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A NEW NEBULIZATION DEVICE SPECIFICALLY DESIGNED FOR THE TREATMENT OF UPPER AIRWAY INFECTIONS IN CHILDREN

Author: M. Casale¹, V. Rinaldi¹, M. Lopez¹, A. Costantino¹, M. Grimaldi¹, A. Luchenna¹, V. Grimaldi²

¹Unit of Otolaryngology-Integrated Therapies, Campus Bio-Medico University, School of Medicine, Rome, Italy.
²General practice pediatrician with the Public Health-ASL RM2-Rome, Italy.

Keyword: upper airway, nebulization, device, children, infections

Background: Upper airway infections (UAI) are extremely prevalent in the pediatric population due to their “physiologically” immature immune system; yet, around 90% are viral – only 10% of UAI are bacterial. Therefore, treatment should essentially be symptomatic to relieve the child’s discomfort. Topical, rather than systemic, treatment is preferable since it has fewer side effects; moreover, it is fast, easy and more acceptable to children and parents. There are many technological devices used to treat UAI, but often they are not specifically targeted for this purpose or overly complicated to use.

Objective: We developed a new device with the following requirements: target specificity, administration speed, pocket-sized and portable, mono-patient usage, easy to sterilize, with the ability to vary the concentration and quantity of medication during delivery and to combine different substances in a single treatment.

Materials and Methods: The device can be used in combination with a common syringe (without needle), and doesn’t require electricity. Using the syringe’s plunger, the liquid medication is pushed into the delivery device, where the substance is nebulized and, from there, delivered to the nose in aerosol form. The device includes a fluid dynamic path with an expansion chamber and an acceleration chamber arranged in sequence, which allows for optimum fluid delivery.

Results: The device is able to atomize particles with an average diameter of 16 micrometres, meaning the upper portion of the nasal cavity and paranasal sinuses (e.g. adenoid and ostiomeatal complex) are easily reached. Moreover, it can quickly and efficiently nebulizer not only saline solution but also substances with a high viscosity, such as hyaluronan.

Conclusions: Our device is effective for use in UAI treatment: combining the comfort of a spray with the efficacy of an aerosol. It can be used easily for all medications that can be administered via the nose, primarily for saline solutions and hyaluronan. However, it could also be used as an effective delivery method for various medicines, including vaccines, insulin and analgesics, amongst others, as well as in the treatment of pathologies such as cephalaea.
ACTIVE SURVEILLANCE OF RESPIRATORY DRUGS, ESPECIALLY INHALED STEROIDS (IS) IN CHILDREN

Author: Ettore Napoleone (1,2), Antonella Lavalle (2), Cristiana Scasserra (2), Moreno Ricci (2).
(1) President of SIMPe Molise, President of FP-MCRN, Campobasso, Italy
(2) Molise Pharmacovigilance Regional Center, Campobasso, Italy

Background: IS are used inappropriately in children with an "over prescription" for conditions that do not require their use. Despite being an anti-asthmatic medicine, it is often prescribed for colds, coughs and sore throats. Some studies confirm that the IS has a modest effectiveness in preventing both recurrent wheezing viral and bronchiolitis in the child. No benefits were noted in reducing symptoms of infection to the respiratory tract.

Objective: The primary objective of the study is monitoring the use of respiratory medication and in particular the IS with careful analysis of the risk / benefit factor of the therapy in the age group from 0 to 14 years, through the accuracy of diagnosis, the therapeutic appropriateness, the safe use of medication and the correct follow-up.

Material and methods: In this epidemiological / observational (case-control) and active surveillance project, the prescribing data for 13,530 children aged between 0 - 14 followed by 17 Family Pediatricians (FP), were collected and processed. In particular, the prevalence of IS use, the age group prescriptions, the number of prescriptions, the number of pieces, the pharmaceutical expense and the single types IS-Prescriptions (IS-P), were taken into account for the evaluation of outcomes.

Results: The study showed that the prevalence of IS prescribed by FP in children (0-14 years -13,530 children), was 20.71% (number of children with at least one prescription: 2802). Of these, the number of children with the prescriptions made according to Guidelines was only 767 with a prevalence of 5.67%. Therefore the prevalence of inappropriate prescriptions was 15.04%. The total number of ISP was 4175 and the number of ISP according to the Guidelines was only 1308; therefore the number of inappropriate ISP was 2867 with a percentage of 68.67%. Regarding the age groups: in the 0-4 yrs the prevalence of inappropriate ISP was 70.24%, in the 5-10 yrs was 66.31%, and in the 11-14 yrs was 69.80%. Therefore, the percentage of inappropriate expenditure was 67.31%. Finally an analysis of the percentages of inappropriate ISP of the single type of IS was highlighted: for beclomethasone 71.47%, for budesonide 68.82%, for fluticasone 53.73% and for flunisolide 70.45%.

Conclusions: From the data emerging in a cohort of more than 13,500 children, a marked prescriptive inaccuracy of IS was highlighted. Therefore there is a need for training interventions for FP and information for families on the correct use of IS.
TREATMENT WITH POLYMERIC MEMBRANE DRESSING FOR HEMANGIOMA ASSOCIATED ULCER

Author: Gilad Chayen, MD, Osnat Naor, RN, Hofit Bar RN
Head of pediatric emergency department, Emek Medical Center, Pediatric E.D, Israel, head nurse, Emek Medical Center, Pediatric E.D, Israel, nurse pediatric emergency department, Emek Medical

Background: A healthy five weeks old baby was admitted to the ER for an extensive hemangioma on his buttocks. According to the infant's parents, three days before the admission redness appeared around the anus, it bled and then started to ulcerate. The child was admitted for what the parents had described as a "severe rash", during this period the child had been treated with a number of different ointments with no relief. The parents consulted with a dermatologist who diagnosed the "rash" as a hemangioma, referred them to Emek Hospital's dermatologic ward for further evaluation and treatment.

Observation: When arriving at the hospital, the infant had been examined by a pediatrician at the pediatric emergency ward, at which time the hemangioma was cleaned and treated with polymeric membrane dressing (PMD) the child was referred to the dermatologist ward for further consultation; since the hemangioma was extensive (6-8) cm and located around the anus, spread on both sides of the buttocks with ulcers at the center. It was decided to treat it with systemic oral medication, Deralin (Beta-blocker) and to complete enquiry to eliminate the possibility of "lumbar syndrome"

Key message: Polymeric membrane dressing has been shown to have a good effect on the ulcerated lesions. The dressing was changed every day and a good result was achieved. This is a novel use of these dressings.
EFFECTS OF DRAWING DIAGNOSIS ON CHILDREN’S HOSPITAL EXPERIENCES

Author: Emine Erçin¹ Sultan Çetinkaya²
¹Çukurova University, Faculty of Health Sciences, Department of Nursing Msc Student, Adana, Turkey
²Çukurova University, Faculty of Health Sciences, Head of the Department of Child Health and Disease Nursing, Adana, Turkey

Introduction: The illness has various negative effects on the development of the children. The illness and hospital’s interventions made are frightening, disturbing and unpleasant experience for them. Children can express their emotions and thoughts through drawing which is used by various science branches, especially psychology as a means of “diagnosis”.

Objectives: The aim is to understand effects of drawing on children’s hospital experiences and on their acute or chronic illnesses.

Results: Generally nurses are the ones interacting with families mostly. That’s why doctors and nurses have to be as honest as possible. Different needs were stated by family such as being informed, informing other family members, relying on the honesty of the staff, having support and guidance. Beside the environment, in health consciousness creation, experience and doctor-nurse-child relationship play an important role.

Disease is one of the most common sources of stress that can affect each stage of development of the child. Acut short-term illnesses are rarely reason of serious effects or long-term emotional disturbances on the child. However, chronic illnesses can have long or everlasting effects on the cognitive and emotional development of the developing child.

During procedures involving the insertion of certain instruments into the body. The gradeschooler fears to lose some body functions, disease and death. Unknowing actions and being under threat of self-control constitute other reasons that make the gradeschooler to fear the healthcare staff. Child is filled with fantasies of gaps in the informations because she/he does not fully understand everything about childhood.

Conclusion: The pictures provide non-verbal communication and help the child to express his/her feelings. When children ask for a drawing, they often describe the different situations affecting them and how they perceive them. The pictures give us clues about children’s fears, perceptions, fantasies and misconceptions. The pediatric nurses should be able to use verbal and non verbal communication techniques according to the age and development level of the child.

Key Words: Chronic illness, Child, Drawing, Nursing.
CHANGES OF COLOR PERCEPTION IN CHILDREN’S DEVELOPMENTAL STAGES THROUGH DRAWING.

Author: Senay Cetinkaya¹, Emine Erçin²
¹Çukurova University, Faculty of Health Sciences, Head of the Department of Child Health and Disease Nursing, Adana, Turkey
²Balcalı Hospital, Msc Nurse, Adana, Turkey.

Introduction: The color is the effect that light has created after striking the objects. The picture is the universal language of the child. When drawing, the child synthesizes many components such as content, style, form, color, line and composition in order to express what he/she wants to say. The pictures help the kid to provide non-verbal communication and also to express his/her feelings.

Objective: It is aimed to examine the change of color’s perception according to chronological development stages of childhood using the picture drawn by the child.

Findings: In daily life the psychological effects of colors are used in many areas. Using colors as required is an area of expertise in it. Using correctly colors increases performance and productivity. But using it unconsciously may increase fatigue, stress the error rate of employees and decreases visual perception, which may negatively affect visual ability orientation and safety.

Girls are more concerned with the color choice than boys. Some children prefer flashy color like yellow, red, orange etc. while others may prefer dark colors such as blue and green. As mentioned by experts flashy colors are preferred by socializing, harmonious and collaborative children while dark colors are preferred by children have pretentious, moody and incompatible behaviours. Kindergarten children who tend to suppress and hide their emotions seem to prefer constantly dark colors. It is thought that children who widely use red color are considered to be pretentious and aggressive. As it is found that in the natural life, the child’s color preference differ those who like dark colors from one’s who like flashy colors. For example, in the paintings of children who use brown and blue most frequently, toilet training is observed when they are under pressure, meanwhile those who start to use other colors are seen after being pressured.

Conclusion: Children often have difficulties in expression of their feelings. It is thought that color sensitivity can be determined in the picture’s drawing method which can be easily applied to children by healthcare professional working with children in order to detect early symptoms such as anxiety, aggression and depression due to illness and understanding the perceptions like illness and health which will be more beneficial for children and healthcare professional.

Key Words: Color Perception, Drawing, Child Development Stages.
EXAMINING THE HEALTH AND MEDICAL STAFF PERCEPTION IN CHILDREN AGED 9-11 WITH THE METHOD OF PROJECTIVE ILLUSTRATION

Author: Emine Ercin¹, Senay Cetinkaya²

¹ Çukurova University, Balcalı hospital, Msc Nurse, Adana, Turkey.
² Çukurova University, Faculty of Health Sciences, Head of the Department of Child Health and Disease Nursing, Adana, Turkey.

Background: The disease prevents the student’s independence, their relationship with friends and school and play activities which are very valuable for school-age children. School-age children miss their friends whom gives a great importance, and social activities, at the same time they want to be with their parents but they don’t want to see their parents near them because they don’t want to seem dependent. Besides the environment and experience, nurse-doctor-child relationship has an important role on the formation of health awareness in children. Picture is an important tool and an effective way on the development of children's spiritual, physical and as well as their personality. Drawing pictures in childhood is an important communication process for children's self-knowledge and introducing themselves. Children designate health and medical staff with the method of projective illustration.

Objective: It is a qualitative study aimed to examine the "health and health care providers" perceptions of 9-11 aged children.

Findings: Research is a qualitative study and it was conducted between 27.10.2016-10.01.2017. For the research, 32 children who have chronic diseases in the Çukurova University Balcalı Hospital and 30 healthy children studying in a primary school randomized. Firstly, a questionnaire was applied to the children and their mothers about their socio-demographic characteristics. Then, it was said that drawing pictures during 30 minutes by giving them 12 color crayons and drawing paper about what they figure out firstly about health-nurse-doctor. Questions were asked to the children about the pictures they drew.

Conclusion: Evaluation of the images were made by criterions generated by utilizing the literature and used pictures evaluation criterias. It was determined that 28 children (87.5%) in the hospital group and all children (100%) in the school group had positive messages in their pictures. It was determined that 17 children in the hospital group drew weak nature figures and 24 children in the school group drew rich nature figures in their pictures. It was seen that all of the children in two groups had positive feelings after drawing the pictures. The health workers, communication tools, teachers and parents have great responsibilities for the formation the concepts related to health in children.

Key Words: Healthy and sick children, health conscious, health-nurse-doctor perception, projective drawing method.
RELATIONSHIP BETWEEN EMPATHY SKILLS AND EMOTIONAL INTELLIGENCE LEVELS OF NURSING AND MIDWIFERY STUDENTS

Author: Senay Cetinkaya
Cukurova University Faculty of Health Sciences, Adana, TURKEY

Background: Emotional intelligence and empathy are important communication skills that play a role in the successful and efficient service delivery of employees in areas related to human health.

Objective: It is a descriptive-sectional study designed to examine the relationship between empathy skills and emotional intelligence levels of nursing and midwifery students.

Materials and Methods: 1200 nursing students and 150 midwifery students studying in Cukurova University Faculty of Health Sciences (Adana-Turkey) in the 2016-2017 academic year spring semester formed in the universe of research. While the application of the data was aimed to reach the whole of the universe, to the 704 students, who agreed to voluntarily participate in the research and who received informed consent were applied under supervision in May-June 2016. A questionnaire consisting of 19 questions including sociodemographic characteristics of the students, Intelligence Assessment Scale and Empathy Skill Scale were used for gathering the data. Statistical package program was used to evaluate the data.

Results: The average age of the students who participated in the study was found as 21.23±1.75. 493(70%) of the students were female and 211(30%) were male. Of the students, 621(88.2%) were nursing students while 83(11.8%) were midwifery students. The mean score of the students' emotional intelligence scale was 126.95±34.42. The total score average of the students obtained from the Empathy Skill Scale was 140.78±23.73. Positive, very weak and statistically significant relationship was found between empathy skill and emotional intelligence (r=0.178; p=0.000). The Empathy Skill Scale revealed a positive, very weak and statistically significant relationship between feelings awareness, managing feelings, self-motivation, empathy and social skills subscales (p<0.05).

Conclusions: As the level of emotional intelligence of the students increased, empathy skills increased, too. Students with knowledge of emotional intelligence were found to have higher empathy skills than students who had no knowledge about emotional intelligence.

Key words: Emotional intelligence, empathy, interpersonal relationship, midwifery, nursing.
THE APPROACHES AND STUDIES ABOUT PAIN IN CHILDREN

Author: Senay Cetinkaya
Çukurova University, Faculty of Health Sciences, Adana, Turkey.

Background: Pain is one of the most common reason why people seek for help from health care and has broad impact on all aspects of life. Pain is subjective and individual. There are no physiological or chemical tests that may measure pain. That's why according to Mc Caffery's pain is what the individual says, whenever and wherever an individual says that he is painful, it is necessary to believe because it's one of the most accurate pain definition. Children often experience pain in different stage of life. Children experience pain due to acute onset diseases such as trauma, surgery, otitis media or pharyngitis and also in different medical interventions such vaccination, blood transfusion, vascular access, dressing change, lumber punching, or sickle cell anemia. According to the American Academy of Pediatrics (AAP) and the American Pain Society (APS) (2001), pain in children is often underestimated and treated.

Objective: In this study, current approaches and studies about pain in children will be presented. Non-pharmacological methods will be examined in more detail.

Materials and Methods: Effective pain control in children requires collaboration among healthcare team members and various initiatives. Pharmacological and non-drug methods are used for pain control. The most effective method is the combination of drug therapy and cognitive-behavioral methods. The use of psychological techniques to prepare and relieve the child before administering a pharmacological agent may also reduce the need for analgesic dosing. The use of cognitive and behavioral methods such as relaxation, respiration methods and falling, allows the child's attention to move away from the painful process and reduces tension, pain and anxiety. Cognitive and behavioral methods appropriate to the child's age should be used. For example, babies' nipples or pacifiers can be useful. In older children, it is effective to create an environment where they can keep hobbies, to read books, and to watch television. There are different scales used to measure pain in children. It is necessary to check the validity and reliability of the scales before the use because some elected scales can be used according to age.

Conclusions: Every child has right to live a painless life. It is one of the main purposes of nursing care to relieve children's pain and improve their life quality. Since the nurse is healthcare provider who interacted a lot with the child and family, it is important for the nurse to evaluate the child's pain and to inform the child and the family about the pain control policies.

Key words: Pain, pain management, nursing.
A CASE OF OESOPHAGEAL STRicture FOLLOWING INGESTION OF A CAUSTIC SUBSTANCE

Author: Dr Kate Hooper.
Department of paediatrics, Royal Berkshire Hospital, Reading, United Kingdom

Keywords: oesophageal stricture

Background: Caustic soda (sodium hydroxide) is an alkaline substance that is widely used in production of soap or detergent in Sierra Leone. Its accidental ingestion is a recognised cause of oesophageal stricture in children.

Observation: A three year old boy presented to the emergency department of a hospital in Freetown, Sierra Leone, with a two day history of being unable to drink. His parents told medical staff that the child had ingested caustic soda about eight weeks earlier and had had progressive difficulty with swallowing food over the days leading up to his presentation. On assessment the child was dehydrated and had extreme thirst; each time he drank water there was an immediate, effortless regurgitation of the fluid. After his stabilisation and rehydration with intravenous fluids he was transferred to a surgical centre for attempted dilatation of his oesophageal stricture.

Key message: In this setting, challenges include lack of public health measures to prevent accidents, late presentation to hospital and limited diagnostic and surgical resources. In cases where there is an established stricture management is by dilatation, but risks of complications or treatment failure are higher in children who present late.
THE EFFECT OF IMPROVED URBAN CYCLING AND WALKING INFRASTRUCTURE ON CHILDREN’S WALKING AND CYCLING RATES

Author: Michael Keall\textsuperscript{a}, Ralph Chapman\textsuperscript{b}, Philippa Howden-Chapman\textsuperscript{c}, Karen Witten\textsuperscript{d}, Wokje Abrahamse\textsuperscript{e}, Alistair Woodward\textsuperscript{f}

\textsuperscript{a} NZ Centre for Sustainable Cities, Department of Public Health, University of Otago Wellington, \textsuperscript{b} NZ Centre for Sustainable Cities, and Victoria University of Wellington, Environmental Studies Programme, SGEES, \textsuperscript{c} NZ Centre for Sustainable Cities, Department of Public Health, University of Otago Wellington, \textsuperscript{d} NZ Centre for Sustainable Cities and Massey University SHORE & Whariki Research Centre, \textsuperscript{e} NZ Centre for Sustainable Cities, and Victoria University of Wellington, \textsuperscript{f} NZ Centre for Sustainable Cities, and School of Population Health, University of Auckland

\textbf{Keyword(s):} Infrastructure; Physical activity;

\textbf{Background:} Inadequate levels of population physical activity (PA) contribute to high rates of several chronic diseases, including cardiovascular disease, diabetes, some cancers, hypertension, depression and osteoporosis. Inadequate PA levels also contribute to high levels of obesity internationally: nearly one in six children are overweight or obese in OECD countries. Efforts to increase PA levels include the promotion and encouragement of active travel, where people walk or cycle to reach a destination. In 2010, two small cities in New Zealand received funding for infrastructural changes (e.g. improved walkways and cycle lanes) along with information and education (e.g. campaigns to increase uptake and the confidence of individual cyclists) to help address a national decline in active travel (walking and cycling for transport). For the population overall, there were statistically significant increases in the odds of active travel of 37% (95% confidence interval 8% - 73%) associated with the intervention.

\textbf{Objective:} The current study consists of a sub-analysis specifically looking at how the travel of people aged under 20 may have changed.

\textbf{Materials and Methods:} For our quasi-experimental study, two control cities were identified prior to the intervention as suitable matched communities, being similar in size and climate, and interested in increasing active travel, but without the additional targeted central government funding. By comparing the intervention cities with the control cities over time, we could infer whether changes seen in the intervention cities were due to the intervention or were part of a wider trend. Face-to-face surveys conducted as part of nationally representative travel surveys over the study period provided information on all trips made on specified travel days, including walking and cycling.

\textbf{Results:} Relative to the control cities, the odds of trips by children aged under 20 being by active modes (walking or cycling as opposed to motorised travel) increased by an estimated 210% (95% CI 40% to 590%) in the intervention cities between baseline and post-intervention. Although we can confidently infer that active travel increased, estimating the degree of increase is hampered by a relatively small sample size and a wide confidence interval.

\textbf{Conclusions:} For children in the cities studied, improvements in infrastructure and associated programmes appear to have successfully arrested the general decline in active mode use evident in recent years. This highlights the importance of providing infrastructure that supports active travel for children to help address the epidemic of chronic diseases associated with lack of physical activity.
PARENTAL DRUG ABUSE AND EFFECTS ON CHILDREN IN CARE - IS BETTER CLINICIAN AWARENESS REQUIRED?

