There are some reports on changes in metabolic control during the menstrual cycle. Adolescents during the menstrual cycle. There are individual variations in metabolic control, even if no systemic variation was found in the measured variables during the menstrual cycle.

**THE BLUE DOG PROJECT: SCIENTIFIC VALIDATION, WORLDWIDE RESPONSE AND NEED FOR FURTHER RESEARCH**

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Recommendations on how dogs and children should interact have been extensively published, but only few programmes have been analysed on their effectiveness. The Blue Dog interactive CD aims to reduce the incidence of dog bites in young children and it was considered crucial to assess if the CD was effective as an educational tool.

The hypotheses to be tested were: (1) whether the presentation of selected extracts of the CD in standardised settings to 3–6 year olds induced a “learning effect”; (2) whether the lessons learned will be transferred to new situations; (3) the effect of verbal feedback and parent support on the messages learned.

In the pilot study, children of 3, 4, 5 and 6 years (24 children/age group) were exposed to the appropriate scenes, then trained to distinguish safe from unsafe situations. Finally they were tested, immediately and following a delay of 2 weeks.

Results showed that (1) children of all age groups significantly learned from the Blue Dog scenes; (2) the performance improved with increasing age; (3) children who received parental input seemed better able to retain their acquired knowledge. Verbal feedback had no significant effect.

According to the results, parental input is important in teaching children the lessons from the Blue Dog Story. Therefore, the Blue Dog package consists of a CD and an accompanying printed parent guide. The presentation will highlight the market penetration and feedback received from the first year following the launch as well as further research options initiated by the Blue Dog Trust.

**PERSONAL WATERCRAFT INJURIES AMONG CHILDREN BEFORE AND AFTER IMPLEMENTATION OF SAFETY POLICIES**

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Objective: Personal water craft (PWC) are small, motorized boats that transport up to two people and can obtain speeds over 60 mph. PWC are built for adult use but children can participate as operators or passengers. Due to the hazardous nature of PWC, one state in the USA passed policies that set a minimum age of operation of a PWC and required boating education before operation. The purpose of this study was to investigate the injury rate among children under age 12 before and after the regulations were enacted.

Methods: The state of Arkansas passed legislation in 1999 that regulated age of operation and required boating education for PWC use. Data was obtained from the Arkansas Game and Fish Commission that investigates boating crashes on lakes and waterways. Data was evaluated for the years 1994 through 2005.

Results: The data suggest that the policies provided some protection immediately after implementation. However, injury rates among children climbed to levels experienced pre-policy enactment.

Conclusion: The impact of policies and regulations had a short-term impact on PWC-related injury among children. It is not certain the reason for the increase post-policy implementation. Suggestions are that the media campaign immediately before policy implementation created awareness that provided short-term behavior change. The injury rates went down initially post-policy but increased soon after the end of the media campaign. Another reason could be that the policy had a short-term effect but then users realized that enforcement was going to be challenging so participants took risks.

**RISK AWARENESS: UNDERSTANDING THE BARRIERS TO EFFECTIVE RISK REPORTING IN A TERTIARY NEONATAL UNIT**

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Aim: Many neonatal units have a robust risk reporting and analysis system. However, disparities exist in perceiving risks which leads to variable levels of reporting. This study aimed to understand these disparities and suggest ways to improve reporting systems.

Methods: Medical and nursing staff based on the tertiary neonatal unit at St James’s University Hospital, Leeds were invited to a presentation and a photo quiz on situations with potential risks involved. Participants then completed a questionnaire on their knowledge, frequency and behaviour of incident reporting, unreported incidents and suggestions to improve reporting.

Results: 23 participants completed the questionnaire: doctors 66% and nurses 34%. All thought reporting was good practice but reporting was higher amongst nurses (90%) compared to doctors (74%). Only 12% felt they received satisfactory feedback (consultants 33.3%, senior nurses 20%, junior doctors 7.7%). 28% never reported clinical incidents. The reasons given for not reporting included: lack of feedback, lack of time and interest, lack of appropriate action and doubts about its usefulness. Only 48% felt reporting changed practice and only 24% felt their reporting led to action. 74% respondents knew where to find incident forms on the unit.

Suggested ways to improve reporting practice were: regular risk awareness lectures, providing simpler forms, providing good feedback, dissemination of results amongst team members.

Conclusions: There are many reasons affecting attitudes and behaviour towards incident reporting, mainly hierarchical differences, poor feedback rate and perceived lack of action. Proactive reporting may be improved if reporting staff received prompt, adequate and satisfactory feedback.

**METABOLIC CONTROL DURING THE MENSTRUAL CYCLE IN ADOLESCENT GIRLS WITH INSULIN-DEPENDENT DIABETES**

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Introduction: There are some reports on changes in metabolic state during the menstrual cycle (recurrent ketoacidosis, hypoglycemia and hyperglycemia). The purpose of this study was to elucidate the impact of menstruation on metabolic control and daily living in adolescents with insulin-dependent diabetes.

Methods: The subjects were 79 teenagers, 14 to 20 years of age, with insulin-dependent diabetes. Only 26 patients agreed to participate. 6 patients did not complete the study. Data from 6 consecutive menstrual cycles were obtained. Metabolic control: blood glucose by self-monitoring recorded daily, insulin doses, hypoglycemic events, and physical activity were recorded in a diary.

Food intake: 24 hour food-intake diary, 2 days weekly. Weight: the participants weighed themselves twice weekly. Psychosocial conditions: 4 questions about social and emotional support were included.

Results: There are no variations in metabolic control in diabetic adolescents during the menstrual cycle. There are individual variations in metabolic control, even if no systemic variation was found in the measured variables during the menstrual cycle.
Hypoglycemia appears more frequently in the week of menstruation, with no relation to increased doses of insulin. **Conclusions:** Even if the influence of menstruation on metabolic control was not demonstrated, the impact might be greater in occasional individuals, as evidenced. Estrogen makes cells more sensitive to insulin, while progesterone makes cells more resistant to insulin, though not simultaneously or to the same degree so women are affected differently. Some patients experienced mood swings and food cravings; more carbohydrates and fats can also affect blood sugar levels.
Poster session: brain/neurology (neurosciences)

DRAMATIC EFFECT OF NANDROLONE DECANOATE ON MOTOR DEVELOPMENT IN CEREBRAL PALSY

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Objectives: There is no specific intervention to improve motor development in cerebral palsy (CP). The aim of this paper is to report the effect of nandrolone decanoate (ND) on motor development in a child with CP.

Method: A 14-month-old boy with CP caused by birth asphyxia presented with delayed motor development associated with mild spasticity and hyperreflexia. On presentation he was unable to turn from the supine to the sitting position alone and was not able to maintain a sitting position when he was put in a sitting position. He was not crawling but he was occasionally rolling to the sides. He was able to catch a biscuit and eat it. His language was delayed and he was not capable of saying any word with meaning. The patient received 2 intra-muscular injections of ND 12.5 mg in an interval of 2 weeks. Estimation of the bone age was made using radiographs of the left wrist before the injection and 2 weeks after each injection.

Results: The use of ND was associated with a dramatic effect on the motor development without the occurrence of any adverse effects. After one week the child was able to sit alone and was trying to stand. One week after the second injection the child was walking (holding furniture) confidently, and walking 1–2 steps alone.

Conclusion: The novel use of ND in this child with CP resulted in a dramatic effect on motor development without the occurrence of unwanted effects or advancement of bone age.

A DYSMORPHIC GIRL WITH ACROCEPHALY, SEIZURES, LONG FINGERS, AND CHERRY RED SPOTS: A NEW ASSOCIATION

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Objectives: To report the association of acrocephaly, cherry red spots, squint, seizures and long spindly fingers which has not been reported before.

Methods: A 10 month old girl with generalized tonic clonic convulsions despite treatment with sodium valproate, and two of her siblings, a girl and boy who were similar in appearance to this girl, died from recurrent seizures that didn’t respond to sodium valproate during the first year of life. Seizure was completely controlled with carbamazepine. The aim of this paper is to report a new clinical association.

Results: The girl was born at term with average weight by normal vaginal delivery. The mother did not report taking any drugs during pregnancy. The girl was acrocephalactic with flat occiput and had microphthalmia. She has microcephaly (head circumference 32 cm), bilateral microphthalmia and bilateral corneal opacities, and microphthalmia. Serological tests for congenital rubella, cytomegalovirus, and toxoplasmosis were negative. She has normal female karyotype. Ultrasound of the eyes showed chorioretinal anterior segment, vitreal haziness and opacity. CT-scan of the brain showed prominent cistern magna, bilateral cerebral atrophy and agenesis of the corpus callosum. Abdominal ultrasound revealed normal findings.

Conclusion: The novel occurrence of corneal opacity in association with the first case of AS in the Arab world is reported.

THE NOVEL OCCURRENCE OF CORNEAL OPACITY IN ASSOCIATION WITH THE FIRST CASE OF AICARDI SYNDROME IN THE ARAB WORLD

A Al Mosawi. Head of the Department of Pediatrics, University Hospital in Al Kadhimiya, Baghdad, Iraq

Objective: Aicardi syndrome (AS) is a sporadic rare cerebro-ocular disorder that affects primarily females. It consists of cerebral manifestation including agenesis of the of the corpus callosum, seizures, and mental retardation. Ocular abnormalities include chorioretinal lacunae and microphthalmia. Corneal opacities have not been reported with this syndrome. The aim of this paper is to report the novel occurrence of corneal opacity in association with first case of Aicardi syndrome in the Arab world.

Method: An 18 month old girl with bilateral microphthalmia and developmental delay was referred because her mother has become pregnant and there was fear of birth of another abnormal child.

Result: The girl has significant growth retardation with all of her growth parameters below the third centiles. She looked active and was smiling frequently despite serious visual impairment. She cannot speak yet. She was able to sit up from the supine position but was unable to stand. She has microcephaly (head circumference 32 cm), bilateral microphthalmia and bilateral corneal opacities, and microphthalmia. CT-scan of the brain showed prominent cistern magna, bilateral cerebral atrophy and agenesis of the corpus callosum.

Conclusion: The novel occurrence of corneal opacity in association with the first case of AS in the Arab world is reported.

DRAMATIC EFFECT OF SINGLE DOSE NANDROLONE DECANOATE ON THE MOTOR DEVELOPMENT IN CEREBRAL PALSY

AJ Al Mosawi. Department Of Pediatrics, University Hospital In Al Kadhimiya, Baghdad, Iraq

Objective: Cerebral palsy (CP) is the most common motor disability of childhood. There is no specific intervention used to improve the motor development in CP. The aim of this paper is to report the effect of single dose of nandrolone decanoate on motor development in a in a child with CP.

Method: A 14-month-old boy with CP caused by birth asphyxia presented with delayed motor development associated with mild spasticity and hyperreflexia. During the neonatal period he had poor feeding. Head control was not achieved until 1 year of age. On presentation he was unable to turn from the supine to the sitting position alone and was not able to maintain a sitting position when he was put in the sitting position. He was not crawling but he was occasionally rolling to the sides. His language was delayed and he was not saying any words with meaning. He has 3 other healthy siblings aged 3, 4, and 6 years and there was no family history of any neurological disorders. The patient received nandrolone decanoate 12.5 mg by intra-muscular injection. Estimation of the bone age was made using radiographs of the left wrist before the injection and 2 weeks after.

Results: The use of a single injection of ND was associated with a dramatic effect on motor development. After one week the child was able to sit alone and was trying to stand without the occurrence of any adverse effects.

Conclusion: The possible role of anabolic agents in CP should investigated in more studies.
MYCOPLASMA INFECTION IN A CHILD PRESENTING WITH PSYCHOTIC MANIFESTATIONS

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Objective: Medically treatable disorders constitute an important part in the evaluation of a child or adolescent presenting with psychotic manifestations.

Methods: A four-year-old girl presented to a pediatrician with evident changes in her personality and behaviour over the last two weeks. The changes included muteness, indifference to the outside world, resistance to being touched, avoidance of males, frequent awakenings, loss of appetite, willingness to die, abstraction, difficulty in comprehension, increased dependence on her mother, disruption of amicable relations in day care, loss of eye contact, loss of laughter, obstinacy, and enuresis. She had fevers exceeding 38°C every night. She was referred to a child psychiatrist and then referred to our university clinic for further evaluation.

The family history of the child revealed a past depression in her father, an undescribed psychiatric illness in the grandfather, and attention deficit hyperactivity disorder in her cousin.

The physical examination showed an auxillary temperature of 38°C, and hyperemic and hypertrophic tonsils.

Initial laboratory tests were normal except leukocytosis (22,100/µL), an elevated C-reactive protein (3.2 mg/dL), and an elevated erythrocyte sedimentation rate (112 mm/hour). The chest x-ray showed an infiltrative area consistent with pneumonia in right lung. Mycoplasma pneumoniae IgM was positive.

Results: Azithromycin was started. On day 3 of the therapy, the symptoms and signs abated and disappeared soon afterwards.

Conclusions: Among the medical conditions that rarely cause pediatric psychosis symptoms, infectious causes, especially Mycoplasma infection, should be kept in mind.

EVALUATION OF NEONATAL SEIZURE CAUSES IN OUR WARD SINCE 2007

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Objective: Seizures are the most frequent manifestation of serious diseases, in premature and term newborns. Experimental data suggest that neonatal seizures may have a deleterious effect on the developing brain. In the present prospective and case control study, we try to show the incidence of seizure, its causes and outcomes for the patients in our area since 2007.

Methods: We evaluated the files of 54 cases that had signs and symptoms of at least a form of seizure: tonic, clonic, subtle and myoclonic. First, data including gestational age, gender, weight, birth history, delivery type and its problems, address, duration of stay in ward, kind of seizure and its treatment, patient's general psychological profile both at 4 and 8 years.

Results: 18 patients (33%) were premature, 30% had metabolic disorders, there was prenatal asphyxia in 15 newborns (25%), CNS infection/sepsis in 5 cases (10%) and drug withdrawal in 1 patient (2%)

Conclusions: Observation of the different types of neonatal seizures may assist in discovering etiological factors and in formulating a prognosis. Time of onset may be useful as certain etiologies are more likely to occur early (first 24 hours) while others typically occur later in the neonatal period. Our results showed that many neonatal seizures are preventable. It seems more than one factor of potential etiological significance was present in several babies.

Pre-Clinical studies for the identification of novel therapeutic agents for the treatment of CNS atypical teratoid rhabdoid tumour in children

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Objective: Atypical teratoid rhabdoid tumor (AT/RT) of the central nervous system is a highly malignant and difficult to treat tumor affecting mainly infants and young children. Because of the high treatment failure rate, novel treatment protocols are urgently needed for its treatment. Using an experimental model we are investigating the effects of novel targeted therapeutic agents against AT/RT tumor derived cell lines.

Methods: ATRT cell lines, BT12, BT16 and KCCF1, were cultured with increasing concentrations of conventional and new chemotherapeutic agents. Cell death was determined by Alamar blue assay. Target modulation was carried out by Western blots against growth regulators and apoptosis related proteins. Drug combination studies were done by the addition of individual drugs at low concentrations with increasing concentrations of a second agent. From these data, inhibitory concentrations at 50% (IC50) and drug combination indices were calculated.

Results: Our results show the induction of apoptosis and changes in signaling molecules by the multi-kinase inhibitors Sorafenib and Sunitinib at physiologically attainable concentrations. In addition, effective cell killing was also observed with the histone-deacetylase inhibitor, Apicin and the new generation topoisomerase inhibitor, Irinotecan. Importantly, our studies show that the combination of a multi-kinase inhibitor with other anti-neoplastic agents may potentiate their anti-tumor activity.

Conclusions: We present data that identify potential targeted therapeutic agents for the treatment of AT/RT in children. It is hoped that the target modulation assays presented here will provide an effective way to identify the group of children who may show responsiveness to regimens containing these agents.

Healthy preterms and controls at 4 and 8 years: a longitudinal study on cognitive, neuropsychological and learning profile

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Objective: Many preterm infants show early neuropsychological and cognitive deficits generally associated with later learning disorders. Nevertheless, some research has not found significant learning disorders and a general recovery of preterm deficits is described. We investigated learning abilities in primary school in preterm and full-term peers considering cognitive and neuropsychological profile both at 4 and 8 years.

Methods: We tested 21 healthy preterm (born <33 week) and 13 full-term controls on reading, writing and math abilities (Cornoldi 1998, 2002; Sartori 1995) during the last three years of primary school (mean age: 8.9). Moreover we analysed at a mean age of 8.9 and at 4.4 years their cognitive (respectively with WISC-III and Griffiths) and neuropsychological profile.

Results: No significant differences were found in specific learning tests. ANOVA analysis at 8.9 years showed a difference in mean IQ scores (p=0.001, difference: 14.6 points) and in visual-motor skills (VMI: p=0.007, difference: 12 points). The same infants at 4.4 years showed differences in Griffiths GQ score (p=0.001, difference: 10 points), visual-motor skills (VMI: p=0.001) and verbal and visual-spatial short-term memory (Digilt: p=0.005; Corsi: p=0.011). IQ score at 8.9 years correlated with GQ score at 4.4 years (rho = 0.70, p<0.001).
Conclusions: Healthy preterms (<33 weeks) do not show significant differences in learning abilities during primary school. At 8.9 years, they show cognitive and neuropsychological profiles within normal range and seem to recover from specific early neuropsychological deficits. However, they still present significant differences in cognitive profile and visual-motor skills in comparison with their full-term peers.

ANTENATAL TREATMENT IN TWO DUTCH FAMILIES WITH PYRIDOXINE DEPENDENT SEIZURES
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Pyridoxine-dependent seizure (PDS) is a rare, autosomal recessive disorder characterized by drug-resistant neonatal seizures. About 20% of mothers experience abnormal foetal movements during pregnancy, and birth is complicated in a third of children. It is thought that early postnatal treatment improves cognitive development. However, the benefit of antenatal treatment is still under debate. Some case reports support favourable outcome of antenatal treatment (n = 5 patients) while other case reports show no or little advantage in outcome (n = 5). We present two well documented Dutch families with metabolic and DNA confirmed PDS including long term follow-up. In these families the first born child could be studied as a natural ‘control’ of the second child. The mothers started pyridoxine in the first trimester of their second pregnancy and pyridoxine was well tolerated by the mother and foetus. The mothers did not experience abnormal foetal movements and labour and birth were uncomplicated in both. At follow-up the second child developed better than the older sibling.

Conclusion: We believe that in families with PDS, antenatal treatment should be advised. Antenatal treatment does not seem to harm the mother and the foetus, it might prevent the occurrence of intra-uterine seizures, and can decrease the risks of complicated birth. Antenatal treatment might also improve the long-term neurological outcome.

STURGE-WEBER SYNDROME: ONSET PARTICULARITY
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Introduction: Cerebro- trigeminal angiomatosis, Sturge-Weber syndrome (SWS) is a neurocutaneous disease which associates leptomeningeal and facial angiomatosis, located in the distribution of the ophthalmic and maxillary division of the trigeminal nerve. Neurological features include refractory focal seizures, transient focal disability, headache and deterioration of the neuro-mental status. The residual embryologic vascular plexus forms leptomeningeal, facial and ocular hemangiomas as etiologic defects in SWS; there are reports about somatic mutation, somatic mosaic, 4q inversion and trisomy 10 being responsible for the structural and functional regulation of the vascular plexus. Fibronecint, which is known to intervene in angiogenesis, is reduced, and the decreased level of endorphin 1 leads to vasoconstriction of the cortical vascular plexus.

Case report: The authors present a SWS case whose neurological symptoms, contralateral partial seizures with secondary generalization, appear in febrile context in a 2 year old child with normal neurological development. The acute febrile illness evolves like a viral meningitis.

Conclusion: In Sturge-Weber syndrome, the neurological monitoring and control therapy of the critical symptoms are major objectives.

PRENATAL DIAGNOSIS OF “COMPENSATED HYDROCEPHALUS”: TWO CASE STUDIES
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Introduction: Spinal dysraphism is a result of early developmental abnormalities of the cord. Myelomeningocele, a form of open spina bifida, can be associated with intracranial abnormalities and hydrocephalus. We present two cases of cystic myelomeningocele with spinal abnormalities disproportionate to their intracranial abnormalities.

Methods: Case notes review of 2 infants with antenatally diagnosed myelomeningocele and spinal dysraphism.

Case 1: Antenatal diagnosis of myelomeningocele of foetus at 19 weeks. The cystic myelomeningocele continued to increase in size without significant intracranial changes. There was mild ventriculomegaly with no evidence of Chiari II malformations and these findings remained stable throughout pregnancy and foetal MRI at 30 weeks. The baby needed ventriculo-peritoneal shunt inserted day 2 of life.

Case 2: Antenatal diagnosis of myelomeningocele on ultrasound scans at 14 weeks. This continued to increase in size through her pregnancy without changes in the intracranial structures as confirmed by foetal MRI at 31 weeks. Infant had a ventriculo-peritoneal shunt inserted in week 2.

Discussion: These two cases suggest that a growing cystic myelomeningocele without accompanying intracranial changes is suggestive of a process of “compensated hydrocephalus” with the cyst bearing the brunt of the increasing pressures. Also, it raise the need for very early shunting in life for unhindered brain growth. We recommend that such cases be considered for early foetal MRI scans and parents be counselled about the severity of the condition and the need for delivery in a tertiary centre to enable early neurosurgical assessment after birth.

PERVASIVE DEVELOPMENTAL DISORDERS, AGGRESSIVE BEHAVIOUR AND SEIZURES: A CASE REPORT
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Background: The diagnostic category of pervasive developmental disorders (PDD) refers to a group of disorders characterized by delays in the development of socialization and communication skills. Symptoms may include problems with using and understanding language, difficulties relating to people, objects and events, as well as difficulties in changing routine or familiar surroundings, repetitive body movements or behaviour disorders. The behaviour disorders (aggressive behaviours, SIB) can occur and manifest with a large spectrum of clinical symptoms; they usually can be treated with antipsychotic medications. However, when no response to antipsychotics is observed, episodes of aggressive behaviour could be related to epilepsy, occurring in the context of high emotional arousal, anger or fear.

Methods: We report the case of a 18-year-old man diagnosed with PDD presenting auto-aggressive behaviour non-responding to neuroleptic medication. The symptoms began when he was 14-year-old. Clinical evaluation showed recurrent episode of excessive hyperactivity and severe auto mutilation, such as biting himself. PET imaging with F-18 2-fluoro-2-deoxyglucose (F-18 FDG) was performed for epilepsy work-up.

Results: PET Imaging showed a focal hypo metabolic lesion in the right temporo-parietal region, highly suggestive for an epileptic focus.
Treatment with anti-epileptic medication was initiated and 2 weeks later the self-injurious behaviour disappeared with no recurrence 12 months later.

**Conclusions:** Evaluation of more cases of this subset of PDD patients with epilepsy presenting as behaviour disorders by 18F-FDG PET may suggest a possible role in determining an epileptic focus and might in addition potentially help to monitor treatment response.

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**PNEUMOCOCCICAL MENINGITIS IN HOSPITALIZED CHILDREN**

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**Objective:** In the spectrum of purulent meningitis, pneumococcal meningitis (PM), caused by gram positive diplococcus pneumoniae exhibits the hardest clinical presentation to detect. The main pathological substrate is a purulent exude in the subarachnoidal space.

**Aim:** The aim was to show characteristics of PM meningitis in hospitalized children.

**Material:** In a retrospective study (depends on medical documents), we analyzed 7 cases of PM among 30 purulent meningitis in children, hospitalized in the Infectious Disease Clinic from 1991–1999.

**Results:** In the first group aged from 3 to 6 years, we had 2 children, in second group aged from 7 to 18 years, there were 5 children with PM. The male/female ratio was 6:1. All had data about head injury. Interval from injury and symptom appearance was from 5 days to 6 years. In clinical findings all had fever, headache, nausea and positive meningeal signs. Lab analyses shown high ESR, WBC count, increase in fibrinogen and CRP. In the liquor we had a lot of polymorphonuclear cells, albuminorrachia (0.58 to 3.5 g/l) and hypoglycorrhachia. In the liquor culture, we isolated streptococcus pneumoniae in all cases. All were cured by two antibiotics: Crystacillin and Chloramphenicol with corticosteroids. The duration of therapy lasted two to three weeks. In one case we had resistance to these antibiotics, except to Pentrexyl.

**Conclusion:** All patients recovered without sequelae. Because PM is a very difficult disease to detect, the time to detection and administration of antibiotic therapy is very important to prevent mortality.

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**ACUTE NECROTIZING ENCEPHALOPATHY IN AN 18 MONTH OLD GIRL**

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**Objective:** Acute necrotizing encephalopathy (ANE) of childhood is described in increasing numbers in the European Union, but remains a rare disease with higher prevalence in Asian countries. The etiology of ANE remains uncertain. Infectious, metabolic, immune mediated or inherited reasons for ANE are reported.

**Methods:** We report about an infant presenting an acute necrotizing encephalopathy.

**Results:** An 18 month old European girl, previously healthy, born and immunized in Germany, attended our hospital with a history of 24 h of high fever and seizures. At time of admission the girl was comatose (Glasgow Coma Scale 4). Laboratory findings from serum showed physiologic values and no sign of major infection. Analysis of cerebrospinal fluid (CSF) revealed discrete pleocytosis and increased IL-6. No infectious pathogens were detected. There was no evidence for metabolic disease. Repeated MRI scans showed progressive symmetric necrotic areas in the thalamus and brainstem. Additionally contrast-enhancement of basal meninge was detected. Based upon these neuroradiologic findings we diagnosed acute necrotizing encephalopathy. Typical neuroradiologic characteristics are multifocal, symmetric lesions involving thalami, brainstem, tegmentum, supratentorial white matter and cerebellum. Initially we treated our patient with broad spectrum antibiotics and antiviral drugs. On day three of hospital stay we administered high dose cortisone and immunoglobulins. Despite a close multifactorial therapeutic strategy no clinical improvement was detectable.

**Conclusions:** Clinicians should be aware of ANE as an important differential diagnosis of seizures and fever. Early diagnosis of ANE seems of importance for initiation of adequate treatment. Clinical improvement of ANE is reported after immediate immunosuppressive therapy.

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**COMPARISON BETWEEN PASSIVE SMOKER CHILDREN AND OTHER CHILDREN FROM AN IQ AND EDUCATIONAL ADVANCE VIEW**

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People are aware of the harmful effects of Tobacco smoking. Children are in particular victims of passive smoking. We decided to do a comparison between passive smoker children and other children from an IQ and educational advance view.

**Methods:** This research is a descriptive–analytic study which was carried out on 665 primary school age children in Yasuj (1384) in two equal groups as smoker and non-smoker families (sample and control) after equalization of these two groups with attention to age, sex and parent’s occupation, by Rieven’s test for evaluation of IQ and by reference to their written average for educational advance evaluation.

**Results:** This study revealed that the chance ratio of above average intelligence in non-smoker families was 2.5 times more than smoker families. In educational advance the student’s written average in non-smoker families was 0.65 more than smokers. Also, good average (>17) in non-smoker families was 15% more than smoker families; these findings are significant. The number of above average intelligent children in males in non-smoker families was 12.9% more than smoker families. But this difference was not significant in females.

**Conclusion:** The findings of this study revealed that passive smoking has a significant harmful effects on educational advance and IQ, especially on high grades. Due to this fact it appears essential to educate parents about smoking dangers at home through mass media.

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**AUROPALPEBRAL REFLEX AND AUDITORY-SPEECH PERCEPTION IN PRELINGUALLY COCHLEAR IMPLANTED CHILDREN**

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This study is intended to demonstrate that blink reflex or auropalpebral reflex evaluation can be used as a prognostic factor for the assessment of auditory and speech perception levels in prelingually cochlear implanted children.

In an observational, analytic, prospective study conducted at a single cochlear implant rehabilitation center we evaluated the presence or absence of BR in 85 prelingually cochlear implanted children. The results of subsequent auditory and speech perception tests were compared in the two groups.

The study included 85 prelingually cochlear implanted children, 46 males (54%) and 39 females (46%) who were implanted at a single acoustic tertiary care center. Implant age ranged 1Y+9m to 6Y+3m (Mean = 4Y+5m, SD = 1year and 3 months), and all patients were rehabilitated at a single cochlear implant rehabilitation center.
The cell count in the cerebrospinal fluid ranged from 0 to 3.1. Although earlier thought as a paediatric benign neurological disease, the majority of cases occur in childbearing age (several hours–7 d).

In conclusion, ACUTE UNILATERAL FACIAL PALSY: DATA FROM THE CHILDREN’S DEPARTMENT OF DANUBE HOSPITAL

Objective and aims: ACUTE UNILATERAL FACIAL PALSY (AFUP) is one of the greatly-discussed diseases where diagnostic and management recommendation vary greatly and are also changed very often. The aim of this study is to share our collected data from 2006 until now.

Methods: We retrospectively reviewed our data on AFUP; for that we conducted a search in our registry using the following ICD Codes G51.0, G51.8 and G51.9. The data of 47 (21 girls and 26 boys) patients were included in this study, with an age range from 3 years to almost 18 years (mean: 10.9). 35 (~75%) of them under went diagnostic lumbar puncture, in 12 the procedure could not be performed for various reasons.

Results: The cell count in the cerebrospinal fluid ranged from 0 to 996 (mean: 81), only 11 (31.4%) showed a pleocytosis, where 5 of them showed a marked increase in cell counts. The protein and the glucose levels showed a similar pattern, with a mean of 27.3 mg/dl (0–95.7) and mean of 59.7 mg/dl (43–76), respectively. As expected the levels were higher from Apr–Oct, than in the other months. The mean duration of symptoms before consultation was 1.9 days (several hours–7 d).

Conclusion: As expected when lumbar puncture is performed early as in our case, results are at best very inconclusive. In sight of this short review our data will be reviewed back to year 2000, and presented in the case of our contribution being accepted.

Objective: Impaired cerebral pressure autoregulation (CPA) is associated with brain damage and mortality in preterm infants. CPA can be calculated by means of spectral analysis of spontaneous fluctuations in mean arterial blood pressure (MAP) and a surrogate of cerebral blood flow obtained by near-infrared spectroscopy using coherence (a frequency-domain measure of correlation) and gain (the ratio of magnitude of flow to pressure). The Autoregulatory Index (ARI) describes the degree of CPA, where 1 indicates no change in flow with MAP and 0 indicates proportional changes, i.e. complete loss of CPA.

Methods: Sampling and analysis of the oxygenation index (Hamamatsu, NIRS-800) and invasive MAP were performed simultaneously using in-house written software in Labview. 110 minutes of stable signal from one extremely preterm infant was divided into epochs of 10 to 40 minutes and subdivided into segments of 5 minutes with 50% overlap. We applied a Hanning-window before FFT-transformation in two frequency bands (0.003–0.04 Hz and 0.04–0.1 Hz). Thresholds of statistical significance were calculated for coherence (Taylor JA et al, 1998) and gain was used to estimate ARI.

Results: Prolonging the epochs increased statistical significance. Coherence for epochs longer than 20 minutes were all statistically improved after acetazolamide with or without prednisolone. Treatment and follow-up are discussed.

Discussion: Although earlier thought as a paediatric benign condition, it is now clear that vision impairment can be permanent. By contrast, recent data revealed a 40% 5-year recurrence. By this way, an interdisciplinary management and a close long-term ophthalmologic surveillance are of primordial importance in patients with PC.

European Academy of Paediatrics abstract

EPIDERMAL CYST CAUSING DISASTEROUS MENINGO-ENCEPHALITIS IN A CHILD

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Epidermoid cysts are classified benign skin tags requesting only elective surgery. But there are reports in the literature showing life-threatening courses as well.

While visiting her homeland a 9.5 y old girl started shivering and getting feverish. She was admitted to the rural hospital where symptomatic treatment started. Since her condition worsened she was repatriated. On arrival she was septic and somnolent. Plane x-rays revealed a small bony channel beyond the clinically identified epidermoid cyst; confirmed in detail on high solution CT scan together with an increasing hydrocephalus internus. In an emergency procedure external shunting was performed. After ICB decrease the child could be weanded off the ventilator but left hemiparesis and cortical blindness were persistent. An osteoplastic occipital craniotomy was performed and the entire cyst, originating from the brain stem, removed. Due to enhanced liquor production and drainage an ETV to improve interventricular flow was performed. But despite a visible outflow in MRI scans unfortunately no remarkable clinical improvement resulted requiring a classical VP-shunt. After stabilization of her vitals intensive neuro-rehabilitation started. The girl made good progress, in 1-year follow-up only slight deficits have to be considered.

In conclusion, epidermal cysts rarely cause encephalo-meningitis but if they do they are always life-threatening and restitutio ad integrum is not certain.

PSEUDOTUMOR CEREBRI IN PREPUBERTAL CHILDREN: WHAT SHOULD WE DO?

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Background: Pseudotumor cerebri (PC) is characterized by intracranial hypertension (IH) without any evident underlying neurological disease. The majority of cases occur in childbearing age obese women. On rare occasions, PC affects prepubertal children and is associated with different patient features, greater clinical spectrum and special epidemiological context.

Case Reports: A 5 and a 6-year-old boy, with a previous upper respiratory tract infection, were brought to the ER with severe headaches and vomiting on awakening, followed by sixth pair paresia and horizontal diplopia. One also presented unilateral facial nerve palsy and torticollis. Fundus examination revealed bilateral papilledema. Blood pressure, visual acuity, field and color vision were all normal. None had ataxia or abnormal tendon reflexes. Cerebrospinal fluid opening pressures were 24 cm H₂O and 50 cm H₂O. Computed tomography scan and magnetic resonance venography only detected IH signs. There was no history of recent vaccination, head trauma, drugs or toxics. Infectious, endocrine, thrombotic and immune possible causes were excluded. Both

ACUTE UNILATERAL FACIAL PALSY: DATA FROM THE CHILDREN’S DEPARTMENT OF DANUBE HOSPITAL

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Objective and aims: ACUTE UNILATERAL FACIAL PALSY (AFUP) is one of the greatly-discussed diseases where diagnostic and management recommendation vary greatly and are also changed very often. The aim of this study is to share our collected data from 2006 until now.

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Conclusion: As expected when lumbar puncture is performed early as in our case, results are at best very inconclusive. In sight of this short review our data will be reviewed back to year 2000, and presented in the case of our contribution being accepted.

USE OF COHERENCE AND GAIN TO EVALUATE CEREBRAL PRESSURE AUTOREGULATION IN A PRETERM INFANT USING NEAR-INFRARED SPECTROSCOPY

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Objective: Impaired cerebral pressure autoregulation (CPA) is associated with brain damage and mortality in preterm infants. CPA can be calculated by means of spectral analysis of spontaneous fluctuations in mean arterial blood pressure (MAP) and a surrogate of cerebral blood flow obtained by near-infrared spectroscopy using coherence (a frequency-domain measure of correlation) and gain (the ratio of magnitude of flow to pressure). The Autoregulatory Index (ARI) describes the degree of CPA, where 1 indicates no change in flow with MAP and 0 indicates proportional changes, i.e. complete loss of CPA.

Methods: Sampling and analysis of the oxygenation index (Hamamatsu, NIRS-800) and invasive MAP were performed simultaneously using in-house written software in Labview. 110 minutes of stable signal from one extremely preterm infant was divided into epochs of 10 to 40 minutes and subdivided into segments of 5 minutes with 50% overlap. We applied a Hanning-window before FFT-transformation in two frequency bands (0.003–0.04 Hz and 0.04–0.1 Hz). Thresholds of statistical significance were calculated for coherence (Taylor JA et al, 1998) and gain was used to estimate ARI.

Results: Prolonging the epochs increased statistical significance. Coherence for epochs longer than 20 minutes were all statistically improved after acetazolamide with or without prednisolone. Treatment and follow-up are discussed.

Discussion: Although earlier thought as a paediatric benign condition, it is now clear that vision impairment can be permanent. By contrast, recent data revealed a 40% 5-year recurrence. By this way, an interdisciplinary management and a close long-term ophthalmologic surveillance are of primordial importance in patients with PC.
significant yet ARI was 0.80 and 0.67 for low and high frequencies, respectively.

Conclusions: In spite of highly significant coherence this extremely preterm infant had near-normal ARI. The conventional threshold is >0.4. Also, as there is a time-lag for change in vascular smooth muscle cell tone it was expected that CPA was slightly less complete in the high frequencies.

EFFECT OF HIGH-DOSE INTRAVENOUS METHYLpredNISOLONE IN ACUTE DISSEMINATED ENCEPHALOMYELITIS (ABOUT SIX PEDIATRIC CASES)

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Introduction: Acute disseminated encephalomyelitis (ADEM) in an acute inflammatory demyelinating disease of the central nervous system that is typically preceded by an infectious illness or a vaccination. Steroid treatment has been the most widely reported therapy for ADEM. However, there has been great variety in the specific steroid formulations employed, routes of administration, dosing and tapering regimens. We describe the effect of high-dose intravenous methylprednisolone in ADEM.

Methods: A six year retrospective chart review of children with diagnosis of ADEM who were treated with high-dose intravenous methylprednisolone was conducted.

Results: Six cases were identified; there were three male and three female patients. Four children had a recent viral illness and the other patients a vaccination. All patients were treated with high-dose intravenous methylprednisolone (50 mg/kg/day for 5 days), followed by oral steroid taper for 6 weeks. Overall, five children had remarkably responded to high-dose methylprednisolone alone and recovered within the first week. One patient had long-term neurologic sequelae. No undesirable effect with steroids has been noted.

Conclusion: Our experience indicates that high-dose methylprednisolone is efficacious in pediatric-onset acute encephalomyelitis.

THERAPEUTIC HYPOThERMIA IN NEONATES: REVIEW OF CURRENT CLINICAL DATA, ILCOR RECOMMENDATIONS AND SUGGESTIONS FOR IMPLEMENTATION IN NEONATAL INTENSIVE CARE UNITS

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Recent evidence suggests that the current ILCOR guidelines regarding hypothermia for the treatment of neonatal encephalopathy need urgent revision. In 2005 when the current ILCOR guidelines were finalised one large (CoolCap trial, n = 255) and one small RCT (n = 67), in addition to pilot trials, had been published, and demonstrated that therapeutic hypothermia after perinatal asphyxia was safe. The CoolCap trial showed a borderline overall effect on death and disability at 18 months of age, but significant improvement in a large subset of infants with less severe electroencephalographic changes. Based on this and other available evidence, the 2005 ILCOR guidelines supported post resuscitation hypothermia in paediatric patients after cardiac arrest, but not after neonatal resuscitation. Subsequently, a whole body cooling trial supported by the NICHD reported a significant overall improvement in death or disability. Further large neonatal trials of hypothermia have stopped recruitment and their final results are likely to be published 2009-2011.

Many important questions around the optimal therapeutic use of hypothermia remain to be answered. Nevertheless, independent meta-analyses of the published trials now indicate a consistent, robust beneficial effect of therapeutic hypothermia for moderate to severe neonatal encephalopathy, with a mean NNT between 6 and 8. Given that there is currently no other clinically proven treatment for infants with neonatal encephalopathy we propose that an interim advisory statement should be issued to support and guide the introduction of therapeutic hypothermia into routine clinical practice.

VIROLOGICAL INVESTIGATION IN CHILDREN ACCOMPANIED WITH SEIZURE IN RESPIRATORY SYNCYTIAL VIRUS INFECTION

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Objective: Respiratory syncytial virus (RSV) is a common cause of childhood respiratory infection resulting in significant debilitation and mortality. Recently, several cases of encephalopathy and neurological complications with RSV infection have been reported and the correlation between infection in early infants followed by a convulsive tendency has also been investigated. However, these reports were limited and its pathophysiology was not fully understood. We have already established a highly sensitive and specific assay for the detection of the RSV genome. In this study we investigated the pathophysiology in five cases with RSV infection - associated seizures.

Methods: We described four cases of respiratory syncytial virus infection with seizures and detected the virus genome in their cerebrospinal fluid (CSF) by the reverse transcription loop-mediated isothermal amplification (RT-LAMP) method. No case was immunized by Palivizumab.

Results: Some of the levels of IL-6 in CSF were high. Some of the cases showed abnormalities in magnetic resonance image (MRI) and single photon emission computed tomography (SPECT).

Conclusions: These data would support the fact that neurological involvement may be commonly caused by a direct invasion.

TYPE 1 NEUROFIBROMATOSIS: DIAGNOSIS PECULIARITIES IN 2 SIBLING CASES

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Objectives: To emphasize the diagnosis particularities in 2 sibling cases diagnosed with neurofibromatosis von Recklinghausen.

Methods: The authors present a six months old male infant admitted in the context of watery stools and fever. The family history wasn’t suggestive: the parents and a 4 years old sister were healthy. The clinical exam revealed 9 cafe-au-lait spots (>5 mm in the highest diameter), macrocephaly, skin pallor and watery stools. The clinical diagnosis was enterocolitis and anemia in an infant with multiple cafe-au-lait spots.

Results: The laboratory and imagistic investigations revealed anemia and a low degree hydrocephalus. In the context of cafe-au-lait spots, the medical staff has analyzed the differential with LEOPARD, Watson, McCune-Albright and type 1 neurofibromatosis syndromes. The staff had to reconsider the family history and the infant’s mother was evaluated: she presented multiple cafe-au-lait spots and neurofibromas. For the first time, the medical staff established the type 1 neurofibromatosis diagnosis for mother and,
consequently, for the infant too. The infant’s sister was examined and neurofibriomatosis diagnosis was also confirmed for her (2 diagnosis criteria).

Conclusions: The diagnosis was established earlier (most clinical signs appear during the second decade of life); the infant presented with minimal hydrocephalus (a rare condition); we were able to reveal the neurofibriomatosis diagnosis for both siblings because of positive diagnosis first established for their mother (as a peculiarity, the mother represents the “index case” or “probant”).

HERPES SIMPLEX ENCEPHALITIS IN CHILDREN YOUNGER THAN TWO YEARS

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Herpes simplex encephalitis (HSE) still remains a severe central nervous system infection, leaving neurologic sequelae, despite the use of acyclovir therapy significantly decreasing its mortality and morbidity.

Aim: Clinical analysis of patients diagnosed with HSE younger than 2 years old.

Methods: The analyzed group consist of 10 patients (6 males and 4 females) aged between 5 weeks to 11 months hospitalized in 1999–2007. The diagnosis was based on the clinical presentation, neuroimaging (CT, MRI), laboratory findings (the cerebrospinal fluid analyses, detection of anti-HSV antibodies, polymerase chain reaction) and electroencephalography.

Results: In most patients authors reported the symptoms typical for neuroinfections: fever, vomiting, altered consciousness, and 8 children presented with convulsions (partial, generalized tonic-clonic, myoclonic). In the physical examination one child had labial herpes (two had contact with visibly infected persons). In the neurological examination the most common finding was hemiparesis. Neuroimaging (MRI or CT) revealed abnormalities of different extents in all analyzed patients. Laboratory finding confirmed herpes etiology by positive PCR results or presence of IgG and IgM antibody in serum or cerebral spinal fluid. In all the children acyclovir therapy was conducted. Only in one patient was relapse of herpes encephalitis observed.

Conclusions: The right diagnosis and early antiviral treatment is an important factor in remission of clinical symptoms and is crucial for good outcome.

CONGENITAL DISORDERS OF GLYCOSILATION: PATIENTS’ PRESENTATION

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Congenital disorders of glycosylation (CDG) constitutes a rapidly growing group of genetic disorders affecting mostly the nervous system and characterized by defective glycosylation of glycoproteins. Most disorders are caused by defects of N-glycans biosynthesis.

Two main groups of CDG are delineated on the basis of intracellular localisation of defects on the multistep biosynthesis pathway of N-glycans. Type I with twelve subtypes, denoted alphabetically from Ia to I, concerns defects of lipid-linked oligosaccharide (LLO) assembly on early steps of N-glycosylation, localised in cytoplasm and endoplasmic reticulum. Type II comprise six defects of N-glycan processing localised in the Golgi compartment. Patients with unrecognised primary defects are classified as CDG-Ix or CDG-Ix respectively.

The most common form is phosphomannomutase (FMM) deficiency or CDG-Ia with an autosomal recessive inheritance and incidence estimated at 1/20 000 – 1/50 000 live births. CDG Ia can manifest as severe multi-systemic disease of infancy or milder disorder with only neurological problems including ataxia, hypotonia and psychomotor retardation.

The aim of the study was to describe the clinical picture, molecular study and pathological findings in three children diagnosed with CDG (CDG-Ia, CDG-x).

POST-VARICELLA GUILLAUM BARRÉ SYNDROME: CASE REPORT

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Background: Guillain Barré Syndrome (GBS) is an acute demyelinating inflammatory acquired polyneuropathy. The disease is probably caused by a post-infectious immune mediated process that affects essentially motor neurons. Varicella-zoster virus has been rarely related to this disease. We found in the literature only 48 cases of Guillain-Barré syndrome post varicella-zoster infection.

Case Report: Authors report a 3 year old child, female, admitted with lower limbs hyperesthesias and walking difficulty, which started 8 days before admission. Two weeks prior to admission there was varicella-zoster infection.

Her neurological examination showed slight reduction of proximal lower limb strength (4/5), areflexia, gait instability and impaired joint position sense. Cerebrospinal fluid analysis showed 77 mg/dl proteins, 0.8/mm³ cells and Varicella-zoster virus PCR was negative. EMG showed reduced nerve conduction velocity. Serologies for Campylobacter jejuni, Epstein Barr virus, cytomegalovirus, human immunodeficiency virus and Mycoplasma pneumoniae were negative. Enterovirus stool culture was negative. Serum immunological tests revealed IgA 0.3 g/L, IgG 10.3 g/L, IgM 1.08 g/L, total lymphocytes 3185/mcl, CD3 74%, CD8 24%, Linfocits B CD19 19%, NK CD16+56+ 8%.

She was treated with immunoglobulin 400 mg/kg/day for 5 days and gabapentin 4 mg/kg/day. Muscular strength and motor coordination were almost recovered within 9 days. At discharge there was still areflexia. 2 month after admission she was completely recovered.

Discussion: This case shows a temporal relation between GBS and varicella-zoster infection. However clinical cases reported in the literature state a more severe course of the disease, with need for airway mechanical support and residual strength impairment that was not noted in our case.

THE ASPECT OF NEUROLOGIC COMPLICATION, SEIZURE IN SHIGELLOSIS

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Aim and Background: Shigellosis is a cause of seizure in pediatric patients. Early detection is difficult, specially when it presents before diarrhea.

The aim of this study was to determination of aspect of seizure in shigellosis in children. Seizure was the first clinical presentation in these patients.

Methods: In this retrospective study we overviewed the most common neurological finding, seizure in 164 patients on seizure
before and after admission including the first clinical presentation before diarrhea, in Alièbe Abitaleb Hospital Zahedan, in the southeast of Iran. Data were analysed by SPSS software.

Results: Of 164 established shigellosis cases, M/F = 1/1.43 cases (26.2%) were less than 1 year old, 108 (65.9%) were between 1–5, and 13 (7.9%) were above of 5 years old. 19.5% had decreased consciousness, 76.8% of patients before, 16.5% after admission and 6.7% had recurrent seizure, previous history of seizure was positive in 16.5% of patients. 9.1% of patients had positive family history of seizure. High peak temperature in both sex was 38.3°c, time of seizure was 5 min and was of generalized form.

Conclusion: The family patients are not in a position to do early detection of shigellosis and complications, therefore attention must be paid to development of prevention, especially in children less than 5 years age group, which will decrease morbidity and mortality.

FATAL BRAIN STEM INFARCTION DUE TO MUCORMYCOTIC EMBOLI IN AN ADOLESCENT GIRL WITH ACUTE MYELOID LEUKEMIA

Objective: Mucormycosis is a very rare filamentous fungal infection occurring as a severe complication in neutropenic patients with hematological malignancies. The most frequent sites of infection are lungs and upper airways.

Methods: We report on a 16-year-old girl with acute myeloid leukaemia with cerebral infarction due to mucormycotic emboli.

Results: The girl received four courses of standard risk chemotherapy (AML-BFM-2004 protocol). After the induction therapy she developed pulmonary infiltrates suspected to be aspergillosis. Liposomal amphotericin B was given, followed by oral voriconazole which was continued during the whole chemotherapy. After the fourth course of chemotherapy febrile neutropenia occurred. Blood cultures revealed klebsiella and antibiotic treatment was initiated. Six days later neutropenia and fever still went on and the girl complained of sudden hemianopsia, headache and nausea. Cranial MRI revealed klesbiella and antibiotic treatment was initiated. Autopsy of the brain showed bi-occipital infarction, signs of intracranial pressure and a thromboembolic occlusion of basilar artery, caused by thrombi interspersed with mucorales-type hyphae.

Conclusion: Mucorales are known to settle in the internal elastic lamina of arteries and can lead to thromboembolism. Oral antymyotic agents like triazoles are unable to prevent mucormycosis, amphotericin B is only partially effective. Although mucormycosis is uncommon and diagnosis is difficult it has to be included in the differential diagnosis of fungal infections in neutropenic patients.

DEVELOPMENTAL CHANGES OF READING ABILITY IN JAPANESE CHILDREN. II. RAPID AUTOMATIZED NAMING (RAN) OF PICTURES AND DIGITS

Objective: Phonological awareness and rapid automatized naming (RAN) tasks are known to be useful to detect developmental dyslexics whose mother tongue is English. In this study, we examined the developmental changes in typically developed Japanese children for picture, digit and alternating picture-digit naming tasks.

Methods: We carried out a RAN task involving two stimuli, digits and line drawings. Digits were Arabic numerals (1–9). Sources of line drawings were chosen from a national database of vocabulary for children aged 3 to 5 years. We furthermore selected based on familiarity and established three kinds of RAN tasks in 207 elementary school children from 6 to 12 years of age. Their performance of and total articulation time for reading were measured.

Results: There was a negative correlation between the articulation time and their school grade. For the digit naming task, the articulation time was significantly longer in the first graders, then stayed the same for several years, and significantly shortened again after age 10. For the picture naming task, the articulation time was significantly longer in the first graders and gradually shortened as they passed on the upper grade. For the alternating picture-digit naming task, the articulation time distributed in the time range of the picture and digit naming tasks. The changing pattern was closer to the picture naming task. Performance was good for all tasks in all grades.

Conclusion: These results suggest that there is a slight difference of development between naming digits and naming pictures.

UNILATERAL ABDUCENS PALSY, DROP ATTACKS AND ATAXIA IN A PATIENT WITH ARNOLD CHIARI I MALFORMATION AND MIGRAINE

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Purpose: Since the first description of the Arnold Chiari malformation by Hans Chiari in 1890 the understanding of this entity has improved. However, multiple aspects, including the wide variety of clinical signs and symptoms of this malformation, are not completely understood. We present a patient with an Arnold Chiari I malformation with symptoms of unilateral abducens palsy, hemiataxia and drop attacks. This patient illustrates the complexity of the diagnosis and treatment of the Arnold Chiari I Malformation.

Case report: A 14 year old Moroccan boy presented with recent history of progressive frontal headache, diplopia, photo and phonophobia and drop attacks. There was a history of migraine attacks for 2 years and the patient used sumatriptan during these attacks. Physical examination revealed unilateral abducens paresis on the left side and a mild ataxia of his left leg (dysmetric and atactic heel to knee movement). There were no other neurological signs. A MRI scan of the brain showed an Arnold Chiari I malformation without syringohydromelia. At this time surgery was not performed but is still under discussion. The patient was treated with pizotifenmaleate for his frequent migraine attacks. One month later his migraine symptoms had almost disappeared. On physical examination the clinical signs consistent with the Arnold Chiari type I malformation persisted.

Conclusion: The clinical manifestations of Arnold Chiari are multiple and complex. The standard treatment of this entity is foramen magnum decompression surgery. The concomitant migraine and unilateral abducens palsy presented in this case are not described previously.

AN INFANT WITH EPSIDOC ABDOMINAL PAIN AND STARING

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Purpose: Tuberous sclerosis is an autosomal dominant inherited neurocutaneous disorder characterized by the involvement of
multiple organs and a variety of clinical presentations. We present a patient with atypical seizures and skin hypopigmentation.

**Case report:** A 2 year old Moroccan girl presented with a recent history of episodic abdominal pain, spasm and staring to the left side. She was prematurely born after a gestational age of 36 weeks and 2 days and had a normal birth weight. She was previously admitted to the hospital because of an episode with fever and a head trauma. Physical examination revealed several hypopigmented areas of the skin. There were no other abnormalities observed.

An EEG showed focal epileptic activity and a CT-scan of the brain showed multiple subependymal noduli. The diagnosis of tuberous sclerosis was made. She had a mutation of the TSC1 complex. The TSC2 complex was not altered. A routine check-up for other abnormalities consistent with tuberous sclerosis was normal. She was treated with valproic acid for her seizures and 5 months later the clinical symptoms of epilepsy and abdominal pains had disappeared. Her older sister and her father were also evaluated and diagnosed with tuberous sclerosis.

**Conclusion:** The clinical presentation of epilepsy may show a wide variety, especially in young children. Tuberous sclerosis is a known cause of epilepsy, but diagnosis may be difficult and may depend on a positive family history. Episodic abdominal pain and spasm with staring are rare presentations of symptomatic epilepsy in this child with tuberous sclerosis.

**ROLE OF LUMBAR PUNCTURE IN CHILDREN WITH ENCEPHALITIS: KK HOSPITAL EXPERIENCE**

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**Introduction:** Encephalitis, a common paediatric neurological disease, presents with a combination of headache, fever and altered level of consciousness. Many viruses and bacteriae have been implicated. Lumbar puncture (LP) is routinely done as part of the initial work-up or later in the course of illness, if there are initial contraindications, to determine the exact causative agent. LP, though a safe procedure, has its own risk. We aim to review the practice and management of encephalitis in our department and look at the role and safety of LP in these patients.

**Method:** We conducted a retrospective study of all patients who were treated for encephalitis in our hospital between Jan 2001 to Dec 2003. Data was collected on the demographics, timing of LP, etiologic agent identified, adverse effects of LP, and management of patients including the antimicrobials used and their duration.

**Results:** Twelve patients were treated for encephalitis during the period. Median age of presentation was 4.1 years (range 0.2 to 11.8 yrs). LP was performed in all patients and was delayed up to 5 days after admission in some patients. Nine (75%) of the patients had abnormal CSF fluid analyses with pleiocytosis and elevated protein levels. Mycoplasma was identified in 4 (33%) of these patients. There were no adverse outcomes after LP. All patients were covered with intravenous acyclovir and ceftriaxone and the duration of treatment was guided by CSF results.

**Conclusion:** LP is a safe and important diagnostic tool in the management and treatment of paediatric patients with encephalitis.

**PRECHTL’S METHOD ON QUALITATIVE ASSESSMENT OF GENERAL MOVEMENTS IN PRETERM S WITH GESTATIONAL AGE LOWER THAN 34 WEEKS POSTMENSTRUAL AGE**

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Our study intends to evaluate at different times general movements of a group of preterms with gestational age <34 weeks postmenstrual age and to correlate neurological data obtained observing motor patterns to ultrasound findings and the most important obstetrical-neonatological variables.

44 newborns have been subjected from 01/01/2006 to 31/07/2006 to brain ultrasound and general movement assessment. Video recordings were made at birth, at 35 weeks, at term and from 9th to 15th postmenstrual age.

Data obtained from our study do not show any significant correlation between general movements and obstetrical variables associated to neurological damage.

By contrast we could observe, with a significant frequency, something not yet described in the literature: motor repertoire of unfavorable neurological outcomes correlated to both the seriousness of the acute clinical picture (RDS, NEC, sepsis) and to outcome (ROP and O2 dependence).

Motor patterns themselves have a good correlation with difficulties in adaptation to the birth (need of resuscitation) and emodynamic instability at birth (use of inotropies). At eighteen months of follow up, we had a case of cerebral palsy in a fidgety absent-minded child.

The correlation among neonatological variables and pathological general movements contribute to which clinical picture to study and prevent the mechanisms of brain damage.

The early identification of pathological motor patterns helps to address at the right moment children at risk for neurological follow up.

**ENTORHINAL CORTEX AND IQ IN VLBW ADOLESCENTS**

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**Background:** The entorhinal cortex serves as an important gateway between the cerebral cortex and hippocampus by receiving afferent information from limbic, modality sensory-specific, and multimodal association fibres from all brain lobes.

**Objective:** To investigate whether thinning of the entorhinal cortex is associated with reduced cognitive skills in VLBW adolescents.

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The correlation among neonatological variables and pathological general movements contribute to which clinical picture to study and prevent the mechanisms of brain damage.

The early identification of pathological motor patterns helps to address at the right moment children at risk for neurological follow up.
**Design and Methods:** 49 VLBW (<1500 grams) and 58 controls were examined at age of 15 years with Wechsler Intelligence Scale WISC-III and executive/attention function tests. An automated MRI technique for morphometric analyses of cortical thickness was used.

**Results:** The cortical surface model demonstrated 26 areas of regional cortical thinning and thickening in the VLBW group. Among these were thinning of entorhinal cortices, the rostral part of the parahippocampal gyrus on both sides. In the VLBW group, thinning of left entorhinal cortex (white) (figure 1) was correlated with low scores on IQ subtests picture arrangement (p = 0.001) and block design (p = 0.055), resulting in low estimated performance (p = 0.003) and full scale IQ (p = 0.012). Thinning of this area on both sides correlated with low performance on executive/attention function tests, including aspects of working memory.

**Conclusions:** Entorhinal cortical thinning is related with low IQ and reduced executive functions in VLBW adolescents.

**Freeman-Sheldon Syndrome**

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In the mid-1990s the classification of the most common Mendelian-inherited arthrogryposis syndromes was revised. Distal arthrogryposes (DAs) were classified into 10 hierarchically related disorders according to the proportion of features they shared with one another (DA1–DA10). Features shared among the DAs include a consistent pattern of distal joint (hands and feet) involvement, limited proximal joint involvement, autosomal dominant inheritance, variable expressivity. Most FSS cases are sporadic, but there are also evidences of autosomal-dominant transmission in FSS. An autosomal recessive or X-linked recessive pattern may be observed in cases in which the parent has non-penetrant somatic mosaicism or germ-like mosaicism.

Several DA syndromes can be caused by mutations in 4 genes that encode proteins of the troponin-tropomyosin complex of fast-twitch myofibres (mutations in TPM2, TNN12, TNNT3, MYH8).

The most frequently seen clinical manifestation are: scoliosis, dental crowding, strabismus, severe respiratory infections, hearing loss, fractures, hernia, cryptorchidism, headaches, malignant hyperthermia, joint dislocations, severe vomiting, arthritis/joint pain. Children with Freeman-Sheldon syndrome are recognized by the characteristic face ("whistling mouth"), microcephaly and mental retardation have been observed in one third of patients.

The authors present a 11-month-old boy with the phenotype of Freeman-Sheldon syndrome.

**Adolescent with Neurologic Manifestations of Cardiac Origin**

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**Objective:** Primary cardiac tumors in children are rare. Myxomas are the third most common tissue type behind rhabdomyomas and fibromas. The authors report a clinical case highlighting myxoma as an important cause of embolic events and cerebrovascular disease in children and adolescents.

**Methods:** Review of clinical data.

**Results:** A 12-year-old girl presented with sudden dizziness and right sided paresthesia of the lips and of the right hand fingers. She underwent neurological evaluation and the brain magnetic resonance suggested demyelinating lesions or vasculitis. Other laboratory and imaging studies were made to clarify the clinical situation. The echocardiogram showed a left atrial tumor that was surgically removed without complications. Microscopic examination was compatible with cardiac myxoma.

**Conclusions:** This case emphasises the need for cardiac evaluation and the importance of ruling out an embolic event of cardiac origin in the presence of neurologological manifestations of cerebrovascular disease, even when faced with inconclusive brain imaging studies and without any previous evidence of cardiac disease. Prompt clinical recognition and operative removal are essential for the prevention of serious complications.

**Valproic Acid is Effective in Different Types of Headache and Convulsive Disorders Probably Because it Inhibits Replication of T. Gondii**

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**Background:** Valproic acid (VA) is effective in treatment of migraine with and without aura, drug-resistant migraine, tension-type headache, and/or chronic daily headache, as well as in epilepsy. The aim of this study was therefore to focus on the pathomechanisms that may be responsible for these clinical effects.

**Methods:** Literature data were selected to illustrate that latent CNS *T. gondii* infection/inflammation intensity and/or host defense mechanisms may be affected by changes in the mechanisms mediated by an IFN-γ responsive gene family, production of NO, cytokines, tryptophan degradation by indoleamine 2,3-dioxygenase, limiting the availability of intracellular iron to *T. gondii*, production of reactive oxygen/nitrogen species (ROS), and finally cause of different types of headache or epilepsy.

**Results:** VA was found to induce generation of ROS and NO, as well as decreased IFN-γ, IL-6 and TNF-α production. These irregularities could markedly improve host defense mechanisms important for immune control of the parasite, because an in vitro study showed that VA inhibited replication of *T. gondii* tachyzoites at median concentration of 4.1 mg/ml, similar to that of trimethoprim (5.3 mg/ml), which displayed a synergistic effect with VA. It is likely that most treated patients with different types of headache or epilepsy attain therapeutic levels of VA within the brain necessary for the inhibition of *T. gondii* since the level of VA in the CNS of treated individuals is approximately 20% of the serum levels (20–100 mg/ml).

