Poster

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Non-tuberculous mycobacteria infection of childhood in Korea

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Background: The epidemiologic data of nontuberculous mycobacterial (NTM) disease in children was limited. The aim of this study was to estimate the prevalence of NTM disease in children of Korea.

Methods: To investigate the prevalence of NTM disease (A31), we did analyze the nationwide database (National Health Insurance Corporation) which included the health-care records of 48.1 million individuals between January 1, 2005 and December 31, 2014.

Results: Prevalence of NTM disease in Korea showed an increased trend between 2005 (825) and 2014 (11,917), however pulmonary tuberculosis in Korea was decreased between 2005 (139,934) and 2014 (75,509). In child age groups, showing same patterns on NTM disease: under nine years old, age group had increased in the following pattern; 72 (2005), 52 (2006), 59 (2007), 213 (2008), 35 (2009), 22 (2010), 31 (2011), 67 (2012), 91 (2013), and 138 (2014); and the 10~19 years group had also increased 26 (2005), 28 (2006), 18 (2007), 20 (2008), 27 (2009), 37 (2010), 81 (2011), 59 (2012), 57 (2013), and 52 (2014). However, pulmonary tuberculosis also showed a decreasing pattern in child age groups: under nine years old age group had decreased 6,006 (2005), 4,940 (2006), 4,637 (2007), 3,805 (2008), 3,388 (2009), 2,227 2010), 1,954 (2011), 1,847 (2012), 1,315 (2013), and 836 (2014); 10~19 years group had also decreased 6,913 (2005), 5,563 (2006), 5,445 (2007), 4,582 (2008), 4,657 (2009), 3,835 (2010), 3,682 (2011), 3,432 (2012), 2,649 (2013), and 2,136 (2014).

Conclusion: Although this data have some limitations, the prevalence of NTM disease in children showed increased tendency, however prevalence of pulmonary tuberculosis was seen to have a decreased pattern. So, further study is needed in future for better exploration in this field.

Speaker Biography

Gwang-Cheon Jang has completed his MD from Yonsei University and also completed his PhD from Yonsie University. He then did his Post-doctoral studies from Harvard University School of Medicine. He is the Director of Computation/Information Committee, Korean Academy of Allergy and Respiratory Disease. He has published more than 64 papers in reputed journals and has been serving as an Editor-in-chief of Medical Journal of NHIS.

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Notes:

Determination of pterines as markers of hyperphenylalaninemias

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In humans, genetic defects of the synthesis or regeneration of tetrahydrobiopteridin (BH4), an essential cofactor in hydroxylation reactions, are associated with severe neurological disorders. The diagnosis of these conditions relies on the determination of BH4, and its metabolites and precursors in biological fluids. This paper describes a reversed-phase high-performance liquid chromatographic (HPLC), new method with fluorometric detection (ERRECI, Milano) for precise and sensitive quantification in urine of the pterins after oxidation: neopterin, monapterin, isoxanthopterin, pterin, biopterin and primapterin. The HPLC method employs a C18, 5-μm particle size analytical column (250 mm×4.6 mm), 10-μL injection volume, column at room temperature, excitation at 350 nm and emission at 450 nm, and an acetate buffer mobile phase at a flow rate of 1.1 mL/min. These conditions resolve the six molecules as well as diluent peaks within 20 min. The method is linear for all the six molecules (0.2-34.0 μmol/L). The detection limits were <0.08 μmol/L at a signal-to-noise ratio of two. The relative standard deviation was <5% (<10% only for monapterin) for the within-assay imprecision (n=10) and <9% for the between-assay imprecision (n=6). The recovery of different amount (1.3-5.5 μmol/L) of the six molecules added to an urine sample was 92-108%. The specific and sensitive method described may offer a means for determining BH4 and five metabolites. The method is characterized by high recovery and good reproducibility; it is well suited for routine operation in every newborn with even slight but persistent hyperphenylalaninemia unresponsive to a low-phenylalanine diet.

Speaker Biography

A Barassi has completed her PhD from Insubria University School of Medicine (Varese, Italy) and Post-doctoral studies from Insubria University School of Medicine (Varese, Italy). She is working as an Assistant Professor of Clinical Biochemistry and Clinical Molecular Biology, University of Milan from 2006 and Assistant of Laboratory of Clinical Chemistry, San Paolo University Hospital, Milan, Italy from 2007. She has published 67 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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A case of pneumoscrotum following spontaneous colonic perforation and mimicking strangulated inguinal hernia

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We reported a fourty two days old, previously healthy boy following spontaneous perforation of the descending and sigmoid colon. The patient presented with progressive abdominal distention and a swollen scrotum that lead to the suspicion of strangulated inguinal hernia. Next plain abdominal radiographs showed free intraperitoneal gas and final diagnosis was made by exploratory laparatomy, that revealed perforation in the descending and sigmoid colon.