Author: Varsha Sadavarte
Royal Stoke University Hospital University Hospitals of North Midlands NHS Trust Newcastle Road, Staffordshire ST4 6QG, PAEDIATRICS, STOKE ON TRENT

Introduction: Much research exists regarding the effects of parental alcohol and tobacco use on child development but little has been done to establish associations between parental use of other drugs and problems with child development. In this audit, data was collected about known parental use of drugs and developmental, educational, behavioural and mental health problems in their children and compared to find associations.

Methods: A retrospective case note audit was performed looking at all children who attended the Looked After Children clinic at Royal Stoke University hospital in one month, looking specifically at substances which parents had used, including during pregnancy, and comparing this to developmental, educational, behavioural and mental health in their children.

Results: Of 22 children born to mothers who had not used drugs 41% were normal, compared to 57% of children born to mothers who had used drugs. 2 children in this cohort were born to mothers who had used drugs during pregnancy: both were normal – possibly reflecting the early age that these children were placed into the care system. In contrast of 27 children born to mothers who had not used drugs during pregnancy 44% were normal. 11 children in this cohort were born to fathers known to take drugs, of these 36% were normal while 56% of the children born to fathers who were not known to take drugs were normal. The commonest problems were challenging behaviour, aggression, delayed development of motor skills and the requirement of extra educational support at school.

Conclusion: Inconsistent and unexpected results from this cohort highlight the need for a larger sample size to collect data from in order to achieve more statistically powerful results. More information about parental substance misuse needs to be provided from social care services in order to fully evaluate a child’s future risk profile. A tabulated summary of children outcome collated to be used during adoption medicals for discussions with future parents.
TEACHING RESILIENCE TO CHILDREN: OPPORTUNITIES IN PEDIATRICS AND PSYCHIATRY

Authors:
Marie Leiner, PhD1, Texas Tech University Health Sciences Center El Paso, Dept. of Pediatrics, Texas, USA.
Indu Pathak, MD2, Texas Tech University Health Sciences Center El Paso, Dept. of Pediatrics, Texas, USA.
Angelica Calderon, Master3, Universidad Autónoma de Ciudad Juárez, Ciudad Juárez, Chihuahua, México.
Cecilia de Vargas, MD2, Texas Tech University Health Sciences Center El Paso, Dept. of Psychiatrics, Texas, USA.

This is a set of presentations that includes the following themes by author:
Marie Leiner, PhD – Teaching resilience to preschool-aged children using social media.
Indu Pathak, MD – Cultural issues about teaching resilience to families: a multinational perspective.
Angelica Calderon, Master – Using a different strategy to reach parents: improving wellness of employees in their workplace.
Cecilia de Vargas, MD – Resilience in children/parents: the psychiatric perspective.

Background: Children, who occupy marginal or subordinate positions within peer hierarchies, will be more susceptible to adversity with both physical and psychological injury. Adversity among children is neither randomly nor evenly distributed within the population; instead, it is experienced more by those confronted with financial, educational or social disparities. Children who are exposed to adversity experience both short- and long-term physical, mental, and emotional harm, with only a few of them remaining unharmed.

Resilience skills may be used by some of these children and their families to assist in recovering after facing adversity, and such skills can be taught either in the clinic or in the workplace. Even though any opportunity to teach resilience skills to children and their parents is beneficial, focusing on an early age group is considered by many authors to be the most important strategy to maximize the efficacy and the retention of the resilience skills.

Cultural differences must be considered when addressing parents and children with different backgrounds, and tailoring resilience skills to particular cultural issues is necessary to help parents and children develop skills that are culturally appropriate and meaningful to them.

Parents/children at risk often do not have the opportunity to develop resilience skills themselves when they were or are growing up. The wellbeing of parents can reflect in how they raise their children and how they transfer skills, including resilience. The concept of individual wellbeing has recently acquired value, and as a result, many organizations offer programs for their employees in which resilience skills can be taught. The largest impact on teaching resilience may be achieved when a holistic approach to wellness is undertaken either in primary care clinics or in the workplace.

With psychiatric conditions largely being classified with the purpose of facilitating assessment, treatment interventions and research to ameliorate the burden of psychopathology in children, adolescents and families, the acquisition of resilience skills seems to have been relegated in the field of psychiatry. Resilience, however, is a powerful phenomenon that greatly contributes to protect, empower and transform families in the presence of stressful circumstances, such as abuse, neglect, divorce, family and collective violence, immigration and other arduous circumstances.

Child and adolescent psychiatrists, pediatricians and researchers need to create and implement programs at school and with families to incorporate resilience as a major tool in the protection and empowerment of our children and their parents.
Infectious diseases

CONGENITAL TUBERCULOSIS IN A NEONATE: A CASE REPORT WITH LITERATURE REVIEW

Authors: Tarida Dorothy1, Nila Akbariyyah1, Nina Dwi Putri1, Idham Amir1, Bambang Supriyanto1
1RS Hermina Jatinegara, Jakarta, Indonesia

Background: Tuberculosis (TB) is one of the leading infectious diseases in the world. Congenital TB is a rare infection transmitted from a mother to her foetus and doesn’t have any specific and pathogomonic signs and symptomps. Devastating consequences in the absence of early therapy signify the importance of early diagnosis and treatment during the neonatal period.

Observation: This case report demonstrated a case of congenital tuberculosis in RS Hermina Jatinegara. The female neonate, preterm with gestational age 30 weeks, who delivered by caesarean section with birth weight 1530 gram, presented with respiratory distress (APGAR score 7/8). Diagnosis of congenital TB obtained from a positive history of tuberculosis in the parents, clinical investigation, positive tuberculosis blood test, and positive microbacterial culture from gastric lavage for M. tuberculosis. Anti-tuberculous administrating showed remarkable improvement.

Key message: Congenital tuberculosis, though rare, should be considered in an infant diagnosed with pneumonia that is resistant to antibiotic therapy especially in areas of high tuberculosis prevalence. Early diagnosis and treatment during the neonatal period have an important role for the successful treatment. This case illustrates the difficulties in diagnostic this disease, which are of great interest to public health, and points to the need to develop specific protocols to deal with these situations.
PATHOGENESIS OF CONGENITAL MICROCEPHALY DUE TO INTRAUTERINE INFECTIONS: ZIKA VIRUS AND OTHER INTRACELLULAR PATHOGENS

Author: Fernando Gomez, MD¹, Lawrence D. Frenkel, MD²

¹Department of Specialty Medicine, Rocky Vista University College of Osteopathic Medicine, Parker, Colorado, United States of America, ²Departments of Pediatrics and Microbiology, University of Illinois College of Medicine Division of Immunology, Allergy, and Infectious Disease, Rockford, Illinois, United States of America

Keywords: Microcephaly, Zika virus, Host-pathogen interactions

Background: Zika virus associated congenital microcephaly has stimulated interest in the pathogenesis of microcephaly induced by infectious agents. In addition to Zika virus, other neurotropic intracellular pathogens, such as the classic "TORCH" syndrome agents, can also cause neonatal microcephaly.

Materials and Methods: The authors performed an extensive review of the literature on congenital microcephaly, neurotropic infectious agents, congenital central nervous system infections, as well as the normal maternal and fetal immune systems and how the maternal immune system responds to infections during pregnancy. The most appropriate literature identified was used to develop a hypothesis on the pathogenesis of infectious congenital microcephaly.

Results: Pregnancy is associated with increased susceptibility to pathogens that require intact cell-mediated immunity. Neurotropic intracellular pathogens induce variable degrees of CNS inflammation and tissue destruction with many similarities in the findings in neural tissues. The decrease in brain matter is accompanied by increased intracranial fluid. As the fluid recedes, microcephaly develops and there may be collapse of the cranial vault with overriding of the cranial bones.

Conclusions: Normal pregnancy leads to down-regulation of T-cell mediated immunity. This allows for systemic pathogen dissemination with a high pathogen load reaching the placenta. Failure of maternal-fetal placental barriers allows the infectious agent to disseminate to the developing organs in the fetus. Strain-specific pathogen affinity to neural tissue allows infection of neural progenitor cells and other CNS cells. Chronic destructive inflammation and cellular apoptosis follows via amplified fetal innate immune responses to the intracellular pathogen. The pathology of microcephaly is similar regardless of the causal pathogen. However, infection early in gestation causes more destruction as death of neural precursor cells leads to loss of numerous potential progeny.
A clinico-epidemiological profile of Hepatitis A virus and Hepatitis E virus co-infection in pediatric age group

Author: Shikha Handa¹, Sanober Wasim², B.P Kalra³, Vipan Chandar³, Alpa Gupta
¹Senior Resident, ²Associate Professor, ³Professor
¹,²,³ Department of pediatrics Himalayan institute of Medical Sciences, Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand, India

Background: Hepatitis-A virus infection (HAV) and Hepatitis E virus infection (HEV) are two major hepatotropic viruses of great public health importance in the developing countries like India. Both HAV and HEV are enterically transmitted and there are speculations that their co-infection might be associated with a more severe clinical course and increased rate of mortality.

Objectives: To determine the prevalence, clinical features and biochemical parameters of Hepatitis A and Hepatitis E co-infection in hospitalized patients at a tertiary care centre in Uttarakhand.

Material & Method: It is a Retrospective study, covering a period of 4 years from January 2014 to December 2017 and conducted in Himalayan Institute of medical sciences, SRHU Jolly Grant, Dehradun. Records of the patients with Hepatitis A & Hepatitis E co-infection were retrieved and analyzed.

Results: Out of total 125 patients, 13 patients had HAV & HEV co-infection, maximum patients being in age group of 0-5 years. 100% of the patients with co-infection presented with complaints of fever and jaundice, followed by 76.92% with vomiting, 69.23% with pruritis, 61.53% with pain in abdomen and 23.07% with altered sensorium. Mean Bilirubin, ALT, AST were 8.69 +/- 7.27, 2030.69 +/- 1726.93 and 1880.07 +/- 1881.11 respectively. Average duration of stay was 8.2 days. Encephalopathy was seen in 2 patients. However no mortality was reported.

Conclusion: Co-infection of HAV and HEV is not rare in pediatric age group. However such co-infection did not produce a more severe disease. Knowledge about this will be of immense help for planning of future vaccination strategies and for better sanitation program in developing countries like India. We recommend screening of all patients of Acute Viral Hepatitis A for Hepatitis E.

Key words: Hepatitis A, Hepatitis E
RAPID DIAGNOSTIC QUANTIFICATION OF CIRCULATING TB ANTIGEN IN HIV-EXPOSED CHILDREN

Author: Tony Hu
School of Biological and Health Systems Engineering, Virginia G. Piper Biodesign Center for Personalized Diagnostics, The Biodesign Institute, Arizona State University

Children co-infected with human immunodeficiency virus (HIV) and Mycobacterium tuberculosis (Mtbc) in their first 2 years of life have a 43% increased risk for developing tuberculosis (TB) in the next 12 months. In these individuals, activation of latent TB is 20 times more likely if they are also HIV-positive (+), making HIV the highest known risk factor for contracting pediatric TB. Although children with HIV/TB constitute a small percentage of the health care caseload, they represent one of the most challenging for TB diagnosis and management. For adults and children, obstacles to accurate TB diagnosis include: 1. pulmonary symptoms that cannot be differentiated from TB by radiologic analyses; 2. low compliance in children to laborious sample collection protocols; 3. propensity for swift advancement of incessant symptoms; and 4. dependence on parental or caregiver observation. Diagnosis for TB is traditionally based on symptom presentation, chest radiography, tuberculin skin tests (TST) and Mtbc culture testing, for instance, but each has limitations. Many researchers have invested great efforts to improve detection methods. For example, PCR-based GeneXpert allows a high limit of detection, but lack of quantitation and limited sensitivity in culture-negative specimens (extrapulmonary TB) are still prohibitive factors.

We propose a strategy comprised of a quantitative, multiplex platform – porous silicon nanodisks (pSiND)-mass spectrometry (MS) – for rapid TB diagnosis and evaluation of treatment efficacy in HIV+/- children, based on our hypothesis that Mtbc secretes CFP-10 and ESAT-6 peptides into the blood that can be accurately quantified with pSiND-MS. If successfully applied in this most challenging cohort, then our approach should mitigate challenges in less difficult TB cases. The size, surface density, and distribution of deposited metal nanocrystals on pSiND are tailored to the properties of targeted biomarkers, allowing sensitive and specific peptide enrichment. At Houston Methodist’s current Good Manufacturing Practices (cGMP) facilities, we have achieved industrially scalable manufacturing of pSiND by using micro-fabrication processes and adhering to the Food and Drug Administration standards. In pilot clinical testing, we distinguished TB+ (n=59) from TB- children (n=206), at 96% specificity and 94% sensitivity. Fast and accurate identification of TB not only directly saves lives, but it also prevents disease transmission. This helps to protect the well-being of the communities in both low- and high-incidence countries, and to save costs for patients and clinical care providers. The pSiND-MS technology platform has an added advantage in that high-throughput and accurate mass spectrometry has become a virtually essential technology for clinical diagnosis in many parts of the world. The “miniaturized” and easy-to-use MS system at a shoebox size for point-of-care applications is aimed at serving patients in resource-limited areas. Achievement of all of our aims will significantly improve clinical management strategies for global TB control.
THE IMPORTANCE OF PRIMARY ANTIBIOTICS TREATMENT FOR CHILDREN WHO HOSPITALIZED DUE TO INFECTION DISEASES – RETROSPECTIVE RESEARCH

Author: Osnat Naor
Research Facility: "Emek" hospital, Afula, Israel
Lead researcher: Prof. Dani Meron (PhD) "Emek” hospital, Afula, Israel

I, singed below, declare to conduct the research under protocol methodology, its appendices and GCP (Good Clinical Practice) qualifications, and adhere the regulatory requirements of the ministry of healthcare and the Clalit Medical Center.

Research background: Research in adult subjects show that as early as Pneumonia is being treated with antibiotics, the chances to recover are higher and the odds of infectious complications is lower. As a result, it is custom nowadays to follow a quality assurance protocol stating that a treatment in the disease is crucial within the first 6 hours of a hospitalized patient visiting the medical facility. Equivalent research sources lack the information of how to treat other infectious diseases; Assuming the results will be similar, the common approach in Ha’emek Medical Center is to treat adult subjects, regardless the type of infections, with the same antibiotics treatment during their residency in the ER. To our best knowledge, no equivalent research has been conducted in children, however a consensus around the research in adults delivers a common sense around children as well. Nevertheless, a process of admitting child between the hospital wards is complex and highly dependent on staff availability, hence a potential delay in antibiotics treatment might influence on the patient’s recovery. We believe, that this approach gives children patients the overall treatment they deserve, including the primary antibiotics treatments, thus assuring treatment continuity.

Objective: Examine the effects caused by primary antibiotics dose in hospitalized children who suffer from Pneumonia or urinary tract infection.

Methodology: Retrospective research, in which all hospitalized children in the time space between Januarys to June of 2017, will be part of. Including the previous year in which the implementation did not took place yet. The entire metadata will be taken from the hospital’s computer systems.
Number of subjects – 400. The number was chosen based on the assumption that it is possible to shorten the average hospitalization duration in 10% among children who were given the primary antibiotics dose, and in order to achieve statistical power of 80% as well as statistical significance of 0.05. Comparing the results between the two groups of research will be done using Student T Test.

Methodology and process: Retrospective research, in which all hospitalized children in the time space between Januarys to June of 2017, will be part of. Including the previous year in which the implementation did not took place yet. The entire metadata will be taken from the hospital’s computer systems.
All metadata will be extracted from internal computerized systems and ER and hospitalization folders, which will include the ER counter desk registration hour, primary antibiotics dose hour (in ER or respective ward) and duration of hospitalization in days, for every child which will be assigned as research subject. The metadata will be stored in Excel spreadsheets and calculation will include the average duration from first hospital patient registration in the front desk and until receiving the first dose of antibiotics, and the average hospitalization duration. Comparing the results between the two groups of research will be done using Student T Test.
**Results:** Improving the TTA (Time to Antibiotics) parameter shortens the hospitalization time of children diagnosed with pneumonia and UTI. Shortening the duration of hospitalization affects the satisfaction of patients, the staff, and saves on hospitalization costs.

**Conclusions:** Improvements in this indicator may help reduce the complications of these diseases, but more studies are needed. The process proves that cooperation among all the "one-headed" teams is an essential parameter in the success of changing significant work processes.
FREQUENCY AND ASSOCIATED FACTORS OF TYPHOID CARRIER ON DUODENAL FLUID CULTURE IN A TERTIARY CARE HOSPITAL, KARACHI

Author: Sonia Qureshi\textsuperscript{1}, Farah Naz Qamar\textsuperscript{1}, Tahir Yousafzai\textsuperscript{1}, Shafquat Rozi\textsuperscript{4}, Shahida Qureshi\textsuperscript{2}, Aneeta Hotwani\textsuperscript{2}, Kamran Sadiq\textsuperscript{3}, Om Parkash\textsuperscript{3}, and Anita K.M Zaidi\textsuperscript{1}

\textsuperscript{1}Department of Pediatrics and Child Health, Aga Khan University, Stadium Road, Karachi 74800, Pakistan
\textsuperscript{2}Infectious Disease Research Laboratory, Aga Khan University, Stadium Road, Karachi 74800, Pakistan
\textsuperscript{3}Department of Gastroenterology (Medicine), Aga Khan University, Stadium Road, Karachi 74800, Pakistan
\textsuperscript{4}Department of Community Health Sciences, Aga Khan University, Stadium Road, Karachi 74800, Pakistan

Background: Typhoid fever is a serious public health problem and remains a major cause of morbidity and mortality worldwide. Typhoid carriers serve as a reservoir in the ongoing transmission of typhoid fever and were not explored mainly in developing world due to limited availability of investigating tools.

Objective: This study aims to determine the frequency of typhoid carrier and its associated factors on duodenal fluid culture in patients undergoing upper gastrointestinal (GI) endoscopy in Karachi.

Materials And Methods: We conducted a crosssectional study at Aga Khan University Hospital (AKUH), Karachi from February 2017 to August 2017. Individuals of age more than or equal to 1 year who underwent upper gastrointestinal endoscopy for any reason were included and interviewed using a pre-structured questionnaire. \textit{Salmonella typhi} and \textit{paratyphi} investigated on duodenal fluid culture. Statistical analysis carried out using Stata software (version 12.0). Frequencies with percentages were reported for categorical variables and for quantitative variables mean/median and standard deviation/interquartile range were reported depending upon the data distribution. For socioeconomic status factor analysis was performed. Overcrowding was assessed by estimating crowding index. Geographical location GIS mapping was done for visualizing distribution of study participants using Google Earth Pro.

Results: Out of 801 participants, 477 were enrolled. The mean±SD age (years) of the individuals was 42.4±15.5. Children ≤ 18 years accounted for 17/477 (3.6%). Majority 287/477 (60.2%) of participants were males. Participants were widely dispersed representing around 74.5% from the province of Sindh (54% from Karachi), 13.6%, 3.4% and 3.4% from Baluchistan, Punjab and KPK respectively. 205/477 (42.9%) reported use of unsafe water for drinking in their homes, yet 67/477 (14%) were not washing their hands with soap and water after defecation. 389/477 (81.5%) of the participants who underwent upper gastrointestinal (GI) endoscopy visited the hospital due to underlying diagnosis of gastrointestinal illness. Approximately 185/477(38.8%) of the participants living in crowded house. 73(15.3%) of the participants reported past history of typhoid fever. Only 9/477 (1.9%) of the participants stated that they received antibiotics in the prior two weeks of the procedure. Out of 477 duodenal fluid cultures, 250 (52.4%) came out to be positive. We did not observe any \textit{Salmonella typhi} or \textit{paratyphi}. However, common pathogens isolated on culture were \textit{Escherichia coli} 68 (27.2%) followed by \textit{Pseudomonas species} 58(23.6%), \textit{Klebsiella pneumonia} 35 (14%).

Conclusion: We did not find any typhoid carrier on duodenal fluid culture among subjects who underwent upper gastrointestinal endoscopy in our study. Carrier detection remains one of the best ways to stop salmonella epidemics. Cohort studies and molecular detection methods can be planned to determine its prevalence and to establish temporality and cause effect relationship.

Keywords: Typhoid fever, Salmonella species, Typhoid carrier
COMPARISON OF XPERT MTB/RIF WITH AFB SMEAR AND AFB CULTURE IN SUSPECTED CASES OF PEDIATRIC TUBERCULOSIS IN A TERTIARY CARE HOSPITAL, KARACHI

Author: Sonia Qureshi1, Arjumand Sohaila1, Sana Hannan1, Muhammad Dawood Amir Sheikh2, Farah Naz Qamar1

1Department of Pediatrics and Child Health, Aga Khan University, Stadium Road, Karachi 74800, Pakistan
2Medical student, Aga Khan University, Stadium Road, Karachi 74800, Pakistan

Background: Tuberculosis (TB) remains a fatal transmissible disease. Despite the development in medical technologies, the accurate rapid TB diagnosis, predominantly in children remains a challenge.

