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ABS 1

ACUTE RESPIRATORY INFECTIONS IN CHILDREN AT THE SYLVANUS OLYMPIO TEACHING HOSPITAL IN LOMÉ (TOGO)

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INTRODUCTION
According to the World Health Organization, 25% of deaths in children under 5 years of age are from acute respiratory infections (ARI). The objective of this study was to describe ARI in children.
PATIENTS AND METHODS
This was a retrospective cross-sectional study involving the analysis of records of children aged 1 month to 15 years hospitalized at the Sylvanus Olympio University Hospital from January 1, 2014 to December 31, 2016. Epidemiological, clinical, therapeutic, and evolutionary data were collected and analyzed.
RESULTS
A total of 557 cases of ARI were identified, corresponding to a hospital frequency of 4.7% with two seasonal peaks in October-November. Children under 2 years of age were the most affected (72%), with a predominance of males (sex ratio 1.3). The main presenting signs were rhinorrhea and cough. Neutrophilic hyperleukocytosis predominated in 38.2% of cases. Frontal chest radiography contributed to the diagnosis in more than half of the cases, with abnormalities found in 65.3% of cases. Low ARI (61%) was dominated by pneumonia (50.3%) and high ARI (27.5%) by nasopharyngitis (46.4%). The case fatality rate was 4.1%.
CONCLUSION
ARI was a very frequent reason for consultation and hospitalization, and children under 2 years of age were more affected.

ABS 2

ALTERNATIVE STRATEGIES FOR THE MANAGEMENT OF PEDIATRIC ASTHMA DURING THE COVID-19 PANDEMIC: THE POTENTIAL ROLE OF TELEMEDICINE

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Asthma is the most common chronic disease of childhood, affecting 6 million children in the United States [1, 2]. Respiratory viruses, including Coronavirus, are widely known to be potential risk factors for asthma exacerbations, especially in children [3]. Although allergic diseases and controlled asthma might not appear a predisposing factor for Coronavirus Disease 2019 (COVID-19) or a risk factor for severe outcomes [4, 5], there are relatively little data about the SARS-CoV-2 infection in children with chronic comorbidities, especially with asthma and other chronic lung diseases. On the other hand, patients with severe or uncontrolled asthma might be at increased risk of developing more severe COVID-19 [6]. In order to prevent the risk of SARS-CoV-2 transmission, as well as gain and maintain asthma control, national and international guidelines were promptly published to provide new and essential recommendations for the management of pediatric asthma during the pandemic [7].

Asthma management is mainly focused on maintaining disease control and reducing the risk of asthma-related exacerbations and deaths. Typically, routine follow-up visits are fundamental tools to assess the burden of respiratory symptoms, disease control, lung function, and compliance with therapies. In a state of emergency as the COVID-19 pandemic, telemedicine can play a central role in delivering allergy/immunology services and help physicians in the management of children with chronic/remittent allergic diseases, such as asthma.

Firstly, telemedicine promotes social distancing. Particularly, telemedicine may 1) limit the exposure of healthcare providers to potentially infected patients, 2) avoid the patient-to-patient viral transmission, protecting children with immunodeficiencies or other chronic comorbidities, and 3) provide a rapid evaluation for potential viral infection [8]. Besides, the availability of free online communication plat-

forms may easily allow virtual consultations for first and follow-up visits of asthmatic children, and share clinical data (investigations, imaging, and laboratory results). Finally, telemedicine may help pediatric allergists to manage mild-moderate asthmatic exacerbations that do not show "red flags" requiring urgent care or tests for COVID-19.

Trials of telemedicine interventions were mainly applied in school settings, showing a reduction of disparities in access to health care (rural vs. urban area), providing counseling services, and helping manage acute diseases. As reported by recent systematic reviews, the available evidence supporting the introduction of telemedicine for asthma management at school showed conflicting data, but none of the included studies indicated its adverse effects [9].

Telemedicine also makes use of even smarter technologies than online platforms. Electronic monitoring devices (EMDs) and mobile apps may promote the control of asthma symptoms and compliance with therapies. EMDs in asthma may provide objective data and not be biased by patient self-report [10]. The majority of the currently available EMDs focus on treatment adherence, helping patients and their families to remind the administration of prescribed medications and proper inhaler use [10].

More than 500 asthma-related apps were reported in 2019, mainly providing health education, compliance to therapies, symptom tracking, and environmental alerts. However, despite the significant number of available mobile apps for asthma, their use in clinical settings is not validated yet [10]. A few and conflicting studies evaluated the efficacy of apps in terms of quality of life, symptom control, lung function, asthma exacerbations, and hospitalization rates [10].

In conclusion, although telemedicine definitely may help, no studies have been realized to assess the real benefits and efficacy of telemedicine in the management of asthma in adults and children during this period of health emergency; thus, extensive and multicentric studies are truly indispensable.

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ABS 3

THE EFFECT OF MATERNAL VITAMIN D LEVELS ON HOSPITALIZED PRETERM INFANT AT BIRTH IN NICU

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BACKGROUND

The prevalence of vitamin D deficiency in pregnant women in Indonesia remains high. Maternal vitamin

D level is known to affect the fetal vitamin D level. However, the interaction between the two still needs to be further studied.

OBJECTIVE

This study aimed to investigate the correlation of vitamin D levels in the maternal, umbilical cord and newborn aged one week.

METHODS

This cohort study included newborns with the gestational age of < 32 weeks or birth weight of < 1,500 grams. The study was conducted in Cipto Mangunkusumo Hospital from November 2019 to January 2021. The vitamin D levels were examined from the maternal, umbilical cord, and newborn aged one week.

RESULTS

A total of 43 subjects were examined. A strong correlation between maternal and umbilical cord vitamin D levels ($r = 0.76$, $p < 0.001$) was found. Also, the vitamin D levels in umbilical cord and newborns aged one week ($r = 0.53$, $p = < 0.001$). Meanwhile there is poor correlation between maternal and newborn aged one-week vitamin D levels ($r = 0.37$, $p = 0.01$).

CONCLUSION

Maternal vitamin D levels affect the vitamin D levels of preterm newborns. However, in one week of age, maternal vitamin D level is no longer the sole determinant of newborn vitamin D levels. Vitamin D levels at birth play an important role in regulating vitamin D. Further studies are warranted to further investigate these correlations.

ABS 4

EFFECT OF GESTATIONAL DIABETES MELLITUS ON GLUCOSE TRANSPORTERS EXPRESSION IN MILK-DERIVED MESENCHYMAL STEM CELLS

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INTRODUCTION

The first 1,000 days of life are pivotal for the long-term health of the newborn. Maternal gestational diabetes mellitus (GDM) alters the intrauterine milieu for fetal development, and it represents a risk factor for chronic disease later in life. It has been described that breastfeeding, the first choice for neonatal nutrition, improves glucose tolerance in the early postpartum period reducing the risk for type 2 diabetes. Recently, breast milk was identified as a rich source of stem cells such as Mesenchymal Stem Cells (MSCs), a unique cellular population with immunomodulatory and anti-inflammatory properties exerted through the secretion of trophic mediators. Several studies demonstrated that MSC transplantation is an effective treatment in patients with diabetes mellitus since MSCs restore glucose blood concentration control modulating Glucose transporters (GLUTs). To date, nothing is known about Milk-Derived MSC (MDMSC) GLUTs expression levels and their possible contribution to breast milk-induced glucose tolerance in the newborn. Herein, we characterized MDMSCs phenotype and tested gene expression of GLUT-1 and GLUT-4, the two most important GLUTs members.

METHODS

Within 2 weeks after birth of term infants, milk samples were collected from women with normal uncomplicated pregnancies (n = 5) and women with GDM pregnancies (n = 3). MDMSCs were isolated and cultured in Dulbecco's modified Minimum Essential Medium (DMEM) supplemented with 10% Fetal Bovine Serum in flasks pre-coated with 5μg/cm^2 fibronectin. MDMSCs characterization was performed by flow cytometry assessing the expressions of CD105, CD90 and CD73, main MSCs surface markers, and of HLA-DR (Human Leukocyte Antigen DR), receptor responsible of non-self antigens presentation to the immunological system. Finally, MDMSCs were processed for mRNA isolation, and gene expression of stemness markers Oct-4 and NANOG and of GLUT-1 and GLUT-4 were assessed by Real Time.

RESULTS

All MDMSCs lines investigated were positive for CD105, CD90 and CD73 surface antigens, while they were negative for HLA-DR. Moreover, all MDMSCs lines properly expressed both Oct-4 and NANOG mRNA. Finally, GLUT-1 and GLUT-4 gene expression levels were more expressed in MDMSC from GDM relative to control pregnant women.

CONCLUSION

Our results demonstrated that MDMSCs from GDM pregnancies are characterized by altered GLUTs expression profile suggesting their possible contribution to newborn's disorders later in life. GLUTs expression suggests that MDMSCs possess glucose-tolerance modulatory properties as observed in MSCs from other sources. Further investigation is required.

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ABS 5

PULMONARY HYPERTENSION IN BRONCHO-PULMONARY DYSPLASIA: A RETROSPECTIVE STUDY OF TWENTY PRETERM

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INTRODUCTION

Bronchopulmonary dysplasia (BPD) is a major complication of preterm infants. BPD may be associated with pulmonary vascular disease (PVD) and secondary pulmonary hypertension (PH) [1]. About 25% of infants with moderate to severe BPD develop BPD-PH that is associated with high morbidity and mortality [2]. The aim of the study is to identify predictive factors for the onset of PH in preterm with BPD. An early diagnosis and prevention of PH may improve the outcome of BPD. There is an urgent need for factors and biomarkers that can predict the development of BPD-PH to provide adequate care for this subgroup of preterm with BPD.

METHODS

A population of preterm infants with gestational age (GA) ≤ 30 weeks was enrolled in this retrospective study. They were born in the Duilio Casula Hospital in Cagliari in the period between January 2014 and December 2016. All demographic data and information regarding pregnancy, childbirth, neonatal management in the delivery room, conditions at birth, neonatal intensive care, medications, invasive and non-invasive ventilation, and oxygen needs were recorded. Pulmonary pressures were assessed through an indirect method using transthoracic echocardiography according to modern guidelines [3].

RESULTS

Among the factors we analyzed, lower birth weight, lower GA, lower Apgar score, and need for surfactant administration were statistically significant in predicting the onset of PH in the newborn with BPD. Specifically, low birth weight (less than 700 g) was found to be a negative prognostic factor. Furthermore, our study showed that infants less than 30 weeks GA with early PH (< 14 days of life) are more inclined to develop severe BPD with PH at 36 weeks of postmenstrual age (PMA).

DISCUSSION

This was a retrospective study on a small cohort of patients. According to the literature, birth weight, Apgar score, EG, and the need for surfactant administration may be predictors of BPD-PH. Early PH as a predictor of BPD-PH at 36 weeks PMA is an emerging finding of particular interest. Further studies on a larger population are needed to confirm this result.

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ABS 6

UNEXPECTED POST-SURGICAL BLEEDING: ROLE OF STRESS ULCER PROPHYLAXIS WITH PROTON PUMP INHIBITORS (PPIs)

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INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is an uncommon but potentially serious, life-threatening

condition in children. The causes of UGIB include peptic ulcer disease, caustic ingestions, varices, erosive esophagitis, Crohn's disease. Non-steroidal anti-inflammatory drugs (NSAIDs) use and *Helicobacter pylori* (HP) infection should be considered risk factors. We report a case of bleeding duodenal ulcer in a 13-year-old male hospitalized for complicated acute appendicitis.

CASE REPORT

A 13-year-old male, otherwise healthy, presented to ER for a 2-day history of continuous, non-radiating, abdominal pain in the right lower quadrant associated with vomiting and fever. Clinical examination: suffering, T 38.5°C, CRT 2 sec, HR 120 bpm, SaO_2 98% in RA, BP 128/72 mmHg. Right lower quadrant pain on palpation, no guarding, rebound tenderness or rigidity. Blood tests: WBC 14.00 × 10^9/L, N 10.58 × 10^9/L, CRP 5.3 mg/dL. Other blood tests and urinalysis were normal. Pediatric Appendicitis Score was 7. Ultrasonography revealed pericecal free fluid. The patient was subjected to laparoscopic appendectomy with evidence of phlegmonous appendix. A drain was placed into the rectovesical sac. Initial management consisted of intravenous (IV) fluids and antibiotics (piperacillin tazobactam). The post-operative course was complicated by:

- poor food tolerance with gastric vomiting;
- poor control of pain with the need for analgesic therapy, initially paracetamol and ketorolac, then opioids;
- dark bile liquid stools in the 1st day after surgery, then evolution in melena;
- fever up to the 4th post-surgery day with important elevation of CRP (29 mg/dl) despite antibiotic therapy;
- progressive anemia (Hb from 13 to 6.4 g/dl on the 10th post-surgery day).