**Conclusion:** Subjects with different types of headache or epilepsy should have test(s) for *T. gondii* infection performed obligatorily.
Results: Examples of various triggers revealing headaches or AM that were caused, at least in part, by increases in the circulating cytokines characteristic for the J-HR include: HIV-1 infection (TNF-α, IL-1, IL-4, IL-6, IL-10), obesity (TNF-α, IL-1β, IL-6, leptin), iron deficiency anemia (TNF-α, IL-6), ibuprofen (TNF-α, IL-1β, IL-2, IL-6, IFN-γ), rHGH treatment (TNF-α, INF-γ, IL-1β, IL-2, IL-6, IL-12, because of severe headaches Molozowski et al. even suggested that therapy with rHGH in GH deficient subjects should be started from the lowest recommended dose), cholesterol contained in debris from ruptured epidermoid cysts (TNF-α, IL-6, IL-8).

Conclusion: Headaches and aseptic meningitis may be features of the J-HR in CT.

PRENATAL EXPOSURE TO METHYL-MERCURY AND POSTNATAL NEURODEVELOPMENT

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Objective: The aim of this project is to assess the effects of long-term environmental low-level exposure to methyl-mercury on child neurodevelopment, and develop optimal diet recommendations for fertile women.

Patients and Methods: Pregnant women with high levels of methyl-mercury in their hair (≥2 μg/g) were enrolled in the experimental group, while those with low levels (<2 μg/g) joined the control group. All pregnant women filled the questionnaire to determine their food intake habits, and assess their socio-economical status and work history. At birth we conducted the neurosonographic examination of all the children.

Results and Conclusion: In the first few months of this project we screened 43 pregnant women for body levels of methyl-mercury, and found that four of them had high levels (≥2 μg/g). Neurosonographic examination of a child from one of these mothers revealed morphological brain changes, consisting of basal ganglia low echo density. The same changes were detected in one other child whose mother had low levels of methyl-mercury. The project will continue with inclusion of additional subjects, until we reach the desired size of sample (N = 200). Prospective neurophysiological, neuropsychological and neuroimaging examination of all included children will be conducted. Obtained results will enable scientifically based decisions on preventive actions regarding exposure to low levels of methyl-mercury in fertile woman.

CASES OF COMPLICATED SINUSITIS REQUIRING PICU ADMISSION: A FOUR YEAR REVIEW

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Objective: Review cases of complicated sinusitis requiring PICU admission to ascertain demographics, preceding symptoms, sinus involvement, causative organisms, interventions, complications and outcomes.

Methods: Retrospective review of case notes from January 2003 to April 2007. Patients identified from the PICU database.

Results: Eight patients, 6 females and 2 males, were identified. Median age was 12 years (range 6–15 years). Seven patients presented with symptoms of pyrexia, headache, vomiting, coryza and meningism. Pneumonia was a major presenting feature in 2 cases. Only one patient had otitis media. Five cases involved multiple sinuses and three involved single sinuses. Organisms were identified in 7 cases, all streptococcus species with 5 cases of S. milleri, 1 Group C streptococcus, 2 Group A streptococcus, 1 streptococcus species. 75% of patients required intracranial empyema evacuation + antral washouts. Two patients had single and four required multiple interventions. 83% of patients had both neurosurgical and ENT interventions. Complications included 5 cases of seizures, 1 superior sagittal sinus thrombosis, 1 right middle cerebral artery territory infarction and 1 cavernous sinus thrombosis. Outcomes were divided into intermediate and long term with 4 cases of transient hemiparesis, 1 persistent hemiplegia and aphasia. Three cases had no clinical sequelae.

Conclusion: Complicated sinusitis can present non-specifically, mainly affecting children over the age of ten. Streptococcus species was the commonest pathogen, in 88% of cases. Sinusitis causes important morbidity with seizures, intracranial empyemas, cerebral infarct, sagittal and cavernous sinus thrombosis as seen in our patients. Prompt diagnosis and treatment may help minimise complications and their sequelae.

A CASE OF POTT S PUFFY TUMOUR

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We describe a case of Potts puffy tumour in a 10 year old girl.

A previously well child presented to a district general hospital with a 48-hour history of fever, headache, diarrhoea, vomiting and neck pain. She was confused, meningeal, tachycardic, and tachypnoeic with O₂ saturation of 78% in air. Initial investigations revealed a metabolic acidosis, white cell count of 16.9 × 10⁹/L, platelets of 10 × 10⁹/L, and CRP 185 mg/L. Chest x-ray showed bilateral consolidation. Initial diagnosis was atypical pneumonia with possible meningococcus. She was started on IV cefazidime, metronidazole, aciclovir and clariromycin. She developed respiratory distress and septic shock requiring ventilation and inotropes. She had a small swelling on her forehead. A CT head confirmed a supraorbital soft tissue swelling and frontal sinusitis but no intracranial involvement. Pus from the swelling grew Streptococcus constellatus. Potts puffy tumour was diagnosed. She underwent a craniotomy for evacuation of extradural and subgaleal empyemas and frontal sinus debridement. She was successfully extubated on day 15 of admission. She remained on high dose intravenous benzyl penicillin and metronidazole for 4 weeks. She has no residual sequelae.

Potts puffy tumour is a rare complication of sinusitis in the post antibiotic era and Streptococcus constellatus is cause. Nevertheless it has the potential for significant morbidity including osteomyelitis, cranial empyemas and morbidity and early diagnosis is essential.

HEMICHOREA IN A PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS AND ANTIPHOSPHOLIPID SYNDROME

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Introduction: The neuropsychiatric involvement is one of the most common features of systemic lupus erythematosus (SLE) with a report incidence between 25 to 75%. Chorea is a rare manifestation of SLE and is often associated with the detection of antiphospholipid antibodies.

Case report: A 15 year old girl, healthy till March 2004, when she developed pruritus and cyanosis in her left toes with progressive impairment to necrosis. Laboratory studies revealed a positive antinuclear antibodies with increased anti-DNA Ds antibodies and erythrocyte sedimentation rate. Anticardiolipine antibodies and
antibodies of the anticoagulant lupus were positive. The presumptive diagnosis of SLE was made associated with antiphospholipid syndrome. The patient was treated with heparin, endovenous E(1)prostaglandin and oral pentoxifilin with a good clinical response. She was discharged with oral hydroxychloroquine and warfarine and maintained a stable clinical condition for three years. In February 2007 she started oral steroids due to pericarditis. Four months later, she experienced involuntary choreothetotic movements on the right side with disartric speech and, subsequently, involuntary choreothetotic movements on the left arm. MR imaging of the brain revealed inespecific frontal lesions in white matter. Pulses of cyclophosphamide and methylprednisone were started. The choreiform movements disappeared and she did not present further clinical symptoms of CNS lupus.

**Discussion:** A strong association between the levels of antiphospholipid antibodies and chorea in individuals with SLE has been referred. Immunosuppression is the first choice treatment in these cases. Unlike other related cases, no characteristic neurologic lesion appeared in the cerebral MR.

**POST-VARICELLA VASCULOPATHY: AN UNUSUAL COMPLICATION FOR A COMMON DISEASE**

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Stroke in childhood is an uncommon event, but carries a significant long-term morbidity. There is a wide spectrum in terms of etiology and causation is often multifactorial. Varicella-Zoster infection has been recognised as a risk factor for arterial ischemic stroke.

The authors report the case of a 4 year-old girl who presented with sudden onset left hemiparesis with predominant face and arm involvement, with partial resolution after 15 minutes, but recurrences in the 3 following days. She was a previously healthy child, with an unremarkable familial and personal history, except for a varicella rash 4 months before. Magnetic resonance imaging with angio-MRI showed signs of acute ischemia in the deep territory of the right middle cerebral artery (MCA) and narrowing of the right internal carotid artery (ICA), with no signs of dissection. Carotid Doppler located the lesion at the base of the skull with extension of flow disturbance to the proximal segments of anterior (ACA) and MCA. Further diagnostic studies included transthoracic echocardiogram, prothrombotic, metabolic and serologic studies. Cerebral angiography with evaluation of the aortic arch depicted a marked stenosis of the suprarenal segment of the right ICA with extension to the proximal segments of the ACA and MCA and a faible filling of ipsilateral lenticulostrate arteries.

Once embolic, hematologic and metabolic causes have been excluded, and considering the recent history of varicella infection, post-Varicella arteriopathy remains as the most probable diagnosis. The authors intend to highlight the importance of Varicella-Zoster infection as a risk factor for stroke in childhood.

**SENSORY AND COGNITIVE SCREENING OF CHILDREN WITH PROFOUND INTELLECTUAL AND MOTOR DISABILITIES (PIMD) USING EVENT-RELATED BRAIN POTENTIALS (ERPs)**

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**Objective:** For children with profound intellectual and motor disabilities (PIMD) the traditional psychological tests are inadequate to evaluate their cognitive capacities due to their severe mental and physical limitations. A promising diagnostic tool for these children are event-related brain potentials (ERPs), as this technique does not require an active contribution or behavioral response.

**Methods:** Electric brain activity (EEG) is recorded by electrodes placed on the skull during the presentation of visual, auditory, and tactile tasks. These passive tasks require no instruction to, nor a behavioral response of, the participant. By means of ERPs one can not only evaluate whether a sound, picture or vibration is detected but also whether a novel stimulus can be distinguished from a standard stimulus, thus providing information about selective attention and memory.

**Results:** We recorded EEG data in more than 100 children with normal development between 6–12 years of age using the same visual, auditory and tactile tasks. These reference data allow us to assess individual children with PIMD and to determine whether functional processing is abnormal or shows a developmental delay. Next these individual profiles can be compared with standardized observational instruments. In several cases functional sensory and cognitive auditory/visual processing was established in children with PIMD that were thought to be deaf or blind. ERP profiles are also very useful for repeated measurements and the evaluation of treatments.

**Conclusions:** The ERP technique yields important complementary information on the quality of cognitive functioning in children with PIMD that cannot be obtained otherwise.

**CYTOKINE RESPONSE IN PERINATAL HIPOXY**

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**Objective:** Concentrations of cytokines (IL-6, IL-1β, TNF-α, IL-18) in cerebrospinal fluid (CSF) and serum of hypoxic newborns (5 to 96 hours old) was determined and correlated with level of hypoxic-ischemic encephalopathy (HIE) and the neurological outcome in 12 month old children.

**Subjects and Methods:** A prospective cohort analysis included 35 children with PNH. 25 children served as the control group. The cytokines were determined by ELISA assay. HIE was determined according to Sarnat/Sarnat method. Neurologic outcomes were estimated according to Amiel-Tison method

**Results:** Mean concentration of IL-6 in serum was statistically higher in patients than in the control group (p = 0.0407). In the CSF concentrations were not significantly different. TNF-α was significantly higher in the serum (p = 0.023), not in CSF. IL-18 and IL-1β were unmeasurable in CSF in both groups. In serum the values were higher in patients, but not significantly. No significant correlation between the concentrations of mediators and neurologic outcome was found in the 12 month old infants.

**Conclusion:** Inflammatory cytokines were present in serum and CSF of the newborns with PNH in the acute phase of disease. There was not any significant correlation of concentration of cytokines and the HIE stage with the neurologic findings in the 12 month old infants.

**DELIRIUM IS THE MOST FREQUENT SYMPTOM IN CLINICALLY MILD ENCEPHALITIS/ENCEPHALOPATHY WITH A REVERSIBLE SPLENIAL LESION (MERS)**

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**Objective:** Simple febrile delirium is usually reversible and benign in children; however, delirium associated with influenza recently attracted attention in Japan when several pediatric patients jumped
from significant heights and were injured or died. The MR imaging finding of a reversible lesion with transiently reduced diffusion in the splenium of the corpus callosum (SCC) has been reported in patients with clinically mild encephalitis/encephalopathy, leading to a new clinical-radiological syndrome, clinically mild encephalitis/encephalopathy with a reversible splenial lesion (MERS). We have often experienced delirium in patients with MERS. The purpose of this study is to evaluate the frequency of delirium in a series of patients with MERS.

Methods: We retrospectively reviewed clinical charts of 54 patients (45 patients less than 15 years; mean age, 9 years) with newly diagnosed MERS; who were collected from the members of the Japanese Society of Pediatric Neurology between September, 2006 and March, 2008 after institutional review board approval from Kameda Medical Center.

Results: Delirium was the most frequent symptom (54%, 29/54), followed by seizures (35%, 19/54), and decreased consciousness level (33%, 18/54). Among the 10 patients associated with influenza, 9 presented with delirium.

Conclusion: MERS should be considered as an underlying condition in children with delirium. This study suggested that influenza-associated MERS presents with delirium more frequently than MERS associated with other pathogens (90% (9/10) vs 45% (20/44)).
AN UNUSUAL CASE OF RETINAL ARTERIAL OCCLUSION IN CHILDHOOD

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Retinal arterial thrombosis is rare in childhood. We describe a 15-year-old boy with sudden visual loss in his left eye. Ophthalmologic examination of the left eye showed an optic disk edema, and an upper visual field defect. Fluorescein angiography showed an occlusion of the lower temporal branch of the left retinal artery. Ocular motility and anterior segment structures were normal in both eyes. The boy’s medical history revealed hypercholesterolemia; cardiovascular disease and hypercholesterolemia were reported in the family. At admission, he was in good clinical condition. Physical examination revealed systolic ejection murmur. Procoagulant and anticoagulant factors (activated prothrombin time, partial thromboplastin time, free protein S, factor V Leiden, factor II, plasma homocystine, resistance to activated protein C, and antithrombin III) were normal. Hypercholesterolemia (282 mg/dL) and elevated level of lipoprotein (a) (1840 mg/dL, normal value <300 mg/dL) were detected. Chest x-ray, brain MRI, angiography, and carotid Doppler ultrasound were normal. A contrast echocardiography revealed a large right-to-left interatrial shunting across the patent foramen ovale. Anticoagulant (low weight heparin) therapy was administered. Two months later the child underwent surgical closure of his patent foramen ovale by using a transcatheter device, followed by anti-platelet acetylsalicylic acid therapy for 12 months. At 9 months follow-up was uneventful. Thus, in otherwise healthy children with isolated retinal arterial occlusion, a screening for underlying thrombophilia, including lipoprotein (a), should be performed. A paradoxical embolism, due to the presence of both foramen ovale patency and hypercoagulable state, could be hypothesized as the pathogenetic mechanism in our case.

HEAT SHOCK: ATYPICAL PHENOTYPE IN CYSTIC FIBROSIS

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Cystic fibrosis is a monogenic condition defined by polymorph clinical manifestations such as: chronic obstructive pneumonia, chronic diarrhea with steatorrhea, malnutrition and failure to thrive. In literature atypical phenotypes have been presented, one of them with heat shock determined by severe hypotonic dehydration.

Objectives: To show the importance of quick detection of severe hyponatremia as a modality of cystic fibrosis onset.

Methods: We present the case of a 2 month old female infant who presented with seizures and acute depleting syndrome caused by dehydration through insufficient supply.

Results: Blood tests revealed severe hyponatremia (110 mmol/l), in this context seizures were labeled as metabolic. Sweat test: positive, values between 83 and 112 mmol/l. The diagnosis was established to be cystic fibrosis after differential diagnosis with other causes of hyponatremia and false positive sweat tests, such as hypothyroidism (although patient comes from an endemic area), adrenal cortical insufficiency through absence of hyperkalemia and hypoglycemia. There were many episodes of hypotonic dehydration (heat shock), while respiratory and digestive symptoms were rarely revealed. Later, a genetic test was performed, which revealed Delta F 508 mutation and certified the diagnosis.

Conclusion: In cystic fibrosis precocious management is very important, even in cases with the poorest classical symptoms.
Poster session: diabetes

STUDY OF URINARY CRYSTALS FOR DIABETIC SUBJECTS (TYPE I)

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Objective: Diabetes mellitus is a common public health problem due to the seriousness of its complications. It can be harmful for the kidneys of these patients and it is useful to take preventive therapeutic measures against the various lithiasis.

Methods: The survey includes 116 diabetics (type I), where first morning urine samples were examined with an optical microscope with polarization for qualitative and quantitative analysis of crystalluria.

Results: Calcium oxalates were mainly in abundance in the both sexes compared to other crystalline species, with a frequency of 79.5% at direct examination and 84.6% at +4°C. The total frequency of purins was 22.0% in the direct examination. The crystalluria observed in the type I diabetic showed a prevalence of oxalo-calcic type (Weddelitte) crystals with a frequency of 64.5%, followed by Whewellite (15.0%).

Conclusion: The high percentage of purin crystalluria for diabetic subjects in general gives an index of danger to the clinicians and the experts.

TESTING WILKIN’S ACCELERATION HYPOTHESIS IN A POPULATION AGED 2–14 YEARS IN UPPER SILESIA

1 L Pracki, 2 P Jarosz-Chobot, 1 J Polanska. 1 Silesian University of Technology, Gliwice, Slask, Poland; 2 Medical University of Silesia, Katowice, Poland

Objective: The aim of the study is to test the Wilkin’s acceleration hypothesis, predicting a relationship between age at diagnosis of type 1 diabetes and BMI or body weight.

Methods: The study analyzed age, gender, BMI and body weight at onset for the cohort of 394 patients (223 boys) diagnosed at the age of 2-. Children were divided into age groups: 2–4, 5–9, and 10–>. BMI and body weight (BW) were measured 30–90 days after onset, converted into SDS and then compared.

Results: The mean values of SDS BMI, for all patients as well as separately for boys and girls were significantly lower than the general population (p<0.05; 95% CI –0.27 to –0.08, –0.32 to –0.07 and –0.29 to –0.01, respectively). These three groups’ mean SDS of body weight was significantly higher than the population (95% CI 0.34 to 0.56, 0.28 to 0.57 and 0.32 to 0.64). The SDS BMI of children from 2–4, 5–9 age groups were similar, with no dependence on gender. Children aged 10 (especially boys) had BMIs similar to the population average, though higher than the younger ones (p = 0.0076). The analysis of SDS BW demonstrated that the youngest children had significantly higher body weight at onset (p<0.05) than other age groups. The observation of lower BMI and higher BW can suggest significantly higher SDS for body height.

Conclusions: The significantly higher body weight and lower BMI measured in the group of the youngest children may indicate that the onset age is correlated with the height of children.

FAMILY HISTORY AND RISK OF TYPE 1 DIABETES MELLITUS

1 S Sipatic-Gnjijic, 1 H Vujinac, 1 N Kucev, 2 J Marinkovic. 1 Institute of Epidemiology, School of Medicine, Belgrade University, Belgrade, Serbia; 2 Institute of Social Medicine, Statistics And Health Research, School of Medicine, Belgrade University, Belgrade, Serbia

Objective: The aim of the study was to evaluate association of type 1 diabetes in children with positive family history of type 1 diabetes, type 2 diabetes, thyroid, adrenal, rheumatic, allergic, coeliac and some other diseases.

Methods: A case–control study was conducted in Belgrade. The case group comprised 105 children less than 17 years old who were hospitalized for the first time because of type 1 diabetes during the period 1994–1997. For each case two controls were chosen among children treated for skin diseases. Cases and controls were individually matched by age (± 1 year), sex and place of residence (all were from Belgrade). In the statistical analysis were used chi-squared test, Fisher exact test, and univariate and multivariate logistic regression.

Results: According to multivariate logistic regression analysis, risk of type 1 diabetes was significantly associated with a positive family history for type 1 diabetes (OR 8.58; 95% CI 3.28 to 22.46), type 2 diabetes (OR 4.04; 95% CI 2.31 to 7.07), allergic diseases (OR 3.32; 95% CI 1.63 to 6.76), coeliac and Crohn’s disease (OR 11.02; 95% CI 1.14 to 106.89) and other diseases group (thrombocytopeenia, alopecia areata, psoriasis, chronic uveitis and pernicious anemia; OR 3.63; 95% CI 1.05 to 12.48).

Conclusions: This study support the hypothesis that the risk of type 1 diabetes is increased in children with positive family history for type 1 diabetes.
Viral gastroenteritis with dehydration is one of the most frequent reasons for visits to pediatric Emergency Departments. This is increasingly being addressed in scenario training becoming part of day-to-day practice. But for example, despite training on defibrillator use Paediatric teams often find it difficult to use in an emergency situation (which thankfully none of the UK centres experience in children), and regular resuscitation scenarios such as cardiac arrests (which again are thankfully very rare in children). This is increasingly being overlapped the dissecting aortic aneurysm or pulmonary embolus, or to have little experience reducing shoulder dislocations. This depends on where the cut-off for age is drawn, but illustrates that Paediatric Emergency Departments still require physicians regularly practicing in Adult Departments rather than becoming insular stand-alone departments.

"MY CHILD CAN'T KEEP ANYTHING DOWN!": INTERVIEWING PARENTS WHO BRING THEIR PRESCHOOLERS TO THE EMERGENCY DEPARTMENT FOR DIARRHEA AND VOMITING

A CRP was obtained on all patients undergoing lumbar puncture. The study received approval from the Institutional Review Board. Statistical analysis was performed using SPSS 11.5 for Windows (SPSS Inc, Chicago, IL).

Results: Over the three study periods, 80 patients were enrolled. The results are shown in the table.

Conclusions: CRP appears to be unhelpful in differentiating Lyme and viral meningitis. Despite published data that suggest CRP is elevated in most patients with Lyme disease (4), we did not find the CRP to be consistently elevated in patients with Lyme meningitis.

DePiero et al CRP concentrations in patients with suspected meningitis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Age (yrs, (SD))</th>
<th>n</th>
<th>CRP mg/dL (mean, (SD), range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyme meningitis</td>
<td>10.4 (3.5)</td>
<td>12</td>
<td>2.0 (1.9), &lt;0.2–5.4</td>
</tr>
<tr>
<td>Viral meningitis</td>
<td>8.7 (3.6)</td>
<td>44</td>
<td>1.7 (1.7), &lt;0.2–8.1</td>
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<tr>
<td>No meningitis</td>
<td>12.0 (3.8)</td>
<td>24</td>
<td>3.2 (3.4), &lt;0.2–11.1</td>
</tr>
</tbody>
</table>

LYME TOXICITY SECONDARY TO INGESTION OF LITHIUM BUTTON BATTERY

Ingestion of button batteries by young children is well-reported. Uncommonly, impaction of the battery in the oesophagus may be associated with a oesophagitis, oesophageal perforation and mediastinitis, which may be fatal. Toxicity from leakage of battery contents has not been widely reported. We present first case of accidental lithium poisoning secondary to button battery impaction in the cervical oesophagus. Lithium poisoning should be considered in any child with neurological symptoms following lithium-ion battery ingestion.

DePiero et al CRP concentrations in patients with suspected meningitis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Age (yrs, (SD))</th>
<th>n</th>
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</tr>
</tbody>
</table>

ROLE OF C-REACTIVE PROTEIN (CRP) IN THE DIFFERENTIATION OF LYME AND VIRAL MENINGITIS IN A LYME-ENDEMIC AREA

Objective: To determine the ability of C-reactive protein (CRP) to differentiate viral and Lyme meningitis in children.

Methods: Children ages 2–18 years were prospectively enrolled over three consecutive seasons: during which Lyme disease was prevalent when the attending physician had concern for meningitis.
This project is part of a program of research to design an educational tool for parents of preschoolers with gastroenteritis. The primary objective of this phase was to validate an interview guide. From initial data, the researchers explored parental motivations for bringing their children to the ED.

Methods: Ten families were recruited from the pediatric ED. Included were families of children under 4 with vomiting, diarrhea, and dehydration. Telephone interviews were recorded and transcribed. The interview guide was edited for face and content validity.

To ensure rigor, thematic analysis was done by all investigators.

Results: The interview guide was validated. Probes were added, and likert scale questions were standardized. Thematic analysis focused on parents’ decision to take their child to the ED. Making this decision is complex, involving community-level, family-level, and child factors. Access to medical care, including perceived urgency, travel time and mode of transport, impacts parents’ decision.

Conclusions: A model outlines the most important factors our sample of parents report when deciding to take their ill child to the ED. Making the decision about an ill child is more complex than when individuals decide for themselves. The interview guide developed will facilitate collection of further information to test our model.

INTRODUCTION OF A CLINICAL CASE OF METHAEMOGLOBINAEMIA

A Hagerman Sanchez, R Galindo Zavala, J Blasco Alonso, J Lopez Lopez, A Jurado Ortiz. Department of Pediatrics, Carlos Haya Children’s Hospital, Malaga, Spain

Introduction: Acquired methemoglobinemia is due to various compounds (mainly nitrates in the water) that activate the oxidation of hemoglobin to form methemoglobin (which is unable to carry oxygen), thereby causing cyanosis when reaching levels of 15% or more. Young children and infants are more predisposed by a transient methemoglobin reductase deficiency. We present a unique case seen at the hospital over the past 6 years, of methemoglobinemia.

Case report: A newborn of 29 days of age who presented generalized cyanosis within few hours of evolution, without apparent relationship with gastrointestinal or respiratory symptoms. The week before he was admitted with a similar picture (milder and self-limited) diagnosed as a possible gastroesophageal reflux. The mother related boiling bottles with celery greens (average trend to accumulate nitrates) as a possible cause. Physical examination presented only central cyanosis saturating 93% to ambient air. The tests showed an additional 60% of methemoglobin. It was treated with intravenous 5 mg methylene blue, repeating the same dose about an hour later with post methaemoglobin of 1.1% and a normal acid base balance.

Discussion: methemoglobinemia is one of the main causes to be considered in patients who presents a picture of central cyanosis with normal oxygen saturation. Its timely diagnosis allowed us to initiate treatment as soon as possible, obtaining a good response in cases of acquired methemoglobinemia.

SEQUENCE ANALYSIS OF THYROID TRANSCRIPTION FACTOR 1 GENE REVEALS POLYMORPHISMS AND MUTATIONS IN PATIENTS WITH THYROID DYSGENESIS

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In the present study we analyzed the thyroid transcription factor-1 (TTF-1) gene in patients with congenital hypothyroidism due to thyroid dysgenesis: In Iran, a large screening program was run for almost 2 years on all newborns. In total around 300 new CH patients were found. The incidence of CH was found to be 1 in every 570 newborns, which is quite high compared to the world report (1 in every 3000–4000 newborns).

The aim of the present study was to investigate the mutation/variant of thyroid transcription factor-1 (TTF-1) genes in Iranian children with congenital hypothyroidism (CH) due to thyroid dysgenesis. Genomic DNA was isolated from peripheral blood of 40 pediatric patients. The whole TTF2 gene was amplified by PCR with 4 pairs of primers. The PCR sequence was the directly sequenced. Sequencing of the TTF-1 gene revealed the following mutations/polymorphism in patients.

We found polymorphisms such as (CTT→CTC) at position 129 in 4 patients (TAC→TAT) at position 210 in 2 patients, (TCC→TCT) at position 273 in 5 patients. Frameshift mutations were found in 1 patients including mutation in both position 215 (insertion T) and 227. Substitution mutations at position 158 (GAG→TAT), 165 (GAC→AAC), 168 (GCA→AGC), 221(insertion A), 229 (GTG→GCC), 239 (insertion C), 346 (GGG→AGG), 374 (AGC→AAC) in one patient were detected. In conclusion, known polymorphisms in 9 patients (22.5%) were detected. Two frameshift and nine substitution mutations in 11 patients (27.5%) were identified.

CONGENITAL SPLENIC CYST: A CASE REPORT

1A Mascarenhas, 1S Jorge, 2H Quemado, 1M Martins. 1Department of Paediatrics, Centro Hospitalar de Cascais, Lisbon, Portugal; 2Department of Surgery, Centro Hospitalar de Cascais, Lisbon, Portugal

Background: Splenic cysts are rare entities. There are approximately 1000 cases reported in the literature, with an estimated incidence of 0.07%. Congenital cysts, corresponding to nearly 2.5% of all splenic cysts, are more frequent in female children and young adults. Usually they are asymptomatic sole lesions, discovered incidentally during imaging studies. Often the patients present with an abdominal mass associated with mild symptoms related to cyst enlargement.

Complications occur in 15–20% of cases (infection, rupture, hemorrhage). Imaging studies have an important role in diagnosis (ultrasound, CT scan, MRI) but definitive diagnosis is established by anatomicopathology. In most cases conservative management is reasonable. For symptomatic or larger cysts (more than five centimetres) surgery is warranted.

Case Report: A ten-year-old female child, otherwise healthy, presented with diffuse abdominal pain after minor toraco-abdominal trauma. On examination she was pale, with no significant hemodynamical alterations. The abdomen was diffusely painful to palpation with peritoneal reaction. On analytical evaluation, haemoglobin 13.2 g/dL, hematocrit 37.3%, leucocytes 32,420×10^3/μL (82% neutrophils). Abdominal ultrasound revealed spleen rupture with hemoperitoneum. She was submitted to total splenectomy, with identification of a volumous ruptured splenic cyst. Anatomopathological exam revealed a congenital cyst of stratified squamous epithelium. The patient had an uneventful recovery and was discharged home on postoperative day 5.

Comments: Rupture as initial presentation of a congenital cyst is rare and mandates surgical therapy. Total splenectomy was the only option as the size of the cyst did not permit organ preservation.

TRACHEOESOPHAGEAL FISTULA AFTER DISC BATTERY INGESTION

M Seyedhejazi, 2E Madarek, 3N Najati. 1Department of Anesthesia, Tabriz Children Hospital, Tabriz, Iran; 2Department of Obstetrics, Allahra Hospital, Tabriz, Iran; 3Department of Pediatrics, Tabriz Children Hospital, Tabriz, Iran

Foreign body ingestion is a common complaint in the pediatric emergency department. Esophageal foreign bodies are potentially serious causes of morbidity and mortality in children.
Here we report an interesting case of a watch disc battery ingestion leading to tracheoesophageal fistula. The exact place of tracheoesophageal fistula was diagnosed 20 days later after a third investigation by rigid esophagoscopy and bronchoscopy.

A 2 year old, 9 kg male patient was admitted with chief complaint of bloody vomitus and symptoms of aspiration pneumonia after watch battery ingestion. The battery was removed during the first 12 hours. In the third examination the location of the fistula was diagnosed. The trachea and esophagus were repaired, and a muscular flap placed in the place of fistula. The patient was discharged from hospital after 5 days.

IMPLEMENTATION OF A CLINICAL DECISION-MAKING PATHWAY FOR FEVERISH ILLNESS IN CHILDREN YOUNGER THAN FIVE YEARS

2AG Rowland, 3J Hampson, 1S Jackson, 1E White, 1AB Stewart. 1Care Pathways Co-Ordinator, Royal Liverpool Children’s Hospital NHS Trust, Liverpool, UK; 2Paediatric Emergency Department, Royal Liverpool Children’s Hospital NHS Trust, Liverpool, UK

Background: Fever in children is a common reason for seeking advice from healthcare professionals. The challenge is to determine which children have a simple self-limiting cause and which have a potentially serious or even life-threatening illness that needs urgent treatment. In 2007 the National Institute for Health and Clinical Excellence (NICE) for England and Wales produced a guide to the assessment and initial management of feverish illness in children younger than five years. This aims to help guide parents and health care professionals to identify those at risk of serious illness.

Methods: We implemented this NICE guidance by producing a clinical decision-making pathway to be used by staff to assess children who present to the Emergency Department at Royal Liverpool Children’s Hospital with fever, where the source is not immediately apparent. This pathway follows a “traffic light” system to categorise patients into high, medium and low risk of serious illness, and direct appropriate investigation and treatment strategies.

Discussion: The intention is that the pathway will improve patient care by standardising clinical assessment, investigation and treatment of these children.

In addition, it ensures that clinicians are aware of updated national guidance, aids teaching and education of junior medical and nursing staff and provides a convenient way to audit clinical practice.

The pathway we have designed will be of interest to others involved in the emergency care of children.

Our poster will present this pathway, display the results of an ongoing audit of its use and discuss the challenges of implementing national guidance.

DOES BUCCAL MIDAZOLAM (BM) OFFER A HIGH DEGREE OF SATISFACTION AMONGST PARENTS AND HEALTHCARE PROFESSIONALS IN MANAGING PROLONGED SEIZURES?

DN Sobithadevi, R Chakupurakal, AP Choules, M Ahmed. Paediatrics Department, Queen’s Hospital, Burton-On-Trent, UK

Objective: In the absence of intravenous access, rectal diazepam is the standard management for prolonged seizures. The mode of administration and rapid onset of action make BM a superior alternative in this setting. Evidence based medicine currently advocates BM as first line management. Our aim was to identify the frequency and familiarity of BM usage amongst parents and healthcare professionals for children with seizure disorders.

Method: Questionnaires were devised and distributed amongst parents of children who suffer from epilepsy as well as doctors and nurses in our paediatric department over a period of 3 months.

Results: 134 questionnaires (parents 53, doctors 46, and nurses 35) were completed and analysed. 34% parents, 72% doctors and 94% nurses were aware of BM, of these 78% parents, 21% doctors and 53% nurses had actually administered it. Majority of parents (93%) administered the oral preparation of BM compared to healthcare professionals. 85% doctors and 88% nurses used the intravenous preparation. Most parents (95%) and healthcare professionals (86% doctors, 94% nurses) were satisfied with the mode of administration. All parents, 86% doctors and 94% nurses were content with the efficacy of BM to control seizures.

Conclusion: Our survey demonstrated a high degree of satisfaction over the efficacy and mode of administration of BM. Majority of parents were not aware of BM and doctors and nurses were not as familiar as nurses in administering it. We conclude that BM is a superior outpatient management option for prolonged seizures in children but its awareness needs to be increased.

BENIGN ACUTE CHILDHOOD MYOSITIS IN THE EMERGENCY DEPARTMENT

AZ Talento, JA Craven, CT Martin. Paediatric Emergency Department, Adelaide and Meath National Children’s Hospital, Tallaght, Dublin, Ireland

Over a period of 3 months, 16 cases of benign acute childhood myositis were diagnosed in the Paediatric Emergency Department of the National Children’s Hospital.

Objective: To present the clinical and laboratory features of the patients diagnosed to have benign acute childhood myositis.

Results: Ten males and 6 female patients (3–9 years of age, mean 6 years) presented with lower limb pain and/or refusal to walk. This presentation was preceded in all cases by a febrile illness with or without upper respiratory tract symptoms for a duration of 2–14 days (mean of 4.6 days). Tender calf muscles were seen in 10 cases and 3 refused to walk. Thirteen of these patients could ambulate, 6 had normal gait, 4 had toe-walking and 3 walked with a stiff wide based gait. Neurologic examination findings were normal in all the patients. Creatinine kinase was elevated in all patients (560–15556 IU/ml). Leukopenia and neutropenia were likewise seen. Two patients were admitted to hospital overnight and 14 were sent home. All sixteen cases recovered within 24–72 hours of presentation.

Conclusion: Benign acute childhood myositis is a self limiting syndrome of lower limb pain and difficulty walking with elevated creatinine kinase. It has an excellent prognosis. This diagnosis should be considered when presented with this clinical picture and with careful explanation and out-patient follow-up unnecessary investigations can be avoided and parental anxiety alleviated.
Influenza viral infections cause a broad array of respiratory illnesses. In children, avian viruses cause similar symptoms to other types of flu. Avian influenza, an infectious disease of birds, is caused by the type A strain of the influenza virus. Avian influenza viruses are mainly distributed by migratory birds. It is crucial to develop virologic surveillance programs for animal and human influenza, to limit the spread of the virus from infected poultry, and to develop efficacious vaccines by exploiting novel technologies such as reverse genetics. Currently, the primary treatment option is the flu drug oseltamivir (Tamiflu), a neuraminidase inhibitor that works by preventing the virus from escaping its host cell. Another antiviral flu drug, zanamivir (Relenza), may be an alternative. This article discusses current methods of identifying and treating the illness in children, and outlines principles of public health measures for preventing and containing influenza pandemic in Europe. Because no natural immunity to the new strain exists, it can spread quickly, causing widespread illness and death. The virus is especially lethal, killing close to 100 percent of susceptible birds and more than half of infected people and children. But the greatest complication of bird flu is still hypothetical: that it spreads easily from person to person. Two groups at risk for developing complications or requiring hospitalization if they get the flu are adults over sixty five and children between 6 months and two years.

**EPIDEMIOLOGICAL STUDY OF ACUTE POISONING IN CHILDREN**

1. A Balasa, 1CM Mihai, 1V Cucic, 1L Mihai, 1RI Stoicescu, 1V Stroia, 1C Frecus. 1Department of Pediatrics, Emergency Clinical County Hospital, Constanta, Romania; 1Laboratory Department, Emergency Clinical County Hospital, Constanta, Romania

**Background:** Acute poisoning events represent a special problem for pediatricians, due to their frequency and gravity. The frequency has been increasing since 2000 and in Europe it is considered that they represent one of the most important reasons for hospitalization. It is thought that acute intoxication of children represents a “family disease” and can be included with “neglected and abused children” syndrome.

**Objective:** To determine the frequency, etiology and type of poisoning in pediatric patients admitted to a tertiary care unit.

**Method:** We studied 334 children aged 3 months–16 years, hospitalized in PICU, Clinical Emergency Hospital of Constanta, Romania, with acute poisoning in 2006–2007.

**Results:** The number of cases was over 40 times lower than the total number of children hospitalized (2.24%). According to age, patients between 1 and 6 years were more likely to have an intoxication (37.72%), followed by children between 11–16 years (28.74%). The majority of cases were due to known substances (91.02%). Most of them were accidentally produced (66.16%). Drugs were most often the problem (68.86%), such as benzodiazepines (19%), non-steroidal anti-inflammatory drugs (17%), phenotiazines (15%), ferrous sulfate (12%) barbiturates (6%), beta-blockers (8%) and non-identified drugs (16%). Multiple drug ingestion was seen in 29.57% of cases. Among other toxic substances, ethyl alcohol was a frequent problem (10.17%), raising an alarming question concerning the use of alcohol in children.

**Conclusion:** It is recommended that parents are better informed of the risks that come along with ready at hand substances and drugs that normally are unavailable to children.
The prevalence of asthma was 8.9%. In the final model, adjusted for birth and early life variables, females were protected against asthma (OR 0.49; 95% CI 0.26 to 0.94). Hospitalization due to pneumonia (OR 2.34; 95% CI 1.17 to 4.69) and a family history of asthma (OR 2.70; 95% CI 1.40 to 5.20) were found to be strongly associated with asthma. The presence of a cat in the house reduced the risk of asthma (OR 0.45; 95% CI 0.21 to 0.94) and father’s age of more than 35 years (OR 2.20; 95% CI 1.06 to 4.57) increased it. No statistically significant association was observed between low birth weight, intrauterine growth restriction, preterm birth, maternal smoking, parental socioeconomic characteristics and asthma.

**Conclusion:** The perinatal variables analyzed did not interfere with the risk of asthma. A family history of asthma more than doubled the risk, possibly reflecting genetic factors. Infection during childhood seems to confer a greater risk of asthma, but the possibility of reverse causality cannot be ruled out.

**DEATH REGISTRY IN CATANZARO MUNICIPALITY: MORTALITY DUE TO CANCER IN PAEDIATRIC AGE IN 13 YEARS FROM 1990 THROUGH 2002**

M Baserga, E De Marco, L D’Autolo, .

**Objective:** Evaluation of mortality due to cancer.

**Methods:** ISTAT death files; crude rates (referred to 10,000 inhabitants)

**Results:** In Catanzaro as well as in the Calabria region in Italy, leukaemia and brain cancer represented the main cause of death due to cancer in both sexes. However the CR due to cancer decreased.

**Conclusions:** This survival study following the examination of mortality data showed how life expectancy increased because of an increase in deaths moving from paediatric ages to the between 20 and 24 age group. In Catanzaro deaths increased 1.3 times. This happened mostly among males for blood cancers, but also for brain and testicular cancers. In the Calabria region this happened among males for brain cancer, so deaths increased 1.5 times. In Italy overall there were no changes.

### ICD-9 Mortality due to cancer in paediatric age (between ages of 0 and 19): 1990–2002

<table>
<thead>
<tr>
<th>ICD-9</th>
<th>Site</th>
<th>M</th>
<th>F</th>
<th>M+F</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>CR</td>
<td>N</td>
</tr>
<tr>
<td>Catanzaro</td>
<td>Leukaemia</td>
<td>3</td>
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<tr>
<td>204–208</td>
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<td>0</td>
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<tr>
<td>170</td>
<td>Connective and soft tissue</td>
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<td>Brain</td>
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</table>
Infectious Diseases in Four Generations of Children Aged 0-6 in a Large City in Siberia (Retrospective Research)

NV Dedulinia, AE Petuchova. Chair of Hygiene, Omsk State Medical Academy, Omsk, Russia

Objectives: The development of infectious pathology causes and their monitoring in children aged 0–6 is vital and was therefore the aim of our investigation.

Methods: Study of 1000 records of acute morbidity data from medical histories from children aged 0–6 over four generations (born in the 1970s, 1980s, 1990s, and 2000s) was carried out.

Results: Among boys and girls, enteritis, measles, chicken pox and epidemic parotitis in the general structure of morbidity were more than 80%. Morbidity rate in the category of infectious and parasitic diseases was higher in children of the 70s (boys) and the children of the 00s (girls) born and having lived in the maximal technogenic loadings conditions than at the children of 80s–90s (p<0.001). Parameters of diseases for chicken pox and measles in children were the highest. Girls from the 2000s were 15 times more likely to get measles than girls from the 70s. For boys high parameters of measles and chicken pox were seen in 2 generations (70s and 2000s).

Conclusion: High parameters for infectious and parasitic diseases in 4 generations, despite vaccination, were marked. The highest rated disease was in girls from the 2000s (measles) and boys from the 70s (chicken pox). In boys an increase in diseases was observed through 2 generations, at girls through 1 generation. Further studying of this problem is necessary.

Complications of Mononucleosis Infection

S Dragas, J Djecevic, L Banjac. Infectious Disease Department, Clinical Center, Podgorica, Montenegro; L Pediatric Department, Clinical Center, Podgorica, Montenegro

Objective: Mononucleosis infection (MI) is a generalized lymphoproliferative disorder, mostly caused by Epstein Barr virus (EBV). It usually lasts 2–3 weeks; complications are rare and most serious is spleen rupture.

Community-wide Outbreak of Acute Hepatitis A Virus in Mongolia, 2007

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Hepatitis A is a common vaccine-preventable disease in Mongolia. Most cases occurred during a community-wide outbreak that was difficult to control. The 2007 annual incidence of 34 cases per 10,000 population was 8 times higher than the national average rate.

Objective: To describe the distribution of cases and clinical manifestations, and to identify sources of infection of hepatitis A among children living in communities with the highest rates of infection during the community-wide outbreak.

Design: Serologic and descriptive survey.

Participants: Between September and December 2007, 405 schoolchildren, 355 kindergarten children and 128 children cared for at home were hospitalized for hepatitis A.

Main outcome measure: Incidence of immunoglobulin M antibodies to hepatitis A virus and clinical criteria of case definition among hospitalized children at the National Center of Infectious Diseases.

Results: Most Mongolian cases of hepatitis A occurred during a community-wide outbreak. 19% of cases lived in a household where a previous case occurred. IgM anti-HAV positive cases where skewed toward the younger age group, with 34%, 39%, 13%, and 24% among 2–4 years, 5–9 years, 10–14 years, and greater than 15 years, respectively. Given that more than 70% of cases are asymptomatic in young children, it is estimated that over 2000 cases occurred related to the outbreak.

Conclusion: During a community-wide outbreak, HAV infection among children was common, frequently unrecognized, and may have been an important source of transmission within and between kindergarten, school and households. Ongoing vaccination of children may prevent future outbreaks.
Aim: The aim was to analyze frequency and characteristics of complication in hospitalized patients with EBV M1.

Material: In this prospective study from 2007 we analyzed 60 hospitalized patients aged between 3 and 18 and divided them into two age groups to better analyze complications; a preschool (age <7) (20 patients) and school age group (40 patients). All patients satisfied criteria of acute M1: positive IgM and IgG antibody against EBV VCA (Viral capsid antigen). We used clinical examination, standard laboratory tests and additional analyses.

Results: All patients had fever, sore throat and lymphadenopathy, almost all had splenomegaly. Most frequent complication was second bacterial throat infection (50% in both groups), caused by GABHS (group A beta hemolytic streptococcus), with higher prevalence in the first group, mild thrombocytopenia (2 cases) and upper airway obstruction (1 case) were frequent in the first age group. We had one case with peritonsillar abscess in the second age group. Other complications (pneumonia and anemia) were not age related.

Conclusion: The average time of hospitalization was 10 days. All patients completely recovered. We treated them with standard, symptomatic and additional therapy, when necessary (corticosteroids, antibiotics, incision in patients with peritonsillar abscess).

PROLONGED AND EXCLUSIVE BREASTFEEDING REDUCES THE RISK OF INFECTIOUS DISEASES IN INFANCY: THE GENERATION R STUDY

Objectives: To examine the associations of duration of exclusive breastfeeding with upper respiratory tract infections (URTIs), lower respiratory tract infections (LRTIs) and gastrointestinal infections (GI) in infancy.

Methods: This study was embedded in the Generation R Study, a population-based prospective cohort study from fetal life onwards in The Netherlands. Breastfeeding during the first 6 months (never; partial <4 months; not thereafter; partial 4–6 months; exclusive 4 months; not thereafter; exclusive 4 months, partial thereafter; exclusive 6 months) and the occurrence of doctor-attended URTI, LRTI and GI until the age of 12 months were assessed by questionnaires and available in 4,164 subjects.

Results: Prolonged and exclusively breastfed infants had lower risks of URTI, LRTI and GI during the first 6 months, and a lower risk of LRTI between the ages of 7 and 12 months (p-values for trend <0.01). Compared to never breastfed infants, those who were breastfed exclusively until 4 months and partially thereafter, had lower risks of URTI, LRTI and GI until the age of 6 months (adjusted odds ratio (aOR) 0.65 (95% CI 0.51 to 0.83), aOR 0.50 (95% CI 0.32 to 0.79) and aOR 0.41 (95% CI 0.26 to 0.64), respectively) and of LRTI between 7 and 12 months (aOR 0.46 (95% CI 0.31 to 0.69)). Similar tendencies were observed for infants exclusively breastfed ≥6 months.

Conclusions: Prolonged duration of exclusiveness of breastfeeding is associated with lower risks of common infectious diseases in the first 6 months life. These findings support current health policy strategies to promote breastfeeding in industrialized countries.

EVALUATION THE FREQUENCY OF HYPOXIC–ISCHEMIC ENCEPHALOPATHY IN HOSPITALIZED NEONATES

Background and Objective: Neonatal seizures may have different causes with clear background and clinical manifestations. Seizure due to hypoxic–ischemic encephalopathy usually occurs within 12–24 hours after a history of asphyxia and may be linked with metabolic common causes of seizure in preterm neonates. The aim of the present study was to evaluate the frequency of hypoxic–ischemic encephalopathy in hospitalized neonates.

Methods: This cross-sectional study implemented a two year evaluation of 1295 neonates admitted into the neonatal ward of Ekbatan hospital in Hamedan province of Iran for hypoxic–ischemic encephalopathy. Data such as CT scan findings, blood gas findings, Apgar score of 5th minute, decreased muscle tone and conscious-ness, seizure, age, sex, birth weights, serum calcium, glucose and sodium, were entered into the questionnaires and data analyzed using SPSS 13.

Results: 34 patients (2.62%) out of 1295 evaluated neonates had a seizure. From 34 neonates with neonatal seizure, 11 (32.4%) had hypoxic–ischemic encephalopathy. The mean age was 14.05 ± 10.05 days (1–29 days). 25 (73.5%) neonates were boys and 9 neonates (26.5%) were girls.

Conclusion: According to the results of our study, The incidence rate of hypoxic–ischemic encephalopathy in hospitalized neonates was 32.4%.

PREVALENCE OF AGALACTIAE COLONIZATION IN PREGNANT WOMEN FROM PORTO ALEGRE, BRAZIL

Objective: To determine the prevalence of maternal colonization by GBS, evaluating the obstetrical and perinatal outcomes in low and high risk pregnant women from Porto Alegre, Brazil.

Methods: Prospective cohort study with 299 pregnant women. Samples for analysis of GBS were obtained at 35th to 37th weeks of gestation by vaginal and anal swabs cultivated in Todd Hewitt Broth with gentamicin and nalidixic acid. N confirming the presence of GBS colonization, the patients received chemoprophylaxis at the time of labor. The study was approved by the Research Ethics Committee of the Institution. Statistical analysis were calculated obtaining the mean and 95% CI, and analysed by chi-square, significance was at p<0.05.

Results: The prevalence of colonization among the patients was 11.4% (95% CI 7.8 to 15.0%). We did not identify difference in term of prevalence of colonization for the several risk factors analysed. Newborns of mothers colonized showed an index of the first minute Apgar significantly lower than that of mothers not colonized (p = 0.003), as well as higher frequency of negative outcomes, such as the need for ICU admission and neonatal sepsis (p = 0.02).

Conclusions: The results of this study confirms the need for universal screening and assessment of the rates of GBS resistance to antibiotics in pregnant women.

DETECTION OF HIGH LEVELS OF HIV DRUG RESISTANCE IN CHILDREN ON HAART

Background: Data on definition of mutations of a high level to NRTI and PI in children born to HIV-infected mothers are presented.
Methods: Sequencing of 1.8 kb pol gene was performed using ABI Prism 3100 Avant, ViroSeq HIV-1 genotyping system software v2.6 (Stanford University Drug Resistance database) was used for interpretation of results.

Results: Child S, 3 years old, born to an HIV-infected mother has been on HAART from 9 months, and receives AZT 3TC NVP. Researches by definition of resistance of HIV to ARV preparations have found a high level of resistance to NRTIs. The following mutations have been found: D67N, K70R, M184V, K219Q; V118I - NRTI resistance mutations, as well as K101H, G190A - NNRTI resistance mutations. Child R, 3 years old, has been on HAART since August 2004. He has received PI+NRTIs. Research on resistance has revealed a high level of resistance to PI, as well as to NRTIs. The following mutations have been found: PI-M46I, L90M; NRTI-D67N, T69I, K70R, T215FY, K239Q. Child P, 14 years old, has been on HAART since 2004. Accepted PI+NRTIs. Research on resistance revealed a high level of resistance to PI and high level of resistance to NRTI: 3TC, ABC, AZT, D4T, DDI, FTC, TDF.

Conclusion: Introduction of a method of detection of HIV resistance to ARV preparations in Belarus has allowed us to optimize approaches to the treatment of HIV infected patients, guiding changes in preparations and regimens for treatment. The resistance testing equipment has been obtained through donations from the Global Fund.

ANTI-RETROVIRAL THERAPY FOR HIV INFECTED MOTHERS AND CHILDREN IN UKRAINE

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In 2007, there were about 2.1 million children aged up to 15 years born of HIV-infected mothers and 290,000 children died of AIDS. Ukraine has become the center of the HIV epidemic in Europe, with twice as many newly registered HIV cases as in Western Europe and 14 times as many as in Central Europe. In March 2008, approximately 1.4% of the total adult population was estimated to be HIV positive. 16,678 new cases of HIV infection were registered among children and 98% of infected children were born to HIV-positive mothers. The majority of HIV-positive children live in the Donetsk, Dnipropetrovsk, Odessa and Mykolaiv regions. Ukrainian studies show that 12%–38% of HIV-infected mothers became informed on their positive status only at the time of childbirth. In cases of serum-positive response, the infected woman needs information on the probability of infecting the child during birth and how to avoid transmission after delivery. The provision of such information could decrease the number of HIV-infected children and those who obtain anti-retroviral therapy (ART) will help to diminish the vertical HIV transfer from mother to child. Ukraine has entered the seven countries’ circle, which attempts to provide anti-retroviral therapy for more than 40% of HIV-positive pregnant women. This effort will begin to reduce the number of HIV-positive newborns. During the last five years ART has diminished the virus transfer from mother to child by up to 7.9%. Further studies of the resistance to drugs will increase ART efficacy.

INFANTILE HYPERTROPHIC PYLORIC STENOSIS: A COMPARATIVE STUDY OF INCIDENCE AND EPIDEMIOLOGY IN SEVEN EUROPEAN REGIONS

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Objective: The objective of this study was to present epidemiologic data on infantile hypertrophic pyloric stenosis (IHPS) from seven well-defined European regions and compare incidence and changes in incidence over time between these regions.

CHILDHOOD TUBERCULOSIS TRENDS IN SERBIA

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Objective: The objective of this study was to establish the pattern of tuberculosis incidence in children in Serbia in the period 1992–2006.

Methods: A descriptive epidemiologic study was conducted. The source of tuberculosis morbidity data in children 0–14 years in Serbia was the Central TB Registry in Belgrade.

CONGENITAL HYDROCEPHALUS: PREVALENCE, PRENATAL DIAGNOSIS AND OUTCOME OF PREGNANCY IN FOUR EUROPEAN REGIONS

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Objective: To describe prevalence, prenatal diagnosis and outcome for fetuses and infants with congenital hydrocephalus.

Methods: Data from four European registries of congenital malformations (EUROCAT). The registries included are all based on multiple sources of information and include information about live births, fetal deaths with GA >20 weeks and terminations of pregnancy after prenatal diagnosis of malformations (TOPFA). All cases from the four registries diagnosed with congenital hydrocephalus and born in the period 1996–2003 were included in the study. Cases with hydrocephalus associated with neural tube defects were not included in the study.

Results: Ninety cases with congenital hydrocephalus were identified during the study period giving an overall prevalence of 4.81 per 10,000 births. There were 44 live births (49%), 4 fetal deaths (4%) and 42 TOPFA (47%). Non-cerebral malformations were diagnosed in 32 cases (36%) and karyotype anomalies in eight cases (9%).

Median GA at TOPFA was 21 weeks. Among live births 43% were diagnosed prenatally with a mean GA at 32 weeks (range 19–40 weeks) and a median GA at birth at 36 weeks. Thirteen live-born infants (30%) did not survive, nine of whom were diagnosed prenatally. The majority of deaths in live-born cases occurred within the first week of birth.

Conclusion: Prevalence of congenital hydrocephalus falls within the European definition of a rare disease which is 5 per 10,000 births. Associated malformations and karyotype anomalies occur frequently together with congenital hydrocephalus. Prenatal diagnosis is often followed by termination of pregnancy and mortality among live births is high.
Results: In the period 1992–2006 in Serbia 377 children acquired tuberculosis, 174 boys and 203 girls. The average annual incidence rate in the observed period was 1.93/100,000 (95% CI 1.72 to 2.14). The rate in boys was 1.74/100,000 (95% CI 1.42 to 2.0) and in girls 2.14/100,000 (95% CI 1.89 to 2.39). Incidence rates had decreasing tendency ($y = 2.125-0.241x$, $p = 0.3$), for both boys ($y = 2.0215-0.0354 x$, $p = 0.5$) and girls ($y = 2.2576-0.0123 x$, $p = 0.6$) although those decreases were not statistically significant.

Conclusions: In spite of favourable epidemiologic patterns of childhood tuberculosis incidences in Serbia there is a need for permanent control of this important pediatric disease, because of unfavourable social and economic conditions after the war in this region, and the increase of tuberculosis incidence rates in adults in the previous few years.

PEDIATRIC HYDATID CYST IN EASTERN AZERBAIJAN PROVINCE, IRAN

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Objective: One of the most serious helminth infections in humans with widespread occurrence is hydatid disease. This study was aimed to evaluate the characteristic of hydatid disease in children admitted to the Tabriz Children’s Hospital in the eastern Azarbaijan Province in the northwest of Iran.

Methods and Materials: Over a period of 6 years (2001–2006) patients with a diagnosis of hydatid cysts were retrospectively identified. The clinical and epidemiologic data from these patients and therapeutic outcomes were analysed.

Results: Twenty-three patients fulfilled the diagnostic criteria. The mean age was 8.52 ± 3.08 years (range, 4 to 13 years). The male/female ratio was 1.90. Lung cysts were found in 17 (73.9%) and liver cysts in 11 patients (47.9%). Seven patients (30.4%) had coexisting cysts in lungs and livers and 2 (8.7%) had cysts only in their kidneys.

Conservative surgical treatment was carried out in all patients and cases who had multiple cysts received albendazole.

Conclusion: This information may be useful for assessing the cost effectiveness of designing effective public health programs to control echinococcosis in this and other endemic areas.

REPRODUCTION AND FEMALE FERTILITY IN POLAND IN THE PERIOD 1990–2006

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The decreasing number of births in the period 1990–2003 led to a deep demographic depression in Poland. The aim of this study is to analyse the problems connected with reproduction in the Polish population and female fertility in the period 1990–2006.

Methods: In 2006, the total population in Poland was 38,125,479 (19,698,704 women and 18,426,775 men). Data concerning analysed problems and synthetic measurements were taken from Polish Statistical Yearbooks and Eurostat Yearbooks.

Results: The number of births increased steadily from 2004 and in 2006 the female fertility rate was 36.8 (the highest between 25–29 years), total fertility rate was 1.27 and gross reproduction rate was 0.60. Live births per 1000 population was 9.81 and the following years), total fertility rate was 1.27 and gross reproduction rate was 0.60.

Conclusions: The following conclusions were reached:

1. Although the birth rate increased from 1990 until 2006, the fertility rate in Poland was one of the lowest in the European Union.

2. In the period 1990–2006 a steady increase of births by women with a higher education level, a rising percentage of extramarital births (from 6.2% to 18.5%) and an increase of age of women at childbirth of the first child were observed.

3. The emigration process of well educated Polish women may lead to a decreasing of birth rate in the next few years.

CHILD HIV/AIDS EPIDEMIC DEVELOPMENT IN ODESA REGION OF UKRAINE

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Ukraine occupies the first place in Europe for the number of HIV-infected people and patients with AIDS. Ukraine is also the leader in HIV infection dissemination and the corresponding coefficient approaches the level of 1.4% of the adult population. HIV dissemination among pregnant women in Ukraine is one of the highest in Europe. This exponent is about 0.4% of the total number of pregnant women at the beginning of the year 2008 as compared to 0.002% in the corresponding period of the year 1995. The Odesa region is the largest region of Ukraine, including 29 districts. The Odesa region is in first place of Ukraine as to the level of HIV/AIDS infection cases and is third for infected pregnant women. The negative tendency is that the number of HIV infected persons increases among pregnant women, which includes 86% of the patients being of reproductive age and the situation badly needs early diagnostics to help diminish the risk of HIV infection by vertical transmission to the child. During last 10 years the number of HIV infected pregnant women increased by 17%. This increases the number of children born by HIV-infected mothers. Annual figures are as follows: 292 children in year 2005, 521 in 2006, and 476 in 2007. Anti-retroviral therapy applied in time allows the diminishing of the newborn HIV infection rate from 50% to 9%. As a result, more than 1270 previously infected children were qualified as healthy.

A FOUR-YEAR SURVEILLANCE OF SEVERE NON-POLIO ENTEROVIRUS-ASSOCIATED DISEASES BEYOND THE NEONATAL PERIOD

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Objective: To understand the trend of severe non-polio enterovirus infections beyond neonatal period.

Methods: Clinical manifestations of patients aged between 1 month to 18 years with culture-confirmed non-polio enteroviral infections were analyzed in a tertiary teaching hospital between January 2004 and March 2008.

Results: There were 3,223 laboratory-confirmed enteroviruses during this period. A total of 26 patients were diagnosed severe non-polio enterovirus-associated diseases. Nine were female, and 17 were male. The median age was 3.6 ± 2.4 years. The average days from onset to deterioration were 3.4 days (range 1–10 days). Among the 18 patients with encephalitis, most of them had myoclonic jerk (14/18), and most of the encephalitis patients with myoclonic jerk were EV 71-infected (13/14). Interestingly, less than half (12/26) had oral ulcers, and/or skin rashes, thus making earlier diagnosis difficult. Nineteen patients had EV 71 isolated either from
throat or rectal swabs. Non-EV 71 isolates were 3 coxB3, 2 non-typable, 1 coxA16, and 1 echo 6 viruses. IVIG had been used in 12 patients, 2 of them receiving both IVIG and ECMO were expired (both had myocarditis), and the last fatality was with EV 71-associated encephalitis and pulmonary hemorrhage. Pulmonary edema/hemorrhage appeared to be strongly associated with EV 71 infections. Other patients remained alive and recovered except one patient who was ventilator-dependent.

Conclusions: EV 71-associated encephalitis and pulmonary edema/hemorrhage are fatal diseases among children in Taiwan. Even in the absence of typical oral ulcers or skin rashes, pediatricians should be alert about myoclonic jerk and other neurological signs.

NOSOCOMIAL PATHOGENS IN THE NEONATAL INTENSIVE CARE UNIT

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Introduction: It is unrealistic to hope for a germ free NICU, but it is possible to reduce the likelihood of poor hygiene. NICU hygiene is affected drastically by the medical staff and the internal environment. This study will describe some interactions between the laboratory and improper housekeeping procedures.

Methods: The present study was conducted in the NICU of Damanhour Teaching Hospital. Cleanliness and sanitation was evaluated by bacteriological examination of the umbilical stump and the internal environment of the wards represented by floor, air, baby balance, baby heat, air conditioning devices and baby care units.

Results: The study revealed the failure of the routine housekeeping process. The study suggested 3 categories to control and prevent NICU nosocomial infections. Also suggested is a technique for cleaning and sanitation of ward baby incubators by using stabilised hydrogen peroxide 6% as a disinfectant after cleaning by natural soap and not using any toxic or irritant materials. The technic succeeded 100% in the removal of all pathogenic microorganisms; using stabilised hydrogen peroxide is the safest disinfectant instead of other toxic disinfectants.

Conclusion: The study revealed failures of routine housekeeping processes, and suggests 3 methods to control and prevent NICU nosocomial infections. It also proposed a new technique, for cleaning wards and baby incubators, and assures a result of 100% in removing pathogenic microorganisms.

HOW MANY OF THE YOUNG KNOW ABOUT TUBERCULOSIS?