Speaker Biography

Rahele Mehraeen has completed her General Medicine at the age of 26 years from Tehran University and postdoctoral studies from Zahedan University School of Medicine. She is an Assistant Professor of Radiology, Ayatollah Rouhani Hospital. She has published more than 13 papers in reputed journals and has been serving as assistant editor of both English and Persian journals namely the Caspian Journal of Internal Medicine and Caspian Journal of Pediatrics and has published a book entitled "An alphabetic guide of pediatric Chest Radiology".

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Accepted Abstracts

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Abdominal wall defects in newborns: A pediatric surgeon's view point on post-partum care

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Abdominal wall defects in newborns have an incidence of approximately 1:2000 live births and are considered to be the result out of a failure in the embryonic development sequence when the physiological umbilical cord herniation of the viscera fails to return back into the abdominal cavity before the 11th week of gestational age. The most common types are "gastroschisis" and "omphalocele". In Germany, these babies are usually deliverd in a Level I Perinatal Centre and treated right from the beginning by an interdisciplinary team of obstetricians, neonatologist, NICU nurses, pediatric anesthetists and pediatric surgeons. Soon after stabilization of the newborn, usually surgical closure of the defect follows. For this closure several different techniques do exist in our neonatal surgical textbooks. In this communication an overwiew about these surgical techniques is given based on a lecture series held in our institution for all staff members involved. In a short appendix a novel technique with its advantages und disadvantages is discussed and shared with the audience.

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Co-infection of respiratory pathogens influencing severity of acute respiratory infection in children under 5 years

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Acute respiratory infections (ARI) leading to pneumonia, bronchiolitis or reactive airway disease are the leading cause of death and ill health among children under 5 years in developing countries. With introduction of molecular diagnostic methods like real time based multiplex PCR tests, polymicrobial infection is being increasingly detected in both hospitalized and OPD cases of ARIs, but their clinical significance is poorly documented. In a recent study in 2016-17, we screened 618 under 5 years children with ARI for 21 different viral and bacterial respiratory pathogens in a tertiary hospital in northeast India using real time taqman probe based multiplex assay. The most common respiratory pathogen in indoor cases vs OPD was RSV (27.3% vs 11.5%, p-value: 0.0001) followed by *Streptococcus pneumoniae* (SP) (16.4% vs 28%) and Rhinovirus (RV) (13.5% vs 9.6%) respectively. Co-infection of 3 or more pathogen was common and was observed in 25% of indoor cases (76/304) and 32.1% of OPD cases (101/314). Co-infection rate was similar in both indoor and OPD cases, however coinfection of RSV, RV & SP was significantly higher in indoor cases compared to OPD cases. RSV, RV and SP infection were significantly associated with breathlessness/respiratory distress (p-value=0.0001). It was seen that U5 children presenting RSV with bacterial superinfection specially *Streptococcus pneumoniae* was significantly associated with severe breathlessness/respiratory distress (OR:10.2; 95% CI: 5.3 to 19.6% p-value=0.0001). Moreover, 23 different RV serotypes was found to be circulating in the region. Rhinovirus C was found to be significantly associated with breathlessness/respiratory distress than RV A or RV B infection. In developing country like India, where U5 mortality due to ARIs is very high, pneumococcal conjugate vaccine has now recently been introduced from May 2017 in the UIP. Furthermore, development of an effective low cost RSV vaccine is necessary to lower the morbidity and mortality associated with ARIs in developing countries.

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Sensivity pattern of microorganisms of septicemia in neonatal intensive care unit of tertiary hospital, Bangladesh

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Introduction: Micro-organism causing neonatal septicemia varies from country to country and also region to region and time to time. In many situations, conventional antibiotics are not sensitive to causative micro-organism. Our aim of the study was identify causative organism and sensitivity pattern of micro-organism in Neonatal intensive Care Unit (NICU).

Methods & Subject: Total 300 patients were enrolled in this study with clinically diagnosed septicemia with prior antibiotic treatment or not. This study was done in NICU of tertiary Hospital, Chittagong Medical College, Bangladesh during the period of January 2013 to July 2014. Blood culture was done in Bact /Alerd 3D system and culture incubated in Fractionated antibiotic neutralization (FAN).