On the 5th post-surgery day, abdominal CT had ruled out active bleeding showing a small pericecal liquid flap and moderate diffuse thickening of several ileal loops in the abdomen. Therefore, the boy was subjected to laparoscopic surgical revision with evidence of diffuse fibrin surrounding the loops of the small intestine and lysis of the adhesions. Proton pump inhibitors (PPIs) therapy was started. On the 10th post surgery day, anemia and melena required esophagogastroduodenoscopy (EGD) preceded by RBC transfusion.

A bleeding duodenal ulcer was identified. Hemostasis was achieved using endoscopic dilute epinephrine injection and high-dose IV PPI for 3 days. The patient was discharged after 17 days of hospitalization with PPIs therapy for 1 month. The control EGD was negative for Crohn's disease and HP infection.

CONCLUSIONS

Stress ulcer prophylaxis with PPIs is the standard of care in many critically ill children in ICU. It is not recommended in a general practice setting for use in children. In our case, the duodenal ulcer was secondary to several factors: acute abdomen, stress from surgery, fasting, medications (NSAIDs and antibiotics), post-surgical infection. We think that, in selected cases (complicated appendicitis, possibility of prolonged fasting, need to use NSAIDs), its use should be considered immediately.

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ABS 7

L1 CELL ADHESION MOLECULE (L1CAM) EXPRESSION IN THE FETAL HUMAN KIDNEY DURING DEVELOPMENT

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INTRODUCTION

L1 Cell Adhesion Molecule (L1CAM) is an adhesion molecule belonging to the L1 protein family. It is a transmembrane protein expressed in multiple cell types in which it is involved in promoting motility and invasion. During human development, L1CAM has been reported to be expressed in the genital tract throughout the entire fetal life [1]. In the same study, L1CAM was shown to be expressed in the developing fetal kidney. L1CAM has also been hypothesized to play a role in neuronal development, being involved in axonal guidance. To the best of our knowledge,

comprehensive data on the expression of L1CAM in the majority of developing human organs have not been published yet. L1CAM expression has also been reported in multiple human tumors, including endometrial adenocarcinoma [2], uterine carcinosarcoma, hepatocellular carcinoma. With these data taken together, the aim of this study was the analyze L1CAM expression in the human fetal kidneys during fetal development.

PATIENTS AND METHODS

Kidney autoptic samples were obtained from 3 fetuses, with gestational age ranging from 12 to 18 weeks. In the clinical history, no evidence of nephrological malformations was present. Kidney samples were formalin-fixed and routinely processed. Three micron-thick sections were stained with hematoxylin and eosin (H&E) and immunostained with a mouse monoclonal antibody (Sigma-Aldrich, clone UJ127) against L1CAM. The ultraView Universal DAB Detection Kit was used for detecting primary antibodies.

RESULTS

L1CAM was expressed in all fetal renal kidneys analyzed in this study, at different gestational ages. Immunostaining for L1CAM was restricted to some specific fetal structures: collecting tubules and the tips of the epithelial branches invading the metanephric mesenchyme. In these fetal structures, L1CAM was expressed along the cell membrane of epithelial cells. No cytoplasmic or nuclear reactivity was observed. The intensity of immunostaining changed from one structure to the next. L1CAM was highly expressed in the large collecting ducts in the fetal renal hilum. A lower immunoreactivity was observed in the tips, in strict connection with the subcapsular metanephric stem/progenitor cells.

CONCLUSIONS

Our preliminary findings confirm previous data on the expression of L1CAM in the developing human kidney. The expression of L1CAM in the epithelial cells of the tips of the ampullae represents a new finding in human nephrogenesis. These cells have been shown to play a major role in the induction of metanephric progenitor cells toward mesenchymal-epithelial transition, giving rise to the process of glomerulogenesis [3]. The significance of the expression of L1CAM in the subcapsular zone of the fetal kidneys lays stress on the possible relevance of L1CAM expression during nephrogenesis. Further studies are needed to better evaluate, in a large series of fetal kidneys, L1CAM immunoreactivity, in order to better evaluate its role during human kidney development.

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ABS 8

NEW THERAPEUTIC STRATEGIES IN PEDIATRIC ALLERGY

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INTRODUCTION

The development of biological drugs is one of the significant achievements in the field of Precision Medicine. The panorama of biological drugs available is constantly expanding in pediatric allergy; thus, this article aims to summarize current knowledge on biological therapies in pediatric allergy, focusing on asthma and atopic dermatitis (AD).

ASTHMA

About 5% of asthmatic patients develop severe or uncontrolled asthma that is a complex and heterogeneous disease. Recent research efforts have focused on identifying epidemiologic, clinical, and molecular mechanisms that underlie severe asthma, leading to recognizing different phenotypes and endotypes and identifying biomarkers able to predict the response to biologic therapies [1].

Omalizumab was the first humanized monoclonal anti-IgE with a pediatric indication. By binding to circulating IgE, omalizumab directly prevents their interaction with the IgE receptor (FCεR) on the mast cells and basophil surface, inhibiting the release of pro-inflammatory mediators [2]. Omalizumab is more effective in asthmatic children with multiple allergic comorbidities, high peripheral eosinophil counts (> 300 cells/μL), pretreatment total IgE, FeNO > 20 ppb and elevated serum periostin. Notably, pediatric studies reported that omalizumab reduced the rate of acute asthma attacks, hospitalizations, and the need for

oral corticosteroids (OCS), significantly improving patients' asthma control and QoL. Finally, pediatric patients treated with omalizumab developed fewer seasonal exacerbations induced by respiratory viruses than controls. Many data from trials and prospective studies showed that omalizumab is generally well-tolerated in children and adolescents. Mepolizumab is a humanized monoclonal antibody that binds and inhibits circulating IL-5. Mepolizumab has recently been approved as additional maintenance therapy for severe eosinophilic asthma. Mepolizumab was recently in children older than 6 years with severe eosinophilic asthma. Two double-blind, randomized, placebo-controlled trials evaluated the efficacy and safety, showing a significant decrease in the rate of asthma exacerbations and QoL [3].

Dupilumab is a fully human monoclonal antibody, which blocks the IL-4/IL-13 receptor. Dupilumab is indicated as an additional treatment for patients with type 2 asthma. Dupilumab was approved in the US and Europe for patients aged ≥ 12 years with moderate-to-severe asthma and peripheral eosinophilia (≥ 300 cells/μL). In three main clinical trials, dupilumab reduced severe asthma attacks and OCS use and improved lung function. Two-phase III ongoing trials evaluated the efficacy, safety, and tolerability of dupilumab in children aged 6 to < 12 years with severe uncontrolled asthma [4, 5].

ATOPIC DERMATITIS

AD is the most common chronic inflammatory skin disease in children, characterized by cutaneous xerosis, pruritus, and skin inflammation. Severe and refractory forms of AD require off-label immunosuppressant therapies that are burdened by frequent side effects. In recent years, major therapeutic milestones have been achieved with dupilumab treatment. Since 2019 dupilumab has been indicated to treat moderate to severe AD in adolescent patients aged > 12 years [6]. More recently, the FDA and EMA have approved the use of dupilumab, also in children > 6 years of age, as an add-on treatment for moderate-severe AD, poorly responsive to conventional therapies. In clinical trials, patients treated with dupilumab reported a reduction in the IGA score and a ≥ 75% improvement in the EASI-75 score compared to the subjects in the placebo group. Dupilumab also improved EASI score, pruritus, and quality of life. The most reported adverse events are the injection site reactions (pain, hyperemia, skin swelling) and conjunctivitis [6].

Lebrikizumab and tralokinumab are humanized monoclonal antibodies that inhibit IL-13 and showed a safety and efficacy profile in adults with moderate-severe AD.

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ABS 9

BACTERIAL PATTERN OF THE SEPSIS PATIENTS ADMITTED TO THE NICU OF BUDHI ASIH REGIONAL PUBLIC HOSPITAL (JAKARTA) FROM JANUARY 2019 TO OCTOBER 2020

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BACKGROUND

The neonatal mortality rate in Indonesia, particularly in DKI Jakarta, is still quite high. In 2019, the most common cause of neonatal mortality in Indonesia was sepsis, which ranks 5th with a neonatal mortality rate of 703 cases. Neonatal sepsis is most often caused by bacteremia. The importance of knowing the bacterial pattern that causes sepsis is related to appropriate antibiotic treatment.

OBJECTIVE

To determine the bacterial pattern of the septicemia patients admitted to the Neonatal Intensive Care Unit (NICU) of Budhi Asih Regional Public Hospital as a reference for choosing antibiotics.

METHODS
The study design is a descriptive study with data collected retrospectively, using culture results of septicemia patients based on medical records in the NICU of Budhi Asih Regional Public Hospital from January 2019 to October 2020.
RESULTS
Positive culture results in the NICU found 35 types of bacteria. There were 117 patients with positive culture result in 2019 and 198 patients from January to October 2020. All patients with clinical manifestations of sepsis were subjected to blood culture tests. Positive culture results of septicemia patients were more dominant in boys (182, 58%) than girls (133, 42%), premature infants are 116 (37%), early-onset neonatal sepsis (EOS) cases are 275 (87%), and there were 14 (4%) mortality cases. The most common organism isolated was *Klebsiella pneumoniae*, followed by *Serratia marcescens* and *Staphylococcus haemolyticus*.
CONCLUSION
The most common organism isolated was *Klebsiella pneumoniae*, followed by *Serratia marcescens* and *Staphylococcus haemolyticus*.

ABS 10

CONGENITAL CYTOMEGALOVIRUS INFECTION: CAN THE DIFFERENCE BETWEEN THE VIRUS' RELATIONSHIP WITH THE HOST'S IMMUNE SYSTEM EXPLAIN THE DIFFERENCE IN CLINICAL PHENOTYPES?

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BACKGROUND
Human cytomegalovirus (HCMV) is a double-stranded DNA virus with ubiquitous distribution around the world. In immunocompromised hosts, HCMV has the ability to determine severe infections, with high morbidity and mortality. A paradigmatic example of what HCMV is capable of is the infection acquired during pregnancy, which leads to the congenital HCMV infection of newborns. In terms of congenital infection, the severity of the clinical situation is determined by the time of maternal infection during pregnancy: newborns infected during the first phases of pregnancy usually present with greater morbidity and long-term sequelae during infancy. Despite the great number of cases of congenital HCMV infection, the mechanisms underlying the ability of HCMV to determine infections with great differences in terms of severity are only partially understood.
OBJECTIVE
In this study, we aimed to identify a correlation between the phenotypical characteristics and immunomodulatory ability of different strains of HCMV, clinically isolated from organic samples (urine) of newborns with HCMV congenital infection, and the clinical phenotype presented by the patients. In particular, we aimed to identify which virologic features determine not only a more severe congenital HCMV infection *in utero* and in the neonatal period, but also a greater number of long-term sequelae.
MATERIALS AND METHODS
In this study, we considered a population of 21 newborns diagnosed with congenital HCMV infection at the Neonatal Care Unit of Neonatology at the Sant'Anna Hospital of Turin during the period of April 2015 and September 2017. The growth properties of the HCMV isolates were analyzed in different culture models. Genetic polymorphism was assessed by genetic analysis of viral genes involved in drug resistance (UL54 and UL97). Moreover, we sought to determine whether inter-host phenotypic variability of HCMV influences its ability to modulate NK cell responses to infection and, consequently, the ability to determine a more severe congenital infection. For this purpose, we selected five HCMV clinical isolates from the considered cohort of patients and analyzed the expression of several ligands for specific NK cell-activating receptors. We also studied the IFN-γ production by NK cells co-cultured with HCMV-infected fibroblasts, in order to correlate the expression of the ligands with the functionality of the immune system cells.
RESULTS
Our results indicate that it exists a great variability of replicative behavior and genetic polymorphisms between the HCMV strains studied. While the genetic polymorphisms did not show influence on the severity of the infection, we observed that the replicative behavior's variability influences the immunomodulatory ability of HCMV, leading to more severe congenital infections and long-term sequelae.