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Objective: In the world, every second, bacillus tuberculosis infects one person. One third of the world’s population has already been infected, with an expectation that 5–10% will be infected during their lives, if they are not HIV positive. Each non-treated patient with active tuberculosis could infect 10–15 persons every year. One third of the world’s population has already been infected, with an expectation that 5–10% will be infected during their lives, if they are not HIV positive. Each non-treated patient with active tuberculosis could infect 10–15 persons every year.

Methods: We performed an investigation of knowledge, attitudes and behavior of children with reference to tuberculosis. The questionnaire used was anonymous, consisted of 21 questions and was completed by enclosing one answer from three or more that were offered. The knowledge check was implemented before and after education.

Results: From 4673 children, 51.9% were female and 48.1% were of male gender. On the basic question of is tuberculosis a communicable disease, two-thirds gave a positive answer. However, on the question of how it was transmitted, almost two-thirds answered wrongly. After education, 73.9% of examinees answered correctly. On the rest of the eight questions, they answered with the highest percentage of uncertainty (they often used “I don’t know”), while after education, that percentage significantly decreased (less than 10%). Before education children got basic information about tuberculosis only via public media; after this, health workers and schools provided information to more than a half of examinees.

Conclusions: There is a necessity to perform tuberculosis education in children and youth. After education the knowledge about tuberculosis as a communicable disease was improved. Besides a need for sufficient amounts of educational material, it requires constant and continual education for knowledge to become adopted and override current attitudes.

FTO GENE POLYMORPHISM RS8050136 IS NOT ASSOCIATED WITH GROWTH IN FETAL AND EARLY POSTNATAL LIFE: THE GENERATION R STUDY

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Objective: Recent genome-wide association studies have identified FTO as a candidate gene for obesity. Studies have shown that this gene is also associated with childhood obesity. We hypothesized that FTO polymorphism rs8050136 influences prenatal and early postnatal growth.

Methods: This study was embedded in the Generation R study, a population-based prospective cohort study from fetal life until young adulthood. Fetal growth was assessed by ultrasound in early, mid-, and late pregnancy. Anthropometrics in infancy were assessed at birth and at the ages of 1.5, 6, 11, 14 and 18 months. FTO rs8050136 genotyping was performed in 3372 children of Caucasian ethnicity. Additionally, dual-energy x-ray absorptiometry (DXA) was performed at 6 months in 200 children.

Results: Genotype frequency distribution was 37.8% (C/C), 47.8% (C/A), and 14.7% (A/A). Using dominant models, the variant genotype (A/A) was not associated with estimated fetal weight, birth weight (difference: 31 grams (95% CI −10 to 75)), or postnatal weight (difference at 18 months: −63 grams (95% CI −218 to 90)). No significant differences were found in height or head circumference either. Finally, FTO genotype was not associated with body composition at 6 months using DXA. Similar effect estimates were found using additive models.

Conclusions: This study suggests that FTO rs8050136 is not associated with body composition or fetal and early postnatal growth. The previously found association with (childhood) obesity may start after the first 18 months of life.

HOSPITAL-BASED SURVEILLANCE TO DETERMINE ROTAVIRUS GASTROENTERITIS SEROTYPE DISTRIBUTION AMONG SPANISH CHILDREN AGED <5 YEARS

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Objective: Rotavirus (RV) is a major cause of acute gastroenteritis (AGE) requiring hospitalizations in young children in Europe and strains are known to vary temporally and geographically. The aim of this study was to determine RV serotype distribution in Spanish children aged <5 years.

Methods: A prospective study was conducted in 3 hospitals in Spain between March 2005 and August 2006. Children aged <5 years presenting to emergency rooms (ER), requiring hospitalization for community-acquired (CAH) AGE, or presenting with hospital-
acquired (HA) RVGE were identified and stool samples were collected and tested by ELISA for detection of RV antigen and by RT-PCR to determine RV G and P types. This study was part of a multi-country study to evaluate the burden of RV in various European settings.

**Results:** A total of 985 children <5 years with AGE were recruited, 756 (76.8%) via ER, 201 (20.4%) hospitalized with CAH AGE and 28 (2.8%) with HA AGE. Stool samples were tested from 825 AGE cases of which 246 (29.8%) were RV (+). G9P(8) was the most prevalent RV serotype (74%) followed by G1P(8) (12%) and G3P(8) (11%).

**Conclusions:** RV was a major cause of AGE among children <2 years in Spain accounting for 29.8% of AGE cases (ER and hospitalizations). G9P(8) was the most prevalent RV serotype. Results of large scale, randomized phase III studies conducted in Europe and Latin America show RotarixTM to provide a high level of protection against all commonly circulated Spanish RV types, including G9P(8).

**VACCINATIONS AGAINST INFLUENZA IN CHILDREN AGED 0–4 YEARS IN POLAND IN 2001–2006**

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**Introduction:** According to ACIP recommendations healthy children aged 6–59 months are in a higher risk group for complications due to influenza and should be vaccinated yearly against flu.

**Aim:** The aim of the study was to find out the coverage of vaccination against influenza in children aged 0–4 years in Poland in 2001–2006.

**Methods:** Data collected in 2001–2006 by the National Institute of Hygiene, National Institute of Public Health, Department of Epidemiology and Chief Sanitary Inspectorate and Department of Communicable Diseases Control, published yearly as a bulletin ”Vaccinations in Poland”, available at http://www.pzh.gov.pl, were analyzed. Demographic data were obtained from Central Statistical Office (http://www.stat.gov.pl).

**Results:** The general number of vaccinations against influenza in children aged 0–4 years varied from 22637 (in 2004) to 34262 (in 2002). The coverage of vaccination against flu in these children ranged from 1.3% (in 2004) to 1.9% (in 2005). Among vaccinations performed in persons at all ages, the percentage of vaccinations made in children aged 0–4 years varied from 2.2% in 2002. The coverage of vaccination against flu in children aged 0–4 years in Poland in 2001–2006 was low (<2%). It is necessary to find out reasons for this situation and to improve it.

**CARESS: THE CANADIAN REGISTRY OF SYNAEGIS**

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**Objective:** To determine current usage of palivizumab prophylaxis, compliance patterns, hospitalization rate (HR) and outcomes in children at high-risk of respiratory syncytial virus (RSV) infection through a Canadian Registry Database (CARESS).

**Methods:** A prospective, observational, study of Canadian infants who received palivizumab in the 2006/2007 RSV season. Neonatal and demographic data were collected upon enrolment. Parents/caregivers were contacted monthly for data on palivizumab utilization, compliance and outcomes related to any respiratory tract events.

**Results:** 1224 infants, aged 2 days–34 months (mean = 5.17 -months) who received at least one injection of palivizumab were recruited from 16 regional sites across Canada. Participants were typically male (57.4%) and Caucasian (72.2%). Gestational age was 31.5 ± 4.3 weeks. 914 infants (74.7%) received palivizumab primarily for prematurity (<35 completed weeks gestational age). 119 (9.7%) had bronchopulmonary dysplasia (BPD) and required supportive oxygen therapy. 119 (9.7%) had congenital heart disease and 72 (5.9%) were prophylaxed for other risk factors. 76.9% of subjects received at least 4 injections of palivizumab. The majority of injections were administered within recommended monthly time intervals (73.5%). There was a 5.1% HR for respiratory tract events (e.g., bronchiolitis or pneumonia). The RSV positive HR was 1.4% (proven RSV). Hospitalization rates for respiratory tract events were highest in those with BPD (12.8%, p < 0.001), and those of Hispanic (15.4%) or Aboriginal descent (13.6%) (p = 0.051).

**Conclusions:** Compliance with the course of palivizumab was very good. The RSV hospitalization rate observed in the 2006/2007 CARESS season was lower than that previously documented in the scientific literature.

**ATTENTION DEFICIT/HYPERACTIVITY DISORDER PREVALENCE AND CORRELATES IN CHILDREN AND ADOLESCENTS IN CYPRUS**

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**Objective:** As part of a study regarding rural and urban children’s psychosocial and developmental well-being, we evaluated symptoms of developmental disabilities, such as ADHD, according to DSM-IV criteria.

**Methods:** 593 children in primary education and 1673 in secondary education were evaluated with a specially designed parent-completed questionnaire for psychosocial and developmental problems.

**Results:** Children in primary education reported a prevalence of 7.7% of ADHD symptoms (9.2% rural, 7% urban areas) however area was not statistically significant (Pearson Chi-square 0.149). There is a relationship when the Pearson Chi Square asymptotic significant value is less than 0.05. Gender was statistically relevant (Pearson Chi-square 0.000), with 70.7% of the children matching the ADHD criteria being boys and girls 29.3%. Grade was statistically significant (Pearson Chi-square 0.000) and surprisingly correlated positively with excellent and good academic performance (45.7% and 51.4% respectively) as only 2.9% of the children with ADHD symptoms displayed poor academic grades. Adolescents in secondary education exhibited similar results with total prevalence 8%. Rural areas reported 8.1% and 7.7% in cities but area was not statistically significant (Pearson Chi-square 0.491). Gender was also statistically relevant (Pearson Chi-square 0.000), with 60.8% males and 39.2% females. Grade was statistically significant (Pearson Chi-square 0.000), however it was correlated with excellent academic performance only at 19.6%, good 62.6% and 17.8% with poor academic performance.

**Conclusion:** ADHD prevalence was similar to international studies and was found to correlate with gender and grade but not with area. Further study is needed to establish all the possible correlates in Cyprus.

**EATING DISORDERS AND CORRELATES AMONG HIGH SCHOOL GIRLS IN TABRIZ, IRAN**

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**Objective:** There is little data on the prevalence of eating disorders in Azarian populations. We therefore undertook this study to estimate disordered eating attitudes among high school girls in Tabriz, and their relation to demographic parameters.
CONSANGUINITY AND PREGNANCY OUTCOME

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Objectives: Consanguineous marriage is common in Jordan and the Middle East in general. The aim of this study is to see the effect of consanguinity on pregnancy outcome.

Patients and Methods: Mothers in the postnatal ward were interviewed and a questionnaire was completed. They were asked whether their marriage was consanguineous or not. Data regarding number of pregnancies, abortions, stillbirth, intrauterine death, neonatal and infant deaths, multiple gestation and low birth weight babies were collected.

Results: This study included 95 mothers of consanguineous marriage and 160 mothers of non-consanguineous marriage. There was a statistically significant difference between the two groups regarding number of pregnancies, abortions, stillbirths, intrauterine fetal deaths, neonatal deaths, infant deaths, multiple gestations, and low birth weight babies. All were higher in consanguineous marriages.

Conclusion: Consanguineous marriage has adverse effect on pregnancy outcome. Consanguinity should be included as a factor in high risk pregnancy. The obstetrician and neonatologist should be alerted to its significance.

EPIDEMIOLOGY OF CYSTIC FIBROSIS IN THE REPUBLIC OF MOLDOVA

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Aim: To evaluate the epidemiological data, the clinical profile and explorative characteristics in children with cystic fibrosis (CF) from the Republic of Moldova.

Methods: At present in Moldova according to official statistical data there are about 120 children with CF. There are 50 children with a confirmed diagnosis of cystic fibrosis in the Clinic of Pneumology. This study included 21 boys and 19 girls. Genetic diagnosis was made in children and their parents for 4-7 CFTR mutations.

Results: In 26 children (52%) the ΔF508 mutation was revealed (21 children, homozygous), 1 child, N1303K; 1 case, R334W. The diagnostic of CF was established at the age of <1 year in 24 children, 1–5 years in 13 children, 5–10 years in 6 cases, 10–15 years in 6 children and 16–20 years in 1 child. Bacteriology of sputum was characterized by predominance of S. aureus in 66.15%, Ps. aeruginosa in 37.2%, H. influenzae in 35.6% and mixed infection with S. aureus + Ps. aeruginosa in 25.4%, S. aureus + H. influenzae in 11.9% and S. aureus + Ps. aeruginosa + H. influenzae in 3.4% cases. Spiral computed tomography has revealed saccate and cylindrical bronchiectasis (10 children), focal (4 children) and diffuse pulmonary fibrosis in 3 cases, and signs of bronchiolitis (3 cases) and chronic bronchitis in 18 children.

Conclusion: There is a predominance of the ΔF508 CFTR mutation in children with CF in Moldova. Bronchopulmonary affects are characterized by chronic infection with Ps. aeruginosa, S. aureus, H. influenzae, ventilatory function disorders, bronchial remodeling and sectors of pulmonary fibrosis.

MONITORING IMMUNIZATION COVERAGE IN ISRAEL

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Objectives: Immunization coverage is a major health indicator. A national registry in Israel is in the process of being planned and implemented.

Methods: The specific goals were determined, the current status and reporting techniques reviewed, and a program for future action outlined.

Results: Routine childhood immunizations are provided at public well-baby clinics. An average of 145,000 live births occurred during 2000–2007 in Israel. The average national immunization coverage at age two years in 2004 was: DTP4 Polio4 Hib4 (all 91%), HepB3 (98%), MMR1 (95%), HepA1 (89%). These are the most recent available data. Reporting is based on a 17% population-based sample in some districts and on cumulative reports in others. Despite the high national average coverage, specific sub-populations are under-immunized, as highlighted by recent outbreaks of vaccine-preventable diseases such as measles. Sampling carries the risk of under-representation of some population strata, particularly high-risk groups. A complete national immunization registry was found to be the most preferable option. This registry requires data completeness, protection of confidentiality, compulsory reporting by providers, and links to other computerized records. It should provide individual immunization data from infancy to adulthood and be accessible to both providers and consumers. A uniform protocol was developed, with cross-sectional reporting at 12, 24 and 36 months of age. An experimental web-based electronic reporting from the clinics to the ministry of health was started in 2008.

Conclusions: The provision and monitoring of childhood immunizations are important cornerstones of a national health policy. Hence, the importance of maintaining a comprehensive immunization registry.
confirms that girdariosis is the digestive parasitic disease with the highest prevalence. There was no significant difference according to the gender of the children. The most affected age group was represented by children of 3–4 years. Obligatory periodic investigations of children from collectives should be routinely performed for diagnosing parasitic infections.

**YOUNG ADULTS BORN WITH VERY LOW BIRTH WEIGHT EXERCISE LESS THAN THEIR TERM-BORN PEERS**

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**Background:** Preterm birth with very low birth weight (VLBW; <1500 g) is associated with lower muscle mass in adult life. Although these findings could be related to physical inactivity, little is known about exercise habits in this particular patient group.

**Objective:** To study leisure time physical activity in young adults born with VLBW, compared with term-born controls.

**Methods:** The Helsinki Study of Very Low Birth Weight Adults comprises 166 VLBW and 172 term-born adults, born in 1978–1985. In 2004–2005, at age 18–27 years, the participants attended a clinic study during which their physical and psychological health was assessed. Pre- and postnatal data were obtained from hospital records, and information on current health and physical activity from questionnaires. Individuals (n = 16) with impairments such as cerebral palsy, blindness or developmental delay (conditions related to reduced exercise ability) were excluded from analyses. We used chi-square tests for crude group comparisons, and logistic regression when adjusting for gender, age, and parental education.

**Results:** The VLBW group reported leisure time exercising less frequently than controls (once weekly: 39.9% vs 60.1%, p = 0.02). Their average exercise duration was shorter (<30 minutes; 15.9% vs 4.7%, p<0.001), and intensity lower (p<0.001). The results remained after adjustment for the aforementioned confounders, and additionally for bronchopulmonary dysplasia. Fewer VLBW adults than controls rated their physical fitness as “good” or “very good” (39.7% vs 60.3%, p = 0.048), although this difference turned non-significant after adjustment.

**Conclusion:** VLBW adults report lower frequency and duration of leisure time exercise than controls. These findings have potential implications for later adult health outcomes.

**MULTI-YEAR EPIDEMIOLOGIC AND CLINICAL LABORATORY STUDY OF THE MOST COMMON PEDIATRIC INFECTIONS IN THE NORTHERN PARTS OF GREECE**

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**Objective:** To investigate clinically and by laboratory methods the most common pediatric infections of the past 5 years in different hospitals and health centers of Northern Greece and study their course through time.

**Methods:** We retrospectively studied the files and the laboratorial examinations of children who attended the emergency room or who were hospitalized in our health institutions. We studied a total of 4865 cases concerning pediatric patients in the last 5 years.

**Results:** We registered 478 (9.8%) cases of upper respiratory system infections, 786 (16.2%) cases of lower respiratory system infections, 353 (7.3%) cases of urinary infections, 543 (11.2%) cases of bronchial asthma attacks and 622 (12.8%) cases of gastroenteritis.

**Conclusions:** There was no improvement found over the past 5 years in the infections status of children:

a) The cases of lower respiratory system infections and the cases of urinary infections have increased through these years (23% and 41% respectively). This could be a result of the generous use of antibiotics as we found new microbial strains responsible for infection that are resistant to the common antibiotics.

b) The cases of upper respiratory system infections and the cases of gastroenteritis were found to be stable.

c) The cases of bronchial asthma attacks increased by 3% due to the increase of new chemical allergens.

**DETECTION OF ANTIBIOTIC SUSCEPTIBILITY IN CHILDREN WITH URINARY TRACT INFECTIONS IN HAMEDAN, IRAN**

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**Introduction:** Urinary tract infections (UTIs) are the most common genitourinary disease and second most common infection in childhood. The aim of this study was to identify the most common bacteria causing UTIs, clinical manifestations and detection of antibiotic susceptibility of isolates in children under 18 years of age who were referred to the hospital in Hamadan, western Iran.

**Methods:** A descriptive analytical study was performed on 456 patients who were suspected to have a UTI. Urine cultures, urine analysis, clinical manifestations and antibiotic susceptibility patterns were investigated. The required data from patients were gathered through a questionnaire and analyzed using the Epi6 system. An antibiogram for twelve antibiotics was performed by the gel-diffusion method of Kirby-Bauer.

**Results:** Out of 456 children suspected to have a UTI, 156 children (34.2%) had positive bacterial culture with 88.5% of isolates Gram-negative. The most common isolates were Escherichia coli (58.4%), Enterobacter sp. (9.6%), Klebsiella sp (6.4%), Staphylococcus aureus (5.8%) and Pseudomonas aeruginosa (5.1%). Fever (72.8%), dysuria (58.3%), flank pain (47.4%), urgency (48.6%) and urinary frequency (39.8%) were the most common clinical manifestations of patients. The most effective antibiotics against isolates were nitrofurantoin, ciprofloxacin, nalidixic acid, amikacin, ceftizoxime and co-trimoxazole, while most isolates showed high resistance to ampicillin, tobramycin, tetracycline and amoxicillin.

**Conclusions:** This study showed that Gram-negative bacilli, in particular E. coli and Enterobacter sp., are predominant causes of bacterial agents of UTIs in children under 18 years of age in this region. Most species showed high resistance to routine antibiotics such as tobramycin, amoxicillin, ampicillin and tetracycline.
Poster session: ethics

“A GOOD DEATH”: PALLIATIVE SURGERY IN TRISOMY 18

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Palliative care serves to enhance quality of life, relieve symptoms, and provide support to families.

A “good death” is one that is free from avoidable distress and suffering for patients, families, and care-givers.

Various severe congenital malformations, profound mental retardation as well as a high rate of infant mortality are characteristic features of trisomy18. Congenital cardiopathy occurs in 60–90%. Since it is a condition of poor prognosis, a “minimal care” policy is usually adopted.

The authors present a child who was born with a phenotype compatible with trisomy 18, confirmed later by cariotype. She presented with a large ventricular septal defect (VSD), foramen ovale and patent ductus arteriosus, which resolved with indomethacin. Because of VSD there was clinical deterioration with congestive cardiac failure (CHF) and respiratory distress that made it impossible to send her home, which was the parent’s desire.

After discussion between neonatologists, the pediatric cardiologist, cardio-thoracic surgeon and the parents, a decision for palliative cardiac surgery was made. Pulmonary artery banding in the 37th day of life allowed for a better clinical condition and release to go home on the 44th day of life.

On movement she revealed no signs of CHF or respiratory distress. She died on 77th day probably from central apnoea. The family was thankful for the chosen option. Cardiac surgery seems to be a palliative option to consider in cases of trisomy 18, since it can ease significantly the pain in these patients. The purpose of neonatal palliative care is to add life to the infant’s time, not to add time to the infant’s life.

**ETHICAL DECISION MAKING IN RESUSCITATION OF INFANTS BORN AT MARGINS OF VIABILITY TO FOREIGN NATIONALS**

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**Background:** Neonatologists encounter many ethical dilemmas including limits of viability, conforming to parental wishes whilst also considering best interests of the infant, ethics of withdrawing care and provision of palliative care. These issues are further complicated if patients are infants of foreign nationals who are not entitled to free NHS care. We describe 2 cases and the ethical dilemmas they posed.

**Objectives:** To explore the practical application of ethical principles in resolving these clinical dilemmas.

**Methodology:** Retrospective analysis of case records and case discussions.

**Case:** 25 and 26 week gestation infants born to African mothers visiting the UK as tourists. The dilemmas were whether or not to resuscitate these infants at the margins of viability and whether these UK defined margins of justifiable survival can be extrapolated to other countries. Other dilemmas included; when to discuss payment of medical bills with the parents; in the presence of finite resources do we owe a greater duty of care to these infants or those displaced by their requirement for intensive care; to what extent should these parents influence decision making and what is ethically in the best interests of the child; impact on decision making of known lack of resources and infrastructure in the home countries for long term follow up after discharge.

**Discussion:** These cases highlight the difficulties of financial considerations superimposed on pre-existing ethical dilemmas within neonatology. The anticipation of ethical dilemmas and early and frank communication with parents can aid in acting in the best interests of the child.

**DO IATROGENIC INJURIES INFLUENCE ETHICAL DECISION MAKING IN WITHDRAWAL OF NEONATAL INTENSIVE CARE?**

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**Background:** Intensive care is high risk care and patients are susceptible to iatrogenic injury due to the placement of multiple invasive devices used for monitoring clinical status. These injuries have financial and medical implications as patients may later seek legal recourse and compensation. There are also issues about loss of confidence in medical carers when injuries occur and this can complicate ethical decision making within the ICU.

**Objectives:** To explore the practical application of ethical principles in decision making around withdrawal of intensive care given a background of iatrogenic injury.

**Methodology:** Retrospective analysis of case records and case discussions between the neonatal team and parents.

**Case:** A 26+5 week gestation infant with treatable congenital heart disease who developed many of the complications of prematurity including respiratory distress syndrome, necrotising enterocolitis and cystic periventricular leukomalacia and attendant risks of long term respiratory, gastrointestinal and neurological morbidity. Placement of an arterial line led to ischaemic necrosis of the hand. The ethical dilemma faced related to conflict between the parents and carers as to continued provision of ICU. Did the presence of the hand injury sway physicians from acting in the best interests of the child?

**Discussion:** In this case decisions about continued provision of care were complicated by the presence of a non-life threatening iatrogenic injury. Parental confidence in physician motivation was a major issue in clinical decision making. This highlights the need for a clinical ethics service to provide more impartial decision making in the best interests of the infant.

**PAEDIATRIC CONSENT: ARE WE JUST PAYING IT LIP-SERVICE?**

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Back in 1985 the original Gillick decision allowed the medical profession to accept consent given by mature minors as valid (in exceptional cases).

Paediatricians and other healthcare professionals often profess to work according to this. However this is often a fairly cursory (and unrecorded) assessment of degree of competence based partly on physical appearance. Often mature minors are asked to give consent to life-saving treatment would not generally be respected, it cannot consent. Whenever there is an option of recourse to parents the situation effectively becomes one of allowing consent ‘for show’. In such a case this amounts to no more than mere assent. If refusal to consent to life-saving treatment would not generally be respected, it can only be for treatments which could not be viewed as life-saving that any degree of real autonomy exists. Mature minors in addition cannot consent to blood or bone marrow donation or any cosmetic procedures.

If children are deemed pre-competent rather than incompetent they must surely pass through a finite point where competence is
reached. If it is the competence rather than the gravity of the decision which matters (as in adults), then reaching this mythical point of competence is critical. When it has been accepted once, it should be accepted every time following that, however grave the situation. This may be used in a test case for refusal of consent, though so far there are very few such cases, where it could be very difficult to defend.

**ETHICAL–LEGAL COMPLEXITIES IN CONSENTING CHILDREN FOR MALE CIRCUMCISION IN KENYA**

**DS Omondi Aduda. Male Circumcision Program, Nyanza Province, Kenya**

In the Kenya Children’s Act of 2001, a child is any person under 18 years. A child of tender years is one below 10 years. The Kenya Citizenship Act Ch. 170 states a minor is any person who is less than 21 years. The Marriage and Divorce Act states a minor’s age is 16 years for females and 18 years for males. A male of 12 years is considered incapable of sexual offences. Section 14 of the Penal code sets the age of criminal responsibility at 8 years. But this may only mean that a child can distinguish right from wrong, but not necessarily give consent. The children’s department and the courts accept 8 years as the minimum age for decision-making. However their understanding; maturity; survival; best interest and welfare of the child are critical considerations. The medical practice guidelines and Kenya Public Health Act (1986) are inadequate with regard to MC process, but the minister can make regulations in some matters of public health (sec 11 and 13).

Kenya lacks a comprehensive regulatory framework for voluntary MC in children. There is need to justify and fortify its public health importance and implications to pre-empt potential ethical, legal, policy and regulatory complexities related to the practice. The intent and context of MC based on current medical and scientific knowledge are critical considerations. However, translating the scientific results from an adult population to the children is an ethical challenge. “Therapeutic” and “non-therapeutic” are some of the terminological challenges in public health interventions and research.

**PHARMACOGENOMICS AND ITS ETHICAL IMPLICATIONS FOR CHILDREN**

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**Objective:** Although few clinical applications for pharmacogenomic tests currently exist, pharmacogenomic research has the potential to generate clinically relevant information, whose applicability and utility will doubtless grow over time. Current guidelines will be critically assessed and recommendations will be proposed.

**Methods:** We undertook a comprehensive review of literature as well as of international, regional and national norms and guidelines addressing pharmacogenomic research in pediatrics.

**Results/Conclusions:** We identified three major ethical issues that have implications for paediatric research: 1) consent and assent: how the assent of child should be obtained taking account of both age and maturity; and how complex information should be communicated to ensure that parental consent is properly informed; 2) the return of research results to participants: when, if ever; general or individual; ancillary results; and when the child becomes mature; and 3) the future secondary uses of samples: reconsent; risks and benefits.

**PEDIATRICIAN’S OPINIONS ON PATENTING DNA SEQUENCES**

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**Introduction:** Patents are a contract made between an inventor and the government that gives the applicant the right to prevent the manufacture, use and sale of the invention by others for a limited period of time. Although patents promote further technological developments, researchers are concerned that patenting DNA does more harm than good.

**Objective:** Upon completion of the Human Genome Project a new horizon has opened in the area of biomedicine as well as in the interests of pharmaceutical companies. Patenting of genes and analysis of their mutations will be the subject of scientific discussion. In this study we try to assess the interests of pediatricians in this subject.

**Method:** A simple questionnaire with regard to the significance of patenting and the knowledge of whether it has been applied to DNA sequences was distributed to 140 clinical pediatricians (mean age 38 years old).

**Results:** 82% of doctors are accustomed with the meaning of patenting but they don’t know the specific requirements. 65% have been informed by the daily press about “who owns what in our body”. Only 3% know that some patent cases resulted in worldwide controversies (the Neem tree, John Moore’s case, Guayami case). Fewer (2%) know that the monopoly lasts 20 years. An interesting point is that younger colleagues (24–30 years old) are better informed on the subject. 98% of pediatricians express concerns about the ethical aspects of gene patenting.

**Conclusions:** We discovered satisfactory curiosity from pediatricians but an inadequate level of knowledge on this crucial scientific matter.
Children have their right to give their voice and participate in situations which they are engaged in, according to The Convention on the Rights of Child. The aim of this study was to explore and describe 3 year old children’s expressions of engagement during annual child health care visits.

A qualitative research design with video observations was used. The actions of 29 3 year old children were focused on when interacting with the nurse. A hermeneutic analysis was carried out to grasp the children’s varied expressions.

The findings demonstrate how 3 year old children, when invited to the health care activity, are preparing themselves in readiness for engagement. They arrange their bodies in different positions, ask questions, seek contact with a parent or are absorbed in thoughtfulness. Then the children direct their attention towards the nurse and/or the health care activity with spoken and/or bodily readiness. Children’s engagement occupies the whole body or separate parts of the body. Further, findings demonstrate how bodily expressions replace each other in a rapid process and how the same expressions can have different meaning depending on the actual situation. The children’s spoken expressions strengthen bodily expressions, and are responding to nurses’ invitations or are spontaneous conversation.

This research project will continue to study expressions of engagement and perceived participation of the children at 4 and 5.5 years of age at their annual primary child health care visits. To take preschool children’s engagement in primary child health care settings into consideration can contribute to promoting their participation when interacting with the nurse.

**IMPLEMENTATION OF A BREASTFEEDING-FRIENDLY POLICY IN A NEONATAL INTENSIVE CARE UNIT**

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In this poster we want to share our experiences with the implementation process and practical results from a project to secure good quality regarding breastfeeding support in a NICU.

As a framework for the project we used WHO/UNICEF 10 demands for a Baby Friendly Hospital which support breastfeeding from birth to discharge. These demands were adapted to the NICU setting by the Norwegian Breastfeeding Competence Centre.

To get an approval the unit started a project with a group of nurses and doctors led by a lactation consultant. The project group developed evidence based standards that met the 10 demands. A total of 21 guidelines for solving different kinds of breastfeeding challenges were developed, covering all kinds of interventions from before birth to discharge. In addition 23 standards regarding breast problems and milk production were elaborated. Many of these standards and guidelines were also issued as informational folders to mothers.

To increase the staff’s knowledge, an educational program for doctors and nurses was arranged, and our first priority was to educate five lactation consultants. In addition specific guidelines for educating new employees were developed.

To assure good collaboration with the maternity ward and the primary health service, standards and information material were coordinated, and information about breastfeeding problems was documented and distributed in meetings and written reports.

After all these actions were initiated the Neonatal unit at Rikshospitalet University Hospital met the criteria of knowledge level and breastfeeding support, and was thereby approved as a Baby Friendly Neonatal Unit in January 2006.

**THE EFFECTS OF FIRST BREASTFEEDING ON FUTURE**

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**Objectives:** Breastfeeding has many advantages for both mothers and infants. The aim of this study was to assess success of first breastfeeding after delivery by using “LATCH Breastfeeding Charting System” and compare with breastfeeding for four months.

**Methods:** This study was approved by the Local Research Ethics Committee of Sakarya University. This study was observational and comparative. The research took place at the Delivery Hospital in Sakarya. The samples were volunteer participant mothers who delivered healthy neonates. 24 cesarean deliveries under general anesthesia and 56 vaginal deliveries were chosen for the study. Data were obtained using the “Introductory Information Form” which was prepared using related literature and the “LATCH Breastfeeding Assessment System”. Every month mothers were called by phone in order to clarify whether they fed their babies with breastfeeding or formula after delivery. SPSS (Statistical Package for Social Sciences) was utilized in the analysis of data. Percentage, average, standard deviation and independent samples t test were used for statistical analysis.

**Results:** The average age of the mothers who participated in the research was 26.82 ± 5.54, 81.5% received primary education, 60% were multiparous. It was determined that 71.2% of mothers fed their babies for four months only with breastfeeding. There were no statistical differences between the first breastfeeding LATCH score and only breastfeeding for four months (P = 0.080; P> 0.05).

**Conclusions:** Breastfeeding should be continued in the home and mothers should be encouraged on this subject.

**LONG-TERM-EFFECT OF THE MOTHER INFANT TRANSACTION PROGRAM (MITP)**

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**Background:** A longitudinal follow-up efficiency study at three year of age from a randomized controlled trial.

The MITP is a cost and time effective structured psychoeducative intervention up to 3 months for parents of preterm infants (7 single hours in prior to discharge from NICU and 4 at home). We investigated if the MITP could sensitize the mothers toward the babies’ signals and thereby increase the quality of joint attention and decrease parental stress.

**Object:** The purpose of this study is to investigate the three-year outcome of infants enrolled in our three group RCT, and to investigate if the MITP can reduce the parent’s experience of concern and stress, and improve the children’s development in various aspects at three years of age.

**Design:** The cohort comprises 47 preterm infants in an intervention group, and 48 preterm and 47 full term infants in control groups. Recruitment started January 2008.

Children outcome measures include: motor, cognitive, linguistic, social, emotional and conduct development. Parental outcome includes: experience of stress and concern for their child.
Test battery: a) Ages and Stages Questionnaire. b) ASEBA/Child Behaviour Check List 1.5–5. c) Mullen scale of Early Learning, and d) Parental Stress Index.

A semi-structured interview in a focus group comprised of parents of the preterm infants to describe parents’ concern for the children and reflection regarding participation in the intervention.

Results: Available in 2010.

WORLD HEALTH ORGANIZATION BREASTFEEDING CERTIFICATE: FEASIBLE FOR A NEONATAL INTENSIVE CARE UNIT

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Background: In 1996 the World Health Organisation (WHO) established a vision regarding breastfeeding in neonatology, based on the evidence that lack of breastfeeding is an important risk factor in infant morbidity and mortality. In 2003 a project was started within our Perinatal Neonatal Centre (PNC) for accreditation of our units (NICU and obstetrics) according to WHO guidelines for breastfeeding in neonatology.

Implications: Ten steps are advised by the WHO, but not all were taken into account, because the majority of the infants admitted to the NICU are preterm born, with very low birth weight, are immunocompromised and undergo invasive procedures.

The steps we followed were:

► Have a written breastfeeding policy routinely communicated to health care staff
► Train all health care staff in skills necessary to implement this policy
► Inform all pregnant women of the benefits of breastfeeding and how to breastfeed successfully
► Show mothers how to breastfeed, and how to maintain the flow of breastmilk even if they should be separated from their infants
► Give newborn infants no food and drink other than breastmilk, unless medically indicated
► Allowing mothers and infants to remain together (e.g. Kangaroo Care)
► Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

Conclusion: An external assessment concluded that our PNC met the international criteria for Baby Friendly Hospital Initiative and was certificated in 2007. Our hospital was the first NICU in The Netherlands to be certificated by the WHO.
Poster session: gastro-intestinal/nutrition

NEONATAL PRESENTATION OF CONGENITAL SODIUM DIARRHOEA

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Congenital sodium diarrhea (CSD) is one of the rare causes of secretory diarrhea that can present very early in life, and even in utero. It is due to an inborn defect of the intestinal sodium/proton exchanger located in the apical membrane of small intestinal epithelial cells. To date, six isoforms of the sodium/proton exchanger has been identified. This defect leads to severe diarrhea, voluminous alkaline stools with a high concentration of sodium, features that result in hyponatremic dehydration and normal anion gap metabolic acidosis.

We report a pre-term baby boy with a birth weight of 1.4 kg who was referred because of rapidly rising serum urea and creatinine. The initially reported high urine output was later found to be severe watery diarrhea with severe oliguria and acute renal failure. Associated findings were normal anion gap metabolic acidosis with hyponatremia that required >50 mmol/kg of sodium per day for correction and about 500 ml/kg per day of replacement fluid to correct fluid and electrolyte abnormalities. The patient continues to do well 8 months after diagnosis.

CYTOMEGALOVIRUS AND HELICOBACTER PYLORI CO-INFECTION IN A CHILD WITH MÉNÉTRIER’S DISEASE

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Ménétrier’s disease is an uncommon disease in childhood characterized by enlarged gastric rugal folds and gastric mucosal thickening and hypoproteinemia secondary to a protein-losing gastroenteropathy. In this report we present the second case of Ménétrier’s disease in a child with co-infection of cytomegalovirus (CMV) and Helicobacter pylori (H. pylori).

Case report: A 12 month-old boy was admitted with a two week history of oedema of the face and extremities associated with vomiting. Urine analyses were normal. Protein losing enteropathy was confirmed by laboratory investigations: hypoalbuminemia, hypoproteinemia and elevated fecal alpha1 antitrypsin. Diagnosis of Ménétrier’s disease was suspected by the presence of thick gastric folds on gastric ultrasound and gastrointestinal endoscopy and confirmed by histological study. Aetiological investigations revealed co-infection of CMV and H. pylori. After the eradication therapy against H. pylori, we observed clinical, biochemical and ultrasonographic resolution of the disease.

Conclusion: Intractable Ménétrier’s disease with CMV infection may associate with H. pylori infection. In such a case, eradication therapy of H. pylori may contribute to clinical resolution.

DETERMINATION OF LIVER ENZYMES, SERUM CERULOPLASMIN AND URINE COPPER IN PARENTS OF CHILDREN WITH WILSON’S DISEASE

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Background: Wilson’s disease is an autosomal recessive disorder of copper metabolism leading to liver disease and neuropsychiatric deterioration. These patients have low serum ceruloplasmin levels and high urinary copper excretion. The aim of this study was to determine the level of liver enzymes, serum ceruloplasmin and urine copper in parents of children with Wilson’s disease.

Methods: We performed this prospective study on parents of Wilsonian children between February 2005 and May 2007. In this study liver enzymes, serum ceruloplasmin and 24-hour urine copper were evaluated in all parents. Serum ceruloplasmin and 24-hour urine copper content were determined by radial immunodiffusion and flame atomic absorption spectroscopy, respectively.

Results: There were 31 parents (16 female, and 15 male) with mean age of 39.7 ± 8.2 years. Only one case had abnormal liver enzymes. Six cases (19.4%) had low serum ceruloplasmin and 14 (45.2%) had high urine copper levels (mean, 110.3 ± 55.8 µg/day).

Conclusion: We conclude that a significant number of parents of children with Wilson’s disease have high urine copper levels.

ROUTINE PARASITOLOGICAL STOOL EXAM: A RETROSPECTIVE STUDY

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Objectives: To evaluate, from the etiological perspective, the incidence of intestinal parasites in fecal material among children using direct wet mount microscopic examination. The direct examination of the stool is beneficial to assess the worm burden of a child and provides a quick diagnosis.

Methods: 708 parasitological stool exams were performed in a paediatric clinic laboratory during a 3 month period using direct wet mount microscopic examination in Lugol’s iodine (1 gram iodine, 2 grams potassium iodide, 100 ml distilled water). The examinations were performed by the same investigator using optic microscopy under ×100 and ×400 magnification.

Results: From 708 parasitological exams, 104 specimens (14.68%) were positive: 32 specimens of Giardia intestinalis (4.5%), 35 cases of Blastocystis hominis (4.9%), 9 specimens of Entamoeba coli (1.2%), 14 specimens of Ascaris lumbricoides (1.97%), 4 cases of Trichuris trichiura (0.56%) and 1 specimen of Enterobius vermicularis (0.14%). 9 cases (1.27%) presented combined parasitic infections.

Conclusions: 1. We have noticed the low incidence of positive specimens using direct wet mount microscopic exam; 2. Giardia intestinalis and Blastocystis hominis have almost the same prevalence; 3. The routine parasitological stool exam has revealed a low prevalence for whipworm infection (0.56%); 4. The direct wet mount is not useful for Enterobius vermicularis infection diagnosis.
CAPSULE ENDOSCOPY IN PEDIATRIC PATIENTS

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Objective: We analyzed our initial experience with capsule endoscopy (CE) in pediatric practice.

Methods: We retrospectively reviewed all the records of children who underwent CE at the Emergency Children’s Hospital. Eighteen patients (range 6–19 years), with suspected small bowel disease were selected. We reviewed the usefulness of the investigation and the adverse events.

Results: Seventeen patients (mean age 13 years) swallowed the capsule without difficulty; only a 6 year old girl refused it. The indications for CE included: suspected Crohn’s disease (n = 5), obscure gastrointestinal bleeding (OGIB) (n = 5), Peutz-Jeghers syndrome (n = 1), recurrent abdominal pain (n = 5), unexplained syderopenic anemia (n = 1) and suspected celiac disease (4 asymptomatic patients with positive celiac serology). Crohn’s disease was confirmed in 2 cases and was excluded in 3 children (2 children with jejunitis). A possible small bowel bleeding source was identified in 2 patients with OGIB. Suggestive signs of celiac disease were noticed in 3 patients (duodenal biopsy demonstrated villous atrophy in 2 patients and normal histology in one patient) and in the patient with anemia (later confirmed via biopsy). Six records showed normal small bowel: OGIB (n = 1), recurrent abdominal pain (n = 5), suspected celiac disease (n = 1), suspected Crohn’s disease (n = 1). There were no adverse events after the ingestion of the capsule.

Conclusion: CE revealed pathologic findings in 64.7% cases (definite diagnosis in 47% cases and a possible diagnosis in 17.7% cases) and was normal or non-diagnostic in 35.3% cases. CE was safe and helpful in the evaluation of pediatric patients with suspected bowel disease.

EVALUATION OF (WHO) ORAL REHYDRATION THERAPY IN CHILDREN WITH ACUTE INFECTION DIARRHEA ADMITTED TO ALL-ASGHAR HOSPITAL IN TEHRAN, IRAN

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Background: Diarrheal disorders in childhood account for a large proportion (18%) of childhood deaths, with an estimated 1.3 million deaths per year globally. The WHO suspects that there are >700 million episodes of diarrhea annually in children <5 yr of age in developing countries. While global mortality may be declining, the overall incidence of diarrhea remains unchanged at about 3.2 episodes per child per year.

Methods: This study was done retrospectively by studying of case records of patients admitted with a diagnosis of acute infectious diarrhea during 1 year.

Results: 191 cases were hospitalized with acute diarrhea. Of these 53.92% were male and 46.08% were female. The median age of patients was 17.13 mo. The most common age was between 6–11 mo. Most of them had symptoms of dehydration 45.2%. Risk factors were: high fever in 52 cases, convulsion in 11 cases, FFT in 24 cases, and electrolyte disturbances in 14 cases. The mortality rate was 1.4% in the age group 0–5 mo with severe dehydration and FFT.

Conclusion: In our study the mortality rate was 1.4% in the age group <6 mo with FFT. The remaining 189 (98.95%) patients were cured without any complication. Children, especially infants with risk factors such as high fever, age<6 months, and FFT are more susceptible than adults to dehydration and the mortality rate is higher in this group so dehydration must be evaluated rapidly and corrected in 4–6 hr according to the degree of dehydration and estimated daily requirement.

ACUTE ALITHIASIC CHOLECYSTITIS IN CRITICALLY ILL PATIENTS

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Introduction: Acute alithiasic cholecystitis (AAC) is more frequent in severely ill patients, in the immediate postoperative period or in patients with extensive burns. Its morbimortality is quite high, with ischemia, infection and gall bladder stasis the main pathogenic determinants.

Methods: A retrospective study including all cases of AAC diagnosed in our unit in the period of time between January 1997 and December 2007.

Results: Four patients are included, all of them associated with viral or bacterial infection. They all started as abdominal pain localized in right hypochondrium, jaundice and darkened urine.

Three patients also suffered from fever. Abdominal ultrasound showed thickening and hipvascularization of gall bladder wall in all cases. Clinical evolution was favourable in all cases without need for surgery.

Conclusions: This illness is usually ologysymptomatic appearing during other systemic diseases of different severity. AAC must be suspected in all critically ill patients or suffering from severe infections who are presenting with abdominal pain with jaundice/darkened urine and hypertransaminasemia.

TOTAL COLONIC AGANGLIONOSIS: MANAGEMENT DIFFICULTIES

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Introduction: In 5–10% of Hirschsprung’s disease (HD) cases the aganglionic segment involves the entire colon and may extend into the small bowel. Long-term results after surgical treatment are not always good (mortality rate for this group exceeds 65% in most series). We report our experience with two patients with different short-term outcome.

Case 1: A two-day-old boy admitted with bowel obstruction and operated on for colonic and ileocolic valve atresia, performing cecostomy. HD was not suspected initially, and the patient underwent a ceco-colonic anastomosis one month later, suffering from anastomosis dehiscence and chemical peritonitis. Partial ileocolonic resection, ileostomy and side-to-end ileo-colonic anastomosis were carried out, showing histological diagnosis of total colonic aganglionosis (TCA). Now (at 7 month-old), the patient does well (weight/height >p3), with definite procedure still to be done.

Case 2: A two-day-old boy with intestinal obstruction underwent urgent laparotomy, finding ileocecal hernia with partial resection and ileostomy. Postoperative ischemic enterocolitis occurred, carrying out resection of entire colon and 65 cm of small intestine, both aganglionic. Boley modified procedure, creating a 20 cm side-to-side ileocolostomy with the aganglionic descending colon, was performed. Complications included near total parenteral nutrition dependence, cholestatic hepatopathy, severe perianal excoriation due to liquid and frequent stools, blood infections etc. The patient died at 7 months of age because of bacterial sepsis.

Comments: TCA diagnosis is a clinical challenge for paediatricians. Accurate histological diagnosis and meticulous preoperative bowel management are necessary. Nevertheless, the length of the aganglionosis seems to have the greatest impact on overall surgical outcome of HD.
SACCHARASE AND MALTASE ACTIVITY IN CHILDREN WITH INFLAMMATORY BOWEL DISEASES

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Etiopathogenesis of inflammatory bowel diseases (IBD) is very complex. So far, there are no definite links between ulcerative colitis and diet, but epidemiological studies have suggested that patients with Crohn’s disease eat more sugar and sweets.

Aim: The aim of the study was the evaluation of saccharase and maltase activity in patients with various forms of IBD.

Patients and methods: The study comprised 54 children, aged 3–18 years, in whom we diagnosed various forms of IBD: in 10 children Crohn’s disease, in 15 ulcerative colitis, in 7 lymphocytic colitis, and in 22 undetermined colitis.

During the endoscopy of the upper part of the alimentary tract we took biopitates from the descending part of the duodenum, where we determined saccharase and maltase activity using the Dahlquist method.

Results: Decreased saccharase activity was most frequently observed in patients with lymphocytic colitis (in 4/7, 55%) and ulcerative colitis (7/15, 46%), whereas it was least frequently seen in children with undetermined colitis (in 8/22, 36%).

Decreased maltase activity in the small bowel mucosa was most frequently observed in patients with Crohn’s disease (in 3/10, 30%), whereas it was least frequently seen in children with ulcerative colitis (in 2/15, 13%). The lowest mean values of maltase activity were found in children with Crohn’s disease (5.4 U/1 g). The lowest mean values of saccharase activity were observed in patients with lymphocytic colitis and ulcerative colitis (2.7–3.3 U/1 g)

Conclusions: It seems reasonable to perform diagnostic examinations aimed at saccharase and maltase intolerance and to initiate the dietary treatment in children with IBD.
RETROSPECTIVE STUDY OF POSITIVE BLOOD CULTURES FROM SEVEN YEARS IN A PAEDIATRIC DEPARTMENT

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Objective: To study and analyze the positive blood cultures from patients of our paediatric department between 2000 and 2006.

Methods: Retrospective review of medical records from children (aged 1 month to 14 years old) who had positive blood culture either in the paediatric emergency department or during hospitalization in a paediatric ward over a seven year period.

Results: 67 children had a positive blood culture between 2000 and 2006. N. meningitidis was the most frequently isolated pathogen. It was observed in 20 cases (29.8%). In the rest of the cases the pathogens isolated were: E. coli in 15 patients (22.4%), S. pneumoniae in 14 (20.9%), S. aureus in 14 (20.9%) and Brucella in 4 cases (6%). 10 patients with N. meningitidis also had meningitis (1 died), 13 patients with E. coli had pyelonephritis, 9 children with S. pneumoniae had pneumonia and 2 meningitis, 8 children with S. aureus had septic arthritis or osteomyelitis. 43 of the children had age between 1 month and 1 year (64.2%).

Conclusions: The most common pathogen isolated in positive blood cultures in children is N. meningitidis. E. coli, S. pneumoniae and S. aureus are also very common pathogens. Noteworthy in our area is also the isolation of the Brucella in blood cultures because of the contact of children with animals having the disease. Most of the children with positive blood culture were <1 year of age and had also serious diseases.

PREVALENCE OF VIRAL INFECTION IN BETA THALASSAEMIA PATIENTS

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Background: Due to multiple transfusions, thalassaemia patients have been exposed to a wide range of blood-borne viruses, among which the human immune deficiency virus (HIV), hepatitis C virus (HCV) and hepatitis B have a considerable impact on their lives.

Methods: 400 thalassaemia patients mean age 17 years, range 2--52 years, female 46.8%, male 53.3%, were evaluated for hepatitis B, C, HIV, EBV (IgG, IgM), CMV (IgG, IgM), SGOT, SGPT and serum ferritin.

Results: Among 400 patients 4 (1%; 3 male, 1 female) were HBS Ag positive, 7 (1.75%; 3 male, 4 female) anti IgM CMV positive, 5 (0.75%; 3 male) IgM anti EBV positive, 97 (24.3%; 65 male, 34 female) anti HCV positive; among this, 65 (16.3%) were HCV RNA positive, and nobody was HIV positive. Mean SGOT 65.28 (range 16--554), SGPT 77.54 (range 9--961), ferritin 1946.43.

Conclusion: In thalassaemia major, the survival rate and quality of life is dependant on safe and adequate blood; efforts must be focused on safe blood and blood production.

IDENTIFYING RISK FACTORS FOR SEVERE REACTIONS IN IRISH FOOD CHALLENGES

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Background: Food challenges are the gold standard for diagnosing food allergies.

Aim: To identify risk factors that would suggest an increased risk of severe reaction requiring IM adrenaline at food challenge.

Method: Retrospective review of 140 consecutive food challenges carried out at Cork University Hospital.

Results: In total 140 food challenges were reviewed involving 115 children. 59/140 (42%) of food challenges were positive. 75/140 (52%) were negative. 117 food challenges were open, 2 single blind and 21 double blind. 5 patients refused challenge. 3 food challenges were inconclusive. 4 children (3%) (2 peanut and 2 egg) required IM adrenaline.

Mean maximum wheal diameter for all children was 3.2 mm, for children with positive food challenge 3.17 mm and children requiring IM adrenaline 4 mm. Mean specific IgE for all patients was 8.38 (range 0 to 100). Mean specific IgE for patients with a positive food challenge was 12.38 (range 0 to 100). Mean specific IgE for patients requiring IM adrenaline was 16.5 (range 4.68--40).

Conclusion: We did not find any single factor which would identify accurately which child is likely to have a significant reaction at food challenge requiring IM adrenaline. This reinforces the idea that food challenges can be high risk procedures and need to be carried out by experienced staff.

TWO CASES OF PAEDIATRIC KIKUCHI FUJIMOTO’S DISEASE: A RARE CAUSE OF LYMPHADENITIS

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Lymphadenitis is a common problem in paediatrics. It is most frequently caused by virus or bacteria infections. Kikuchi Fujimoto’s disease (KFD) or histiocytic necroizing lymphadenitis associates cervical lymphadenopathy with fever and leucopenia typically in young women. We report here two paediatric cases of KFD. The first case was an 11-year-old girl presenting with firm painless unilateral cervical and sus-clavicular lymphadenitis, weight loss but no fever. The second was a 13-year old girl with fever, unilateral cervical lymphadenitis, weight loss and asthena. Both patients were initially treated with antibiotics but were referred for symptom persistence. Laboratory tests failed to show leucopenia and elevation of C-reactive protein. Serology screenings for bacteria, virus and autoimmune diseases were negative. Tuberculin skin test was also negative. A PET scan displayed hypermetabolic spots localized to the clinically enlarged lymph nodes. Surgical biopsy was performed and revealed the presence of histiocytic necrosis compatible with the diagnosis of KFD in both children. A few weeks after diagnosis the first patient presented with butterfly erythema and increased antinuclear antibody titer suggesting the development of systemic lupus erythematosus (SLE). She was treated with chloroquine that allowed a rapid resolution of symptoms.

In conclusion, KFD is a rare and benign cause of lymphadenitis that may occur in children. It may be associated with auto-immune diseases such as SLE. It should be considered in the differential diagnosis of prolonged cervical lymphadenopathies where infectious aetiology has been excluded. Histological examination is required to confirm the diagnosis and to exclude malignant infiltration.

DISSEMINATED BCG INFECTION IN TUNISIA: CLINICAL AND AETIOLOGICAL FEATURES

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Disseminated BCG infection (BCGitis) is a rare complication of antituberculous vaccination and usually affects children presenting...
an immune deficiency. We report the Tunisian experience of about 12 cases of disseminated BCGitis.

Methods: We retrospectively studied 12 cases of disseminated BCGitis enrolled into the paediatric departments of Tunisia during a 15 year period (1990–2004).

Results: There were 9 boys and 3 girls belonging to 11 unrelated Tunisian families. Parental consanguinity was noted in the half of cases and deaths in the low age in 2 cases. After BCG vaccine was received in all cases at birth, the first clinical symptoms appeared at age 3 months on average (extreme:16 days to 5 months) whereas age of diagnosis was 9 months on average (extreme:3 to 28 months). Immunogenetic studies identified immune deficiency in 10 cases: IL12p40 deficiency in 5 cases, IL12 receptor β1 deficiency in 2 cases, severe combined immunodeficiency in 2 cases and chronic granulomatous disease in 1 case. Immunological investigation remained negative in 2 cases. All patients have received antituberculous treatment and 2 among them interferon gamma. Evolution was favourable in only the half of cases. The 6 other patients died: 2 patients at an evolved stage of the disease and 4 by severe infection.

Conclusions: BCG vaccination, which is compulsory at birth in Tunisia, had probably favoured the emergence of disseminated BCGitis occurring in genetically immunodeficient children. Disseminated BCGitis cases were clinically and genetically heterogeneous. However, genetic defects in the IL12/IFN pathway found in 7 cases were the most frequent aetiology of this disorder.

SEROLOGICAL EXAMINATION OF MAJOR BETA THALASSEMIA PATIENTS UNDER THE AGE OF 15 FOR CYTOMEGALOVIRUS INFECTION IN IRAN

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Objective: With due attention to the prevalence of thalassaemia in Iran and patients’ persistent need for blood intake, this study aimed to inspect contaminations due to repeated blood transfusion which were not sifted out during blood donation. One such contamination is cytomegalovirus infection, which is an important pathogen in immunosuppressive patients or receivers of transplanted organs.

Methods: This cross sectional study was conducted on 311 thalassemia patients under the age of 15 years who were receiving blood from Hospitals in Tehran and Noorabad Mamasani. To determine active infection (presence of IgM antibodies) of cytomegalovirus, the ELISA method was used. In addition, 225 healthy people under the age of 15 years were studied as a control group and finally all data were analyzed using SPSS ver. 11.5.

Results: 12.9 % of patients were positive from the view point of active infection. Regional separation of patients showed that the patients residing in Tehran are more likely to be contaminated with this virus than patients of other cities.

Conclusions: The range of cytomegalovirus active infection in thalassemia patients is high. One reason might be the infected blood intake or immunosuppressant (weakness of immune system) in patients, therefore careful immune care of these patients and negative serologic blood intake with respect to their condition, and also hematoc parents (parents with the same blood) are important.

INFECTIOUS MONONUCLEOSIS COMPLICATED WITH ACUTE HEMOLYTIC ANEMIA

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Objective: Mononucleosis infectious (MI) is a generalised lymphoproliferative disorder most commonly caused by Epstein Barr virus (EBV). Acute hemolytic anemia is a rare complication, usually lasting for 1–2 months.

Aim: To examine a patient with acute MI complicated with hemolytic anemia.

Material: Acute EBV MI was verified with a serologic ELISA test; IgM and IgG antibody against EBV VCA (viral capsid antigen) was used. We examined the patient clinically and with standard laboratory and other additional tests.

Results: Patient BS, female, 15 years old, was admitted to the Infectious Disease Department with symptoms of weakness, chill, fever, sore throat and abdominal pain. Symptoms started 8 days earlier. Per examination: tonsillar enlargement with pus on the left, mild eye and skin jaundice, cervical lymphadenopathy, mild liver and spleen enlargement. MI was suspected. Laboratory tests showed inflammatory factors elevated with lymphocytes predominately elevated in low RBC, HCT, HGB; with positive direct Coombs test. Liver enzymes (AST, ALT), lactate dehydrogenase, total bilirubin with unconjugated bilirubin were predominately elevated. In the peripheral smear schistocytes, significant number of atypical lymphocytes (50%) and reticulocytes were seen. Immunoserology analyses showed positive for ANA antibody.

Conclusion: Four weeks after admission, the symptoms resolved. The patient become afebrile, without jaundice. The liver and spleen were near normal range. Liver enzymes and other laboratory findings were in regression. Direct Coombs test become negative. The patient was treated with corticosteroids, antibiotics, iron and other symptomatic therapies.

RENAL AND UROLOGICAL MANIFESTATIONS OF THALASSEMIA

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Renal and urological manifestations in thalassemia patients can be attributed to chronic anemia, and iron overload as well as the side effects of iron chelation therapy. The purpose of this study is to describe the abnormalities of the kidney and urological system in patients with beta thalassemia. We analyzed the examination history as well as urine and blood of 50 well-maintained homozygous beta thalassemia patients. Blood and timed urine samples were obtained for hematological and biochemical tests for blood urea nitrogen (BUN), serum creatinine, creatinine clearance, serum sodium, urine osmolality, potassium, uric acid, ferritin, beta2 microglobulin and other radiological investigations. Our results revealed that the tubular function disorder, renal calculi, recurrent urinary tract infection and nocturnal enuresis were the renal and urologic problems in thalassemic patients.

INTERFERON GAMMA RELEASE ASSAYS FOR CHILDREN IN THE UK: PATCHY AVAILABILITY, VARIATION IN USE AND UNCERTAINTY ABOUT RESULTS

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Objective: Interferon gamma release assays (IGRA) have recently been introduced into clinical practice for the diagnosis of tuberculosis (TB). Current UK guidelines recommend the use of
IGRA to aid the diagnosis of latent TB. We aimed to survey paediatric TB specialists on their use of IGRA.

**Methods:** TB specialists were identified by a method described previously (Adalat *et al*) and sent the six-question survey by e-mail between January and February 2008.

**Results:** 59/100 paediatricians completed the survey. 60% had used IGRA. Practice varied in the use of the tests in specified patient groups. IGRA were used outside the indications of the national guidelines by 22 paediatricians. 16% had IGRA performed in their local laboratory, 22% sent specimens >100 miles away. Only 9% reported no pragmatic problems with IGRA use. Laboratory accessibility, costs, and sceptism about the clinical value of the tests were reported to preclude the use of these assays in the investigation of TB.

**Conclusions:** IGRA are not readily available for use throughout the UK. When available, there are variations amongst paediatricians in the clinical applications; national guidelines are not adhered to. Uncertainty about the clinical value of these tests also precludes their use. Longitudinal studies of IGRA in children with latent TB are needed. If these show benefit and cost effectiveness, then availability and funding for these tests will need to be reviewed.


**IMMUNOLOGICAL ASPECTS OF ACUTE VIRAL HEPATITIS B IN CHILDREN**

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Last year the tendency of growth of morbidity as a result of acute viral hepatitis persisted. Morbidity in Ukraine is in 5–20 times higher than in the USA and the countries of Western Europe. The prognosis and clinical course of a HBV infection are related to to the state of immune system, the degree of infection and the virus virulence.

According to statistics for each third inhabitant of Ukraine there is a secondary immunodeficiency. Its development is influenced by radiation pollution (Chernobyl), psychoemotional stresses, inadequate treatment and irrational fear.

We observed children with the acute viral hepatitis B in a city isolation hospital (Odessa). In children of the first year of life HBV is extremely severe. The lethality at this age reaches 13.8%.

The connection between HBV and HIV infection is significant as their is similarity of pathway and frequent correlation. Odessa has by quantity one of the highest numbers of HIV infected people in Ukraine.

It was revealed that an immune homeostasis disorder occurs from the first days of disease and is manifested by reduction of the quantity of T-lymphocytes, with a change in the immunoregulatory populations of T-helper and T-suppressors. Because of β-cell stimulation there is an activation of B-lymphocytes, due to the production of antibodies, that results in the destruction of hepatocytes.

HBV infection is an autoimmune and autoaggressive disease, therefore an integral part of medication and the rehabilitation of patients is a stabilization of immune homeostasis.

**HEPATOSPLENIC GAMMA DELTA T CELL LYMPHOMA IN TWO BOYS AGED 5 MONTHS AND 9 YEARS**

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**Introduction:** Hepatosplenic gamma delta T cell non-Hodgkin’s lymphoma (HSTCL) is an exceedingly rare entity in children. We hereby report two cases of HSTCL.

**Case report 1:** A 5-month-old boy was referred with a history of remittent high fever and progressive hepatosplenomegaly. He was a term twin born from an in vitro fertilized pregnancy. Blood examination revealed pancytopenia (hemoglobin 9.1 g/dl, white blood cell count 3200 mm$^3$, and platelet count 90/mm$^3$).

Diagnosis was established after a splenectomy with an immunohistochemical examination of the spleen. The tumor cells were positive for CD3, CD8. The proliferation index Ki 67 was 80–90%.

The boy’s parents refused further chemotherapy and the boy died at the age of 11 months.

**Case report 2:** A 9-year-old boy had a progressive splenomegaly, mild hepatomegaly and thrombocytopenia. The bone marrow biopsy showed hypercellular marrow without atypical lymphoid cells. Splenectomy was performed due to progressive splenomegaly.

An immunohistochemical examination showed atypical lymphoid cells, which were positive for Ki-67 and for the antigens CD3, CD8, CD57, CD45RO and TIA-1. A clonal T cell receptor gamma rearrangement has been demonstrated by PCR. The boy has been treated by NOFHO 95 protocol with an autologous bone marrow transplantation. He is in complete remission and in good clinical condition 26 months after diagnosis.