Result: Out of 300 cases, 204 cases were culture negative and 96 cases were culture positive. Klebsiella is the commonest causative organism 52(54.17%), followed by Pseudomonas 16(16.67%), Acinetobactor 14(14.58%), *S.aureus* 6(6.25%), *E.Coli* 6(6.25%), *E. Coli* with other Coliform 2(2.08%). In this study, sensitivity of Klebsiella was mostly to Ciprofloxacin, Imipenem, Azithromycin, Co-trimoxazole, Piperaciline, and Tazobactam. Sensitivity to Pseudomonas was mostly to Amikacin, Imipenem, Ciprofloxacin, Azithromycin and Cefoperazone+ Sulbactum. Sensitivity to Acinetobactor was mostly to Amikacin, Imipenem, Ciprofloxacin, Netilmicin. Sensitivity to Staph. Aureus was mostly to Vancomycine, Amikacin, Imipenem, Meropenem. Sensitivity of *E.coli* was mostly to Amikacin, Ciprofloxacin, Ceftazidin. Most of the culture positive organisms resistant to conventional Ampicilin, Gentamycin.

Conclusion: Conventional antibiotics Ampicillin and Gentamycin are almost resistant to organism causes neonatal sepsis in our NICU.

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Predictive pathogen biology: Genome-based prediction of pathogenic potential and countermeasures targets

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Horizontal gene transfer (HGT) and recombination leads to the emergence of bacterial antibiotic resistance and pathogenic traits. HGT events can be identified by comparing a large number of fully sequenced genomes across a species or genus, define the phylogenetic range of HGT, and find potential sources of new resistance genes. In-depth comparative phylogenomics can also identify subtle genome or plasmid structural changes or mutations associated with phenotypic changes. Comparative phylogenomics requires that accurately sequenced, complete and properly annotated genomes of the organism. Assembling closed genomes requires additional mate-pair reads or "long read" sequencing data to accompany short-read paired-end data. To bring down the cost and time required of producing assembled genomes and annotating genome features that inform drug resistance and pathogenicity, we are analyzing the performance for genome assembly of data from the Illumina NextSeq, which has faster throughput than the Illumina HiSeq (~one-two days versus ~one week), and shorter reads (150bp paired-end versus 300bp paired end) but higher capacity (150-400M reads per run versus ~5-15M) compared to the Illumina MiSeq. Bioinformatics improvements are also needed to make rapid, routine production of complete genomes a reality. Modern assemblers such as SPAdes 3.6.0 running on a standard Linux blade are capable in a few hours of converting mixes of reads from different library preps into high-quality assemblies with only a few gaps. Remaining breaks in scaffolds are generally due to repeats (e.g., rRNA genes) are addressed by our software for gap closure techniques, that avoid custom PCR or targeted sequencing. Our goal is to improve the understanding of emergence of pathogenesis using sequencing, comparative genomics, and machine learning analysis of ~1000 pathogen genomes. Machine learning algorithms will be used to digest the diverse features (change in virulence genes, recombination, horizontal gene transfer, patient diagnostics). Temporal data and evolutionary models can thus determine whether the origin of a particular isolate is likely to have been from the environment (could it have evolved from previous isolates). It can be useful for comparing differences in virulence along or across the tree. More intriguing, it can test whether there is a direction to virulence strength. This would open new avenues in the prediction of uncharacterized clinical bugs and multidrug resistance evolution and pathogen emergence.

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About the etiology of schizophrenia

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In the origin of schizophrenia the evidences point to intra-uterine environmental factors that act specifically during the second pregnancy trimester producing a direct damage of the brain of the fetus. The current available technology doesn't allow observing what is happening at cellular level since the human brain is not exposed to a direct analysis in that stage of the life. Methods. In 1977 we began a direct electron microscopic research of the brain of fetuses at high risk from schizophrenic mothers in order to finding differences at cellular level in relation to controls. Results. In these studies we have observed within the nuclei of neurons the presence of complete and incomplete viral particles that reacted in positive form with antibodies to herpes simplex hominis type I [HSV1] virus, and mitochondria alterations. Conclusion. The importance of these findings can have practical applications in the prevention of the illness keeping in mind its direct relation to the aetiology and physiopathology of schizophrenia. A study of amniotic fluid cells in women at risk of having a schizophrenic offspring is considered. Of being observed the same alterations that those observed previously in the cells of the brain of the studied foetuses, it would intend to these women in risk of having a schizophrenia descendant, previous information of the results, the voluntary medical interruption of the pregnancy or an early anti HSV1 viral treatment as preventive measure of the later development of the illness.