CONCLUSIONS

HCMV clinical isolates with a non-aggressive replicative behavior are capable of determining a severe clinical phenotype due to an increased capability of molecular mimicry of the virus. Infections from isolates with an aggressive replicative behavior *in vitro* result in asymptomatic phenotypes, due to a lower molecular mimicry.

ABS 11

A PERSISTENT AND RESISTANT DUCTUS ARTERIOSUS

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INTRODUCTION

While in most full-term newborns the arterial duct closes spontaneously in the first days of life, in preterm infants this may not happen, resulting in a situation known as Patent Ductus Arteriosus (PDA). If persistence of PDA is accompanied by the presence of a significant left-to-right shunt, this condition can lead to short- and long-term clinical consequences. Pharmacotherapy is first-line therapy; in the last few years, ibuprofen is usually considered as the first-line drug. Non-steroidal anti-inflammatory drugs (NSAIDs) are contraindicated in many situations, such as thrombocytopenia, renal failure, intraventricular hemorrhage (IVH), necrotizing enterocolitis (NEC) and severe hyperbilirubinemia. Paracetamol could be an alternative treatment in these patients, resulting as effective as NSAIDs, but with less side effects, especially regarding nephrotoxicity [1].

CASE REPORT

We present the case of L., born at 24^{+2} weeks of GA by emergency cesarean section due to placental abruption. Her birth weight was 660 g and Apgar scores were 1, 5 (following endotracheal intubation), 7. A full course of antenatal corticosteroid therapy was administered. At birth, she required intubation and invasive ventilation. She was placed on high-frequency oscillatory ventilation and treated with one dose of surfactant. In the following days, multiple extubation attempts failed due to a decrease in oxygen saturation values, an increase in FiO_2 up to 1 and signs of respiratory distress, so she required mechanical ventilation for 35 days and O_2 supplementation for 14 more days. At 8 days of life, echocardiographic images revealed a hemodynamically relevant PDA; ibuprofen was initially contraindicated due to thrombocytopenia, so she underwent a 4 days treatment with paracetamol with no response. Then, with the normalization of platelet count, we administered two courses of ibuprofen for 3 days (at 11 and at 17 days of life) with further failure of PDA closure. At 27 days of life, she underwent a 3 days treatment with indomethacin with successful closure and no side effects.

CONCLUSIONS

In some preterm infants, especially showing very low gestational age (23-24 weeks), there is a failure to close the PDA, even after several courses with different drugs. In these patients, it is preferred to carry out more courses of pharmacotherapy in order to avoid surgical ligation, a practice often associated with perioperative and postoperative complications. The underlying causes of this phenomenon have yet to be fully clarified, but in these populations an individualized approach would be useful [2]. At present, we are not able to identify those newborns who will need more courses of therapy for PDA closure. In the near future, an important role could be played by metabolomics, which allows us to study the basal metabolic status of these patients and how this could be related to the response to therapy [3].

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ABS 12

ACUTE SUPPURATIVE THYROIDITIS IN A 4-YEAR-OLD BOY: A CASE REPORT

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BACKGROUND

The thyroid gland is relatively resistant to infections because of its capsule. Acute suppurative thyroiditis (AST) is a rare disease in childhood, caused by an infection (usually bacterial) of the thyroid gland. This infection can occur through these routes: hematogenous spread from a distant focus of infection, direct extension from a focus in the head or neck (tonsils, pharynx) or direct trauma to the neck. In some cases, AST is due to a fistula from the pyriform sinus associated with a defect of the third or fourth branchial arch. This type of fistula is characterized by a connection between the pharynx and the thyroid capsule and is almost always left-sided [1]. In fact, AST usually affects the left lobe of the thyroid gland and gives rise to recurrent thyroiditis. The classic appearance is with painful neck swelling, associated with local heat and redness, and often fever. The treatment is based on antibiotic therapy, but the definitive treatment is surgical excision of the fistula to prevent recurrence.

CASE REPORT

A 4-year-old boy presented to our hospital with a left-sided mass of the neck. This mass was painful. The overlying skin was erythematous and warm. Ultrasound showed a left lobe swelling with an area (3 cm) formed by hypoechoic and hyperechoic aspects, compatible with abscess. Given the clinical situation, we decided to act surgically immediately. The patient underwent exeresis of the left thyroid lobe and fistula. At histology, the surgical specimen showed a fistulous path with multi-layered squamous epithelium with areas of erosion and mixed granulocytic and lympho-plasma cell inflammation in the context of the thyroid gland. In the remaining thyroid, we observed foci of chronic lymphocytic inflammation in follicular aggregates. On the basis of these data, the diagnosis of acute suppurative thyroiditis was performed. At 2 months after surgery, the patient is in excellent clinical condition.

CONCLUSIONS

AST is a rare (< 1% of thyroid diseases) and serious thyroid gland infection. The differential diagnosis is between subacute thyroiditis and, less frequently, thyroglossal cyst or acute hemorrhage of a thyroid nodule [2]. AST in children is almost always secondary to a local congenital anatomic anomaly as a piriform sinus fistula or fourth branchial arch anomalies. Due to the asymmetrical embryonic development, they are generally located on the left side (87% of cases). Many pathogens have been implicated, mostly *Staphylococcus aureus* and *Streptococci* species [3]. Clinically, patients might have painful neck swelling, fever, sore throat, dysphagia and increased C-reactive protein. Our case report presented with left neck localization, as the majority of cases previously described.

Our aim is to remind that AST is a rare disease but should be taken into consideration when a patient comes to our attention with this clinical presentation, due to its potential life-threatening consequences.

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ABS 13

NEONATAL COMPLICATIONS ASSOCIATED WITH EMERGENCY CESAREAN SECTION AND INSTRUMENTAL DELIVERY

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INTRODUCTION

Emergency cesarean section and instrumental delivery are well-known risk factors for neonatal complications. The objective of this study was to determine the frequency of neonatal complications in emergency cesarean section and instrumental delivery.

MATERIALS AND METHODS

A retrospective, multicenter, descriptive, and analytical cross-sectional study was conducted in the maternity wards of the Sylvanus Olympio University Hospital and Bè Hospital in Lomé, from 01 January 2018 to 31 December 2018. The records of deliveries in the maternity ward of both hospitals who had an emergency cesarean section or an instrumental delivery were included. Statistical analysis was performed on the R 3.3.4 software. The selected significance level was 0.05.

RESULTS
The total number of deliveries in the two centers was 12,027. The frequency of emergency cesarean section was 17.10% (n = 2,057) and that of instrumental delivery was 2.74% (n = 330). The prevalence of severe neonatal complications was 89.61%. Emergency cesarean section was associated with the occurrence of a neonatal complication (yes = 88.83% vs. no = 63.31%, p < 0.0001). Apgar (5 min) ≤ 3 was associated with emergency cesarean section after failed instrumental extraction (20.41%, p < 0.0001), low educational level (illiterate and primary) (59.32%, p = 0.0318), referral (82.76%, p = 0.0101). Fresh stillbirth was associated with emergency cesarean section (92.13%, p = 0.0458) after acute fetal distress (11.97%, p = 0.0001), after poor presentation (0.86%, p = 0.0007) and after failed instrumental extraction.
CONCLUSION
Emergency cesarean section was a source of neonatal complications more than instrumental delivery.

ABS 14

IS IT SYNDROME OF INAPPROPRIATE ANTIDIURETIC HORMONE SECRETION OR CEREBRAL/RENAL SALT WASTING SYNDROME?

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Cerebral/renal salt wasting (CRSW) syndrome, whose etiopathogenesis is still poorly known, and the syndrome of inappropriate secretion of antidiuretic hormone (SIADH, including the subtypes reset osmostat [RO] and nephrogenic syndrome of inappropriate antidiuresis [NSIAD]) can lead to euvolemic hyponatremia, and their differential diagnosis can be a hard challenge, since the clinical approach based on the extracellular volume (ECV) status can be inadequate [1, 2].
In CRSW syndrome-affected subjects, increased natriuresis determines ECV depletion in the early stages, which can, successively, normalize in euvolemia. Arginine-vasopressin (AVP) secretion continues despite low natremia, due to baroreceptors stimulation; thus, CRSW syndrome can also result in euvolemia.
RO is usually characterized by moderate/mild hyponatremia, diluted hyposmolar urine and normal uric acid excretion fraction (FeUa). Moreover, RO does not respond to oral sodium supplementation, water restriction or fludrocortisone supplementation. On the contrary, CRSW and SIADH are both characterized by severe hyponatremia, hypouricemia, increased urine osmolality and increased FeUa. What can be observed is that water restriction can normalize serum sodium, uricemia and FeUa in SIADH but not in CRSW, typically showing a persistently elevated FeUa (FeUa > 11%) after hyponatremia correction. However, the exact mechanism for this condition is not clear. Natremia normalization can, therefore, correct FeUa in SIADH, not characterized by a proximal tubule injury, but is not sufficient in CRSW syndrome. Therefore, damage involving the proximal tubule is present in CRSW syndrome and could involve a specific transporter that regulates sodium excretion.
A damaged proximal tubule could eliminate sodium and uric acid despite natremia correction by exogenous sodium, sustaining FeUa increase [3].
In conclusion, the evaluation of serum uric acid and FeUa can help in the differential diagnosis between CRSW syndrome and SIADH, and this allows adequate treatment, different in the two conditions.
Considering the inadequacy of clinical evaluation in distinguishing hypovolemic hyponatremia from euvolemic forms, FeUa can represent an ideal instrument, affirmed and currently applied among adults, to distinguish CRSW syndrome and SIADH. Thus, we believe that FeUa use, hyponatremia evaluation, urinary osmolality measurement, and FeUa alteration persistent after hyponatremia correction, are highly useful even among children over one year of life in which euvolemic hyponatremia can represent a diagnostic challenge.

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ABS 15

POLAND SYNDROME: A CASE REPORT

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CASE REPORT

Mother: 33 years old, in anamnesis hip dysplasia. Father: 35 years old; he denies any pathologies. First born in clinical wellness. Physiological pregnancy, the usual clinical checks are normal. The first-trimester morphological ultrasound scan has shown right-hand agenesis, normal remaining skeletal finds.

At birth: right-hand agenesis, two bumps of the first and fifth toe can be noticed near the carpus. Mild hypoplasia of the ipsilateral upper limb with good functional status. Trunk asymmetry at the level of the anterior thoracic cage with depression of the right side. Hypoplastic and introflex nipple, palpatory dimorphism of the middle ribs and of the sternum-costal joints.

X-rays of the right upper limb show agenesis of the right hand with a minimal bump of the thenar eminence of the first ray. Mild hypoplasia of the arm and forearm. Muscle ultrasound of the anterior chest wall documents the agenesis of the right major pectoralis muscle. Standard remaining finds.

The orthopedic counseling confirms the Poland Syndrome diagnosis.

Regular clinical course during hospitalization in the Nursery, taken care at the discharge by the Orthopedic and Physiatrist Department to start functional rehabilitation.

Poland Syndrome is a rare malformative condition with an estimated incidence of 1 per 30,000 births and male prevalence (M/F 3:1). This syndrome is characterized by agenesis or hypoplasia of the major pectoralis muscle, in particular of the external rib heads, associated with malformations of the ipsilateral upper limb, mostly in the right side. The etiology and the subsequent pathogenesis are still unknown.

The most accredited hypothesis for the pathogenic mechanism is a vascular defect of the subclavian artery during the early embryological stage. This causes an insufficiency of inflow of the limb and breast leading to the main muscle-skeletal features of the Poland Syndrome. The severity of the clinical features depends on the gestational age in which the vascular insult occurs.

The Poland Syndrome phenotype can be extremely variable, as much as 3 types of Poland Syndrome have been classified:

- type 1: isolated pectoral muscle defect;
- type 2a: pectoral muscle defect associated with upper limb anomaly without rib anomalies;
- type 2b: pectoral muscle defect associated with rib anomaly without upper limb anomalies;
- type 3: pectoral muscle defect associated both with upper limb and rib anomalies.