**Conclusions:** Our patients differed from those reported in other HSTCL cases by having a younger age at diagnosis. HSTCL should be considered as a differential diagnosis in the cases of progressive splenomegaly in the absence of lymphadenopathy.

**AUTOIMMUNE HEMOLYTIC ANEMIA IN POST INVASIVE PHASE OF VARICELLA INFECTION: A PEDIATRIC CASE REPORT**

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Generally considered to be a benign viral disease in childhood, varicella infection presents a wide range of complications. We report here the case of a 27 month-old boy admitted for typical ataxia in the benign course of varicella, without any other neurological disorders.

Clinical survey of dark urine and conjunctive jaundice lead us to serum controls detecting normocytic anemia with initially hyporeticulocytosis and low haptoglobin, moderate leukocytosis and normal platelet count.

Hemolytic anemia is well tolerated; lowest Hb count (6.2 g/dl) was found on day four after admission, and red cell transfusion is not required. Normal reticulocyte response and normal colored urine was found from day six, and the neurological disorder disappeared after day eight.

Clinical cerebellitis with typical varicella motivated us to use intravenous Ayclovir treatment, we rejected prednisone therapy because of the complicated course of chicken pox and rapid hematologic improvement.

Serologic tests for mycoplasma, CMV, HAV, HBV, HCV and HIV were negative, EBV showed mild reactivation. Both direct and indirect Coombs test and cold agglutinin antibodies were positive, confirming mixed autoimmune hemolytic anemia caused by varicella infection.

Hemolysis is caused by virus induced polyclonal antibodies of class M for the complement-activating cold agglutinin pathway and antibodies of class G for normothermic agglutination against red cell membrane antigens.

To the best of our knowledge, only three pediatric and three adult cases of autoimmune hemolytic anemia in chicken pox have been reported in literature and no specific epidemiologic data is available. Our observation reveals a very rare but potentially dangerous complication of varicella infection.
THROMBOCYTOPENIC PURPURA AND CAELIAC DISEASE IN CHILDHOOD: REPORT OF PEDIATRIC CASE
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Objective: Case report may improve link between immune thrombocytopenic purpura (ITP) and caeliac disease (CD).

Methods: We report a 12-year-old female admitted for evaluation of recurrent abdominal pain, pallor and purpura that had been evolving over the previous 3 months. Physical examination revealed mucus tal pallor and purpura in the lower extremities. The remaining physical examination was normal. Complete blood count showed moderate anaemia and severe thrombocytopenia. A diagnosis of ITP was made. Because of the associated recurrent abdominal pain and anaemia, checking for CD was performed and then confirmed by biological and histological examination. A gluten-free diet was initiated. Evolution of both ITP and CD was favourable.

Conclusion: CD may increase risk of ITP. A link between the two conditions is important to recognize because treatment of CD may lead to remission of ITP.

SUCCESSFUL USE OF METHOTREXATE FOR JUVENILE DERMATOMYOSITIS: KK HOSPITAL EXPERIENCE
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Background: Juvenile dermatomyositis (JDM) is an inflammatory disease of unknown etiology with involvement of the skin and striated muscles. High-dose steroids are administered as first-line treatment. Prognosis in JDM has improved, and most patients eventually make a full functional recovery. However, prolonged steroid use may lead to severe adverse effects. Methotrexate, a steroid-sparing agent, has been very effective in many rheumatological conditions and recently has been used in JDM with good efficacy. We report our experience with methotrexate in our cohort of patients.

Method: We reviewed case records of patients with JDM who are on follow up at the rheumatology clinic at KKH and were treated with methotrexate. Data on age and symptoms at presentation, initial and subsequent treatment regimens, clinical and biochemical response, and side effects of treatment regimens was collected and analysed.

Result: We have three patients who are currently on methotrexate for treatment of JDM. These patients had presented classically with skin and muscle involvement and were treated with high doses of prednisolone. Upon weaning the dose of prednisolone they had recurrence of symptoms and were started on subcutaneous methotrexate. All patients responded well to the treatment. No adverse effects were noted.

Conclusion: In our limited experience, methotrexate has been a safe and effective steroid-sparing agent in the management of JDM. However, larger studies are required to prove the safety and efficacy of methotrexate in our local population.

DRUG INDUCED LUPUS ERYTHEMATOSUS: A CASE REPORT
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Introduction: Drug induced lupus erythematosus to various anti-epileptic drugs is a known entity in adults with fewer cases reported in children. The presentation is vague and needs a high index of suspicion to diagnose this condition which has a potential to cause significant morbidity. It should be differentiated from multi-systemic, auto-immune systemic lupus erythematosus (SLE).

Case report: A 12 months old girl with juvenile absence seizures was started on lamotrigine. After a good initial response, 6 months later, she had a few prolonged absences followed by generalized tonic-clonic seizures. Her generalized tonic-clonic seizures improved on increasing the dose of lamotrigine, but absences continued and hence ethosuximide was added. Six months after adding ethosuximide she developed severe facial swelling along with a malar rash. She was investigated and referred to dermatologist. Her antinuclear antibody (ANA) and double stranded DNA antibody (dsDNA) were positive (ANA 1:320; dsDNA 48.6 IU/ml) and the complement levels were low. She was otherwise well with normal examination, blood pressure and renal functions. On consultation with dermatology and paediatric rheumatology, she was diagnosed to have drug induced lupus. On taking her ethosuximide off she started to recover with improvement in ANA levels (1:160) and dsDNA becoming negative (11.1 IU/ml). She has not needed any further treatment.

Conclusions: This case highlights the need to be vigilant for this potentially hazardous disease which can be cured in majority by discontinuing the offending drug and the need to be differentiated from SLE.

IDIOPATHIC HYPREOSINOPHILIC SYNDROME (HES) IN A 15 YEAR-OLD GIRL
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The hypeporesinophilic syndrome (HES) is a group of diseases characterized by persistent and marked blood eosinophilia, with end-organ involvement and no recognized secondary cause.

We present a 15-year-old girl who was admitted to our department in January 2008 with a four week history of headache, arthralgias, myalgias, sore throat and angioedema. Laboratory test revealed significant leucocytosis (76 x 10^9/L with 58% eosinophils), thrombocytosis (738 x 10^9/L), elevated ESR (82 mm/h) and IgE 348.3 (n.v. <114 g/L), and hypergammaglobulinemia. Extensive allergologic, immunologic, infectious, and toxicological studies were negative. Bone marrow biopsy showed increased cellularity with increased granulopoiesis predominated by cells of the eosinophilic lineage, with a normal karyotype. Patient was negative for the FIP1L1-PDGFRA fusion kinase and BCR-ABL gene fusion by RT-PCR. Abdomen CT showed diffuse small intestine wall thickness, and cardiac echocardiogram showed thickened of the left ventricular wall and interventricular septum. The biopsy of myocardium and small intestine was planned, but in the meantime the patient’s condition worsened. She developed hypoproteinemia (46 g/L), generalised oedema, and diarrhoea. A diagnosis of idiopathic HES was made and methylprednisolone was introduced into the therapy. She had a rapid response to methylprednisolone (within 12 hours), with normalisation of the blood counts, protein level and regression of oedema. Methylprednisolone was slowly tapered, and, at present, HES is in complete clinical and laboratory remission.

Conclusion: Although HES is extremely rare in childhood, it has to be considered when a patient presents with significant leucocytosis and eosinophilia.

AN UNUSUAL CASE OF HIGHLY INVASIVE INTRA-ORAL ASPERGILLOSIS INFECTION
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Objective: We present a rare case of intra-oral aspergillosis infection in an immuno-compromised two years old girl.

Methods: A two years old caucasian girl with a medical history of severe aplastic anaemia was referred to the paediatric maxillofacial department regarding an intra-oral necrotic area. The 3 cm gingival lesion extended between the upper primary central and lateral
incisors up to the buccal sulcus and had quickly expanded over a few days. A saliva swab was positive for actinomycosis.

Results: The patient underwent excisional biopsy of the intra-oral lesion. The specimen was submitted for histopathology results which showed invasive aspergillosis. Clinically the lesion appeared superficial and the maxillary bone appeared intact. CT scans of the maxillary sinuses also showed no bony lesions.

The patient had an uneventful recovery and she has been kept under intravenous broad spectrum antibiotics and antifungals (gentamycin, itraconazole and voriconazole) to date.

Discussion/clinical relevance: Aspergillus is a world-wide fungus but it does not normally causes illness. In immunocompromised patients however, aspergillus fungi cause a spectrum of opportunistic infections especially in the lungs with non-specific symptoms including haemoptysis, pyrexia and malaise. The fungi can transfer to other organs, including the brain, the heart, the kidneys and the sinuses. Effective treatment consists of antifungal drug therapy. If aspergillosis resists the drug treatment, it is eventually fatal. A high mortality rate from aspergillosis is common in haematological malignancies. Our patient, despite two unsuccessful bone marrow transplants so far, responds successfully to the antifungal therapy and no episodes of recurrence have been reported.

CHRONIC GRANULOMATOUS DISEASE (CGD) WITH MULTIPLE LIVER ABSCESSES

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Introduction: Chronic granulomatous disease (CGD) is characterized by the ability of neutrophils and monocytes to ingest but their inability to kill catalase-positive microorganisms because of a defect in the generation of microbial oxygen metabolites. CGD is a rare disease with an incidence of four to five million individuals, caused by genes affecting one x-linked and three autosomal recessive chromosomes.

Case report: We report a 2/5-year-old girl with multiple liver abscess and final diagnosis of chronic granulomatous disease (NBT activity 0% and DHR test was positive)

Conclusion: Any patient with recurrent or unusual pneumonia, lymphadenitis, hepatic abscesses, osteomyelitis at multiple sites, a family history of recurrent infections, or unusual infections with catalase-positive organisms (e.g. S. aureus) requires evaluation for this disorder.

PERIPHERIC LYMPHOCITES SUBSETS IN WELL NOURISHED AND MALNOURISHED INFECTED CHILDREN BEFORE INFECTION TREATMENT

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When we compared malnourished infected children (MNI) with well-nourished infected children (WNI) their lymphocytes (under mitogen) are not able to activate cells in the same proportion as WNI. The aim of this work was to assess the in vitro response of periphery lymphocytes after an infection recovery period in MNI and WNI children.

Methods: Peripheral blood was obtained the day of hospital admission and one week after infection recovery period. Blood was in vitro activated with mitogen. Cells were stained using the CD69 antibody.

Results: It was found that between the two sampling times, WNI showed changes in B (53.6 ± 2.9 vs 22.7 ± 2.2%, p < 0.01), CD8+CD69+ (12.5 ± 1.1 vs 8.3 ± 1.1%, p < 0.02), and CD19+CD69+ lymphocytes (7.9 ± 0.5 vs 9.9 ± 0.6%, p < 0.05). MNI had differences in CD4+ (31.2 ± 3.8 vs 47.5 ± 3.9%, p < 0.01) and CD8+CD69+ (6.5 ± 1.2 vs 10.5 ± 1.1%, p < 0.05). When the 1 week blood samples of WNI and MNI were compared, changes were found in CD4+, CD19+CD69+ (8.8 ± 0.9 vs 5.6 ± 0.8%, p < 0.02) and CD56+CD69+ (7.6 ± 0.7 vs 2.7 ± 0.7%, p < 0.001).

Conclusion: Differences in subsets of lymphocyte between the first and second sampling time of WNI children showed a recovery of normal values. However, the B lymphocytes showed an increased response capacity. MNI had differences in CD4+ and CD8+CD69+ lymphocytes. This lymphocyte type apparently had an increased response capacity. However, when the responses of WNI and MNI children were compared we found MNI children had a low response capacity for B and NK lymphocytes. These results suggest that the lymphocyte functionality of children under non-completely solved malnutrition is persistently affected.

HISTOLOGICAL CHARACTERISTICS OF 21 PAPUA NEW GUINEAN CHILDREN WITH HIGH-GRADE B-CELL LYMPHOMAS, WHICH ARE FREQUENTLY ASSOCIATED WITH EBSTEIN BARR VIRUS INFECTION

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The aims of this study were to evaluate the feasibility of non-invasive hepatic investigations in HIV-1 chronically infected children, to assess the prevalence of signs of hepatotoxicity and to analyze the influence of HIV disease severity and exposure to antiretroviral therapy (ART).

BACKGROUND: Progressive hepatotoxicity is a concern in HIV-infected children exposed to long-term antiretroviral drugs and to the cytopathic effect of the HIV virus. New non-invasive procedures are being developed permitting regular assessment of the liver function.

OBJECTIVE: The aims of this study were to evaluate the feasibility of non-invasive hepatic investigations in HIV-1 chronically infected children, to assess the prevalence of signs of hepatotoxicity and to analyze the influence of HIV disease severity and exposure to antiretroviral therapy (ART).
**EXTREME EFFICIENCY OF ANTI-INTERLEUKIN 1 AGENT (ANAKINRA) IN A JAPANESE CASE OF CINCA SYNDROME**

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**Objective:** Neonatal Onset Multisystem Inflammatory Disease (NOMID) which is also known as Chronic Infantile Neurological Cutaneous and Articular (CINCA) syndrome is characterized by the triad of cutaneous urticarial rash, chronic meningitis and arthropathy, which starts most often soon after birth. The long-term prognosis is poor, with progressive deafness and visual impairment, and worsening of the central nervous system manifestations.

**Methods:** We report on a Japanese boy with NOMID who was admitted and discharged several times. When high fever continued, methylprednisolone 30 mg/kg was given for 2–3 days. In October he had a high fever with low blood pressure and heart failure, which could not be explained. Since IL-6 was extremely high, a combined treatment of continuous hemodialfiltration (CHDF) with steroid pulse therapy was done in order to remove cytokines. After the treatment commenced his ejection fraction recovered and the levels of IL-6 and CRP normalized.

Two weeks later IL-6 increased gradually again. As given for juvenile idiopathic arthritis, ibuprofen, steroids and methotrexate were used. We tried anti-TNF antibody intravenously, however there was no improvement in his symptoms. Anti-interleukin (IL-1) agent (Anakinra) is currently used as a new type of treatment.

**Results:** Anakinra was very effective in reducing the dose of prednisolon. His CRP and IL-6 levels were normal for three months with mild flare.

**Conclusions:** We report on a Japanese boy with NOMID where a combined treatment of CHDF and steroid pulse therapy was effective. The effect was temporary but useful for recovery from serious conditions.

**WHICH RED BLOOD CELL INDICES BETTER INDICATE IRON DEFICIENCY IN A POPULATION WITH A HIGH PREVALENCE OF ALPHA THALASSAEMIA?**

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**Objectives:** Hypochromia and microcytosis exist in iron deficiency anaemia (IDA) and thalassaemias. Several red blood cell (RBC) indices have been proposed to differentiate between these conditions, but with low specificity or sensitivity confirmation by standard laboratory methods is still required, especially in adults. In addition, most studies originated in countries with a higher prevalence of IDA or beta thalassaemias. As, in the United Arab Emirates, alpha thalassaemias prevail (with diagnosis beyond infancy requiring DNA studies not widely available), we studied the value of RBC indices to diagnosis IDA in our population.

**Methods:** In a cohort study of 91 children (6 months to 12 years) with either microcytosis (MCV <77 fl) or hypochromia (MCHC <32 g/dl), with or without anaemia, we calculated the RBC indices from the full blood count at presentation. We analysed their predictive value as well as their respective Youden’s index for the diagnosis of IDA.

**Results:** IDA occurred in 18.7%. Alpha thalassaemia traits occurred in 73% of the other children, beta thalassaemia traits in 20% and beta thalassaemia in 4%. The Youden’s index shows that the best discriminatory indices for IDA are, in descending order: a Green-King index >65 (correctly identifies 72.5% of cases), red cell distribution with (RDW)>14 (identifies 55%) and a positive England-Fraser index (identifies 47%).

**Conclusion:** In countries with a high prevalence of alpha thalassaemia, IDA in children with microcytosis is best differentiated with a Green-King index >65, a RDW>14 and a positive England Fraser index.

**OUTCOME OF CHILDHOOD EPISTAXIS WITH TREATMENT OF ALLERGIC RHINITIS: A RANDOMISED CONTROLLED TRIAL**

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**Objective:** There have been no previous studies on the effect of treatment of underlying allergic rhinitis (AR) on outcome of epistaxis.
Aim: To study outcome of childhood epistaxis in a local paediatric population with treatment of underlying AR and determine if combined treatment with anti-histamine (clarityne) and nasal steroid spray (nasonex) was better than monotherapy (clarityne or nasonex).

Hypothesis: Treatment of underlying AR would improve outcome of epistaxis in children. Primary outcome was frequency of epistaxis after treatment.

Methods: From August 2005 to September 2006, 60 children (< 18 years), with underlying AR, presenting to our Otolaryngology clinic with first presentation of epistaxis were enrolled into this single-blinded trial. Patients were randomized to 3 different treatments. Treatment 1: antihistamine (clarityne); treatment 2: nasal steroid spray (nasonex); treatment 3: clarityne and nasonex. Follow up reviews were conducted at 1 and 3 months using a standard questionnaire. Frequency of epistaxis was standardized to number of episodes of epistaxis in a 6-month-period (adjusted frequency). Data were analysed using SPSS v13.0 software.

Results: Prior to treatment, the median adjusted frequency of epistaxis in treatment groups 1, 2 and 3 were 12 (SD 22), 21 (SD 66) and 9 (SD 85) episodes in 6 months, respectively. Post-treatment, the mean number of episodes of epistaxis on follow-up at 1 month were 3.7 (range 0–30), 1.3 (range 0–8) and 0.5 (range 0–3) respectively for treatment groups 1, 2 and 3.

Conclusions: There was significant improvement in frequency of epistaxis after treatment of AR. It appeared that treatments 2 and 3 were superior to treatment 1. Steroid spray may be important.
Poster session: hepatology

JAUNDICE, COLURIC URINE AND HEPATOMEGALY IN A 2 YEAR-OLD BOY

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Introduction: Progressive familial intrahepatic cholestasis type 3 or MDR3 deficiency is a chronic autosomal recessive liver disease. It typically presents in the first months of life and progresses to cirrhosis and liver failure before adulthood.

Case report: We report on a 2 year old boy with jaundice, coluric urine and clay coloured stools since he was 12 months old. He was the sixth son of non-consanguineous parents. There were no problems during the controlled pregnancy. He was a healthy term infant with a birth weight of 3000 g and a neonatal period without incidences. In the initial physical examination he had good appearance, good nutritive status, cutaneous-mucous jaundice, 3–4 cm. hepatomegaly and 6–7 cm. splenomegaly, with prominent collateral blood vessels. He had a normal phenotype with normal cardiopulmonary auscultation. Serum analysis revealed hypertransaminasemia (AST 211 UI/L, ALT 156 UI/L, GGT 789 UI/L), high levels of bile acids (450 μmol/L, normal (0–6)) and hyperbilirubinemia with a direct bilirubin of 9.2 mg/dl. Abdominal ultrasound revealed portal hypertension and 10.5 cm. splenomegaly. The liver histology showed extensive bile duct proliferation, portal and periporal fibrosis. Complete absence of canalicular staining was also observed. He received treatment with ursodeoxycholic acid and nutritional support.

Conclusions: MDR3 deficiency should be clinically suspected in those children who present with cholestasis and cirrhosis with high GGT. Pharmacological treatment with UDCA is successful in approximately 30% of the cases. Patients who do not respond should be considered for liver transplantation, as in our case.

DIFFERENT MANIFESTATIONS AT THE ONSET OF A RARE METABOLIC DISEASE

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Introduction: Wilson disease is an inherited disorder in which excessive amounts of copper accumulate in the body, particularly in the liver, brain and eyes. The disease can present with hepatic, neurological, hematological, psychiatric disturbances or a combination of these, in individuals ranging from three years to over fifty years of age. It is important to remember that the “classic triad” of liver disease, movement disorder and Kayser-Fleischer ring is quite uncommon and to establish the correct diagnosis of Wilson disease could be challenging.

Aim: To expose different manifestations at the onset of the disease in childhood.

Methods: We have studied chronologically the clinical features and the paraclinical findings in 5 children (3 being part of the same family). Three of them had liver disease (fulminant hepatic failure, recurrent jaundice, fatigue, anorexia, hepatosplenomegaly) or hemolytic anemia and the other two had neurological and psychiatric manifestations.

Results: In most of the cases the first signs are abdominal (hepatosplenomegaly, chronic hepatitis) and observed in early childhood. If the disease is left unobserved and untreated at teen age, neurological and psychological manifestations become predominant.

Conclusions: Wilson disease is an autosomal recessive genetic disease and it is important to investigate all members of the affected family. Clinical manifestations are different from person to person, even if they come from the same family. Despite the polymorphism of clinical signs and symptoms, the challenge is to establish the correct diagnosis as soon as possible and to institute the lifetime treatment with chelating agents.

AUTOIMMUNE HEPATITIS AND IMMUNE THROMBOCYTOPENIC PURPURA

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Autoimmune hepatitis is a chronic necroinflammatory liver disorder often associated with other autoimmune diseases. Association with idiopathic thrombocytopenic purpura is not frequent, especially in children.

We report a case of a 15-year-old boy who presented to our department with petechiae for 2 days and a 4-year history of a cervical posterior lymphadenopathy. Previous lab results 6 months previously showed elevated liver enzymes. He had a family history of psoriasis. At admission, physical examination was normal, except for purpura. Laboratory evaluation showed: platelet count, 6x109/L; aspartate aminotransferase 820 UI/L; alanine aminotransferase 1568 UI/L; normal gamma glutamyl transferase, alkaline phosphate, total bilirubin and unconjugated bilirubin levels; international normalized ratio (INR): 1.30; immunoglobulin G 1240 mg/dL; ferritin: 1230 mg/L; ceruloplasmin, copper and alpha-1-antitrypsin levels were normal. He is heterozygous for the H63D of the HFE gene.

Antinuclear, antimitochondrial, anti-smooth muscle and liver/kidney microsomal antibodies were negative. Blood smear, bone marrow aspirate and flux cytometry of peripheral blood cells was negative for neoplastic cells and pointed to peripheral destruction of platelets cells. Anti-platelet antibodies were positive. Liver biopsy, done after platelet account reached 50,000/μL, revealed an inflammatory lymphocytic infiltrate in portal areas, with many eosinophils and some areas of interface hepatitis and bridging fibrosis. He was successfully treated with prednisolone and azathioprine.

The aim of this presentation is to discuss an unusual association of autoimmune diseases: autoimmune hepatitis with immune thrombocytopenic purpura, in a male without hypergammaglobulinemia or autoantibodies at presentation.

ACUTE PANCREATITIS AS A COMPLICATION OF EBV INFECTION IN A 4-YEAR-OLD BOY

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Mononucleosis caused by Epstein-Barr virus (EBV) is an acute virus infection frequently found in children and teenagers. In most cases it is a self-limited and generally benign disease. EBV infection is largely asymptomatic, but occasionally, more severe complications may arise.

We present the case of 5-year-old boy, where a case of EBV infection caused acute pancreatitis.

A previously healthy patient was presented to the hospital with symptoms of upper respiratory tract infection, fever up to 39°C and lymphadenopathy. The serological profile was typical
for primary EBV infection. Laboratory studies showed pancreas failure. Our diagnosis was mononucleosis complicated by pancreatitis.

In this report, special attention was paid to the atypical pattern of infection and difficulties in its diagnosis. In spite of the usually gentle course of mononucleosis the patient required attentive observation as well as the detection of possible complications.

Doctors should know that EBV infection could be the etiologic factor of acute pancreatitis, and also remember that the cases can be asymptomatic or ologosymptomatic, which makes for difficult recognition.
Poster session: infection control

CHILDREN’S HOSPITAL BAMBINO GESÙ (OPBG): PRELIMINARY RESULTS OF THE ”THE 5 MILLION LIVES CAMPAIGN”

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Objective: OPBG is involved in the Project “The 5 Million Lives Campaign”, launched by the Institute for Healthcare Improvement (IHI). The objective of this work is to promote awareness in hospital health care personnel about the control of hospital infections.

Methods: the project was launched in the first half of 2006, with the formation of three working multidisciplinary groups for each of the three selected interventions: prevention of surgical site infections, prevention of central line infections, and prevention of ventilator-associated pneumonia. Each group has designed a card with two functions: reporting correct activities and creating a check-list as a reminder of procedures to be implemented.

Results: Between May 2006–December 2007 4393 procedures were carried out relating to 736 mechanical ventilations, 2034 CVC and 1623 surgical wounds, detected on 3108 patients. In the first 6 months adherence to the project showed an upward trend, reaching a maximum value of 89.42% in 8 months. In the subsequent 12 months there has been a substantial plateau with an average value of roughly 77%. The percentage of infections associated with procedures has shown a significant reduction between the first and second quarter (rates decreased from 12.82% to 4.39%). In the following periods data showed a steady trend between 5% and 7%. Differences observed over time in rates of infection are statistically significant.

Conclusion: The study demonstrates that a few EBP may have a high clinical impact, as highlighted by a reduction in infections associated with the procedures.

PERCEPTION AND COVERAGE OF INFLUENZA VACCINE AMONG PEDIATRIC NURSES

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Health care workers should be routinely and annually vaccinated against influenza for of epidemiological reasons. Persons who take care of children aged 0–59 months belong to the same group because of the same indications. Pediatric nurses have at least twice the reason to be vaccinated.

Aim: The aim of the study was to determine the general perception and coverage of the influenza vaccine among pediatric nurses.

Methods: The self-administrated survey was completed by 386 nurses, among them 189 were pediatric nurses. The survey was validated (kappa score 0.7). The median age of the nurses was 34 years (SD 2.4).

Results: Among 189 pediatric nurses, 32% had influenza vaccinations occasionally, 11% annually, and 57% avoided this vaccination. The main reason for not taking vaccination was fear of the possible side effects (68%), disbelieving the effectiveness of the vaccination (62%) and perception of influenza as a mild disease not requiring prevention (45%). Among nurses who took vaccination annually, 82% did it because of willingness to avoid the illness and its complications, 8% because they belonged to a risk group according to medical conditions, and 1.5% because of a willingness to protect patients.

12% nurses thought vaccination against influenza was an ethical duty, 88% considered this procedure as a medical condition.

Conclusions: The influenza vaccine coverage among pediatric nurses was low (11%). Generally, influenza vaccination was considered under medical rather than ethical conditions. The necessity of vaccination against influenza should be strongly emphasized among health care workers, including nurses.
This report describes a newborn, whose perinatal antecedents were a caesarean section birth with normal Apgar scores. At birth, he showed respiratory distress, macrocephaly, prominent front, erratic movements and hyperreflexia. Because of severe neurological impairment, mechanical ventilation was necessary, and intractable seizures started. EEG showed a slow focal activity in the left temporal lobe, and MRI a non-specific alteration of the supratentorial white matter of both brain hemispheres. An inborn disorder of metabolism was suspected, so extensive metabolic workup was performed, with PA elevated on plasma and CSF. This finding is consistent with pyridoxine deficiency. After treatment with pyridoxine, progressive neurological improvement and disappearance of seizures were observed. 

Comments: Our case has a characteristic elevation of the PA levels in plasma and CSF. This fact has a good correlation with the diagnosis of pyridoxine deficiency, being more probable as the PA-LCR/PA-p ratio is higher. At present, the origin of this finding and its implication in the production of seizure is unknown.

DIFFERENT EVOLUTIONS OF WILSON’S DISEASE IN THREE BROTHERS
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Background: Wilson’s disease is a rare autosomal recessive disease of copper metabolism with different possibilities of clinical presentation and evolution in children, most frequently as chronic hepatitis.

Aim: To present the different possibilities of clinical onset and evolution of Wilson’s disease in children.

Patients and methods: We present clinical observations of three brothers (aged 8, 13 and 18 years) with Wilson’s disease diagnosed, treated and followed-up since 2006. The diagnostic was done by clinical examination, liver tests, serum ceruloplasmine, serum copper and 24-hour urinary copper levels and ophthalmologic examination. Wilson’s disease was confirmed by genetic tests.

Clinical observations: The clinical presentations of Wilson’s disease were different: asthenia and elevated transaminases (ALAT 190 U/l, ASAT 103 U/l) in the 8-year-old patient, liver cirrhosis with synthesis deficiency, ascites and Kayser-Fleischer ring without any episodes of elevated transaminases in the 13-year-old patient and mild and intermittent elevation of transaminases without any symptoms in the 18-year-old patient. Level of serum ceruloplasmine was decreased (9.3 mg/dl, 8.8 mg/dl, 7.4 mg/dl) and 24-hour urinary excretion was increase (105 mg/24 h, 88 mg/24 h, 89 mg/24 h) in all brothers. The genetic tests confirmed the Wilson’s disease diagnostic: all brothers were homozygotes for G1341D mutation. All patients are treated with zinc therapy and d-penicillamine treatment was introduced in the 8- and 13-year-old patients with a steady evolution of the disease and without any adverse effects.

Conclusion: Wilson’s disease must be evaluated in differential diagnosis of chronic hepatitis. In the same family there is the possibility of different manifestations of Wilson’s disease, even if the genetic mutation is the same.
HYPERINSULINISM: A CASE REPORT

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Background: Hyperinsulinism, although rare (1:30,000 to 1:50,000 live births), is the most common cause of persistent hypoglycaemia in early infancy. The inappropriate oversecretion of insulin is responsible for profound hypoglycaemia that can cause irreversible brain damage. Seizures are the revealing symptom in approximately half of the cases of persistent hyperinsulinemic hypoglycaemia of infancy (PHHI). Hypoglycaemia of neonatal onset seems to be more severe than infant-onset hypoglycaemia. Diazoxide treatment remains the mainstay of medical therapy in long-term management.

Case report: We report on an 8-month-old child admitted with a complex seizure. Retrospectively he had possible seizures in the last month and a poor weight and development evolution in the previous two months. His blood glucose level was 37 mg/dl. Because of the high insulin level during hypoglycaemia (insulin/glucose ratio 0.3, insulin: 20.5 µU/ml), the absence of ketonuria, and the need for a high dose glucose infusion to achieve normoglycaemia, a diagnosis of PHHI was made. He started diazoxide with good therapeutic response. The child is now in the fourteenth month of diazoxide therapy, with good glycaemic control and has a mild development delay.

Discussion: PHHI is serious and often difficult to diagnose. Diagnostic criteria and therapeutic management are important to discuss in face of the rarity of these cases and few consensus reports.

VITAMIN E IMPROVES NEUTROPENIA AND REDUCES THE FREQUENCY AND THE SEVERITY OF INFECTIONS IN PATIENTS AFFECTED BY GSD1B

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Background: Patients affected by Glycogen storage disease type 1b (GSD1b) show neutropenia and neutrophil dysfunction, which cause recurrent infections and are associated to an increased risk for inflammatory bowel disease (IBD). These manifestations are likely due to increased intracellular reactive oxygen species (ROS) of neutrophils and activation of apoptosis. The aim of the present study was to evaluate the efficacy of antioxidant therapy with vitamin E on clinical and biochemical parameters including neutrophil counts and function, frequency of infections and IBD in GSD1b patients.

Patients and methods: Seven GSD1b patients, median age 12 years (range 5–29 years) were studied over a 2-year-period; during the first year no vitamin supplementation was prescribed, whereas during the second year vitamin E was given to patients (600 mg per day in pre-pubertal patients and 900 mg/day in adults). Frequency and severity of infections, ileocolonoscopy and intestinal histology, neutrophil counts and function were evaluated.

Results: The median value of neutrophil counts was significantly higher during vitamin E supplementation than during the period without vitamin E (2292 ± 300 vs 1463 ± 418, p < 0.05). Frequency and severity of infections, mouth ulcers and perianal lesions, were reduced on vitamin E supplementation (p <0.05). Ileocolonoscopy and histology showed a mild improvement during vitamin E supplementation. No changes in neutrophil function were detectable during vitamin E supplementation.

Conclusion: These results suggest that vitamin E supplementation might be beneficial in GSD1b patients and may alleviate disease manifestations associated with neutropenia.
COMPARISON OF THE SCLEROGENIC EFFECT BETWEEN TWO SUBSTANCES IN THE TREATMENT OF LABIAL VENOUS MALFORMATIONS IN YOUNG ADOLESCENTS AND CHILDREN

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Objective: Vascular venous malformations are present at birth, and evolve progressively, yet slowly. They are generally located in the cervico-cephalic region, and are responsible for functional disorders and aestheticity and consequently for psychological repercussions in adolescent subjects. Their treatment includes two consecutive steps. A pre-surgical one or sclerotherapy, which consists of many trans-mucous embolisations using a sclerogenic agent, and a surgical one.

Aim: To compare the therapeutic effect between two sclerogenic substances, 5% sodium tetradecyl sulfate and absolute alcohol among young patients with a labial vascular malformation (LVM).

Methods: Five patients whose mean age in the evolutionary peak is 12±1 years (range: 11–13 years) were recruited at the Pathology and Oral Surgery Department of University Medical Centre of Tlemcen (northwest of Algeria) for a randomised clinical trial. The sclerogenic effect is evaluated through fibrose installation speed (lesion drying) related to injection number, clinically translated by an induration at the lesion palpation and by the absence of increase in its volume in the sloping position (surgery time determining factors).

Results: The number of injections (1 mL/injection) of sodium tetradecyl sulfate was considerably higher than that of absolute alcohol (3% sodium tetradecyl sulfate: injections number = 7.5±0.7 (range: 7–8); absolute alcohol: injections number = 5.7±0.6 (range: 5–6), p<0.05).

Conclusions: This study showed that the sclerogenic action of absolute alcohol is higher than that of the sodium tetradecyl sulfate. Additionally, no case of cutaneous-mucous necrosis was observed.

EXHALED BREATH ANALYSIS WITH ARTIFICIAL NOSE DISCRIMINATES AMONG DIFFERENT LUNG DISEASES

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Objectives: Smelling to establish diagnoses has been practiced in clinical medicine since ancient times. Nowadays, an electronic nose has been successfully used for detection of organic compounds in food and perfume industry. The aim of this study was to test whether exhaled breath analyzed with an artificial nose could identify and discriminate between different lung diseases.

Methods: 62 individuals: 25 asthma, 13 lung cancer, 13 pneumonia, 12 other lung disease patients and 10 healthy volunteers were tested. Exhaled air was collected in plastic bags and immediately analyzed by an electronic nose instrument (9185, Nordic Sensors AB) containing 14 different odour sensors. Multifactorial logistic regression analysis was used to find correlation between the amplitudes of sensor responses and the clinical diagnoses of patients.

Results: The table presents p values of significant relationship between electronic nose sensors and clinical diagnosis. Some sensors (1, 6, and 13) gave specific responses to particular disease; some other sensors (3, 5, and 7) shared the response with two diseases.

Conclusions: An artificial nose is able to discriminate among different lung diseases. Further development of this approach is necessary to create new screening and monitoring methods for different lung diseases.

THE RELATIONSHIP BETWEEN BIRTH WEIGHT AND ENDOTHELIAL FUNCTION IN NEWBORNS

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Objective: Low birth weight is associated with cardiovascular disease in later life. Endothelial dysfunction is considered a precursor of atherosclerosis and is linked to cardiovascular events in adults. We aimed to study endothelial function in newborns to find an early marker to identify and follow up children at high risk.

Methods: 50 healthy newborns were included in the study and skin perfusion was measured by laser-Doppler flowmetry on the forearm in the first week of life. Endothelium induced vasodilation was measured as maximum perfusion in response to acetylcholine delivered to the skin by iontophoresis. In addition endothelium independent vasodilation was analyzed following delivery of nitroprusside. Vasodilation was expressed as a percentage increase of baseline perfusion. Data were related to birth weight using linear regression analysis.

Results: Baseline perfusion was not related to birth weight. Linear regression analysis revealed a significant linear relationship between birth weight and percentage increase of skin perfusion in response to acetylcholine (p = 0.04). A one standard deviation increase in birth weight was associated with an increase in response to acetylcholine of 73%. Endothelium independent vasodilatation was minimally influenced by birth weight.

Conclusions: The data show considerable impact of birth weight on endothelial function in the first week after birth. In addition, endothelium independent vasodilatory capacity is not impaired in low birth weight infants. This may help to understand the mechanisms that predispose small for their gestational age infants to cardiovascular disease and to identify and follow up infants at risk.

SIDESTREAM DARK FIELD IMAGING (SDF) TO EVALUATE THE MICROCIRCULATION POSTNATALLY IN VERY PREMATURE INFANTS

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Objective: The skin as the child's shock organ is easily accessible to evaluate the microcirculation non-invasively by sidestream dark field imaging (SDF) using the reflection of emitted light (530 nm) in the absorption spectra of hemoglobin.

Methods: In 25 preterm infants (median (95% CI) gestational age: 28 (27 to 29) weeks, birth weight: 980 (849 to 1103) g) both the functional vessel density (FVD) and the vessel diameter were measured by sidestream dark field imaging (SDF) using the reflection of emitted light (530 nm) in the absorption spectra of hemoglobin.
measured in the first 48 hours of life using SDF. The sequences were analyzed off-line by Microvision analysis software (MAS).

**Results:** Post-natally, in the first 48 hours FVD increased significantly (from 212 (204 to 218) to 224 (219 to 232) cm/cm², p<0.018) with the greatest change between the 12th and 48th hours of life (from 211 (203 to 220) to 226 (219 to 232) cm/cm², p<0.001). The proportion of small capillaries (diameter <10 μm) increased from 31% (28 to 36) to 40% (36 to 42), (p<0.025). The proportion of the large vessels (diameter >20 μm) declined from 8% (7 to 15) to 6% (5 to 8), (p<0.001). The change of the medium capillaries (diameter 10–20 μm) did not reach statistical significance (from 56% (54 to 59) to 54% (52 to 57)). Blood pressure (syst., diastol. and MAP) and FVD did not correlate (MAP: r = −0.0245, p>0.85). Catecholamines/hydrocortison infusion increased FVD significantly (210 (198 to 221) versus 224 (212 to 232) cm/cm², (p<0.012), but not volume intervention (≥10 ml/kg/BW 0.9% NaCl).

**Conclusion:** There are significant changes in microcirculatory parameters postnatally but without direct correlation to blood pressure changes. Catecholamines/hydrocortison significantly improved both microcirculation and blood pressure.
Poster session: miscellaneous

MANAGEMENT OF HIV-POSITIVE PREGNANT WOMEN AND THEIR BABIES, AT THE AMES PAGET HOSPITAL (JPH), GREAT YARMOUTH, UK

Objective: Increasing numbers of HIV-positive women are delivering in the UK, and thanks to several large studies, guidelines have been successfully implemented for managing this group of patients. This study was aimed at assessing the level of adherence to local and national guidelines, by clinicians, and the success rates of these measures, at the James Paget Hospital (JPH).

Methods: Cases of HIV-positive pregnant women, who booked and delivered at the JPH from January 1997 to January 2008, were selected. The following outcomes were assessed with regard to the women: HIV type and time diagnosed; viral load and CD4 counts; antiretroviral therapy (ART); delivery (mode, complications, outcome, ART etc). Outcomes for infants were as follows: birth details; post-exposure prophylaxis; feeding options; HIV status.

Results: There were a total of thirteen deliveries by twelve women within the 11-year period. There were twelve live births and one stillbirth, which occurred as a result of drug toxicity (nevirapine). Most women had HIV-1 subtype and were on at least one type of ART. Most women delivered via caesarean section, although 50% of these were emergency cases due to premature onset of labour. All neonates received adequate ART from delivery for at least 4 weeks, and there were no reported cases of HIV infection.

Conclusion: There is good adherence to local and national guidelines, with good success rates. However, more guidance is needed with respect to ART prescribing in pregnant women, as well as more overall detailed JPH guidelines for these women.

PLASMA IGFs AND IGFBP5S PROFILES IN SYNDROMES WITH GENERALIZED AND/OR LOCALIZED OVERGROWTH

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Background: Overgrowth syndromes are a group of conditions characterized by tall stature and advanced bone age. Some authors suggested that isolated hemi-hyperplasia represents a form of “partial overgrowth”. The aim of the present study is to study the serum levels of IGF-I, IGF-II, IGF-BP1, IGF-BP3 and ALS in a group of patients with overgrowth syndromes.

Patients and methods: 13 patients with Beckwith Wiedemann syndrome (BWS), 6 patients with “non-specific overgrowth” and 13 patients who showed isolated hemi-hyperplasia were enrolled in the study. A double number of controls for each group of patients was analyzed. The serum levels of growth hormone (GH), circulating insulin-like growth factor (IGF-I and IGF-II) as well as IGF binding proteins (IGFBPs), namely IGBP1 and IGBP3 (IRMA) and of the acid-labile-subunit (ALS) (ELISA) were measured.

Results: IGF-II mean serum levels were significantly higher, in particular the results were follow: BWS (943±243 vs 472±176 P<0001), “non-specific overgrowth” (989±387 vs 449±149 p 0.001); Hemi-hyperplasia (892±163 vs 480±156 p 0.001). IGF-BP3 and ALS were significantly lower in all patients than in controls.

Conclusions: The detection of high IGF-II serum levels in all the studied patients as compared to the control group might suggest a role of IGF-II in each of the studied conditions including isolated hemi-hyperplasia. The well-known association among IGF-II and the development of cancer suggests the importance of an accurate surveillance not only of the patients affected by BWS but also of patients with isolated hemi-hyperplasia and by “non-specific overgrowth”.

INDIVIDUAL AND CONTEXTUAL FACTORS ASSOCIATED WITH BREASTFEEDING INTENTION AND FOLLOW-THROUGH

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Objective: To determine predictors of intention to breastfeed and breastfeeding follow-through in a low-income, urban-dwelling sample.

Methods: A total of 301 Dominican, Mexican and African-American mother-infant dyads, recruited at three major NYC hospitals, participated in the Metrobaby cohort study. At baseline, face-to-face interviews were conducted with the mother within three days of the baby’s birth. A telephone follow-up interview was completed with the mother when the baby was one month old, and again at six months of age. Using logistic regression, mother’s age, race, place of birth, education, relationship with father, household income, number of household members, cohabitation with partner and work status, were entered as predictors of three separate outcomes: (1) intention to breastfeed at baby’s birth, (2) breastfeeding at one month, and (3) breastfeeding at six months.

Results: At time of baby’s birth, 85% of mothers stated intention to breastfeed. When infants were one month, 64% of mothers were breastfeeding and when infants were six months, 32% were still breastfeeding. Univariate analysis showed race, place of birth (US or other) and cohabitation were significantly associated with all three outcomes. Only mother’s work status was significantly associated with breastfeeding follow-through when infants were 6 months. Mothers who were working, regardless of occupation, were 53% less likely to breastfeed (95% CI 20% to 90%) than those who did not work.

Conclusions: The finding that cohabitation and work status significantly predicted breastfeeding follow-through at one and six months has important implications in designing strategies to increase partner and employer support during the breastfeeding process.

IMPROVEMENT OF PARENTAL INFANT CPR BY PRIVATE BASIC LIFE SUPPORT COURSE

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Introduction: Childhood out-of-hospital cardiac arrest is a traumatic event for care givers and parents. Outcome is determined mostly by the time that CPR is started. Most times, parents are the first one to discover that their child needs CPR. Because of that, it is advocated that parents of high risk neonates, including NICU graduates, should undergo CPR courses.

Methods: Parents of NICU or PICU admitted newborns underwent a private BLS course which included theoretical and practical training. This was a prospective trial. Every participant completed a pre- and post-test. Test evaluation was blinded.

Results: 113 parents participated in the trial; 59 females and 54 males. The average score of the pre-test was 42.8±17.0 compared to 84.1±13.5 for the post-test (p<0.001). Only 26% passed the pre-test with a score higher than 60 compared to 96% in the post-test. All the participants that didn’t pass the post-test with a score higher than 60 improved their score compared to the pre-test.

Conclusions: A private BLS course improves parental infant-CPR skills. The course achieves this important goal with very low cost.
A NEW ALLERGY POC TEST IN A PAEDIATRIC ALLERGY CLINIC

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Objective: To evaluate the diagnostic performance of a new “point of care” (POC) allergy test in a Paediatric Allergy Clinic.

Methods: Clinical history of children attending for the first time at the clinic, between October and December 2007, was documented. Instead of routine allergy tests we used ImmunoCAP® Rapid Wheeze/Rhinitis (Phadia AB), a new in-vitro qualitative test with ten common allergens in paediatric patients, performed with 110 μl of whole blood and with results available in 20 minutes. After the test, a satisfaction questionnaire was done.

Results: A total of 39 patients were included, with a median age of 5 years (2–16). Wheezing and/or asthma were reported in 30 (76%) and rhinitis in 32 (82%). In 36 children (92%) symptoms were persistent. Only in 5 patients (13%), triggering allergens were found by the clinical history: house dust mites in 3 (8%) and cats in 2 (5%). The new test identified one or more allergens in 29 children (74%); house dust mites in 23 (59%) and cats in 6 (15%). In 21/36 patients (58%) with persistent symptoms house dust mites were identified by the test. All triggering allergens identified by the clinical history were confirmed by the test. Thirty two children (82%) preferred the test instead of routine ones.

Conclusions: This test, easy to perform and well accepted by the patients, is apparently more sensitive than clinical evaluation and has a good clinical correlation. It seems a useful tool to rule in or out allergic sensitization in children with respiratory symptoms.

EXPERIENCE WITH AZATHIOPRINE IN A CHILDHOOD POPULATION WITH SEVERE ATOPIC ECZEMA OVER AN EIGHT YEAR PERIOD

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Objective: To investigate the safety and efficacy of azathioprine in a childhood population with severe atopic eczema

Methods: We conducted a retrospective review of azathioprine use over an eight year period in a childhood population with refractory atopic eczema. Twenty one patients with severe atopic eczema, 19% of whom had partial enzyme deficiency of thiopurine methyltransferase (TPMT) were included.

Results: Azathioprine was commenced at doses ranging from <2 mgs/kg to 2–3 mgs/kg/day. Treatment was withdrawn due to failure to comply with monitoring in 2 cases and treatment was discontinued due to severe thrombocytopenia (28,000/mm3) in 1 child. Of the remaining 18 patients, a total of 16 patients (88.9%) responded to treatment, of whom 7 (43.7%) improved significantly within the first 6 weeks of therapy. Treatment durations varied from 6 to 15 months. Of the 16 responders, objective improvement (as assessed by the supervising Physician) at 3 months, was estimated as poor, i.e. <50% in one case (who subsequently improved significantly following a dose increase), as good i.e. 50–80% in 6 individuals (37.5%) and as excellent i.e. >80% in 9 cases (56%). Duration of remission was variable, less than 3 months in one case, 3–12 months in 5 individuals, remission (ranging from 2 to 18 months) is ongoing off treatment in 4 patients and 6 patients remain on treatment. Azathioprine was tolerated without side effects in 14 patients (66.7%), one patient developed severe thrombocytopenia and another moderate neutropenia (Partial TPMT deficiency). Conclusion: In summary, azathioprine appears effective and safe for refractory childhood eczema.

OUR EXPERIENCE WITH ORAL ITRACONAZOLE IN THE MANAGEMENT OF CHILDHOOD TINEA CAPITIS OVER A 2 YEAR PERIOD

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Objectives: Tinea capitis is a common paediatric infection for which Griseofulvin is the only licensed medication. However azole antifungals are readily available and may be efficacious in this cohort of patients.

Methods: We conducted a retrospective study which investigated the efficacy and safety of oral Itraconazole in the management of tinea capitis; 86 children of varying ethnicity who attended our department over a 2 year period were included. All patients had a clinical diagnosis of tinea capitis and were treated with oral...
Itraconazole at doses ranging from 3 to 5 mgs/kg/day. Fungal scrapings were obtained from 34 patients, of whom 34 had positive cultures. Trichophyton tonsurans was the most common organism.

**Results:** 17 patients failed to attend after the initial visit; of the remaining 69 patients, clinical cures were documented in 43 (62.3%) after 6 weeks or less of Itraconazole, a further 14 (20.3%) resolved after 6–12 weeks of treatment, while 4 (5.8%) did not respond and required introduction of another agent.

Of the 31 patients with confirmed Trichophyton species, clinical cures were recorded in 56% after less than 6 weeks of treatment and a further 20% were cured after 6–12 weeks. Of the 3 patients with confirmed M. canis, 1 patient had a partial response after 6 weeks of oral Itraconazole while 2 patients were unresponsive. Itraconazole was well tolerated in all cases with no recorded side effects.

**Conclusions:** In summary, Itraconazole is a safe and effective option for childhood tinea capitis. Trichophyton species are particularly responsive but Microsporum infections appear much more resistant.

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**GIANT CONGENITAL MELANOCYTIC NAEVI IN THE NEWBORN: A REAPPRAISAL**

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The management of a child with a giant congenital melanocytic naevus (GCMN) is still one of the most controversial issues in paediatric dermatology. In the decision-making process aesthetic and psychosocial issues, risk of malignant transformation, and final cosmetic and functional outcome must be taken into consideration.

As the risk for developing melanoma in GCMN appears to be the most important in the first years of life, intervention must start as early as possible. Surgical excisions aimed at complete naevus removal do not always eliminate the risk of melanoma: it is often impossible to remove all naevus cells and there is still the risk for developing extracutaneous melanoma. Partial removal of superficially located naevus cells resulting in a more acceptable cosmetic outcome is another way of approaching these lesions and can be obtained by curettage, dermabrasion or laser therapy. On the basis of our personal experience in more than 50 patients, we advise removal of GCMN as early as possible. In the neonate curettage is our preferred treatment option as in most of our patients so-treated, good cosmetic and functional results were obtained. Moreover, by this technique an important reduction of the most active naevus cells with the highest proliferative activity is obtained. For lesions that can be excised in two or a maximum three procedures, we recommend serial excision. If this option is chosen, we strongly advise early intervention in the first months of life: taking advantage of the cutaneous laxicity of the skin results in better cosmetic outcome and in reduction of the number of interventions. We do not actually recommend laser treatment in the management of GCMN in paediatric patients, as this treatment may alter the biologic behaviour of residual naevus cells and repigmentation often occurs. Paediatricians have a crucial role in the outcome of these patients, as they can arbitrarily refer a newborn with a GCMN for optimal early intervention.

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**VASCULAR ABNORMALITIES: EXPERIENCE OF A MULTI-DISCIPLINARY TEAM**

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**Objective:** The term vascular abnormalities (VAs) covers a wide range of blood vessel lesions approached from the interface of several medical disciplines. Our purpose is to present our experience in multi-disciplinary management.

**Methods:** We performed a descriptive and retrospective study of VAs assessed between June 2005 and June 2007. We used ISSVA classification. We analyzed sex, symptoms, age of beginning, therapeutic choice and outcome.

**Results:** 127 patients were evaluated (aged 27 days to 18 years); 64 males and 63 females. The most frequent symptoms were tumor (72%), macula (26%) and others (pain, functional disorders). 17 patients (15.4%) presented with hemangiomas, 110 (86.6%) with vascular malformations (VMs). Hemangiomas prevailed in the head and neck (10/17), meanwhile low-flow VMs (47/58) and high-flow VMs prevailed on limbs (9/10). Most hemangiomas occurred before 1 month from birth (15/17), whereas VMs did not differ regarding clinical onset. Outcome: a stable or favorable status was observed on hemangiomas, only 4 patients need surgery. Most low-flow VMs (54/55 patients) were treated with sclerotherapy and/or surgery, with favorable evolution in 26 patients (76.4%), 5 stable (14.7%) and 3 progressive (8%). Regarding high-flow VMs, all cases evolved to be stable or favorable with the treatment given.

**Conclusions:** VAs comprise a range of lesions, spread over the whole body, with diverse diagnostic and therapeutic choices. Most hemangiomas only need clinical control. VMs were the majority in our series, mostly low-flow. They occurred from neonatal stage to adulthood, and required some kind of therapy owing to their expanding growth, lack of remission and probability of complications.

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**PREVALENCE OF PSYCHOLOGICAL DISORDERS IN CHILDREN WITH ASTHMA VERSUS CANCER**

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**Objective:** Asthma is the most prevalent chronic condition among children; many studies have documented that childhood asthma is related to higher rates of symptoms of depression and anxiety. The aim of this study was to evaluate the relationships between asthma severity, type and prevalence of psychological problems in those children compared to children with cancer.

**Method:** A group of 60 children suffering from asthma, a group of 30 children with cancer and 60 health children were evaluated. The parents filled in the Child Behavior Check List (CBCL), and an anamnesis form on which they reported on their child’s medical history, health conditions and family situation. The Birleson depression self-rating scale (DSRS) was used in both groups.

**Results:** Depression was significantly higher in the cancer group (35.3%) than controls and children with asthma (p<0.05). In moderate/severe asthmatic subgroups depression (15%) and anxiety disorders (55%) occur at a greater prevalence. In the mild group emotional and/or behavioral problems (15%), and anxiety disorders (20%) were more prevalent. There were more emotional and behavioral problems and anxiety disorders in the asthmatic group than in the control group. We observed that depression was highly related to the asthma severity, and that depression decreases compliance and worsens prognosis.

**Conclusion:** In cases of severe asthma treatment of depression may increase compliance and decrease mortality. These children and their families must receive psychological support.

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**PROGRAMMED INTERRUPTION OF ANTIRETROVIRAL THERAPY IN HIV INFECTED CHILDREN**

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**Objectives:** To establish the safety and efficacy of programmed treatment interruption (PTI) in HIV infected children. To identify parameters that could define for whom this strategy is safe.
Methods: A prospective study since October 2005. Eligible patients were HIV infected children with prolonged and sustained control of virological and immunological response to antiretroviral treatment (ART).

Results: Ten patients underwent FTI. The median age of HIV diagnosis was 4.6 months (category A 40%, B 50%, C 10%). The average on ART regimens was 46.3 months (four under a second treatment pattern and two on a third). Median age at start of interruption was 120 weeks (range 79–169). Significant decreases of CD4 (CD4<25%) were seen in two patients during the first month (6.1 and 21% total CD4) and five patients during the third month (range 13–24% total CD4); two of them recovered (>25%) in the next months. HIV viral loads increased from the first month. None of the patients had changes in their clinical status. Six children had remained for a median time of 21.6 months (range 1 to 60 months) on FTI. Four of the patients continued with FTI. During monitoring there were two immunological failures, one acute retroviral rebound syndrome, one clinical failure, one with a significant decrease in CD4 (14%) and one who restarted ART following the protocol of a FENTA clinical trial.

Conclusions: FTI may represent a safe therapeutic strategy in a selective group of HIV infected children, despite initial decrease in CD4 (close follow up is warranted).

CONGENITAL CENTRAL HYPOVENTILATION SYNDROME WITH HYPERINSULINISM IN A PRETERM INFANT

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Congenital central hypoventilation syndrome (CCHS), a rare disorder typically presenting in the newborn period, results from PHOX2B polyalanine repeat mutations in over 90% of cases. It is characterized by alveolar hypoventilation, symptoms of autonomic nervous system dysregulation, and in a subset of cases Hirschsprung’s disease and later tumors of neural crest origin. We describe a preterm infant with severe phenotype of CCHS and hyperinsulinism. A novel de novo heterozygote missence mutation (Gly68Cys) in the PHOX2B gene could be identified. Based on the observation of three patients presenting with the combination of congenital hyperventilation and CCHS, hyperinsulinism might represent an additional clinical feature of CCHS.

PARASITIC INFECTIONS: A DIFFICULT DIAGNOSIS?

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Objectives: To present the clinical peculiarities regarding parasitic infections.

Methods: The authors present a 4 case series of children with anaemia and growth impairment. The first case was admitted for further investigations regarding a chronic allergic conjunctivitis. The second case was admitted in the context of recurrent wheezing episodes. The third case was suspected to have kidney malformation because of repeated urinary tract infections episodes, and the last case was further evaluated for recurrent skin allergy episodes.

Results: Parasitological stool exams revealed: in the first case infection with Hymenolepis nana associated with Giardia intestinalis, in the 2nd case a massive infection with Ascaris lumbricoides and Trichuris trichiura, in the 3rd case the stool exam was negative but adhesive tape test has revealed an infection with Enterobius vermicularis and in the 4th case only the third stool exam was positive for Giardia intestinalis. We have reconsidered the diagnosis for all 4 cases and we have initiated specific therapy with a good clinical evolution regarding growth impairment and the associated pathologies.

Conclusions: 1. All four cases have presented impairment of nutritional status and were admitted for different pathologies (respiratory, renal, allergic). 2. The combined parasitic infections have suggested poor hygiene. 3. In spite of a high incidence, parasitic infections are generally underdiagnosed because the symptoms of parasitic infection can vary with high risk of diagnosis errors.

VOICE AND SWALLOWING OUTCOMES IN CHILDREN UNDERGOING SURGICAL RECONSTRUCTION OF COMPLEX AIRWAY PROBLEMS

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Objectives: Children with congenital or acquired airway conditions involving the supraglottic, glottic, and/or subglottic airway require complex airway management. Tracheotomy with later surgical intervention for reconstruction and expansion of the airway is often necessary. The effect of the necessary surgeries to improve airway patency may also impact upon the laryngeal functions of phonation and airway protection during swallowing. The purpose of the present project was to analyze diagnosis, surgical intervention, and laryngeal findings in a cohort of patients undergoing laryngotraacheal reconstruction.

Methods: A retrospective review of 46 patients was completed. Type of airway lesion, surgical approach and number of airway surgeries, past and present history of feeding/swallowing dysfunction, past and present laryngeal findings, and voice outcomes were tabulated.

Results: The most common diagnosis in the patient cohort was prematurity and/or prolonged intubation resulting in subglottic stenosis. Co-existing morbidities present in the majority of patients including developmental delay, gastroesophageal reflux disease, and congenital syndromes. The majority of patients had undergone >2 airway surgeries. Common post-operative laryngeal findings associated with swallowing dysfunction included restricted vocal fold mobility, lateralized vocal folds, and supraglottic scarring. Voice outcomes revealed moderate to severe dysphonias secondary to variable sources of laryngeal vibration for voicing. Patients who did not display swallowing dysfunction following airway reconstruction were noted to demonstrate greater supraglottic compression for voicing.

Conclusions: Laryngeal closure for adequate airway protection requires supraglottic compression. Continued research is needed to delineate the relationship between aspects of laryngeal reconstruction and resulting long term voice and swallowing outcomes.

SEVERE ACUTE POISONING OF CHILDREN IN A TERTIARY PEDIATRIC INTENSIVE CARE UNIT: REPORT OF A SINGLE CENTER EXPERIENCE

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Objective: To describe the demographic characteristics, clinical course, and outcome of children with acute severe poisoning (SAP) leading to PICU admission.

Methods: A retrospective study of all cases of children admitted to a tertiary PICU for poisoning between 1998 and 2007 was performed. Circumstances of poisoning, clinical charts and outcome of patients were reviewed.
Results: 108 patients with SAP (3% of total admission) were admitted. Median age was 6 years (7 days–14 years) and 66.6% occurred between 2 and 6 years. SAP was due to drug ingestion in 55.5% of cases. Salicylate was the most frequent drug resulting in SAP (28%). Domestic and agricultural products were identified in 42% of cases and organophosphate was the most frequent cause (29.6%). The most common route of exposure was oral ingestion (93.5%). Therapeutic errors was noted in 3.7%. Indications for PICU admission were: coma (48%), respiratory failure (37%), and potentially SAP (18.5%). Gastrointestinal decontamination was used in 79.6% of patients, with activated charcoal in 77.7%. Three patients died, one from carbon monoxide poisoning and two from Atractylis gummifera. Median length of stay in survival patients was 2 days (1–12).

Conclusions: Drugs and organophosphate ingestion was the major cause of SAP with a maximal risk between 2 and 6 years old children. Mortality is low and seems to be related to the cause of PAS.

ANALYSIS OF THE QUESTION/ANSWER SERVICE OF THE EMMA CHILDREN’S HOSPITAL INFORMATION CENTER

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Introduction: At the information centre of the Emma Children’s Hospital AMC paediatric patients, parents, relatives, healthcare professionals and other persons involved with the patient can ask questions about all aspects of disease and social subjects. This is important because sufficient information has positive effects on coping with disease and medical results.

Objective: To evaluate the question/answer service, what kind of questions are asked, how frequently and by whom, which information sources are the most appropriate for the service and the time it takes and to what extend we are able to answer questions.

Methods: A case management system was developed in MS Access. Information content areas of all questions and used information resources are registered. Also, characteristics of the requester are registered (parent, patient, healthcare professional, other). If a question was answered (fully, partly, not) according to the employee and according to the requester and the time it took to answer a question.

Results: In 2007, 1434 questions were asked. Most questions were asked by parents (23.3%). Most frequently asked questions include disease (19.6%) and treatment (12.5%). About 90% of questions could fully or partly be answered. Paper information sources mainly from other organisations were the most used information sources.

Conclusions: Despite provision of information by their physician or other healthcare professionals and despite access to information on the internet, parents in particular want more and more thorough information about all aspects of disease.

The information centre of the ECH anticipates this information need with relatively simple resources.

CORRELATION OF RENAL LENGTH WITH FEMORAL LENGTH AND OTHER ANTHROPOMETRIC MEASUREMENTS IN CHILDREN

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Aim: To study the renal length in various age groups and to find out its correlation with femur length and other anthropometric measurements.

Subjects and methods: A prospective study in a tertiary care children’s hospital from March 2008–February 2004. 231 normal children between days 1–18 years of age were studied. All children had their anthropometry (height/length, weight, head circumference) and femur length checked by a single observer using standard measures and also had an ultrasonogram of the abdomen to measure kidney length by a single radiologist using an L & T Sapphire model, 5 MHz mechanical sector probe.