Objective: This study aims to evaluate the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of Xpert MTB/RIF in suspected pulmonary and extra pulmonary tuberculosis patients compared to AFB smear and AFB culture and reports the frequency of rifampicin resistance.

Material and Methods: Retrospective records reviewed from January 2013 to December 2016 at Aga Khan University Hospital, Karachi. Children with clinical suspicion of pulmonary and extra pulmonary tuberculosis based on Modified Kenneth Jones criteria, age 1 month to 18 years whose samples (respiratory or nonrespiratory) were sent for Xpert MTB/RIF, AFB smear and culture concurrently were included. Analysis carried out by STATA and MecCalc softwares.

Results: 91 suspected TB patients were eligible. Of which 42(46.2%) had extra pulmonary TB. 54.9% were females. The median age was 12 years. The Xpert MTB/RIF had higher sensitivity 66.7% (95%CI: 50.5%, 80.4%) compared to smear microscopy 47.6% (95% CI: 32%, 63.6%). The sensitivity, specificity, PPV and NPV of Xpert MTB/RIF compared to culture were higher in GA (100%, 60%, 71.4%, 100%), sputum (85.7%, 88.9%, 85.7 %, 88.9%), BAL (83.3%, 50%, 83.3%, 50%) and in lymph node tissue (100%, 50%, 80%, 100%). AFB smear positive samples sensitivity and PPV were 100% in sputum, BAL, CSF and GA. For AFB smear negative samples, the sensitivity was 100 % in GA.

Conclusion: Xpert MTB/RIF is more sensitive than smear when compared to culture in both pulmonary and extra pulmonary TB in children.

Keywords: Xpert MTB/RIF, AFB Culture, Pediatric Tuberculosis
MORBIDITY AND MORTALITY OF PRETERM INFANTS LESS THAN 26 WEEKS OF GESTATIONAL AGE

Author: Maria Inês C. Durães; Filipa Flor-de-Lima; Gustavo Rocha; Henrique Soares; Hercília Guimarães
Affiliation: Department of Pediatrics of Faculty of Medicine of Porto University and Neonatal Intensive Care Unit, Department of Pediatrics, Centro Hospitalar São João. Alameda Professor Hernâni Monteiro, 4200-319 Porto, Portugal

Background: Extreme preterm infants have a high risk of morbidity and mortality. Newborns delivered between 23+0 and 25+6 weeks, are considered to be in the “gray zone” and have uncertain prognosis. For these children medical decision-making becomes complex and controversial. The present study intends to evaluate the neonatal morbidity and mortality of preterm infants born between 23 weeks and 25+6 weeks of gestational age.

Methods: A retrospective study was conducted including all inborn preterm infants, with a gestational age between 23+0 and 25+6 weeks, admitted to a level IIIC NICU, between 1st January, 1996 and 31th December, 2014.

Results: A total of 72 preterm neonates were included, 18.1% had a full cycle of antenatal steroids. The most frequent major morbidities were RDS (95.4%), patent ductus arteriosus (81.3%), sepsis (55.7%, being 19.7% early sepsis, and 36.1% late sepsis), intraventricular hemorrhage (34.4%), retinopathy of prematurity (21.9%) and necrotizing enterocolitis (10.9%). Fifty-four (75%) children died. The only factor adjusted to age associated with high mortality founded was hypotension (OR=4.99, p<0.019). Morbidity at discharge was: severe bronchopulmonary dysplasia (77.8%), retinopathy of prematurity (72.2%), intraventricular hemorrhage (16.7%), cystic periventricular leukomalacia (11.1%) and necrotizing enterocolitis’ sequelae (5.6%).

Conclusion: The survival rate was 25% and a high morbidity at discharge was observed, which leave us with the huge responsibility to improve this result in a near future. Extreme prematurity is still a very controversial and complex issue and particular challenge for neonatologists. The use of antenatal steroid in the more immature preterm infants should be encouraged.
HEARING SCREENING IN HIGH-RISK NEONATES IN THE INTENSIVE CARE UNIT BY TRANSIENT EVOKED OTOACOUSTIC EMISSIONS (TEOAE): PILOT STUDY.

Author: Nicolas Georges¹, El Maoula Houria¹, Faddous Khalifeh Marie-Claude, Iskandar Maria¹
¹ Holy Spirit University of Kaslik, Faculty of medicine and medical sciences, Pediatric department, Centre Hospitalier Universitaire Notre Dame des Secours, Byblos, Lebanon.

Background: Neonatal hearing impairment is a silent disability that can affect child’s linguistic and cognitive development later on if not diagnosed early.

Objectives: To determine the prevalence and the risk factors associated with hearing loss in our society, including factors registered in the Joint Committee of Infant Hearing (JCIH) and other variables that we thought to be significant.

Materials and Methods: The study enrolled 87 newborn children admitted to the Neonatal Intensive Care Unit (NICU) at the Centre Hospitalier de Notre Dame des Secours, Byblos, Lebanon between January 2017 and February 2018 presenting at least one of the following variables: pregnancy by In Vitro Fertilization (IVF), multiple pregnancy, complications during pregnancy and/or delivery, prematurity, low birth weight, low APGAR score, cardio-respiratory problems, hyperbilirubinemia, craniofacial malformations and/or trauma, ototoxic drugs use, transfusion, NICU hospitalization for more than 2 weeks, parental consanguinity and familial anomalies. Data collection was carried out at the hospital’s medical archive department. Subsequently, parents of children who failed the TEOAE test were contacted and asked about the required follow-up.

Results: Eight children (9.42%) failed the TEOAE test, seven of them had failed the test in one ear, and one child had failed the test in both ears. Only IVF, multiple pregnancies and low APGAR score at 1 minute were significantly correlated with failed TEOAE test, with P values of 0.014, 0.035 and 0.027 respectively. Furthermore, only 25% of the children who failed the TEOAE test were followed up 4 weeks after discharge from NICU.

Conclusion: The prevalence of neonatal hearing loss according to TEOAE test in our study is much higher than the international standards (2 – 5 %). Likewise, we have found that IVF and multiple pregnancies, variables that were not studied previously worldwide in this context, were predictive of hearing loss and might be added to the international register of risk factors (JCIH) for neonatal deafness, consequently insisting on the universal hearing impairment screening in neonates.

Keywords: hearing impairment, neonates, transient evoked otoacoustic emissions.
IDENTIFICATION AND ANTIMICROBIAL RESISTANCE OF PATHOGENS FOR NEONATAL SEPTICEMIA IN CHINA – A META-ANALYSIS

Author: Jing Lin¹, Jing-yang Li², Shang-qin Chen², Zhen-lang Lin²
¹ Icahn School of Medicine at Mount Sinai, Department of Pediatrics, New York
² Yuying Children’s Hospital of Wenzhou Medical University, Department of Neonatology, Wenzhou

Objectives: The purpose of the study is to analyze the distribution and antimicrobial resistance of common bacterial pathogens causing neonatal septicemia based on a systematic review of the published studies in China.

Methods: Articles about neonatal sepsis published in the Chinese literature from 2009 to 2014 were identified according to the inclusion and exclusion criteria. Data were extracted and analyzed using Comprehensive Meta-Analysis software.

Results: A total of 71 studies were included in which a total of 8080 bacterial species were isolated from culture positive blood samples. The pooled distribution rates of common bacterial pathogens were as follows: Staphylococcus 67.1% (95% CI: 63.3%-70.6%), Enterococcus 4.1% (95% CI: 3.5%-4.8%), Streptococcus 2.3% (95% CI: 1.6%-3.2%), Escherichia coli 7.4% (95% CI: 6.4%-8.7%), Klebsiella 6.5% (95% CI: 5.2%-8.2%), Enterobacterium 2.3% (95% CI: 1.9%~2.8%), Acinetobacter 1.6% (95% CI: 1.3%~2.0%), Pseudomonas 1.7% (95% CI: 1.3%~2.2%). Among the Staphylococcus aureus strains isolated, >60% were Methicillin-resistant. In addition, over 50% of the gram-negative isolates, including Escherichia and Klebsiella, were resistant to the commonly used third generation cephalosporins. Most of the gram-positive and the gram-negative bacteria isolated were sensitive to aminoglycosides, especially amikacin.

Conclusions: We conclude that Staphylococcus, especially coagulase negative Staphylococcus continues to be the principal organisms responsible for neonatal septicemia in China, Enterobacteriaceae are common in the Gram-negative isolates. Significant numbers of MRSA and multidrug resistant gram-negative bacteria are being isolated as pathogens responsible for neonatal septicemia in China.

Keywords: septicemia; infants, newborn; pathogens; antimicrobial resistance
NEONATAL HYPOGLYCEMIA IN NEWBORNS WITHOUT RISK FACTORS

Author: Nicolas Georges 1, Chaaban Riham1, Faddous Khalifeh Marie-Claude 1, Souaiby Juliana 1, Salemeh Yara1
1 Holy Spirit University of Kaslik, Faculty of medicine and medical sciences, Pediatric Endocrinology, Centre Hospitalier Universitaire Notre Dame de Secours, Byblos, Lebanon.

Introduction: Hypoglycemia is a common problem in neonatal period associated with adverse neurological outcome and brain injury if treatment was not provided. AAP and PES recommended screening for hypoglycemia only in newborns with risk factors but many others neonates may present episodes of asymptomatic hypoglycemia without any known risk factor.

Objectives: To assess the incidence of hypoglycemia in healthy full term neonates without any risk factors in our medical center and to correlate it with mother’s BMI, the initiating time of feeding and the difference between breast feeding and formula. To prove the benefit of universal neonatal screening of hypoglycemia in saving many full term newborns without any risk factors.

Materials and methods: A hospital based, prospective longitudinal study involving 282 healthy full term asymptomatic neonates. Blood glucose level was measured at 60 and 90 minutes of life using reagent strips and Glucometer independent of feeding time.

Results: According to the definition of hypoglycemia by the AAP (glycemia< 40 mg/dL) and PES (glycemia<50 mg/dL), the overall incidence of hypoglycemia in asymptomatic healthy full term newborns was 12.1% and 30.9% at 60 min respectively, while it was 1.1% and 17% at 90min respectively. There was no significant statistical association between BMI of the mother and hypoglycemia in neonates. However, the frequency of hypoglycemic episode in babies born at 37 weeks of gestation was higher than those born at 38 weeks and above with a significant P value of 0.0001. Neonates who were breastfed presented much less hypoglycemia than formula fed neonates with statistically significant P value of 0.0001. There was a higher incidence rate of hypoglycemia when feeding was initiated above 1 hour after delivery.

Conclusion: Delayed initiation of feeding, gestational age below 38 weeks and bottle fed infants were significantly associated with hypoglycemia. It is preferable to do a universal glycemic screening for all newborns to prevent transient neonatal hypoglycemia, which could have some deleterious consequences on the central nervous system and to start breastfeeding within 1 hour after delivery.

Keywords: Hypoglycemia, neonates, breastfeeding.
INCIDENCE RATE OF CONGENITAL HYPOTHYROIDISM IN NOTRE DAME DES SECOURS UNIVERSITY HOSPITAL BYBLOS - JBEIL – LEBANON

Author: Nicolas Georges¹, Nacouzi Mansour¹, Malouf Issam¹, Faddous Khalifeh Marie Claude¹
¹ Holy Spirit University of Kaslik, Faculty of medicine and medical sciences, Pediatric department, Centre Hospitalier Universitaire Notre Dame des Secours, Byblos, Lebanon

Background: Congenital hypothyroidism is one of the most common preventable causes of mental retardation with an incidence rate of 1/2000 to 1/4000 newborns worldwide.

Objectives: To determine the incidence of this disease in Notre Dame Des Secours University Hospital Lebanon and some characteristics factors of the disease such as sex, preterm delivery, maternal age, consanguinity, length, weight and head circumference at birth.

Materials and Methods: A total of 8364 newborns were screened by measuring newborn TSH, from January 2009 till December 2015. The technique was based on measuring venous blood TSH levels which is different from normal blood spots adopted for detecting congenital diseases. The sample included every newborn having a TSH level at birth >20mIU/L. All these newborns were followed and detailed medical record at birth were collected and analyzed using SPSS program.

Results: Out of 8364 screening test done, the number of newborn having TSH >20mIU/L was 669. When TSH repeated after 2-3 days, 636 patients presented a normal level while 33 children were diagnosed with congenital hypothyroidism (15 boys and 18 girls), giving an incidence of 1: 253. This number is uncommonly high. However, we noted the presence of a significant association between congenital hypothyroidism and the age of the mother (P value 0.03), newborn weight (P value 0.04) and gestational age (P value 0.01). The other variables studied (sex, length at birth, head circumference, consanguinity of the parents) were not significantly associated with congenital hypothyroidism. It was important to mention that 36 mothers out of 631 gave birth to 74 children having all TSH>20mIU/L at birth. Therefore, there is a possible relationship between having a child with TSH>20mIU/L and having another child from the same mother with TSH>20mIU/L.

Conclusions: The incidence of congenital hypothyroidism was 1/253 in our University hospital. The risk of having a baby with Congenital Hypothyroidism increased with increased maternal age. Whereas the risk decreased when the weight of the newborn increased: odds ratios of 0.8 (0.6-0.9) and decreased when the gestational age was ≥37 weeks: odds ratios of 0.3 (0.1-0.7).

Keywords: congenital hypothyroidism, serum TSH screening, incidence.
IMPROVING THE ECOSYSTEM OF PEDIATRIC CONDITIONS: MINDFULNESS AND COMPASSION TRAINING WITH FAMILIES AND THERAPISTS OF CHILDREN WITH ASD

Author: Fernandez-Carriba, Samuel
Marcus Autism Center at Children’s Healthcare of Atlanta. Department of Pediatrics, Emory University - Atlanta, GA, USA

Background: Pediatric populations require full participation of families and support professionals in their interventions. While healthcare professionals are at a higher risk of experiencing severe mental and physical illness than employees of any other industry, parents of children with Autism Spectrum Disorder (ASD) have a much higher incidence of depressive symptoms and stress than those of typically developing children. Despite research literature suggesting that mindfulness and compassion practice is associated with stress reduction and improvement of quality of life in several populations, we are not aware of any studies describing compassion based interventions for therapists of children with ASD or their families.

Objective: We offer evidence from several pilot studies conducted with families and therapists of children with ASD on the effects of CBCT (Cognitively-Based Compassion Training), a mindfulness and compassion meditation protocol developed at Emory University. Like traditional mindfulness programs, CBCT fosters self-regulation by bringing attention to the present moment experience. The compassion aspect of CBCT helps promote social-emotional regulation by helping practitioners develop understanding and positive connection with others.

Materials and Methods: Data was obtained from 9 caregivers in a quasi-experimental design (without a control group) and from 22 therapists in an experimental design (with a wait-list control group). Participants in the experimental groups received CBCT over the course of 8 weeks and completed pre- and post- self-reported measures on stress, quality of life and social competence. Mixed models were utilized to evaluate pre-post changes in the parents’ scores at the 0.05 significance level. Paired t-tests compared pre-post changes in experimental and control groups of therapists at 0.05 significance.

Results: In the parents, there was a significant decrease in perceived severity of the child’s symptoms (ABC) and in parent stress (PSI) as well as significant increase in acceptance (AAQ) and parenting sense of competence (PSOC). The therapists in the experimental study, but not in the control group, showed a significant decrease in stress (PSS) and increase in acceptance (AAQ) and cultural competence (CCC).

Conclusions: Overall, these results suggest that CBCT has the potential to: (1) help families accept their experience and utilize better the available social support, and (2) become an effective technique to reduce stress and increase social competence in providers.
A RANDOMIZED CONTROLLED TRIAL OF INTRANA SAL VASOPRESSIN TREATMENT FOR SOCIAL DEFICITS IN CHILDREN WITH AUTISM

Author: Antonio Hardan¹, Karen Parker², Joseph Garner³
¹ Stanford University, Department of Psychiatry, Stanford
² Stanford University, Department of Psychiatry and behavioral Sciences, Stanford
³ Stanford University, Department of Comparative Medicine, Stanford

Background: Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by social impairments and restricted, repetitive behaviors. Despite ASD’s prevalence, there are currently no medications that effectively treat its core features. Accumulating preclinical research suggests that arginine vasopressin (AVP), a neuropeptide involved in mammalian social functioning, may be a possible treatment for ASD.

Objective: The goal of this investigation is to examine the safety and efficacy of AVP in the treatment of social deficits in children with ASD.

Material and Methods: Using a double-blind, randomized, placebo-controlled, parallel design, we tested the efficacy and tolerability of 4-week intranasal AVP treatment in a sample of N=30 children with ASD aged 6-12 years.

Results: AVP compared to Placebo treatment significantly enhanced social abilities in children with ASD as measured by change from baseline in the trial’s primary outcome measure, the Social Responsiveness Scale (a parent-report measure). AVP-related social improvements were likewise evident on clinician impression and child performance-based measures. AVP treatment also diminished anxiety symptoms and some restricted/repetitive behaviors. An endogenous blood AVP concentration by treatment group interaction was also observed, such that participants with the highest pre-treatment blood AVP concentrations benefitted the most from AVP (but not Placebo) treatment. AVP was well tolerated with minimal side-effects. No AVP-treated participant dropped out of the trial, and there were no differences in adverse event rates reported between the AVP and Placebo groups. Finally, no significant changes from baseline were observed in electrocardiogram, vital signs, height and weight, or clinical chemistry measurements after 4-week AVP treatment.

Conclusions: These findings suggest that intranasally administered AVP is a well-tolerated and promising medication for the treatment of social impairments in children with ASD.
AUDIT ON DEVELOPMENTAL COORDINATION DISORDER BASED ON DSM V CRITERIA

Author: Varsha Sadavarte¹, Rula Alaraji²
¹ Royal Stoke University Hospital University Hospitals of North Midlands NHS Trust Newcastle Road, Staffordshire ST4 6QG, PAEDIATRICS, STOKE ON TRENT
² QMC, PAEDIATRICS, NOTTINGHAM

Introduction: Developmental Coordination Disorder (DCD), also referred to as Dyspraxia, is a common disorder that affects fine and/or gross motor coordination in children. The "DSM V Diagnostic Criteria for Developmental Co-Ordination Disorder" highlights the need for occupational therapy as well as paediatrics assessment to diagnose DCD.

Objectives:

• To assess if the local practice has been following DSM-V criteria for diagnosing DCD
• To define the age at diagnosis or problem recognition
• To identify associated comorbidities

Methods: Random selection of 30 patients from the local Community database using search words: dyspraxia, DCD and developmental coordination disorder (the terms were used in the problem list for those patients after 2013).

Results:

• DCD (and/or Dyspraxia) diagnosis was made at 7-8 years in all cases, 63% were boys
• Approximately 50% of children had the term DCD and/or Dyspraxia used but about 25% had DCD term used only
• About 1 in 2 children met the criteria for diagnosis of DCD (48%)(wherein diagnosis was given solely by paediatrician)
• Associated motor skills delay was recorded in 1 out of 4 cases, a quarter had behavioural issues, 23% developmental delay, 1 in 5 had learning difficulty, 16% hypermobility, and only 1 case had associated diagnosis of ADHD
• 4 out of 30 children had chromosomal abnormality detected on microarray (13%)

Conclusions:

• DCD diagnosis was made for the appropriate age range as being described in the literature. A DSM-V criterion requires an occupational therapist assessment alongside the paediatrician assessment.
• Variety of terms used to describe developmental coordination disorder; however a unified use of DCD term provides clearer description of the condition. Appropriate use of terminology avoids clinical and parental confusion
• Most of the children had associated problems like motor skills or developmental delay which reflect the complexity of making this diagnosis and the need for early intervention and support to improve outcome
D-LACTATE LEVELS REDUCTION CORRELATIONS WITH REDUCED LIPIDS IN OBESE CHILDREN AFTER SHORT-TERM FRUCTOSE RESTRICTION

Author: Alejandro Gugliucci1 Yasmin Bains1 Susan M Noworolski2, Kathleen Mulligan3, Ayca Erkin-Cakmak5, Robert H Lustig5, Jean-Marc Schwarz1
(1)College of Osteopathic Medicine, Touro University California, Vallejo, (2) Medicine, University of California San Francisco, (3) Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, (4)CTSI-CRS, University of California San Francisco, (5)Pediatrics, University of California San Francisco

Background: Fructose is an important lipogenic molecule. It increases both fatty acid synthesis and triose phosphate fluxes, which generate methylglyoxal (MG), implicated in diabetes pathogenesis. MG is detoxified to D-lactate which is a surrogate marker of whole body MG production. We hypothesized that fructose restriction leads to decreased MG and therefore D-lactate production.

Objective: We determined the effect of 9 days of a fructose- but not calorie- restricted diet on D-lactate levels in obese children with high habitual dietary sugar intake.