Type 2a is the most typical.

The diagnosis is based on physical evaluation and involves a multidisciplinary approach with a pediatric surgeon, a plastic surgeon, an orthopedist, a geneticist, a psychologist and a physiatrist.

The treatment is basically surgical and may vary on the type of malformation.

CONCLUSIONS

Poland Syndrome is a rare condition that presents a variable phenotype. It is important to recognize it at birth to make an early diagnosis and start a proper treatment regarding clinical, surgical and psychological aspects.

ABS 16

EXPRESSION OF BRAIN-DERIVED NEUROTROPHIC FACTOR AND NEUROTROPHINS 3/4 IN MILK-DERIVED MESENCHYMAL STEM CELL (MDMSCs)

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INTRODUCTION

Human brain development is an organized and highly dynamic process that begins *in utero* after fertilization and continues postnatally into

adolescence. The early postnatal period is crucial for the establishment of cognitive and behavioral abilities that last a lifetime, and breastfeeding has been identified as a key contributor in brain development and long-term neurologic outcomes. Beneficial effects of human Breast Milk (hBM) are mediated by long-chain polyunsaturated fatty acids, cholesterol, sialic acid, taurine, hormones, growth factors, neuroprotective factors including glutamic acid, probiotics and oligosaccharides as well as neurotrophins such as BDNF (Brain-Derived Neurotrophic Factor), NT (Neurotrophin) -3 and -4. Recently, hBM was described as a source of Mesenchymal Stromal Cells (MSCs), a unique cellular population with renowned anti-inflammatory and neuromodulatory properties mainly mediated by neurotrophins such as BDNF, NT-3 and NT-4. To date, Milk-Derived Mesenchymal Stem Cell (MDMSCs) have not been well characterized, and nothing is known about their role in neonatal neurological development. Herein, we characterized MDMSCs phenotype, and we investigated the expression of neurotrophins BDNF, NT-3 and NT-4.

METHODS

MDMSCs (n = 13) were isolated from human breast milk collected within 2 days (colostrum) or within 10 days (transitional milk) after the birth of a term infant. MDMSCs were cultured in Dulbecco's modified Minimum Essential Medium (DMEM) supplemented with 10% Fetal Bovine Serum in flasks pre-coated with 5μg/cm^2 fibronectin. To characterize MDMSCs, flow cytometry was performed, and the expressions of CD105, CD90 and CD73, main MSCs surface markers, and HLA-DR (Human Leucocite Antigen DR), receptor responsible for non-self antigens presentation to immunological system, were evaluated. Finally, cells were processed for mRNA isolation and the gene expression of stemness makers Oct-4 and NANOG and neurotrophin BDNF, NT-3 and NT-4 were assessed by Real Time.

RESULTS

All MDMSCs were positive for CD105, CD90 and CD73 surface antigens, while they were negative for HLA-DR. Moreover, all MDMSCs properly expressed both Oct-4 and NANOG mRNA. MDMSCs resulted negative for NT-3 expression. Instead, BDNF and NT-4 were highly expressed in all MDMSCs cell lines analyzed, and their expressions are higher in MDMSCs from colostrum relative to transitional milk (BDNF p-value = 0.036; NT-4 p-value = 0.036)

CONCLUSION

Our results demonstrated that MDMSCs possess an appropriated MSCs phenotype characterized by positive expression of CD105, CD90 e CD73. Since MDMSCs did not express HLA-DR, they could be used in patients different from donors without causing host vs. graft rejection. BDNF and NT-4 expression suggest that MDMSCs possess neuromodulatory properties as observed in MSCs from other sources. In conclusion, our data open the gate to innovative MDMSCs-based therapeutic approaches for the treatment of premature neonates with immature brain development.

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ABS 17

BLASTIC PLASMACYTOID DENDRITIC CELL NEOPLASM (BPDCN) IN A 15-YEAR-OLD GIRL

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INTRODUCTION

Firstly described in 1994, blastic plasmacytoid dendritic cell neoplasm (BPDCN) is a malignant transformation of plasmacytoid dendritic cells [1]. BPDCN is a highly aggressive rare disease, and it is more frequent in male patients, with a male-to-female ratio of 3:1 [2]. A bimodal timing of presentation has been reported, with an incidence of 0.09/100,000 in people with more than 60 years of age and of 0.04/100,000 in up to 20-year-old people [3]. In 60-100% of cases, it presents with variable cutaneous, usually nonpruritic lesions, more frequently with a bruise-like appearance eventually progressing to a scaly one [2]. Mucosal involvement has rarely been reported [2]. BPDCN may also involve other organs, e.g. bone marrow, lymph nodes, spleen, liver and occasionally lung, breast, bladder and kidney [2]. Up to 30% of cases show neurological involvement [2].

CASE REPORT

A 15-year-old girl presented with a single nodularity on the internal surface of the right leg. The lesion

showed a central erythematous appearance and a peripheral hyperchromatic halo, with regular and blurred margins. The lesion appeared 10 months before the physical examination. It was 8 cm in diameter. An incisional biopsy was performed.

At histology, we observed a dense monomorphic, lymphocytic-like proliferation of medium-sized cells, occupying the dermis and mainly the hypodermis. The proliferation showed a diffuse and pseudo-nodular growth pattern. It was composed of cells with high nuclear-to-cytoplasm ratio, ill-defined cell borders, fine chromatin and small nucleoli. Frequent mitoses were observed. The neoplastic cells diffusely expressed CD123 (weakly), CD56, CD43, CD45, CD7 (weakly), BCL2 and CD38. The focal expression of CD4 (weakly), BCL6 (weakly), MUM-1 (with variable intensity), S100 and TDT was also observed. Only exceptionally rare cells expressed CD23 and no immunoreactivity for Myeloperoxidase, CD138, HHV-8, CD10, CD117, LAT, TIA-1, Granzyme B and CD1a was shown. No EBER-positive cells were observed through *in situ* hybridization. The Ki-67 proliferation index was high, with almost 80% of cells immunoreactive. Background histiocytes, T and B lymphocytes were observed.

The morphology and immunophenotype suggested the diagnosis of BPDCN.

CONCLUSIONS

BPDCN may occasionally affect pediatric patients [1, 3]. It typically has a poor prognosis [3], but a less aggressive clinical behavior has been reported in younger patients, if treated with proper chemotherapy and central nervous system prophylaxis [1]. Thus, its recognition is fundamental for the patient outcome. However, its histological diagnosis may be very challenging, due to its rareness, to the variability of immunohistochemical expressions and to its morphological and molecular resemblance to myelodysplastic syndrome, acute myeloid leukemia, chronic myelomonocytic leukemia, NK-T-cell leukemia/lymphoma and mature proliferation of plasmacytoid dendritic cells [1, 2].

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ABS 18

MULTIPLE FETAL CARDIAC RHABDOMYOMAS ASSOCIATED WITH TUBEROUS SCLEROSIS: A PRENATAL DIAGNOSIS

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INTRODUCTION

Rhabdomyomas (RBS) are the most common fetal primary heart tumors. Even if they usually have a good cardiac prognosis, they may be the first symptom of tuberous sclerosis (TSC) with a subsequent brain disorder and impaired neurological development.

CASE REPORT

A 34-year-old pregnant woman with no remarkable personal or family history was referred to us for an abnormal obstetric ultrasound scan. Ultrasonographic examination of the fetus revealed multiple solid masses consistent with RBS in the ventricular septum and left and right ventricular walls. A weekly echocardiographic follow-up was started to monitor cardiac function. Magnetic resonance imaging (MRI) of the fetal brain and prenatal genetic counseling were performed. Fetal MRI showed brain lesions consistent with TSC. The baby was born at 37 weeks by cesarean section. Apgar scores were 9 at 1 minute and 10 at 5 minutes. Birth weight was 2.990 kg, appropriate for gestational age. At birth, the infant was admitted to the Neonatal Pathology Department due to heart disease. Postnatal echocardiography confirmed the presence of cardiac RBS without signs of left ventricular outflow obstruction. ECG Holter did not show any significant arrhythmia. No other anomalies were detected by abdominal ultrasound. The infant was discharged home in good clinical condition with a multidisciplinary follow-up program.

DISCUSSION

RBS are the most common fetal primary heart tumors, followed by teratomas, fibromas, hemangiomas, and myxomas. They account for up to 60% of all fetal tumors [1]. RBS usually involve the left and right ventricles and ventricular septum, and they may grow intracavity, intramurally or extracardiacally. They may be asymptomatic, or signs of heart failure may already occur in the fetal period. Fetal RBS usually grow up to 32 weeks and postnatally, probably due to a decrease in maternal

estrogen levels, almost all of them regress [2]. Fetal cardiac RBS are often benign, but their prognosis is guarded due to very frequent association with arrhythmias and TSC [2]. Complications such as effusions, fetal hydrops, obstruction of the ventricular outflow tracts, arrhythmias may occur. The risk of developing TSC is reported in a wide range in studies from 50-90% [1]. When fetal cardiac RBS are diagnosed, careful evaluation of other fetal structures, including brain and renal parenchyma, should be performed to search for signs of TSC [3]. Even with the association of TSC, the variability of this disease is wide, and it is difficult to determine the fetal prognosis. Therefore, during prenatal counseling it is important to inform the future parents of the virtually constant perspective of the TSC complex [1].

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ABS 19

A USEFUL EXPERIENCE: THE NORMAN PEDIATRIC AND NEONATOLOGY MEETINGS

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On November 29, 1997, the first Norman Meeting of Neonatology and Pediatrics was organized in the city of Aversa. This event, dedicated to bronchial asthma in Pediatrics, aimed to analyze the present and the future of this pathology.

The Congress was hosted in the prestigious Cimarosa Theatre, a historical city setting located near the home of Domenico Cimarosa, an Aversano who was, with Niccolò Iommelli and other famous fellow citizens, the protagonist of European classical music in the 18th century.

That date and that event started a "reawakening" of hospital and territorial medicine that, in a few years, brought the city hospital to prestigious national and international comparisons.

In the first Congress, study awards for research were instituted and assigned for a total of 10 million old liras. These prizes have always been dedicated to the City of Aversa, to the Real Casa Santa dell'Annunziata – San Giuseppe Moscati Hospital and to the memory of famous deceased colleagues.

This event was one of the first to offer pediatric nurses the opportunity to express and discuss their ideas and professional experience.

Today we are now at the 26th edition of the Norman Meeting of Neonatology and Pediatrics, and it is certainly pleasant to remember that they have generated and produced events of extraordinary importance and scientific interest.

In all these years, we have provided more than €100,000, rewarding mainly young doctors for their research.

In Aversa have come, as speakers, distinguished colleagues from all over Italy, Europe, America, Asia, Africa and for each event an interesting volume of Proceedings was produced.

In Aversa, national and international scientific societies have been founded, and new ways of collaboration with many countries have been opened. The following societies are still operative: the Norman Group of Neonatal and Pediatric Nephrourology, the Italian Society of Hospital Pediatrics (SIPO), the Italian Romanian Pediatric Society (IRPS – www.irps.it), the Italian-Arabic Pediatric Society (IAPS – www.iaps.online); moreover, scientific protocols have been shared with the Turkish, Rumanian, Lebanese, Jordanian and Kurdistan Pediatric Societies.

Aversa has obtained, for many years, a prestigious position in the Union of Middle-Eastern and Mediterranean Pediatric Societies (UMEMPS), obtaining a Delegate from Aversa, a President from Cagliari and a Councilor from Rome.

The SIPO, founded in this city, has currently, as new National President elected in Rome, Domenico Perri, Chief of Pediatrics and Neonatology at the Real Casa Santa dell'Annunziata – San Giuseppe Moscati Hospital. The old city hospital, which dates back to the first decades of 1300, born as a *nosocomio* to accommodate abandoned children and the sick, relives a wonderful experience. It is also useful to remember that the Real Casa Santa dell'Annunziata Hospital received a conspicuous donation from Queen Giovanna II of Anjou who, in 1435, by notarial deed, ordered its use especially for the assistance and care of abandoned children.

Moreover, the city boasts close ties with the Salerno Medical School, with the foundation of one of the first *xenodochi-lebbrosari*, of the first asylums (the "madmen's houses", in 1813), of the first neurology magazines and, perhaps, of the first classification of mental illnesses.