Results: Male:female ratio = 1.5:1. The mean renal and femoral length were 7.3 and 23.5 respectively. In univariate linear regression analysis, we observed that for every unit increase in femur length the kidney length increased by 0.13 cm and we derived the following formula: kidney length = 4.2+0.13× femur length. Also, for every unit increase in height the kidney length increased by 0.04 cm and the formula is: kidney length = 5.1+0.04× height.

Conclusion: Femur length correlates well with renal length. It will be useful in bedside monitoring of children with chronic renal disorders.

ALCOHOL, MARIJUANA AND TOBACCO USE PATTERNS AMONG CANADIAN YOUTH

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Objectives: Despite the health risks and public harm associated with heavy drinking, tobacco and marijuana use, the abuse of these substances remains common among youth in Canada. In this paper, for these three substances we examine (a) changes in their use over time, (b) age of onset, (c) co-morbid use, and (d) sociodemographic factors associated with their use in a nationally representative sample of Canadian youth.

Methods: Data were collected from students in grades 7 to 9 as part of the Canadian Youth Smoking Survey (n = 19,018 in 2002; n = 29,245 in 2004; n = 71,003 in 2006).

Results: Alcohol is the most prevalent substance used by youth. Co-morbid substance use was common, and it was rare to find youth who had used marijuana or tobacco without also having tried alcohol. There were high rates of underage youth trying alcohol, as well as a high prevalence of binge drinking and co-morbid use with tobacco and/or marijuana. Onset of alcohol and tobacco occurred at younger ages than marijuana. School performance and disposable income were associated with increased risk of these three behaviours.

Conclusions: The data suggest that alcohol, tobacco and marijuana are used by a substantial number of youth in Canada, despite age and legal regulations prohibiting their use. Considering the inter-relationship between alcohol and tobacco onset, future research should examine the potential impact that the increasing popularity of alcohol use may have on future youth smoking rates.

CLINICAL CASE OF SECONDARY HYPOTHYROIDISM AND HYPOOVARISM

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The autoimmune condition hypophysitis is a rare disease, affecting 0.0002% to 0.008% of the population. It is often diagnosed through exclusion of other diseases and should be considered in the differential diagnoses of every non-secreting pituitary formation.

We present the case of a 17-year-old girl with 6-months duration of amenorrhea and thyromegaly. Positive antithyroid antibodies were established. The thyroid hormone status and the TRH test have proven secondary hypothyroidism. The investigation of sex hormones established secondary hypoovarism. TSH 0.381 (0.35–5.5) IU/ml, FT4 11.15 (11.5–25.5) pmol/l, LH 0.25 (1–20) mU/ml, FSH 1.58 (2–22) mU/ml, E2 86 (39–241) pmol/l. TRH test with 200 mcg i.v. gave the following results: TSH at 0 min, 0.699; 30 min, 5.079; 60 min, 3.68 (normal 0.35–4.5) mU/l.
MRI of the hypothalamic-hypophysial tract visualized a pico adenaoma, 3 mm in size, in the region of adenohypophysis. Because of the small size of the pituitary formation, we consider that it is unlikely to be the cause of the pituitary dysfunction. This increases the possibility for autoimmune hypophysitis.

There are no literature data for investigation of large patient groups, as well as knowledge on diagnostic procedures, therapy and management. The present experience is based on reports on separate cases and we consider that our case can contribute to it.

**ACUTE SEPTIC ARTHRITIS: A FOUR YEAR RETROSPECTIVE STUDY**

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**Aims:** Evaluation of the demographic, clinical, laboratory and evolutive characteristics of septic arthritis in the pediatric population in a reference pediatric hospital.

**Methods:** Case review of children admitted with the diagnosis of septic arthritis between January 1st 2004 and December 31st 2007.

**Results:** From a total of 46 patients, 60.9% were male. Age at diagnosis ranged from newborn to 15 years old (mean 4.51). Mean in-hospital stay was 15.7 days. Symptoms were referred on average 12.5 days prior to admission (median 4 days). Fever was present in 78.3%; 97.8% had pain, reduced motility and inflammatory signs of the affected joint. The lower limbs were most commonly affected (95.7%; hip 45.7%). 25.9% referred with previous trauma or cutaneous infections. Seventeen (37%) had taken NSAIDs the week before. Blood or synovial fluid cultures were positive in 41.3% of patients. Staphylococcus aureus was the most common pathogen (19.6%, one isolate was methicillin resistant). Most patients received flucloxacillin (87%) and gentamicin (73.9%). Only 3 patients revealed sequelae on follow up evaluation.

**Conclusions:** The successful management of pyogenic arthritis depends on timely decompression of the joint space with adjustment of the antibiotic therapy. Compared to other studies we have longer in-hospital stays and longer parenteral antibiotic courses but our sequelae incidence is lower than usually reported. NSAIDs use was probably a risk factor. Staphylococcus aureus remains the most common isolated micro-organism with a small incidence of community-acquired methicillin resistance.

**UTILITY OF A QUALITY ASSURANCE DATABASE FOR EVOLUTION OF A PEDIATRIC SEDATION PROGRAM**

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**Objective:** At Boston Children’s Hospital, over 3000 children are sedated annually using established protocols.

**Methods:** Since 1997, a computerized database has tracked quality assurance (QA) data for each sedation. Prior to 2005, routine sedation consisted of intravenous pentobarbital (Nembutal) with fentanyl added if needed. Although the safety and efficacy of this regimen was acceptable, the risk of a prolonged sedation, lengthy recovery time and pentobarbital rage motivated the Sedation Committee to seek alternative agents. Dexmedetomidine, an alpha-2 agonist, was trialled as the primary intravenous sedative to replace pentobarbital.

**Results:** Our original Dexmedetomidine protocol reflected the Food and Drug Administration recommendations for adult dosing. The outcome data for 16,000 pentobarbital sedations showed an 0.4% incidence of significant adverse events: 0.55% incidence of oxygen desaturation, 0.06% incidence of brief positive pressure ventilation and no incidences of cardiac arrest or endotracheal intubation. The outcome data for Dexmedetomidine would have to be comparable to pentobarbital in order to justify a practice change. Over 3 years, following careful review of all QA data, the dosing increased. Currently we have replaced pentobarbital with Dexmedetomidine, a medication with a shorter half life, less risk of respiratory depression and a shorter recovery time.

**Conclusion:** The QA tool must be carefully designed to reliably query critical information. Adverse events should only be entered after agreement by independent blinded reviewers. With a reliable QA database, information may be queried, protocols modified and new protocols may be trialled and implemented.

**ISOLATED SPHENOID SINUS INFECTION: RARE IN CHILDREN, WITH ATYPICAL SYMPTOMS AND SERIOUS COMPLICATIONS – A REPORT OF THREE CASES**

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**Introduction:** Isolated sphenoid sinusitis is unusual (incidence of about 2.7% of all sinus infections) and is even rarer in children under 6 years old. It is frequently misdiagnosed because of its atypical presentation, but it threatens serious, even fatal, complications because of the sphenoid’s anatomical relationships with many intracranial structures (nerves, vessels etc). We report three cases of isolated sphenoiditis in previously healthy children with acute symptoms of CNS, which initially had raised suspicion of other conditions.

**Case reports:** Case 1: a 4-year-old boy, with symptoms mimicking meningitis. Laboratory findings indicative for bacterial infection but “clear” CSF.

Case 2: a 12-year-old boy with dizziness and two transient episodes of visual hallucinations. No signs of infection. His
symptoms initially seemed to be psychic in origin, so he was evaluated by child psychiatrists.

Case 3: A 12-year-old boy, with acute headache, vomiting and dizziness. Romberg sign present, without infection findings.

In all three cases, the diagnosis of isolated sphenoiditis was revealed by head CT (the study of choice), which was performed on the suspicion of other intracranial conditions.

All cases received i.v. ceftiraxone plus clindamycin, with excellent final outcome for the first two children. The third one still has (after three months) radiological findings, so he is under ENT observation.

Conclusion: Sphenoiditis can be a serious infection but is frequently misdiagnosed because of its atypical symptomatology, as in our cases. Considering that our cases presented to a provincial hospital within one year, we discuss that its rarity could be due to uncomplicated cases which did not undergo head CT scan.

RELATIVE FREQUENCY OF BACTERIAL INFECTIONS IN INTENSIVE CARE UNITS OF SHIRAZ UNIVERSITY OF MEDICAL SCIENCES TEACHING HOSPITALS, SHIRAZ, IRAN

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Objective: Intensive care unit (ICU) acquired infections bring some degree of morbidity and mortality to the ICU patients. In this study the prevalent bacterial infections among ICU patients in two major university hospitals in Shiraz was investigated.

Methods: A cross sectional prevalence study was performed on all the patients hospitalized longer than 48 hours in a total of 8 intensive care units at two Shiraz University teaching hospitals. Samples were microbiologically cultured. Rates of infection and death, microbiological isolates and their resistance profile to most commonly available antibiotics were detected.

Results: 123 specimens from 89 patients aged 1 month to 80 years (38.5±13.4) were studied. 46 patients (51.7%), 95% CI 41.3 to 62.1% showed infection based on culture and clinical finding. 48 patients (48.3%) had no defined type, 37 patients (41.6%) had more than one, and 9 patients (10.1%) had only one ICU-related nosocomial infections. The overall mortality rate for ICU acquired infections was 10.9% (5 patients) and bacteria with gram-negative microorganisms was the cause of death. Gram negative bacteria were significantly more involved in infections than Gram-positive bacteria (p<0.05). The most frequently reported infections were urinary tract (54.7%), respiratory tract (65.2%), wound (32.6%), and blood (23.8%). The most frequently isolated bacteria was Pseudomonas (39.1%) which was mainly sensitive to amikacin and ticarcillin-clavulanate.

Conclusion: The potential effects of such rates of ICU infection and the outcomes emphasize the importance of specific measures for infection control in critically ill patients in ICUs, especially when using urinary catheters.

THREE YEAR OUTCOME OF BLEOMYCIN SCLEROTHERAPY TREATMENT OF VASCULAR ANOMALIES: CLEVELAND VASCULAR MALFORMATION GROUP RESULTS

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Introduction and aims: Intralesional bleomycin sclerotherapy has been offered to 65 of 238 patients presenting with haemangiomas and vascular malformations in our centre over the last three years. Methods: Clinical response, administered dose, amount of sessions and complications were recorded. 42 of the 66 patients have completed their treatment thus far. Respiratory surveillance is provided by an adult and paediatric pulmonologist utilising the locally agreed Cleveland malformation surveillance protocol.

Results: Thirteen children and 29 adults completed treatment with a mean of 3.4 sclerotherapy sessions. 17% of children treated were under the age of 1. Treatment lasted for an average of 88 days. 43% of patients received prior treatment other than bleomycin. The following pathologies were treated: haemangioma, 10, venous malformation 26, lymphatic malformation 4, capillary malformation 1, AVM 1. Complete resolution occurred in 66%, with an overall response rate of 98%. Skin ulceration occurred in 1 patient, minor blistering in 5, infection 1, swelling 1, headache 1, bruising, skin rash 1 and skin pigmentation occurred in 3 patients. The maximum administered dose was 3 mg/kg.

Conclusion: Predictable results were obtained with a high success rate. No systemic or pulmonary complications occurred. Secondary treatment, apart from bleomycin sclerotherapy was only needed in two patients with partially resorbed hemangiomas.

MESENCHYMAL STEM CELLS IN TREATMENT OF GROWTH PLATE AND ARTICULAR CARTILAGE

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Objective: Assorted treatment methods for growth plate and articular cartilage injury in children are known. The using of MSCs (mesenchymal stem cells) from bone marrow blood brings new possibilities in the treatment of these defects.

Methods: Group A was represented by 10 pigs; allogenic MSCs were transplanted into a iatrogenic defect on the lateral side of distal epiphysis of left femur. Group B was represented by 30 pigs; MSCs were transplanted into a circular osteochondral defect (0.6 mm). In group A all femurs were measured for the length of bone and valgus deformity. The final results in both groups were made by histological examination (H-E, Pearls, PAS, ELISA, FISH).

Results: In group A the left femurs were on average 0.56±0.44 cm longer than the right femurs. Average angular deformity of the left femur was 0.78°, while on the right femur without transplantation 3.7°. In groups A (left femurs) and B we can see the creation of hyalin cartilage in most of the experimental animals. In group A (right femurs) a bone bridge in the iatrogenic partial growth plate arrest was created.

Conclusion: MSCs transplantation into the growth plate defect can hide the creation of valgus deformity and restrict the length of growth failure of the bone. Also, the MSC transplantation into the articular cartilage defect leads to much better healing than the common methods. This work was supported by grants from Research Projects of IGA MZ CR NR9296-2/2007 and MSMT (NPV II 2B06130).

RETROPERITONEAL SEMINOMA: A RARE DIAGNOSIS FOLLOWING AN ORDINARY COMPLAINT

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Abdominal pain is a common complaint in children and adolescents and one of the main reasons to seek medical attention. It is nevertheless one of the most non-specific symptoms.
We describe the case of a fifteen-year-old boy who presented in the emergency room with a 48 hour right low abdominal pain, nausea and fever, without any other complaint. The anamnesis revealed a 2 year history of nocturnal enuresis and an episode of not feeling well eliciting right testicular pain after trauma in the past year. He had right low abdominal tenderness and the Blumberg sign was positive; no abdominal masses were felt. The testicles were asymmetrical (right one smaller). There were no other abnormalities on physical examination. Laboratory studies were normal except for a raised C reactive protein and lactate dehydrogenase on blood samples. Tumoral markers (beta-human chorionic gonadotropin and alpha-fetoprotein) levels were normal. The abdominal ultrasound and the computed tomography scan revealed a 55 mm retroperitoneal paraaortic mass with central necrosis. Scrotal ultrasound showed a smaller, heterogenic right testicle, with calcifications. A retroperitoneal mass biopsy was performed and revealed a seminoma. The right testicle biopsy was negative. Staging did not show any metastasis.

Chemotherapy was started (cycles of carboplatin, etoposide and bleomycin) and a good response was noticed: more than 50% reduction after 2 cycles. Surgery is planned.

Extragonadal seminomas are rare, but when treated have a good prognosis; the authors stress the importance of an early diagnosis of cancer in children and adolescents.

HUMAN HERPESVIRUS TYPE 8 IN HIV PERINATALLY INFECTED CHILDREN WITH INTERSTITIAL LUNG DISEASE

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Objective: The human herpesvirus type 8 (HHV8) was first described in 1994 and has been associated with pathogenesis of Kaposi sarcoma (a body cavity lymphoma), Castleman’s disease and, recently, related to interstitial pneumonitis in HIV-infected adults. We have studied six children with interstitial pneumonitis, which acquired HIV infection perinatally, for the presence of HHV8 in lung tissue.

Methods: Lung biopsies were performed in six pediatric patients and the samples were examined for HHV8 using the polymerase chain reaction technique (PCR). Our patient series included two females and four males, ages ranged from 6 to 16 years and the CD4 count ranged from 193 to 1046 cells/mm³. All patients presented chronic cough and progressive dyspnea. The radiological findings were diffuse ground glass opacities and bronchiectasis.

Results: In three patients, PCR for HHV8 have shown positive results. All children with positive results for HHV8 have been living in the same institution, but with CD4 counts at different levels (193, 400 and 1046 cells/mm³) and also different histopathological findings (folicular bronchiolitis, lymphoid interstitial pneumonitis and bronchiolitis obliterans).

Conclusion: To the best of our knowledge, no further cases of HHV8-associated interstitial pneumonitis in pediatric HIV-positive children have been described. The role of HHV8 in pathogenesis of interstitial lung disease remains unknown. The presence of HHV8 in lung tissue of three children perinatally HIV infected living in the same environment highlights non-sexual transmission of HHV8 via saliva and perinatally, which has been described in late years.

CHOLEDOCHAL CYSTS IN CHILDREN: 25 YEARS OF CLINICAL EXPERIENCE

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Introduction: Hirschsprung’s disease (HD) is a congenital disorder of the colon. Multi-staged surgeries result in complications in 20% patients and unsatisfactory results in 4%, while the irrational approach to decreasing the number of stages is fatal in 4–6% of cases.

Methods: The study involved 228 children treated for different forms of HD: under 1, 29 (9.2%); 1–3, 72 (31.6%); 3–7, 66 (28.9%); and above 7, 69 (30.8%). Rectal HD was diagnosed in 63 (27.6%) patients, rectal-sigmoid, 138 (60.6%); near-total agangliosis, 21 (9.2%); and total, 6 (2.6%).

Results: Radical surgery without colostomy was performed in 165 (72.4%) cases: Soave, 14; Duhamel, 5; Soave-Duhamel, 16; Lynch, 6; Swenson, 5; Rebein, 3; Boely hand-sutured primary perineal colorectal anastomosis (HSA), 56; Boley stapled primary perineal colorectal anastomosis (SA), 60.

Protective ostomy (one of the stages of the treatment) was performed in 52 (22.8%) children with advanced HD. After colostomy, radical surgeries were performed upon stabilization of the patients’ health (disappearance of anemia and hypotrophy, subsidence of intoxication symptoms, and correction of the concomitant defects) within 6 months to 2 years: Swenson, 4; Rebein, 1; Duhamel, 4; Soave, 3; Soave-Duhamel, 1; Boley HSA, 6; Boley SA, 4; reconstructive plastic surgeries in severe agangliosis, 29.

Differentiated approach to treatment of HD patients resulted in a marked decrease of post-surgical mortality (0.4%) and good and (21.5–94.7%) satisfactory (12–5.3%) outcomes.

EFFICACY OF IMMUNOTHERAPY IN CHILDREN WITH IGE-MEDIATED ANAPHYLAXIS TO HYMENOPTERA VENOM: ARE THEY PROTECTED ON RE-STING?

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Background: Hymenoptera venom allergies in children are of concern because young patients are more prone to re-stings.

Objective: This study aims to determine the protective effect of venom immunotherapy (VIT) with and without use of emergency rescue medication (ERM, i.e. oral antihistamines and steroids) to re-stings in childhood.

Methods: 83 children with anaphylaxis to bee (n = 49), wasp (n = 29) or both hymenoptera venoms (n = 5) were included. Mean follow-up period was 7.7 years after commencement of VIT. We evaluated the number of re-stings, percentage of systemic reactions, number of patients carrying and taking ERM and its clinical efficacy in addition to VIT.

Results: 49 children (59%) had been re-stung 108 times by the insect they were allergic to. The rate of re-stings was 0.23 per patient per year of follow-up with no difference between bee and wasp stings. 16% of children re-stung by bees developed immediate systemic reactions as compared to 6% of patients re-stung by wasps (p = 0.25). The majority of patients (87%) carried ERM, only 75% took it after re-sting. Children not taking ERM experienced significantly more frequent systemic allergic reactions to re-stings compared to those taking ERM (19% versus 4%, p<0.01). Furthermore, grades of systemic reactions were milder in children taking ERM in comparison to children not taking ERM after being re-stung.

Conclusions: A majority of children are being re-stung. VIT provides complete protection in 94% with allergy to wasp venom and in 84% to bee venom. ERM provides adjunct therapy with
Eosinopenia as an early marker of severe bacterial infection in children

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Introduction: Sepsis is one of the most common causes of mortality and morbidity in the Pediatric Intensive Care Unit (PICU). Clinical as well as laboratory parameters in sepsis are not specific and the outcome of sepsis might be devastating if misdiagnosed.

The aim of this observational study is to analyze the time course of eosinophilia during the stay in PICU in documented infected children with sepsis compared with post surgery children without infection.

Methods: 11 children admitted with documented infection and severe sepsis (sepsis group (SG)) compared with 11 age matched children admitted to the PICU after a surgical procedure without documented infection (control group (CG)).

The timely course of the white blood cell count (WBC), C-reactive protein and the absolute value of the circulating eosinophil leukocytes were followed.

Results: The mean age in the SG was 4.1 years compared with 3.9 years in the CG. The cause of the sepsis in the SG was severe pneumonia (5 patients), meningitis (4 patients), Peritonitis (1 patient) and mastoiditis (1 patient). In the CG, the cause of admission into PICU was major neurosurgery (5 patients), abdominal surgery (3 patients), urosurgery (2 patients) and cardiosurgery (1 patient). Eosinopenia was correlated with very high CRP and very severe sepsis.

Conclusions: Eosinopenia seems to be an early, rapid, available, inexpensive biological marker and correlates with the severity and the prognosis of the illness in severely infected children. Further prospective data are needed to validate this preliminary result.

Effectiveness and safety of a sedation protocol for non-invasive diagnostic procedures on a general paediatric ward

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Introduction: There is a lot of debate in The Netherlands about the safety and effectiveness of procedural sedation, mainly given by paediatricians. A new sedation protocol was introduced in December 2004.

Objective: To evaluate a sedation protocol for successful procedures, and to study adverse events.

Methods: Prospective observational study of all children admitted at the day-care unit for non-invasive diagnostic procedures during one year.

The protocol describes a step-up procedure consisting of chloralhydrate followed if needed by midazolam intravenously. Patients were sober according to the nil per os guidelines. A paediatric nurse was responsible for the child all the time. Oxygen saturation and heart rate, after midazolam also respiratory rate, were monitored. Resuscitation equipment was with the patient all the time.

Adverse events were defined as apnea, airway obstruction, loss of consciousness or elongated stay. Discharge took place when vital parameters and behaviour were as before sedation, and after drinking. One paediatric radiologist judged each brain MRI on how well the clinical question could be answered.

Results: Of 101 procedures the success rate was 94%. Of 68 brain-MRIs, 63 (93%) were successful. There were no adverse events.

Conclusion: Implementation of this sedation protocol has lead to a high success rate for non-invasive diagnostic procedures, without adverse events.

Cost effectiveness of continuous veno-venous hemofiltration (CVVH) during ECMO

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Objective: Extracorporeal membrane oxygenation (ECMO) is a supportive cardiopulmonary bypass (CPB) technique for patients with acute respiratory or cardiac failure. Hemofiltration in infants on ECMO is used with the intention to diminish the capillary leakage syndrome, minimize blood transfusions and duration of ECMO.

The objective of the current study is to see if CVVH during ECMO reduces duration of ECMO and overall costs.

Methods: Retrospective case-comparison trial. Medical data of patients with hemofiltration during ECMO were matched for age, weight, diagnosis and ECMO mode, to those without hemofiltration (HF) in a 1:3 ratio.

Primary outcome parameters are time on ECMO, time till extubation after decannulation, number of transfusions and costs.

Results: Time on ECMO was significantly shorter: 98 (48–187) hours in the HF group compared to 126 (24–403) hours in the control group (P = 0.02). Time from decannulation till extubation was significantly shorter: 2.5 (0–6.4) days and 4.8 (0–121.5) days respectively (p = 0.04). The need for blood transfusions was lower in the HF group 0.9 ml/kg/d (0.2–2.7) compared to the control group 1.8 ml/kg/d (0.8–2.9) (p = 0.001) resulting in a transfusion of an extra 5.4 units of blood per patient. Hemofiltration saved costs of €5000 per patient.

Conclusions: Routine addition of continuous hemofiltration to the ECMO circuit in newborns significantly reduces duration of ECMO and mechanical ventilation post ECMO. Moreover the amount of transfusions can be restricted resulting in a significant reduction in costs.
Poster session: multiorgan failure

FATAL PNEUMOCOCCAL MENINGOENCEPHALITIS IN TWO IMMUNIZED CHILDREN IN VIENNA, AUSTRIA

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Background: Because national immunization programs are not yet fully in place, invasive pneumococcal disease (IPD) remains a serious illness killing more children in Europe than all other vaccine preventable diseases. The heptavalent pneumococcal vaccine (7-vPC) has recently become part of the immunization schedule in Austria, but vaccination coverage remains low (around 10%).

Methods: We report 2 cases of fatal pneumococcal meningoencephalitis in previously vaccinated children presenting to the Pediatric Intensive Care Unit in October 2007 and February 2008, both in critical condition. Past medical histories and immune status were within normal limits in both children, ages 5 months and 20 months. Antimicrobial therapy with amoxicillin/clavulanate was initiated, 5 days after disease onset in both cases.

Results: The serotypes were determined to be 9N and 7F, respectively, both susceptible to penicillins and 3rd generation cephalosporins. The first patient had received only the 2nd dose of 7-vPC, 10 days prior to onset of illness, the second patient had completed all 3 baseline immunizations, but was infected with a strain that is not covered by 7-vPC.

Conclusions: In settings with low immunization coverage, IPD should remain on top of the list of differential diagnoses in <2-year-old children with mental status changes and fever, regardless of vaccination history. It is hoped that immunization coverage and herd immunity will increase, minimizing invasive disease with vaccine preventable pneumococci. Systematic surveillance of IPD in Austria has been in place since 1999 and will ensure that IPD strains are monitored, and vaccines may be adjusted as needed.

THE MOST FREquent CAUSES OF COMPLICATED URINARY TRACT INFECTIONS

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Objective: To present cases with complicated urinary tract infections and the most frequent causes of infection.

Methods: Included in the study are cases with urinary tract anomalies and uroinfections. The diagnosis has been established by clinical examination, microbiologic examination of urine, ultrason examination of the urinary tract, excretory urography and voidin cisturethography.

Results: We have analysed 130 children with urinary tract anomalies. We performed a microbiologic examination of urine and identified the cause. The results of the study show that examined samples in 13.8% of the cases were sterile and in 86.2% of cases were positive. From the isolated organisms E. coli was the most frequent cause of infection (53.8%), followed by the infections caused by Klebsiella (19.2%), Proteus (13.0%), Citrobacter (1.54%) and Pseudomonas (0.77%).

Regarding the type of the anomalies of the urinary tract the results of the microbiologic examination shows that at obstruction of the urteropelvic junction E. coli is the most commonly isolated (65.1%). Obstructive uropathy associated with calculi in 45% of the cases was sterile, in 40% of the cases E. coli was isolated, than Proteus (15%) and Klebsiella (5%). At vesicoureteral reflux E. coli was isolated (61.8%), followed by Klebsiella (17.6%).

From 16 patients with megaureter, in 50% of the cases Klebsiella was isolated and in 37.8% E. coli.

Conclusion: The study has shown that the most frequent cause of complicated urinary tract infections is E. coli, followed by Klebsiella while the other causes are present only in small percentages.
Poster session: neonatal

MATERNAL DIETARY HABITS IN PREGNANCY: COMPARISON BETWEEN TWO GROUPS, 1991 VS 2007

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Aim: To match maternal dietary habits in pregnancy in 1991 and 2007, respectively, in a preliminary survey.

Methods: Semi-quantitative food frequency questionnaires, designed according to Block (Am J Epidemiol 1986;124:453) related to the 6 previous months, distributed at delivery.

Statistics: Student’s t test.

Results: 100 questionnaires, 50 in 1991 and 50 in 2007, out of 600 per group, have been analysed and reported in the table.

Conclusion: Trends towards higher protein, micronutrient, fiber, and lower alcohol, intakes, were observed in the 2007 group. We plan to reach sample sizes adequately powered in both group to assess dietary differences of the major dietary items, and to relate them to trends in neonatal weight.

RETNOPATHY OF PREMATURITY IN AN IRISH NEONATAL INTENSIVE CARE UNIT

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Introduction: Retinopathy of prematurity (ROP) occurs in the retina of preterm infants due to incomplete retinal vascularisation. The National Eye Institute in the USA reports a yearly incidence of 0.4%. ROP remains an important cause of severe visual disability.

Aims: To assess the incidence, investigation, screening programme, management and outcomes of ROP at risk infants over a two year period (2006–2007) in a regional Neonatal Intensive Care Unit (NICU).

Methods: A retrospective chart review was performed and the selection criteria included infants born ≤31 weeks gestation and/or of ≤1,500 g birth weight. All ophthalmic examinations were carried out by a single ophthalmologist using standardised protocols, with the first examination performed between the 4th and 7th week of the postnatal period.

Results: 1181 infants were admitted to our NICU during the period of January 2006 to December 2007. 53 infants (4.5%) fulfilled the predefined selection criteria. 16/53 infants (30%) were found to have ROP of varying degrees. 7/53 infants (44%) required treatment by laser therapy. No infants required surgery. Three infants died in the immediate postnatal period. Four were transferred to other centres prior to screening. All infants were followed up to complete regression of ROP.

Conclusion: The study determined an ROP incidence of 1.35% in all infants admitted to the NICU in two years. The study demonstrated a lower incidence (30%) of ROP in infants with predefined risk factors as compared to other international multicentred studies (56.4% Swedish, 66% American). UK and Irish figures are still not clearly defined to date.

NEONATAL MENINGOCOCCAL MениNGITIS: CASE REPORT

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Neonatal meningococcal meningitis and meningooccal septicaemia is a rare condition. Surveillance in the USA has described an annual incidence of 9 per 100,000. The rate on invasive meningococcal disease in neonates in the UK has not been defined. Following an extensive literature review there is no reported case in an Irish Neonatal Intensive Care Unit.

The patient was a twin, born at 35 weeks gestation by emergency LSCS under general anaesthetic. On day 12 of life she developed temperature instability, poor feeding, vomiting and fleeting bradycardias. A full septic work up revealed a blood culture positive for Neisseria meningitidis serogroup B. Blood PCR was positive for meningococci. Cerebrospinal fluid (CSF) microscopy revealed a white cell count of 7,700, with 30,000 red blood cells, glucose 0.5 mmol/l and protein 3100 mg/l. The CSF was positive for Gram negative meningococci. Cranial ultrasound scan was normal.

The patient received a 21 day course of IV Cefotaxime and Gentamicin. Recovery has been uneventful to date.

Extensive screening for carrier state was performed of 29 medical personnel and 2 close relatives to the infant. All were negative. No secondary cases of meningococcaemia occurred among the other infants in the NICU.

This case report presents an uncommon aetiology of neonatal meningitis. This represents the first case of meningococcaemia in Ireland occurring in neonatal unit.

Agostini et al

<table>
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DECREASING USE OF EXCHANGE TRANSFUSION IN NEONATAL HYPERBILIRUBINEMIA

AA Al Matti. Pediatric and Neonatal Department, Islamic Hospital, Amman, Jordan

Objectives: To study the changing need for exchanging transfusion in NNHB and to compare its frequency during the years 1997 and 2007.

Method: A retrospective study of the charts of all cases of NNHB that were admitted to SCBU in our hospital in 1997 and in 2007 and to study the different causes of jaundice and the number of cases that needed exchange transfusion in each year.

Results: Total number of deliveries in 1997: 9622. Total number of deliveries in 2007: 5725. Total number of 368 cases of NNHB were admitted in 1997 and 267 cases in 2007.

Exchange transfusions were performed in 67 cases (18%) in 1997 compared to 11 cases (4.2%) in 2007. ABO incompatibility was responsible for 38 cases (56%) in 1997 compared to 9 out of 11 cases (82%) in 2007.

Conclusion: In the treatment of severe NNHB, exchange transfusion is now performed much less frequently than in the previous decade, about four times less. This was related to the increasing awareness of the public, the early referral of cases by the general practitioners and the pediatricians as well as the changed guidelines at which exchange transfusion is done at higher bilirubin levels. ABO incompatibility is the main indication for exchange transfusion.


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<td>Total no. of deliveries</td>
<td>9622</td>
<td>5725</td>
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<tr>
<td>No. of NNHB cases</td>
<td>368</td>
<td>267</td>
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<tr>
<td>No. of transfused cases</td>
<td>67</td>
<td>11</td>
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<tr>
<td>No of ABO incompatibilities</td>
<td>38 (56%)</td>
<td>9 (82%)</td>
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EVALUATION OF THE RELATIONSHIP BETWEEN DIAMETERS AND AREAS OF UMBILICAL ARTERIES AND UMBILICAL VEIN AND GROWTH PARAMETERS OF THE NEWBORN

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Objective: Through the histopathological and morphometric evaluation of the umbilical cord, data can be obtained to support the IUGR and explain pathogenesis. With this study we aim to examine the relationship between the morphology of the umbilical cord and morphometric measurements of the umbilical cord vessels of normal newborns, and those of newborns with IUGR.

Method: In this study, 98 umbilical cords of newborns were examined, 70 of which belonged to normal newborns, and 28 to newborns with IUGR. The anthropometric measurements of the newborns, their maternal features, the morphology of the placenta and the umbilical cord was recorded in addition to total cord area, Wharton’s jelly area, total vein area, and total artery area values for each umbilical cord.

Results: The weight and the diameter of the placenta, the length of the umbilical cord, the total cord area, and the area of the Wharton jelly are all related to the fetal growth. In addition to the above the total vascular area and the total arterial area are decreased in fetal growth retardation. Maternal age is also an important factor in the development of vascular structure.

Conclusion: In light of these findings we can say that IUBG has many factors such as uteroplacental, maternal and environmental factors, however, the major factors arise as a result of the interaction between anthropometric measurements of the newborn and morphometric measurements of the umbilical cord.

MECONIUM-STAINED AMNIOTIC FLUID, MECONIUM ASPIRATION SYNDROME: ARE WE ABLE TO MAKE A DIFFERENCE IN THE MANAGEMENT?

SA Alsaad. NICU, Department of Pediatrics, Aljahra Hospital, Kuwait

Introduction: Meconium-stained amniotic fluid (MSAF) results from the passage of fetal colonic contents into the amniotic cavity. It is noted in 12% of pregnancies. Meconium aspiration syndrome (MAS) is noted in 5% of these infants. The delivery room management of infants born through (MSAF) remains an issue for debate among neonatologist and obstetricians.

Setting: Neonatal Unit of Aljahra Hospital.

Subjects: 1610 consecutive deliveries, over a 15 month period.

Interventions: in all babies born through MSAF, thorough oropharyngeal suction as soon as the head was delivered followed by immediate intratracheal intubation and suctioning in infants depressed at birth.

Results: 93 (5.77%) deliveries had MSAF other studies have reported incidence varying between 7–22% of live births. Fetal distress during labor and intrauterine growth retardation were observed with MSAF. 15 (16.1%) babies developed MAS needed intubations and ventilation The consistency of meconium did not have a direct bearing on the neonatal outcome. no deaths were observed, however, morbidities i.e. convulsions, DIC, needing HFOV were observed in 4 babies.

Conclusions: A selective approach can be adopted for babies with MSAF reserving intratracheal suctioning at birth for depressed neonate
or evidence of fetal distress in utero. Other neonates only need careful observation after thorough oronasopharyngeal suctioning.

RETINOPATHY OF PREMATUREITY: INCIDENCE, RISK FACTORS AND TREATMENT OUTCOME IN A TERTIARY NEONATAL INTENSIVE CARE UNIT IN KUWAIT

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Background: Retinopathy of prematurity (ROP) is the leading cause of preventable blindness in infants. Advanced neonatal care in a country like Kuwait results in better survival of even extremely low birth weight infants.

Methods: The study was conducted at the neonatal intensive care unit of Jahra Hospital, Kuwait. Charts of babies who were screened for ROP from September 2006 to August 2007 were reviewed. All babies ≤1500 gms and or ≤34 wks were screened.

Results: 220 infants were screened for ROP. 209 infants were included in the study. Others had incomplete follow up. There were 110 (52.6%) male and 99 (47.4%) female babies. The average birth weight was 903.6 g (range: 494 to 1667 g). The average gestational age 29.8 weeks (range: 25 to 35 weeks). ROP developed in 89 (42.6%) babies. The average birth weight of babies developing ROP was 823 g (range: 494 to 1538 g). The average birth weight of babies not developing ROP was 1017 g (range: 769 to 1667 g). The average gestational age of babies developing ROP was 27.4 weeks (range: 25 to 34 weeks). The average age of babies not developing ROP was 31.7 weeks (range: 25 to 35 weeks). Laser photocoagulation was needed in 11 babies. This is 12.35% of babies who developed any stage of ROP and 5.26% of total screened babies. One baby had an adverse structural outcome.

Conclusions: Our study shows incidence and risk factors of ROP similar to developed countries. Results of treatment show that incidence of adverse outcome is low in our series.

ADVERSE OUTCOMES ASSOCIATED WITH CHRONIC OPIATE EXPOSURE IN VLBW NEONATES

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Background: Morphine is widely used frequently in mechanically ventilated VLBW infants. The pharmacokinetics of morphine in VLBW infants is different than pediatrics and adult patients. There are still unanswered questions about the safety of morphine in such vulnerable group of infants.

Objective: To determine if ventilated VLBW infants who are chronically exposed to higher doses of morphine during the first 2 weeks of life have a significant increase in the incidence of adverse outcome namely: BPD, IVH, ROP, NEC and sepsis.

Design/Methods: A retrospective study of 60 VLBW infants (BW 937 ± 327 g, GA 26.5 ± 1.4 weeks), who required ventilation for more than 7 days and admitted to NICU from January 2000 through December 2005. Cumulative opiate exposure (mg/kg morphine) was recorded daily for the duration of hospitalization.

Results: There were no significant differences between the 2 groups with regards to gestation, birth weight, incidence of RDS, need for surfactant, and incidence of PDA. SNAPPEII scores were higher in infants with higher opiate exposure. ROP, IVH, PVL, LOS, and bacteremia incidence was similar. Higher exposure was significantly associated with use of oxygen at 56 weeks corrected gestational age, time to achieve full feeding, NEC > stage II, hypotension, use of volume expansion for hypotension, inotrope use, steroids to treat hypotension, severe IVH, multiple bacteremias and sepsis related mortality.

Conclusion: Higher opiate exposure during the first 2 weeks of life is associated with increased risk of NEC, hypotension and multiple bacteremias.

ARE THE PERSPECTIVES OF EUROPEAN PHYSICIANS ON RSV PROPHYLAXIS COMPLIANCE FACTORS CONSISTENT WITH THOSE OF NON-EUROPEAN PHYSICIANS?

1KS Anderson, 2VM Mullaney, 3LM Fredrick, 4AL Campbell. 1Anti-Infectives Department, Abbott, Abbott Park, IL, USA; 2Medical Publishing Department, Abbott, Abbott Park, IL, USA; 3Statistics Department, Abbott, Abbott Park, IL, USA

Objectives: To describe physicians’ perspectives (European vs non-European) on compliance factors relating to palivizumab prophylaxis (PP), which is proven to prevent RSV hospitalization in high-risk infants.

Methods: Globally, 453 physicians were invited to participate in an internet-based survey containing 29 questions to assess patient demographics, physician practice habits and perceptions of obstacles and measures to enhance PP compliance.

Results: 100 physicians completed the survey (Europe = 60). The main reasons parents refuse PP, according to European physicians, are ‘anti-vaccine’ beliefs (50%), incomplete knowledge (40%) and inconvenience (38%) while non-European physicians identified cost (55%), incomplete knowledge (55%) and lack of benefit (35%). The top 3 reasons for non-compliance, according to European physicians, are distance (45%), inconvenience (40%) and fear of injections (35%) while non-European physicians identified cost (55%), inconvenience (45%) and not understanding the threat of RSV (38%). The main compliance drivers were the same, globally; however, the percentages differed (Europe vs non-Europe): physician recommendation (75% vs 85%), provision of educational materials regarding RSV (47% vs 75%) and RSV history in another child (38% vs 43%). Globally, physicians provided the same recommendations to increase compliance: provision of additional educational materials, hospital reminders and educating the family about RSV and PP.

Conclusion: Although European and non-European physicians identified some different compliance obstacles, they were in agreement that focused proactive interventions such as empowering caregivers with educational materials and reducing caregiver inconvenience may be instrumental to increase compliance.

Funded by Abbott.

BIRTHWEIGHT TRENDS IN BABIES OF SOUTH ASIAN ORIGIN VS EUROPEAN BABIES IN THE UK OVER 20 YEARS

E Archary, R Parikh, GP Sinha. Department of Paediatrics, Walsall Manor Hospital, Walsall, West Midlands, UK

Introduction: Historically South Asian babies are of low birthweight and lighter than their European counterparts. It has been reported that Japanese nationals who immigrated to the US increased in size until they were similar to their native American counterparts. It has been anticipated this will occur among Asian children born in the UK.

Aims: (1) To determine the secular trend over a 20 year period (1986–2006) for the mean birthweight of South Asian babies born in UK vs their European counterparts. (2) To determine if ethnicity or any maternal factor had a significant effect on birthweight.

Methods: The birthweight of five subgroups of South Asian babies and European babies were studied over a 1 year period and compared to a similar study 20 years ago.

Results: 402 babies were studied: 263 European and 134 South Asian origin. The mean birthweight in all subgroups of South Asians has not increased in the last 20 years. Mean birthweight remained highest in European babies(3.52 kg) and lowest in Hindus
and Muslim Gujarati subgroups (3.04 kg). Maternal predictors of birthweight were BMI, cigarette smoking, parity and not ethnicity.

**Conclusion:** Recent UK research shows low birthweight predisposes to type 2 diabetes, hypertension, coronary artery and renal disease in later life. Further studies delving into this persistence of lower birthweight in babies of South Asian origin in UK are necessary so that strategic health measures can be implemented to reduce the risk of both perinatal and long-term morbidities. It will be useful to see if this trend is evident in other European countries as well.

**PERINATAL MORBIDITY AND MORTALITY OUTCOME IN HIGH-ORDER MULTIPLE PREGNANCY**


Infertility treatments have produced an increase in multiple gestations and premature deliveries. High-order multiple pregnancies have also increased. Clinicians are facing the challenge of managing these complicated pregnancies. The aim of this study was to analyse the factors of perinatal morbidity and mortality associated with high-order multiple pregnancy.

This was a retrospective study done upon 51 cases of multiple pregnancies with 155 newborns, who were hospitalized at the national centre of reference for neonatology, the children’s hospital of Rabat, from September 1977 to August 2006. The anthropometric, clinical, therapeutic and outcome parameters were gathered then analysed.

We have recorded 46 triplet deliveries and 5 quadruplets. The perinatal mortality rate was 40.5 percent and the neonatal mortality rate was 12.7 percent. The inincriminated factors were: respiratory despair (p < 0.01), membrane hyalines illness (p < 0.01), low birth weight (p < 0.01), neonatal infection (p < 0.01), childhood place of delivery as well as way of delivery (p < 0.01), and prematurity (p = 0.05).

High-order multiple pregnancy are pregnancies of high risk. Neonatal outcome will primarily depend on the birth weight of the babies, the conditions of delivery and the gestational age at delivery.

**POSTNATAL HYPOPHYTROPHY: A RETROSPECTIVE STUDY OF ABOUT 80 CASES**


The optimization of the nutrition of low birth weight premature neonates has become a major concern given the improvement in survival for these children. The goal of the recommended nutritional intakes is to reach a quantitative and qualitative growth similar to in utero growth.

The objectives of this study were to analyze the anthropometric data at birth and near term in a cohort of premature neonates and to try to determine risk factors of postnatal hypotrophy.

**Population and methods:** We conducted a retrospective study over 1 year (2006) in the neonatology unit of the Children’s Hospital of Rabat, Morocco. The inclusion criteria was a gestational age under 37 weeks. Data were collected at admission, during hospitalisation and at discharge, and a standardised form was filled for each child. We defined postnatal hypotrophy (PNH) as an hypotrophy at discharge (weight < 10th centile according to the Audipog reference curve) in neonates with birth weight appropriate for gestational age.

**Results:** 80 neonates were included. 44 had PNH. In univariate analysis, factors significantly associated with PNH were: birth weight, gestational age, length of hospitalisation, the occurrence of nosocomial infection, of enteropathy, pre-eclampsia, neonatal asphyxia and anemia.

**Conclusion:** Our study shows that half of the low birth weight premature neonates were hypotrophic near term. The causes may be various: nutrition is not optimal and intercurrent factors may play a major role such as nosocomial infection.

**MODE OF DELIVERY AND SUBSEQUENT STRESS RESPONSE**


This study was concerned with 50 newborns among whom 25 had been born by instrumented delivery and 25 by programmed caesarea.

The objectives of this study are analysis of the stress to the newborn of being born by a low level assisted way compared to those born by programmed caesarea at birth, after 15 days then at 2 months of life.

**Methodology:** in the neonatal period the analysis was by the rates of cortisol in the blood of the umbilical artery by radio-immunoassay. At the ages of 15 days and 2 months the evaluations were by the intensity of the pain response to a vaccinal act by using DAN scores. The results obtained were described and compared. A difference is considered statistically significant if p < 0.05.

**Results:** The mean values for the cortisol were 403.4 nmol/l ± 260.90 for the low assist methods and of 117.1 ± 63.90 for the caesareans: p < 0.00001. The comparison of the pain scores after a vaccinal act as well as after BCG at 2 weeks of life, as after DTCP in 2 months of life, showed significant differences: p = 0.016 at 2 weeks; p = 0.001 at 2 months.

**Conclusion:** We have shown that a baby’s stress and DAN scores to inoculation at 2 and 8 weeks was related to mode of delivery, with the greatest response shown in those born by assisted delivery and the least response in those born by elective caesarean section.

**EVALUATION OF 25(OH)D3 LEVEL IN NEWBORNS AND THEIR MOTHERS**

1. F Bashari Hashemi, ‘Y Talebi, ‘B Ghaseemi, ‘M Ghojazadeh. ‘Neonatal Ward, Koodakan Hospital, Tabriz, Iran; ‘Clinical Laboratory, Koodakan Hospital, Tabriz, Iran; ‘Department of Epidemiology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

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**Conclusion:** Our study shows that half of the low birth weight premature neonates were hypotrophic near term. The causes may be various: nutrition is not optimal and intercurrent factors may play a major role such as nosocomial infection.
Conclusion: Vitamin D deficiency is still a common and serious health problem in productive age women and their babies in developing countries. 90% of our vitamin D is provided by conversion of 7-dehydrocholesterol in skin exposed to UVB light. Vitamin D deficiency leads to neonatal seizure, infantile rickets and adult osteomalacia; therefore we need to reconsider recommendations for vitamin supplements and sunlight exposure for pregnant women and their infants.

WHO WATCHES THE BABY? A STUDY OF EARLY UNEXPECTED NEONATAL COLLAPSE

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Objective and Methods: Sudden collapse of apparently well term infants within hours of birth is a rare but recognised event. In many cases an underlying cause will be found, but a few remain unexplained. This group of infants are characterised by a high mortality and poor neurological outcome but are unrecognised in national statistics, and therefore the population incidence is uncertain. Following a cluster of cases in our hospital we undertook a review of such infants to identify common features and relative frequency.

Results: Over a 2-year period, five infants, previously assessed as healthy, were found collapsed in the care of their primiparous mothers within 12 hours of birth. Two were found prone on their mother’s chest who was undergoing episiotomy repair, two further infants were lying alongside their sleeping mother and one was in her mother’s arms in a dark room. Despite full resuscitation and intensive care, the outcome was poor with four neonatal deaths and one death aged 18 months with severe neurological impairment. The rate of sudden unexplained neonatal collapse was 0.4 per 1000 live births. No cause for collapse was identified despite extensive investigations, including post mortem in all the neonatal deaths. One infant, however, showed widespread antenatal brain damage at post mortem.

Conclusion: We postulate that some infants with an underlying vulnerability may maladapt to extrauterine life following a hypoxic stressor possibly caused by suboptimal airway positioning. We suggest national studies to investigate the incidence and epidemiology of early sudden neonatal collapse.

NEONATAL OUTCOME OF 937 CHILDREN BORN AFTER TRANSFER OF CRYOPRESERVED EMBRYOS

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Background: To evaluate the safety of cryopreservation in combination with IVF or ICSI, neonatal outcome was investigated in children conceived from frozen-thawed ICSI embryos (cryo ICSI) and frozen-thawed IVF embryos (cryo IVF).

Methods: Questionnaire data and results of physical examination at 2 months of age of 547 cryo ICSI and of 390 cryo IVF children at post mortem. We postulate that some infants with an underlying vulnerability may maladapt to extrauterine life following a hypoxic stressor possibly caused by suboptimal airway positioning. We suggest national studies to investigate the incidence and epidemiology of early sudden neonatal collapse.

Results: Birth characteristics were comparable between cryo ICSI and cryo IVF. Cryo singletons showed a trend towards higher mean birthweight compared to fresh singletons, both in ICSI and IVF, reaching significance when all cryo (ICSI plus IVF) singletons were considered. Low birthweight rate according to multiplicity was comparable between fresh and cryo, both in ICSI and IVF. Very low birthweight and prematurity according to multiplicity were comparable between cryo and fresh, in ICSI but not in IVF. Cryo IVF twins showed a higher rate of prematurity and very low birthweight compared to fresh IVF twins. Major malformations were more frequently observed in cryo ICSI (6.4%) than in cryo IVF liveborns (3.1%) (RR 2.08; 95% CI 1.09 to 3.95) and fresh ICSI liveborns (3.4%) (RR 1.89; 95% CI 1.30 to 2.76).

Conclusion: Singleton children conceived from cryopreserved embryos (ICSI or IVF) have no adverse neonatal outcome compared to children conceived from fresh embryos. However, more major malformations were found in cryo ICSI children than in cryo IVF children and than in the fresh cohorts. This new finding warrants further attention and understanding.

PATHOGENS CAUSING EARLY ONSET SEPSIS

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Introduction: The choice of antibiotic treatment for early onset infection (EOI) must be driven by hospital specific guidelines, based on prevalent organism and their sensibility; thus it was decided to undertake this work to identify the most frequently causative bacterial agents as well as their sensibilities with usually prescribed antibiotics in our unit.

Method: The data included in this retrospective study integrate the positive results from blood culture and/or cerebrospinal liquid culture of 51 newborns in the first 7 days of life, suspected of EOI, between January 2000 and December 2005.

Results: The blood culture was positive in 96% of cases and for the study of LCR in 18%. The germs most frequently identified in the blood are SGB 14/49 (28, 57%), and E. coli 11/49 (22, 44%); however the Gram-negative bacilli (GNB) 27/49 (55, 10%) dominated slightly over Gram-positive cocci (GPC) 20/49 (40, 8%).

Discussion: As in developing countries, this study shows predominance of GNB over GPC, nevertheless, there was a marked progressive emergence of SGB.

Conclusion: While waiting for other studies, we recommended that third generation cephalosporin plus aminoglycoside be used as empiric coverage of EOI while culture results are ascertained.

USE OF BABY WIPES IN THE DIAPER AREA IN NEWBORNS: A PROSPECTIVE, RANDOMIZED CLINICAL STUDY ON SKIN BARRIER

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Objective: To investigate the effect of baby wipes compared to cotton wool with clear water on skin barrier in healthy, full-term newborns.

Methods: In a monocenter, prospective, randomized clinical study 40 healthy, full-term neonates (20 boys and 20 girls) aged <48 hours were recruited and randomly assigned to group 1 (n = 20), use of baby wipes: wet wipes with stripes of emollients and to group 2 (n = 20), use of cotton wool cloth, moistened with clear water during diaper changes. During the observation period both groups had obtained a standard skin care regime.

Transcapidermal water loss (TEWL), stratum corneum hydration (SCH) and skin pH were measured on day 2, 14 and 28 of life on the abdomen, upper leg and buttock. The D-Squame method was performed at day 2, 14 and 28 on the upper leg and buttock. Microbiological skin colonisation in the area of the umbilical and gluteal region was performed at day 2 and 28.

Results: Group 1 showed a significantly lower TEWL on the buttocks (9.6 g/m²/h) compared to group 2 (11.15 g/m²/h) at day 28. No differences in SCH, skin surface pH, epidermal desquamation and frequency of diaper dermatitis were found comparing both groups.

Conclusions: The use of these particular baby wipes with high emollient content on the diaper area seems to stabilize the skin

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barrier better than using a cotton wool cloth with water. Both cleansing procedures do not harm the natural maturation of skin barrier within the first four weeks of extra-uterine life.

INCIDENCE, IMPORTANCE AND CO-OCCURRENCE OF CONGENITAL ANOMALIES IN INFANTS BORN PRETERM

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Congenital anomalies (CA) are relatively frequent and have been reported to be more frequent in infants born preterm (<37 weeks of gestation) than full term. However, the correlation between degree of prematurity and incidence of CA is unknown.

Aims: The first aim of this study is to assess the incidence of CA according to weeks of gestation. The second aim is to evaluate the correlation between the number and the severity of CA and gestational age.

Methods: This is a hospital-based study, which utilized neonatal data between 2001 and 2006 from a hospital in Montreal, Canada.

Results: Over this time period, 19,105 live births were recorded and the incidence of CA was 7.9%. A regression demonstrates an inverse relationship between CA (without CA vs with one or more CA) and gestational age (<p>0.001). An inverse correlation is also found between the number of CA and gestational age (<p>0.001). This relation is also present within term births. Indeed, child born at 37 weeks of gestation are more at risk (OR: 2.41; 95% CI: 1.13 to 5.18) to have at least two CA than child born at 41 weeks of gestation. The inverse relation between CA and gestational age is stronger for major (<p>0.039) but both are significant.

Conclusions: Incidence, importance (major vs minor) and co-occurrence of congenital anomalies are inversely correlated with the gestational age including within the term range.

AVAILABILITY OF GUIDELINES FOR ENTERAL FEEDING IN UK NEONATAL UNITS

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Aim: To determine availability of guidelines for enteral feeding of preterm neonates in UK neonatal units.

Methods: A questionnaire was sent to UK clinicians who care for infants <30 weeks’ gestation and/or <1500 g birth weight, including questions about availability of guidelines for initiation, progression and discontinuation of feeds.

Results: 258/625 (41.3%) clinicians responded, with at least one response from 134/168 (80%) units. Neonatologists were more likely to respond than general paediatricians contributing to neonatal care (<p>0.006). 52% indicated they had guidelines for feed initiation, 39% for progression, and 16% for discontinuation. Where ≥2 responses came from one NNU (56% responding NNUs), these conflicted on 38%, 29% and 23% of occasions respectively. Responses indicated availability of guidelines for initiation in 42–64% of units, progression in 53–49%, discontinuation in 10–25%.

32–53% of NNUs had no guideline for any aspect of feeding; less than 20% had guidelines for all three.

Conclusions: Availability of guidelines is variable and may be as low as 10% for some aspects of feeding. Senior clinicians’ knowledge of guidelines is limited. Resulting variation in practice may influence important outcomes.

THE IMPACT OF MOTHER’S BEHAVIOR ON INFANT’S SLEEP BEFORE AND AFTER SURGICAL INTERVENTION FOR LEFT-LIP-PALATE (CLP) REPAIR

1S Brand, 1A Mueller, 1K Schweizer-Zimmerer, 1R Sader, 1HH Zellhofer, 1H Holsboer-Trachsel. 1Psychiatric University Clinics, Depression Research Unit, Basel, Switzerland; 2Clinic for Reconstructive Surgery, Division of Cranio-Maxillofacial Surgery, University Hospital Basel, Basel, Switzerland; 2Cleft Centre, Clinic for Maxillofacial Surgery, Frankfurt am Main, Germany

Objectives: Next to cardiovascular and genitourinary malformations, CLP is the most common congenital defect demanding surgical repair. In Europe about one in 700 births is affected by a CLP malformation. The commonplace view is that any surgical intervention in young infants leads to heightened psychological and physiological stress in both infants and parents. However, reliable data are missing. Furthermore, if the surgical intervention was a stressful event, this should be mirrored in changes to the child’s sleep continuity. The aim of the study was therefore to assess sleep of infants with CLP before and after CLP repair, and to compare these sleep patterns descriptively with the mother’s sleep pattern.

Methods: The sleep of seven infants with CLP was assessed by means of actigraphy four days before and four days after surgical intervention for CLP repair. Additionally, mothers completed a sleep log for the same period of time.

Results: No statistically significant differences between infants’ sleep before and after surgical intervention were observed. Infants’ sleep duration decreased markedly the night before the surgical intervention. Mother’s sleep quality decreased preceding the day of the CLP repair, and sleep onset latency almost doubled.

Conclusions: CLP repair is not as ‘traumatic’ as the commonplace view holds, because otherwise infants sleep patterns would have been much more altered. However, comparing the patterns of mother’s and infant’s sleep suggests that infants are sensitive to their mother’s psychological tension and behavior. As a result, infants may become concerned, and this tension is reflected in reduced sleep.

LONGITUDINAL FOLLOW-UP OF 350Singleton INFANTS BORN AT LESS THAN 32 WEEKS OF AMENORRHEA: NEUROCOGNITIVE SCREENING AND ACADEMIC OUTCOME

1V Brevault-Malatry, 1M Busuttil, 1MA Einaudi, 1AS Monnier, 1C D’ercole, 1C Gire. 1Department of Paediatrics, Hôpital Nord, Université de la Méditerranée, Marseille, France; 2Department of Obstetrics and Gynaecology, Hôpital Nord, Université de la Méditerranée, Marseille, France

Objective: To evaluate the influence of antenatal and neonatal factors on the neurocognitive outcome in children at school age.

Design: Longitudinal prospective trial in a French tertiary perinatal care centre.


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Arch Dis Child 2008;93(Suppl II):A399–A446
Methods: Participants were invited for an examination to screen for neurocognitive disorders between 4 and 8 years of age and then re-contacted between 6 and 10 years of age in order to evaluate their results at school.

Main outcome measure: Three profiles of neurocognitive outcome were defined (normal, minor or major disorders) and correlated with maternal, antenatal and neonatal factors.

Results: The survival rate of our cohort was 80.8% (285/350) and follow-up of the survivors was 71.4% (202/283). There were 137 children (68%) with a profile for normal outcome, 29 children (14%) with minor disorders and 36 children (18%) with major disorders. The three principal risk factors for major or minor disorders were gestational age (GA) inferior to 28 weeks of amenorrhea (WA) (adjusted odds ratio (OR): 1.28 (95% CI 1.06 to 1.56)), chronic lung disease (CLD) (adjusted OR: 2.92 (95% CI 1.15 to 7.42)) and the latest abnormal EEG (adjusted OR: 2.61 (95% CI 1.10 to 6.18)). Moreover, abnormal cranial ultrasound was identified as an independent risk factor in the occurrence of major disorders (adjusted OR: 2.98 (95% CI 1.51 to 6.71)).

Conclusion: Research for measures to prevent the occurrence of CLD must become a priority in the domain of neonatal intensive care.

ASESSMENT OF A TOOL OF DETECTION OF MINOR NEUROCOGNITIVE DISORDERS IN PRESCHOOL-AGED CHILDREN WHO WERE BORN PRETERM

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Objective: To assess a detection tool to help paediatricians to identify, in preschool age children, minor neurocognitive disorders that interfere with education.

Methods: 114 preterm singletons born at less than 32 weeks of amenorrhoea, inborn, in a French tertiary perinatal care center, born between 1997 and 2001. Participants were invited for a medical examination and fast neurocognitive assessment battery (BREV) between 4 and 8 years and re-contacted between 6 and 10 years to evaluate their school level. We correlated results of the BREV and school level.

Results: Mean gestational age was 29 weeks and mean weight 1164 g. Fifteen children (13.2%) had gotten abnormal results in the BREV and had had an abnormal education. Among the 68 children having a normal BREV, 65 (95.6%) had a normal education. The sensitivity of the BREV in our population tracking some unrest/ minor disabilities interfering with the education was therefore 83.3% (95% CI: 57.7 to 95.6) and the predictive value of a negative test was 95.6% (95% CI: 86.8 to 98.9). For the 57 children (50%) having been assessed before the age of 5 years, the sensitivity and the predictive value of a negative test were 100%.

Conclusion: Our survey shows that BREV is an exam that screens for minor neurocognitive disorders with an impact on education in preschool-aged children who were born preterm. The BREV, used in the setting of a follow-up network for premature children, would permit children to receive early special education before school failure.

NEONATAL MORTALITY RATE IN A ROMANIAN NICU (LEVEL III)

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Neonatal mortality rate is an important indicator of newborn care in NICU.

Objectives: neonatal mortality rate analysis in NICU, in two different years (10 years interval)

Methods: a retrospective study of early and late neonatal mortality rate in 1997 (2750 newborns) and 2007 (3850 newborns). Epi Info program was used for data analysis

Results: Neonatal mortality rate was 14.9% in 1997 and 14.4% in 2007. Early neonatal mortality rate was in 1997 78%, and late neonatal mortality was in 2007 52.7%. At the same time mortality rate was higher for prematures both in 1997 and 2007. Prematurity rate was higher in 2007 than 1997. The principal risk factor was perinatal asfixia; another frequent cause of death was congenital malformations.

Conclusions: In Polizu, Bucharest, our maternity staff are caring for high risk newborns delivered here or transferred from other maternity wards. The neonatal mortality rate was not significantly decreased, but for the newborns delivered in our maternity unit the mortality rate decreased from 12.3% to 9%. At the same time the number of ILBW and ELBW increased. The increase of ELBW and immaturity can explain the value of the indicator.

A RETROSPECTIVE AUDIT OF MULTIPLE BIRTHS: AN IATROGENIC BURDEN?

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Introduction: Multiple births are high risk and remain a major complication for those undergoing assisted reproductive therapy (ART). In Ireland, more than one embryo is replaced during IVF treatment, leading to multiple births and increased socioeconomic costs.

Aim: To determine the incidence and outcome of multiple births in the Rotunda Hospital in recent years. Furthermore, to compare the outcomes of those following ART (IVF, ICSI and IUI) with those conceived naturally.

Methods: A retrospective audit was carried out on all liveborn multiple births greater than 500 g in the Rotunda Hospital between January 1st 2007 and December 31st 2007. Data was collected from the hospital information system, the Vermont Oxford Network and medical records. Information collected included whether the baby was born as a result of ART or not, NICU admission, birth weight.

Results: 405 babies were born of multiple pregnancies, 119 of these (~29.4%) were a result of ART. 160/405 (39.5%) of multiples required NICU admission versus 86/500 (17.0%) of singletons required NICU admission. 49/119 (~41%) of ART multiples were admitted versus 109/279 (~39%) of non-ART multiples, data is not available currently on the remaining 2 admissions. Multiple births accounted for 39 (31.4%) of the 124 liveborn babies <1500 g.