Design/Methods: Twenty high sugar consumer obese children BMI z-score 2.4 ± 0.1), (average fructose intake >50 g/day), had all meals provided for 10 days with the same caloric, CHO and macronutrient composition as their standard diet (reducing fructose from 12 to 4% of total caloric intake). D-lactate was measured with a specific enzymatic assay. Insulin, lipids, glucose were measured using standard methods on Day 0 (high fructose) and Day 10 (low fructose).

Results: D-lactate levels were significantly reduced (38%) after fructose restriction from 6.0 +/- 2 umol/l to 3.7 +/- 1.5 umol/l; p<0.0001). D-lactate levels at baseline correlated positively with TG, LDL-C, and TG/HDL-C ratio (r=0.39, 0.55 and 0.36 respectively, p<0.01) and negatively with HDL-C, r=0.3, p <0.05. Percent changes (Day 0-Day 10) in D-lactate levels correlated positively with percent changes in TG, LDL-C, and TG/HDL-C ratio (r=0.43, 0.36 and 0.36 respectively, p<0.01).

Conclusions: This is the first mechanistic evidence for a link between fructose consumption, MG fluxes, and therefore, glycation, which is a key contributor to diabetes complications.
THE ROLE OF OSTEOPROTEGERIN IN THE PATHOGENESIS OF RICKETS

Author: V.A. Shcherbak, I.G. Kargina, P.P Tereshkov, N.M. Shcherbak
Chita State Medical Academy

Introduction. In 1997 glycopeptide, later called osteoprotegerin (OPG), was isolated from rat intestinal cells. This molecule belongs to the superfamily of tumor necrosis factors. Concentration of OPG in rickets has not been studied before, so we attempted to clarify its role in the development of rickets.

Objective. To investigate the level of OPG in children with rickets.

Materials and methods. 68 children aged 3 months to 2 years with rickets were examined. 1st degree of rickets was diagnosed in 42 children, the 2nd - in 26. Acute course was in 48, subacute - in 20 children. As a control, 18 healthy children were examined. The study of OPG in serum was performed by ELISA using Ray Biotech kits (USA). Median and interquartile range (from 25 to 75 percentile) were determined.

Results. It was registered that the concentration of OPG at the 1st degree of rickets was 37 [25; 62], with the 2nd degree - 58 [42; 92] pg/ml, which is 1.4 and 2.1 times higher than in healthy children (27 [14, 49] pg/ml, p <0.05). In patients with subacute rickets, the content of OPG was 63 [42; 74], which is 34% higher than acute (47 [36, 89] pg/ml, p <0.05). OPG inhibits the maturation of osteoclasts, thereby contributing to an increase in bone density. For the subacute course of rickets, the predominance of osteoid hyperplasia over the processes of osteomalacia is typical. The increased OPG concentration that we have determined logically explains these processes. Another possible reason for the increase in the level of OPG is its antagonism to parathyroid hormone.

Conclusion. Remodeling of bone tissue is a complex process that helps the development, maturation and preservation of bone matrix. This process is especially intense in rickets. The obtained data allow revealing the role of osteoprotegerin in the development of osteoid hyperplasia. The level of osteoprotegerin in rickets is increased, especially in subacute disease. This glycopeptide promotes the growth of bone tissue, which is typical of the subacute course of rickets.

Keywords: rickets, osteoprotegerin, children.
NANOSTRUCTURED LIPID CARRIERS (NLC) FORMULATIONS OF HYDROCHLOROTHIAZIDE AIMED FOR PEDIATRIC THERAPY: EFFECT OF CYCLODEXTRIN COMPLEXATION

Author: Marzia Cirri¹, Francesca Maestrelli¹, Natascia Mennini¹, Paola Mura¹, Carla Ghelardini², Lorenzo Di Cesare Mannelli²

¹Department of Chemistry, School of Human Health Sciences, University of Florence, Via Schiff 6, Sesto Fiorentino I-50019, Florence, Italy
²Department of Neuroscience, Psychology, Drug Research and Child Health (NEUROFARBA), Pharmacology and Toxicology Section, University of Florence, Florence, Italy

Background: Hydrochlorothiazide (HCT) is a diuretic drug often used in hypertension treatment of pediatric patients. Extemporaneous liquid pediatric formulations of HCT are often prepared in hospital pharmacies. It has limited and variable bioavailability, due to its low solubility and permeability. Moreover, its limited stability in aqueous solution makes the possibility of developing stable aqueous HCT liquid formulations very difficult. Liquid lipid-based nanocarriers, such as NLC, represent a promising and versatile approach for delivery of hydrophobic drugs. Cyclodextrin complexation is a successful strategy widely used to enhance solubility, dissolution rate and thus the bioavailability of poorly soluble drugs, including HCT.

Objective: The aim of this study was to investigate the effectiveness of simultaneously exploiting the advantages of both cyclodextrin (Cd) complexation and nanostructured lipid carriers (NLC) by joining them in a unique drug delivery system, loading the drug-Cd complex into the lipid nanoparticles, to finally obtain a stable and effective oral liquid formulation of HCT.

Materials and Methods: Equimolar HCT binary systems with HP\(^\text{β}Cd\) and SBE\(^\text{β}Cd\) were prepared as physical mixtures (P.M.) or co-ground products (GR) obtained by a high-energy vibrational micromill. NLC based on two different non-ionic surfactants were prepared by hot high-shear homogenization technique followed by ultrasonication and characterized for particle size, Polydispersity Index, Zeta-potential, Entrapment Efficiency (EE%), gastric stability and in vitro release properties. The NLC diuretic activity was evaluated by in vivo studies on rats. Their stability during storage was also monitored.

Results: Loading of HCT:HP\(^\text{β}Cd\) systems, both as P.M. or GR product, allowed the formation of homogeneous and stable NLC, with increased EE% compared to HCT-loaded NLC. Instead, the presence of the HCT:SBE\(^\text{β}Cd\) system hampered nanoparticles formation. Only NLC containing polyoxyethylene-sorbitan-monooleate as surfactant showed a good gastric stability. The presence of HP\(^\text{β}Cd\), due to its solubilizing and wetting properties, enabled to enhance the HCT release rate from NLC formulations compared to those containing the plain drug, with a more marked effect in the case of NLC loaded with the HCT:HP\(^\text{β}Cd\) GR system. These latter NLC formulations showed a significantly (P<0.01) more intense and prolonged diuretic effect in vivo on rats, not only than a simple HCT aqueous suspension, but also than the corresponding NLC formulation loaded with the plain drug.

Conclusions: The actual usefulness of the proposed strategy based on the drug complexation with a suitable cyclodextrin, and the loading of the complex into NLC for developing an oral liquid formulation of HCT aimed for pediatric use was demonstrated.
SHOULD WE SCREEN LIPID DISORDER IN ALL OUR LEBANESE CHILDREN AGED BETWEEN TWO AND TEN YEARS OLD?

Author: Nicolas Georges 1, Akiki Simon 2

1Pediatric Endocrinology, Centre Hospitalier Universitaire Notre Dame de Secours, Jbeil, Lebanon, 2Holy Spirit University of Kaslik, Faculty of medicine and medical sciences, Centre Hospitalier Universitaire Notre Dame de Secours, Lebanon.

Introduction: Dyslipidemia has been recognized as a risk factor for cardiovascular diseases. Studies showed that the development of atherosclerotic lesions begins in childhood and progresses throughout life. While the prevalence of dyslipidemia in adults has been reported to be 10 times higher in Lebanon, there is no available data on the prevalence of dyslipidemic children in Lebanon.

Objectives: This study was conducted to check if a protocol for universal screening for lipid disorder in Lebanese children aged between two and ten years old is needed.

Materials and Methods: A total of four hundred children aged 2 to 10 years old (51.5% boys) were included in the study. These subjects were recruited from private pediatric clinics after parental consent. Fasting total cholesterol (TC), triglycerides (TG), LDL, HDL levels were measured and non-HDL cholesterol was calculated. The values were categorized according to 2011 Expert on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents.

Results: The overall prevalence of high TC (≥200 mg/dL), high non-HDL-C (≥145 mg/dL), high LDL (≥130 mg/dL), high TG (≥100 mg/dL) and low HDL (<40 mg/dL) was respectively 19.5%, 23%, 19%, 31.8% and 20%. The overall frequency of dyslipidemia was 51.7%. In a bivariate analysis, dyslipidemia in children is associated with a BMI ≥ 95th percentile and parents having TC >240 mg/dL with a P value respectively of 0.006 and 0.0001. Furthermore, high TG is independently associated with a BMI ≥ 95th percentile (P=0.0001). Children with parents having TC >240 mg/dL is significantly correlated with high TC, high non-HDL-C and high LDL (P=0.0001 for all variables). Finally, according to the Pediatric dyslipidemia screening guidelines from the 2011 Expert Panel, 62.3% of dyslipidemic children had at least 1 risk factor that qualified them for screening while 37.7% of them didn’t have any risk factor.

Conclusions: We might need to reconsider the latest pediatric dyslipidemia screening guidelines by performing a universal screening program because we are missing 37.7% of our dyslipidemic Lebanese children and a healthier diet should be recommended for all age groups.

Keys words: dyslipidemia, screening, Lebanese children.
INTRODUCTION: Pesticides are identified as one of the dangerous poisons globally in children and are associated with increased short and long term morbidity. Pesticide poisoning is the most common method of self-poisoning among adults in rural Sri Lanka and the clinical management is associated with significant healthcare costs to the country. There is however little data published on acute pesticide poisoning among children in rural Sri Lanka.

OBJECTIVES: The current study aimed to comprehensively evaluate clinical profiles, harmful first aid measures, emergency clinical management, complications, outcomes and risk factors related to acute pesticide poisoning among children in the rural community of Sri Lanka.

METHODS: This multicenter study was conducted in North-Central province of Sri Lanka involving all inpatient children with pesticide poisoning and who were between 9 months and 12 years of age. Data were collected over seven years and children from thirty six hospitals in the province were recruited. Data collection was carried out by a pretested, multi-structured, interviewer administered questionnaires and a qualitative study. Qualitative study recruited all children with pesticide poisoning and their parents at Anuradhapura teaching hospital and data collection was done via focused group discussions over two years.

RESULTS: Among 1621 children with acute poisoning, 9.5% (155) comprised children with acute pesticide poisoning. Male children outnumbered female children and the majority of children were less than five years. Most common poisons used were organophosphates and carbamates. Gastrointestinal and neurological symptoms were predominant clinical features. Limited transport and lack of concern regarding urgency among caregivers were leading reasons for delayed management. Most common location for poisoning was cultivation lands. Harmful first aid measures were practiced in 32.4%. 7.1% had intentional pesticide poisoning. The case fatality rate of all pesticide poisonings in the study was 1.9%. 58.1% of patients were transferred between regional hospitals and the teaching hospital. Cardiac and respiratory arrests, aspiration pneumonia and convulsions were among reported complication. Pesticide use by care givers, unsafe storage of pesticides and inadequate supervision were major risk factors for acute pesticide poisoning among children.

CONCLUSIONS: Acute pesticide poisoning in paediatric age group (<12 years) is a relatively uncommon yet significant cause of child health related morbidity and mortality in rural Sri Lanka. Patterns of poisoning represent the pattern of pesticide use by the rural community. The practice of harmful first aid measures by care givers and delay in attending the emergency department negatively impact patient outcomes.

KEY WORDS: Pesticide poisoning, Patterns, Children
ORBITAL COMPLICATIONS SECONDARY TO RHINOSINUSITIS-TRENDING CHANGE TOWARD CONSERVATIVE MANAGEMENT

Author: Eviatar Ephraim,
Sackler Faculty of Medicine, Tel Aviv University, Tel-Aviv, Israel.

**Background:** Orbital complications secondary to rhinosinusitis are rare. These complications have potential to develop severe consequences such as blindness and even death. The prevalence is about 1-3% while the majority of the involved population is children. According to Chandler's classification there are 5 stages while stage 1 (periorbital cellulitis) and stage 3 (subperiosteal abscess) are the most frequent. Stage 3, an abscess, may be managed by performing CT scan and surgically. Conservative management of no performing CT scan that prevent non necessary radiation exposure and no surgery has great advantage.

**Observation:** We found that 130/290 (46%) patients with orbital complication performed CT scan. While only 46% of the children with subperiosteal abscess were managed surgically. There are number of factors that can help us to prefer conservative management upon surgical of orbital complications: Age, ophthalmologic status, volume and dimensions of the subperi orbital abscess.

**Key message:** For summary young children, with unharmed ophthalmologic status, with small abscesses should be managed conservatively, without surgery and even without performing CT scan.
GUT MICROBIAL CHANGES AFTER FECAL TRANSPLANT IN CHILDREN WITH ULCERATIVE COLITIS.

Author: Sonia Michail
University of Southern California

Ulcerative colitis is a chronic inflammatory disease of the colon that carries a significant disease burden in children. Therefore, new therapeutic approaches are always being explored to help children living with this disease. Fecal microbiota transplantation (FMT) has been successful in some children with ulcerative colitis. However, the mechanism of its therapeutic effect in this patient population is not well understood. To characterize changes in gut microbial and metabolomic profiles after FMT, we performed 16S rRNA gene sequencing, shotgun metagenomic sequencing, virome analysis and untargeted GC-MS/TOF metabolomic profiling on stool samples before and after FMT from 4 children with ulcerative colitis that responded to treatment. Alpha diversity of the gut microbiota increased after intervention, with species richness rising from 251 (± 125) to 358 (± 27). The mean relative abundance of bacteria in the class Clostridia shifted toward donor levels, increasing from 33% (± 11%) to 54% (± 16%). Patient metabolomic and viromic profiles exhibited a similar but less pronounced shift toward donor profiles after FMT. The fecal concentrations of several metabolites were altered after FMT, correlating with clinical improvement. Larger studies using a similar approach may suggest novel strategies for the treatment of pediatric ulcerative colitis.
IMAGING OF AN UNUSUAL PRESENTATION OF MALIGNANT LYMPHOMA AS LARGE MASS OF THE LEFT HEMITHORAX WITH RIB DESTRUCTION AND SPINAL CANAL EXTENSION IN AN INFANT

Authors: Tereschenko G.V1., Ternovaya E.S1., Scherbakov A.P1., Laberko A. L2., Scherbina A.U.2, Abramov D.S3.
1Dmitry Rogachev National Research Center of Pediatric Hematology, Oncology and Immunology, Department of Radiology, Moscow, Russia - 2Dmitry Rogachev National Research Center of Pediatric Hematology, Oncology and Immunology, Department of Immunology, Moscow, Russia - 3Dmitry Rogachev National Research Center of Pediatric Hematology, Oncology and Immunology, Department of Pathology, Moscow, Russia

Keywords: computed tomography, mediastinal lymphoma

Background: The most common malignant tumors presenting in children as chest wall masses are those in the family of Ewing sarcoma, followed by rhabdomyosarcoma. Hodgkin disease rarely develops as a chest wall mass in the pediatric patients. We present a case report imaging of chest wall tumor with osseous involvement that turned out to by lymphoma in an infant. Based on imaging results and patient’s age differential diagnosis constituted of neuroblastoma, rabdomyosarcoma or Ewing sarcoma.

Observation: Two months old female was referred to Dmitry Rogachev National Research Center of Pediatric Hematology, Oncology and Immunology for evaluation, differential diagnosis and treatment with febrile temperature, recurrent pneumonia and mass in the left hemithorax with rib destruction detected by plain radiography. Patient has undergone computed tomography and magnetic resonance imaging with bolus contrast enhancement of the chest, neck areas and the spine. The CT scan was performed with 16 slice computed tomography. Contrast agent was calculated as 1,5ml/kg and administration speed was 0,7 ml/sec. Chest CT showed posterior mediastinal large, homogenous soft tissue mass in the left thoracic paravertebral region. Also were detected structural destruction of the adjacent rib and mass extension to the soft tissue and muscle layers of the neck and back. The tumor had gradual and uneven enhancement after contrast administration. No calcifications were detected. MRI was performed with 1.5T scanner and revealed extension of the tumor through intervertebral foramen of the C6-C7 and C7-Th11 vertebrae into epidural space without spinal cord compression. As well was diagnosed encasing of the left common carotid artery by the tumor masses. Imaging studies were followed by biopsy of the mass, which showed results consistent with Hodgkin’s lymphoma. Further laboratory work up also revealed primary immunodeficiency: severe combined immunodeficiency (T-B+NK(low)), lumbar puncture revealed presence of Epstein-Barr virus.

Key message: Hodgkin disease and non-Hodgkin lymphomas comprise 10%–15% of all childhood cancers. Lymphomas in the chest wall account for less than 2% of soft-tissue tumors. Mediastinal lymphoma at such young age is extremely rare. Tumor localization in the posterior mediastinum is atypical and it is more common for neurogenic tumors. Lymphomas rarely cause bone destruction unless primary lymphoma of the bone. Lymphomas rarely spread into soft tissues of the back. Imaging studies with pathological and laboratory correlation allowed for correct diagnosis and patient was started on treatment with positive response.
INFLUENCE OF VESICO-URETERAL REFLUX ON GROWTH

Author: Nicolas Georges1, Hneineh Roula1
1Pediatric endocrinology, Holy Spirit University of Kaslik, Faculty of Medical Sciences, Kaslik, Lebanon, Notre Dame de Secours University Hospital-Byblos

Background: Vesico-ureteral reflux (VUR) is the most common urologic abnormality seen in children. It represents the backflow of urine from bladder to upper urinary structures due to a defect in closure of uretero-vesical junction. This condition predisposes children to repetitive pyelonephritis associated with renal scarring.

Objective: Studies are continuously searching for the potential effect of VUR on growth. We aimed to assess growth indices: height z-score (HZ), Ideal body weight percent (IBWp) and percent of actual weight over median weight for age (MWAp) in children with VUR at presentation and at time of study and to compare them with those of children with pyelonephritis without VUR.

Materials and methods: We included children aged between 0 and 6 years old with a normal renal function admitted in our center for pyelonephritis. However, children with chronic diseases affecting growth were excluded. The children who met above criteria (112 children) were divided into 3 groups according to voiding cystography results: G1( VUR grade 1-2 ), G2(VUR grade 3, 4, 5) and G3 (no VUR).

Results: Our data showed no significant difference between the 3 groups concerning sex, age groups, consanguinity, gestational age, height and weight at birth. However, we noted a strong association between VUR and ESBL infection (p=0.0001), and history of previous pyelonephritis (p=0.0357). Growth indices HZ and MWAp were significantly lower in G2 than in other groups at presentation and at time of study (p=0.0001 for both). In contrast, no significant change was detected in IBWp neither at presentation nor in at time of study. No significant association was found between reflux laterality and growth indices. We also noted a significant improvement in HZ (p=0.01) and in MWAp (p=0.0168) following surgical treatment, while no significant change was recorded in growth indices following antibiotic prophylaxis.

Conclusion: VUR might have a negative impact on growth depending on severity and surgical treatment was shown to improve growth indices. So, an early detection and surgical correction especially for severe cases of VUR might prevent growth retardation.

Key words: Vesico-ureteral reflux, pyelonephritis, growth indices.
DOES WARM CLIMATE INCREASE THE RISK OF NEPHROLITHIASIS IN CHILDREN?

Author: Rahime Renda
Antalya Research and Education Hospital, Antalya, Turkey

Introduction: Different environmental and genetic factors were determined in urolithiasis. The most common metabolic abnormalities are hypercalciuria and hypocitraturia.

Objective: To determine the demographic data and clinical features in patients with nephrolithiasis in the pediatric group.

Materials and Methods: We retrospectively evaluated the clinical, radiological, laboratory findings and metabolic risk factors of 129 children (74 boys and 55 girls) with nephrolithiasis between 2015 and 2017. Patient symptoms, urinary infection, metabolic disturbances, radiological findings and treatment modalities were determined.

Results: The mean age of children were $7.2 \pm 3.4$ years. The most common symptoms were macroscopic hematuria and renal colic. Urinary tract infection in 17 cases (13%) and 64 cases (50%) have calculus which was located bilaterally in the kidneys. Hyperuricosuria in 44 cases (34%), hypercalciuria in 15 cases (11%), hypocitraturia in 12 cases (9%), hyperoxaluria in 12 cases (9%) and cystinuria in 3 cases (2%) were found.

Conclusion: We think that living in warm climates increase the risk of harboring kidney stones due to dehydration, which leads to a high excretion of urinary calcium and other minerals that promote the growth of kidney stones.
**Pediatric patient safety and quality improvement**

**WSP-OP038**

**DO PATIENTS AND THEIR CARERS FIND IT ACCEPTABLE TO USE TECHNOLOGY TO IMPROVE THEIR CARE? EVALUATION OF A PATIENT WEB PORTAL IN PAEDIATRIC DIABETES**

*Author: Anna Maria Czesak¹, Nicholas Conway², Evridiki Fioratou¹*

¹ Medical School, University of Dundee, Dundee, United Kingdom ² Department of Paediatrics, NHS Tayside, Dundee, United Kingdom

**Background:** Paediatric chronic diseases, such as diabetes, are challenging to manage. Self-management involves not only patients but also their parents or carers as well as technology. Patient Web Portals with an access to educational materials, online communication tools, and electronic Personal Health Records, are one way of addressing issues in self-management and improving healthcare. This case study explores a Patient Web Portal in Scotland, and acceptance towards such websites in users and non-users for both patients and their parents or carers, using the Technology Acceptance Model and Systems Engineering Initiative for Patient Safety model.