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Nutritional intervention: Important aspect of treatment in children with cancer

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Malnutrition with estimates of prevalence ranging up to 50% is one of main concerns in cancer therapy. It is thought to increase the risk of morbidity, mortality and early relapse. Nutrition risk must be determined through a nutrition screening process. Nutrition assessment is a comprehensive evaluation carried out by an RDN using medical history, physical examination laboratory data which must be also specific for pediatric cancer patients. Nutrition intervention technique is based on the clinical assessment and the child's requirements. Appropriate nutrition delivery either oral or enteral or even parenteral should be based on individualized medical nutrition therapy. Is there any other nutrition risk factor for pediatric cancer patients, except what is happen for chronic diseases through medical course? Actually long-term childhood cancer survivors are at higher risk of developing metabolic syndrome, cardiac complications, or peak bone mass reduction due to treatment-related side effects. We explore this by hormonal changes in more than 100 cancer childhood survivor. Undoubtedly these chronic diseases must be under control through nutrition therapy to increase insulin sensitivity for these neglected disorders in cancer childhood survivors. Some other neurologic and psychiatric problems in these children also must be evaluated by dietitian for better control. So we hope we can present the main points.

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India must strengthen the microbial disease monitoring network

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India depends on the monsoon rains to sustain agriculture productivity since millions of farmers rely on it for their survival. The monsoon rains also triggers serious outbreak of microbial diseases. The weather reports nowadays can precisely predict the rainfall patterns ahead and the government agencies should be prepared well in advance to counter microbial outbreaks immediately after heavy rains and floods. India needs to add more sophisticated laboratories in villages to contain microbial disease outbreaks on the grassroots level. In 2004, India started the Integrated Disease Surveillance Program and nearly 90% districts were regularly providing status reports. But, what is required now is to increase the village and block-level coverage and then only the whole country can be brought under systematic surveillance. The government fs India's 12th Plan (2012–17) budget has allocated USD 98 million for disease surveillance work. But, more funds are needed to cover the entire nation that has a population of over 1.3 billion people. Then, the microbial surveillance network including the provision of latest rapid diagnostic tools will become easier for the healthcare sector.

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Long-term endocrine effects of chemotherapy in cancer childhood survivors

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Advances in new therapies for childhood cancer have resulted in cure rates of almost 80%. But there is greater risk for developing late adverse effects after treatment, including obesity, high blood pressure, cardiovascular diseases, and impaired glucose metabolism. Endocrinopathies are among the most frequently encountered late sequelae in Cancer Childhood Survivors (CCS). Some of mentioned adverse effects are part of metabolic syndrome (MetS). Although the exact relation between cancer and MetS is not elucidated yet, but treatment factors (radiotherapy, chemotherapy) have been indicated to determine metabolic changes in CCS rather than baseline characteristics. Obesity is another concern in these patients which is reported to be higher among Acute Lymphoblastic Leukemia and brain tumors survivors. Obesity in situ can lead to inflammation as described in literature and also has considerable endocrine changes because of adipokines like Leptin and Adiponectin and others. Glucocorticoids treatment is one of risk factors in CCS. Impaired glucose tolerance because of osteocalcin dysregulation is another hormonal change which can cause harmful phenomenon like Insulin resistance. Undoubtedly nutrition has remarkable effect for management of these disorders. Based on child characteristics, type of cancer, type of therapy and present disorder, different management needs to be planned. Some of nutritional intervention aim to increase insulin sensitivity and some of them to prevent or treat obesity. So we wish we can explain these endocrinopathies and also nutrition management.

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Infections due to various pathogens can lead to overweight and obesity: Adenovirus 36 and obesity

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Introduction: Ad36 is the first human adenovirus reported that causes obesity in experimentally infected animals and shows association with obesity in humans. More human studies, all over the world, are related to the relationship between Ad36 infection and obesity, and till now have not been explanatory, studies show contradictory results.

Aim: The aim of our study is to assess the association between Ad36 infection and obesity in high-school students from Eastern Slovakia.

Methods: Two hundred and twenty-four randomly selected students (17.72 ± 1.20 years of age, 120 female) from 7 high-schools in Kosice were included in the study. Subjects with secondary causes of obesity were excluded and none were taking medications or had a history of cardiovascular disease. In 224 healthy students, anthropometric parameters, fasting plasma glucose and insulin were measured. Ad36 antibody was detected by ELISA test.

Results: Serum leptin levels were significantly lower in presence of Ad36 seropositivity ($p<0.05$, $U=3886.00$). UA levels were significantly higher in Adv36 seropositive adolescents (318.79 ± 71.51) compared to seronegative (298.45 ± 63.05) ($p<0.05$). No significant differences were found between lean and overweight/obese adolescents in prevalence of Adv36 seropositivity (chí-kv: 0.60, $p=0.43$). Body weight were significantly higher in Adv36 seropositive lean subjects compared to Adv36 seronegative lean study group ($p<0.05$, $U=2221.50$).

Conclusion: The current study suggests that Adv36 seropositivity seems to be directly associated with decreased of leptin levels and development of unhealthy obesity and cardiovascular (CV) risk, which may be amplified by UA. Our study shows a possible association between Ad36 infection and the risk of development of obesity in normal weight children and adolescents. Further studies in different age groups of children and adults are required to elucidate this biological mechanism of such complex relationship.