Conclusion: Over a third of our multiples born <1500 g are a product of ART. Elective single embryo transfer can significantly decrease multiple pregnancies associated with IVF. This has become standard practice in subgroups of women undergoing IVF in some European countries and should be considered in Ireland.

UNIVERSAL NEWBORN HEARING SCREENING IN ITALY

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The aim of this paper is to provide data on the degree of implementation and coverage of UNHS in Italy.

Data were collected through a Questionnaire that was sent to all Birthing Hospitals active in Italy in 2006.

Results revealed a quick diffusion of UNHS in Italy from 29.3% in 2003 to 48.4% in 2006. The majority of UNHS programs were implemented in the North West, 79.5%, and North East, 57.2%, while there remains a limited diffusion in some areas, typically in the Islands (11.8%).

Our results suggest that three conditions seem to play a crucial role in the implementation of UNHS in Italy: the size and location of the hospital, and the presence of an audiologist in the UNHS coordinating team.
Labor induction with misoprostol appears to be a safe and effective alternative to other methods of labor induction.

**Objective:** To compare outcomes of hypoxia in offspring of women with labor induction with misoprostol and the control group where misoprostol was not used.

**Methods:** Retrospective study analyzing hypoxia in term neonates born in Kaunas University of Medicine Hospital in 2005–2006. We investigated data from 545 newborns with hypoxia: 91 offspring of women with labor induction with misoprostol and 454 neonates from a control group.

**Results:** The rate of hypoxia in the misoprostol group was higher than in the control group (22.0% vs 9.2%, p<0.05). The mean cord pH and the base deficit were comparable in the two groups. More neonates from the misoprostol group had acute hypoxia (50.5% vs 31.5%, p<0.05) or needed neonatal resuscitation (19.8% vs 9.9%, p>0.05). The incidence of meconium aspiration syndrome was higher in the misoprostol group (20.8% vs 4.0%, p<0.05). From the misoprostol group, more neonates were admitted to the NICU within 24 hours after delivery than from the control group (16.4% vs 7.0%, p<0.05), but there was no difference in the length of treatment in NICU.

**Conclusions:** Our findings showed that misoprostol use is associated with an increased probability of meconium aspiration and a higher chance of admittance to the NICU within 24 hours. There is evidence to suggest that misoprostol is effective at inducing labor, yet certain precautions should be taken.

**NEUROSONOGRAPHY AND HEMOSTASIS DATA IN PREMATURE NEWBORNS WITH HYPOXIC-ISCHEMIC ENCEPHALOPATHY**

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**Background:** Hypoxic-ischemic damage to the brain in preterm newborns is a significant current problem in neonatology.

**Methods:** 140 newborns of 28–36 weeks gestation at 820–2650 g have been investigated. All the patients have been divided into groups according to ultrasound and Doppler-metric changes. The 1st group included children with intra- and periventricular 1st, 2nd and 3rd degree bleedings. The 2nd group included patients with 1st, 2nd and 3rd degree hypoxic-ischemic damage of the CNS. The 3rd group included so called "healthy" children. Para-clinical methods included haemostasis condition on the 1st, 3rd, 5th and 7th days of life.

**Results:** On the 3rd day of life 5.1% decreases of fibrinogen count in blood serum have been noted. Increase of thrombocytes (10.4%) and simultaneous decrease of APTT (7.3%) in the 1st group children in comparison to the control group have been revealed. In the 2nd group the spread and duration of cerebral ischemia was accompanied by fibrinogen increase (7.1%), thrombocytes (9.2%) and APTT: 15.7% in comparison to the control group.

**Conclusion:** Complex study of the haemostasis system and neurosonography data were associated with different clinical manifestations. Peri- and intraventricular bleedings were accompanied by thrombocyte count decrease and plasma-coagulation increase.

Hyoxic-ischemic brain damage was accompanied by thrombocyte count increase and plasma-coagulation haemostasis decrease. So the combination of neurosonography and haemostasis investigation on the 1st–7th days of life is an effective method and significant for diagnostics of cerebral pathology in preterm newborns.
Infants who receive palivizumab during their first year of life are at increased risk for RSVH in the subsequent respiratory season. Funded by Abbott.

MEDIUM TERM NEUROLOGICAL OUTCOME IN A GROUP OF PRETERM INFANTS SURGICALLY TREATED FOR POSTHEMORRHAGIC VENTRICULAR DILATATION (PHVD)

Background and Aims: To investigate the outcome of a group of preterm infants with PHVD treated with external ventricular drainage (EVD) and/or ventriculoperitoneal shunt (VPS).

Methods: Study group comprised 29 preterm infants (24–36 wks of gestation), born between 2003–2007, diagnosed as having a grade III–IV IVH and who developed PHVD; twenty-six of them were referred to our hospital for treatment. Neurological assessment was performed at 12 and 24 months corrected age (CA).

Results: Mean gestational age (GA) was 29 wks (DS 5); mean birth weight 2777 g (DS 510); 24 newborns were <32 wks GA. Primary intervention was EVD at a mean age of 34 days of life; this was followed by 17% of cerebrospinal fluid infections. VPS was placed in 96% of the infants, 52% of whom needed at least one more surgical replacement. Twenty children were evaluated at 12 months CA; 40% had epilepsy, 80% motor impairment and 95% at least one of them. Fifteen children were evaluated at 24 months CA, and 67% had cerebral palsy (CP).

Conclusions: PHVD is a serious illness complicating grade III–IV IVH, that mainly affects newborn infants <32 wks gestation. In our series, neurological sequelae were present in nearly all babies at 12 months CA, and CP was diagnosed in two thirds of those evaluated at 24 months. Long-term follow-up may allow us to estimate the prevalence of neurological impairments, to give prognostic information, and possibly to evaluate the impact of medical and surgical treatments.

DOES TRANSFUSING FFP IMPROVE COAGULATION STATUS IN NEONATES?

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Background and Aims: Bleeding and coagulopathy are common problems in sick neonates in intensive care. Fresh frozen plasma (FFP) is frequently transfused to correct coagulation abnormalities and for active bleeding. Evidence for the efficacy of this practice is limited. We conducted a retrospective review to see if there is an improvement in coagulation status in neonates transfused with FFP.

Method: Retrospective study of neonates admitted to a tertiary neonatal unit who received FFP transfusion during a 5 year period (January 2005–March 2008).

Results: 33 neonates received at least one FFP transfusion (range 1–3, total 44 transfusions). This cohort (18 male, 15 female) had a mean gestational age of 29+4 weeks (range 23+1–41+4 weeks) and median weight of 1090 g (range 492–4300 g). 11 infants had co-existent thrombocytopenia (platelet count <100×109/L). 20 of the 33 infants (61%) died before discharge. The most common reason for transfusion was coagulopathy (17 transfusions); other indications included active bleeding (14), volume expansion (4), and surgical management (3). The duration of FFP transfusion ranged from 15–240 minutes (median: 60 minutes) and FFP volumes ranged from 10–20 mL/kg (median: 20 mL/kg). For infants with available pre and post (within 24 hours) transfusion coagulation studies (20 transfusions), there was no significant difference in PT (p = 0.2), APTT (p = 0.1) or fibrinogen levels (p = 0.2) resulting from the FFP transfusion.

Conclusions: Although abnormalities of laboratory coagulation studies were the commonest reasons for transfusing FFP, no significant improvement in coagulation status was found in this patient group following FFP transfusion.

DEEP AND MILD HYPOTHERMIA: ARE THERE DIFFERENCES IN VENTILATOR PARAMETERS?

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Objective: Mild hypothermia (MH) (rectal temperature 33–34 C) appears neuroprotective. Deep hypothermia (DH) (rectal temperature 30–33 C) could be a new therapeutic strategy for treating severe hypoxic-ischemic term infants. The aim of this study was to describe ventilator changes during DH and MH.

Methods: 28 term asphyxiated newborns were enrolled: 20 DH and 8 MH. Mechanical ventilation was set to maintain an arterial oxygen saturation of 92–95% with FaO2 between 50 and 60 mmHg and PaCO2 between 40 and 45 mmHg.

Results: 14 DH (70%) and 4 MH patients (50%) were treated with SIMV. In the DH group, 7 patients (35%) were maintained in room air and 15 (65%) required oxygen (FiO2 0.27–1.0). In MH group, 4 cases (50%) required oxygen (FiO2 0.22–1.0) and 4 (50%) room air. Mean of hours of ventilation 48.11 (44.11) hrs in DH and 105.5 (69.69) hrs in MH; there was no statistically significant difference between the two groups (p = 0.095). Mean of hours of oxygen required were 88.5 (91.95) hrs in DH and 251 (88.298) hrs in MH (p = 0.010). There was no statistical difference in the highest quantity of FiO2 between the DH and MH (p = 0.747).

Conclusions: Mild and deep hypothermia did not produce any change in mean of hours of ventilation. However there is a statistically significant difference in hours of oxygen support. This discrepancy is probably correlated to a reduction in oxygen consumption, for a decrease in metabolic state in DH group compared with MH group.

PAEDIATRIC ATTENDANCE FOR ELECTIVE CAESEREAN SECTIONS (CS) UNDER GENERAL ANAESTHESIA (GA): AN 11 YEAR REVIEW

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National Sentinel CS Audit showed an overall CS rate of 21.5% in UK, 10% of which were elective. Midwives are routinely trained on Neonatal Life Support (NLS) courses to perform neonatal resuscitation. This enables them to manage uncomplicated deliveries and support the paediatric team. Despite this paediatricians routinely attend elective CS deliveries in many neonatal units. Our aim was to evaluate the outcome of children born by elective CS under GA in the context of resuscitation requirements at the time of delivery in a District General Hospital setting.

We identified all elective CS deliveries under GA from 1996–2006 from the maternal theatre list. Resuscitation was defined as any assistance at delivery. Data was retrospectively collected using case notes and the Hospital Information Support System. 184 children from 181 deliveries (3 twins) were identified were included. Data from 178 patients after exclusion of children below 35+0 weeks of gestational age (6/184) was analysed (table).
First, we re-examined the diagnosis of neonatal gastric perforation. Medical charts were reviewed retrospectively from a prospective geographically based cohort study of very low birth weight infants (<0.4th centile) in East Anglia, UK. Two year outcome of very low birth weight infants born below 0.4th centile in East Anglia, UK.

99% children required either no assistance or only O₂/bag and mask, which can be easily provided by NLS trained midwives. Our study demonstrates that routine paediatric attendance is not required for elective CS under GA. Implementation of this policy will have a significant impact on the day-to-day work load of paediatricians in a busy neonatal unit.

AN INNOVATIVE APPROACH TO BETTER MAINTENANCE OF POSITIVE END EXPIRATORY PRESSURE (PEEP): FUNCTIONAL RESIDUAL CAPACITY (FRC) DURING SURFACTANT INFUSION

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The use of nasal CPAP (NCPAP) maintaining FRC and timely surfactant replacement has made a significant difference in Hyaline Membrane Disease management, dramatically reducing mechanical ventilation especially in the greater than 1200g infants. We describe an innovation to better maintain oxygenation and FRC during surfactant replacement. Once the decision to infuse surfactant is made, the appropriate equipment is prepared and the surfactant is warmed. Ideally the resuscitation bag (RB) has PEEP-maintaining capabilities. In our case we use the Ambu Spur II with an Airlife PEEP valve set at 5cm water. Alternatively the Neopuff infant resuscitator (Fisher & Paykel) set at a PEEP of 5cm water and a PIP of 16–20cm water may be a better option. Once ready, the child is removed from the NCPAP and placed on Nasal Cannula at 2 Lpm per minute flow at 100% to provide ancillary oxygen in the oropharynx for the intubation process. The infant is then intubated. The tube placement is confirmed and the RB is removed and the surfactant is instilled. Better, if using the Neopuff, one does not have to detach; the surfactant can be instilled through the T-piece portal, maintaining PEEP throughout the procedure. Recruitment breaths are given. The resuscitator repositions the RB towards the chest to allow for free access of the head for re-attachment of the NCPAP set-up. Once ready, the child can then be extubated with the mouth closed, maintaining PEEP with minimal loss of FRC.

TWO YEAR OUTCOME OF VERY LOW BIRTH WEIGHT INFANTS BORN BELOW 0.4TH CENTILE IN EAST ANGLIA, UK

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Background: Severe intrauterine growth restriction places infants at risk of adverse neurodevelopmental outcomes. As survival rates of low birth weight infants have increased have the number of intact survivors increased proportionately or is there a higher morbidity rate in those infants below the 0.4th centile?

Methods: Prospective geographically based cohort study of very low birthweight infants (<1500g) from 8 UK neonatal units from 1993 to 2002. Infants with a birth weight below 0.4th centile were identified and using UK standard growth charts. Infants were assessed at 2 years using prestructured forms based on the Health Status Questionnaire. Data were analysed for disability rates amongst surviving infants.

Results: 91.5% (2367/2586) VLBW infants survived to admission to the neonatal unit. Of these 6% (153/2567) had a birth weight <0.4th centile; 128 infants <0.4th centile survived and were assessed at two years corrected age. Overall disability rates were similar (<0.4th centile; mild disability: 19.5%, mod-severe: 22.7%) versus >0.4th centile (mild: 20.9%, mod-severe: 19.2%). There was a trend towards decreased rates of cerebral palsy (3.1% (4/128) in the <0.4th centile group versus 5.4% in infants >0.4th centile).

Conclusion: In this study overall disability rates were similar although infants <0.4th centile had lower rates of cerebral palsy. This may reflect differences in gestational age between the two groups. Larger numbers are required to analyse subgroups within this population by gestational age.

REEVALUATION OF NEONATAL GASTRIC PERFORATION: FROM A NEONATOLOGIST’S POINT OF VIEW

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Objective: Neonatal gastric perforation is a rare and serious problem. The aim of this study is to highlight the vital clinical features and to identify the prognostic factors of such cases.

Methods: Medical charts were reviewed retrospectively from January 1997 through December 2007. Neonates with the diagnosis of gastric perforation were enrolled.

Results: Twelve patients were identified. Male to female ratio was 9:3. Four of them (33%) were preterm infants. The mortality rate was 33% (4/12). Median age of onset was 3 days old (range 1–14 days). The most common presenting S/S was abdominal distension, followed by respiratory distress and vomiting. Except for one patient whose gastric perforation was diagnosed during surgical repair for gastrochisis, all others were found to have pneumoperitoneum at admission. 75% and 50% of patients had peritonitis and sepsis, respectively. The concomitant GI anomaly or disorders included NEC with/without bowel perforation (5), intestinal malrotation (2), duodenal web (1), hiatal hernia (1), and gastrochisis (1), which led to the need for a second operation during hospitalization in 5 patients. Six patients had leucopenia at admission and seven patients developed thrombocytopenia in the following 48 hours. All the mortality patients had leucopenia at admission and thrombocytopenia in the following 48 hours.

Conclusions: Neonatal gastric perforation concomitant with GI anomaly or infectious disease is not uncommon. It is mandatory to inspect the small intestine carefully whenever repairing a gastric perforation. Patients with leucopenia and developing thrombocytopenia within 48 hours are at risk for poor outcome.

REEVALUING NICU PLATELET TRANSFUSION PRACTICE

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Objective: Most platelet transfusions given in the NICU are prophylactic, because the platelet count has fallen below a somewhat arbitrary limit. Platelet transfusions in the NICU carry risks. We hypothesized that new evidence-based definitions of neonatal thrombocytopenia and stricter adherence to transfusion guidelines would reduce platelet transfusions.

Methods: First, we re-examined the diagnosis of neonatal thrombocytopenia by electronically tabulating platelet counts from neonates in a multihospital healthcare system. Second, we examined every platelet transfusion given in the system during 2006, identifying those within vs in violation of guidelines. Third, we revised platelet transfusion guidelines based on platelet mass (platelet count X MPV).

Results: Platelet counts were obtained from 47291 neonates 22 to 42 wks gestation and new definitions of thrombocytopenia devised. The lower reference range was 110,000/uL for those <34 wks, and 125,000/uL for those ≥34 wks. During 2006, 4% of our NICU patients received (median 3) platelet transfusions, but for those...
Platelet counts as low as 110,000/uL are normal.

Optimization of Preanalytical Shipping Time in Neonatal Screening

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Objective: Earliest possible diagnosis of congenital metabolic disorders is the top priority of neonatal screening. Two delayed diagnoses of galactosemia and one of hypothyroidism initiated this study on preanalytical time passing in neonatal screening.

Methods: For 2006 and 2007, the time needed from blood sampling to arrival of the screening cards in 4 obstetrical clinics and 4 neonatal units at the screening laboratory was evaluated (shipping time). Results of 2006 were communicated to the participants early in 2007. Methods of optimization were discussed. Shipping times needed in 2006 and after intervention in 2007 were compared.

Results: The 4 obstetrical clinics showed significant differences in shipping times in 2006 (mean 1.65–3.05 days), neonatal units a range of 1.80–2.17 days, mean 2.0. Thus, 44% of the results were obtained >72 hours after blood sampling. Distribution patterns of shipping times also varied considerably (1–10 days). Requested results <72 hours after blood sampling were possible only for screening cards reaching the laboratory within 65 hours after sampling and successful screening completion on the day of sample arrival (9 hours processing time). These requirements were met in more than 88% of cases for samples from Monday through Wednesday, and in less than 40% for samples from Friday or Saturday.

Conclusions: Differences between obstetrical clinics and neonatal units prior to and after intervention demonstrate still considerable preanalytical delays, however optimization is possible. One participant reduced shipping time from 3.05 to 1.81 days within one year.

Newborns from Interethnic Couples: The Experience of an Italian Hospital

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Immigration and intermarriage have not been focused on in Italy. Our objective is to evaluate risk factors for neonatal pathology distinguishing newborns of immigrant ethnically homogeneous couples (EHC) from those of immigrant women in interethnic couples (IC). The aim of the study was to evaluate efficacy of sodium-alginic acid in reducing apnea related to gastroesophageal reflux in preterm infants evaluated by Ph-impedance, intraluminal monitoring and polysomnography.

EFFICACY OF SODIUM ALGINATE IN REDUCING APNEA RELATED TO GASTROESOPHAGEAL REFLUX IN PRETERM INFANTS EVALUATED BY PH-IMPEDANCE, INTRALUMINAL MONITORING AND POLYSOMNOGRAPHY

L Corvaglia, D Zama, S Gualdi, V Albigherri, M Spizichino, G Faldella. Department of Preventive Pediatrics and Neonatology, S. Orsola-Malpighi Hospital, Bologna, Italy

Objective: Gastroesophageal reflux (GER) and apnea of prematurity (AOP) are events that commonly occur in preterm infants. Our recent data highlight an increase of AOP in periods after GER. The aim of the study was to evaluate efficacy of sodium-alginic acid in reducing frequency of AOP related to GER in preterm infants.

Methods: Twelve infants (GA:28±3 wks; BW:1124 g) were studied as they had recurrent apneas. They underwent a simultaneous polysomnography and pH-impedance monitoring (pH-MII). Polysonomography characterizes apneas, by recording of breathing movement, nasal airflow, electrocardiogram, pulse oximeter saturation and videoregistration. Respiratory pauses lasting more than 5 seconds were considered. By pH-MII monitoring we registered
acid/non acid GERs. GER and AOP were considered temporally related if both started within 30 s of each other. Each registration involved 2 post-prandial periods lasting 3 hours characterized by presence or absence of treatment with sodium alginate (2 cc/kg) after meal. Data registered during the two post-prandial periods (with or without treatment) were compared.

Results: During the 72 h of registration we found 373 AOP and 385 GER events. Comparing data found after treatment with those registered during free-treatment periods we found no differences in number of total apanae and related events. Reduction in the number of GERs after using sodium alginate was observed, mostly related to acid episodes.

Conclusions: Preliminary data suggest that sodium-alginate reduces number of GERs, in particular acid ones, but not significantly. We observed that frequency of AOP events do not change after treatment with sodium alginate. These data can be explained by poor efficacy in reducing non-acid GERs, particularly relevant in preterm infants.

EXUTBATION FAILURE IN VERY LOW BIRTH WEIGHT PRETERM INFANTS IN A TERTIARY NEONATAL INTENSIVE CARE UNIT

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Objective: To quantify the extubation failure rate among VLBW infants and describe characteristics of those who failed.

Methods: A retrospective review was performed between 2005 and 2006. VLBW infants <32 weeks requiring mechanical ventilation at <48 hours of life were included. Exclusion criteria included severe congenital pulmonary or cardiac abnormality or withdrawal of care. Background data on infant characteristics were recorded. A diagnosis of extubation failure was made if infants were reintubated within 48 hours. Normal data were analysed using t-tests and non-parametric data using the Mann–Whitney test.

Results: 145 eligible infants were identified. 21% (n = 31) required reintubation within the first 48 hours. 98% of infants had caffeine, 96% received CPAP. Infants who failed extubation were smaller (0.95 v 0.85 kg), less mature (28.3 v 26.8 wks) and had a lower pH (7.36 v 7.3) and higher pCO2 (5.4 v 6.2) pre extubation (all p < 0.05). Extubation failure was unaffected by gender, antenatal steroid use or co-morbidities. Severe apnoea was the commonest reason for reintubation (40%). Other clinical indications included hypercarbia and increased work of breathing. The average duration of mechanical ventilation before extubation was 195 hours in infants who failed and 104 hours in those who were successfully extubated. The average time to reintubation was 4 hours in those who failed.

Conclusions: This study found a 21% reintubation rate among extubated VLBW infants. Infants who failed extubation were of lower gestational age and birth weight and had worse blood gas results pre and post extubation.

RESUSCITATION WITH 21% OXYGEN DECREASES BRAIN LEVELS OF INTERLEUKIN 6 IN HYPOXIC NEWBORN PIGLETS COMPARED TO 100% OXYGEN

1,2,3 Damveng, 1,2,3 AL Nesse, 1 Paur, 1,2,3 Skjaeret, 4 Aasen, 4 Blomhoff, 4OD Saugstad, 5 Nakstad. 1 Department of Pediatrics, Akershus University Hospital, Lørenskog, Norway; 2 Department of Paediatric Research, Rikshospitalet, Oslo, Norway; 3 Institute of Surgical Research, Rikshospitalet, Oslo, Norway; 4 Institute of Basic Medical Sciences, University of Oslo, Oslo, Norway

Objective: Several clinical and experimental animal studies indicate that resuscitation with 100% oxygen increases brain injury and induces inflammation in vital organs. Elevated levels of the cytokine interleukin (IL)-6 have been observed in a number of pathological conditions including inflammation. Studies indicate that phytochemicals may protect against reoxygenation injury in the newborn. Our aim was to determine whether resuscitation with 100% oxygen after hypoxia generates higher levels of IL-6 in brain than resuscitation with 21% oxygen. We also wanted to examine if intravenous administration of phytochemicals given prior to hypoxia would have an additional effect.

Methods: Forty newborn Noroc piglets were randomized to hypoxia or control groups and pretreatment with phytochemicals or placebo. The phytochemical solution contained 10 different biological active molecules with antioxidative properties. The piglets were given hypoxia and resuscitated with either 21% or 100% oxygen for 30 min and then observed with 21% oxygen for 120 min.

Results: IL-6 increased significantly in frontal cortex of the brain for the 100% oxygen group compared to the 21% oxygen group. The adjusted difference was 28.0 (95% CI: 1.9 to 54.1, p = 0.041). IL-6 was not significantly related to phytochemicals (p = 0.836).

Conclusions: Resuscitation after hypoxia with 21% oxygen induces less IL-6 in frontal cortex of newborn piglet brain than resuscitation with 100% oxygen. Intravenously administered phytochemicals did not have an additional effect. The potential effects of phytochemicals in this model are being further investigated.

HOSPITALIZATION RATES AMONG NEONATES OF LESS THAN 32 WEEKS OF GESTATION AFTER PALIVIZUMAB PROPHYLAXIS

M Papadopoulou, M Dasopoulou, V Makri, A Gounaris. NICU, Alexandra Hospital, Athens, Greece

Aim: To assess rates of hospitalization due to RSV during 2 years follow up after palivizumab prophylaxis and identification of related factors.

Methods: Neonates below 32 weeks of gestation born between 2006–2007 were enrolled. Palivizumab was administered prior to discharge and once monthly for a 6 month period. Independent factors were correlated with number of lower respiratory tract infections and rates of hospitalization using ANOVA statistics. Tobacco exposure and family history were also recorded.

Results: Between 2006 and 2007, from a total of 95 neonates 48 and 35 neonates survived respectively, of which 43 males (45.3%) and 52 females (54.7%), with mean gestation 29.05 weeks (min: 24, max: 32, SD: 2.33), and mean BW: 1220.31 (min: 580, max: 1910, SD: 356.26). Mean hospital stay was 44.10 days (min: 1, max: 181, SD: 34.16). Mean days on ventilation was 4.53 (min: 0, max: 69, SD: 10.75), on NCPAP 11.6 (min: 0, max: 56, SD: 13.11), days of incubator oxygen 12.18 (min: 0, max: 174, SD: 21.8). Twenty-nine neonates required respiratory support at 28 days (41.4%), and 32 were on more than 21% of oxygen (38.1%), while 15 (18.3%) remained on oxygen at 36 weeks corrected gestation. Number of hospital admissions was 4.3% with 3 cases requiring more than 1 admission (3.6%).

Conclusions: Lower gestational age (p: 0.011), birth weight (p: 0.042) and CLD (p: 0.000) correlated significantly with higher rates of hospitalization.

COIN TRIAL: THE GREEK EXPERIENCE. NCPAP VERSUS IPPV FOR PRETERM NEONATES: IS NCPAP NEUROPROTECTIVE?

G Brouts, M Dasopoulou, C Costalos. NICU, Alexandra Hospital, Athens, Greece

Aim: To evaluate neurodevelopment of preterms 25–28 weeks of gestation enrolled in the COIN trial with the application of a parental questionnaire by 1 year corrected gestation age.

Methods: The questionnaire translated, validated and standardized, was constructed for the purpose of the COIN trial.

The trial highlighted the incidence of BPD after the early use of NCPAP compared to IPPV in neonates 25–28 weeks of gestation. Eligibility criteria were gestation age, no known condition that might adversely affect breathing and an ability to breathe 5 minutes after birth, despite of need for respiratory support. Ineligible were all infants that had been intubated before randomization or without a need for respiratory support Randomization to either NCPAP or intubation at 5 minutes was according to a sealed numbered envelope. Written
consent was obtained. Forty-six of 616 infants enrolled in the multicentre trial. The questionnaire (5 of 6 items domains gross motor, fine motor, problem solving, personal-social, and communication scoring system) was applied by the first follow up appointment.

Results: Of 46 neonates (25 NCPAP/6 deaths, 21 IPPV/5 deaths) 30 followed up by 1 year corrected gestation age. 1 from the IPPV compared to none from the CPAP group presented with gross and fine motor disability (score<15, score<27 respectively), who had been already attending physiotherapy. 5 and 4 respectively from the groups were problem solving low scorers (<25), communication (<15), and personal-social (<20).

Conclusion: No significant difference regarding neurodevelopment between NCPAP and IPPV infants was recorded by 1 year corrected gestational age.

CURRENT PRACTICE OF SKIN ANTISEPSIS FOR CENTRAL VENOUS CATHETER INSERTION IN UK TERTIARY-LEVEL NEONATAL UNITS

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Background and aims: There is a high mortality and morbidity associated with catheter-related blood stream infections in neonates, yet no official UK guidelines exist for skin antisepsis prior to neonatal central venous catheter (CVC) insertion. This study aimed to identify which antiseptic solutions are currently being used for skin antisepsis before CVC insertion in UK neonatal intensive care units (NICUs).

Methods: In October 2007 we surveyed all tertiary-level NICUs in the UK to ask about current practices for cutaneous antiseptics prior to CVC and umbilical catheter insertion.

Results: Data were obtained from 50/50 (100%) NICUs approached. 8 different antiseptic preparations were being used (table). Chlorhexidine-based solutions were used by 86% of NICUs, and its concentration varied from 0.015–1%.

Conclusion: These data show that there is no uniformity in type or concentration of antiseptic solutions being used for neonatal skin preparation prior to CVC insertion in the UK. Randomised controlled trials are warranted to find the optimal antiseptic solutions for use in neonates, preparations that will minimise both the risk of catheter-related morbidity and mortality and also any side effects associated with the use of these agents.

Datta and Clarke

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<tr>
<th>Antiseptic solutions</th>
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<tr>
<td>0.015% Chlorhexidine and 0.15% Cetrimide in aqueous solution</td>
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<td>0.05% Chlorhexidine in aqueous solution</td>
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<td>0.5% Chlorhexidine in aqueous solution</td>
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<td>0.5% Chlorhexidine in 70% alcoholic solution</td>
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<td>1% Chlorhexidine in aqueous solution</td>
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<td>10% Povidone-Iodine in aqueous solution</td>
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ENCRYPTED DATA

Case report: A 36-year-old healthy woman presented at 28 weeks with spontaneous onset of labour and a clinical suspicion of chorioamnionitis. Membranes were intact. Four hours later, a girl was delivered vaginally with good Apgar scores. The clinical evolution was uneventful and the infant did not present any clinical or biological signs of infection. Nevertheless, ultrasound studies on day one showed diffuse periventricular hyperechogenicity and cerebral MRI on day five showed a massive bilateral periventricular leukomalacia. Placental histology showed severe chorioamnionitis and cultures were positive for Morganella morganii.

Discussion: Morganella morganii is a rare cause of early-onset systemic neonatal infection through maternal chorioamnionitis. Late-onset neonatal infections, rarely associated to meningitis or brain abscesses, have also been reported. The clinical presentation of the mother and child in this case is compatible with a subclinical infection causing preterm delivery and in utero brain injury. The association between chorioamnionitis, preterm delivery and periventricular leukomalacia is well established, but Morganella morganii has not yet been associated to this constellation.

Conclusion: Morganella morganii is a rare cause of neonatal infection. The case reported showed a poor neurological outcome without any risk factor other than Morganella morganii maternal chorioamnionitis. This causality is debatable, but would represent the first case described.

A PLACEBO CONTROLLED STUDY ON LUNG MECHANICS AFTER INTRA-AMNIOTIC INJECTION OF VEGF IN PRETERM RABBITS

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Background: Vascular endothelial growth factor (VEGF) is critical for angiogenesis, vasculogenesis and alveolar type II cell differentiation. We aimed to study the functional pulmonary effects of antenatal intra-amniotic VEGF administration in a preterm rabbit model.

Methods: At 26 d gestational age (GA), term = 51–52 d), 60 μg recombinant rat VEGF164 in 250 μL vehicle or 250 μL placebo were injected intra-amniotically. Unexposed littermates served as internal controls. At 28 d GA, fetuses were harvested (11 VEGF, 10 placebo, 10 control) for morphologic assessment or ventilated (11VEGF, 9 placebo, 8 control) with a Flexivent (Scireq, Montreal) ventilator allowing measurement of total lung capacity, resistance, compliance. Morphologic assessment includes airway and vascular morphometry and immunohistochemistry for Sp-B, Flik 1, apoptotic (caspase 3) and proliferative markers (PCNA).

Results: Lung mechanics as well as number of Flik-1 positive cells were higher in treated pups than in placebo and control animals (ANOVA p<0.05) (figure 1).

Conclusion: Antenatal intra-amniotic injection of VEGF during the canalicular phase results in a significant improvement in lung mechanics and a higher number of Flik-1 positive cells at 28 d (saccular stage). This may be a new approach to improve lung maturation.

HIGH INCIDENCE OF INFECTIONS AND BLOOD VALUE DIFFERENCES IN CHILDREN BORN PRETERM

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Background/aim: Adverse perinatal outcomes have been associated to increased risk for illness later in life. Inflammation has been implied to be an underlying mechanism for such associations. Whether preterm birth would increases infections and inflammatory responses during childhood is not known.

Design/methods: The study included 105 prepubertal children: 39 born preterm (preterm, <32 weeks) 29 born term but small for
gestational age (SGA) and 37 born term with normal birth weight (control). Medical history, physical examination and blood samples were obtained.

**Results:** History of infections during childhood requiring medical attention, was more frequent in preterm (46% in preterm, 24% in SGA and 13% in control, p=0.006). Preterms had higher WBCs (6.4±1.5, 6.1±2.1 and 5.5±0.9x10^9 respectively, p<0.05), higher HCTs (40.5±2.5, 38.6±2.1 and 38.8±2.1%, p<0.003), higher hemoglobin (139±8.5, 133±6.4 and 133±6.8 g/L, p<0.0003) and higher RBCs (5.0±0.3, 4.6±0.3 and 4.7±0.3x10^9, p<0.0003) but no significant differences in PLTs (302±59, 285±82 and 283±60±109). MCV was significantly lower in preterms compared to SGA and not to control (31.3±2.8, 33.3±4.3 and 32.6±3.8). No differences were found between the groups for the inflammatory markers hsCRP or SAA. In children with a higher incidence of infections no differences were found in hsCRP, SAA or any blood cell parameters.

**Conclusion:** Children born preterm have a history of more infections requiring medical attention during childhood but no association was found with the higher WBCs. We speculate that hemoconcentration and increased WBCs could be due to sympathetic stimulation.

**PLASMA ENDOTHELIN-1 AND NITRIC OXIDE LEVELS IN CHILDREN WITH ACUTE PNEUMONIA**

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**Objective:** To explore the changes of plasma endothelin (ET) and nitric oxide (NO) levels in children with acute pneumonia.

**Methods:** The level of plasma ET was measured by radioactive immunoassay, and NO by spectrophotometry. Statistical analysis was performed with the Wilcoxon test.

**Results:** The medical records of newborns with gestational age 34–57 weeks, admitted in our NICU for RD between January 2006 and June 2007, were reviewed. Gender, gestational age, birthweight, delivery mode, antenatal steroids, premature rupture of membranes and maternal age, diabetes mellitus and hypertension were recorded. Arterial blood gas data within the first 12 hours of life (or until intubation), were also evaluated.

**Results:** Ninety infants were studied and 30 (33.3%) of them developed RF. Logistic regression analysis identified the lack of antenatal steroid administration as the only significant risk factor for RF (p = 0.02). The maximum A-aDO_2 had the best predictive ability (AUC = 0.966). An A-aDO_2 of >200 mmHg had 96.7% sensitivity, 95% specificity and 19.5 likelihood ratio in identifying newborns at risk for RF.

**Conclusions:** The lack of antenatal steroid administration may be related to the development of RF in late-preterm newborns with RD. The maximum A-aDO_2 within the first 12 hours of life may be considered as an early predictor of severe respiratory impairment in these infants.
Results: The levels of ET, NO and the ET/NO ratio in children with acute pneumonia (AP), with in 24 hours in hospital were all significantly higher than those in other groups of patients (140 ± 4.2) pg/ml, (104 ± 7.1) μmol/L, and 1.67 ± 0.11, P < 0.01. Compared to healthy controls (N), the levels of ET and NO in children increased significantly (P < 0.01).

Compared to those before treatment, the levels of ET and NO in the SP group on the 3rd and 7th day in hospital dropped significantly (P < 0.01). The ET/NO ratio on the 7th day was also lower than that on admission (P < 0.01).

Conclusions: The malfunction of endothelial cells and the increased ET/NO ratio may be related to the mechanism of acute pneumonia microcirculatory disturbance in patients with AF; early dynamic determination of these parameters may help predict the prognosis of AF.

INFANTS BORN TO DRUG MISUSING WOMEN: IMPLICATIONS FOR HEALTH CARE RESOURCES AND FACTORS ASSOCIATED WITH DEVELOPMENT OF NEONATAL ABSTINENCE SYNDROME

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Objectives: To assess implications for health care resources of infants born to drug misusing women and investigate factors associated with the development of neonatal abstinence syndrome (NAS).

Methods: Retrospective cohort study 1/1/04 to 31/12/06.

Results: 478 infants were born to 476 women, 96% of whom were prescribed substitute methadone in pregnancy. Despite a policy of rooming-in and treating NAS in the postnatal wards until day 10, 47.9% of infants were admitted to the neonatal unit (NNU). 40% of these admissions were for ongoing treatment of NAS. For term infants admitted to NNU, the median duration of total hospital stay was 17 days; non-admitted term infants remained in hospital for a median of 7 days. Infants of drug misusing mothers represented 2.9% of hospital births, but utilised 18.2% of NNU cot days. 44.7% of infants received pharmacological treatment for NAS. The likelihood of an infant requiring treatment for NAS was independently related to prescribed maternal methadone dose rather than associated polydrug misuse (p < 0.01). Breast feeding was associated with reduced risk of requiring treatment for NAS (OR 0.52: 95% CI 0.33 to 0.84). 21% of infants were born preterm; gestational age did not influence the likelihood of the infant receiving treatment for NAS.

Conclusions: Infants born to drug misusing mothers draw heavily on health care resources. The most important predictor of NAS is the prescribed maternal methadone dose. Breast feeding may protect against the development of NAS and should be actively promoted in the management of pregnant drug misusing women.

EVALUATION OF THE FREQUENCY OF INTRACRANIAL HAEMORRHAGE IN HOSPITALIZED NEONATES

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Objective: The improvements in perinatal care during the last decade have changed the clinical presentation of intracranial hemorrhage (ICH) among full-term newborns. New imaging techniques allow for diagnosis of ICH even in asymptomatic babies. Intraventricular hemorrhage (IVH) is a major complication of preterm birth. Large hemorrhages are associated with a high risk of disability and hydrocephalus. The aim of the present study was to evaluate the prevalence of ICH and its types in hospitalized neonates.

Methods: In this descriptive, cross-sectional study 34 seized newborns hospitalized in our Neonatal Intensive Care Unit were analyzed from September 2004 to September 2006. Data such as cranial sonographic findings, brain CT scan findings, cerebrospinal fluid analysis, age, sex, and birth weight were entered into the questionnaire and data were analyzed using SPSS v. 13.

Results: ICH was diagnosed in 7 (20.6%) newborns with neonatal seizure. 4 (57.1%) had subarachnoid hemorrhage, 2 (28.57%) had intraventricular hemorrhage and 1 (14.28%) had perversentricular hemorrhage. Multifocal bleeding was more frequent (71.4%) than bleeding only to one brain compartment (28.57%). The mean age was 14.03 ± 10.05 days (1–29 days). 25 (73.5%) neonates were boys and 9 neonates (26.5%) were girls.

Conclusions: In the present study the most common type of intracranial hemorrhage was subarachnoid hemorrhage and multifocal bleeding was more frequent. Because subarachnoid and subdural space are not easy visible by head ultrasound, CT or MRI scans are recommended in newborns with ICH.

EVALUATION OF 5'-UTR FUSION SEQUENCE IN VACCINE STRAIN OF MEASLES VIRUS (AIK-C) AFTER PASSAGE OF THE VIRUS IN THE MRC-5 CELL LINE

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Objective: Live attenuated measles vaccine is based on immunogenecity of F and H viral glycoprotein. Each gene of this virus harbors non-coding regions which are important in controlling the viral coding regions. The 5'-UTR fusion protein gene is one of the non-coding regions which is prone to multiple point mutations and deletions that may affect the function of the fusion protein. Therefore we propose these mutations may have occurred by changing the measles virus cell cultures.

Methods: Concerning the importance of F gene and the influence of the non-coding region on the immunogenecity and the tropism of this protein, evaluation was performed by RT-PCR, gene cloning and sequencing methods.

Results: In this study the amplified region was cloned in pTZ57R, cloned plasmids were insert into E. coli DH5α, then amplified plasmids extracted from the bacterial cell and sent for sequencing. Comparison of the sequenced F gene 5'-UTR with the gene bank sequence of this region shows no variation and mutation after changing the measles virus cell lines from fibroblast to MRC-5, used for multiplication of measles vaccine strain.

Conclusion: On comparison of F gene sequences no detection of mutational changes was observed between them. We conclude that producing a measles virus vaccine strain in the MRC-5 cell line possibly did not lead to changes in the immunogenecity of F protein.

PERIPHERALLY INSERTED CENTRAL CATHETERS IN NEONATES: THE SINGAPORE GENERAL HOSPITAL EXPERIENCE

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Objective: To describe PICC usage and its complications.

Methods: Prospective data collection was done from January 2004 to February 2008 for neonates with PICC. Information included gestation, birth weight, indication, duration, insertion sites, number of attempts, catheter tip position, catheter tip culture and complications. Definitions were adapted from the Guidelines...
IS VITAMIN SUPPLEMENTATION EFFICIENT TO PREVENT VITAMIN A AND E DEFICIENCIES IN VERY LOW BIRTH WEIGHT TUNISIAN INFANTS?

Background: Vitamins A (VA) and E (VE) are essential nutrients for normal development and optimal health. This study was aimed to test the efficiency of vitamin supplementation in very low birth weight (VLBW) Tunisian infants during the perinatal period.

Methods: The study included 148 VLBW infants (birth weight <1500 g), admitted to the neonatology service (Tunis, Tunisia). Vitamin A and E levels were determined by HPLC at the day of admission, which correspond to day of the birth and the day of the return of the optimal weight, which generally correspond to the day of departure. Moderate and severe vitamin deficiencies were considered for plasma VA <20 µg/dL and <10 µg/dL, and plasma VE <300 µg/dL and <100 µg/dL, respectively.

Results: We observed a significant increase of plasma VA (19.6 ± 12.9 vs 14.8 ± 12.7 µg/dL; p = 0.001) and plasma VE (652 ± 628 vs 238 ± 179 µg/dL; p < 0.001) between the admittance and the departure. From birth day to departure day, there was a significant decrease of the prevalence of moderate deficiencies (77.7% to 60.5% for VA and 75.7% to 32.2% for VE) and severe deficiencies (28.4% to 16.3% for VA and 16.2% to 5.4% for VE).

Conclusion: Enhancement of vitamin A and E status in VLBW Tunisian infants during the hospitalisation period remains insufficient. The strategy for vitamin supplementation in preterm infant in Tunisia should be revised to reduce the risk of morbidity and mortality related to vitamins A and E deficiencies.

CONGENITAL SYPHILIS REVIEWED

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Introduction: Syphilis has been recognized since the 15th century. However, despite the availability of preventive and therapeutic approaches, it continues to present a significant public health problem.

Objective: To determine the prevalence, risk factors, clinical evolution and treatment of newborns at risk of congenital syphilis.

Methods: Transversal study between January 2001 and December 2006, of mothers with venereal disease research laboratory (VDRL) positive titers and their newborns. We analysed sociodemographic data, prenatal care, clinical presentation, treatment and evolution of the newborn. Following our hospital’s protocol, newborns were classified in two groups according to maternal VDRL titers and treatment: group I (GI) without/incorrect treatment and/or correct treatment with stable or rising titers; group II (GII) correct treatment with decreasing titers.

Results: We studied a total of 187 and 103 VDRL positive mothers and newborns, respectively. Prevalence of risk for congenital syphilis was 0.36%. Sixty-four (34%) mothers were 19–25 years old and 62% had incomplete schooling. 88% had prenatal care with 30% having stable or rising VDRL titers. Maternal risk factors were: absence of treatment (36%), Human Immunodeficiency Virus infection (10%) and drug or alcohol abuse (2.6%). Most (70%) newborns belonged to GII. Mean gestational age and weight was 38 weeks and 3150 grams, respectively. Only two were symptomatic. 95% newborns were treated with penicillin and 92% realized lumbar puncture, none being VDRL positive.

Commentary: The occurrence of syphilis and the important number of VDRL positive pregnant women, indicate that the prenatal screening programs, as well as preventive measures of sexual transmitted diseases, are still not totally accomplished.

A PROSPECTIVE STUDY OF CONGENITAL MALFORMATION AMONG LIVE BORN NEONATES AT UNIVERSITY HOSPITAL IN WESTERN SAUDI ARABIA

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Objective: To estimate the incidence of major and minor congenital malformations among liveborn infants at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. An estimation of risk factors was also evaluated.

Methods: Between March 2004 and May 2005, a total of 5356 babies born at King Abdulaziz University Hospital, were enrolled in this study for malformations. Details of cases were recorded after parents’ interviews, clinical, radiological, and laboratory evaluations.

Results: One hundred and forty-seven (27.06/1000 live births) and 13 (2.39/1000 births) stillbirths had congenital anomalies. In all live births, incidences of major anomalies were 93.9% and minor were 6.1%. Mothers of babies with congenital malformation were 95.9% healthy, 5.4% were diabetic and 0.7% had cardiac malformation. In
38.8% of cases parents were consanguineous. Among the live-born births, the most common system involved was cardiovascular (7.1/1000), followed by musculoskeletal/limb (4.1/1000), external genitalia (2.8/1000), urinary (2.6/1000), multiple chromosomal (2.2/1000), or facial (1.9/1000), central nervous system (1.9/1000), skin (1.7/1000), multiple single gene (1.3/1000), multiple sequence (0.75/1000), eyes (0.56/1000), unclassified (0.19/1000), musculoskeletal/abdominal (0.19/1000) and endocrine (0.19/1000).

**Conclusion:** Importance of genetic counseling is revealed in our study since more than three quarters of mothers were under 36 years, and may well plan future pregnancies.

**TOPIRAMATE PHARMACOKINETICS IN THE NEONATES TREATED WITH PROLONGED SYSTEMIC HYPOThERMIA FOR HYPOISCHAEMIC ENCEPHALOPATHY**

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**Objective:** Topiramate reduced cerebral damage in neonatal animal models of hypoxic ischaemic encephalopathy (HIE), and has been suggested as a useful therapy for newborns with perinatal HIE. However, hypothermia may modify drug pharmacokinetics. We investigated the pharmacokinetics of topiramate in neonates with HIE undergoing prolonged systemic hypothermia. Ten newborns (mean gestational age 40.6 weeks, weight 3443 g) with perinatal asphyxia (mean pH 6.88, HCO3- 6.4, BE –19.5) were treated with whole body hypothermia (30–33.5°C) started on average at 3.7 h of age, and maintained for 72 h. All infants were treated with topiramate at the dose of 5 mg/kg orally once a day for the first three days. Phenobarbital (20 mg/kg loading dose followed by 5 mg/kg/day maintenance dose) was administered to four infants.

**Methods:** Topiramate concentrations were measured with liquid chromatography tandem mass spectrometry test in dried blood spot collected in the third day of hypothermia before the third dose of topiramate and at 0.5, 1, 1.5, 2, 4, 6, 8, 12, 16, 20 and 24 h thereafter.

**Results:** Mean maximal plasma concentration (Cmax) was 18.14 (±5.1) µg/dL, minimal plasma concentration (Cmin) was 10.86 (±2.9) µg/dL, time of the maximal concentration (Tmax) was 4.0 (±2.2) hours, the area under the time-concentration curve (AUC) was 349.04 (±102.1) µg*h/mL, the apparent total body clearance (CL/F) was 15.7 (±5.3) mL/kg/h.

**Conclusions:** We observed Cmax and AUC very high if compared with dose, Tmax later and CL/F lower than values reported in literature. These data suggest a slower absorption and elimination and validate the decision to administrate topiramate once a day.

**THE OUTCOME IN NEWBORNS WITH CONGENITAL DIAPHRAGMATIC HERNIA IN A NORWEGIAN REGION**

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**Aim:** To evaluate the therapeutic strategies used in neonates with congenital diaphragmatic hernia (CDH) during the last fifteen years in our department.

**Method:** A retrospective study of 27 neonates with CDH treated at the Neonatal Intensive Care Unit at Ulleval University Hospital between 1992 and 2006. The patients were divided into two groups; from 1992 to 1996 (9 patients), and from 1997 (18 patients). Since 1992 we have used a delayed operative repair, and from 1997 we started using surfactant replacement and iNO.

**Results:** The overall survival was 70.4%. The first group had an exceptionally good outcome, 100% vs 55.5% in the last group.

**Conclusion:** New therapeutic modalities during the last ten years have not resulted in a better outcome. Pulmonary hypoplasia and hypertension are still the most challenging factors in the treatment of these patients. Management of CDH requires experienced neonatologists and paediatric surgeons. Delayed surgery in CDH allows preoperative stabilization of newborns and makes it possible to avoid surgery in the newborns that are most likely to die.

**MANAGEMENT OF CONGENITAL CYTOMEGALOVIRUS INFECTION (CMV): AN EVIDENCE-BASED APPROACH**

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**Objective:** To develop an evidence-based structured approach to the management of neonates with CMV.

**Materials and methods:** Medline/OVID databases and the Cochrane Collaboration Library were searched for related papers and graded for their level of evidence.

**Results:** 39 papers were identified including 9 reviews. Neonates with abnormal neurological signs i.e. microcephaly, seizures, abnormal cranial ultrasound, sensorineural hearing loss (SNHL), choriorretinitis or signs of disseminated infection i.e. intraventricular growth restriction (IUGR), thrombocytopenia or abnormal liver function tests should be evaluated for CMV infection.

**Asymptomatic neonates:** Current evidence does not support treatment of babies who only have positive CMV-PCR.

**Symptomatic neonates:** Evidence recommends treatment of all newborns with positive CMV-PCR and CNS related/sensorineural symptoms to prevent further neurological deterioration. IUGR newborns are thought to have systemic involvement including CNS and could also therefore be considered for treatment. There is evidence to suggest that newborns with no CNS symptoms but other signs of systemic involvement could be treated to avoid neurological sequelae if their viral load in the peripheral blood is high. Neonates with normal neurology but lower viral load should be closely followed up for evidence of SNHL. Treatment should be with intravenous Ganciclovir. Increasing evidence suggests oral Valganciclovir for 6 weeks as an effective alternative. Close follow-up for evidence of toxicity and neurological deterioration is required.

**Conclusion:** Evidence for neonates who would benefit from treatment is growing. We have tried to formulate this structured protocol in order to treat neonates with signs and symptoms that would affect long-term prognosis.

**CONGENITAL MEASLES: A CASE REPORT INTEGRATING NEW MOLECULAR DIAGNOSTIC ARRAYS**


Pregnant unvaccinated women and their unborn children are at increased risk for complicated measles during outbreaks. Because measles serologies are not routinely performed during pregnancy, mothers-to-be can be unaware of their susceptibility and of the subsequent risk for their offspring. Furthermore, there are no guidelines for the management of congenital measles.

We report a case of congenital measles and its management during the current measles outbreak in Switzerland.

The mother developed severe disease one week before delivery, after being infected by an unvaccinated child. Treatment was supportive and her condition improved over two weeks. Elective caesarian section was performed one week later for medical reasons, when it was established that the mother wouldn’t be contagious to
the newborn. Although the child was born without any clinical signs of disease, measles virus was detected in several mucosal samples by RT-PCR. RT-PCR and viral culture were negative in other biological fluids, including CNS. Results suggest the lack of systemic infection (and thus good prognosis) and that the viral transmission occurred probably during delivery (rather than by transplacental infection). The child received several intravenous immunoglobulin injections until all viral detection assays were negative. He had a normal clinical follow-up one year later.

Reports on congenital measles are usually descriptive and don’t integrate molecular techniques such as RT-PCR. Guidelines for the management of congenital measles are necessary. Until then, vaccination strategies should continue to be a priority to prevent congenital and non-congenital measles.

A CRITICAL REVIEW OF PAIN ASSESSMENT AND MANAGEMENT IN EXTREMELY LOW GESTATIONAL AGE INFANTS

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Objective: The past 2 decades have witnessed an increased survival of extremely low gestational age (ELGA; 23–27 weeks GA) infants who are exposed to multiple painful procedures at a time of rapid neurological development. Pain in the developing nervous system differs from the mature nervous system, but little is known about how ELGA infants manifest pain. The aim is to systematically review the evidence of pain in ELGA infants to ascertain best pain practices.

Methods: A comprehensive electronic search was conducted in MEDLINE, CINAHL and EMBASE. Two individuals screened and extracted data independently from relevant papers.

Results: Only 3/13 papers focused on pain behaviors in ELGA neonates. In 2 studies, ELGA infants were examined during painful and non-painful situations. Increased facial actions and decreased body movement were indicators of pain, but magnitude of response was proportional to gestational age (GA). One study contributed to the construct validity of the Premature Infant Pain Profile, while a second contributed to the validity of a non-English version with more mature infants. Seven studies examined ELGA infants at 32 weeks GA; however pain stimuli (e.g. heel lance, clustered care) and outcome measures (e.g. facial, body movement) varied. Only one study examined the maturational effects on pain responses in 11 neonates.

Conclusions: Few studies have examined pain behaviors in ELGA, and most were derived from small sample sizes with single observations during heel lance procedures. Further longitudinal studies with adequate sample sizes examining a broad repertoire of responses for a variety of pain paradigms is required.

NATIONAL CARE STANDARDS IN NICU (IRAN)

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Objective: Creative of national care standards in neonatal intensive care units (NICU).

Methods: This research is a multiple triangulation study. First, international standards were extracted from the worldwide web. Then, using the Delphi method, these standards as well as the viewpoints of 15 clinical medical sciences experts were compiled to set suggested standards in intensive care units. Finally, in the third stage, 42 clinical medical science experts in the country were selected and their suggestions regarding desirability and applicability of these standards to the executive and sociocultural situations in Iran were investigated through a descriptive survey method. Results of this stage were analyzed via descriptive statistics.

Results: In the first stage, intensive care standards were extracted from 10 countries and states. Then suggestional assertions made by experts regarding the suitability and applicability to the environmental situation in Iran were studied and 372 standards in intensive care were drafted and were finally approved by an 80–100 desirability percentage rate.

Conclusions: The findings of the second and third stage of either appropriate and fairly appropriate levels were necessary so changes in final standards could be made based on subjects, viewpoints and suggestions as well as consulting with supervisors, finally to generate intensive care standards suggested for Iran.

COMMUNICATION BETWEEN A MOTHER AND HER BABY IN THE EARLY POSTNATAL PERIOD

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Objective: The aim of the study was to assess an influence of postnatal education in “The School of Mothers” on the communication between mothers and their babies during the postnatal period.

Methods: The study involved 400 lying-in women and their newborn babies hospitalized in the obstetric and neonatal wards in the clinical hospital in Szczecin in the years 2004–2005. The study was based on the comparison of two groups of women: those educated in the School of Mothers during their stay in the maternity ward and those who did not undertake postnatal education. A questionnaire of the author’s own design was used as a research tool.

Results: The results show that attempts to build proper relations with babies during the first days after childbirth were made in both groups. They were realised mainly by breastfeeding, touching and Kangaroo care. The women involved in postnatal education statistically more often gave health reasons for communication with their babies than the women not included in the postnatal education programme. The “educated” women applied Kangaroo care twice as often as the women from the other group. The women from the “non-educated” group statistically more often did not know of Kangaroo care as a method of communicating with a baby.

Conclusions: Women who participated in postnatal education more often and more consciously communicated with their babies in the postnatal period.

MOLECULAR BASES OF G6PD DEFICIENCY IN TUNISIA AND CORRELATION OF GENOTYPE AND PHENOTYPE

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Although several research works have been published which have more or less addressed G6PD deficiency in Tunisia, none of them have treated the issue with the objective of molecular characterization through a systematic representative screening study.

Biochemical and molecular characterizations were performed on a subset of 186 subjects: 144 neonates, ascertained through a neonatal screening for G6PD deficiency, including 30 deficient neonates, and 42 relatives belonging to 17 Tunisian deficient families of the above group. Forty-one samples showed a low G6PD activity using the spectrophotometric method. Samples were classified into eight phenotypic groups based on G6PD level and electrophoretic mobility. DNA analysis using PCR-RFLP found at least six mutations. The A variant was the most common (n = 35), followed...
by Mediterranean mutation (n=20). At least four uncharacterized other mutations have not been determined by PCR, RFLP. The variant B was the predominant non-deficient variant (99%). Most deficient subjects were asymptomatic (78%). The Med variant was found to give a more decreased G6PD level, without more severe clinical manifestations. In deficient subjects, type B mobility was significantly correlated to Med mutation. A type A mobility and NEDB was significantly correlated to A mutation. G6PD levels were significantly lower in HMZ than in HTZ, without significant difference in clinical manifestations between the two groups.

Our findings provide evidence that A mutation is the most common in Tunisia, followed by the Mediterranean mutation. These two variants account for about 89% of G6PD mutant variants in Tunisia. Moreover, biochemical characterization is the first step in identifying G6PD mutations in a population that had never been explored in this interest; however, a phenotypic heterogeneity does not directly imply a molecular heterogeneity.

**DOES FETOSCOPIC LASER SURGERY FOR TWIN-TO-TWIN TRANSFUSION SYNDROME IMPROVE NEONATAL OUTCOME OF PRETERM TWINS?**

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**Objective:** Twin-to-twin transfusion syndrome (TTTS) results in high rates of perinatal mortality and morbidity. Fetoscopic laser surgery (FLS) is currently used as the treatment of choice for advanced disease. The purpose of this study was to evaluate neonatal outcome after TTTS that was treated by FLS compared to the group without FLS.

**Methods:** We took retrospective analysis of all neonates live born from pregnancies with TTTS in our tertiary hospital from 2005 to February 2008. Neonatal outcome was assessed in 48 newborns who were treated with FLS (n=20) and compared with the group without FLS (n=28). In that group 18 neonates were without any antenatal treatment and 10 were treated with amnioreduction. We evaluated neonatal mortality and serious morbidity. Donors and recipients were assessed separately.

**Results:** The average BW of donor was 874 g (FLS) and 829 g (without FLS); recipients average BW was 1320 g and 1387 g (FLS group) (28.6%) (p<0.05) respectively. Neontonal mortality was higher among the donors (52%) then recipients (36%). There was no statistically significant difference in mortality (donors: 55.6% in FLS group and 50.0% in no FLS group, recipients: 36.4% and 35.7% respectively). In the FLS group serious neurologic morbidity occurred less often (15%) compared with the no FLS group (32%) especially among recipients (18.2% vs 42.9%). Recipients survival without severe cerebral lesions was higher in FLS group (63.6%) compared with the no FLS group (28.6%) (p<0.05).

**Conclusions:** FLS has no effect on preterm twins mortality, but improves neurological outcome particularly among recipients.

**EFFECT OF ANTE NATAL MAGN E SIUM SULFATE ADMINISTRATION ON BIOCHEMICAL PARAMETERS OF RED CELLS MEMBRANE IN VLBW NEONATES**

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**Objective:** MgSO₄ is widely used during pregnancy in PIH as a tocolytic drug.

Some authors emphasize that MgSO₄ given antenatally could act as a neuroprotective factor in VLBWN. The aim of this study was to compare the selected parameters including: ATP concentration, band 3 amount, TBARS concentration and phosphotyrosine content in erythrocyte membranes of preterm newborn whose mothers were treated or untreated with MgSO₄.

**Methods:** The study group consist of 24 neonates prenatally exposed to MgSO₄ (BW ≤1500 g and GA ≤34 weeks). Control group included 20 infants (without prenatal Mg²⁺ administration). In both groups, blood at time 0 and 24 h later was collected with citrate and erythrocyte ghosts were prepared.

**Results:** In erythrocyte membranes of the study group TBARS at 0 and the 24th hours of life were nearly twice as low in comparison with the control group. Directly after birth the ATP concentrations in the study group were lower by 24% compared to control group. In the study group a lower quantity of chloride channel protein was revealed. Tyrosine phosphorylation of chloride channel monomeric forms was similar in both groups just after birth while phosphorylation levels increased by 20% after 24 hours of life in the control group.

**Conclusions:** The results presented belong to the first trials to explain the mechanisms of the influence of magnesium on the fetus and newborn organism.

The project was funded by grant no. PBZ-MEiN/-8/2//2006 financed by Polish Ministry of Science and Higher Education.

**NEONATAL DEATH DUE TO MEDIUM-CHAIN ACYL-COENZYM E A DEHYDROGENASE DEFICIENCY: STILL MILES TO GO TO PREVENT THEM**

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**Objective:** Medium-chain acyl coenzyme A dehydrogenase deficiency is the most common of the inborn errors of mitochondrial fatty acid β-oxidation. Typically the manifestations are seen between 5 months and 5.1 years of age, with 13% having symptoms in the neonatal period. Routine neonatal screening at day 5 with PKU card is being carried out in several countries worldwide.

**Methods:** We present a case of medium-chain acyl coenzyme A dehydrogenase deficiency that presented fatally on day 2 of life. We also reviewed the literature looking for neonatal presentation and the neonatal screening done for medium-chain acyl coenzyme A dehydrogenase deficiency.

**Results:** Routine neonatal screening at day 5 with the PKU card is being carried out in several countries worldwide. Despite the possibility of early detection with the help of this programme, some neonates who present earlier might die even before the bloods are taken for routine screening.

**Conclusions:** We are still miles to go before research can devise methods, either antenatal or postnatal for early detection of the deficiency.

**LONG TERM OCTREOTIDE FOR CONGENITAL CHYLOTHORAX**

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**Background:** Chylothorax is the most common cause of pleural effusion causing respiratory distress in the neonate. Conservative management includes drainage through a chest drain and dietary fat restriction. Cases have been reported where surgery was avoided with use of octreotide, 2. The duration of treatment ranged from 5 to 29 days, with a mean of 11 days. In our case, it was successfully used for 76 days. To date this is the longest duration reported. No adverse effects were noted in the short term.