**Observation:** The data collection is still ongoing and will finish at the end of April 2018. Questionnaires were distributed in paper and online versions. Online versions were send to the patients via their emails, and paper copies were distributed in clinics, patients were approached before their clinic appointment when they were in a waiting area.

Preliminary results show that majority of people answering the questionnaire are non-users of the Portal. The main reasons are lack of knowledge of what the Portal is and what benefits it could have. There are also conflicting priorities and unwillingness to explore more about disease than what is necessary.

**Key message:** Creating Patient Web Portals is a substantial part of quality improvement. However, just as important is exploring reasons behind whether patients are willing to use them and their opinions on perceived usefulness and ease of use of them. Those factors are essential to optimise use of resources and act in patients’ best interest. Our preliminary results show that patient education in what is available for them and how they could incorporate it, is crucial.

**Keywords:** paediatric diabetes, patient web portal, quality improvement
DOES EARLY EXPOSURE TO GENERAL ANESTHESIA AFFECT CHILDREN’S LEARNING FROM 5 TO 10 YEARS? A CROSS SECTIONAL STUDY

Author: El Khoury Berthe¹ Makhoul Ghais² Al Ojaimi Mode³, Abi Fares Georges.¹, Fadous Khalife Marie-Claude.¹

¹Holy Spirit University of Kaslik, Kaslik, UH Notre Dame des Secours, Byblos, Lebanon
²Haykal Hospital, Tripoli, Kobayat hospital, Kobayat, Lebanon
³Balamand university, Koura

Introduction: The harmful effects of general anesthesia at a young age were clearly proven in animal studies; anesthesiologists tried to extrapolate these risks to human with lack of causality and evidence. We are presenting a pediatric study done in pediatric clinics looking for learning disabilities in children who have undergone surgery before the age of 5.

Objective: Determine if exposure to anesthesia, mainly general anesthesia, early in life is associated with development of learning disabilities and difficulties later in childhood between 5 to 10 years of age.

Materials and methods: A double questionnaire was distributed in the pediatricians’ clinics. The target population was Lebanese children attending school aged 5 to 10 years. The first questionnaire asks parents about the operative history and educational difficulties of their child. The second is based on three parts of the WISC score with color exercises adapted to each age group: 5-6, 7, 8-9 and 10 years.

Results: A total of 478 Lebanese children were recruited, 102 exposed to general anesthesia and 376 unexposed. No significant results were found regarding the presence of learning problems in children exposed early to general anesthesia for surgical procedures (P=0.186) as well as working memory, verbal comprehension and perceptual reasoning. Certain criteria were negatively influenced, especially difficulty with spelling (P=0.039). However, development of post op complications was related to the appearance of slow reading (P=0.043), difficulties with math (P=0.032) and affected the verbal comprehension (P=0.044).

Conclusion: Early single exposure to general anesthesia is without side effects on learning abilities of children aged 5 to 10 years of age. Further studies are needed to confirm our results and reassure parents of the intellectual safety of their children exposed to general anesthesia.

Key words: anesthesia, learning disabilities.
A HUMAN FACTORS APPROACH TO TRANSITION PROCESSES FROM PAEDIATRIC TO TEENAGE SERVICES FOR TYPE 1 DIABETES

Author: Caitlin Finnan1, Evie Fioratou1, Louise Gannon2
1Human Factors Research Lab, School of Medicine, University of Dundee, Dundee
2Paediatric Unit, Ninewells Hospital, Dundee

Background: In Scotland, no gold-standard approach exists to the transition of a young person with type 1 diabetes (T1DM) from paediatric to adult services. Poorly structured transition programmes increase patients’ risk of developing diabetes-related complications. This leads to adverse patient outcomes, creates additional workload challenges for healthcare professionals, and incurs a significant cost burden to healthcare services. A ‘transition clinic’ – collaboration between paediatric and adult diabetes services – was introduced into NHS Tayside’s diabetes service, to improve experiences of transition for young people with T1DM.

Objective: This project uses a human factors approach – the Systems Engineering Initiative for Patient Safety (SEIPS) model – to evaluate teenage patient and healthcare professionals’ experiences of the current diabetes transition process in Tayside, comparing a transition clinic system to conventional diabetes clinic systems.

Materials and Methods: A mixed-methods design was implemented, including document analysis of guidance on diabetes transition (n=2 documents), observation of diabetes clinics in NHS Tayside (n=5 observations), patient (n=2) and healthcare professional (n=6) questionnaires. Document analysis identified ‘Work-As-Imagined’ – a theoretical description of transitional care delivered by NHS Tayside. Clinic observation identified ‘Work-As-Done’ – a realistic description of transitional care delivered by NHS Tayside. Questionnaires identified ‘Work-As-Perceived’ – a description of transitional care as experienced by patients and healthcare professionals. Deductive thematic analysis was performed on all collected data, using SEIPS model, to identify work-system elements which act as barriers or facilitators to diabetes transition.

Results: National recommendations on diabetes transition are incorporated into local diabetes policies, with 83.3% of healthcare professionals who participated in a questionnaire finding these recommendations helpful. Patients displayed favourable views towards their transitional care and described the diabetes clinic environment as ‘friendly’. Opinion was split amongst healthcare professionals regarding whether the environment of diabetes clinics acted to facilitate or impede transition. Use of tools/technologies in diabetes appointments acts to facilitate transition. 50% of healthcare professionals thought a standardised approach to diabetes transition would be useful. Healthcare professionals regarded the ‘transition clinic’ as a gold-standard approach to transition.

Conclusions: Human factors can be used to create a systematic description of diabetes clinics involved in transitional care. Identifying work system elements as imagined, as done, and as perceived, which act as barriers or facilitators to successful diabetes transition, can help re-engineer current work systems in healthcare that need improvement.

Keywords: Type 1 Diabetes; Transition; Human Factors
THE IMPORTANCE OF RATIONAL DRUG USE AND RESPONSIBILITIES OF NURSE IN PROVIDING PATIENT SAFETY IN CHILDREN

Author: Ayla Kaya1, Şerife Tutar Güven1, Ayşegül İşler Dalgıç1
1 Akdeniz University, Faculty of Nursing, Pediatric Nursing Department, Antalya/TURKEY

Background: Rational drug use is defined as “the set of all the rules required to be followed in order for patients to get medications in accordance with their clinic requirements, in doses that will meet their personal needs, within sufficient time period and in the lowest cost for them and the society”. Using the drugs safely is one of the most principle responsibilities of the nurse. Therefore, pediatric nurses should be aware of the main principles in drug therapy and provide the safe administration of drugs.

Objective: The purpose of this literature review is to draw attention to the importance of rational drug use in children and to the responsibilities of nurses concerning rational drug use.

Materials and Methods: This research is literature review article.

Results: According to the estimations of the World Health Organization, more than half of all drugs are prescribed, supplied or sold improperly. When considering that some of this rate consists of unsafe medication by the healthcare professionals, rational drug use is one of the issues to be primarily addressed. Especially, medication in children are considerably different from adults and this brings along many responsibilities. Since all organs particularly organs such as liver and kidneys are immature in children compared to adults, the possible side effects may be life-threatening. Therefore, problems related to drug use may lead to an increase in mortality and morbidity and a damage in the country’s economy with unnecessary drug consumption requiring high cost. When taking into account all of these, pediatric nurses bear significant responsibilities in treatment of outpatient or inpatient pediatric patients. In accordance with these responsibilities, it is very important to share evidence-based information with the patients and their family based on the philosophy of family-centered care; to provide training and counselling for drug use on especially chronic illnesses; and to create awareness on rational drug use in the community.

Conclusions: It is seen that irrational drug use is a significant health problem today and carries significant risks especially in pediatric patient groups. Many healthcare professionals have important responsibilities in this matter. Especially nurses are in the key position in matters such as decreasing gradually increasing rate of drug use; using medications and nonpharmacological methods; and training of the patients and their families. Thus, pediatric nurses should be aware of this subject and pay necessary attention to the rational drug use in order to maintain their health service successfully.
LOW LEVEL OF VITAMIN D IN CHILDREN INCREASES THE RISK OF LOW ENERGY FRACTURES – A SINGLE CENTER STUDY.

Author: Nicolas Georges 1, Hoyek Fady 1, Assaf Elias 1, Akiki Simon 1
1Pediatric department, Centre Hospitalier Universitaire Notre Dame de Secours, Jbeil, Lebanon, Holy Spirit University of Kaslik, Faculty of medicine and medical sciences.

Introduction: The physiological process by which vitamin D regulates calcium and phosphorus metabolism, the major mineral constituents of bone tissue, is by far very well understood. However, the clinical implementation of vitamin D deficiency on bone fragility in childhood remains controversial.

Objective: The aim of this case-control study is to investigate the prevalence of vitamin D deficiency among Lebanese children who experienced a “low-energy” fracture in our center.

Materials and Methods: A total of 37 cases and 70 control patients were included in this study. All healthy children admitted to the emergency department between 1 and 15 years of age were potential candidate for this study. Fracture was confirmed by conventional X-ray radiography and 25-HydroxyVitamin D level of the same candidates was measured.

Results: A total of 19 patients out of the 37 cases were suffering from vitamin D deficiency (25-hydroxyVitamin D < 20 ng/ml), whereas only 13 out of the 70 control candidates were found to have deficiency in vitamin D. A statistically significant relationship between D hypovitaminosis and low energy fractures has been noticed among children between 1 and 15 years of age who presented to the emergency department of Notre-Dame des Secours University medical Center (OR: 4.63; 95% CI: 1.92 – 11.18; X²: 12.41, P-value: 0.000428).

Conclusion: A relation has been established between vitamin D deficiency and low energy fractures in Lebanese children. However, the reasons behind D hypovitaminosis, despite sufficient amount of sun light exposure, in Lebanese pediatric population are still to be considered. Furthermore, a larger sample and multicenter study will be needed to determine if a relationship exists between the severity of vitamin D deficiency and the frequency of fractures and their complications.

Key Words: Vitamin D, Low energy fracture, Children
THE SIGNIFICANCE OF THEURAPETIC GAMES IN PEDIATRIC NURSING

Author: Şerife Tutar Güven¹, Ayla Kaya¹, Ayşegül İşler Dalgɩç¹
¹ Akdeniz University, Faculty of Nursing, Pediatric Nursing Department, Antalya/TURKEY

Background: Games play a crucial role for children to express themselves and to cope with stress during hospitalization processes. Theurapetic games are the core of psychosocial and cognitive development activities that improve child’s emotional and physical well-being. It has been suggested that theurapetic games reduce stress and traumas caused by the disease and hospitalization processes, help children to cope with stress before, after, and during the medical intervention, and enable the evaluation of child’s emotional reactions against medical interventions.

Objective: This review aims to highlight the significance and efficiency of theurapetic games in nursing care.

Materials and Methods: This research is literature review article.

Results: As children express their feelings verbally and/or nonverbally through games, theurapetic games are utterly functional for nurses explore children’s world. Theurapetic games are basically structured games and they should be structured in accordance with the child’s age, clinical condition, and cognitive development. Children may be allowed to play with medical masks, nursing uniforms, syringes, and stethoscopes.

Conclusions: Nurses can demonstrate how to insert venous cathethers on a teddy bear or baby doll. It is recommended to use theurapetic games in coping with painful and agitative interventions, preparing children for surgical or invasive interventions, and routing pediatric nursing practices based on atraumatic care philosophy.
HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS IN A PATIENT WITH CYSTIC FIBROSIS

Authors: Ipek Burcu Parlak Ibis, Cahit Baris Erdur, Erhan Ozbel, Irem Bato, Kiyemet Karagoz, Zeynep Izem Peker Bulgan, Ferah Genel
Department of Pediatrics, Dr. Behcet Uz Children's Hospital, Izmir

Background: Hemophagocytic Lymphohistiocytosis (HLH) is a rare but a potentially lethal condition. It is characterized by activation of T lymphocytes and macrophages, excessive production of proinflammatory cytokines and hemophagocytosis resulting in fever, organomegaly and cytopenia. This condition may occur as primary (genetic) or secondary. In the previous literature, HLH associated with cystic fibrosis has not been reported.

Observation: A four months old male infant with previously diagnosed as cystic fibrosis admitted to our hospital for pulmonary infection. In his previous history, several times of hospitalization for pulmonary infections and gastroenteritis were present. His parents were third degree relatives. He had a history of sibling dead because of cystic fibrosis when he was 8 months old. On admission he was tachypneic. Chest X-ray revealed bilateral consolidation and atelectasis. With the diagnosis of pneumonia ampicillin-tazobactam treatment was initiated. Because of inadequate clinical response, vancomisin was added on the fourth day. However fever, increase in C-reactive protein and transaminases continued. Macular skin rashes on the face, trunk and extremities and hepatosplenomegaly occurred. In laboratory analysis; serum ferritin level 25626 ng/ml, fibrinogen 125 mg/dl, triglyceride 227 mg/dl with neutropenia and thrombocytopenia were found. Bone marrow aspiration demonstrated hemophagocytosis. HLH treatment according to HLH 2004 protocol was initiated. Genetic analysis for primary HLH was found negative and he was diagnoses as secondary HLH. With clinical improvement after treatment he was discharged.

Key message: Secondary HLH may occur in patients with infections, malignities, metabolic and collagen vasculary diseases. In our patient HLH was associated with secondary infections triggered by cystic fibrosis. In patients with prolonged fever, cytopenias and hepatosplenomegaly HLH should be considered in the differantial diagnosis.
PREVENTIVE PRENATAL GENETIC TESTING: THE IMPACT ON CHROMOSOMAL ABNORMALITIES AND GENDER BALANCE AT BIRTH

Authors: O. Miljanovic and D. Likić
1 Centre for Medical Genetics and Immunology, Clinical Centre of Montenegro, Podgorica, Montenegro
2 Institute for Public Health of Montenegro, Podgorica, Montenegro

Introduction: Invasive and recently non-invasive prenatal genetic testing (NIPT) are important tools of preventive medicine, aimed to reduce the incidence of genomic disorders. On the other hand, direct to costumer/online availability of prenatal testing opens up numerous opportunities for misuse of these testing for non-medical purposes, such as the possibility of early embryo’s sex detection and consecutive termination of pregnancy if the sex of the embryo is not desired.

Objective: The aim of this study was to estimate the influence of prenatal genetic testing on the chromosomal abnormalities (ChAs) frequency in newborns and the sex ratio at birth.

Materials and methods: The results of prenatal and postnatal cytogenetic diagnostics in Montenegro (Center for medical genetics and immunology – Clinical centre of Montenegro) were analyzed for the period 2000 – 2017. Sex ratio at birth was observed using the data from Public Health Institute of Montenegro and Statistical Office of Montenegro.

Results: ChAs were found in 2.5% of performed prenatal cytogenetic analysis. Aneuploidies, and pure trisomy 21 among them, were the most common findings (2.1%), strongly correlated with advanced maternal age. The frequency of ChAs among newborns was significantly reduced within examined period. The frequency of trisomy 21, dropped from 1 per 564 in the period 2000-2003, to about 1 per 1400 in the period 2011-2017. On the other hand, constant trend of significant male predominance at birth was found within estimated period: ranging 107.5 - 113.4 male per 100 female newborns, and it cannot be explained as “natural appearance”. A different aspects of genetic testing, such as gender sensitive issues are covered by several laws in Montenegro, and all clearly prohibit prenatal genetic testing for non-medical purposes and consecutive prenatal sex selection. The Law on genetic data protection (www.mzdravlja.gov.me) plays the central role regarding the most important medical and ethical aspects of genetic testing usage, with respect of protection of the most important human rights. Genetic testing in Montenegro is organized only within public health system and includes mandatory pre-test and post-test genetic counselling, provided by medical doctor qualified for genetic counselling. Instead of appropriate bioethical ambient some pending issues still exist.

Conclusion: Despite the significant contribution of prenatal preventive testing in the prevention of genomic diseases, rapid “genetization” of medicine in past decades, requests our presence, alertness and quick response in protecting misuse of genetics achievements and in defending child rights from the very beginning of life.

Keywords: prenatal genetic testing, chromosomal abnormalities, gender imbalances at birth
FOOD ALLERGY IS A DISTURBING FACTOR TO WEIGHT CONTROL

Authors: Nana Shavlakade1, Irine Pkhakadze1
1 Akaki Tsereteli State University, faculty of Medicine; Clinic "21st Century" Ltd., Kutaisi, Georgia

Background: Why do we gain weight? A real issue for millions of people, not only an aesthetic but a serious health problem.

Objective: To find out the role of food allergy in weight correction.

Materials and Methods: A two-years research observed: 67 overweight adults and 31 children with normal weight, total 98 patients (Clinic "21st Century" Ltd.). Among them: children aged 6 -16 years 59 boys and 39 girls (overweight 46 (G1), 21 obese (G2), 31 normal weight (G3). To determine the body dependence on nutritional products, we particularly tested the level of the specific IgE (by American ImmunoCAP tests) and level of the specific IgG (by Canadian Hemocode tests) whose sensitivity ranged 96-98% and the parameter was statistically positive if they were more than 5 kUa/L in plasma.

Results: The assessment results revealed as follows:
- G1 group members had a food allergy or sIgE-specific high (median 24.0 kUa / L vs 2.1 kUa / L; p < 0.001) only 4%, or only 2 children;
- G2 group members - 19%, 4 children; Allergic products were milk and soya;
- Allergy on the fruit (kiwi) was found in 1 child from G2 group.
- The results of the IgG survey were significantly different, namely an increased IgG High (median 63.0 kUa / L vs 4.1 kUa / L; p < 0.001) had a 25% among overweight patients of G2, or only 17 children. Out of them, they were 9 (G1) and 8 (G2) members. Foods that led to food intolerance were: milk (2), eggs (2), soya (4), wheat (3), nuts (3), peanuts (2). Tolerance in vegetable and fruit was observed 7% or 5 children and it was broccoli, kiwi (2) and strawberries.

Conclusions: 36% (24) of the study participants were predisposed to the immune pathology directly or indirectly. Especially high was the rate of food intolerance towards the food ingredients among the G1 - 20%, while G2 - 48% (g = + 0.82, P < 0.001).

These figures can truly be the proven as indicators to recognition of overweight and obesity as the immunopathological processes taking place in the body, namely, the compatibility or consequence of food allergies or intolerance. Their awareness and reasonable assessment on individual level is of great importance in correcting the body weight.
AN ENVIRONMENTAL NEEDS ANALYSIS FOR PAEDIATRIC TO ADULT SERVICES’ TRANSITIONS

Authors: Stuart Thomson¹, Lesley Tierney², Evie Fioratou³

¹University of Dundee, Dundee, Scotland. ²University of Dundee, Dundee, Scotland. ³University of Dundee, Dundee, Scotland

Transitioning from paediatric to adult services is a stressful time not only for the patient but for their family as well. They do not only have to familiarise themselves with new care teams but also with new environments. Taking a systems engineering approach, the current qualitative study aimed to compare two ward environments in a Scottish Hospital, a paediatric ward and an acute medical ward. Specifically, elements within each of the two environments (such as layout, accessibility) and existing tools (such as posters, leaflets) were recorded during 5 observations per ward. Our results show that there are distinct differences between the two wards in terms of their environment and their tools that may make the transition for patients and their families a stressful one to handle. Small changes in the adult environment to account for transitioning children are recommended, as well as further research focusing on patients’ and their families’ perceptions of the adult environment in which they find themselves.
Infectious diseases

CLINICAL PATTERNS, EPIDEMIOLOGY AND RISK FACTORS OF COMMUNITY ACQUIRED URINARY TRACT INFECTION CAUSED BY EXTENDED-SPECTRUM BETA-LACTAMASE PRODUCERS: A PROSPECTIVE HOSPITAL CASE CONTROL STUDY

Authors: Basima A Almomani1, Wail A. Hayajneh2, Abeer M. Ayoub1, Mera A. Ababneh1, Miral A Al Momani2
1 Department of Clinical Pharmacy, Faculty of Pharmacy, Jordan University of Science and Technology, Irbid, Jordan,
2 Department of Pediatrics and Neonatology, King Abdullah University Hospital, Irbid, Jordan,

Background: Extended-spectrum beta-lactamase (ESBL)-producing organisms are now recognized globally as common causes of hospital and community acquired infections. Emerging ESBL resistance has the potential to limit therapeutic options, lead to therapeutic failure and associate with financial burden to healthcare system.

Objective: To assess incidence rate, risk factors and susceptibility patterns associated with ESBL producing Escherichia coli (E. coli) or Klebsiella pneumoniae (K. pneumoniae) in community acquired urinary tract infections (CA-UTIs).