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Pneumonia and lower respiratory infections among under-5 hospitalized children in malaysia: Insights on nasopharyngeal staphylococcus aureus yielding phenotypic and genotypic variations between oxacillin/methicillin sensitive (MSSA) and resistant (MRSA)-strains

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Background: *Staphylococcus aureus*, particularly the MRSA strains (resistant to oxacillin/methicillin and other antimicrobials) causes infections commonly including pneumonia accounting for 3-5%, globally, Since childhood-pneumonia in Malaysia ranges between 7-44% but, molecular epidemiology of naso-pharyngeal *S. aureus* has been scarcely reported, we conducted this cross-sectional study.

Objective(s): To determine prevalence of *staphylococcal pneumonia* among under-5 years-old and to compare phenotypic and genotypic diversities between oxacillin/methicillin sensitive (MSSA) and resistant (MRSA) *S. aureus*-strains.

Methodology: With mother's consent, nasopharyngeal-swabs (NPS) were collected from randomly selected 220 hospital admitted children in two tertiary-care hospitals in Kedah, Malaysia. Bacterial isolates grown on mannitol-salt and blood-agar plates were incubated (+35o-37oC), overnight. Colony morphology read, gram-stained done and bio-chemical tests (+ve catalase & coagulase & CHO-fermented) performed. Antimicrobial-resistance using 8 antibiotic-disks: AMC^{20}, CRO^{30}, CIP^{5}, E^{15}, CN^{10}, S^{10}, TE^{30}, VA^{30}; OX^{1}) were performed. For genetic-analysis PCR (*Sigma*, USA) were performed employing rapid DNA isolation and thermal cycler (*Bio-Rad*, USA) using two specific-primers ***femA*** (confirming **MSSA**) and mecA (confirming **MRSA**) by tracing electrophoretic-DNA band-size on agarose-gel.

Results: Of all suspected cases, 76% were clinically diagnosed as pneumonia. NPS from 32.6% yielded MSSA among which 39.4% were MRSA when identified phenotypically. Lower MRSA-prevalence was observed genotypically (32%) than phenotypically (39%). While no differences existed between MRSA & MSSA phenotypically, genetically it did significantly ($p<0.01$), particularly for pneumonic cases ($p<0.04$) showing marked difference in carrying ***femA*** and ***mecA*** genes ($p<0.00$).

Conclusion and Recommendation: Although MSSA, other than MRSA is associated to cause childhood-pneumonia, detailed molecular-epidemiology is recommended to elucidate genetic diversities of *S. aureus* implicating childhood pneumonia.

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Iatrogenic profile of newborn in Neonatal Intensive Care Unit (NICU)

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Iatrogenic problems are the gift of advancement in medical technology and it is defined as deleterious effects of diagnostic or therapeutic regimen producing pathology independent of the condition for which the regimen is given to sick newborn in NICU. It is an emerging problem of developing and developed countries. The prevalence varies from place to place and it depends upon the knowledge, attitude and practices of the medical and paramedical staff of the NICU. Keeping in view of the above fact this observational study w.e.f Jan 2003 to Dec 2016 was carried out in NICU of Neonatal Section of Department of Pediatrics, Jawaharlal Nehru Medical College Aligarh Muslim University Aligarh India with the objectives to determine the prevalence, spectrum and impact on immediate outcome of iatrogenic diseases in NICU. A total of 55816 babies delivered in Obstetric Department of Jawaharlal Nehru Medical College AMU Aligarh of which 16396 babies were admitted to NICU for their sickness. 1446 newborn with mean age 11.5 ±4.08 with predominance of male over female with M:F ratio of 1.07:1,delivered to unbooted, multipara through normal vaginal route in68%,41.63% and 56.6% respectively. The neonatal profile of newborn who developed iatrogenic problem during the NICU stay were having in combination illness followed by respiratory distress, birth asphyxia, prematurity (Gestational age <37 weeks), septicemia, blood group incompatibility and congenital anomalies I 29%,18%,18%,13%,12%7% and 6% respectively. The overall prevalence of iatrogenic problem was observed 8.81% which included predominance of intravenous cannulation injury followed by, anemia, miscellaneous, obstetric injuries.,drug induced problem and surgical problems in .38.9%,18.5%,17.6%, 13.7%, 9.5%, and 1.9% respectively.

Conclusion: There is increase prevalence of iatrogenic disease in NICU which can be reduced considerably by vigilance of trained and skilled medical and nursing staff regarding iatrogenic problems, following strict protocol management and regular auditing of iatrogenic problems in NICU during their management.