**Short report:** JE was found to have increased nuchal translucency at 14 weeks and a small pericardial effusion at 20 weeks on
ultrasound antenatally. At 30 weeks there was a right sided pleural effusion requiring a pleuro-amniotic shunt. He was born at 31 weeks gestation with a birth weight of 2020 grams. He required ventilation for 6 days and then nCPAP for 90 days. He had bilateral pleural effusions at birth and chest drains were inserted that drained serous fluid. Monogen was started on day 8. The drains were removed when fluid drainage ceased. However, fluid reaccumulated, requiring several pleural taps before a subcutaneous Octreotide infusion was started at 20 mcg/kg/day on day 45 of life. Because of the recurring pleural effusions, Octreotide was further increased to 60 mcg/kg/day. It was slowly weaned and finally stopped on day 121 of life. CT scan of the chest done at day 120 of life suggested the possibility of pulmonary lymphangectasia which had clinically and radiologically resolved.

A CASE OF UNRESPONSIVE TO RESUSCITATION: CONGENITAL BILATERAL DIAPHRAGMATIC DEFECT

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Introduction: Despite recent advances in prenatal diagnosis, neonatal intensive care and surgery, bilateral congenital diaphragmatic defects continue to have high mortality. Survival of these infants often depends on cardiopulmonary function and the presence of other non-pulmonary congenital anomalies and chromosomal defects. We present a case of bilateral diaphragmatic defect with unilateral pulmonary agenesis.

Case report: A 2240 g male infant was born at 35 weeks' gestation to a 34-year-old mother with a history of polyhydramnios. He experienced early distress requiring intubation. Apgar scores were 2/1/1 at 1, 5 and 20 minutes, respectively and efforts to resuscitate him were unsuccessful. He died at 2 hours of age. Autopsy revealed bilateral diaphragmatic agenesis associated with right pulmonary hypoplasia, left pulmonary agenesis, left atrial and ventricular hypoplasia, large atrial septal defect, aortic over-ride of the septum, pulmonary artery aplasia and gall bladder agenesis. Cytogenetic studies showed a normal male karyotype.

Conclusion: Bilateral agenesis of the diaphragm is a rare, life-threatening malformation and associated frequently with other major anomalies. The antenatal diagnosis permits the paediatrician and the surgeon to prepare and optimize the care of the newborn

INCIDENCE OF HYPOCARBIA ON ADMISSION OF VENTILATED ELBW INFANTS TO THE NICU

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Objective: Hypocarbia, defined as a PaCO₂<4.7 kPa, is associated with the development of chronic lung disease (CLD). Our objective was to investigate the incidence of early hypocarbia in ELBW infants following transfer from the delivery suite.

Methods: Retrospective chart review of ventilated preterm infants <1.5 kg and gestational age <32 weeks admitted to the NICU. All documented blood gases taken while on mechanical ventilation were reviewed and infants with hypocarbia (<4.7 kPa) and low CO₂ (<5.3 kPa) were identified. Cranial ultrasound and, where available, MRI findings of IVH, severe IVH and PVL were noted. This study was performed as an audit of current unit practice.

Results: Ventilated ELBW infants admitted to the NICU between January and December 2006 were identified. Notes were obtained on 50 infants, only 3 had a PCO₂ <4.7 kPa (6%) on arrival to the NICU. 2 infants (4%) had a CO₂ <3.8 kPa on arrival and a further 3 infants (6%) had a low normal CO₂ (4 to 5.2 kPa).

Of the infants with hypocarbia (<4.7 kPa), 2 of 3 were oxygen dependent at 36 weeks' corrected age. Of infants with a CO₂ between 4.7 and 5.3 kPa on admission, two died and the other did not develop CLD.

Conclusion: 6 infants (12%) were exposed to increase risk of CLD because of low, and low to normal, early CO₂ values. However the incidence of hypocarbia on admission was only 6%, less than previously reported. Of 3 infants who were hypocarbic on admission, 2 developed subsequent CLD.

ELBW EXPOSURE TO HYPOCARBIA IN A TERTIARY NEONATAL INTENSIVE CARE UNIT AND ASSOCIATED RISK OF LATER NEURODISABILITY

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Background: Hypocarbia, defined as a PaCO₂<4.7 kPa, is a risk factor for chronic lung disease, severe intraventricular haemorrhage, periventricular leucomalacia and cerebral palsy.

Aims: To quantify ELBW exposure to hypocarbia during mechanical ventilation and to document the cranial ultrasound findings in exposed infants.

Methods: Retrospective chart review of ventilated preterm infants <1.5 kg and gestational age <32 weeks. All documented blood gases taken while on mechanical ventilation were reviewed and the degree and duration of hypocarbia noted. Cranial ultrasound and MRI findings of IVH, severe IVH and PVL were noted. This study was performed as an audit of current unit practice. All results are expressed as median (range).

Results: ELBW infants admitted to the NICU between January and December 2006 were identified. Notes were obtained on 50 infants, of whom 26 experienced a PaCO₂ <4.7 kPa (52%). The median lowest PaCO₂ reading was 3.65 (2.9-4.65) kPa. The median time between identification of hypocarbia and achieving a normal CO₂ was 9.38 hours. 15.4% of infants who experienced a CO₂<4.7 kPa had PVL and/or a severe IVH.

Conclusion: ELBW infants are frequently exposed to severe and prolonged hypocarbia during mechanical ventilation. While both IVH and PVL are multifactorial, 15.4% of infants exposed to hypocarbia had either severe IVH or PVL on scan.
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**COLONIZATION RATE OF INTRAVASCULAR CATHETERS AND CATHETER RELATED BLOOD STREAM INFECTION IN NICU WARD OF NAMAZEE HOSPITAL, SHIRAZ, IRAN**

Z. Hashemizade, A. Emami. Department of Bacteriology and Virology, Medical School, Shiraz University of Medical Sciences, Shiraz, Fars, Iran

**Introduction:** Peripheral intravenous catheters are used with increasing frequency in the neonatal intensive care unit (NICU) to administer intravenous fluids, blood products, drugs and nutrition. Catheter infection is associated with increased morbidity and mortality and duration of hospital stay. We aimed to determine colonization rate of intravascular (IV) catheters and catheter related blood stream infection in the NICU of Namazee Hospital.

**Methods:** 130 infants from which IV catheters were removed were included. The end 3 cm of the catheter tips were cut aseptically and put in thioglycolate media. In cases of growth within the next 7 days, this was subcultured on blood agar and MC agar media and the type of bacteria were identified. Sensitivity tests of cultured bacteria were done according to standard methods. Before catheter removal, from each infant blood samples were taken for culture and microbiological procedures for identification, and antibiograms were done.

**Results:** Of 130 cultured catheter tips, 48 (37%) were revealed to have colonization, of which 28 cases (58%) were identified as coagulase negative Staphylococci (CNS). 12 patients (9%), all from the colonized catheter group, had positive blood culture (8 CNS and 4 coagulase pos. Staphylococci). Among the CNS isolated from catheters, the most resistance (100%) was related to ampicillin and oxacillin and the least (23%) resistance to vancomycin.

**Conclusion:** Use of intravascular catheters in neonates should be balanced between the need for vascular access and the risk of bacterial infection, and in cases of use, adequate control and preventive measures must be rigorously undertaken.

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**TERM ADMISSIONS TO A NEONATAL UNIT: ARE THEY AVOIDABLE?**

AA Hassan, H Thu, M Upton, A Curley. Neonatal Intensive Care Unit, Addenbrookes Hospital, Cambridge, UK

**Background and aim:** Term infants represent a significant percentage of NICU admissions and are major contributors to workload. We audited all admissions to our unit over a year to identify potentially avoidable admissions and common avoidable factors.

**Methods:** Retrospective review of admissions >36 weeks gestation Oct 2005–Oct 2006. Gestational age, birth weight, mode of delivery, Apgar score and need for resuscitation, source and reason for admission, temperature, blood sugar and any relevant preadmission events were assessed. Final diagnoses, outcome and length of stay were noted. Case notes review of potential avoidable admissions were carried out.

**Results:** 419 (49%) admissions to the NICU/SCBU were >36 weeks gestation. 88 were deemed potentially avoidable. Case notes review of 88 infants identified 46 of these (10.9%) were potentially avoidable admissions (no evidence of sepsis, early response to basic supportive measures only). Within this cohort reasons for admission were hypoglycaemia in 31/46, (67%); hypothermia in 14/46, (30%); poor feeding with excessive weight loss and hypernatremia in 3/46, (6.5%), and critical hyperbilirubinaemia in 1/46, (2%).

**Conclusion:** Term/near term admissions comprise about half of the NICU workload. In our study 11% of admissions were potentially avoidable. Early review and better management of hypothermia and hypoglycaemia particularly in known risk groups such as those <2.5 kg may reduce admissions. Improving documentation of early management plans and care given to newborns during their stay in the delivery suite may reduce costs of the neonatal unit significantly although it is difficult to identify factors determining admission retrospectively.

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**ROP AND OTHER OCULAR INVOLVEMENT IN LOW BIRTHWEIGHT AND PREMATURE BABIES**

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**Purpose:** Retinopathy of prematurity (ROP) is the cessation of normal eye development and subsequent abnormal vessel growth that occurs exclusively in premature infants. There is no standardized approach for the ophthalmic care follow-up of children screened for ROP. We report the ocular findings at 12 months in preterm and low birthweight babies screened for ROP over a 5-year period (2001–2006).

**Methods:** 225 babies were retrospectively reviewed for birth details, maternal details, presence of ROP, and findings at follow-up screening which included visual acuity, refraction at 12 months, presence of squint, and any other ocular problems.

**Results:** At 1 year follow-up, 21% of ROP positive children failed a screening visit because of squint (8%), refractive error (8%), and optic nerve abnormalities (5%). At 1 year follow-up, 15% of ROP negative children had failed a screening visit because of squint (6%), refractive error (6%), and other pathology (3%).

**Conclusions:** Screening of all babies with ROP at 12 months is recommended to identify amblyogenic factors such as squint and refractive error. Parents of infants who do not develop ROP should be advised of the increased risk of visual problems in their children and have to have their child examined in the preschool period.

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**USE OF PLASTIC BAGS TO PREVENT HYPOTHERMIA AT DELIVERY IN PRETERM INFANTS: DO THEY WORK AT LOWER GESTATIONS?**

GPH Ibrahim, CW Yoxall. Neonatal Unit, Liverpool Women’s Hospital, Liverpool, UK

**Objectives:** To audit the incidence of hypothermia at admission (temperature<36°C) to the NICU after the introduction of polythene bags at delivery in babies born below 30 weeks in a large tertiary centre.

**Methods:** All infants born below 30 weeks gestation for 2 years before (period 1) and 2 years after (period 2) the introduction of polythene bags were included.

**Results:** 253 babies with admission temperatures documented were included in the audit (72 born in period 1 and 181 in period 2). There was a reduction in incidence of hypothermia between the two periods (figure 1). Subgroup analysis revealed that the reduction was mainly in the babies born after 28 weeks gestation with a non-significant reduction in the babies born before 28 weeks (figure 2).

**Conclusions:** Polythene bags are effective in the reduction of admission hypothermia in infants born at gestations below 30 weeks. In infants below 26 weeks the effect is marginal. This may be related to the low incidence of hypothermia in our babies even before the introduction of polythene bags as compared to previously published work.
Although breastfeeding has been associated with a protective effect against metabolic syndrome, little is known about the association between the types and duration of infant feeding and serum adipocytokines.

**Design and methods:** Serum adiponectin (Ad), leptin (Lep), total cholesterol (TC), and low density lipoprotein cholesterol (LDLc) were measured longitudinally at birth, 6 and 12 months after birth in 46 healthy infants. They were classified into two groups based on whether or not they were breastfed until 12 months of life: Group A, 35 infants received breastfeeding for 6 months or more regardless of the association between the types and duration of infant feeding and serum adipocytokines.

**NEWBORN SCREENING FOR GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY IN ISFAHAN, IRAN: A QUANTITATIVE ASSAY**

**Objective:** Glucose-6-phosphate dehydrogenase (G6PD) deficiency is the most common enzymopathic disease which causes neonatal jaundice in most cases, and in association with intake of drugs or certain foods (for example fava) can cause haemolytic crises. The aim of the study was to determine the prevalence of G6PD deficiency in Isfahan, the central state of Iran.

**Methods:** From February to March 2006, a total of 2501 samples were screened for the quantitative measurement of G6PD activity by enzymatic colorimetric assay using a commercial kit (GAMMA, Belgium). The neonates referred from 17 delivery units to Isfahan neonatal screening center at day 3–7 of birth. Any neonate with a value less than 6.4 U/gHb was considered G6PD deficient.

**Results:** Of the 2501 newborns (1307 males, 1194 females) screened, 79 neonates were found to have G6PD-deficient (67 males, 12 females). The overall incidence of G6PD deficiency was 3.2%. Frequency in the male population was 5.1% (67 neonates of 1307 male neonates) and in the female population was 1% (12 neonates of 1194 female neonates). The female: male ratio was 1.5 (P = 0.0001). The mean enzyme activity in deficient patients was 3.22 ± 1.8 U/gHb (male deficient group: 3.17 ± 1.8 U/gHb, female deficient group: 3.49 ± 2.17 U/gHb, P = 0.58).

**Conclusions:** Routine neonatal screening in Isfahan, Iran with a relatively high prevalence of G6PD deficiency is justifiable because the World Health Organization recommends screening all newborns in populations with a prevalence of 3% to 5% or more in males.

**ASSOCIATION OF TYPES AND DURATION OF INFANT-FEEDING UNTIL 12 MONTHS OF AGE WITH SERUM ADIPOCYTOKINES, CHOLESTEROL AND ANTHROPOMETRIC MEASUREMENTS**

**Objective:** Although breastfeeding has been associated with a protective effect against metabolic syndrome, little is known about the association between the types and duration of infant feeding and serum adipocytokines.

**Design and methods:** Serum adiponectin (Ad), leptin (Lep), total cholesterol (TC), and low density lipoprotein cholesterol (LDLc) were measured longitudinally at birth, 6 and 12 months after birth in 46 healthy infants. They were classified into two groups based on whether or not they were breastfed until 12 months of life: Group A, 35 infants received breastfeeding for 6 months or more regardless with a high hyperactivity score (p<0.05) and Apgar score at five minutes with a high ASEBA externalizing score (p<0.05). No associations were found between gestational age and psychosocial variables. For adolescents born SGA at term, Apgar score at one minute was associated with a high ASEBA externalizing score (p<0.01). After controlling for sex and socioeconomic status, the CGAS score was predicted by birth weight and length of stay in NICU in the VLBW group and by Apgar score (one minute) in the SGA group (p<0.01).

**Conclusions:** Among VLBW adolescents, the psychosocial function may be more strongly associated with prenatal growth and early neonatal disease than with length of gestation. For adolescents born SGA at term, perinatal stress may affect psychosocial function.
of supplementation of cow’s milk-based formula, and Group B, 11 infants received breastfeeding for less than 6 months.

**Results:** Serum TC at 12 months was significantly higher in Group A compared to Group B. There was no significant difference in anthropometric measurements, serum Ad and Lep between two groups. The duration of breastfeeding had a significant positive correlation with serum TC and LDLc at 12 months. Serum Ad at 12 months had a strong positive correlation with cord blood Ad, and its relationship was not affected by infant-feeding.

**Conclusion:** Our data suggest that there is no relationship between types and duration of infant feeding and serum adiponectin and leptin but serum cholesterol in infants breastfed at least for 6 months may be higher at 12 months. It remains to be investigated to what extent adiponectin in the umbilical blood has an effect and whether it is involved in the development of metabolic syndrome.

**SURVEY OF CARDIOVASCULAR ASSESSMENT AND MANAGEMENT OF HYPOTENSION AND PATENT DUCTUS ARTERIOSUS (PDA) IN NEONATAL INTENSIVE CARE UNITS ACROSS THE UNITED KINGDOM**

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**Aim:** To evaluate the current practices of cardiovascular assessment and management in tertiary neonatal intensive care units (NICU) in the United Kingdom.

**Methods:** A consultant neonatologist or senior registrar in each NICU in the UK was contacted with a structured questionnaire survey. This included questions to evaluate practices of cardiac assessment, use of ECHO, and management policies for hypotension and PDA. The data is presented as the percentage from the respondent units.

**Results:** 90% of NICUs responded. Intra arterial blood pressure monitoring was the preferred method for blood pressure (BP) measurement when feasible, followed by oscillometry (65.3%) and Doppler measurements (28.8%). Basic echocardiographic assessment was performed by a neonatologist in 75% units. Hypotension was defined using mean (94.2%) or systolic BP (5.8%). Two thirds (67.3%) administered a routine fluid bolus before commencing inotropes. Only 23% units performed routine echocardiographic assessment prior to management of hypotension.

**Significant** PDA was defined using clinical signs (19.2%), Echo (7.6%) or both (73%), with initial management pharmacological in 57.6% of units compared with conservative management in 42.3%. None of the NICUs considered surgery as initial management of PDA. A consultant neonatologist in 75% units. Hypotension was defined using mean (94.2%) or systolic BP (5.8%). Two thirds (67.3%) administered a routine fluid bolus before commencing inotropes. Only 23% units performed routine echocardiographic assessment prior to management of hypotension.

**Conclusions:**

- The majority of units use mean BP values to define hypotension and most units give at least one fluid bolus before commencing inotropes.
- Most units have at least one neonatologist with echocardiographic skills.
- There is no consensus for initial management of PDA to be conservative or pharmacologic treatment.

**NON-SPECIFIC MARKERS OF BACTERIAL SEPSIS IN NEWBORNS**

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**Background:** Sepsis is a major problem in neonatology with high mortality (13–25%). Early diagnosis leads to good results.

**Materials:** We studied 110 newborns with sepsis. We divided them into 2 groups. 1st group, 60 full term newborns. 2nd group, 50 preterm newborns.

**Methods:** The study was an open prospective research, approved by the clinical bioethics commission. We studied C-reactive protein (CRP) by the latex-agglutination method, and procalcitonin (PCT) by the immunoluminometric method. Detection of bacteria in blood was done with polymerase chain reaction (PCR) and by traditional culture methods.

**Results:** During sepsis the level of CRP in full term newborns increased (96–192 mg/l; norm<6 mg/l) but the level was highest at 36 hours (measured every 12 hours). During sepsis, in preterm newborns the level of CRP was normal in 98% and increased in 2%. After 3 hours of developing sepsis, the level of PCT increased in both groups (PCT >2 ng/ml; norm<0.05 ng/ml), but determination of procalcitonin was limited. Research was statistically reliable (P<0.05).

**Conclusions:** 1) PCT may be indicated as a useful surveillance marker in newborns at risk for severe nosocomial infections and in those presenting with clinical signs of sepsis. 2) CRP and PCT are reliable diagnostic markers in neonatal sepsis, among full term newborns, from 2 days of life, but PCT was more informative, quick and correct than CRP. 3) CRP is not a reliable diagnostic marker for preterm newborns in neonatal sepsis.

**FUNCTIONAL CONDITION OF THYROIDAL GLAND DURING SEPSIS CAUSED BY GRAM-NEGATIVE BACTERIA IN NEWBORNS**

NG Jinchardze. Children’s Central Hospital, Tbilisi, Georgia

**Objective:** The thyroid gland takes part in the adaptive/compensative response to organisms. Because of this, research of its functional status during sepsis in newborns is very useful.

**Methods:** We studied 120 newborns, who had Gram-negative bacterial sepsis. This was an open prospective study, which was approved by the clinical bioethics commission. We studied thyroxin (T4), three-iodine thyronin (T3), thyroid-stimulating hormone (TSH), by radioimmunology methods. In the control group we included 30 healthy newborns. Detection of bacteria in blood was done by real-time polymerase chain reaction.

**Results:** During sepsis, thyroid gland hormone levels decreased: T4 ng/ml = 76.26 ± 4.21 (N = 138.32 ± 5.29); T3 ng/ml = 0.82 ± 0.02 (N = 2.27 ± 0.18); Levels of TSH mk.un/l = 6.29 ± 0.47 (N = 5.18 ± 0.32) increased. During recovery, inclination of normalization of the thyroid gland function was shown, but was less than normal: T4 = 108.51 ± 6.35 ng/ml; T3 = 1.16 ± 0.08 ng/ml; TSH = 1.59 ± 0.26 mk.un/l was decreased. In the clinical picture oedema (37%) and necrotizing of tissue (29%) were prevalent. Bacterial findings were: Serratia marcescens in 17, Pseudomonas aeruginosa in 25, Proteus mirabilis in 15, Klebsiella pneumoniae in 22, Escherichia coli in 21 and Acinetobacter in 20. Research was statistically reliable (p<0.005).

**Conclusions:** 1. During sepsis, the scheme of management must include hormone therapy with L-thyroxin 2. During sepsis, in the acute period of sepsis when there is hypofunction of thyroid gland, the hypophyses reaction appeared adequate, but during the recovery period regulation of hypophises was repressed. 3. During sepsis the frequency of oedema syndrome and necrotizing of tissue is explained by hypofunction of the thyroid gland.

**PAIN IN NEWBORNS: OPINIONS OF NICU STAFF**

J Gallegos-Martinez, Ma Salazar-Juarez. Universidad Autonoma de San Luis Potosi. Facultad de Enfermeria, San Luis Potosi, Mexico

Pain associated with procedures in NICU (Neonatal Intensive Care Units) is a theme very important in humanized care. This study was carried out in a public hospital of second level of attention, in...
San Luis Potosi, Mexico. This study show the opinions of physicians and nurses about the pain and their treatment of the pain and how was actually assessed in an intensive care unit. A descriptive and a health qualitative study was made. 50 informers participated. The information was acquired through a semi-structured interview. It was processed through an analysis of content in the form, of thematic analysis. The opinions learned were on: a) the newborn does not feel pain b) suffering by the newborn on crying c) discovering without competences how to assess and relieve the pain.

Physicians believe infants do not feel as much pain as adults. Neither assessment scales, pharmacologic nor comfort measures are used even for the most painful procedures. Nurses believe both pharmacologic and comfort measures should be used more frequently. Beliefs about infant pain and procedural pain were related to pain management preferences. Nurses ' but not physicians' ratings were associated with significant personal pain.

PARENTAL SATISFACTION OF A HOME GAVAGE FEEDING PROGRAM OF PREMATURE INFANTS

Background: Discharge guidelines at Canberra Hospital were changed in 2005, and allowed parents to administer gavage feeds at home with provision of in-home support with the aim to promote early discharge, and to facilitate positive patient and family centred outcomes without jeopardising patient care. The aim of this study was to evaluate the effects this practice made.

Methods: Two groups were compared; the control group consisted of parents whose babies were discharged when they were able to take six suck feeds and two gavage feeds, given by nursing staff; the study group comprised parents whose babies were discharged when they were able to half of their feeds as suck feeds. A survey was developed and mailed to all parents in both groups.

Results: 135 surveys were sent. There was a 48% response rate. There were no significant differences in satisfaction or bonding experience. Qualitative data highlighted differences between transitioning to home, transitioning to breastfeeding, expectations on discharge, satisfaction with the initial bond and parent-child interaction and inconsistencies with education and support.

Conclusions: The results of this small study show similar satisfaction with two different gavage feeding regimens at discharge. The results indicate that an early discharge with gavage feeding done by the parents in the home environment presents with other positives of an early discharge and does not have a negative impact on parental satisfaction.

EFFECT OF HOME GAVAGE FEEDING OF PREMATURE INFANTS ON SHORT-TERM OUTCOMES

Background: Discharge guidelines for premature infants at Canberra Hospital were changed in 2005, and allowed parents to administer gavage feeds at home with provision of in-home support with the aim to promote early discharge, and to facilitate positive patient and family centred outcomes without jeopardising patient care. The aim of this study was to evaluate the effects this practice made.

Methods: Retrospective cohort study of all premature infants admitted to the NICU between 2004 and 2007. The study group (34 infants) was discharged with nasal gastric tube in-situ and parents administering feeds in the home environment. The control group (34 infants) was discharged when all but 2 feeds were suck feeds. A nurse visited the family home to administer the remaining feeds.

Data was prospectively collected for short-term outcomes.

Results: No increased risks of complications were seen between the groups. Study group infants were slightly younger compared to controls but spent the same amount of time as inpatients. The program effectively decreased the amount of time spent as an inpatient. No differences were seen when comparing rate of weight gain, discharge weights, or gestational age at nasogastric tube removal.

Conclusions: This program has shown that early discharge with parental nasogastric tube feeding is not harmful to the infant. This has potential to increase family centered care for the infant and decrease costs by minimizing the necessity for inpatient care.

EARLY ONSET INFECTION IN NEONATES IN A PEDIATRIC INTENSIVE CARE UNIT: BACTERIOLOGICAL ASPECTS AND IMPACT ON ANTIBIOTIC STRATEGY

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Objective: To identify the bacteriological profile of germs causing early onset infection in neonates and their impact on empiric antibiotic prescription.

Methods: Retrospective review of charts of all neonates, aged less than 4 days admitted to a tertiary PICU with the diagnosis of early neonatal culture-proven infection between 1998 and 2007. A special emphasis on type of germ and its antibiotic-related sensibility was made.

Results: 110 newborns with early onset culture-proven infection were analysed. Mean gestational age (GA) was 34±3 weeks and 60% had GA<34 SA. Postnatal age at admission was 13±12 hours. Mean birth weight was 2500±500 g. Two-thirds of patients had received antibiotics before admission. Overall mortality rate was 16.7%. 61% of isolated bacteria was Gram-negative bacilli. The most frequent species was: group B Streptococcus (58.2%) and Escherichia coli (52%). Multi-drug resistant species was observed in 5.6% and Listeria monocytogenes in one case. Group B Streptococcus was the major germ isolated in term or near term newborn with GA≥34 weeks (62%) and had a constant sensibility to ampicillin (100%). Escherichia coli species was resistant to ampicillin and to gentamicin in respectively, 57% and 5.7% of cases.

Conclusions: Gram-negative bacilli still the major cause of early onset neonatal infection. The most frequent isolated bacteria were group B Streptococcus, constantly ampicillin-sensitive, and Escherichia coli. Gram-positive cocci were the major causes in neonates ≥34 weeks and restriction of empiric third-cephalosporin prescription seems to be useful in such neonates.

ANTENATAL MANAGEMENT OF EXTREME PRETERM NEWBORNS: TO INTERVENE OR NOT

RA Khan, *MP0 Cornell, *EM Derrmpsey. *Department of Neonatology, Coombe Women and Infant University Hospital, Dublin, Ireland; †Department of Obstetrics and Gynaecology, Coombe Women and Infant University Hospital, Dublin, Ireland; ‡Department of Neonatology, Cork University Maternity Hospital, Cork, Ireland

Background: Attitudes towards antenatal management of the expectant mother at the limits of viability differ widely across health care providers.

Aim: To explore the opinions of healthcare providers towards antenatal management of expectant mother and extreme preterm newborn in Ireland.

Methods: An anonymous questionnaire was sent to various working health care providers in Ireland. Questions were related
to antenatal and intra partum management of the expectant mother from 22 to 28 weeks gestation.

Results: Response rate was 55%. 21% of respondents would advocate administering antenatal corticosteroids at 22 weeks, at 23 weeks 42% of neonatologists advocate antenatal steroids and 100% at 24 weeks. The majority of respondents felt that a neonatologist should counsel an expectant mother at 24 weeks whilst the majority felt that an obstetrician should counsel solely at 22 weeks. 92% neonatologists would wish for an obstetrician to council parents at 22 weeks. 50% of all health care providers advocate cardiotocographic monitoring at 24 weeks gestation and above. Both obstetrician and neonatologist do not advocate CTG monitoring at 22 weeks gestation. Only 8% provide written information on survival and longterm outcome. Neonatologists were more likely than obstetrician to advocate caesarean section at 25 weeks for breech. Obstetricians were more willing to perform cesarean section at 25 weeks for fetal distress.

Conclusions: Different professional groups have different views on antenatal management of microprems.24 weeks would appear to be the limit at which most would advocate some form of intervention. Establishment and provision of national outcome data may help decision making at the limits of viability.

PERIPHERAL VASOCONESTRITION IN TRANSITIONAL ELBW INFANTS

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Background: ELBW infants are vulnerable to cold stress during the transition from delivery room to intensive care. Infants produce heat by non-shivering thermogenesis (NST) and should exhibit peripheral vasoconstriction when cold, but little empirical evidence confirms that ELBW infants are capable of peripheral vasoconstriction.

Objective: This study evaluated the ability of ELBW infants weighing 400–1000 grams to exhibit peripheral vasoconstriction when body temperatures decreased.

Design/Methods: A within subject, multiple case design was used to explore the relationships between body temperature and peripheral vasoconstriction in 10 ELBW infants over their first 12 hours in the NICU. Abdominal temperature (AT) and peripheral temperature (PT) were measured in 1-min. intervals. Peripheral vasoconstriction is defined as AT 2 C above PT as established by Lyon et al. Each infant was evaluated for length of time spent with peripheral vasoconstriction.

Results: PT and AT were significantly correlated in each infant. One infant (BW: 889 gms) exhibited peripheral vasoconstriction and one infant (BW 960 gms) had AT 1 C greater than PT. Eight infants (BW: 510–720 gms) did not exhibit peripheral vasoconstriction. Seven infants spent at least 15% of their observations with PT > AT and these infants were most likely to have PT 1–2 C> AT. The peripheral-abdominal temperature difference increased during stressful procedures in some infants.

Conclusions: ELBW infants have little ability to vasoconstrict in response to NST. PT were more often > AT and this difference often increased during stressful clinical events. Vasomotor control appears immature at birth in infants <800 grams.

NEONATAL CHYLOTHORAX: 10 YEARS OF EXPERIENCE IN A TERTIARY LEVEL NEONATAL UNIT

C Kortasalioudaki, H Katagampola, M Sellwood. University London College Hospital, London, UK

Objective: To review the management and outcome of infants with chylothorax admitted to a tertiary level neonatal unit over the past decade.

Methods: Records of neonates admitted with a diagnosis of chylothorax between January 1997–March 2008 were reviewed. Chylothorax was confirmed by lymphocytosis in the pleural fluid ± raised triglycerides.

Results: Twelve neonates, with chylothorax were identified during the study period. Five were male. Eight were antenatally diagnosed and of these, five had antenatal pleurocentesis. Three were associated with non-immune hydrops; one had trisomy-21. Four neonates developed iatrogenic chylothoraces following surgery (2 post PDA-ligation, 1 following tracheo-oesophageal fistula and 1 post diaphragmatic hernia repair).

Three infants underwent surgery for chylothorax (1 had thoracic duct ligation, 1 pleurodesis and 1 pleuro-peritoneal shunt). Two infants died post-operatively one with fulminant necrotising enterocolitis, the other from complications of cardiac surgery.

Conclusions: The majority of infants in our series survived, all the infants required significant periods of intensive care. This information is of value in counselling parents and planning care for these infants. Experience in the use of octreotide is still limited; surgery should be reserved for refractory cases.

Kortasalioudaki et al

<table>
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<tr>
<th>Congenital chylothorax</th>
<th>Latrogenic chylothorax</th>
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<tbody>
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<td>Death</td>
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THE EFFECT OF NEONATAL ENCEPHALOPATHY ON NEURODEVELOPMENTAL DISORDERS

MS Kosim, AH Putrami, G Purwadi. Department of Pediatrics Medical Faculty, Diponegoro University, Dr Kariadi Hospital, Semarang, Indonesia

Backgrounds: Neurodevelopmental disorders is the failure to achieve proper neurologic functional capabilities. One of the causes of neurodevelopmental disorders is neonatal encephalopathy caused by neonatal asphyxia.

Objectives: To define the effect of neonatal encephalopathy caused by neonatal asphyxia on neurodevelopmental disorders.

Methods: A prospective cohort study was done to assess neurodevelopmental disorders using Bayley Infant Neurodevelopmental Screener. Subjects were 40 babies, including 20 with neonatal encephalopathy caused by neonatal asphyxia and 20 with neonatal asphyxia admitted to the NICU and High Risk Baby Care Unit of the Dr Kariadi Hospital, Semarang, during August 2006–June 2007. Onset of neurodevelopmental disorders was determined by Kaplan-Meier survival analysis, and the interval between the occurrence of neurodevelopmental disorders and neonatal encephalopathy caused by neonatal asphyxia was assessed by log-rank test, and the level of significance was p<0.05.
THE EFFECT OF PHOTO THERAPY DURATION TO DECREASE TOTAL SERUM BILIRUBIN OF HYPERBILIRUBINENIA

1 MS Kosim, 1 T Soetando, 2 M Sakurando. 1 Department of Pediatrics Medical Faculty, Diponegoro University, Dr Kariadi Hospital, Semarang, Indonesia; 2 Department of Epidemiology, Faculty of Public Health, Diponegoro University, Semarang, Indonesia

Background: Phototherapy can decrease total serum bilirubin (TSB) but the duration of phototherapy remains unclear. Phototherapy at Dr Kariadi hospital is usually done for 12–24 hours irrespective of initial TSB.

Objective: To determine the mean difference of the decrease of TSB at 6 hrs, 12 hrs, 18 hrs or 24 hrs.

Methods: A quasi experimental study was done in 40 hyperbilirubinemia neonates, divided into 4 groups (group I: total bilirubin 13–15 mg/dL, phototherapy 6 hrs; group II: 16–17 mg/dL, phototherapy 12 hrs; group III: 18–20 mg/dL, phototherapy 18 hrs and group IV: >20 mg/dL, phototherapy 24 hrs), using 4 special blue fluorescent tubes (Philips TLS2/20W), with a 50 cm distance. Hemolytic condition and breast feeding were confounding factors which can influence the effectiveness of phototherapy. Wilcoxon signed ranks test was used to analyze the mean difference of decrease TSB to duration of phototherapy.

Results: There was no significant mean difference of TSB decrease in group II and III (p>0.05), conversely there was a significant mean difference of TSB decrease in group IV (p<0.05). After the first six hours the biggest average of total bilirubin decrease was found in group IV (4.83 ± 2.42 mg/dL). After the last phototherapy, the TSB decrease in group I, II, III and IV were 3.14 ± 1.86 mg/dL, 4.89 ± 1.82 mg/dL, 7.96 ± 1.94 mg/dL, and 13.41 ± 3.27 mg/dL. There was no significant difference of TSB after phototherapy among groups according to the hemolytic condition or breast feeding.

Conclusions: The only significant mean difference of TSB decrease was in group IV.

READMISSION OF NEWBORNS TO TALLINN CHILDREN’S HOSPITAL IN 2005–2006

1 M-L Kumm, 1 L Veeber, 1 V Dukkevits, K Kovaljova, 1 M Luan, 2 P Andresson, L Toome. 1 Department of Paediatrics, Tallinn Children’s Hospital, Tallinn, Estonia; 2 Department of Neonatology, Women’s Clinic, East Tallinn Central Hospital, Tallinn, Estonia

Objective: Arrangement of neonatal medical care in Estonia has changed over the past 15 years: newborns are discharged earlier from the maternity hospitals and followed up by family doctors. This study was undertaken to analyze the reasons for readmissions during the neonatal period.


Results: During the defined period of time 10,071 live newborns were registered in Tallinn, 360 (3.6%) of them were readmitted. 81 (23%) of them on their first, 109 (30%) on their second, 89 (25%) on their third and 81 (22%) on their fourth week of life. 64 (18%) newborns were sent to hospital by family doctors, 68 (19%) by ambulance and 116 (32%) by different specialists. 112 (31%) babies were brought to emergency room by parents. 104 (29%) children were readmitted due to infections, 64 (18%) neonatal jaundice, 57 (16%) feeding difficulties, 27 (7%) malformations, 14 (4%) neurological pathology, 6 (2%) injury, 88 (24%) with different problems. 89% of newborns with neonatal jaundice and 68% with feeding difficulties were hospitalized during their first two weeks of life. 49 babies had their total bilirubin value over 310 µmol/l, in one case only hypernatremic dehydration was diagnosed. 70% of mothers of children with feeding difficulties were primiparous. Bacterial infection was diagnosed in 54% of children with infectious pathology.

Conclusions: Rearrangements in the neonatal medical care in Estonia are safe if primiparous mothers are effectively counselled about breastfeeding and child care. Active follow-up by different specialists may reduce the risk of readmission.

HYDROCORTISONE AND FUNGAL COLONIZATION IN HIGH RISK PRETERM INFANTS

1 G Latore, 2 F Bonsante, 2 S Iacobelli, L Tauro, V Foriai, 1 L Esposito. 1 NICU and Neonatology, Miluli Hospital, Acquavia delle Fonti, Italy; 2 Department of Paediatrics, University of Dijon, Dijon, France; 2 Department of Microbiology, Miluli Hospital, Acquavia delle Fonti, Italy

Fungal infection is an increasing cause of infant morbidity and mortality in newborns hospitalized in intensive care units. A relationship between hydrocortisone and candidemia has been found but no data about colonization and hydrocortisone therapy have been documented in preterm newborns.

Objective: To determine whether low dose of hydrocortisone can increase fungal colonization in a well defined group of high risk preterm infants.

Methods: We performed a prospective, placebo-controlled study to determine the association between exposure to hydrocortisone during the first 12 days of life (DOL) (0.5 mg/kg/12 h for 9 days, then 0.5 mg/kg/day) and fungal colonization during the first 15 DOL in high risk preterm infants weighing less than 1,250 g at birth. We also evaluated fungal infection during the first 30 DOL. 28 infants, 10 receiving hydrocortisone and 18 placebo, were enrolled.

Results: 8 (28.6%) infants were colonized during the first 15 DOL: 3 (30.0%) in the hydrocortisone group and 5 (28%) in the placebo group (p = NS). 3 (10.7%) infants had urinary infection, 1 in the hydrocortisone group and 2 in the placebo group (p = NS).

Conclusions: We did not find a relationship between the administration of a low dose of hydrocortisone to high risk preterm infants and fungal colonization but the small sample size do not allow to provide conclusive result. Attention should be paid to the role of hydrocortisone in Candida infection in high risk preterm infants and, in further studies, data about fungal colonization or infection should be collected and related to the dose of hydrocortisone used.

IATROGENIC EVENTS IN ADMITTED NEONATES: IMPACT OF CORRECTIVE ACTIONS AND CONTINUOUS MONITORING

1 L Ili, 1 V Millet, 1 L Fayol, 2 F Arnaud, 2 S Tardieu, R Sambuc, 1 U Simeoni. 1 Division of Neonatology, the Conception Hospital, Marseille, France; 2 Medical Evaluation Department, Assistance Publique-Hopitaux de Marseille, Public Health Department, EA 2279, Faculte de Medecine, Universite de la Mediterranee, Marseille, France

Iatrogenic events (IE) are increasingly recognized as an important problem in all newborns admitted to hospital. Hospitalized neonates are particularly vulnerable to IE.

Objectives: To assess the impact of corrective actions superimposed on prospective continuous monitoring in reducing IE in admitted neonates.

Methods: We undertook an observational, prospective study including all neonates admitted in the Division of Neonatology of an academic, tertiary neonatal centre in southern France. IE were
defined as any event that compromised the safety margin for the patient, in the presence or absence of harm. The report of IE was voluntary, anonymous and non-punitive. Following a first study from January to September 2005, we defined a prioritized list of opportunities for improvement: reduction of nosocomial infections, limitation of invasive procedures, reduction of infusion pump programming and calculation errors, minimization of cutaneous injury. Corrective actions and prevention strategies were defined and undertaken. The second period of assessment extended from September 2007 to February 2008.

**Results:** The incidence of IE decreased from 69 to 49 per 100 admissions and their severity from 20 to 12.7 per 100 admissions. The incidence of nosocomial infections was reduced from 14.2 to 11.4 per 1000 catheter days. Medication events were less frequent (8.3 versus 5.1 per 100 admissions). Infusion pump programming errors became scarce but we noticed an increase in prescription errors. Cutaneous injuries were stable.

**Conclusions:** Prospective continuous monitoring is an effective method to assess the impact of corrective actions and to improve quality of health care in hospitalized neonates.

**CORD BLOOD GLP-1 CONCENTRATIONS IN HUMAN FULL-TERM NORMAL AND INTRAUTERINE GROWTH RESTRICTED PREGNANCIES**


1 Neonatal Division, 2nd Department of Obstetrics and Gynecology, Athens University Medical School, Athens, Greece; 2 Research Laboratories, 2nd Department of Pediatrics, Athens University Medical School, Athens, Greece

**Objective:** Glucagon like peptide-1 (GLP-1), synthesized in and released from enteroendocrine cells in the small and large intestine, has been shown to play an important role in the regulation of nutrient assimilation, intestinal growth and function. We aimed to study umbilical cord blood GLP-1 concentrations in intrauterine-growth-restricted (IUGR, usually associated with decreased intestinal growth, feeding intolerance and increased incidence of necrotizing enterocolitis) and appropriate-for-gestational-age (AGA) pregnancies.

**Methods:** GLP-1 concentrations were determined by radioimmunoassay in 50 mixed arterio-venous cord blood samples from IUGR (n = 14) and appropriate for gestational age (AGA) (n = 36) singleton full-term infants.

**Results:** No significant differences in GLP-1 concentrations were found between AGA and IUGR groups. The effect of birthweight, customized centile, gestational age, gender, mode of delivery and parity on GLP-1 concentrations was not significant.

**Conclusions:** GLP-1 is present in human cord blood at birth. The lack of significant differences in GLP-1 concentrations between IUGR and AGA groups possibly suggests that GLP-1 may not be involved in the pathogenesis of the abnormal intestinal growth and function associated with IUGR. In the narrow age interval studied, no significant effect of fetal maturation on GLP-1 concentrations was observed. Finally, GLP-1 concentrations are independent of parity, gender and delivery mode. However, since this is a preliminary study, additional ones are required to further elucidate the role of this peptide during the perinatal period.

**THYMUS DEVELOPMENT ALTERATIONS IN IUGR**

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**Background and aims:** Intrauterine growth restriction (IUGR) continues to be one of the major complications of pregnancy. Utero-placental ischemia is the most common cause of IUGR in developed countries. Infection is one of the most important causes of morbidity and mortality in early life of IUGR infants. Thymus is the main organ involved in the cellular immunity response during the newborn period.

The aim of this study was to describe the consequences of IUGR on the development of the thymus.

**Methods:** On day 17, pregnant Wistar rats were divided into two groups. IUGR was induced by two meso-ovarian vessels cauterization, and sham surgery was performed on control animals. Dams were allowed to deliver at term gestation. Four pups of each group were killed on day 2, 4, 6 and 10. Weight and organ weight data were collected. Thymus was paraffined and HE staining was made.

**Results:** A global and relative thymus’ weight diminution was observed in IUGR animals (p<0.05). The ratio control/IUGR thymus weight was 2.05 (Day 2), 1.75 (Day 4), 1.1 (Day 6) and 0.78 (Day 10).

An alteration of the medulla and stroma structure was observed in the histological study of the IUGR thymus. Progressive thymus structure maturation appeared in the consecutive days. A structure similar to controls was achieved on day 10.

**Discussion:**

- IUGR pups show a thymus weight and relative thymus weight smaller than control pups.
- The histological thymus immaturity may play a role in the increased risk of infection in IUGR babies.

**A NEONATAL CASE OF RARE BLISTERING DERMATITIS**

S Lucarelli, S Lazzari, I Leonardi, S Frediani, T Frederici, T Frediani. 1Department of Pediatrics, Azienda Policlinico Umberto I, University of Rome, Rome, Italy

**Case report:** The case regards a neonate of 20 days with cutaneous lesions characterized by linear plaques of vesicular or blister type on erythematous striae covering the trunk, limbs and groin, especially along Blaschko’s lines. The clinical findings suggested incontinentia pigmenti (IP) of type II (Bloch-Sulzberger disease). This diagnosis was confirmed by molecular genetic investigation revealing genomic deletion of exons 4–10 of the NEMO gene, which was not present in the parents and hence to be regarded as a new mutation. Type II IP is due to a defect of cutaneous pigmentation caused by a single dominant gene linked to the X chromosome (Xq28) with multisystemic involvement (neurological, skeletal and dental) in over 50% of cases. IP is the result of mutation of the NEMO/IKK-y gene codifying a critical component of the system activating the nuclear factor-kB (NF-kB). This is a rare disease (only 700 cases being described in the literature) found all over the world and primarily in females. In 90% of cases the disease manifests itself at birth with characteristic cutaneous lesions that can evolve in 4 stages, often in fixed chronological order (vesicular, warty, hyperpigmented, hypopigmented-atrophic). As was to be hoped, the patient presented a progression of cutaneous lesions from the vesicular stage to hyperpigmentation over a span of 4 months.

**Conclusion:** The case appears to demonstrate perfectly the importance of clinical-pathological correlation in ensuring the correct diagnostic approach to a rare disease. Treatment of the cutaneous lesions is not usually required.

**CARDIAC FAILURE SECONDARY TO A LARGE VEIN OF GALEN MALFORMATION IN A NEWBORN**

A Mallappa, AM Chisakuta, D’Graham, B’ Craig, D’ Hannah. 1Pediatric Intensive Care Unit, Royal Belfast Hospital for Sick Children, Belfast, N. Ireland, UK; 2Department of Cardiology, Royal Belfast for Sick Children, Belfast, N. Ireland, UK; 3Department of Neurology, Royal Belfast for Sick Children, Belfast, N. Ireland, UK

A term newborn with a provisional diagnosis of persistent pulmonary hypertension of the newborn was admitted to our Intensive Care Unit, with an impending cardio-respiratory failure.
The child was intubated, ventilated and started on inhaled nitric oxide. A right internal jugular vein was cannulated for central venous pressure monitoring/possible inotropic use.

As the colour of the blood was bright (blood gases done showed an arterial picture), a repeat echocardiography was performed to rule out the presence of anomalous pulmonary venous drainage into superior vena cava. Repeat echocardiography did not reveal any abnormality of the pulmonary venous drainage but confirmed the presence of the cannula in the superior vena cava.

Incidentally when the echo probe was placed on the anterior fontanel, a large midline venous structure was seen. A head ultrasound showed the same. Magnetic resonance imaging confirmed the vein of Galen malformation.

**PULMONARY OUTCOME IN 8- TO 10-YEAR-OLD VERY LOW BIRTH WEIGHT CHILDREN (VLBW) IN THE SURFACTANT ERA**

1. E Maranella, 1 L Ridolfi, 1 G Aquilano, S Vandini, 1 Oasti, 1 Corsini, 1 M Gallucci, 2 E Di Palma, 2 F Bernardi, 1 G Falda. 2Department of Preventive Pediatrics and Neonatology, S. Orsola-Malpighi Hospital, Bologna, Italy; 2Department of Pediatric Pulmonology, S. Orsola-Malpighi Hospital, Bologna, Italy

**Aim:** To evaluate the respiratory function in VLBW (birth weight <1500 g) children compared with normal birth weight (NBW; birth weight >2500 g) and term controls. 

**Methods:** 41 children (mean age 8.5 ± 1.1), born between 1996 and 1999, with gestational age ≥31 wk or with birthweight <1500 g, were compared to the same temporally nearest term-born subjects. Spirometry, pletysmography, exhaled nitric (ENO) and carbon monoxide diffusing lung capacity (DLCO) were performed before and after salbutamol inhalation.

Neonatal data were obtained from hospital records and current symptoms were ascertained from validated questionnaires.

**Results:** VLBW show reduced expiratory flows: FEV1% (p = 0.003) and FEF 25–75% (p<0.05). The lowest was the gestational age; the lowest was FEV1% (p = 0.005) compared to VLBW without BPD and term controls.

Neonatal oxygen exposure (p = 0.047) and birthweight (p = 0.003) are also predictors of poor respiratory outcome.

VLBW with bronchopulmonary dysplasia (BPD) showed the lowest mean expiratory flows (p = 0.003) and no reaction to salbutamol inhalation.

ENO value of preterm (mean value 9.7 ppb) did not differ significantly from the control group (mean value 9.8 ppb) and neither did DLCO.

**Conclusion:** In the surfactant area, birthweight, neonatal respiratory morbidity, gestational age and oxygen supplementation appear to affect the respiratory morbidity of VLBW children. Early effects of preterm birth on the lung airways persist to school-age.

**SKIN-TO-SKIN CONTACT AND TRADITIONAL CARE AT BIRTH: EFFECT ON INFANT TEMPERATURE AND BREAST FEEDING**

MA Marin Gabriel, C Cantisano Bono, A Lopez Escobar, M Benedict Gomez, MC Puente Sanchez, I Llana Martin, P Touza Pol, M Garcia Alvarez, I Romero Blanco, E Fernandez Villalba, A Siles. Pediatric Department, Hospital Madrid-Torrelodones, Madrid, Spain

**Introduction:** The aims of this study were:

- To determine if skin-to-skin contact in the delivery room has any analgesic effect while episiotomy suture is practiced.
- To evaluate if it modifies placental delivery time.

**Methods:**

- This study is part of a prospective case-control study. Patients were assigned to either one of these two groups:
  - Immediate skin to skin contact (KC)
  - Traditional care (SC)

**Results:** The study was approved by the Hospital Ethical Committee. Patients were included in the study once informed consent was accepted. Newborns <35 weeks of gestational age, babies born by caesarean section and multiple births were excluded. Axillary temperature was measured one minute, five minutes and 2 hours after birth. A breastfeeding survey was made one month after delivery.

**Discussion:** Skin-to-skin contact in the delivery room offers a higher thermal stability to the term and nearly term newborns during the first minutes of life. No differences were observed in the percentage of exclusive breastfeeding at hospital discharge nor one month later.

**SKIN-TO-SKIN CONTACT AND TRADITIONAL CARE AT BIRTH**


**Introduction:** The aims of this study were:

- To determine if skin-to-skin contact in the delivery room has any analgesic effect while episiotomy suture is practiced.
- To evaluate if it modifies placental delivery time.

**Methods:**

- This study is part of a prospective case-control study. Patients were assigned to either one of these two groups:
  - Immediate skin to skin contact (KC)
  - Traditional care (SC)

**Results:** The study was approved by the Hospital Ethical Committee. Patients were included in the study once informed consent was accepted. In order to establish the level of analgesia in episiotomy suture time a numeric scale was used (0: minimum pain; 10: maximum pain). Time of placental delivery was considered from the beginning of newborn delivery to the complete placenta expulsion. No oxytocin was administrated in this period.

**Discussion:** Skin-to-skin care in the delivery room has no analgesic effect during the episiotomy suture. No differences in delivery placental time were reported either; however had the sample been larger differences might have been found.

**Limitations:** 99% of the patients received epidural anesthesia; moreover episiotomy length varied between different patients. Pain sensation may be modified by both factors.

**SCHOOL AGE OUTCOME FOLLOWING IMMEDIATE OR DEFERRED DELIVERY FOR FETAL GROWTH RESTRICTION (THE GRIT TRIAL)**

1. D-M Walker, 1 L Upstone, 1 A Vail, 1 D Wolke, 1 J Thornton, 1 N Marlow. 1School of Human Development, University of Nottingham, Nottingham, UK; 2School of Medicine, University of Manchester, Manchester, UK; 3Department of Psychology and HSN, University of Warwick, Warwick, UK

**Background:** Timing of delivery for fetuses with growth restriction is a balance between fetal harm caused by ongoing hyoxia and that from preterm birth. The Growth Restriction Intervention Trial
Walker et al. Incidence of selected cancers: comparisons within the cohort based on exposure to ionising radiation

<table>
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<tr>
<th>Cancer exposure category</th>
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<td>B/C</td>
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CLL, chronic lymphatic leukemia; RIR, age- and year-adjusted relative incidence ratio, that is the ratio of cancer incidence in the category relative to category A.

Methods: Children in the UK, Netherlands, Italy, Slovenia and Germany were traced and offered evaluation at 7 years by a psychologist.

Results: 453 women (492 infants) were entered into GRIT (77% of total women). No deaths had occurred since 2 years. 7% of women actively declined and outcome status was known for 341 (69%) children. Death or known severe impairment was present in 28 (16%) in deferred delivery arm and 32 (19%) in immediate delivery arm. Scaled scores on assessment (shown in the table) indicated no differences.

Interpretation: Within the confines of the GRIT trial, immediate or delayed delivery did not lead to changes in short or long term outcomes.

Funded by MRC, UK.

LEOSING WEIGHT IN THE FIRST DAYS OF LIFE IS NORMAL: CASE REPORT OF HYPERNATREMIC DEHYDRATATION

1 S Malo Gomes, C Almeida Fernandes, H Ramos, E Fernandes, M Santos, C Neves, O Nascimento, A Marques Valido. Pediatrics Department, Centro Hospitalar Das Caldas Da Rainha, Caldas Da Rainha, Portugal; 2Pediatrics Department, Centro Hospitalar de Setubal, EPE, Setubal, Portugal; 3Pediatrics Department, Espírito Santo Hospital, Evora, Portugal; 4Pediatrics Department, Dr Alfredo Da Costa Maternity, Lisboa, Portugal

Background: Hypernatremic dehydration is a potentially lethal condition that can cause major neurological complications in neonates. The increased number of reports in breast-fed neonates reinforces the need for a good surveillance and evaluation of breastfeeding techniques.

Clinical case: Male infant, first-born to a Graffard class III family (vaginal delivery, GA- 35 weeks, BW-2370 g), discharged at 48 h, maintaining exclusive breast-feeding.

On day 5, metabolic screening was made at the primary healthcare center (PHCC). The first appointment was scheduled to 1.5 months and weight was not assessed.

On day 15, weight was assessed by the parents, as the PHCC was closed: he weighed 2050 g fully clothed, which was interpreted as the “normal weight loss of the first days”.

On day 21, because of additional weight loss and lethargy, he was brought to the hospital. Suction was referred to be vigorous and feeding intervals>4 h. Observation revealed a lethargic, malnourished baby, with a weight loss of 40% his BW. Laboratory tests: Hb-17.9 g/dL, WBC-20800(40%N), Na+196 mEq/L, urea- 271 mg/dl, creatinin-1.7 mg/dl, pH-7.10, HCO3-14.6 mEq/L, glucose-53 mg/dl, CRP<=0.3 mg/dl.

Slow IV correction was started, but still he had seizures at day 3 of admission.

Cerebral ultrasound was normal. He was discharged 28 days after admission, clinically well.

Discussion: Breast-feeding failure can lead to hypernatremic dehydration in neonates. Precious weight assessment, clinical and breast-feeding evaluation are recommended in order to prevent and recognize these situations as early as possible.

The failure of all health surveillance mechanisms associated to a very low maternal knowledge on breast-feeding, could have lead to the death of a healthy newborn.

BREAST-FEEDING ASSOCIATED HYPERNATREMIC DEHYDRATATION

1 S Malo Gomes, C Almeida Fernandes, H Ramos, E Fernandes, M Santos, C Neves, O Nascimento, A Marques Valido. Pediatrics Department, Centro Hospitalar Das Caldas Da Rainha, Caldas Da Rainha, Portugal; 2Pediatrics Department, Centro Hospitalar de Setubal, EPE, Setubal, Portugal; 3Pediatrics Department, Espírito Santo Hospital, Evora, Portugal; 4Pediatrics Department, Dr Alfredo Da Costa Maternity, Lisboa, Portugal

Background: In the last few years there has been an increase in case reports of hypernatremic dehydration in breast-fed newborns. Insufficient intake has an important role in the pathophysiology of this condition.

The aim of this study was to evaluate breast-fed neonates admitted for hypernatremic dehydration.


Arch Dis Child 2008;93 [Suppl II]:A399–A446
Results: 19 cases were identified (0.44% of neonatal intermediate care hospitalizations): 47% female and 53% male. Annual distribution revealed a higher number of cases in 2008: 26.3% in only 3 months. BW ranged from 2570 g to 4145 g (median 3000 g), and gestational age from 35 w to 40 w (mean-38 w). Vaginal delivery was the most frequent. Maternal age ranged from 16 to 38 years old (mean 29 y), the majority of mothers being primiparous (79%). Admissions were made through the emergency department in 68.4% of cases. Main reasons for seeking medical attention: poor oral intake (32%), weight loss (26%) and jaundice (26%). Age at admission ranged from 2 to 21 days (median-4 days). Percentage of weight loss: 6.7%–40%, median 11%. Dehydration signs were absent in 42%. Na+:146–196 mEq/L, median 152 mEq/L. Co-morbidities were found in 74% of patients, jaundice being the most frequent (100%). Intravenous fluids were administered in 89%. Acute neurological complications were found in 21%. There were no deaths.

Discussion: Breast-feeding associated hypernatremic dehydration seems to be a consequence of breast-feeding difficulties in inexperienced mothers. This strengthens the need for better support from health care professionals in education and follow-up monitoring of breast-feeding techniques.

IMPACT OF DELAYED SCREENING FOR PROLONGED JAUNDICE IN THE NEWBORN

S Hingley, M Tyrrell, C Giles, JO Menakaya. Hillingdon Hospital NHS Trust, Uxbridge, UK

Background: Jaundice in the newborn beyond 14 days is a trigger to screen for serious underlying disorders. Early screening may lead to unnecessary investigations on a baby. We evaluated the impact of delayed screening for prolonging jaundice.

Methods: Babies with prolonged jaundice referred between April 2006 and July 2007 on day 14 by their midwife were assessed from day 21 at a dedicated clinic. Clinical evaluation and investigations were carried out to identify serious underlying pathology. Results from this evaluation were analysed.

Results: 183 babies were referred with prolonged jaundice. Jaundice resolved completely in 33 babies (18%) prior to assessment. The average GA was 38.1±2.0 weeks. The average BW was 3.17±0.65 kg. 45/140 babies (30.7%) were not investigated as they were not jaundiced. 92 of 97 babies with jaundice were investigated. The average bilirubin level was 145±60.4 μmol/l (range 23–302 μmol/l). 112 of 140 babies were reviewed once at the clinic. 40% of babies reviewed at 2 weeks attended more than once compared with 18% of babies seen at 5 weeks and older. 72% were discharged from the clinic. 1 baby with UTI, 2 babies with elevated TSH and 6 babies with cardiac murmurs were identified.

Conclusions: Delayed clinical evaluation reduced significantly the number of babies investigated for prolonging jaundice without compromising the need to identify serious underlying pathology.

NEONATAL EVOLUTION OF BLOOD PRESSURES IN INFANTS WITH TWIN-TWIN TRANSFUSION SYNDROME

1 Mercanti, 1 A Boivin, 1 B Wo, 1 C Le Ray, 1 F Audibert, 1 L Leduc, 1 AM Nort, 1 Department of Pediatrics, CHU Sainte Justine, Université de Montréal, Montreal, QC, Canada; 2Faculté de Psychologie, Université Laval, Quebec, QC, Canada; 3Department of Obstetrics, CHU Sainte Justine, Université de Montréal, Montreal, QC, Canada

Background: Twin-twin transfusion syndrome (TTTS) carries significant morbidity and mortality. In utero, major volume transfer from the “donor” to the “recipient” is associated in the donor with oliguria and activation of the renin-angiotensin system. The recipient is confronted with an exaggerated volume load and paradoxal high levels of renin and angiotensin. This pathological hemodynamic should lead to high blood pressure (BP) in the recipient. However the immediate neonatal BP of these infants is unknown.

Objective: Determine the BP in the first 36 hours of life of TTTS infants.

Methods: Chart review of all TTTS born in our institution between 1996 to 2007 with selection of pairs for which both twins were alive at least 24 hours (56/110 pregnancies). BP values under amine infusion were excluded.

Results: TTTS were delivered at 30.3 ±or- 3.2 weeks of gestation. Cardiac biventricular hypertrophy was only present in recipients (36% vs 0). When expressed relative to predicted BP for the weight (Zubrow et al, 1995), both systolic and diastolic BP were significantly higher in recipients (syst/diast: 122±or-26/111±or-26% vs 84±or-15/75±or-18%). Furthermore, the recipients’ BP diminished over the first 12 h of life contrary to the donor and the normal evolution of BP in neonates.

Conclusions: Recipients have a significantly high BP and donors a significantly reduced BP for their weight, which supports the hypothesis that recipients are hypertensive in utero. The long-term impact of these early hemodynamic perturbations remains to be determined.

SERUM STEROID PROFILE IN NEWBORNS: COMPARISON BETWEEN TERM AND PRETERM INFANTS USING LIQUID CHROMATOGRAPHY/MASS SPECTROMETRY/MASS SPECTROMETRY

M Miwa, T Arimitsu, Y Matsuaki, N Kunihara, I Hokuo, K Homma, K Ikeda, T Hasegawa. Department of Pediatrics, School of Medicine, Keio University, Shinjuku-ku, Tokyo, Japan

Background: Liquid chromatography/mass spectrometry/mass spectrometry (LCMSMS) is useful for analyzing neonatal serum levels of steroid hormones because more than 10 steroid hormones can be simultaneously analyzed in only 100 μl of serum, and it has a high sensitivity and does not cross-react with other fetal steroid hormones. Herein, we devised normative standards of term neonatal steroid hormones using LCMSMS.

Objective: We assessed neonatal adrenal function by analyzing serum steroid hormones using LCMSMS, and compared the differences in gestational age and birth weight.

Method: A total of 164 neonates without endocrinological abnormalities were enrolled. Ninety-nine were term appropriate for gestational age (term AGA). Twenty were term small for gestational age (term SGA). Twenty-eight were 34–36 week gestation AGA (preterm AGA). Seventeen were 34–36 week gestation SGA (preterm SGA). We measured cortisol, DHEA, and 17OH pregnenolone (17OHP) (ng/ml) with LCMSMS using 100 μl of serum 5–6 days after birth. The Mann–Whitney U test was used for statistical analysis.

Results: Cortisol was significantly lower in term SGA than in term AGA. DHEA and 17OHP5 were significantly lower in term AGA than in preterm AGA, and in term SGA than in preterm SGA. Additionally, 17OHP was significantly lower in term SGA than in term AGA.

Conclusion: Basal cortisol secretion from the permanent adrenal cortex and 17OHP5 secretion from the fetal cortex was low in term SGA. The volume of the permanent adrenal and fetal cortices in term SGA is small to account for the reduced systemic growth.