Materials and Methods: A prospective, case-control study was conducted at tertiary teaching hospital in Jordan. Pediatric and adult patients attending the hospital from 1st Jan 2015 to 1st Jan 2017 and diagnosed with CA-UTIs caused by E. coli or K. pneumoniae were invited to participate in the study. Patients were assigned as cases if they had positive urine culture for ESBL-producing isolates (ESBL+ve) while patients with non ESBL-producing isolates were assigned as controls (ESBL-ve).

Results: Out of 591 patients included in this study, half of them (n=340, 57.5%) were in the control group (ESBL-ve) and half of them were in case group (ESBL+ve) (n=251, 42.5%). The incidence rate of ESBL-producing isolates was 3.465 cases per 1000 patients admitted to the hospital. Male gender (OR =1.856, 95% CI =1.192-2.889, p=0.006), pediatrics (OR =1.676, 95% CI =1.117-2.517, p=0.013), patients with comorbidity (OR =1.542, 95% CI =1.029-2.312, p=0.036) and UTI in the previous 12 months (OR =1.705, 95% CI =1.106-2.628, p=0.016) were independently associated with higher risk of ESBL infection. There was high resistance rate for most commonly prescribed antibiotics including some cases of carbapenems resistance producing isolates.

Conclusions: Our results suggest that the incidence of ESBL producer among CA-UTIs is high. Male gender, pediatrics, comorbidity and UTI in previous 12 months were associated with higher risk for infection. The observed high resistance of ESBL isolates to antibiotics is alarming and has the potential to add a significant burden to health budget in countries with low income and limited healthcare resources such as Jordan. Continuous surveillance and prudent antibiotics use by healthcare professionals are important for effective control of ESBL producers.

Keywords: Urinary tract infection, Extended-spectrum beta-lactamase, Risk factors
FIBROMUSCULAR DYSPLASIA DIAGNOSED IN A 5 YEAR OLD BOY WITH PRECEDING C. PNEUMONIAE INFECTION

Authors: Morgan Bowling1, Alejandro Zamudio2, Ahsan Sattar3, Shalu Narang4

1Department of Pediatrics, Newark Beth Israel Medical Center; Newark, New Jersey, USA
2Department of Pediatrics, Newark Beth Israel Medical Center; Newark, New Jersey, USA
3Department of Neurology, Saint Barnabas Medical Center; Livingston, New Jersey, USA
4Department of Pediatric Hematology/ Oncology, Newark Beth Israel Medical Center; Newark, New Jersey, USA

Background: The incidence of stroke in children is 2.3 to 13 per 100,000 and 55% of the cases are ischemic in origin. The most common focal presentation is hemiparesis. Arteriopathies have been identified in greater than 50% of all acute ischemic strokes in children. Fibromuscular dysplasia (FMD) is an arteriopathy traditionally described in young adult women. The renal and extracranial cerebral vessels, specifically the internal carotid artery, are most commonly affected. The “string-of-beads” appearance on cerebral angiography is pathognomonic. While the pathophysiology and etiology of FMD are largely unknown, there have been some cases implicating Chlamydia pneumoniae infection as a possible cause.

Observations: We report a 5 year old male who was brought to the pediatric emergency department for severe headache and bilateral lower extremity weakness that worsened over two days. Mother recalled a preceding, self-resolving upper respiratory infection that started approximately twelve days prior to presentation. He was hospitalized for further management. A brain MRI showed acute ischemia of the right insular region. Respiratory pathogen panel revealed a Chlamydia pneumoniae infection and a comprehensive thrombophilia workup was negative. He was prescribed a five-day course of Azithromycin, 10mg/kg for the first day, followed by 5mg/kg for four consecutive days. A working diagnosis of a rheumatologic condition was considered. Therefore, the patient was initially treated with a loading dose of 5mg/kg of Methylprednisolone and then placed on a maintenance dose of 0.5mg/kg daily of Prednisolone for one month. He underwent a diagnostic cerebral angiogram two weeks after discharge which showed a corkscrew appearance of the right A1 segment of the anterior cerebral artery and M1 segment of the middle cerebral artery, suggestive of FMD. His symptoms have since completely resolved and he remains on aspirin 81mg orally daily.

Key messages: Despite the potentially devastating consequences of FMD in the pediatric population, there is minimal literature on this topic. This case study is particularly interesting as the intracranial cerebral arteries were affected, while FMD is typically seen in extracranial vessels. Furthermore, it illustrates important teaching points for clinicians. Infection with Chlamydia pneumoniae has been linked to CNS vasculopathies and as such, FMD should be considered in children presenting with signs of stroke, in combination with signs of recent respiratory infections. Pediatricians must be able to quickly recognize the symptoms of stroke as accurate diagnosis is paramount to optimal recovery. We recommend further research to fully understand FMD’s etiology and pathophysiology.

Keywords: Chlamydia pneumoniae, fibromuscular dysplasia, stroke
PYOMYOSITIS OF PSOAS MUSCLE: A CASE REPORT OF A 12 YEARS OLD BOY

Authors: Nika Morgan, Alenka Stepišnik
Pediatric department, General Hospital Izola, Slovenia

Background: Pyomyositis is a rare cause of hip pain in a child. Staphylococcus aureus is the responsible organism in more than 90% of cases and prior minor trauma has an important role. The magnetic resonance imaging (MRI) is the investigation of choice. Treatment involves antistaphylococcal antibiotics and, in selective cases, abscess drainage.

Observation: A 12 years old boy presented with a 2-week history of right hip pain with limping. He was firstly diagnosed with reactive arthritis. Despite nonsteroidal analgesics, the pain persisted. Five days before admission he became febrile and started treatment with amoxicillin. The condition worsened and he was referred to our department.

On admission he was very painful, unable to bear weight on the right leg. There was generalized tenderness over the abdomen with abdominal guarding in lower right quadrant. Rovsing sign was positive, Blumberg negative. The right hip was internally rotated in a flexed position, the manipulation was extremely painful. Laboratory studies revealed leukocytosis, raised C-reactive protein and erythrocyte sedimentation rate (SR). Ultrasound of the abdomen revealed structurally changed and enlarged the right psoas muscle and the MRI confirmed the pyomyositis of the right iliopsoas major, iliopsoas minor and piriformis muscle.

The patient immediately received flucloxacillin intravenously and drainage of multiple large abscesses was performed the next day. Parenteral therapy was continued for 21 days and because of still raised SR, antibiotic treatment was prolonged for another 2 weeks of per oral antibiotics. All microbiological test were negative, most probably due to previous antibiotic treatment. The histology of the muscle showed a nonspecific inflammation.

Due to a later acquired anamnesis of bicycle fall two weeks before the first symptoms and a good response to antistaphylococcal antibiotics, the pyomyositis was probably caused by a staphylococcus superinfection of a minor trauma in affected muscles.

At the 6 weeks follow-up he was asymptomatic with normal gait. MRI showed total normalization of the affected muscles.

Key message: Children presenting with hip and low abdominal pain, especially with accompanying fever, pose a diagnostic dilemma. The best choice is to obtain a MRI, which distinguishes between osteomyelitis, septic arthritis, appendicitis and pyomyositis.

Keywords: hip pain, pyomyositis
ABSTRACT
Vaccination is a cost-effective primary preventive measure against infectious diseases. However, protection for specific diseases may wane over time. The National Immunization Program was launched to improve vaccine coverage. Still, some countries have erratic immunization compliance. This study aimed to determine the compliance to the National Immunization Program of Grade 1 students in a public elementary school utilizing a descriptive, cross-sectional design. Primary and secondary data were obtained through a pretested structured questionnaire with interview of the students’ caregiver and verification via the students’ immunization records. Compliance to immunization was correlated with the subjects’ age, birthrank, primary caregiver and socio-demographic profile of the caregiver, place of birth and place of vaccination. Data was then statistically analyzed. For the results, most respondents had their mothers as primary caregivers. Majority were born institutionally and immunized at a health center. Mean compliance to vaccination was 69%. Among the factors, only place of vaccination, specifically, hospital delivery, was associated with increased compliance to vaccination (OR = 0.3312, 90% CI 0.1496 to 0.7333, p value 0.0064). Subjects with mothers as primary caregivers, those whose caregivers had higher education, or had both caregivers employed were more compliant to immunization. Vaccination coverage was observed to decrease over time as the subjects grew older. Most common reasons cited for missing vaccinations were vaccine unavailability (68%), financial constraints (46%), and lack of information (40%). In conclusion, compliance to vaccination is affected by multiple factors. Policymakers and stakeholders should address these to improve vaccination coverage and overall health status.

Keywords: vaccines, immunization compliance, national program on immunization.
AN OBSERVATIONAL STUDY FROM INDIA TO ASSESS THE VARIABILITY OF HUMAN MILK COMPOSITION IN MOTHERS DELIVERING PRETERM BABIES

Authors: Avadhesh Ahuja, Raghuram Mallaiah, Sneha Taneja, Deepak Sikriwal
Fortis la Femme, Department of Neonatology, New Delhi

Background: - Mothers giving birth to premature babies produce breast milk that is slightly different in composition, which varies with ethnicity, mother’s nutritional status and diurnally during lactation. Feeding of mother’s milk to rapidly growing preterm infants, especially to extremely premature infants with a gestational age below 28 weeks, often results in suboptimal weight gain and nutritional deficits, as premature infants need large amounts of protein and energy to achieve appropriate growth.

Objective: - To determine serial composition of macronutrients in the breast milk of mothers of preterm babies over time and at different gestational age.

Methodology: - An observational study was conducted in tertiary neonatal center of India for a period of January 2016- December 2017. Expressed breast milk sample was collected from mothers at different gestation age groups (Group 1: less than 28 weeks; Group 2: 28-32 weeks; Group 3: 32-36 weeks) and Serial weekly analysis of breast milk macronutrients was done using the standard method of analysis via MIRIS human milk analyzer.

Results: - Breast milk composition changed gradually with advancing week pertaining to changing nutritional requirement of the preterm. Protein content was highest in 1st week of life as seen in all the 3 groups (less than 28 weeks, 28-32 weeks, 32-36 weeks) and then shows a decline with advancing weeks of lactation but the protein content remained higher in the more preterm group. Intra group comparison indicated higher protein in 2nd group (28-32 weeks -1.80 ± 1.17 g/dl) when compared with group 1- less than 28 weeks and group 3- 32-36 weeks (1.54 ± 0.33 g/dl). Fat and carbohydrate was lower in first weeks of life but then remained constant with advancing weeks and over different gestations.

Conclusion: - Human breast milk composition changes gradually with advancing age, which may not be nutritionally optimal for preterm infants, as per ESPHAGAN 2010 guideline. This study indicated that besides proteins, fat content in Indian mothers was also less than recommendation of ESPHAGAN 2010 guidelines, hence preterm babies may require additional fat supplementation. Since lots of variation was seen in macronutrients among all the groups, an individualized macronutrient fortification regime to meet the recommended nutritional requirement of the preterm is recommended. However, due to limited sample size and localization of study subjects, large cohort study is warranted.

Key words: Breastmilk, preterm babies, observational study, breastmilk composition.
TARGETED INDIVIDUALISED VERSUS STANDARDIZED HUMAN MILK FORTIFICATION IN PRETERM NEONATES: A RANDOMISED CONTROL TRIAL

Authors: Avadhesh Ahuja, Raghuram Mallaiah, Temjen Pokba Longkumer, Deepak Sikriwal
Fortis la Femme, Department of Neonatology, Bew Delhi

Introduction: First choice of feeding a neonate is human breastmilk. Although preterm human milk has high calories as compared to term mature milk, still it fails to provide adequate nutrition in order to achieve growth similar to intra uterine growth rate. Most preterm neonates may end up with increased extra-uterine growth retardation. In order to meet this deficit, use of human milk fortification (HMF) is considered standard practice in NICUs worldwide. There are different methods for fortification, all of which have their own benefits and drawbacks.

Objective: To compare standardised verses targeted fortification of breastmilk with HMF in neonates to assess the catch-up growth between the groups.

Methodology: A prospective randomised control study was conducted at a tertiary level neonatal care unit in urban India for a period of one year (October 2016 to September 2017). Neonates \( \leq 32 \) weeks of gestation, having weight \( \leq 1800 \) gm at birth were included in the study and followed up for a period of 50 corrected weeks for assessment of their catch-up growth.

Result: A total of 32 infants were enrolled in study. 9 were excluded as drop out during trial period. 23 neonates completed the study, wherein 12 were in targeted and 11 were in standard group. Mean gestation age at birth among the groups was 29 weeks (± 2.9) and 28 weeks (± 2.11). Mean birth weight and head circumference was 1293 gms (± 316.1) & 26.1 cm (±1.6) in targeted group and 1119 gms (± 284.5) & 27.18 cm (±2.7) in standard group respectively (p>0.005). In targeted fortification group, 10 neonates out of the 12 were able to achieve ‘Catch-Up Growth’ for weight at mean postnatal gestation of 40.6 weeks. None of the neonates in standard fortification group were able to achieve catch up growth even at the end of study period. Similarly, head circumference of all neonates in target group achieved their catch up growth at a mean gestation of 41 weeks whereas in standard group only 1 out of 12 infants was able to achieve catch-up growth. Both groups were comparable in terms of their weight and head circumference at the end of fortification. However, there was a significant difference in weight (p< 0.0007) and head circumference (p< 0.004) in target group at the end of study period.

Conclusion: Targeted individualised fortification is feasible in clinical practise and helps in achieving catch up growth faster in preterm neonates.
A CASE REPORT OF ANTENATALLY DIAGNOSED COMPLEX OVARIAN CYST

Authors: Ariana Spungina, Michail Sergentanis, Sanjay Raina
The Princess Alexandra Hospital, NICU, Harlow

Background: Neonatal ovarian cysts are the most commonly encountered masses in female foetuses. Most of them are detected antenatally towards the end of the second trimester. The small cysts (< 5 cm) tend to be self-limiting and the complex or large cysts are associated with more complications, such as torsion or oncology. The incidence of small cysts is 90%, whereas the incidence of large cysts is 20 – 34%. The large complex cysts are unequivocally surgically treated, whereas the management of large simple cysts remains controversial.

This was an IVF donor egg pregnancy and maternal age was 44. This was an uneventful pregnancy up until 33 weeks gestation when at a routine antenatal scan an intra-abdominal cyst was noted. There were no other anomalies noted. Further scans at a tertiary hospital did not reveal a lung hypoplasia. Baby girl was born in a good condition by forceps delivery following induction of labour at 39+4 weeks gestation, weighing 3650 grams. Information was collected from the patient, parents, notes and hospital databases.

Observation: A routine antenatal scan at 33 weeks showed a multi-septate cyst measuring 44.7 x 32 x 38.4 mm below the right kidney (image 1). A postnatal abdominal and pelvis ultrasound at 4 days of age, showed a well-defined complex cystic lesion in the right flank measuring 52 x 33 x 53 mm (image 2). It showed eccentric echogenic solid component and thick internal septations. Vascularity was seen along the wall of the lesion. There was no other abnormality noted. It was concluded it was a complex ovarian cyst.

Key message: It is essential to exclude lung hypoplasia in these cases as large intra-abdominal cysts in a foetus are strongly associated with diaphragmatic hernias, therefore changing the postnatal management of the neonate entirely.
Neurodevelopmental Disorders: ASD, ADHD and Down's syndrome

CHANGE IN ATTITUDES TOWARDS TEACHING CHILDREN WITH SPECIFIC LEARNING DISABILITY (SLD) AFTER SHORT COURSE TRAINING BY HOSPITAL’S MULTIDISCIPLINARY TEAM

Authors: Issarapa Chunsuwan¹, Tiraya Lerthattasilp², Tippawan Hansakunachai¹
¹Developmental and behavioral pediatric, Pathumthani, Thailand
²Child psychiatrist, Pathumthani, Thailand

Background: In Thailand, the prevalence of children with SLD is 6-9%. But with limited resources, many teachers assigned to teach children with SLD have not been adequately prepared for this task. At Thammasat University Hospital, a team of multidisciplinary professionals focusing on the care of children with special needs have been working with the Provincial Special Education Center by training teachers to expand their capabilities to help these children.

Objective: This research measured the effectiveness of short course training on SDL for educators in changing attitudes and confidence towards teaching children with SLD.

Materials and Methods: Participants were teachers affiliated with the Provincial Special Education Center and attended the 1-day training course arranged by multidisciplinary team of the hospital. The training including lecture and workshop, covered topic about the fundamental problems of SDL, effects on children and family, and basic keys of intervention. Demographic data were collected, and 5-point Likert type questionnaires on attitudes and confidence toward teaching children with SLD were answered by teachers pre-and post-training. Questionnaire contains 15 questions, divided into 2 parts; indicate attitudes and confidence towards teaching children with SDL. A total frequency score was derived from the sum of items, with higher scores representing more positive responses.

Results: 49 out of 54 participants completed pre-and post-training questionnaires with a mean age of 33 (±7.5) years; most had 1-5 years of teaching experience in parallel classrooms and/or resource rooms. 49% of them graduated with a bachelor or master of education and 51% had alternative degrees. Mean score on attitudes pre-and post-training were 35.14 vs. 37.15 and mean score on confidence pre- and post-training were 14.94 vs. 16.20 accordingly, which both parts revealed significant positive changes (P value 0.002 and 0.001). Statements in the questionnaire that indicate significant positive changes post training were: “I believe that children with SLD can be successful in careers”; “SLD can be improved by proper intervention”; “The label SLD can help teacher understand how to support student”; “I think I can tell which children have SDL”.

Conclusions: Our study demonstrated that multidisciplinary medical specialists could enhance teachers’ positive attitudes and confidence by providing knowledge and basic skills to support children with SLD through short-course training.
EFFICACY AND SAFETY OF HERBAL MEDICINE FOR PEDIATRIC NEUROLOGICAL DISORDERS: AN OVERVIEW OF SYSTEMATIC REVIEWS

Authors: Boram Lee¹, Chan-Young Kwon², Gyu Tae Chang¹

¹Department of Pediatrics of Korean Medicine, Kyung Hee University Korean Medicine Hospital at Gangdong, Gangdong-gu, Seoul, Republic of Korea
²Yanggu Public Health Center, Yanggu-gun, Gangwon-do, Republic of Korea

Background: Pediatric neurological disorders are a major cause of the growing disease burden. Herbal medicine has been widely used because parents of children with neurological disorder thought that it was less harmful compared with conventional pharmacotherapy. Many systematic reviews of herbal medicine for pediatric neurological disorders have been conducted so far. However, these reviews have not been systematically summarized and evaluated.

Objective: The objective of this overview was to critically evaluate the evidence of herbal medicine for pediatric neurological disorders for evidence-informed clinical decision making.

Materials and Methods: We included systematic reviews on the efficacy of herbal medicine for pediatric neurological disorders published up to September 2017 by searching Cochrane Library, Medline, EMBASE, AMED, and CINAHL without language restrictions. Two Chinese and two Korean databases were also searched. The quality of methodology of the included reviews was evaluated with a measurement tool to assess systematic reviews (AMSTAR) instrument.

Results: Thirteen systematic reviews of herbal medicine for pediatric neurological disorder including autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), tic disorder, epilepsy, and cerebral palsy were included. The efficacy of herbal medicine for ASD and ADHD was unclear because the effect size did not be assessed by comparing the quantitative value. The efficacy for tic disorder was inconsistent. When herbal medicine treatment was added to conventional therapy in epilepsy and cerebral palsy, it showed each higher clinical symptom improvements or higher self-care ability compared with conventional pharmacotherapy or rehabilitation alone. There were no fatal adverse reactions reported, but the relevance between herbal medicine and adverse reactions were unclear in most of the reviews. The quality of methodology of each review was medium-to-high when evaluated by AMSTAR checklist.

Conclusions: Herbal medicine treatment may be encouraging for some pediatric neurological disorders; however, the evidence is not sufficient due to overall methodological quality of the reviews and small sample size and the high risks of bias in clinical trials included in each review. More rigorous, high-quality studies should be done for herbal medicine to be presented as a clinical recommendation.

Keyword: Herbal medicine, Neurological disorder, Child
UNIQUE PRESENTATION OF EPILEPSIA PARTIALIS CONTINUA IN A 6-YEAR-OLD BOY

Authors: Michail Sergentanis, Ariana Spungina, Sanjay Raina, Ramya Venkatraman
The Princess Alexandra Hospital, NICU, Harlow

Background: Epilepsia Partialis Continua causes the patient to have recurrent focal motor epileptic seizures of hands and face, followed by unilateral weakness. There are numerous causes, such as inflammation following infections or autoimmune processes in children. These epilepsies are notorious for being resistant to medication and the main goal of treatment is to prevent generalisation. A 6-year-old boy presented to a district general hospital following first unprovoked episode of generalised tonic-clonic seizure with associated urinary and faecal incontinence. Patient developed an isolated constant right arm tremor one week prior to this. Aged 2 years old, patient developed an isolated muscle wasting, stiffness and shortening of left lower leg, which was treated with tendo-achilles lengthening and plantar fascia release. At few weeks of age patient had fever and encephalitis was suspected. Otherwise a fit and well child with normal development and cognition. His father had TIA and strokes aged 62 and 67 respectively. Information was collected from the patient, parents, notes and hospital databases.