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The genetic background of human neural tube development in the aspect of prenatal diagnosis

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Congenital Neural Tube Defects (NTD) are common malformations both as an isolated form and a part of genetic syndromes. Extraordinarily fast development of molecular genetics confirms that almost all NTD are genetically dependent in terms of aberrations in different regions of a chromosome or single gene m utations. On the other hand, NTD are an important component of diverse genetic diseases, inclu ding monogenic and metabolic disorders with mutations (often called polymorphism) genes responsible for the condition of the MTHFR gene. The genes participating therein are located nearly on each chromosome, mainly on pathways, along with ligand genes and co-factors, transcription factors or individually. Many mechanisms on NT development are based on the balance between apoptosis, proliferation and migration. Crucial genes controlling fetal development, including the creation of neural tube and the forming of vertebral continuity are primary “homeobox” genes grouped in 4 clusters HOX1-4. Other genes condition the for ming of different structures. The most important pathways are Shh, Wnt, FGF, Notch, and BMP. These pathways are closely connected with other structures of the body, like conus heart, thymus, intestinal tract, skin, or symphatic nervous system. The most complicated is closing of column. On the one hand, this process does not depend on one but on numerous genes, especially Pax3 and Pax7, and, on the other hand, it depends on proper work mainly of Folic Acid Path, as well as vitamin B12, and choline. Neural development is also affected by the imprinting (about 30 genes) and the inactivation of the X chromosome in day 21s of embryo development. In our daily prenatal practice we are able to find specific NTD as soon as 12th week of gestation but our target is to confirm if NTD may be of truly isolated nature or non-specific mild ultrasound co-markers. As you can see above, we have a lot of information and we can prevent many open NTD, but still affected children are born. It means that our knowledge about it is not yet complete. Presently, we have some possibilities to help the baby in uterus to close peripheral open NT if it’s not too big and has isolated nature.

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Streptococcal skin infections and the role in the development of acute rheumatic fever

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A case of acute rheumatic fever (ARF) in an indigenous maori child in New Zealand Following Group A Streptococcus (GAS) pyoderma and Group G Streptococcus pharyngitis is reported. The case demonstrates that ARF can develop in the absence of GAS pharyngitis and highlights a need for further research into the role of pyoderma and non-Group A Streptococci infections in ARF pathogenesis. This also raises the important question of whether the appropriateness of tunnel vision best practice. Current guidelines designed to reduce the overwhelming disparity in rates of ARF for indigenous Maori and Pasifika children are focusing solely on GAS pharyngitis as the preceding event in the development of ARF. If the reliance of evidence from studies on US servicemen in the 1960's is not applicable in these high risk communities of New Zealand and GAS skin infections have a role then our whole approach needs to be revisited. This could be an important example of where health inequities are driven by stubbornly adhering to the wrong evidence. Dr O'Sullivan will present an example of an innovative digital healthcare programme iMOKO, developed to address the issue of GAS skin infections. Since the introduction of iMOKO there has been a significant reduction in ARF in children of these communities.

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Integrated neonatal support on placental circulation with resuscitation (INSPiRe): A feasibility study

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Background: It is recommended to delay umbilical cord clamping for at least 60 seconds in preterm infants to facilitate placental transfusion (PT). However, compromised neonates receive immediate cord clamping as they are deemed to require resuscitation. These babies may benefit from both PT and resuscitation; this dyad is not well studied.

Objective: To study the feasibility of initiating resuscitative support during PT for up to 90 seconds in preterm infants.

Design/Methods: We designed and built a mobile battery-powered resuscitation platform (INSPiRe) that contains a warm gel mattress, oxygen and air tanks, oxygen blender, T-piece resuscitator, pulse oximeter (PO), and electrical suction device. Resuscitative care included positioning neonate in a supine position, opening the airway, suctioning if necessary, drying, and stimulation. Thermoregulation was maintained using a hat, warme blankets and gel mattress. Respiratory support was initiated at 30 seconds following Neonatal Resuscitation Program guidelines. Preductal oxygen saturation (SpO2) was continuously monitored. Heart rate was documented via auscultation at 30, 60 and 90 seconds. Umbilical cord clamping was done at 90 seconds. The baby and the platform were mobilized from mother's bedside to the radiant warmer in the same room by one provider, while another provider maintained the respiratory support. Axillary temperature was obtained, once the baby is transferred to the radiant warmer. Resuscitation interventions and management during first 24 hours were documented.

Results: Fourteen preterm infants (26–36 weeks) born vaginally received resuscitative care using INSPiRe during PT for 90 seconds. Eleven neonates received CPAP on INSPiRE, two received PPV. Eleven infants received ongoing cpap in the NICU. Preductal Sp02 was >70% at one minute of age and no less than 78% at 90 seconds. One neonate had a temperature <36.5 (35.9). No neonate required inotropes or fluid volume resuscitation in the following 24 hours. None of them had IVH.