ABS 20

PRENATAL PSYCHOLOGY AND COVID-19: A LOOK AT THE FUTURE

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Italian Society of Pediatric Psychology (S.I.P.Ped. – Società Italiana di Psicologia Pediatrica)

The prenatal period has a huge importance for the entire life cycle; however, only in recent decades the study of prenatal psychology has assumed an increasing relevance, thanks to the new techniques and technologies that have progressively made it possible to show how the fetus is not just a psychophysical unit, but is endowed with sensory, motor, cognitive, mnemonic, emotional, social skills, so that it is possible to speak of "fetal psychology". The current pandemic, which has strongly influenced, among others, the experience of pregnancy, raises a series of questions about how the fetuses' psychological functioning may have been conditioned. In fact, considering the prenatal development, the epigenetic perspective states that prenatal environmental experiences interact with genetic factors, influencing the developmental trajectory, and at the same time an evolutionary perspective assumes that the fetus may develop some characteristics (hypoarousal, hyperarousal, ...) in response to a dangerous external environment, as signaled by the anxiety and stress conditions of the pregnant mother.

Memory gradually matures during prenatal development. If in the later stages of pregnancy, the memory and then the "fetal learning" find a neurological basis in the progressive development of brain structures, it has been asked how memorization occurs in earlier stages of gestation. To answer this question, a "cellular memory hypothesis" has been formulated: the experiences lived by the fetus at the beginning of pregnancy could be stored in the RNA molecules, which cause these events to leave a mark throughout the body. The presence of a prenatal memory means that the fetus may be conditioned by the mother's experiences. In particular, mother's prolonged stress or anxiety produces discharges of adrenaline and catecholamines that cause a reduction of oxygen supply to the uterus and affect the fetus' nervous system. At the same time, the fetus can perceive the variations of the maternal beat: when the mother is upset and her heart rate increases, the fetus' movements and heartbeats increase, while when the mother relaxes and her heart rate slows, the fetus also relaxes [1]. The COVID-19 pandemic has strongly influenced the psychological health of pregnant women: several studies [2] record an increase in prenatal anxiety and prenatal depression. Considering prenatal psychology, it is important to understand how the children of these women were affected by the psychological discomfort experienced by their mothers during pregnancy. Some evidence shows that high prenatal maternal stress related to COVID-19 may predict preterm birth as well as the mother's state anxiety COVID-19 related may negatively affect the prenatal attachment of the pregnant women [3]. Further longitudinal studies will be needed to evaluate the effects on the neuropsychological development of these children.

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ABS 21

NUTRIMETABOLOMICS IN WEANING

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It is now known that the future well-being of an organism is closely related to some particular time windows of greater vulnerability. During the first thousand days of a human being's life, the cells are undergoing differentiation, and the various tissues in development result in a high plasticity necessary for the organism to adapt to the surrounding environment. This is possible thanks to the induction of specific phenotypes through which a control of gene expression is implemented that does

not involve DNA modifications. Nevertheless, these alterations play a delicate role mainly due to the fact that regardless of the reversibility that characterizes them, there can be a trans-generational passage. The importance of the environment in the development of an organism therefore emerges. In this context, nutrition is certainly one of the most relevant factors [1]. Therefore, food choices during the early stages of development are responsible for an increased risk of non-communicable diseases as a consequence of the metabolic imbalance generated by the food itself. With this in mind, metabolomics, by providing a unique fingerprint for each individual, can bring out the molecular mechanisms underlying the individual metabolic responses to specific foods or nutritional categories in order to provide personalized dietary recommendations according to the specific phenotype. In addition, it could be useful to discover early markers of diseases, making it possible to identify particular groups of subjects at risk and modify their personalized diet accordingly [2]. Weaning is certainly a crucial stage, not only as it represents the first approach with foods other than milk, but also because it influences future eating habits. However, to date, nutrimetabolomics studies during weaning are very scarce. An animal study has provided encouraging data demonstrating a strong correlation between dietary intervention in weaning and the metabolic impact in some key organs such as the hypothalamus, the olfactory bulb and the liver, underlining the centrality of the latter for the metabolism of nutrients. Furthermore, through a comparative metabolomics analysis, a greater metabolic response in the progeny was highlighted following the type of dietary intervention in weaning compared to other known prenatal risk factors, such as maternal obesity. However, as regards the few studies conducted so far on humans, important data have emerged in support of the strong impact of complementary nutrition on the metabolic profile of children. In this regard, potential dietary markers related to the intake of vegetable proteins have already been identified that can be used in future studies for evaluating the impact of diet on health in the short and long term [3]. However, further studies are needed to investigate this issue.

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ABS 22

THE INTERNATIONAL ALFRED NOBEL'S FRIENDS STUDY CENTER IN SANREMO AND PEDIATRICS

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The Alfred Nobel's Friends Study Center is part of the Alfred Nobel's Friends International Association and is based in Villa Nobel in Sanremo, where Alfred Nobel, the founder of the Nobel prize, lived (21/10/1833, Stockholm – 10/12/1896, Sanremo).
Spreading the culture of science in the field of Medicine, Physics, Chemistry, Literature, Economics and Peace is our aim – to remember a quote from him: "Nature is man's teacher. She unfolds her treasures to his search, unseals his eye, illumes his mind, and purifies his heart".
In December 2019, we published the *Lectures of the Nobel Week 2019* organized at Villa Nobel in Sanremo, Italy, and entitled "The News of Science For a Sustainable Future" [1]. Despite the SARS-CoV-2 pandemic that stopped our initiatives, we managed to publish two articles in international scientific magazines: the first on the lifestyle of immigrant populations in Italy [2], the second on the infection of SARS-CoV-2 in young people [3].
From Villa Nobel in Sanremo, we have organized several events during the Nobel Week 2020 (virtual edition) in the fields of Medicine, Chemistry, and Literature. All these events were published in Italian and English on our website [4]. We have also organized a conference on "Vaccines for COVID-19: how to orient yourself". We have participated in the new initiative of the Italian Chemical Society (*Società Chimica Italiana*), "*I Venerdì della SCI*", as well as numerous articles and interviews in national and international newspapers. "Environment" and "Health System Sustainability" were the keywords of the latest editions of the Nobel Week.
In Nobel Week 2021, "Prevention" is the keyword. The prevention of infectious diseases, in the Pediatric age, will be the main reason for our scientific meetings, with "New frontiers in Pediatrics".

Currently, we are considering to improve the attention about the Public Heath, namely "The science and art of preventing disease", prolonging life and improving quality of life (Sir Donald Acheson, 1988). It is also pandemic the evolving disease burden, towards a high prevalence of Non-Communicable Diseases [5], and we highlight the major importance of lifestyle risk factors in disease etiology. Preventing disease, prolonging life and promoting health are the core purposes of public health, and we want to reward young doctors, researchers, technicians and all those involved in promoting healthy lifestyles and committed to protecting the health environment and preventing diseases. We also aim to promote Culture and Literature in collaboration with the UNESCO Clubs of Sanremo, and we will continue to organize events also for Chemistry, Economy and Peace.

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ABS 23

PARENTS KNOWLEDGE AND ATTITUDES REGARDING ORAL HEALTH DURING CHILDHOOD: A CROSS-SECTIONAL STUDY IN A SAMPLE OF ITALIAN CHILDREN INPATIENTS

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INTRODUCTION

The aim of this study is to detect the knowledge and attitudes toward oral health during childhood in a sample of parents of children inpatients living in the province of Bergamo in Northern Italy.

MATERIALS AND METHODS

The cross-sectional study was conducted from February to December 2018 at Pesenti Fenaroli Hospital in Alzano Lombardo. After the parents' written informed consent, a questionnaire was used to collect data by a specialist operator through a personal interview with one of the parents. Collected data were analyzed with an Excel® spreadsheet.

RESULTS

The statistic sample comprehends 110 subjects: 63 females and 47 males. Only 61 children had already been to the dentist at the moment of the interview. 36% had their first visit to the dentist for adaptive and preventive purposes. The others had their first visit because of dental caries, malocclusion or dental trauma. 79 out of 110 parents interviewed declared not to have received suggestions for a dental check by any healthcare provider. 34 out of 61 children who had already been visited by a dentist had dental caries diagnosis assessed. The correlation between dental caries and social determinants of health was analyzed, including parents' educational level, and also dietary habits were investigated. Moreover, dietary habits were investigated in order to look for the relation between children's oral health and sugar intake. Of 110 subjects, 73 declared to drink sugary beverages on the side of main meals. The Pareto Chart highlights that 61.76% of the children with dental caries use or have used the bottle in the night with a sweetened beverage, whereas 82.35% of children with decayed teeth use it both in the morning and in the night.

DISCUSSION

Nowadays, the role of the pediatrician in Italy represents the gateway that connects the families to the specialists; in Italy, the child is followed up since the birth in his growth by the pediatrician, who should also give dental advice. The present study reveals that the majority of children with dental caries, corresponding to 85.7% of the sample, grew up in a family with a low-average educational level. In this case, the parental cultural heritage has influenced the attitude towards prevention, confirming what is reported in the literature. Another determining factor in oral health is diet. Indications provided by the clinicians regarding sugar intake aim at educating the population in the prevention of obesity and related diseases, but also at guaranteeing a good state of oral health.

CONCLUSION

This cross-sectional study is important to comprehend the difficulties found by families living in Bergamo regarding the prevention of oral cavity

diseases in childhood and could be an inducement to improve cooperation between different specialists, in order to prevent the onset of oral diseases in early childhood and to improve parents' awareness of healthy dietary habits.

ABS 24

A RAPID, NOVEL HOST-IMMUNE TEST PERMITS ACCURATE DIFFERENTIATION OF BACTERIAL AND VIRAL INFECTION IN FEBRILE AMBULATORY PATIENTS: THE APOLLO STUDY

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INTRODUCTION

Signs and symptoms of bacterial and viral infections are often similar. Despite available diagnostic tools to supplement clinical evaluation, significant diagnostic uncertainty remains in many cases [1]. This confusion can lead to misuse of antibiotics causing infectious complications or increase in antimicrobial resistance [2]. An integrated algorithm (MeMed BV®) of blood levels of TNF-related apoptosis-induced ligand (TRAIL), interferon gamma-induced protein-10 (IP-10), and C-reactive protein (CRP) provides a score (BV score) of the likelihood of bacterial versus viral etiology [3].

MATERIALS AND METHODS

This observational multi-cohort and blinded study is designed to validate the diagnostic performance of BV score in distinguishing bacterial from viral infections. Patients with suspected acute infection were enrolled at Emergency Departments in the US, Germany, Italy, and Israel. Blood exams included in MeMed BV®, CRP and PCT testing were performed. During follow-up, other clinical, laboratory, radiological, microbiological data were collected. The reference standard etiology was adjudicated in two rounds by an expert panel. In the first round, experts were not provided with CRP and PCT values and BV scores and were forced to classify every case as bacterial or viral to create an "all-inclusive" cohort. In the second round, experts were provided with CRP and PCT values but not with BV scores, and could classify cases as bacterial, viral, or indeterminate; indeterminates were then removed to create the "suspected" cohort. Thresholds for BV score were: > 65, bacterial infection; < 35, viral infection; and from 35 to 65, uncertain. Diagnostic accuracy was expressed as the area under the curve (AUC) of receiver operating characteristics (ROC) curves.

RESULTS

1,016 patients were enrolled, including 584 adults and 432 children. The BV score showed AUC 0.90 (95% CI 0.87-0.93), sensitivity 88.9% (95%CI: 82.6-93.1) and specificity 82.5% (95%CI: 79.6-85.0%) in the "all-inclusive" cohort and AUC 0.97 (95%CI: 0.95-0.99), sensitivity 96.7% (95%CI: 91.6-99.0) and specificity 89.8% (95%CI: 87.3-91.9) in the suspected cohort (n = 872). BV score was significantly more accurate than PCT in both cohorts ($p < 0.0001$). Its diagnostic power was not affected by sex, age, ethnicity, race, time from symptom onset and previous antibiotic therapy. BV score could possibly reduce antibiotic prescription in virally infected patients by 2.6-fold ($p < 0.001$), and its use seems not to impact antibiotic underuse ($p = 0.2$).