Observation: On examination, the patient had continuous choreoathetoid movement of his right arm, which was exacerbated on testing of right arm reflexes. Patient also had an isolated dysmetria in his right arm. Choreic movement of his tongue was also noted. His tone, power and reflexes in his upper limbs were normal. He had a reduced power in his left leg of 4/5. His knee and ankle reflexes were brisk (left more brisk than right). His plantar was up-going on the left and down-going on the right. He had loss of muscle bulk in his left calf (calf diameter 4 cm less than the right calf) and his left leg was shorter by 1.5 cm than the right leg. He was referred to the tertiary hospital and the following investigations were normal: MRI spine, muscle biopsy, extensive neurometabolic screen, autoantibodies and inflammatory investigations, nerve conduction studies and EMG, and EEG. However, MRA and MRI head showed regions of damage with scarring and volume loss within both cerebral hemispheres, seen in the left superior and middle frontal gyri and on the right in the paracentral lobule, right thalamus and right superior middle frontal gyri junction, some of which could represent anterior watershed ischaemic injury.

Key message: It is essential to pay attention to the history, as the identification of the cause of Epilepsia Partialis Continua is the key in treatment.
A CASE REPORT OF ANTENATALLY DIAGNOSED CHIARI TYPE II MALFORMATION

Authors: Michail Sergentanis, Ariana Spungina, Ramya Venkatraman
The Princess Alexandra Hospital, NICU, Harlow

Background: Chiari type II malformation is a common (1:1,000) congenital malformation of the spine and a small posterior fossa in form of myelomeningocele with associated descent of the brainstem and cerebellar tonsils, as well as other brain anomalies. As structural malformations are so variable, so are the long-term sequelae, such as cranial nerve palsies, neurogenic bladder, hydrocephalus and scoliosis. This was an IVF donor egg and sperm pregnancy in a lesbian couple. It was an uneventful pregnancy up until 20 weeks gestation when at a routine antenatal scan a Chiari type II malformation with open myelomeningocele were noted. Baby boy was born in a good condition by an elective LSCS at 37+1 weeks gestation, weighing 2970 grams. The myelomeningocele was successfully repaired on day 1 of life. On post-operative imaging it was noted the baby had moderately enlarged lateral and third ventricles, with malformation of corpus callosum and absence of septum pellucidum. By 2 weeks of age a ventriculo-peritoneal shunt was inserted due to bulging fontanelle and irritability. Information was collected from the patient, parents, notes and hospital databases.

Observation: The baby was referred to Community Paediatric clinic and was seen at 6 months of age for neurodevelopmental assessment and follow-up. He was found to be doing well and no longer requiring intermittent catheterisation. He was suffering with sleep apnoeas, snoring and excessive drooling, as well as cow’s milk protein intolerance and reflux. Neurologically he was intact, with normal power, tone and reflexes of both upper and lower limbs and he was moving both of his arms and legs. However, he completely lacked head control. He had a good eye contact, normal hearing and a social smile.

Key message: The antenatal ultrasound scan remains the main means of diagnosis and initial assessment of this foetal malformation, which is followed by thorough postnatal evaluation with MRI scan.
DIASTOLIC DYSFUNCTION IN NON TRANSFUSED β THALASSAEMIA INTERMEDIA: CASE CONTROL STUDY

Authors: Khalfan Al Senaidi1, Hanan Nazir2,4*, Surekha Tony2, Shoaib AL Zadjali3, Yasser Wali 2,4.
1 Division of Pediatric cardiology, Department of Pediatrics, Sultan Qaboos University Hospital, Oman
2 Division of Pediatric Hematology, Department of child health, Sultan Qaboos University Hospital, Oman
3 Department of Hematology, College of Medicine and Health sciences, Sultan Qaboos University, Oman.
4 Department of Pediatrics, Faculty of Medicine, Alexandria University, Egypt.

Objectives: Serious cardiac complication can occur in patients with β thalassaemia intermedia (TI). This case control study aimed to evaluate the systolic and diastolic cardiac function in 2 groups of children with TI: non transfused group and a group that received early regular blood transfusion comparing them to healthy controls.

Methods: Thirteen regularly transfused patients with TI with a mean age of 11.8±5.6 years were compared with eight patients who are non-transfused or minimally transfused (< 3 RBCs transfusion/year); mean age 11.8±9.4 years and 18 healthy controls with a mean age of 8.8 ± 3.9 years. Clinical parameters and standard echocardiographic and Tissue Doppler Imaging (TDI) were compared.

Results: Young non-transfused TI patients had a statistically significant higher peak late diastolic velocity of the left ventricular inflow Doppler, a mitral valve A wave duration over the pulmonary vein A wave duration ratio and the pulmonary vein S/D velocities ratio compared to the transfused group with p values of 0.028, 0.01, 0.01 respectively. In addition, they have a lower E/A ratio of the mitral valve inflow and a larger left atrial to aortic diameter ratio compared to the control group with p values of 0.025 and 0.01 respectively. The diameters of the right and left outflow tract were significantly larger in the non transfused group with a trend to have a higher cardiac index compare to the transfused group. Systolic function was similar in the 3 studied groups and non of the patients had evidence of pulmonary hypertension.

Conclusion: Young patients with TI who are receiving early regular blood transfusion have normal systolic function. Diastolic function assessment revealed indicators of an abnormal relaxation of the left ventricle in the non transfused group which indicate diastolic dysfunction. The abnormalities affected multiple diastolic function parameters which give an indication that the changes are clinically significant. A statistically significant increase in the diameters of the outflow tracts are likely attributed to high cardiac output status in non-transfused TI patients as they had a trend to have a higher cardiac index. These findings support the early commencing of regular blood transfusion therapy for TI patients to prevent serious cardiac complications in adult life.

Keywords: Pediatric; β Thalassaemia Intermedia; diastolic function; tissue Doppler imaging; echocardiography.
CLINICAL CHARACTERISTICS OF ENTEROVIRAL MENINGITIS WITHOUT PLEOCYTOSIS IN CHILDREN

Authors: Ji Sook Lee¹, Woochan Jeon²
¹ the Department of Emergency Medicine, Ajou University School of Medicine, Suwon, Republic of Korea
² the Department of Emergency Medicine, Inje University, Ilsan Paik Hospital, Goyang, Republic of Korea

Background: EV meningitis is confirmed by the presence of pleocytosis in cerebrospinal fluid (CFS) and detection of the virus by reverse-transcriptase polymerase chain reaction (RT-PCR) or culture. As several studies have reported the lack of pleocytosis in children with EV meningitis, RT-PCR is presently considered to be the gold standard for diagnosis of EV infections. CSF analysis takes several hours, but RT-PCR requires several days depending on the facilities; therefore, it is difficult to confirm EV via RT-PCR during a patient’s stay in the emergency department (ED).

Objectives: This study aimed to describe the clinical characteristics of enterovirus (EV) meningitis according to the presence of cerebrospinal fluid (CSF) pleocytosis.

Materials and Methods: This was a retrospective analysis of patients aged <18 years old who were diagnosed with EV meningitis by CSF reverse-transcriptase polymerase chain reaction (RT-PCR) testing between January 2015 and December 2016. Clinical variables were compared with regard to the presence of CSF pleocytosis.

Results: A total of 305 patients were enrolled in study; 169 (55.4%) had no pleocytosis. Patients without pleocytosis were younger (29.76 ± 43.65 years vs. 36.17 ± 45.49 years, \( P = 0.05 \)) and had lower white blood cell counts and absolute neutrophil counts (each \( P = 0.05 \)) than patients with pleocytosis. CSF pleocytosis was present in 22 of 128 patients (17.2%) aged ≤90 days, 2 of 5 patients (40%) aged 3 months–1 year, 4 of 8 patients (50%) aged 1–3 years, and 108 of 164 patients (79.4%) aged ≥3 years. CSF pleocytosis was statistically significantly related to increasing age (\( P = 0.05 \)). In patients aged ≤90 days, 94.5% underwent lumbar puncture within 24 hours of symptom onset. The frequency of not having pleocytosis was higher or similar to the frequency of having pleocytosis during peak EV meningitis epidemic months (\( P = 0.001 \)).

Conclusions: This study shows that EV meningitis in young infants, with early lumbar puncture, or occurring during peak epidemic seasons cannot be solely excluded by pleocytosis. Also, a confirmation test for EV meningitis should be performed RT-PCR testing.
FOMEPIZOLE FOR ETHYLENE GLYCOL OR METHANOL POISONING IN CHILDREN: A SYSTEMIC REVIEW

Authors: Ha Na Min¹, Sung Phil Chung²
¹Department of Emergency Medicine, Yonsei University College of Medicine, Seoul, Korea, ²Department of Emergency Medicine, Yonsei University College of Medicine, Seoul, Korea

Objective: The purpose of this study is to evaluate the effectiveness and adverse effect of fomepizole in the management of acute ethylene glycol or methanol poisoning in children.

Methods: Databases such as PubMed, Embase, Cochrane library, and KoreaMed were searched using terms related to fomepizole, ethylene glycol, methanol and pediatric. All studies, regardless of study design, reporting effectiveness or safety endpoints in children were included. Reference citations from identified publications were reviewed. Only reports written in English or Korean languages were included. The reference search was performed by two authors.

Results: Twenty-two relevant literatures were finally included. They were one narrative review, 4 retrospective case series, and 17 case reports (19 cases). Case reports were classified as 5 fomepizole only, 8 fomepizole with other therapies, and 6 no fomepizole. All patients from the literatures were fully recovered without long term sequelae. Adverse effects of fomepizole were reported including anaphylaxis, thrombophlebitis and nystagmus.

Conclusion: There are insufficient literatures regarding fomepizole treatment in children with ethylene glycol or methanol poisoning. The benefits or harms are not clearly established based on the clinical evidences. More prospective comparative studies are required in the future.
RISK PREDICTION OF SERIOUS INFECTIONS IN INFANTS UNDER 6 MONTHS PRESENTING WITH NON-SPECIFIC COMPLAINTS

Authors: Michael Zhang\textsuperscript{1,3}, Nicholas Marriage\textsuperscript{3}, Valerie Astle\textsuperscript{3}, Marie-Louise Ratican\textsuperscript{2,3}  
Haddijatou Hughes\textsuperscript{3}, Jonathan Ash\textsuperscript{3}  
\textsuperscript{1}School of Medicine and Public Health, University of Newcastle, NSW, Australia  
\textsuperscript{2}Queens University Belfast, UK  
\textsuperscript{3}Emergency Department, John Hunter Hospital, NSW, Australia

Introduction: Young infants under 6 months are brought to emergency department (ED) for evaluation of a variety of complaints, often non-specific, and present as a diagnostic dilemma. Whereas many clinical practice guidelines are available to help recognition of sick children, clinical tool of excellent diagnostic performance to aid classification in this specific group of infants is yet to be developed.

Objective: This study aimed to establish a prediction model of serious infections in young infants to aid clinician decision making on those presenting with undifferentiated complaints.

Methods: This retrospective observational study examined the medical records of infants under 6 months presenting with non-specific complaints to a mixed urban ED between January 2013 and December 2014. Individual plausible risk factors analysis was followed by multivariate modelling through stepwise forward variables selection. All statistical models were checked for the diagnostics and model fit. Internal validation with bootstrapping was applied to reduce overfitting of the final model.

Results: About 25% of young infants (835 / 3298) meeting the inclusion criteria were studied. Some of them (14.49%) suffered from serious infections such as urinary tract infection (8.74%), meningoencephalitis (3.83%), and sepsis (1.44%). Fever alone (OR 8.50) and elevated inflammatory markers such as peripheral white cell counts, neutrophils and CRP were helpful to predict serious infection. Multivariate modelling developed an initial Patient model (ROC curve AUC 0.855) that was comprised of solely patient features: highest body temperature ($\beta = 0.91$), urinary leucocytes ($\beta = 2.13$) and nitrates ($\beta = 2.0$). The performance of this model was improved in the Carer model (AUC 0.868) after including carer factors such as choosing ambulance over private transport ($\beta = 1.68$). Further significant improvement of discriminatory performance in the Full model (AUC 0.909, 95% CI 0.873 - 0.946) ($p = 0.004$) was demonstrated by incorporating the clinician factor such as prescribing IV antibiotics ($\beta = 2.42$) . The Full model had a sensitivity of 87.64% and negative predictive rate of 93.79%. More than eighty-two percent of serious infections could be correctly classified by this model. Brier score of 0.106 and Hosmer-Lemeshow statistics ($\chi^2$ (10) 5.14) of the full model was consistent with a satisfactory fit ($p = 0.882$).

Conclusions: An internally validated full model which incorporates patient characteristics, carer behaviour and clinician’s approach has an excellent ability to predict serious infections in infants under 6 months who present with non-specific complaints.

Keywords: Serious infections; Prediction model; Non-specific complaints.
COMPARISON OF HISTOLOGY AND BACTERIAL CULTURE IN CHILDREN WITH HELICOBACTER PYLORI GASTRITIS

Authors: Felicia Galoș 1,2, Gabriela Năstase2, Cătălin Boboc2, Lorena Vatră2, Mihai Stoicescu1,2, Mihai Munteanu2, Mihaela Bălgrădean1,2
1 University of Medicine and Pharmacy Carol Davila Bucharest, Romania
2 MS Curie Children’s Emergency Hospital Bucharest, Romania

Introduction: The correct diagnosis and effective treatment of Helicobacter pylori gastric infection are essential in controlling this infection.

Objective: The aim of our study is to analyse patients with H pylori gastric infection with positive histology and positive culture versus positive histology and negative culture and to find the predictive factors that influence the culture.

Materials and methods: Children who presented themselves with dyspepsia at the gastroenterology department of Maria Sklodowska Curie Children’s Emergency Hospital Bucharest. They were all screened for H pylori and they resulted positive after performing stool antigen tests. All patients underwent endoscopy with biopsy specimens for histology, rapid urease test, and for bacterial culture. Semiquantitative scorings of mild, moderate and marked can rate the density of H pylori.

Results: 38 children (19 girls and 10 boys) aged from four years 5 months to 17 years and 8 months were enrolled in this prospective study. Nine were excluded because of negative histology and culture. 29 cases were included in the final analyses, 19 females (65,51%) and the 10 males (34,49%). The ages were between 4 years and 5 months and 17 years and 8 months (14±4.8 years). In 28 cases H pylori in the histological samples were positive (96,55%), compared to the positive H pylori culture, which was positive only in six cases (21,42%). The density of H pylori was mild in the majority of cases (50%), followed by moderate (39,28%) and marked scores (10,72%). In one case the culture was positive, but the histological exam was negative. In other five cases of positive culture, two were correlated with mild score, two with moderate score and one with marked score regarding the density of H pylori.

Conclusion: Helicobacter pylori culture is a laborious method, with some technical difficulties, but our culture development rates are lower compared with another reported study. We do not have sufficient data to analyse the antibiotic resistance of Helicobacter pylori in our area. Histological evaluation is essential in order to appreciate the presence of bacteria as well as the grading of gastritis. This is the preliminary data of the current study.

Keywords: Helicobacter pylori culture, histology, children
GASTROESOPHAGEAL REFUX DISEASE IN FORMER PREMATURE INFANTS EXAMINED USINGINTRALUMINAL IMPEDANCE AND PH MONITORING

Authors: Felicia Galoș, Anna Chiara Cigognini, Cătălin Boboc, Anca Orzan, Cristina Coldea, Mihaela Bâlgrădean
1 University of Medicine and Pharmacy Carol Davila Bucharest, Romania
2 Marie Curie Children’s Emergency Hospital Bucharest, Romania

Introduction: Preterm infants represent a population at high risk for gastroesophageal reflux disease (GERD) development. What still remains unclear is whether prematurity constitutes a GERD predisposing factor also later in life, during subsequent infancy and childhood.

Objective: To measure the frequency of GERD in former premature infants and to compare it with that of a general population of pediatric patients with signs and symptoms suggestive of GERD, in order to find an association between premature birth and risk of GERD.

Materials and methods: This was a retrospective study conducted at Marie Curie Emergency Children Hospital, in Bucharest, Romania. The study group consisted of 19 former premature patients who were referred to the physician and hospitalized for symptoms suggestive of GERD, starting with October 2012. The control group consisted of 24 patients with no history of prematurity and signs and symptoms suggestive of GERD, selected according to the order of hospital admission. All patients underwent a 24 hours multichannel intraluminal impedance combined with pH monitoring (24h MII-pH monitoring).

The obtained data on frequency of pathologic reflux, its characteristics and distribution in different age categories were analyzed and compared between the two groups.

Results: Pathologic GER was more frequent in the study group (63,16%) than in the control group (62,5%). Prematurity didn’t increase the risk of GERD development (OR 1,02; CI 95% 0,2-3,5). The comparison between children categories revealed a slightly higher GERD frequency in former premature children (63,64%) compared to control children (61,54%). Also in this case, there was not a significant association between preterm birth and GERD development in children (OR 1,03; CI 95% 0,28-3,37). GERD was more common in control infants (63,6%) than in former premature infants (62,5%). There was a negative association between prematurity and GERD in this category of patients (OR 0,9; CI 95% 0,22-4,25).

Conclusion: Our findings do not demonstrate a significant association between prematurity and GERD development during infancy and childhood. The topic warrants further investigation by future research.

Key words: gastroesophageal reflux, prematurity.
TUMOR NECROSIS FACTOR ALPHA (TNFA), PROTEIN GENE PRODUCT 9.5 (PGP 9.5) AND EXTRACELLULAR MATRIX REMODELING FACTOR APPEARANCE IN CONGENITAL INTRA-ABDOMINAL ADHESIONS IN CHILDREN UNDER ONE YEAR OF AGE

Authors: Anna Junga1, Māra Pilmane1, Zane Ābola2, Olafs Volrāts2
1Institute of Anatomy and Anthropology, Rīga Stradiņš University, Riga, Latvia, 2Department of Children Surgery, Rīga Stradiņš University, Riga, Latvia.

Background: Congenital intra-abdominal adhesions are a consequence of abnormal embryological development of the peritoneal cavity. The regulatory role between cytokines and extracellular matrix remodeling factors in adhesions has not yet been defined.

Objective: To explore the appearance and relative distribution of TNFα, PGP 9.5, matrix metalloproteinase-2 (MMP-2) and tissue inhibitor of metalloproteinase-2 (TIMP-2) in congenital intra-abdominal adhesions compared with relatively healthy tissue controls.

Materials and Methods: The experimental group material was obtained from 50 patients who underwent abdominal surgery due to complete or partial bowel obstruction. The control group was obtained from eight patients with surgical repair of inguinal hernia. All patients were under one year of age. TNFα, PGP 9.5, MMP-2 and TIMP-2 were detected using immunohistochemistry methods and their relative distribution was evaluated by means of the semiquantitative counting method. The results were analyzed using a non-parametric statistic method.

Results: A moderate number of TNFα positive structures was observed, but there was no statistically significant difference between the groups (U = 124.0, p = 0.082). A positive reaction for TNFα was found in macrophages and fibroblasts. Positive correlation was observed between the immunoreactive structures for TNFα and PGP 9.5 (rs = 0.429, p = 0.003).

A positive reaction for PGP 9.5 was observed in nerve fibers and shape modified fibroblasts. In control group tissues, positive structures were seen in significantly higher counts for PGP 9.5 (U = 58.5; p = 0.001).

In the experimental group, few to moderate number of MMP-2 positive macrophages, epithelioid cells, fibroblasts and endotheliocytes were detected. In control group tissues, also MMP-2 positive structures were found in few to moderate counts and there was no statistically significant difference between the groups (U = 174.0, p = 0.654).

In the experimental group tissues a positive reaction for TIMP-2 was seen in fibroblasts, macrophages and endotheliocytes. In control group tissues, positive structures were found in significantly higher counts for TIMP-2 (U = 112.0, p = 0.036).

Conclusions: Positive correlation between the immunoreactive structures for TNFα and PGP 9.5 suggests that nerve in-growth into intraabdominal adhesions might be induced by TNFα and PGP 9.5 could have a role in maintaining inflammation. The down-regulation of PGP 9.5 suggests that pathogenesis of congenital intraabdominal adhesions may be related to hypoxia induced damage. The imbalance between MMP-2 and TIMP-2 may prove tissue fibrosis as a response to congenital peritoneal adhesions.

Keywords: Adhesions; Cytokines; Enzymes.
INVOLVING PARENTS IN ROAD SAFETY DECISION MAKING: KEEPING OUR CHILDREN SAFE

Authors: Mohamed A. Hendaus, 1,2 MD, FAAP ; Reem Wassef,3 MD; Marwa Mansour;3 MD; Tasneem Abdel-Karim,3 MD; Ahmed Alhammadi;1,2 MD,FRCPC.
1Sidra Medicine. Doha, Qatar
2Weill Cornell Medicine, Qatar
3Hamad Medical Corporation. Doha, Qatar

Background: Lack of knowledge of the prevalence of morbidity and mortality due to road danger might be a major cause of why parents are not robustly involved in road safety decision making.