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New data regarding the validation of the Pediatric Visceral Adipose Tissue Index (VAIP)

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Introduction: Visceral Adiposity Index (VAI) is a mathematical model associated with cardiometabolic diseases in adults. Previous studies in pediatric population have failed to demonstrate any association of VAI with metabolic and cardiovascular risk. In a previous paper we adapted VAI components to pediatric population (VAI^P); the aim of the present study was to analyze the correlation of insulin resistance indexes and surrogate markers of cardiovascular abnormalities in order to validate VAI^P.

Methods: A prospective analysis was performed. A hundred children (normal weight, overweight and obese) between 8 and 12 years of age were recruited. Correlation analysis between risk variables (intima media thickness (IMT), flow mediated dilatation (FMD), HOMA-IR and Matsuda-ISI indexes, Visceral Fat Adiposity (VFA), Body Fat, and preperitoneal fat thickness (PP)) and VAI^P was performed. Pearson and Spearman correlations were done. Cut points were designed using ROC curves and Odds ratios calculated by logistic regression analysis.

Results: Significant strong correlation was found between VAI^P and HOMA-IR ($r=0.537$, $p=0.001$), Matsuda ($r=-0.607$, $p=0.001$), IMT ($r= 0.705$, $p=0.001$), FMD ($r = -0.464$, $p= 0.001$), VFA ($r= 0.616$, $p= 0.001$), Body Fat ($r= 0.735$, $p= 0.001$), and PP ($r= 0.696$, $p= 0.001$). For children with obesity, the best cut off point of VAI^P to predict insulin resistance was 4.88. All the children with obesity had abnormal values regarding IMT.

Conclusions: Adjusted VAI^P has a strong correlation with adiposity and correlates with cardiovascular and metabolic distress. It could be a helpful tool for identifying children at cardiometabolic risks, and for assessment of these children throughout intervention strategies.

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Influence of prematurity on the "emmetropization" process

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Background: 'Emmetropization' is the process of change by the eyeball optical structures that takes place from birth in order to achieve an optimal refractive state, emmetropia. However, prematurity can alter this process, causing refractive defects that alter the development of vision.

Objective: The present study aims to show the influence of prematurity on the process of 'emmetropization' by comparing a sample of 80 children of 3 to 4 months of age born prematurely with a sample of 80 children born at full-term.

Methods: A descriptive cross-sectional study was conducted comparing two groups, preterm infants (Integral Kangaroo Mother Program) and term infants (Children's Clinic Colsubsidio) each with 80 children, using selected convenience sampling. The variables studied in both groups were: refractive status and gestation period, analyzed by the chi square test.

Results: The most common refractive error was hyperopic astigmatism (+3.00 to +3.75 sph., –1.00 to –1.75 with cyl.) for those born prematurely and (+2.00 to +2.75 sph. with 0.00 to –0.75 cyl.) for term infants. Chi-square analysis rejected the null hypothesis that the variables showing gestational age and refractive state were related (P=.0072).

Conclusion: The most common defect for the two groups was hyperopic astigmatism, being higher in the preterm group than in term infants group. The association between the variables, refractive status and gestational age, indicate that prematurity can be one of the factors that alter the process of 'emmetropization' of the eyeball.

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The investigation on the protective role of regulatory T cells in lps induced fetliver damage in late pregnant mice

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We checked the role of regulatory T cells (Tregs) on the liver inflammatory response in a lipopoly- saccharide (LPS)-induced preterm birth mouse model. The LPS-induced preterm birth mouse model was established. Before LPS treatment Tregs were insulated from pregnant mice and inoculated into different pregnant mice. The expression of Hemeoxygenase-1 (HO-1), fork head family transcription factor (Foxp3), and interleukin-6 (IL-6) in liver were examined by real-time reverse transcription polymerase chain reaction and western blotting.The mRNA and protein expression levels of, HO-1 and Foxp3 in liver from LPS-treated mice was considerably reduced equated with the controls, while the adoptive transfer of Tregs expressively rescinded the changes in the expression of the above said elements after LPS treatment. Fascinatingly, the expression of IL-6 in the liver was meaningfully elevated after LPS treatment, and this effect was obstructed by the adoptive transfer of Tregs. The preterm birth was remarkably persuaded after maternal LPS exposure and affected the expression of Foxp3, HO-1and IL-6 in liver tissue. Furthermore, the adoptive transfer of Tregs absolutely abolished the changes in the expression of the above factors after LPS treatment. However, further study is needed to understand the mechanism of Tregs to prevent the liver inflammation in preterm birth in human.

