2004 criteria, and one of them had also immunosuppression due to corticoids, bacterial pneumonia and required intensive care.

Learning Points/Discussion: With this case series, we want to raise awareness of the importance of including VL in the differential diagnosis of patients with fever, hepatosplenomegaly and cytopenias since without treatment the case fatality rate is high. It is essential to report this diagnosis to local public health organizations in order to implement policies of surveillance and control of vector and reservoirs of *Leishmania spp.*

WITH OR WITHOUT REFERRAL?

E-POSTER VIEWING

**TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY -
TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS**

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Background: Polyclinics provide primary health care as part of their preventive work, conduct regular targeted examinations for the presence of diseases, identify early forms, conduct preventive vaccination and dispense different groups of population. The aim of our research was to investigate the diseases of 0-18 year old patients who were admitted to the “Muratsan” University hospital complex(UHC) ICU and toxicology for the last 7 years, including cases that have been reported from the dispensary with or without referral.

Methods: A retrospective study was performed using medical charts up to 7 years(2012-2018) from “Muratsan”(UHC) ICU and toxicology. The overall number of patients was 5152, among them 3074 were male and 2078 were female. This study included cases that have been reported by the “Muratsan”UHC ICU and toxicology from the dispensary with or without referral.

Results: The number of patients who were referred from the polyclinics of Yerevan is 41(0.7%),23(56.1%) had Acute respiratory infections(ARI),3(7.3%)-Acute Intoxications(AI),5(12.2%)-Acute Drug Intoxications(ADI),2(4.9%)-allergic disorders, 8(19.5%) other disorders*. The patients were divided into 4 age groups(0-1,1-7,7-14,14-18),the first group-10,the second-27,the third-3,the fourth-1 case. 53 patients(1%) were referred from regional polyclinics,20(37.7%) of them had ARI,13(24.5%)-AI,11(20.8%)-ADI,2(3.8%)-allergic disorders,7(13.2%)-other disorders. The first age group-6,the second-42,the third-5,the fourth-0 cases. Out of 2414 patients who were admitted to hospital without referral 519(21.5%) had ARI, 859(35.6%)-AI, 575(23.8%)-ADI and 87(3.6%)-allergic disorders. 374(15.5%)-other disorders. The first group-300,the second-1832,the third-209,the fourth-73 cases. *Diabetes mellitus,epilepsy,cancer,etc.

Conclusions: ARIs are more prevalent in patients who have been referred from polyclinics, while the patients without referral had mostly ADIs and AIs. The hospitalization without referral was rather high, which suggests that the primary chain of trust has decreased.

AGE-RELATED DISORDERS IN CHILDREN

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

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Background: Since both children and adolescents are the most vulnerable group in our society, their diseases require more attention and specific approaches. Each age group has its typical diseases. Therefore, by studying the disorders by the age group, we can struggle with them more productively. **Objective** The aim of our research was to investigate the diseases of 0-18 years old patients who were admitted to the “Muratsan” University hospital complex(UHC) ICU and toxicology for the last 7 years, their relation to the ages and the underlying reasons.

Methods: A retrospective study was performed using medical charts up to 7 years(2012-2018) from “Muratsan” UHC ICU and toxicology. The overall number of patients was 5152, among them 3074 were male and 2078 were female. In this study, we have separated four age groups(0-1;1-7;7-14;14-18) and have included the most common disorders typical for each age group.

Results: Among 538 patients under 1 year old,201(37.4%)-Acute Intoxications (AI)-(caused by KMnO₄ solution,CO). 193(35.9%)patients had Acute respiratory infection(ARI) and 108(20%)-acute drug intoxications(ADI), 36(6.7%)-other disorders*.By observing the 3585 patients aged 1-7 years old we found out the following results:AI-1441(40.2%)-(acetone solution,sodium hypochlorite solution),ADI-939(26.2%),ARI-762(21.3%),443(12.3 %) -other disorders. Among 632 patients of 7-14 years old 316(50%) had AI (CO, alcohol, flavor essence), 93(14.7%)-ADI (15% suicide attempts) and 57(9%)-ARI,166(26.3%)-other disorders.The analysis of 361 patients aged 14-18 years old led to following results:155(43%)-AI(alcohol, CO),122(33.8%)-ADI,75.4%-suicide attempts,20(5.5%) were bitten by animals and insects,64(17.7%)-other disorders. *Diabetes mellitus,allergic disorders,cancer,hematological disorders,etc.

Conclusions: We found out that the most common diagnoses of the patients are ADI and AI independent of age group.This phenomenon might be associated with high curiosity of kids as well as with parental negligence. AIs in adolescents are predominantly caused by alcohol.Both ADIs and AIs in adolescents are usually due to suicide attempts.

ID:1308

WHAT IS HIDDEN BEHIND SEASONAL CHANGES?

E-POSTER VIEWING

TYPE 1: CLINICAL AUDIT, PROSPECTIVE SURVEY OR RETROSPERSPECTIVE STUDY - NOVEL ANTIMICROBIAL TREATMENTS

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Background: Children are the most vulnerable group in our society and are very sensitive to different harmful agents. In addition, seasonal diseases are characteristic of childhood diseases. The aim of our research was to investigate the diseases of 0-18 year old patients admitted to the “Muratsan” University hospital complex(UHC) ICU and toxicology for the last 7 years, their relation to the season and the underlying reasons.

Methods: A retrospective study was performed using medical charts up to 7 years(2012-2018) from “Muratsan” University hospital complex(UHC) ICU and toxicology. The overall number of patients was 5152, among them 3074 were male and 2078 were female. In this study we have included the most typical diseases for each particular season.

Results: In winter 1246 patients were admitted to hospital. 394(31.6%)had acute intoxications(AI),mostly by CO and alcohol.343(27.5%)had Acute respiratory infection(ARI) and 330(26.5%)-Acute Drug Intoxications(ADI),179(14.4%)-other disorders*. Out of 1358 patients admitted to hospital in spring,519(38.2%)had AI(with CO and NaClO solution),322(23.7%)-ADI and 280(20.6%)-ARI, 237(17.5%)-other disorders.The overall number in summer was 1303.425(32.6%) had AI(flavor essence and alcohol),273(20.9%)-ADI,152(11.7%)-ARI,453(34.8%)-other disorders.The analysis of 1245 patients in autumn led to following results:AI-515(41.3%), mostly by flavor essence and alcohol, ADI-343(27.6%), ARI-253(20.3%),134(10.8%)-other disorders.There were 84 suicide attempts in spring(48) and summer(36),that were 68.8% of all suicide cases. *Diabetes mellitus,allergic disorders,cancer,etc.

Conclusions: We found out that the main reasons for admission to the resuscitation department areAI, ADI and ARIindependent of season. The vast majority of patients have AIs caused by flavor essence and CO in cold weather. ARIs are also prevalent in this time of year. In contrast to this, the ADIs and suicide attempts are more prevalent in warm weather. This phenomenon can be due to the curiosity of kids, while the elder children are usually inclined to suicide attempts.