Objective: The purpose of the study is to explore parental knowledge the prevalence of morbidity and mortality related to road danger in the State of Qatar.

Methods and Materials: A cross-sectional prospective study was conducted at Hamad Medical Corporation (HMC), the only tertiary care and academic hospital in the state of Qatar. Parents of children younger than 18 years of age and residents of the State of Qatar were offered an interview survey.

Results: 300 questionnaires were completed, with no rejection rate. Approximately 1 in 8 of parents were in between 20 and 40 years of age, and around two thirds were females. Interestingly 63% of families were familiar with the prevalence of car accidents in Qatar, while less than one half were familiar with the rate of mortality and disability that arises from car crashes. Moreover, 1 in 2 persons felt that keeping crashed cars on the side of the road is a good idea to prevent speeding. Furthermore, around 80% felt that billboards on the side of the road with messages that “Your Family is waiting for you” will deter them from speeding. Most families felt that having different lanes for small and large cars will help prevent car accidents. Role modeling was also assessed and it showed that 85 % of parents believed that the most effective way in teaching children and young people to use roads in a safe way, is to always provide a positive role model when using the roads. Highly educated parents felt that the primary responsibility for delivering road safety education lies within both parents and school (p=0.001).

Conclusion: A large percentage of families are not familiar with the prevalence of car accidents in the state of Qatar and their deleterious effects. We aim to involve authorities to increase local awareness with a focus on public campaigns for education of caregivers.
THE PEDIATRIC DIABETES ACCESS OF CARE: A QUALITY IMPROVEMENT PROJECT

Author: Michael Yafi
UTHealth, The University of Texas at Houston Health Science Center, Dept of Pediatrics, Houston, USA

Introduction: The delivery of care to diabetic children is quite unique. Families with a diabetic child ideally require an integrated support team including a pediatric endocrinologist, diabetes educator familiar with children, dietician, social worker, and psychologist. The limited number of such teams can cause scarce appointments, high cost, and limited choices. The global increased raise of type 1 diabetes and obesity related type 2 diabetes does not parallel an increased availability of pediatric endocrinologists to provide diabetes care. This has made access to pediatric diabetes care more challenging than other fields.

Objective: To evaluate access to pediatric endocrinology care as well as the ability to make a choice in seeking this care.

Material and Method: The legal guardians who brought a child with diabetes were asked to fill a survey during a routine clinic visit. The survey was approved by The Institutional Review Board of our University as a quality improvement project. The survey asked specifically whether the physician seen was the first choice selected by the family, if the visit was for a second opinion, and what distance the family had to drive to see that physician.

Results: Eighty three percent of the families felt that they had the choice when it comes to finding and seeking care by a pediatric endocrinologist while 17% felt that this was dictated by their insurance companies. Twenty nine percent have seen another pediatric endocrinologist prior to seeing our group and 8% have seen an adult endocrinologist previously. Three percent of the families drove less than 10 miles to reach the clinic, 23% drove 10-25 miles, 47% drove 26-50 miles while 27% drove more than 50 miles. Seventy-six percent felt that the physical distance between their homes and our clinic was not a major factor in keeping follow up appointments.

Conclusion: The specific needs of children with diabetes depend on a small pool of qualified pediatric endocrinology teams. It seems that families do not mind driving far to reach a physician or medical team that they have chosen to see. Coming for a second opinion was a proof that the family was able to make a choice. The freedom of choosing a health care provider is a major factor for the satisfaction with the delivery of pediatric diabetes care and this, by itself, may improve the outcome of care.

Keywords: Pediatric diabetes, Access to care, Choice of care
GENDER VARIANCE AMONG YOUTH WITH AUTISM SPECTRUM DISORDER

Author: Aron Janssen, M.D.
NYU Langone Health, New York, New York

Background: Increasing clinical evidence and several large scale studies suggest higher rates of gender nonconformity, or gender variance (GV), among individuals with Autism Spectrum Disorders (ASDs). In a Dutch sample, 7.8% of children diagnosed with Gender Dysphoria or Gender Identity Disorder were also diagnosed with ASDs. This rate is significantly higher than the population rate of ASD diagnoses (de Vries et al., 2010). One recent study suggests a bidirectional association. A prospective cohort study found that 5.4% of the subjects presenting with clinical-level ASD symptoms had parent-reported gender variance compared to a control group (0.7%) (Strang et al. 2014). The co-occurrence between GV and ASD’s present a unique challenge for the diagnoses and treatment planning of both Gender Dysphoria and ASD’s. The present study aims at collecting more data on the rate of gender variance among ASD patients, along with demographic information such as sex and age.

Objective: We aim to test the following hypotheses:
1. We expected to find a higher rate of parent reported gender variance among youth with Autism Spectrum Disorders compared to the non-referred normative CBCL standardization data
2. Consistent with previous studies, we expected to find similar rates of gender variance between natal males and females with ASDs
3. Clinical evidence suggest a pattern of desistence of gender variance as children grow into adolescence. We also expected to find a trend of desistance of GV among the ASD and co-occurring GV sample.

Materials and Methods: We employed a chart review design for this study. We examined the Child Behavior Checklist (CBCL) from all clients ages 6 to 18 who had received ASD’s diagnoses (including Autism Spectrum Disorder, Asperger’s, PDD, and/or PDD-NOS) at the NYU Child Study Center from January 2011 to January 2015. CBCL from 492 subjects were collected (N=492). The CBCL is a gold-standard parent/teacher report for children ages 6-18 that screens for a wide range of behavioral and emotional problems (Achenbach & Rescorla, 1992). The CBCL is standardized based on norms taken from 1,607 non-referred children and adolescents. Our study specifically looked at sex item 110 to determine parent reported gender variance Sex item 110 reads “Does your child wish to be the opposite sex?” Parents can respond with the following: 0 – never true, 1 – sometimes true, or 2 – always true. Gender variance was assumed when the parent endorsed 1 or 2. Strong correlations have been found between clinical diagnoses of GD/GID and endorsement of questions related to questions on the CBCL directed at gender variance (Cohen-Kettenis, et al., 2003).

Results: Hypothesis 1 – Consistent with previous findings and our first hypothesis, a significantly higher percentage (5.1%) of our ASD sample had parent reported variance compared to the CBCL normative sample (0.7%). Odds ratio calculated between the ASD group and the CBCL group yielded significant results. The ASD sample was 7.76 times more likely to report GV compared to the CBCL group.
Hypothesis 2 – A Fisher’s exact test revealed no significant effect of biological sex on rate of endorsement (p=1). Similar rates of gender variance were found in biological males (5.1%) and females (4.8%).

Hypothesis 3 – Logistic regression analysis revealed no significant effect of age on rate of endorsement (b=0.056, se(b) = 0.074, Wald’s t = 0.5, p=0.45.

**Conclusions**: Our findings provide more large scale data suggesting an overrepresentation of gender variance among youth with ASDs. Although the clinical presentation of this co-occurrence is relatively unknown, our findings shed some light upon some of the demographic characteristics of individuals with co-occurring ASDs and GV. We found no difference in the rate of gender variance between biological males and females in our ASD sample. Although our findings suggest that GV and co-occurring ASDs occur in similar rates between males and females, studies have shown physiological differences between males and females diagnosed with ASDs (Bejerot et al. 2012). Future studies should examine whether these differences continue to exist in cases of co-occurring ASD and GV. Interestingly, younger children were just as likely to endorse GV as older children in our ASD sample. This contrasts with studies on childhood GV, which suggest a high rate of desistance as children reach adolescence (de Vries et al. 2012). The lack of desistence in our ASD sample may suggest a different course of gender development for children and adolescents with co-occurring ASD and GV. Our findings present further proof for the co-occurring ASD and GV, and have some clinical and practical implications. The communication impairments among individuals with ASDs can complicate the evaluation and treatment process of gender related problems. Clinicians working with individuals with ASDs should screen for gender related issues, and vice versa. Future studies should further examine the clinical presentation of this co-occurrence.
Rare diseases in childhood and their impact on families

CONGENITAL ADRENAL HYPERPLASIA: NURSING CARE PLAN

Authors: Senay Çetinkaya¹, Emel Yuruk Bal²
¹Çukurova University, Faculty of Health Sciences, Head of the Department of Child Health and Disease Nursing.
²Çukurova University, Faculty of Health Sciences PhD student, Adana, Turkey

Background: Congenital Adrenal Hyperplasia (CAD) is a hereditary disorder associated with adrenal glands, characterized by a deficiency of cortisol and aldosterone hormones and excessive androgen production. In the CAD, corticosteroid hormones can not be produced. It is treated with hormone replacement. The degree of enzyme deficiency determines the severity of the disease.

Objective: In this study, it is aimed to present the nursing care plan of the case diagnosed as congenital adrenal hyperplasia.

Materials and Methods: Data collected from Çukurova University Balcalı Hospital in Child Surgery Ward in Adana, Turkey between 03.10.2017-10.12.2017. It is made as a child's nursing care plan under treatment.

Findings: Mother and father are cousins. A 40-year-old mother has five children. M.K (15 years old), her sex was not known and further examination and treatment were carried out in the Adana hospital. The patient who had a necrotizing enterocolitis episode during six months was referred to Balcalı Hospital. A cut back meatotomy was performed on the cystoscope on 11.08.2003. Oritis was enlarged and cysto urethra vaginoscopy was performed. Cystoscopy+penis reconstruction was attempted in Etga on 24.11.2004 to perform the patient clitoroplasty + vagino ureterroplasty. Suprapubic pelvis usg examination revealed that the uterus size was normal in normal biceps. Cystourethroscopy was performed and the passerini was planned on 10.10.2017. Physical measurements taken in the consultation: weight 60 kg, height length 1.60 cm. In the nurse observation form; body temperature was 36.6 °C, pulse was 96/min, respiration was 24/min, blood pressure was 110/70 mm/Hg. Laboratory findings; white blood cell count: 11.28 μL (3.6-10μL), Hb: 13.4 g /dL and Hct: 44.1%.

Conclusion: The content of the nursing care plan determined after the evaluation is as follows. The risk of infection at the time of birth, the risk of deterioration in tissue integrity, and the risk of activity intolerance were determined. Pain, and despair are observed. There is discomfort in the image of the body and in the concept of self. The inadequacy and lack of self-care were observed in the individual coping.

Key Words: Congenital adrenal hyperplasia, androgen, child health and disease nursing.
HIRSCHSPRUNG’S DISEASES (CONGENITAL AGANGLIONIC MEGACOLON): NURSING CARE PLAN

Authors: Senay Cetinkaya1, Emel Yuruk Bal2

1 Çukurova University, Faculty of Health Sciences, Head of the Department of Child Health and Disease Nursing.
2 Çukurova University, Faculty of Health Sciences PhD student, Adana, Turkey

Introduction: Hirschsprung disease is a blockage caused by disorganised movement in the large intestine. Digested food progresses through the intestine with rhythmic contractions of muscles in the intestinal wall. Due to lack of normal rhythmic contractions in aganglionic intestine, the bowel contents can not be progressed, resulting in blockage and swelling in the abdomen. This condition is also known as congenital aganlionic megacolon.

Objective: This study aims to plan the nursing care of a child with Hirschsprung disease.

Materials and Methods: Data was collected from Çukurova University Balcalı Hospital Research Center for Children's Health and Surgery in Adana-Turkey. It is made between 12.10.2017-19.10.2017. It is a child's nursing care plan of a child who was under treatment.

Findings: E.T. a child of 3 years was born with 2400 gr by normal birth at 40th gestational week. Her mother is 24 years old. There is no consanguineous marriage or genetical disease in the family. Within the first seven days, digestive problem like breast refusal, lack of gaita and gas and swelling in his stomach appeared. Soon after feeding, she started to vomit fecaloid component. Direct abdominal x-rays, barium enema computed tomography, anorectal examination revealed hirschsprung syndrome and colostomy. After the colostomy was opened, the patient came to the regular check-up twice a month and decided to close the colostomy bag by a three-stage operation at the end of two years. A 200 gr colostomy bag is discharged once a day. The nutritional way of oral regimen 2 is given. Her weight, height and head circumference are respectively 12 kg (10% percentile), 98 cm (75% percentile) and 48.7 cm. Body temperature was 36.2 °C, pulse was 109/min, respiration was 30/ min, blood pressure was 100/60 mm/Hg. Laboratory results were like that; white blood cell count: 11.2 μL (3.6-10 μL), Hb: 9.5 gr/dL and Hct: 29.4%.

Conclusion: The content of the nursing care plan determined that after the evaluation is as follows, infection, deterioration of tissue integrity, the risk of intestinal incontinence. Pain, anxiety, and fear are observed. Weight was gained slowly, growth retardation risk, discomfort in the concept of self and lack of leisure time activity has been observed.

Key words: Hirschsprung's disease, ganglion cell, child health and disease nursing.
BEHIND A PANCYTOPENIA: A PYCNODYSOSTOSIS

Authors: H.Chouiki a, M.Merzouk a, S.Guedouar a
a Pediatric unit A, Nafissa Hamoud hospital, Algiers, Algeria

Background: The pycnodysostosis is a rare constitutional disease bone, autosomal recessive, due to a defect in an osteoclastic enzyme: cathepsine K. The diagnosis is made by the association of clinical features with generalized sclerosis bone, phalanx lysis and mandibule dysplasia. We reporte a case where the pancytopenia was the beginning’s point of pycnodysostosis diagnosis.

Observation: 1 year old infant, was admitted for pancytopenia, revealed by a pallor noticed 3 months ago, the infant did many laryngo-bronchiolitis, there were no familial antecedents except an in bred marriage and he has no siblings. Clinical examination revealed a short stature, short upper and lower limbs, pudgy fingers, dysmorphic face with micrognatisme and large fontanel, no spleen or increasing liver size, He has chronic nose obstruction and bronchus. Both smear of blood and bone marrow confirmed central pancytopenia and the decrease of marrow’s cells population. X ray performed showed generalized skeletal sclerosis, distal phalanx lysis, mandibular and clavicular dysplasia, Phosphocalcic screening was normal. The clinical and radiological features respond to pycnodysostosis criteria, so allowed us to make the differential diagnosis with both osteopetrosis and cleido-cranial dysplasia. The management was purely symptomatic, respiratory physiotherapy, blood transfusion, the genetic counseling which be refused by the parents.

Key message: This case shows not only a hematological complication in a patient with pycnodysostosis which is usually described in osteopetrosis but shows the respiratory complication too, also a simple clinical, radiological approach to make the diagnosis of constitutional bone diseases, the final diagnosis reminds genetic and the prognosis is functional. The parent’s and patient’s accompaniment should be efficient. Genetic counseling is ethically a moot point.

Key words: Pycnodysostosis, Pancytopenia, Complications.
22Q11.2 DUPLICATION SYNDROME: WHEN TWO CASES BECOME FIVE

Authors: Ekaterina Popik1, Inês Vaz Matos1, Diana Gonzaga1, Ana Rita Soares2, Céu Mota3, Gabriela Soares2, Laura Marques4, Ana Catarina Prior1
1Neurodevelopmental Unit, Paediatric Department; 2Centro de Genética Médica; 3Neonatal Intensive Care Unit - Neonatology and Paediatric Intensive Care Department; 4Infecciology and Immunodeficiencies Unit, Paediatric Department
Centro-Materno-Infantil do Norte, Centro Hospitalar do Porto, Porto, Portugal

Background: 22q11.2 duplication syndrome (22q11.2DupS) is the reciprocal syndrome of the well-known 22q11.2 deletion syndrome (22q11.2DS) that includes DiGeorge/velocardiofacial syndrome. The phenotype is highly variable, ranging from normal to intellectual disability (ID) and autism spectrum disorder (ASD). Congenital malformations and immunodeficiencies have been described.

Observation: We report on 2 cases from Paediatric Neurodevelopmental Unit of a tertiary hospital. Index case 1: 16 month old girl, born at 35 weeks of gestation, whose diagnosis of 22q11.2DupS was made in the prenatal period due to increased nuchal translucency. Despite normal amniotic fluid karyotype, the duplication was detected by array-Comparative Genomic Hybridization (aCGH). Lenticulostriate vasculopathy and germinolysis on the brain ultrasonography at 1 month of age led to suspicion of congenital cytomegalovirus infection, which was confirmed on Guthrie card. She has peculiar facies, mild global developmental delay, mostly of gross motor and language domains, normal hearing test and mild T-cell deficiency. The multiplex ligation-dependent probe amplification (MLPA) showed the same duplication in both her mother and her 8 year old half-sister. The mother had poor academic performance and reflux nephropathy. The half-sister has an IQ of 68 and communication and attention deficit/hyperactivity disorders. Neither present major dysmorphic features.

Index case 2: 6 year old boy referred to our Unit at the age of 3 due to developmental delay, with speech and language impairment and a normal hearing test. He had previous history of herpes 6 virus cerebellitis, with a normal cerebral MRI at the time. His dysmorphic features include frontal bossing, downsanting palpebral fissures, bulbous nose tip and hypoplastic nostrils. He also has mild T-cell deficiency. Etiological investigation revealed normal male karyotype, normal CGG repeats within fragile X mental retardation 1 gene, normal plasma levels of amino acids, lactate, pyruvate and ammonia and normal urinary organic acids and creatine. The aCGH showed duplication at 22q11.2. The child benefits of speech therapy and special education at school. MLPA analysis revealed an identical duplication in his asymptomatic mother.

Key message:
• 22q11.2DupS is a very variable disorder, ranging from asymptomatic individuals to global developmental delay/ID or ASD. These are the most frequent causes for neurodevelopmental evaluation referral.
• Although this syndrome is less known than 22q11.2DS, it seems to be associated to the same medical problems.
• Prenatal aCGH identification of 22q11.2 duplication, following investigation of increased nuchal translucency with a normal karyotype, like in index case 1, highlights the importance of this diagnostic tool.

Key words: 22q11.2 duplication syndrome; array-CGH, MLPA
SEVERE ANAEMIA WITH RETICULOCYTOPENIA: WHEN WATCHFUL WAITING IS THE BEST ATTITUDE

Authors: Ekaterina Popik, Mariana Branco, Isabel Couto Guerra, Emília Costa, Esmeralda Cleto
Haematology Unit, Paediatric Department, Centro Materno-Infantil do Norte, Centro Hospitalar do Porto

Background: Red cell aplasia is a disorder that results in anaemia, sometimes severe, with reticulocytopenia and reduced or absent red blood cell precursors. Aplasia may affect only red cell line (pure red cell aplasia, PRCA) or may affect other cell lines as well. In childhood there are two main clinical entities of PRCA: Diamond-Blackfan anaemia (DBA) and transient erythroblastopenia of childhood (TEC). Unlike DBA, TEC affects children predominantly older than 1 year of age and is self-limited.

Observation: We report on a case of a previously healthy three-year old boy who was referred to our hospital due to severe anaemia. There was no family history of haematologic disorders. Two weeks before the admission he suffered from febrile upper respiratory tract infection. One week later he presented with progressive worsening of pallor and lethargy. On physical examination he was pale, tachycardic with a normal blood pressure and had a grade II/VI systolic murmur. No lymphadenopathy or hepatosplenomegaly were noted and his physical examination was otherwise unremarkable.

A complete blood count showed a severe normocytic normochromic anaemia (haemoglobin (Hb) 3.6 g/dL) with reticulocytopenia (28300/mm³) and normal white blood cell and platelet counts. A peripheral blood smear was nonspecific. The direct antiglobulin test was negative and the biochemical markers of haemolysis were absent. Foetal Hb level (HbF) was normal (0.4%) and serum erythropoietin was increased up to 3250 U/L. Serology for cytomegalovirus, Parvovirus B19 and Epstein-Barr virus had no evidence of acute infection.

He received a red blood cell transfusion on admission (day 1). On day 4 reticulocyte count increased significantly (245000/mm³) with a subsequent improvement of Hb. He was discharged on day 6 with Hb of 7.8 g/dL and reticulocyte count of 618300/mm³. Spontaneous recovery with sustained normalization of haematologic findings was observed 3 weeks later.

Key message: TEC is an uncommon cause of normocytic normochromic anaemia, with unknown aetiology, that occurs in previously haematologically normal children. In this case patient presents with severe normocytic normochromic anaemia with low reticulocyte count for the degree of anaemia, otherwise normal blood count and no morphologic abnormalities in peripheral blood smear. These, together with normal HbF, high erythropoietin and negative serology for Parvovirus in a child in the characteristic age range allowed to make a diagnosis of TEC. Subsequent normalization of haematologic findings confirmed diagnosis. Authors highlight that it is important to be aware of TEC in order to avoid unnecessary investigation and treatment.

Key words: transient erythroblastopenia of childhood
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