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Deflazacort versus prednisolone: Randomized controlled trial in treatment of children with idiopathic nephrotic syndrome

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Introduction: Corticosteroids are the main therapy of nephrotic syndrome and goal of corticosteroid therapy is to obtain maximum clinical benefit with minimum adverse effects. Children are more vulnerable to side effects of corticosteroids related to growth and adrenal suppression so a search for an alternative steroid with fewer side-effects is underway. Deflazacort is an oxazoline derivative and preliminary data suggest reduced osteoporosis, lesser growth retardation and weight gain with deflazacort. This study was done to compare the effectiveness and safety of deflazacort in idiopathic nephrotic syndrome.

Methods: Twenty five children with age between 2 to 12 years, with idiopathic nephrotic syndrome were enrolled. They were randomly assigned to receive Deflazacort (Group A, n=12) or Prednisolone (Group B, n=13) and were followed up for six months.

Results: All children of group A and 11 of group B had remission. Two children from group B were steroid resistant. Mean time taken to induce remission was significantly (P=0.012) less in group A (10.25±2.41 days) than group B (12.55±1.44 days). One patient in group A had relapse on follow up as compared to 3 in group B (P=0.58). Statistically significant difference (P=0.03) in change in mean height was found between group A (2.13±0.50cm) and B (1.44±0.45cm), with group B gaining less height.

Conclusion: Remission rate in both groups was comparable although time taken to induce remission was shorter in Deflazacort group and there was a significant difference in change of mean height on follow up with Prednisolone group gaining lesser height

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Childhood obesity and its associated disease: Obesity reduction program

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The process of atherosclerosis begins already in childhood and its relationship to the presence and intensity of the known cardiovascular risk factors has been already proved. Expert panel on integrated guidelines for cardiovascular reduction in children and adolescents highlighted early identification of risk factors and their elimination, as they plays a key role in the prevention of CVS diseases. AHA definition of "CVS health" encompasses these parameters: tobacco use, BMI adjusted to the gender and age of a child, physical activity, score of healthy food, total cholesterol, blood pressure, and fasting glycaemia. Obesity causes chronic volume overload (increased preload) and dilation of the left ventricle (LV) of the heart. Hypertrophy LV itself as an adaptation to expanded intravascular volume determines the damage of the diastolic function LV especially by influencing later diastolic passive infilling. For persistent obesity they may of course result in systolic dysfunction and manifest heart failure while damaging the function of the myocardium correlates with body mass index and the duration of obesity. The clinical picture of the consequences of cardiomyopathy depends on the severity of the emerging cardiac changes, age, duration and severity of the obesity, as well as on associated diseases, which often accompany obesity (arterial hypertension, disorder in the metabolism of lipids and glucose, ischemic heart disease, sleep apnea syndrome, etc.). Weight loss in obese youth is associated with improved metabolic outcomes; weight management goals for this age group are more ambiguous than in adults. In our Children faculty hospital the management of obesity include hospitalization to exclude secondary causes of obesity, spa treatment and outpatients programs. Our highly specialized Clinic for preventive cardiology and lipid metabolism disorders focus on individual and group outpatient therapy for obesity and cardiovascular risk stratification in children and adolescent. Highly organized team of specialists working on interdisciplinary outpatient program- "Obesity reduction program, School of Obesity". This program is focused on the same sex groups of children and adolescent who are in *the same* range of ages. The goal of this program is to win the fight against obesity- prevention of cardiovascular disease associated with obesity, and treatment of childhood obesity by new way. We confirmed that group outpatient therapy for children and their parents had significantly better results in body weight loss ($p<0.05$) compare to individual therapy during the childhood.

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The association of maternal body composition and dietary intake with the risk of gestational diabetes mellitus during the second trimester in a cohort of Chinese pregnant women

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The study investigate the association of maternal body composition and dietary intake with the riskof gestational diabetes mellitus (GDM). A total 154 GDM subjects and 981 controls were enrolled in a prospective cohort study in 10 11 hospitals from May 20, 2012 to December 31, 2013. Bioelectrical impedance analysis and dietary surveys were used to determine body composition and to evaluate the intake of nutrients in subjects at 21-24 weeks' gestation (WG). Logistic regression analysis was applied to explore the relationships of maternal body composition and dietary intake with the risk of GDM morbidity. Age, pre-pregnant body weight (BW), and body mass index (BMI) were associated with increased risk of GDM. Fat mass (FM), fat mass percentage (FMP), extracellular water (ECW), BMI, BW, energy, protein, fat, and carbohydrates at 21-24 WG were associated with an increased risk of GDM. In contrast, fat free mass (FFM), muscular mass (MM), and intracellular water (ICW) were associated with a decreased risk of GDM. Maternal body composition and dietary intake during the secondtrimester of pregnancy were associated with the risk of GDM morbidity.

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