CONCLUSION

The study demonstrates that BV score differentiates accurately between bacterial and viral infections across a broad population. The quick elaboration of the sample and the easy interpretation of the result are key elements for supporting the use of BV score in acute care settings, where it could reduce diagnostic uncertainty and improve antibiotic stewardship.

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ABS 25

FILMARRAY® RESPIRATORY PANEL AND BRONCHIOLITIS IN POST-COVID-19 ERA

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INTRODUCTION

Bronchiolitis is caused by different viral lower respiratory tract infections, with a seasonal course and a high hospitalization rate in infants and very young children. Most frequently, it affects infants < 12 months of age, although it can affect very young children, up to 2 years. Respiratory syncytial virus (RSV) is responsible for more than half of the cases, but other viruses might cause bronchiolitis (e.g., rhinovirus [RV], parainfluenza and influenza virus, adenovirus and metapneumovirus). Viral coinfection is reported, but today its role in the severity and clinical manifestations remains unclear. Multiplex Polymerase Chain Reaction Testing might be extremely useful to avoid unnecessary antibiotics and provide immediate diagnosis. Preterm infants, or children affected by bronchopulmonary dysplasia, congenital neuromuscular disorder, congenital tracheobronchial malformation, primary immunodeficiency, hemodynamically significant congenital heart disease are most at risk of severe bronchiolitis. In our setting, we routinely use RSV immunoprophylaxis in these high-risk populations during the epidemic period (November-March). We report about two former preterm female twins with early-onset acute bronchiolitis, coinfection, and rapidly worsening course.

PATIENTS AND METHODS

Two former preterm twins ($29^{+2/7}$ week gestation, current age $42^{+2/7}$ week gestation) were referred to our ER for acute respiratory failure in acute bronchiolitis. Both twins had clear rhinorrhea for 2 days and paroxysmal cough, not respiratory distress, or fever. On the 3rd day, there was a progressive onset of feeding difficulties, followed by acute onset of respiratory distress on the 4th day. The clinical picture was characterized by tachypnea, dyspnea, desaturation, head bobbing, chest wall retractions, nasal flaring, thoracoabdominal breathing; at chest auscultation expiratory prolongation, widespread crackles, and occasional wheezing. Considering the rapid worsening of the clinical picture, confirmed at blood gas samples, supportive care was given (nasal washes, bronchodilators, hypertonic saline, corticosteroids, supplemental hydration), and oxygen supplementation with high-flow nasal cannula (HFNC) started immediately. Moreover, one twin received transfusion because of anemia, and the other received flecainide treatment for congenital SVT. On chest radiography, multiple areas of atelectasis were observed, with lung hyperinflation. For diagnostic confirmation, PCR film array was performed from a single nasopharyngeal swab, with positivity for both RV and RSV in both twins, whereas the mother's swab was positive for RSV. FilmArray® Respiratory Panel 2.1 (RP2.1; BioFire® Diagnostics, LLC) is a rapid multiplexed cartridge-based test for sample-to-answer results designed to simultaneously identify nucleic acids from 22 different viruses and bacteria associated with respiratory tract infection, including SARS-CoV-2, from a single nasopharyngeal swab. Therefore, both infants were transferred to PICU for continuation of treatment. Past medical history in both infants was significant for bronchopulmonary dysplasia. Immunoprophylaxis for RSV with palivizumab was not administered yet because, in our setting, it starts in November.

CONCLUSION

In the post-COVID-19 era, we have observed an increase of bronchiolitis, with an earlier onset. Therefore, immunoprophylaxis should be anticipated in high-risk populations. Furthermore, the epidemiological distribution of pathogens is different than in previous years, since patients are exposed simultaneously to different respiratory agents, including RV and RSV. We have observed several cases of bronchiolitis with coinfection, which seems to have a worse prognosis.

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ABS 26

MICROBIOTA PROFILES IN PRE-SCHOOL CHILDREN WITH RESPIRATORY INFECTIONS: MODIFICATIONS INDUCED BY THE ORAL BACTERIAL LYSATE OM-85

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INTRODUCTION

The exposure to pathogens in childcare facilities or schools, as well as the immaturity of the immune system and microbiota, are probable explanations for the frequency of respiratory tract infections (RTIs) in young children. Some of them are more prone to experience RTIs recurrence and/or more severe clinical manifestations. The overuse of antibiotics can contribute to interfere in host microbiota quality and composition, leading to a vicious cycle of infection, inflammation, and reinfection that causes chronic respiratory conditions like wheezing and asthma [1]. It has been hypothesized that accelerating the maturation and functional competence of the immune system in infancy with oral exposure to some microorganism or microbial-derived components can produce a condition of early and broad resistance to pathogens [2]. Few microbial-derived products can induce this "immune training", like bacterial lysate OM-85.

MATERIALS AND METHODS

The present study is the first to describe the potential effects of OM-85 administration on the composition of gut bacterial commensal species and on the nasopharynx (NP) microbiome in children between 1 to 6 years of age with a history of RTIs, defined as at least 6 acute episodes in the previous years. The randomization in double-blind condition was done during autumn, and stool sample and NP swabs of each patient were picked up at the beginning (T0) and after 6 months of treatment with OM-85 or placebo (T1).

RESULTS

At T0, *Firmicutes* and *Bacteriodetes* were predominant in the gut, while *Proteobacteria*, *Firmicutes*, and *Actinobacteria* were the most common genera in NP samples. Initial prevalence of *Firmicutes*, *Proteobacteria*, *Actinobacteria*, *Ruminococcus spp.* and *Bifidobacterium spp.* differed according to age (< 2 years vs. ≥ 2 years; $p < 0.05$). At T0, *Moraxella* was more common in the NP samples of patients with a history of up to 3 RTIs. After 6 months of treatment, the gut microbiota composition remained more stable in the OM-85 group as compared to the placebo group ($p = 0.004$), in which *Bacteroides* decreased significantly in children ≥ 2 years. About the NP microbiome, significant changes were also observed only in children aged ≥ 2 years and included a significant decrease of *Actinobacteria* in the placebo group, an increase of *Haemophilus* in the OM-85 group and a near to significant decrease of *Corynebacterium* in the placebo group. Due to the small number of patients, the association of clinical outcomes with microbiota changes could not be assessed.

CONCLUSION

Bacterial lysates may play a role in modulating dysbiosis and in reducing the recurrence of upper RTIs and acute otitis media, as demonstrated by the OMPeR study [3]. Our study described the microbiota changes induced by bacterial lysate OM-85, but larger studies are needed to investigate the association with prevention of recurrent RTIs, considering the multiple influencing factors such as delivery method, age, environment, diet, antibiotic use, and type of infections.

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ABS 27

INTRAVENTRICULAR HEMORRHAGE AND PERIVENTRICULAR HEMORRHAGIC INFARCTION IN A FULL-TERM NEWBORN WITH HETEROZYGOUS PROTHROMBIN G20210A GENOTYPE

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INTRODUCTION

Intraventricular hemorrhage (IVH) is a cerebral nervous system insult representing a major cause of morbidity (hemiplegia, neurological disability) and mortality and potentially associated with venous obstruction and prothrombotic mutations [1].

CASE REPORT

L. was born full-term, 38^{+2} weeks of gestational age, 3,150 g (38^{th} percentile), length 51 cm (38^{th} percentile), head circumference 36 cm (90^{th} percentile), by urgent cesarean section due to cardiotocographic anomalies. Fetal movements were absent since the morning of birth.

At birth, L. required respiratory assistance with positive pressure ventilation (FiO_2 0.25-0.35), Apgar 3, 6, 7, meconium-stained amniotic fluid.
At NICU admission, L. presented respiratory distress, which lasted about 12 hours, without neurological symptoms.
On the 2nd day of life, reduced reactivity, chewing movements, weak crying and invalid sucking occurred. Brain ultrasound revealed bilateral grade III intraventricular hemorrhage (IVH) in the clot phase, with right parieto-occipital venous infarction total dilation of the lateral ventricles (LV): right LV 14.1 mm and left LV 10.7 mm, right atrium 11.7 mm, left atrium 11.9 mm and III ventricle 10.8 mm according to Couchard, resistance index 0.76 in the anterior cerebral artery (ACA). Phenobarbital therapy was introduced due to the appearance of tonic convulsive manifestations with hyperextension of the 4 limbs, internal rotation of the upper limbs and trunk hyperextension. The severe brain suffering was also evidenced by very low reactivity to painful and sensory stimuli, nuchal and axial hypotonus, legs hypertonus, unresponsive pupils, archaic torpid reflexes, dystermia.
EEG showed a poorly organized activity, with cerebral suffering and fronto-center-temporal paroxysmal anomalies.
A progressive increase in ventricular size and head circumference (8-9 mm per week) was observed. Dilation of the fourth ventricle and a partial visualization of the cisterna magna were also observed (right LV 19.8 mm, left LV 20 mm, measured according to Couchard, right atrium 16.6 mm and sinus atrium 21.9 mm according to Allan, Leven index 97th percentile + 4 mm, third ventricle 14 mm in coronal section).
Two evacuative lumbar punctures were performed to reduce the post-hemorrhagic hydrocephalus (with drainage of 4 ml and 21 ml of cerebrospinal fluid-CSF, respectively) without modification of the ventricular size.
Serological tests on blood and CSF, liquor culture, blood chemistry and coagulation were negative.
L. was found heterozygous for the mutation of the prothrombin gene G20210A, with negative MTHFR C677T and factor V Leiden screenings.

CONCLUSIONS

Carriers of prothrombin gene G20210A mutation show a substitution of guanine (G) by adenine (A) at nucleotide position 20210 of the prothrombin gene (chromosome 11.3) and present a higher risk of venous thrombosis [1] and IVH [2, 3].
How a prothrombotic mutation can be involved in the pathogenesis of these two different manifestations might be fully clarified [3].
In our case, we have seen bleeding without thrombi, probably because they are covered by the important blood hemorrhage.

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ABS 28

ABNORMAL HIP SYNOVITIS

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INTRODUCTION

The outpatient activity of the pediatrician is based on: anamnesis, clinical examination and a diagnostic hypothesis that can be posed with or without the aid of instrumental diagnostic tools. The pediatrician then proposes a therapy and issues a prognosis. When necessary to define the diagnosis, instrumental and laboratory examinations may be required.

CLINICAL CASE

A child aged 4 years and 6 months presents to the Family Pediatrician's pediatric outpatient clinic, in a region of Northern Italy, because in the previous days he presented an infection of the upper airways (catarrhal rhinitis) with a few lines of fever and a more evident pain in the right hip with difficulty in walking and lameness. Weight: 16.2 kg (25th P); height: 103 cm (25th P). Feeding is selective for meat and carbohydrates. At the clinical examination, he shows a marked pain in the right hip, with difficulty in extrotation and walking in the doctor's office. Slight difficulty in the Mingazzini Test of the lower limbs. Sent to an outpatient radiology clinic, he performs ultrasound of the hips that shows a slight joint effusion at the right hip. It is decided not to proceed with hematochemical tests. The diagnosis is synovitis of the right hip. The child undergoes anti-inflammatory therapy with ibuprofen and

rest for a week. After a slight improvement in the first 24 hours, there is a progressive worsening of symptoms, with pain not exacerbated, but difficulty in maintaining an upright position, the use of the upper limbs and dysphagia. He is sent to the Emergency Room of the regional referral hospital.

HOSPITALIZATION

On admission to the Emergency Room, the child is in good general condition. At the neurological examination, he presents dysphagia for liquids, hypotonia and areflexia to the 4 limbs, does not maintain the position of Mingazzini I and II, both upper and lower, refuses to walk. During the examination, he cries and appears in pain, does not complain of pain except for the osteo-tendinous reflexes of the knees; however, he has areflexia in the upper and lower limbs. Hematochemical examinations are normal with a relative iron deficiency with thalassemia, absolute values of red and white blood cells normal, a decrease in plasma albumin, with an elevated value of plasma proteins, C-reactive protein slightly altered, immunoglobulins A and M normal, immunoglobulins G elevated. All profile for infectious diseases on blood, *Streptococcus*, Infectious Mononucleosis (EBV), Cytomegalovirus (CMV), Parvovirus B19, Adenovirus, Hepatitis C virus, AIDS Virus, Herpes Virus Type 6 (HH6) is negative. On lumbar puncture, CSF is clear, with increased proteinuria of 128 mg/dl and increased glycorrhea of 71 mg/dl, negative viral PCRs for CMV, EBV, Parvovirus B19, HH6, Herpes Virus 1 and 2, Adenovirus, Mycoplasma. IgG and IgM serology, and SARS-CoV-2 negative swab. Urine and stool tests for *Campylobacter jejuni* were negative.

The clinical picture is compatible with acute polyradiculonevritis with demyelinating damage. MRI of the brain and marrow revealed pathological enhancement of the spinal nerve roots of the cauda equina, thoracic and cervical compartments. The radiological picture is compatible with Guillain-Barré syndrome.

He started therapy with immunoglobulins for 5 times a day performed for two cycles, gabapentin, associated with enteral nutrition, polyvitamins, iron and probiotics, intravenous hydration.

CONCLUSION

The patient presented with typical symptomatology of hip synovitis post-viral infection, which affects 3% of children aged 3 to 10 years. Instead of evolving with healing, as happens in almost all cases, since it is a pathology with spontaneous resolution, the symptoms worsened dramatically in a few hours. Hospitalized and subjected to diagnostic tests in a Regional Reference Center, the patient was discharged with a diagnosis of Guillain-Barré syndrome in a 5-year-old child. He improved after 30 days of hospitalization and treatment. Followed since discharge with regular visits by the Family Pediatrician, he has followed regular cycles of physiotherapy and is currently in good health.

ABS 29

ANTIBIOTIC RESISTANCE OF UROPATHOGENS IN CHILDREN HOSPITALIZED FOR URINARY TRACT INFECTION IN THE EMILIA-ROMAGNA REGION, ITALY

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INTRODUCTION

Antibiotic resistance in pediatric urinary tract infections (UTIs) is an increasing public health problem with variable prevalence in different geographical areas [1, 2]. Specific surveillance studies on pediatric populations are needed to assess the local prevalence of resistant uropathogens to choose the most appropriate empirical treatment. Aims of this study were to describe the prevalence of antibiotic resistance among uropathogens in pediatric UTIs hospitalized in the Emilia-Romagna region, Italy, and to analyze the risk factors and outcomes associated with the development of resistant UTIs and treatment failure.

MATERIALS AND METHODS

In this observational, retrospective, multicenter study, the medical records of patients aged < 18 years who were hospitalized for UTI from 01/01/2012 to 30/06/2020 in Pediatric Departments of Emilia-Romagna, Italy, were analyzed. Only patients with febrile UTI and positive urine culture, defined as the identification of a single pathogen with ≥ 10^5 CFU/mL, were included. Time trend analysis was performed between the first 4 years and the last 4 years of the study period.

RESULTS

A total of 1,801 patients were enrolled. The most common pathogen was *Escherichia coli* (75.6%), followed by *Klebsiella pneumoniae*

(6.9%) and *Pseudomonas aeruginosa* (2.5%). Antibiotic resistance was confirmed in 840 cases (46.7%) including 83 (4.7%) extended-spectrum beta-lactamase (ESBL)-producing pathogens, 119 (6.7%) multidrug-resistant (MDR) and 4 (0.2%) extensively drug-resistant (XDR) bacteria. Resistance rates to amoxicillin, amoxicillin/clavulanate, and 3rd-generation cephalosporins were 46.7%, 33.8%, and 11.8%, respectively. Risk factors for resistant infections were a history of recurrent UTIs, antibiotic therapy in the previous 30 days, antibiotic prophylaxis, and urological malformations. Empirical treatment failure occurred in 172 cases (9.6%) and was significantly associated with ESBL or MDR/XDR uropathogens, history of recurrent UTI, antibiotic therapy in the previous 30 days, and empirical treatment with amoxicillin or amoxicillin/clavulanate. First-line therapy with 3rd-generation cephalosporins was the only protective factor.

CONCLUSIONS

The increase in resistance of uropathogens to commonly used antibiotics requires continuous monitoring of microbiological characteristics of UTIs and updating of recommendations for antibiotic choice [3]. In our epidemiological context, amoxicillin/clavulanate no longer seems to be the appropriate first-line therapy for children hospitalized for UTI, whereas 3rd-generation cephalosporins continue to be helpful, in line with other studies. To limit the spread of resistance to cephalosporins, future studies should evaluate differentiated empirical treatments based on selectively use of cephalosporins in recurrent infections and amoxicillin/clavulanate in first episodes. Every effort to reduce and rationalize antibiotic consumption must be made, and accurate antibiotic stewardship can be greatly effective in this regard [4].

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ABS 30

CHILDREN WITH POST-COVID-19 SYMPTOMS IN THE PEDIATRIC OUTPATIENT CLINIC: PRELIMINARY FINDINGS

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INTRODUCTION

There are not many clinical studies concerning the symptoms manifested by children infected with SARS-CoV-2 during the pandemic in Italy. SARS-CoV-2 infection occurs in infants, children and adolescents with clinical pictures much less severe than in adults. Young people and children under 20 years of age are very often asymptomatic and are estimated to have a susceptibility to infection of about half that of those over 20 years of age. Some case reports and systematic reviews suggest that children may experience long-term effects similar to adults after COVID-19 infection. [1]. Data describing symptoms of long COVID-19 are also beginning to be published in a cohort of hospitalized children. The most commonly described symptoms in children with both symptomatic and asymptomatic COVID-19 were insomnia, respiratory symptoms (including chest pain and tightness), nasal congestion, fatigue, muscle and joint pain, and difficulty concentrating [2].

The latest report from the UK Office for National Statistics estimates that 12.9% of UK children aged 2-11 years and 14.5% of children aged 12-16 years still have symptoms 5 weeks after SARS-CoV-2 infection [3]. However, suspicions of long COVID-19 in children need to be reported [4], and we need to try to understand what is happening in pediatric outpatient clinics on the ground.

STUDY DESIGN

The objective of our study is to evaluate whether symptoms persist in pediatric patients previously diagnosed for COVID-19 by molecular nasopharyngeal swab, including children with paucisymptomatic/asymptomatic COVID-19. Twenty pediatricians from 8 Italian regions, namely Calabria, Emilia-Romagna, Lazio, Liguria, Lombardy, Piedmont, Apulia, and Sardinia, were involved. Symptoms were to be assessed after the children had recovered from one month of illness, starting from June 2020 to August 2021, with a telephone interview with parents, or with an outpatient visit, or at a follow-up in case of acute illness. A questionnaire was prepared to be submitted to the parents, and typical symptoms of COVID-19 such as respiratory, gastrointestinal, skin diseases, disorders of behavior and social relations, headache, insomnia and eating disorders were considered. Each pediatrician visited at his or her clinic or contacted by telephone the families of his or her patients who had COVID-19 and asked them the questions established by the questionnaire, making the letter of informed consent available to the parents at his or her office. Each pediatrician was provided with the link to fill in the electronic questionnaire at LimeSurvey made available by the Department of Diagnostics and Public Health of the University of Verona. Children aged 1-16 years assisted by family pediatricians were included, and for the city of Milan, also those hospitalized at the Children's Hospital of Milan "Vittore Buzzi".

RESULTS

Considering reliable the answers of the parents and their observations on the variations in the health status of the children, 715 children were observed. The mean age was 7.5 ± 4.4 years (mean ± SD). Males (n = 371; 51.9%) were slightly more prevalent than females (n = 344; 48.1%) and were slightly younger. In the primary care setting, the symptoms most frequently reported as increased after SARS-CoV-2 infection were neurological symptoms, abnormal fatigue, and respiratory symptoms. Psychological symptoms and muscle/joint pain were less frequent. We are comparing neurological, psychological, respiratory, and dermatological symptoms between children who were hospitalized and those who remained at home.

CONCLUSIONS

We are assessing the relationship between children's and youth's previous illnesses, persistence or worsening of symptoms, and whether SARS-CoV-2 infection in symptomatic, paucisymptomatic, or asymptomatic children leaves symptoms called post-COVID-19 or long COVID-19 that may in some way worsen children's quality of life and how long this may persist.

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ABS 31

CLINICAL OUTCOME ASSOCIATED WITH DISCORDANT THERAPY FOR PEDIATRIC URINARY TRACT INFECTIONS

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INTRODUCTION

The spread of antibiotic resistance in pediatric urinary tract infections (UTIs) is an increasing problem worldwide. Resistance rates for some first-line antibiotics already exceed 25% and, with the emergence of community-acquired uropathogens producing extended-spectrum beta-lactamase (ESBL), resistance to third-generation cephalosporins is increasing too [1]. Patients are often started empirically on antibiotics to which isolates are later found resistant *in vitro* (discordant therapy). However, *in vivo* efficacy may be different. Aims of this study were to describe outcomes associated with discordant empirical treatments for pediatric UTIs and investigate possible risk factors for treatment failure.

MATERIALS AND METHODS

In this observational, retrospective, multicenter study, we analyzed medical records of patients aged

< 18 years hospitalized for UTI from 01/01/2012 to 06/30/202 in the Emilia-Romagna region, Italy, and selected those treated with empirical antibiotics to which the corresponding isolate in urine culture tested resistant at antibiogram. Treatment success was defined as resolution of fever and symptoms with no need for treatment change.

RESULTS

A total of 142 cases were treated with discordant empirical treatment. *Escherichia coli* was the most frequent pathogen (73.9%), followed by *Klebsiella spp.* (9.1%) and *Enterobacter spp.* (7.7%). ESBL-producing pathogens were 9 (6.3%), while multidrug-resistant (MDR) and extensively drug-resistant (XDR) microorganisms were 33 (23.2%) and 1 (0.7%), respectively. Treatment failed in 67 (47.2%) cases. History of recurrent UTIs was significantly more common among patients experiencing treatment failure (23.9% vs. 9.3%, p < 0.05). *Pseudomonas aeruginosa* was also more frequent when treatment failed (9.0% vs. 1.3%, p < 0.05). The most common discordant therapy was amoxicillin/clavulanate (40.8%), followed by a combination of ampicillin plus gentamicin (21.1%) and third-generation cephalosporins (19.7%). Failure rates were 55.1%, 33.3%, and 39.3%, respectively, although no statistically significant differences were observed.

CONCLUSIONS

Increasing resistance rates may prompt the use of broad-spectrum molecules, which may facilitate the emergence of new resistances carrying on a vicious cycle. Our study showed that empirical antibiotics considered inadequate according to *in vitro* tests are still effective *in vivo* in more than half of the cases. Real-life efficacy of recommended treatments exceeds the *in vitro* susceptibility rates, but still varies between different patients and different molecules [2, 3]. History of recurrent UTIs seems the most important risk factor for treatment failure, suggesting the use of more effective molecules in these cases.

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ABS 32

TELEMEDICINE IN PEDIATRIC AND ADULT PATIENTS WITH NEUROGENIC BLADDER DURING THE COVID-19 PANDEMIC: TO MAKE A VIRTUE OUT OF NECESSITY

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BACKGROUND

In the current pandemic, telemedicine has become an effective strategy to provide efficient assistance, while also adapting to mitigation strategies and containment measures.

We follow patients with Neurogenic Bladder Sphincter Dysfunction (NBSD) and neurogenic bowel dysfunction, thus needing procedures such as Clean Intermittent Catheterization (CIC) and Trans-Anal Irrigation (TAI). To better adapt to this time of pandemic, we have started a transition to virtual visits for our outpatients' appointments, assessing a remote follow-up.

MATERIALS AND METHODS

The clinical activity that was switched into a "telematic approach" included remote patient monitoring and training for specific procedures (CIC, TAI). Telephone clinic appointments and patient training were performed via mobile and web-based platforms that allow remote viewing, in the presence of the Urologist and the Urology Nurse. Voiding charts were administered and shared via mail by our Urology nurse to assess the adherence to the procedure.

RESULTS

Among the 78 pediatric and adult patients currently admitted to our clinic for Neural Tube Defects, there were 30 patients performing CIC, and 25 patients performing TAI, who were supplied with catheters, delivered directly to their pharmacy. Follow-ups of 40 patients were performed via mobile, and their clinical records were sent via mail. During the past 14 months, there have been 13 hospitalizations for infective complications or diagnostic investigation. Two patients with cystostomy needed 2 and 3 hospitalizations, respectively, because of Urinary Tract Infections. There were 4 patients who were first admitted to our Unit during the pandemic and were briefly hospitalized to perform specific investigations.

CONCLUSION

Compared to an equally lasting period of time before the pandemic, telemedicine management has guaranteed a good clinical practice: the number of hospitalization and complications during the pandemic are coherent with those recorded before the pandemic. Moreover, the telematic approach contributed to patients' physical and psychological well-being.

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ABS 33

HYPERAMYLASEMIA FROM EXTRAPANCREATIC CAUSES – CLINICAL CASE

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Amylase assays measure total activity without differentiating the relative contributions of pancreatic and salivary amylase isoenzymes. In patients with hyperamylasemia, differentiation of the two types of isoenzymes and determination of lipase is useful, thus providing the basis for rational selection of further diagnostic procedures.

We report a clinical case of a 7-month-old male infant who came to our observation in the Emergency Department for a tumefaction in the lateral neck region. In the next pathological history, he had been complaining for about 2 days, and there was a swelling in the lateral region of his neck. At clinical evaluation, his general conditions were good, with apyrexia, complaining cry, euphnoic breathing and hydration at limits. Further vital parameters showed an alert patient with intact sensory system, HR 140 bpm, breath frequency 30/min and SaO_2 98-99%. On physical examination of the abdomen: umbilical scar normointroflexa, good tractability in all quadrants, not painful on superficial or deep palpation; on the thorax: transmitted noises in the upper airway tract; on the lateral region of the neck: swelling below the auricle and the external acoustic meatus, behind the branch of the mandible. Hematochemical examinations showed about 4-fold elevated amylase values and normal lipase values; white blood cell and PCR values were normal. Subsequently, the determination of pancreatic isoenzyme was useful in order to exclude pancreatic involvement and reach the diagnosis of epidemic parotid disease.

We describe this case as it is rare to find epidemic mumps in ages below the first year of life. It should be noted that the Italian vaccine calendar provides for the first dose of the mumps vaccine starting from 12 months of age and in any case within 15 months of age. Finally, it should be pointed out that an adequate diagnostic evaluation avoids further invasive investigations and allows to start a rational therapeutic treatment in a timely manner.

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ABS 34

IMPACT OF THE PUBLICATION OF THE ITALIAN GUIDELINES ON THE MANAGEMENT OF CHILDREN HOSPITALIZED FOR BRONCHIOLITIS

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Bronchiolitis represents one of the main causes of hospitalization in the first year of life, but for this condition only supportive treatment is currently available. In Italy, a clinical practice guideline for the diagnosis and treatment of bronchiolitis was published in 2014. A recent study has shown that these children commonly underdo unnecessary non-evidence-based treatments in the primary care setting, with few changes after the guideline publications. The purpose of our study was to evaluate the impact of the publication of the Italian recommendations for bronchiolitis in 2014 on the management of children hospitalized for bronchiolitis. For this purpose, we

consulted the medical records of children aged ≤ 12 months hospitalized for bronchiolitis at the Pediatrics Department of the University Hospital of Pisa from October 2009 to May 2020, collecting clinical, instrumental, laboratory and treatment data. Then, we divided the study population into two groups relating to the pre- (2009-2014) and post- (2015-2020) publication of the Italian guidelines. In the study period, 346 children were hospitalized for bronchiolitis at our Department (45% females, mean age 3.6 ± 2.9 months); the mean length of hospital stay was 6.7 ± 2.9 days and inversely correlated with age ($r = -0.169$, $p = 0.001$). 43% had mild, 49% moderate and 8% severe bronchiolitis. 91% underwent nasal swab for viral testing, which was positive for Respiratory Syncytial Virus (RSV) in 64% of cases. In the 2015-2020 group, the use of chest X-ray (67% vs. 35%, $p < 0.001$), blood testing (94% vs. 62%, $p < 0.001$) and systemic corticosteroids administration, prescribed before or during hospitalization, was reduced (93% vs. 48%, $p < 0.001$), but the same was not true for antibiotics (21% vs. 28%, $p = 0.128$) and salbutamol (52% vs. 48%, $p = 0.466$). The length of hospital stay remained unchanged despite the increase in the use of nasal high flow cannula (4% vs. 30%, $p < 0.001$) and inhaled hypertonic solution (1% vs. 16%, $p < 0.001$). In conclusion, in agreement with what has already been reported in the literature, in our study population RSV represented the main cause of hospitalization for bronchiolitis and the length of hospital stay was inversely related to age. The publication and dissemination of the Italian guidelines may have contributed to improving the management of hospitalized children with bronchiolitis.

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ABS 35

FROM THE WORKING GROUP OF ITALIAN HOSPITAL PEDIATRICS TO THE ITALIAN SOCIETY OF HOSPITAL PEDIATRICS (SIPO)

D. Perri

National President of SIPO (Società Italiana di Pediatria Ospedaliera – Italian Society of Hospital Pediatrics)

The Working Group of Italian Hospital Pediatrics was founded in Rome in 1992 by Prof. Mario Calvani and had great success and numerous adhesions. After one year, the members were already 1,500. The first national congress was held in Rome, from 14 to 16 January 1993, at the hotel Ergife in via Aurelia and was a real success with about 1,000 members from all regions of Italy. The inaugural session, on pediatric emergencies, was masterfully entrusted to G.R. Burgio, and it was the first time in the history of our pediatrics that hospital pediatricians from all over Italy were active and exclusive protagonists of their own national scientific congress.

The first secretary of the working group was Mario Galvani; three years later, Franco Tancredi was elected secretary and, subsequently, Ludovico Perletti, Gianfranco Temporin, Riccardo Longhi and Salvatore Vendemmia.

FOUNDATION OF SIPO

Salvatore Vendemmia was the last elected secretary of the Working Group of Italian Hospital Pediatrics. In 2008, he had the idea to give more importance and relevance to the group and, with a notarial deed, he founded SIPO (*Società Italiana di Pediatria Ospedaliera* – Italian Society of Hospital Pediatrics) in Aversa. It was a useful and courageous initiative to awaken the pride of hospital pediatricians who lived moments of discouragement for the difficulties of a critical moment.

Regional SIPO groups were organized for pediatric physicians and nurses. The *Rivista Italiana di Pediatria Ospedaliera* (i.e., the Italian Journal of Hospital Pediatrics), a labor union for hospital pediatricians, work protocols, a working group for pediatric nurses, an annual international congress, study awards for young pediatricians, six-monthly and annual training courses accredited by the Ministry, a project to publicize and implement our pediatrics in Italy and worldwide were created.

With this project, we have created relationships with the American Academy of Pediatrics, the International Pediatric Association, and many other Societies of Pediatrics (Turkish, Romanian, Greek, Jordanian, Lebanese, Saudi, Azerbaijani, Iranian, etc.). We have founded International Scientific Societies, with Romania, Arab countries, Turkey, Kurdistan, Iraq, etc. Every year we have organized an international SIPO Congress. The first meeting was organized

in Aversa, in the Aragonese Castle, from 28 to 29 November 2008. The following conferences were held in Capri, Sanremo, Rome, Sassari, Pavia, Caserta.

The first President was Salvatore Vendemmia. They then followed: Franco Paravati, Giorgio Bracaglia, Alberto Chiara. This year Domenico Perri was elected during the joint congress of SIP (*Società Italiana di Pediatria* – Italian Society of Pediatrics) and SIPO.

The current President is actively reorganizing the Society, updating and improving the Society's website and the quarterly journal. In particular, he is organizing a new website and a journal with international circulation and with a useful and incisive impact factor.

We are confident that SIPO will find the courage and the strength to acquire new and consistent support for future and further successes.

ABS 36

POTENTIAL IMPACTS OF CLIMATE CHANGE ON POLLEN ALLERGY IN CHILDREN

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Global warming is an unequivocal event linked to human activities and pollution, causing long-lasting climate change, which will put human health at great risk in many different ways. Plants life cycle is deeply influenced by weather conditions, temperature, sun exposure and humidity: as a consequence, climate change will have a great impact on plants growth, distribution and pollen production. Plants flowering in spring and early summer are highly dependent on temperature, while plants that flower in late summer and fall are more dependent on light so that the first ones will have earlier flowering on occasion of warmer winters and springs, with longer pollination period. Moreover, CO_2 acts as fuel to plants for photosynthesis, so that those exposed to higher CO_2 concentrations show increased growth and pollen production. Changes in phenology are already occurring in Europe, including in Italy. Nevertheless, data on their effects on respiratory allergy are still limited, especially in children. However, patients affected by respiratory allergic disease will likely be at higher risk for more frequent and severe asthma and allergic rhinitis exacerbations, and children will be the more exposed and susceptible population, due to their higher metabolic and respiratory rate, developing immune system, outdoor lifestyle. We recently performed a pilot study on airborne pollen trends between 2010 and 2019 in North-Western Tuscany in collaboration with the Regional Agency for the Protection of the Environment (ARPAT), showing slight variations, with a significant reduction in Betula pollen concentration. More interestingly, we found a correlation between daily aeroallergens loads and hospitalizations in children with asthma-like symptoms, not caused by respiratory infections. In such context, "thunderstorm asthma" will become more and more frequent: as a matter of fact, when a thunderstorm breaks out in the pollen season, during the first 20-30 minutes there is evidence of pollen rupture caused by osmotic shock after hydration, releasing in atmosphere part of their cytoplasmic content, including inhalable, allergen-carrying paucimicronic particles, potentially causing asthma, even in those affected by allergic rhinitis only. Moreover, recurrent floods lead to indoor and outdoor proliferation of molds, which can worsen respiratory diseases even in those who are not allergic. Knowing the effects of climate change in pollen allergy is pivotal to correctly manage allergic patients, so that more studies, including longitudinal ones, are urgently needed. In the meanwhile, pediatric allergologists should evaluate the sensitization to pollens that were previously uncommon in their area, the pharmacological treatment should also be based on the analysis of the local exposure to pollens, and physicians should warn their patients and their parents on the risks related to extreme weather events.

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ABS 37

FOOD PROTEIN-INDUCED ENTEROCOLITIS SYNDROME (FPIES) MIMICKING A NEONATAL SEPSIS: A DIAGNOSTIC DILEMMA

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INTRODUCTION

Food protein-induced enterocolitis syndrome (FPIES) is a rare condition, non-IgE cell-mediated gastrointestinal food allergy, that is characterized by inflammatory changes in the distal colon in response to one or more different food proteins. The most common triggers include cow milk, soy and grains. The immune mechanism underlying FPIES is not completely understood [1]. There is no blood or skin testing available for diagnosis. Acute FPIES manifests within 1-4 hours after ingestion with repetitive emesis, pallor, and lethargy, progressing to dehydration and hypovolemic shock in 15% of cases. Chronic FPIES manifests with intermittent emesis, watery diarrhea, and poor growth progressing to dehydration and hypovolemic shock over a period of days to weeks [2]. The primary treatment is strict avoidance of the triggering food.

CASE REPORT

A 19-day-old boy was admitted to Paediatric Emergency care after the evidence of poor feeding from a week when starting with both breast milk and formula milk, apnea, pallor and lethargy from the evening. He was discharged from the hospital with exclusive breastfeeding. He was febrile, lethargic with capillary refill time of 3 s. Laboratory findings showed leukocytosis. The blood tests were in range, except for an increased C-reactive protein (5.1 mg/dl). The infant was hospitalized. Antibiotic and intravenous fluid were started. Extensive investigations were done. Bacterial cultures were negative. Specific milk protein IgE were positive. On the basis of the clinical dates and in exclusion of other diagnoses, we assumed the hypothesis of "atypical FPIES". According to this diagnosis, we changed the patient's diet with an amino acid formula milk. In a few days, we saw an improvement in the infant's clinical conditions. After 2 weeks of diet, the infant was readmitted to the hospital to perform a diagnostic oral cow formula challenge (OFC). After 3 h from milk ingestion, the infant showed pallor and poor responsiveness, then he started vomiting. The observed reaction to the provocation test was diagnostic for "atypical FPIES".

CONCLUSION

FPIES typically presents within the first 12 months of age, although there are rare and severe cases presenting within the first days of life, as in our case. Severe forms of FPIES mimic neonatal sepsis. A trial of OFC should be considered whenever diagnostic tests are inconclusive or clinical presentations are atypical.

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