CALPROTECTIN AND IL-8: MARKERS OF INTESTINAL INFLAMMATION IN (PRE)TERM INFANTS?

1 E Moerch, 1 EAM Westerbeek, 1 FR Knol, 1 A Kok, 1 WPF Fetter, 1HN Lefaer, 1RM van Elburg. 1Department of Neonatology, VU University Medical Center, Amsterdam, The Netherlands; 2Department of Clinical Chemistry, VU University Medical Center, Amsterdam, The Netherlands

Introduction and objectives: In newborn (especially preterm) infants, a systemic inflammatory response occurs within 5 minutes after birth. Calprotectin and IL-8 in faeces may reflect this
We analyzed 31 patients, 61.3% female, medium age of 7.2 years. 50 VLBW infants had a convalescent AP performed in the newborn period. Vitamin D deficiency is increasingly recognized in VLBW infants. Intestinal inflammation, reflected by fecal calprotectin, levels may predict abnormal vitamin D levels in VLBW infants.

Conclusions: Intestinal inflammation, reflected by fecal calprotectin and IL-8 are strongly correlated. Of the perinatal factors, only gestational age is negatively correlated with IL-8 in preterm infants.

RESULTS: The etiologic diagnostic average age was 2.1 yo (maximum 10 yo). 55% were identified due to Down syndrome. 25% due to Beckwith-Wiedemann syndrome. 10% due to Prader-Willi syndrome. Only one 5th month of life patient died as a consequence of pneumonia.

Conclusion: More than 50% of the total cases of NH were identified due to Down syndrome. Beckwith-Wiedemann syndrome. Term infants had a convalescent AP performed in the newborn period. Vitamin D deficiency is increasingly recognized in neonates especially if born to high-risk mothers. Term newborns have higher mean alkaline phosphatase (AP) concentrations than controls, indicating increased bone turnover, although values remain within the normal range.

METHODS: Convalescent, stable VLBW infants admitted to a tertiary referral Neonatal Intensive Care Unit were eligible for inclusion if their AP was >1000 IU in routine “growing” bloods. Determination of AP levels sampled of which 10 were in the normal range (>50 nmol/L). AP levels did not correlate with vitamin D, calcium or phosphate levels. Infants with normal vitamin D levels were significantly older than those who were deficient (mean ± SD = 76.1 ± 23.2 versus 49.4 ± 25.7 days respectively).

RESULTS: Mean age at presentation was 9 days (1 day–30 days, median 5 days). Of these 20% were identified due to persistent metabolic acidosis, 17% due to seizures, 17% due to family history, 14% due to hypoglycemia and 10% on newborn screening. Others presented with abnormal urine odour or persistently raised lactate (7%). The range of diagnoses included disorders of carbohydrate metabolism 20%, fat 24%, vitamins 14%, amino acids/organic acids 17% and mitochondria 10%. The most common diagnosis was MCAD. Consanguinity was present in 55%. The mean age at diagnosis was 60 days. 23/29 (79%) were amenable to treatment.

CONCLUSIONS: This review highlights that substantial numbers of IMDs present in the newborn period with the majority in the first week of life. A high index of suspicion is necessary for an early diagnosis. Seizures, hypoglycemia, persistent metabolic acidosis and consanguinity are important clues to diagnosis.

RELATIONSHIP BETWEEN VITAMIN D AND ALKALINE PHOSPHATASE LEVELS IN VERY LOW BIRTH WEIGHT (VLBW) INFANTS

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Introduction: Vitamin D deficiency is increasing in VLBW infants. Vitamin D deficiency is increasing in VLBW infants. The etiologic diagnostic average age was 2.1 yo (maximum 10 yo). Only one 5th month of life patient died as a consequence of pneumonia.

Background: Inherited metabolic disorders (IMDs) presenting in the newborn period are well described. Substantial numbers of these respond well to treatment but may otherwise be fatal. A high index of suspicion is necessary for an early diagnosis to prevent morbidity and mortality.

Methods: Babies with a confirmed diagnosis of IMD presenting in the neonatal period were identified from the laboratory database. A retrospective case-note review of the clinical presentation and diagnosis was undertaken. Results: 29 neonates (14 female, 15 male) were identified. The mean age at presentation was 9 days (1 day–30 days, median 5 days). Of these 20% were identified due to persistent metabolic acidosis, 17% due to seizures, 17% due to family history, 14% due to hypoglycemia and 10% on newborn screening. Others presented with abnormal urine odour or persistently raised lactate (7%). The range of diagnoses included disorders of carbohydrate metabolism 20%, fat 24%, vitamins 14%, amino acids/organic acids 17% and mitochondria 10%. The most common diagnosis was MCAD. Consanguinity was present in 55%. The mean age at diagnosis was 60 days. 23/29 (79%) were amenable to treatment.

Conclusions: This review highlights that substantial numbers of IMDs present in the newborn period with the majority in the first week of life. A high index of suspicion is necessary for an early diagnosis. Seizures, hypoglycemia, persistent metabolic acidosis and consanguinity are important clues to diagnosis.

SPECTRUM OF INHERITED METABOLIC DISORDERS PRESENTING IN THE NEWBORN PERIOD IN A DISTRICT GENERAL HOSPITAL

1PA Munot, ‘A Arasu, ‘N Nathwani, ‘D Housley, ‘V Weckemann. 1Department of Paediatrics, Luton and Dunstable Hospital NHS Trust, Luton, Bedfordshire, UK; 2Department of Biochemistry, Luton and Dunstable Hospital NHS Trust, Luton, Bedfordshire, UK

METHODS: Babies with a confirmed diagnosis of IMD presenting in the neonatal period were identified from the laboratory database. A retrospective case-note review of the clinical presentation and diagnosis was undertaken.

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Conclusions: This review highlights that substantial numbers of IMDs present in the newborn period with the majority in the first week of life. A high index of suspicion is necessary for an early diagnosis. Seizures, hypoglycemia, persistent metabolic acidosis and consanguinity are important clues to diagnosis.

NEONATAL HYPOTONIA: A 5-YEAR RETROSPECTIVE STUDY IN A GENETIC AND METABOLIC OUTPATIENT UNIT

D Moreira, JS Marques. Paediatrics Department, Gaia Hospital, Vila Nova de Gaia, Portugal

Objective: The purpose of this study was to analyze the profile of disorders presenting with neonatal hypotonia (NH) in an outpatient unit for genetic and metabolic diseases.

METHODS: Retrospective study of patients presenting with NH, followed in an outpatient unit of genetic and metabolic diseases. Cases were ascertained by a systematic search of clinical databases, over a period of 5 years (2003–2008).

RESULTS: We analyzed 31 patients, 61.3% female, medium age of 7.2 years old (yo) (maximum 17 and minimum 2 yo). The most frequent cause of NH was Down syndrome (5). 5 cases, 61.1%), respiratory chain disorders (4 cases, 12.9%), Angelman S., Prader-Willi S. and Steinert S. (3 cases each, 9.7%), and finally orofaciiodigital S. type 1, primary hypomagnesemia, Werdig-Hoffman S., Smith-Lemli-Opitz S. and euchromatin duplication of chromosome 11 (1 case each, 3.2%).

The association of hypothyroidism with Down S. was present in 75% of the cases. The etiologic diagnostic average age was 2.1 yo (maximum 10 yo, minimum 1 day, median 0.25 years).

In a follow-up of 5 years, only one 5th month of life patient (Werdig-Hoffman S.) died as a consequence of pneumonia.

Conclusions: More than 50% of the total cases of NH were due to Down Syndrome. Beckwith-Wiedemann Syndrome and respiratory chain disorders. NH was more common in female patients. The majority of the cases were diagnosed before the 4th month of life but the mortality was low during these 5 years of follow up.
CONGENITAL SURFACTANT PROTEIN B (SP-B) A RECESSION AUTOSOMAL DISEASE OF THE TERM NEWBORN: MOLECULAR DIAGNOSIS

Aim: To identify mutations in the SP-B gene of term newborns with RDS.

Patient: We studied 6 newborns. RDS developed in a female infant at the first four hours after delivery, who required mechanical ventilation. She was the first child of a non-consanguineous marriage. The family history had no particular remarks. Chest radiography showed a diffuse granular pattern with air bronchograms. Porcine surfactant administration resulted in an evident transient improvement of oxygenation and of the chest radiograph findings. Diagnosis of SP-B deficiency was then considered and genetic analysis was requested. An open lung biopsy was performed after 25 days. The infant died 2 days later.

Methodology: Genomic DNA was isolated from parents and patients blood. Synthetic oligonucleotides (18–20 bases), corresponding to intronic sequences for the first 10 exons of the SP-B gene, were used in a PCR amplification. Direct PCR products sequencing was realized in an automated sequencer.

Results: No mutations/SNP in the exons from SP-B gene from the 5 out of 6 cases suspected have been found. However, SP-B deficiency was confirmed at 25 days of life in a girl. DNA sequence analysis demonstrated the presence of the 121ins2 mutation in both alleles (homozygous), and in one of them in her parents, accounting for the SP-B deficiency.

Conclusion: The molecular genetic study confirmed the diagnosis promptly to evaluate lung transplantation as a survival treatment option. This is the first report of an SP-B deficient infant from Spain.

THE PREVALENCE OF HYPERGLYCEMIA IN NEONATES HOSPITALIZED IN NICU AT AL-ZAHRA HOSPITAL TABRIZ, IRAN

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Introduction: Hyperglycemia is the most common disorder of glucose metabolism in low birth weight neonates hospitalized in the NICU. If undiagnosed and untreated it progresses to osmotic diuresis and dehydration and its complications.

Methods: In this retrospective survey, we studied 360 neonates hospitalized in the NICU. We considered high glucose levels more than 145 mg/dl. We also studied the correlation between hyperglycemia and risk factors such as birth weight, gestational age, Apgar score, medications (such as methylxantines, corticosteroids), hypoxia and septicemia.

Results: The prevalence of hyperglycemia was 13.5%. It was 61.7% in males and 32.2% in females. 74.5% of hyperglycemic neonates were preterm. 23.4% were term and 2.1% post term.

The maximum level of BS was 466 mg/dl. The minimum weight of neonates was 650 gr and maximum weight was 4180 gr. 10.6% of neonates had septicemia, 12.8% were IUGR, 31.9% had hypoxia, 23.4% were meconium stained, 25.4% had received aminophylline, 10.6% had received hydrocortisone, 8.5% of neonates had low apgar score. There were no cases of diabetes mellitus due to its rarity.

Hyperglycemia in 85.1% of neonates died due to other reasons and they were not dehydrated. There was no need to use insulin.

Discussion: Neonatal hyperglycemia has correlation with risk factors such as low birth weight, prematurity, IUGR, intake of parental glucose, hypoxia, sepsis and medications. There is a need to lower the glucose intake, and, rarely, administration of insulin along with treatment of underlying disorders.

THIOPENTAL PHARMACOKINETICS: A CASE REPORT OF OVERDOSE

Background: In Sweden, thiopental is used in newborns for preoperative induction and endotracheal intubation. A boy, born after 55 gestational weeks (gw), birth weight 2435 g, was prescribed thiopental 3 mg/kg before intubation. He developed a temporary hypotension and desaturation, and did not wake up as expected.

Objectives: To assess thiopental pharmacokinetics in the index case and a reference group.

Methods: Serum samples were obtained from the index case. Seventeen infants (27–42±10 gw), enrolled before surgery (median postnatal age 19.5 h; range 4–480 h), received thiopental 3 mg/kg. Seven samples were obtained for concentration assessment during 48 hours after administration.

Results: In the index case, thiopental concentration was 82, 59, 42 and 32 μmol/L after 20 min, 6, 24 and 48 h respectively. In the reference group, it was 20 (median and mean) μmol/L (range 34.20–7.00) at 5 min.

Infants with a weight <3000 g had a slower decline than those >3000 g. The AUC was 1891 and 1022 min*μmol/L, and T ½ 38.5 hours and 19.5 hours for the groups, respectively.

The index case remained unconscious and the EEG suppressed for 48 hours. Cerebral MRI at 42 gw and psychomotor development at 1.5 years were normal.

Conclusion: The reference values indicate that thiopental metabolism varies in preterm infants, but that the index case had a 10-fold higher concentration than expected. The overdosage error could not be identified in the drug dilution handling. This case emphasis the importance of specially designed drug formulas for neonates.

SOCIAL DEPRIVATION, THE EFFECT ON NEONATAL GESTATIONAL AGE AND BIRTH WEIGHT: A DISTRICT GENERAL HOSPITAL EXPERIENCE

Objectives: To determine whether there is an association between social deprivation and gestational age and birth weight.

Methods: We did a retrospective and prospective review of maternity and neonatal records between January 2004 and April 2007 in Mayday University Hospital Croydon, UK. We collected data from the Protons database, averaging 4700 deliveries annually. From the records we extracted maternal postcodes, gestational age and birth weight.

Results: The statistical analysis of our data using regression analysis based on the birth weight against gestation or index of deprivation showed significant correlation (p<0.0001) for both.
Conclusion: There is a strong correlation between social deprivation and prematurity and low birth weight. This has public health implications for professionals when planning primary and secondary maternity and neonatal care.

Okike et al Regression summary birth weight vs 2 independents

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EARLY AGGRESSIVE PARENTERAL NUTRITION FOR EXREMELY LOW BIRTH WEIGHT INFANTS: ARE WE ACHIEVING WHAT WE SET OUT TO DO?

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Objective: We have a policy of introducing PN with the aim of providing a minimum of 2 g/kg amino acids (AA) along with 30 non-nitrogen kilocalories/kg on D1 and 2.5 g/kg of AA along with 50 non-nitrogen kilocalories/kg on D2. The aim of our study was to assess compliance with this policy.

Methods: 21 ELBW infants were included in this retrospective analysis during a 6 month period. Outborn infants were excluded. Data was collected on the nutritional support provided in the first week of life.

Results: 8 of 21 (38%) infants started PN within the first 24 hours of life and all by 42 hours of age. Mean time of starting PN was 21 hours (range 1–42). Mean day of commencing minimal enteral feeds was day 3 (range 1–5). Mean AA intake on day 1 was 0.5 g/kg/d (0–1.25 g/kg/day) and 1.45 g/kg/day (range 0–2.5 g/kg/day) on day 2. Mean day when 2 g/kg/d of AA was achieved was day 3 (2–6). Mean non-nitrogen energy intake on day one was 28 kcals/kg/d (16–39 kcal/kg/day) and 43 kcals/kg/d (range 23–68 kcal/kg/day) on day 2. Factors which limited the ability to advance PN included tight adherence to fluid restriction policies and delay in initiating PN.

Conclusion: Despite our policy of early aggressive parenteral nutrition, the majority of our infants remained in a protein catabolic state until D3 of life. Clearly the time to starting PN can be improved. Improving the amino acid concentration of the initial stock bag of PN would ensure better amino acid provision.

SERIAL SERUM PARATHORMONE (PTH) AS A MARKER FOR MONITORING METABOLIC BONE DISEASE OF PREMATURETY

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Background: Osteopenia of premature remains a significant problem in Neonatal Intensive Care. Biochemical markers including serum alkaline phosphatase, phosphate and calcium have informed diagnosis and management. Parathormone (PTH) is important in bone health and the axis is known to be mature in preterm infants. There is no documentation of the changes in PTH over time in preterm infants.

Method: Babies born before 32 weeks gestation (mean 26 weeks) and weighing less than 1500 grams (mean 893 ± 290) at birth were recruited. Serial measurements of serum PTH were made from 2 weeks of age and fortnightly to coincide with clinical samples for electrolyte and bone chemistry, until term corrected gestation or discharge. Paired samples were taken for urinary calcium and phosphate.

Results: Data from the first fifteen babies is presented.

Using an ALP cut-off of 400 IU/L to define osteopenia, babies with increased ALP, tended to have a higher PTH (p = 0.07), with mean PTH >7.9 pmol/L being associated with bone disease. Hypophosphatemia (Phosphate<1.5 mmol/L), a known risk factor, was significantly associated with hyperparathyroidism (p = 0.005). PTH and TmP-GFR were inversely correlated. Plasma calcium remained unchanged and within normal range.

Conclusion: Hypophosphatemia is often assumed to be secondary to nutritional deficiency or renal tubular immaturity. Our data suggests the hypophosphatemia is at least in part secondary to hyperparathyroidism. It is unclear whether this is a causal relationship with osteopenia or not. The potential benefit of PTH measurement in prediction of risk, diagnosis and management of osteopenia is highlighted.

COMMON PROBLEMS OF NEONATES DURING THE TWO WEEKS AFTER BIRTH AT ALZAHRA HOSPITAL, IRAN

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Objective: Early neonatal problems are very important. Ignoring these simple problems can lead to lots of complications. The aim of this study was to determine common neonatal problems during the two weeks after birth.

Methods: In a cross-sectional and descriptive study, common problems and complications of 300 neonates ≥34 weeks born in Alzahra hospital from September 2006 to June 2007 two weeks after birth were investigated.

Results: From 300 studied neonates 85.3% were term and 14.7% preterm (34–37 weeks). The mean weight of neonates was 2990.21 ± 512.28 grams (range 1250–4500 gr) which was 3142.57 ± 366.68 gr for term and 2112.04 ± 283.54 for preterm. There was a significant difference between the mean hospitalization days of preterm and term neonates (3.02 ± 1.95 versus 2.19 ± 1.32 d, p<0.001). The most common problems of neonates were: icterus (40%), choking (29%) inability to take the nipple (27.35%), weak sucking (25%), diarrhea (24%), eye contamination (22%), vomiting (21%) and cough (20.33%). Readmission occurred in 9.33% due to ecterus, convulsion, respiratory distress, persistent vomiting and seve diarrhea. There was a significant relationship between inability in taking the nipple, cyanosis and fever with prematurity.

Conclusions: Because of reducing the neonatal problems after birth it is recommended to train the mothers and their partners during pregnancy and follow up the parturients and neonates at home to help them to solve minor problems and refer to a neonatologist when needed.

SURVEY OF SEPTICEMIA IN NEONATES BORN WITH PRETERM PREMATURITY RUPTURE OF THE MEMBRANE AT ALZAHRA HOSPITAL

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Objective: PROM complicates 10% of pregnancies which in 25% occur under 37 weeks of gestation and are named PPROM. This
study evaluates the septicaemia in neonates born with preterm premature rupture of the membrane.

**Methods:** 100 neonates born with rupture of the membrane at 26–37 weeks gestation were studied at Alzahra hospital from June 2006 to February 2007. Data were analyzed by SPSS v.14 software.

**Results:** The mean gestational age at the time of membrane rupture was 33.23±0.56 (range: 26–37 w). The latent phase was from 1 to 720 hours (mean 46.15±17.81 h). Among 100 studied newborns, 3 positive blood cultures (3%), with Staphylococcus epidermidis, Staphylococcus aureus, and E coli were observed. We couldn’t demonstrate any significant relations between positive blood culture of neonates and laboratory and clinical symptoms of both the mother and neonate and the latent period. However, the relationship between positive blood culture of neonates and gestational age, was significant (P<0.05).

**Conclusions:** The reported incidence of neonatal sepsis caused by PROM in western countries is 2–4%, and in PPROM it is about 5%. In our study this rate was 3%.

Considering the low incidence of neonatal sepsis caused by PROM in this study, and in order to reduce the complications of long stay in hospital, it is recommended to perform the first blood culture after birth and maintain close observation of neonates for 24 hours, and if there is no clinical infectious symptoms, all the neonates can be discharged and the parents can be advised to get the blood culture results after 4 days.

**POSTNATAL DECREASE IN HLA-DR EXPRESSION ON CIRCULATING MONOCYTES**

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**Background:** HLA-DR is a MHC class II molecule responsible for antigen presentation to T-cells. Monocytes express HLA-DR molecules and low HLA-DR expression is a sign of immunosupression. We characterized monocyte HLA-DR expression in cord blood and during the first postnatal days in VLBW and near term infants.

**Patients:** 18 VLBW infants (ga 24–29 wk, bw 750–1500 g) and 9 control infants (ga >34 wk without main morbity (bw 1860–4020 g)

**Methods:** Samples from cord vein, from VLBW infants on d 1.3 and 7, and from controls on d 1. Monocytes were labelled with CD14FITC and HLA-DR PE and analyzed with FACS.

**Results:** After birth HLA-DR decreased significantly more in VLBW infants than in controls (Figure).

**STUDY ON CONGENITAL SYPHILIS IN IRLAND**

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**Background:** Congenital syphilis was rare in most affluent European countries.

**Aims:**

- To review the incidence of positive maternal syphilis serology.
- To assess the outcome of these pregnancies.

**Methods:** Retrospective study over a 5-year period from Jan 2005 to Dec 2007. Positive maternal syphilis serology results were identified, biological false positive results excluded and confirmation of infection in the mothers was based on two positive treponemal antibody tests, Treponema pallidum particle agglutination (TPPA) and total treponemal antibody (IgG/IgM) enzyme immunoassay. The rapid plasma reagin (RPR) was also done. The infant records were also reviewed for syphilis tests, type and duration of treatment, systemic manifestations, follow up and outcome.

**Results:** 40,590 women were screened and 47 mothers (1.2/1000) had positive syphilis serology. There were 39 live born infants documented in this group of which 15 (38%) were not investigated. All 24 infants with syphilis testing had a positive TPPA with 2 RPR positive Only 10 infants (26%) had follow-up to an average of 9.6±3.3 months, 3 were referred to the infectious diseases team for follow-up. No baby with congenital syphilis was identified.

**Conclusions:** The follow-up of infants in the presence of positive maternal syphilis serology is inadequate in our hospital at present. Increased awareness of the serious preventable sequelae of congenital syphilis among healthcare professionals is vital.

**MANAGEMENT OF INFANTS AT RISK OF CONGENITAL SYPHILIS**

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**Introduction:** Congenital syphilis was rare in most affluent countries but there has been a resurgence recently in several European countries.

**Aims:**

- To review the incidence of positive maternal syphilis serology.
- To assess the outcome of these pregnancies.

**Methods:** Prospective geographically based cohort study of VLBW infants from 1993 to 2002 Infants with a birth weight below 0.4th centile were identified using the UK growth charts. Infants were assessed at 2 years using prestructured forms. Data were analysed for hospital admissions and utilisation of community services.

**Results:** 6% (153/2367) of VLBW infants were identified with a birth weight <0.4th centile. 128 (83.6%) survived to 2 year follow up. 72 (56.2%) required hospital admissions; median 2 visits (range 1–9). 17 (15.2%) needed 3 or more admissions. Over 10 years there were 1015 hospital admission days in the first 2 years of life. Although only accounting for 14% (72/516) of cohort needing admissions, infants <0.4th centile accounted for 41% of hospital admission days (1015/2494). 58% (74/128) had referrals made for one or more community services compared to an overall cohort referral rate of 24% (450/1850).

**Conclusion:** Increased number of infants born <0.4th centile are surviving into childhood. This has resulted in increased hospital admissions and referrals to community services. Future planning within neonatal networks will need to take into account changing patterns in this subgroup to anticipate their greater need for education and health resources

**UTILIZATION OF HEALTHCARE RESOURCES BY BABIES BORN BELOW THE 0.4TH CENTILE FOR WEIGHT IN THE FIRST TWO YEARS OF LIFE**

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**Background:** Improvements in obstetric monitoring and the development of specialist centres dedicated to fetal medicine have led to improved survival of infants born <0.4th centile. There are limited data available on outcomes of these infants. This study describes health care utilisation rates of these infants in the first 2 years of life.

**Method:** Prospective geographically based cohort study of VLBW infants from 1993 to 2002 Infants with a birth weight below 0.4th centile were identified using the UK growth charts. Infants were assessed at 2 years using prestructured forms. Data were analysed for hospital admissions and utilisation of community services.

**Results:** 6% (153/2367) of VLBW infants were identified with a birth weight <0.4th centile. 128 (83.6%) survived to 2 year follow up. 72 (56.2%) required hospital admissions; median 2 visits (range 1–9). 17 (15.2%) needed 3 or more admissions. Over 10 years there were 1015 hospital admission days in the first 2 years of life. Although only accounting for 14% (72/516) of cohort needing admissions, infants <0.4th centile accounted for 41% of hospital admission days (1015/2494). 58% (74/128) had referrals made for one or more community services compared to an overall cohort referral rate of 24% (450/1850).

**Conclusion:** Increased number of infants born <0.4th centile are surviving into childhood. This has resulted in increased hospital admissions and referrals to community services. Future planning within neonatal networks will need to take into account changing patterns in this subgroup to anticipate their greater need for education and health resources

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**METABOLIC ACIDOSIS INCIDENCE AND ORIGIN IN PRETERM INFANTS, USING STEWART'S METHOD OF STRONG ION DIFFERENCE**

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**Objective:** Metabolic acidosis in the preterm infant is a frequent occurrence and often treated with fluid and buffer boluses. Our aim was to identify the origin of metabolic acidosis in preterm infants, using Stewart’s method of strong ion difference.

**Method:** Data were collected from blood gases, electrolytes, and albumin from preterm infants during their first week of life. These clinically indicated samples were examined for causes of acidosis using anion gap corrected for albumin (AGcorr), and Stewart’s strong ion method.

**Results:** 102 blood gas samples were collected from 12 preterm infants (gestation 26–31 weeks). Of these, 90 (88.2%) had a pH<7.35. PCO2 was elevated in 94/102 (92%) samples. Hyperchloeraemia (>107 mmol/l) was present in 76/102 (74.5%) of blood samples. Raised AGcorr occurred in 75/96 (78%) available samples. Raised lactate (>2 mmol/l) occurred in 14/102 samples (14%).

In 26 samples, simultaneous measurement of electrolytes allowed us to calculate total tissue acidosis and unmeasured anions (UMA). Tissue acidosis occurred in 23/26 (88%) samples. This was due solely to increased UMA (>3 mEq/l) in 16/23 (69%) samples and solely to increased lactate in only one case. Mixed tissue acidosis (raised UMA and lactate) was present in 6/23 (26%) of samples. In addition 19/26 (73%) samples were hyperchloeraemic.

**Conclusions:** Metabolic acidosis in preterm infants is complex and is most frequently caused by a combination of unmeasured anions and hyperchloeraemia. Isolated lactic acidosis is infrequent. The use of pH and base deficit as surrogates for lactate is impracticable.

**THE ECONOMIC IMPLICATIONS OF RSV BRONCHIOLITIS AND PROPHYLAXIS IN IRELAND**


**Objective:** To determine the economic impact of RSV (respiratory syncytial virus) bronchiolitis in a 7 year birth cohort. 2. To determine whether broadening the inclusion criteria for prophylaxis would be cost-effective. Cost-effectiveness analysis of palivizumab in a mixed public-private healthcare market, as in Ireland, has not been attempted before.

**Method:** A HIPE (hospital in-patient enquiry) computerised data analysis provided information on in-patient cases of bronchiolitis over a 7-year and 4-month period from 1999 to 2007. Gestational age, sex, age at diagnosis of bronchiolitis and length of stay were analysed. Information was compiled in a data file, cleaned, coded and analysed using SPSS version 14.0. Cost was calculated at per-bed-day rates on the premise that the babies admitted were subject to negligible cost of intervention.

**Results:** The final number in the cohort was 533. The total cost of RSV admissions during study period was €2,469,901.44 and these patients occupied 2489.82 bed-days over the 7 year 4 month period. The cost of vaccinations under the current guidelines was found to be greater than the cost of in-patient stay. The cost of extending the guidelines to all <37 weeks gestation did not prove cost-effective in the current Irish healthcare model.

**Conclusion:** The economic impact of RSV prophylaxis has not, to date, been a deciding factor in the recommendations for the use of...
palivizumab in the mixed Irish public-private healthcare model. However, if economic ‘net-loss’ is taken as the baseline zero, a reasonable case could be made for the selective widening of the inclusion criteria.

CONVICTIONS IN RESPECT OF CONTROL: COMPARISON BETWEEN MOTHERS OF PRETERM INFANTS AND THOSE OF TERM NEWBORN INFANTS
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Objective: Mother-child interaction, which is influenced by many factors, is important for the neurological development in preterm infants. In this study, convictions in respect of control and perception of stress were compared between mothers of preterm and term newborn infants.

Methods: The convictions in respect of the control of disease and health (internally/social or fatalistic externality by KKG, Lobaus and Schmitt, 1989) were assessed in mothers of preterm (born<32 weeks of gestation) and term newborn infants within the first three days after delivery. The momentary perception of stress (rating scale: 0–5) and socio-demographic data were recorded.

Results: Ten mothers (aged 29.2±5.9 years) of preterm infants (gestational age 29.2±2.9 weeks; birth weight 1355 ±549 g) participated in the study. They were compared with 101 mothers (aged 30.0±5.9 years) of term newborn infants (gestational age 40.0±1.32 weeks, birth weight 3366 ±442 g). Mothers of preterm infants assessed their controllability of internal disease and health as significantly lower (T = 46.1±9.6) than did mothers of term newborn infants (T = 53.0±9.6) (p=0.05). There were no differences in social or fatalistic externality.

Mothers of preterm infants had a significantly higher momentary perception of stress than did mothers of term newborn infants (2.9 versus 1.0; p<0.0001).

Conclusion: Differences were found between mothers of preterm infants and those of term newborn infants with regard to their assessment of the controllability of their disease and health and their momentary perception of stress. These differences should be taken into account in the care and support of mothers of preterm infants in order to improve mother-child interaction.

ACTIVE CYTOMEGALOVIRUS (CMV) RETINITIS IN A NON-IMMUNOCOMPROMISED NEWBORN INFANT: A CASE REPORT
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Background: Usually retinitis is associated with congenital CMV and does not progress postnatally in the immunocompetent neonate, whereas in immunodeficient patients it can progress rapidly.

Objective: To describe the case of a neonate with perinatal CMV infection and active retinitis. A neonate born at 38 weeks gestational age, birth weight 2850 g, hospitalized at 34 days of life for CMV infection. Pregnancy was uneventful, maternal serology demonstrated IgG antibodies but not IgM antibodies against CMV. Active CMV infection was confirmed in the neonate by virus isolation from urine and CMV PCR in saliva, whole blood and plasma. Cerebral and abdominal scans were normal. Eye examination on admission revealed retinal hemorrhages and retinal detachment in the left eye. After 3 days retinal detachment in the left eye was complete and the right eye presented several retinal hemorrhages. An ocular scan of the left eye confirmed retinal detachment. The study of the immune system of the neonate was normal, serology for AIDS was negative.

Treatment with i.v. ganciclovir 10 mg/kg/day was started in view of the active retinitis. Two weeks after treatment the hemorrhage and exudation in both eyes were resolving. After three weeks complete resolution of the infection occurred in the right eye and i.v. therapy was stopped. Oral valganciclovir 30 mg/kg/day was then started and continued for further 3 weeks.

Conclusions: While very unusual, CMV retinitis has to be taken into consideration in neonates with early postnatally acquired CMV infection. An early diagnosis and treatment may be crucial to avoid visual impairment.

CONCEPTUALIZING CHRONIC PAIN IN HOSPITALIZED INFANTS: HEALTH PROFESSIONAL PERSPECTIVES
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According to anecdotal evidence from health professionals and parents, there are significant numbers of medically comprised infants that are potentially experiencing chronic pain. However, minimal research conceptualizing the phenomenon of chronic pain can be found in the literature. The purpose of this study was to conduct an in-depth qualitative analysis of definitional and assessment parameters for infant chronic pain with experienced health care professionals.

Methods: Forty-five health care professionals considered to be expert clinicians (nurses, physicians, respiratory therapists, physiotherapists, occupational therapists, dieticians, pharmacists) with a median of 17 years of clinical experience were recruited from three tertiary level, university-affiliated Neonatal Intensive Care Units and one Pediatric Intensive Care Unit. Using a qualitative descriptive methodology, individual and focus group interviews were conducted with eligible health professionals. All data were transcribed verbatim and analyzed using qualitative and quantitative content analyses methods.

Results: There was clear acknowledgement that infants had the capacity to experience chronic pain. Furthermore, although there were inconsistencies as to the exact definition of chronic pain, health care professionals were able to offer preliminary definitional parameters of chronic pain and provide examples of infant chronic pain on their hospital units. They suggested possible indicators for chronic pain that focused on behaviours and physical/physiological responses sustained over time which differ from indicators traditionally used to measure acute pain.

Relevance: Articulating preliminary definitional parameters of infant chronic pain and positing potential indicators is the first step to improving pain assessment and management in this vulnerable population.

COAGULATION ABNORMALITIES IN THE FIRST 2 DAYS OF LIFE AND SEVERE INTRAVENTRICULAR HAEMORRHAGE IN EXTREMELY LOW BIRTH WEIGHT INFANTS
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Background: Only few studies assessing the risk for intraventricular hemorrhage (IVH) in neonates have reported measurements of coagulation factors. Prematurity, lack of antenatal steroid therapy
We designed a study to evaluate selected coagulation and fibrinolysis system factors in extremely low birth weight infants (ELBW) admitted to the referral ICU, to find the correlation between their levels in the initial 48 hours of life and development of IVH.

**Objective:** To determine through serial measurements the sensitivity and specificity of biological markers: C-reactive protein (CRP), interleukin-6 (IL-6), and elastase-α1-proteinase inhibitor (E-α1-PI) in early, pre-symptomatic diagnosis of neonatal infections, as well as prognostic significance of these markers.

**Methods:** 93 newborns were examined and divided in the following groups: proven early sepsis, proven late sepsis, suspected infection, and a control group. Serial measurements were performed: in the first 24 hours, in 48 hours and every following day afterwards. A quantitative method for CRP and ELISA were used. Statistical analysis was performed using Friedman, Mann–Whitney U and Wilcoxon test.

**Results:** The obtained results showed statistically significant (p<0.001) early increase of IL-6 in the group with sepsis contrary to CRP and E-α1-PI that increased significantly (p<0.001) during the following measurements compared to the control group. Simultaneous use of IL-6 and CRP revealed highest sensitivity (87%) and specificity (96%) in early diagnosis of neonatal infection. Serial measurements of E-α1-PI showed an improvement in cases of good response to therapy and a rapid decrease when the condition worsened.

**Conclusions:** There is an apparent need for serial use of markers for early diagnosis and monitoring of neonatal infections. Simultaneous use of IL-6 and CRP showed highest sensitivity and specificity. E-α1-PI appeared as a good marker for chronological follow up of the infection, response to therapy and complications’ development.

**HYDROPS FETALIS: ANTENATAL DIAGNOSIS AND POSTNATAL OUTCOMES**

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**Aims:** We wished to determine the number of cases, aetiology, antenatal interventions, and postnatal outcomes of pregnancies complicated by hydrops fetalis at our hospital.

**Methods:** All ultrasounds of patients attending the Fetal Assessment Unit from Jan 2001–Dec 2007 were reviewed. Maternal age and gestational age at diagnosis, antenatal investigations and interventions; mode of delivery and infant outcomes to hospital discharge were determined form the medical notes.

**Results:** 87 cases were identified; the women aged 21–42 years and hydrops was diagnosed at 13–39 weeks. Aetiology was identified in 18 (50%); these included TORCH infections (4), immune hydrops (3), chromosomal anomalies (3), cardiac anomalies (3), cystic hygroma (5), chylothorax (2). 21 had antenatal procedures; all had blood tests, 7 had intrauterine transfusions, 6 had shunting/drainage, and 3 had amniocentesis. 13 patients were referred from other hospitals; they were subsequently discharged to the referring hospital and lost to follow-up. 24 delivered at N&H (18 vaginal deliveries and 6 caesarean sections). There were 2 spontaneous miscarriages, 9 intrauterine deaths and 15 were liveborn. Of the 13 liveborn infants, 4 died in the delivery room and 9 were admitted to NICU (length of hospital stay 5–46 days). Six infants survived until discharge.

**Conclusions:** Fetal hydrops has a high antenatal and postnatal mortality (54% and 46% respectively). Antenatal diagnosis is helpful for planned management but did not predict survival. A well structured, targeted investigative approach yielded a prenatal diagnosis in nearly 50% of cases. These results are in keeping with similar international studies.

**PREVALENCE OF CEREBRAL PALSY REGARDING QUALITY OF NEONATAL INTENSIVE CARE**

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**Objective:** Our aim is to investigate the prevalence of CP and to determine if it is influenced by the progress of perinatal and neonatal intensive care at our Department.

**Patients and Methods:** Data regarding live births at the Department of Gynecology and Obstetrics during the period from 1992 to 2001 were collected. Studied period was divided into period I (1992–1996) and period II (1997–2001). CP was evaluated according to gestational age (GA), defined as preterm (PT) (GA 22–36 weeks) and term (T) (GA>37 weeks). Prevalence of CP was calculated for the whole study period, as well as periods I and II. Children were followed up for a minimum of five years and CP was diagnosed according to international criteria.

**Results:** There were 31,523 live births at studied period, PT 1658 and T 29,865.

CP was diagnosed in 62 children, 50 PT and 12 T children. The prevalence of CP during the study period was 1.96/1000, with no significant difference between period I and II (1.92 vs 1.99 per 1000). Prevalence in PT children was 29.67/1000 and 0.40/1000 in T children. In the period I prevalence of CP in T children was 0.49/1000, but was significantly decreased during the period II – 0.29/1000. By contrast, prevalence of CP in PT children in the period I was 26.6/1000, but was increased in period II – 33.6/1000.

**Conclusion:** The prevalence of CP increased significantly with decreased GA, which can be explained by increased survival of preterm infants.

**PERINATAL INFECTIONS AS A RISK FACTOR FOR CEREBRAL PALSY**

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**Objective:** The risk factors for cerebral palsy are well known. They include demographic social factors, maternal medical history, prior pregnancies, eventual complications of current pregnancy, labor and delivery and neonatal characteristics. The aim of this study was to
investigate some of the above-mentioned risk factors for CP in preterm (27–36 gestation weeks) and term infants (>37 gestation weeks).

Patients and methods: A total of 62 children suffering from CP were born at the University Hospital Rijeka during the ten years period (1992–2001.). Diagnosis of CP was consistent with international recommendations. Of them, there were 50 preterm and 12 term infants. Risk factors: maternal age, characteristics of present pregnancy, type of delivery and the presence of the peripartal infection have been analyzed.

Results: Mean maternal age was 28.8 years. However, preterm infants’ mothers were significantly older then term infants (29.6 and 25.0 years old, respectively). In 18 cases cesarean section has been performed. Perinatal infection has been diagnosed in 18 cases, significantly more often in preterm infants then term infants (17 cases vs 1 case) with CP.

Conclusion: Obtained results show that perinatal infection was the most common risk factor for CP in the group of preterm infants. Management of antenatal and intrapartal infections in preterm infants still represents the most challenging issue in prevention of CP.

CERVICAL TERATOMA: A CASE REPORT
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Background and aims: Cervical teratoma is a rare form of teratoma in neonates and is an unusual cause of cervical masses in them. The aim is to present a case of neonatal cervical teratoma to alert neonatologists to the importance of its consideration.

Methods and results: B/O M a full term baby boy born by normal vaginal delivery with birth weight of 2.5 kg. At birth, he was noted to have a huge neck mass extending from the mandible to the clavicle more on the right side. The mass measured 15 x 12 x 10 cm, hard with soft and cystic areas. Plain X-ray, u/s, CT scan and MRI were all consistent with cervical teratoma (images will be included in the poster). Complete surgical resection was done. Pathology report was malignant teratoma grade 3.

Conclusion: Cervical teratoma although uncommon should be considered in the differential diagnosis of neck masses in neonates.

NEONATAL PURPURA FULMINANS: A CASE REPORT
BR Qandalji. Ministry of Health, Al-Bashir Hospital, Amman, Jordan

Background: Neonatal purpura fulminans is a rare neonatal complication with high morbidity and mortality. Most case are due to protein C and/or S deficiency. Acquired causes includes sepsis.

Case: B/O A was born at 35 weeks gestation, admitted with respiratory distress syndrome. He needed assisted ventilation for 5 days. At age of 10 days, he had fulminant sepsis and had deep blush discoloration of hands, forearms, feet and legs. This discoloration progressed to dry gangrene at the tips of fingers.

Investigations revealed high CRP, low platelet count, high PT and PTT, normal levels of protein C and S. Blood culture revealed acinetobacter. The neonate received the appropriate broad spectrum antibiotics along with FFP. He survived the fulminant sepsis but had auto-amputation of the distal phalanges of the hands.

Conclusion: Neonatal purpura fulminans has high morbidity and mortality. It needs prompt recognition and management.

CAUSES OF STILLBIRTH AND NEONATAL DEATH IN WOMEN WITH PRE-EXISTING TYPE 1 AND TYPE 2 DIABETES MELLITUS

Background: Perinatal mortality remains high among babies of mothers with type 1 and type 2 diabetes. The causes of death have not previously been described.

Aims:
- To describe the causes of stillbirth and neonatal death in babies of women diabetes mellitus.
- To test the hypothesis that the causes of perinatal mortality are the same for women with type 1 and type 2 diabetes.
- To compare the currently applied classification systems with newer ‘alternative’ systems, with particular emphasis on numbers of ‘unexplained’ deaths.

Methods: The case notes of women with pre-existing diabetes who had a stillbirth or neonatal death were identified during the Confidential Enquiry into Maternal and Child Health (CEMACH) report. Cause of death was extracted and classified by two reviewers independently.

Results: Ninety three cases were analysed: 73 stillbirths, 20 neonatal deaths. The commonest cause of death was antepartum asphyxia (64 cases) followed by congenital anomaly (18 cases). Mortality due to congenital anomaly was less common in women with type 1 diabetes (15% of deaths vs 26%; rate ratio 0.37, 95% CI 0.15 to 0.95).

‘Alternative’ classification systems reduce ‘unexplained’ deaths, but the differences are predominantly in nomenclature.

Discussion: This is the first description of the causes of perinatal mortality in women with diabetes at a national population level. Most deaths are still classified as ‘unexplained’. Further work is needed (i) to improve the classification for all babies, (ii) to understand better the mechanisms for these losses, in order that (iii) outcomes can be improved.

ASYMPTOMATIC BACTERIURIA AND PYURIA IN PREGNANCY

M Rahimbh, 1H Khavari-Daneshvar. 1Faculty of Allied of Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran; 2Emam Hospital, Tehran University of Medical Sciences, Tehran, Iran

Objective: In many cases, pregnant women with bacteriuria have no symptoms of a UTI. It is an important risk factor for some complications. This study was performed to determine the incidence of asymptomatic bacteriuria and pyuria in pregnant women.

Methods: 86 pregnant women during the first trimester and 56 non-pregnant women were evaluated. All the subjects were clinically identified to have no signs and symptoms of urinary tract infection.

Clean catch midstream urine samples were examined microscopically and cultured by placed on specific and non-specific culture media. Organisms isolated were identified by laboratory techniques and were tested for antimicrobial sensitivity by standard method.

Results: Bacteriological examination revealed that 25/86 (29.1%) and 3/56 (5.4%) were positive for asymptomatic bacteriuria in the study group and controls respectively (p<0.05). Microscopic analysis of urine revealed 18/86 (20.9%) and 3/56 (5.4%) were pyuria in the study group and controls respectively (p<0.05) by further biochemical species identification in study group, Escherichia coli were found in 20%, Ataphylococcus epidermidis 36%, Staphylococcus haemolyticus 12%, Streptococcus group D 12%, Staphylococcus saprophyticus 12% and Proteus mirabilis 8%.

In the control group, biochemical species identification showed that Escherichia coli were found in 33.3% and Staphylococcus epidermidis in 66.7%.

Conclusion: Our results show that the incidences of asymptomatic bacteriuria were significantly higher in pregnant women than non-pregnant women. The main finding in the present study was that about 29.1% of the pregnant women who were in the first trimester had asymptomatic bacteriuria which is much more than was reported in the literature from other countries.
CHOLELITHIASIS IN AN INFANT WITH PROLONGED JAUNDICE

S Ravindran, M Premkumar, T Nicole. Paediatric Department, Yeovil District Hospital, Yeovil, Somerset, UK

Cholelithiasis is very rare in the newborn infant (0.5%). Most common associations are haemolytic anaemia, treatment with total parental nutrition, abdominal surgery and family history. We describe a case of symptomatic gall stones detected in a 11-week-old baby.

Case presentation: 11 weeks old referred by the GP with jaundice and pale stools. This baby was born at term to healthy parents. He was on full enteral feeds. Did not have any features of infections. He had weight loss from 91st centile to 75th centile. Systemic examination was unremarkable except for tinge of jaundice. Blood investigations showed an elevated conjugated bilirubin levels and raised liver enzymes. Ultra sound scan detected significantly dilated intra hepatic ducts, common bile duct and gall bladder contained calculi. He was treated conservatively.

Conclusions: Children of all ages may develop gall stones. Chololithiasis should be considered in a baby with prolonged jaundice and pale stools. Hepatic ultrasound scan should be done in babies with conjugated hyperbilirubinaemia.

THE MOULDED BABY SYNDROME: INCIDENCE AND RISK FACTORS IN 1001 NEONATES

1A Rubio, 1J Griffet, 2Service de Pédiatrie, CHU de Nice, Nice, France; 2Service de Chirurgie Infantile, CHU de Nice, Nice, France

Objectives: Postural deformities are frequent in neonates. The moulded baby syndrome (MBS) comprises one or more of the following disorders: plagiocephaly, torticollis, congenital scoliosis, pelvic obliquity, adduction contracture of a hip, and/or malpositions of the knees or feet. We analyzed the incidence of MBS in healthy neonates and identified the risk factors of its composing elements.

Methods: 1001 healthy neonates were examined on the second or third day of life by the same paediatrician. Familial, obstetrical, perinatal history and putative risk factors for postural deformities were collected. Families of newborns with a torticollis or plagiocephaly were given positioning advice and the outcome was evaluated by a phone survey 2 months later.

Results: MBS was detected in 107 neonates (10.7%): 97 plagiocephalies or torticollis, 25 congenital scoliosis or pelvic obliquities, 13 malpositions of knees or feet. We identified risk factors related to the mother (age: OR = 1.39, parity: OR = 0.643), the obstetrical history (preterm labor: OR = 1.65, oligoamnios: OR = 10.179, breaech presentation: OR = 2.746, pregnancy toxemia: OR = 3.773, instrumental delivery: OR = 6.028) and the newborn (male gender: OR = 1.982, birth length: OR = 1.196). The initial plagiocephaly or torticollis improved in 77% of infants after 2 months of stimulation and positioning measures.

Conclusions: Paediatricians should be alert for the frequent but subtle MBS postural deformities, and give positioning advice to the parents. A neonate of male gender or greater birth length, with an older primiparous mother, a history of preterm labor, oligoamnios or pregnancy toxemia, a breech presentation or an assisted delivery is more likely to have a MBS.

EARLY RESPIRATORY MANAGEMENT IN EXTREME PRETERMS: A REVIEW OF OUTCOMES WITH CHANGING PRACTICE

N Saxena, JW Davis, CP Oneill, DG Sweet. Neonatal Unit, Royal Jubilee Maternity Hospital, Belfast, N. Ireland, UK


Methods: This retrospective study obtained data from NICORE (Northern Ireland Neonatal Database). Data was collected on all babies born <30 wks gestation in 2006 surfactant usage, timing of first dose, duration of respiratory support, oxygen supplementation and respiratory outcome. BPD was defined as oxygen requirement >36 weeks post conceptional age (PCA). This was compared with data from similar groups of babies in 1993 and 2003.

Results: See table

Results are represented as % and median (interquartile range).

Conclusions: Extremely preterm babies are receiving more targeted and selective respiratory care in terms of surfactant administration and mechanical ventilation. Mortality is decreasing but BPD continues to rise despite increased use of targeted postnatal steroids.

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SHORT-TERM MORBIDITY IN POST-TERM INFANTS

1,2E Skogvoll, 2B Theting, 2OJ Johansen, 1R Heimstad. 1Department of Anaesthesia, St. Olav University Hospital, Trondheim, Norway; 2Department of Paediatrics, St. Olav University Hospital, Trondheim, Norway; 2Unit for Applied Clinical Research, Faculty of Medicine, Norwegian University of Science and Technology (NTNU), Trondheim, Norway; 1Department of Obstetrics, St. Olav University Hospital, Trondheim, Norway

Objective: Post-term babies have increased risk of complications, such as asphyxia and meconium aspiration syndrome. The aim of this study was to describe contemporary Norwegian short-term neonatal morbidity beyond 41 weeks of gestation.

Methods: Data were obtained in a randomised clinical trial comparing induction of labour with expectant management at 41 weeks of pregnancy, showing no difference in outcome. (1) A total of 508 post-term neonates born from 2002 to 2004 were examined by a paediatrician according to a prospective protocol.

Results: Median gestational age was 291 days (range 287 to 302), median birth weight was 3970 g (range 2790 to 5150), median Apgar score at 5 minutes was 10 (range 3 to 10), median pH was 7.27 (range 6.86 to 7.52), and median base excess was −3 (range −18 to 7).

Twenty neonates (4%) were resuscitated at birth, mainly needing ventilation. One patient died. Meconium stained amniotic fluid was seen in 156 (31%), but meconium aspiration syndrome was diagnosed in only 4 neonates (1%). A total of 32 neonates (7%) were admitted to intensive care for a median stay of 6 days (range 1–15). Overall neonatal morbidity (1) correlated with increasing gestational age (Spearman’s r = 0.10, p = 0.02).

Conclusions: With proper antenatal care, expedient resuscitation, and access to neonatal intensive care, contemporary short-term morbidity in post-term infants is very low. In particular, meconium aspiration syndrome was rare despite a notable prevalence of meconium staining.

Norovirus infection in preterm and term neonates has been described. Male term newborn, LGA, second child of opioid addicted mother. We reviewed 21 patient records of 20 opioid addicted women, 174 faecal specimens 63 (36%) tested positive by ELISA, thirteen by ELISA and/or by PCR technique. Results: Norovirus was detected in faecal specimen of one term neonate and 3 preterm neonates. Time of onset and duration of symptoms were measured. Conclusion: Norovirus infection is common among neonates born to opioid addicted mothers. Neonatal hemochromatosis is a rare disease of probable alloimmune etiology marked by severe hepatic dysfunction associated with intra and extra-hepatic siderosis, occurring in utero or in the early neonatal period. Its outcome is often fatal. Case report 1: Male preterm newborn admitted to the Neonatal Intensive Care Unit for non-immune fetal hydropsia. Complementary studies excluded congenital infections, cardiac structural disease and numerical chromosomal abnormalities. Analytically, he presented anemia, coagulopathy, hyperalbuminemia and limited hepatic cytolysis. The evolution was adverse with death due to multiorgan failure on day 27. Case report 2: Male term newborn, LGA, second child of consanguineous parents, transferred to our unit on day 7 for recurrent hypoglycemia since birth. From admission, this patient was severely ill, hyporreactive, jaundiced, with anasarca. Complementary studies showed refractory metabolic acidosis, hyperlactacemia, anemia and thrombocytopenia as well as other markers of organ failure, namely hepatic, with severe coagulopathy and hyperalbuminemia, cholestasis and limited cytolysis. Abdominal MRI suggested hepatic deposits of iron. Myotochondrial respiratory chain enzymatic study was normal. Progressive organ involvement resulted in death on day 41.

In both patients, post-mortem studies depicted severe hepatic parenchymal lesion and multisystemic deposition of iron, suggesting the diagnosis of neonatal hemochromatosis.

Although this diagnosis is often established through anatomicopathological findings, the authors intend to highlight the consideration of neonatal hemochromatosis as a differential diagnosis for non-immune fetal hydropsia, especially when accompanied with hepatic disease of prenatal or early neonatal presentation. Therapeutic options are still scarce, but transplantation may soon become a customary option.

**NEONATAL HEMOCHROMATOSIS: CASE REPORTS**

'S Soares, 'MJ Silva, 'M Sampaio, 'S Pissarra, 'G Vasconcelos, 'ML Cardoso, 'O Brandao, 'H Guimaraes, 'E Leao-Telles, 'E Rodrigues. 'Neonatal Intensive Care Unit. Hospital S. Joao, Porto, Portugal; 'Medical Genetics Institute Prof. Jacinto Magalhaes, Porto, Portugal; 'Pathology Department, Hospital de S. Joao, Porto, Portugal; 'Faculty of Medicine, The University of Porto, Porto, Portugal; 'Metabolic Diseases Unit, Hospital S. Joao, Porto, Portugal

Neonatal hemochromatosis is a rare disease of probable alloimmune etiology marked by severe hepatic dysfunction associated with intra and extra-hepatic siderosis, occurring in utero or in the early neonatal period. Its outcome is often fatal.

**Case report 1:** Male preterm newborn admitted to the Neonatal Intensive Care Unit for non-immune fetal hydropsia. Complementary studies excluded congenital infections, cardiac structural disease and numerical chromosomal abnormalities. Analytically, he presented anemia, coagulopathy, hyperalbuminemia and limited hepatic cytolysis. The evolution was adverse with death due to multiorgan failure on day 27.

**Case report 2:** Male term newborn, LGA, second child of consanguineous parents, transferred to our unit on day 7 for recurrent hypoglycemia since birth. From admission, this patient was severely ill, hyporreactive, jaundiced, with anasarca. Complementary studies showed refractory metabolic acidosis, hyperlactacemia, anemia and thrombocytopenia as well as other markers of organ failure, namely hepatic, with severe coagulopathy and hyperalbuminemia, cholestasis and limited cytolysis. Abdominal MRI suggested hepatic deposits of iron. Myotochondrial respiratory chain enzymatic study was normal. Progressive organ involvement resulted in death on day 41.

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**TWO NOSOCOMIAL NOROVIRUS OUTBREAKS AT NEONATAL INTENSIVE AND INTERMEDIATE CARE UNITS**

C Sommer, W Mueller, B Resch. Division of Neonatology, Department of Pediatrics, Medical University, Graz, Austria

**Objective:** Norovirus infection in preterm and term neonates has rarely been described. We report on two nosocomial norovirus outbreaks at the neonatal intensive care unit (NICU) and the Neonatal Intermediate Care Unit of the Paediatric Department of the Medical University Graz, Austria.

**Methods:** Observational study on two nosocomial outbreaks of norovirus disease. Symptoms of infection in preterm and term neonates are described. Norovirus was detected in faecal specimen by ELISA and/or by PCR technique.

**Results:** Episode 1 at the NICU: between January and March 2007, 22 of 44 preterm infants were tested positive for norovirus. Out of 174 faecal specimens 63 (36%) tested positive by ELISA; thirteen specimens tested additionally by PCR were negative. Only the index patient developed symptoms with bloody stools for one day. Viral shedding longer than two weeks was observed in six (27%) patients with a maximum of 39 days.

Episode 2 at the Neonatal Intermediate Care Unit: between December 2007 and January 2008 five of 36 neonates tested positive for norovirus. All had clinical symptoms including vomiting and mild diarrhea in one patient and short-lasting diarrhea in four patients. Isolation of the infants and strict hygiene measures stopped spread of disease. By discharge four of five patients still showed viral shedding.

**Conclusion:** Although spread of disease is difficult to confine, symptoms of disease are generally mild and self-limited in this population. However, we question the reliability of the norovirus-specific antigen assay by the fact of negative PCR testing during the first episode.

**IRON STATUS DURING THE FIRST YEAR IN PREMATURE AND FULL TERM NEONATES WITH PERINATAL IRON DEFICIENCY**

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**Background:** Certain gestational conditions associated with decreased fetal iron delivery and/or increased fetal iron demand beyond the placental transport capacity can result in perinatal iron deficiency (PID).

**Objective:** To determine the 12-month follow up iron status of infants born with abnormally low serum ferritin concentrations (SF).

**Methods:** 35 infants with cord SF<50μg/L and 35 control infants with cordSF>150μg/L had iron status follow up, during the first year of life. Full blood counts, SF, soluble transferrin receptor (sTfR) and erythropoietin levels were measured in neonates and their mothers at delivery and at 12 months.

**Results:** There was no difference between the mean serum hemoglobin (Hb) and SF in mothers and neonates in both groups. Of the neonates with PID the sTfR levels were significantly higher in the premature (42.2±15.5 vs 30.7±15 mg/ml) and the erythropoietin levels were significantly higher in the full term neonates (37±38.8 vs 5.7±1.8). At 12 months, in the low birth ferritin group, the Hb and SF were significantly lower in the premature neonates (11.6±0.9 vs 12.2±0.8, 17.2±10.1 vs 30.6±19) and Hb levels were significantly lower in the full term neonates (11.6±0.2 vs 12.5±0.9). Of the low birth ferritin group, the premature infants were mostly twins while the full term were infants of diabetic mothers. 50% of the neonates had iron deficiency anaemia.

**Conclusions:** Maternal iron deficiency affects fetal iron status but doesn’t represent a significant predisposing factor. PID in full term neonates is mostly associated with gestational conditions that are characterized by augmented erythropoiesis while in premature neonates with decreased fetal iron delivery. Some neonates with PID are still iron deficient at 12 months of age, therefore iron supplementation must be individualized.

**NEONATAL ABSTINENCE SYNDROME IN NEONATES OF MOTHERS WHO HAVE TAKEN OPIOIDS DURING PREGNANCY IN NICU**

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**Introduction:** Neonates born to mothers addicted to opioids are at risk for drug withdrawal.

**Material:** We reviewed 21 patient records of 20 opioid addicted mothers who delivered in Alexandria hospital during August 2005–April 2008. Two opioid types were used in our study: heroin and methadone. Babies were evaluated according Finnegan score.

**Purpose:** To describe:

► Symptoms and their frequency.

► Time of onset and duration.

► Appearance of congenital malformations.

**Results:** 60% (12/20) of the mothers used heroin, 35% (7/20) methadone and 10% both opioids during pregnancy. 80.5% (17/21) of the neonates developed symptoms while 19% (4/21) were asymptomatic. From the symptomatic neonates, 35.29% (6/27) had...
The study group (A) encompassed 51 premature infants, born 24–36 Hbd, suspected of fungal infection (mothers had vaginal fungal infections).

The control group had: (C1), 49 premature infants (born 26–30 Hbd) with birth weights, mean ± SD = 1068.74 ± 298.56 g and (C2), 45 premature infants (born 31–35 Hbd) with birth weights, mean ± SD = 1904.18 ± 405.67 g.

Urinary D/L-arabinitol ratio was determined by GC-ECD methods. Molecular analysis for presence of fungal DNA was made by PCR. Serum procalcitonin levels was performed with LUMI test PCT.

In the control groups C1 and C2, D/L-arabinitol ratio was, mean ± SD = 2.14 ± 0.54 and 2.16 ± 0.53 respectively. The cut off value was D/L-arabinitol = 3.8.

In the study group A there were applied methods (D/L-arabinitol, PCR, procalcitonin) but non-confirmed fungal infection (vs control group p>0.5). In 49 infants D/L-arabinitol ratio, procalcitonin levels were at normal values, results of molecular analysis of DNA did not indicate the presence of Candida sp. Two children with superficial colonization (C. albicans) had a D/L-arabinitol ratio in range of the cut off value limit.

IS NEONATAL HYPERBILIRUBINEMIA A REASON FOR HOSPITAL READMISSION?

Objective: The aims of our study were to estimate the preventive effect of early feeding in neonates at risk of developing hypoglycemia, and to estimate the effect of increasing milk volume.

Methods: All 1605 neonates born in the Central Hospital in Naestved from September 1 2001 to August 31 2002 were managed according to a strict protocol. Data was collected prospectively. Five risk groups were defined: 1) Small for gestational age (SGA), 2) intraterine growth retardation (IUGR), 3) infants of mothers with gestational diabetes, 4) asphyxia, acidosis, or sepsis, and 5) polycthyemia, erythroblastosis fetalis, respiratory distress or hyperbilirubinemia. All neonates at risk received early feeding with 5 ml/kg of milk every two hours. Blood glucose was measured two hours after feeding. In case of hypoglycemia (blood glucose <2.5 mmol/l); the volume of milk was increased. If hypoglycemia persisted infants were given i.v. glucose.

Results: Of the 1605 neonates, 10.5% were at risk. Prevention with early feeding was successful in 46.6% of them. 50% of the neonates who did develop hypoglycemia could be treated with increased volume of milk. Hypoglycemia occurred in all risk groups. The risk was highest in the groups “SGA” and “birth weight <2500 g”. The presence of more than one risk factor increased the risk significantly.

Conclusions: More than 50% of newborns at risk developed hypoglycemian in spite of a strict preventive protocol. The clinical significance is ill-defined.

Determination of D-arabinitol ratio, presence of fungal DNA and procalcitonin levels as markers for candidiasis in premature infants

It is considered that premature infants in invasive of methods treatment condition are a considerable risk group for fungal infection, particularly for opportunistic microorganisms (C. albicans constitutes 50–80%), due to immune system immaturity. The essential problem of the efficacious treatment for candidiasis is lack of sensitive and fast diagnostic methods.

D-arabinitol, a characteristic metabolite of several Candida sp. is applied as an alternative non-invasive, diagnostics biomarker for candidiasis.
Transfusion requirements. In the regional NICU in Northern Ireland phlebotomy is undertaken by junior medical staff, with no targeted education. Junior doctors establish the required blood volumes by cumulative experience. We aimed to describe the pattern of neonatal phlebotomy over two time periods and to determine the necessity of formal phlebotomy education.

**Methods:** Early morning blood sampling was assessed before and after an educational package, which detailed regional laboratory volume requirements. We recorded sample source, infant weight, gestation and day of life. Samples were weighed at laboratory level and classified as insufficient, sufficient, clotted or overdrawn. The volume was calculated using the specific gravity of blood and converted to percentage of laboratory-requested volume. The phlebotomists were blinded to this review process.

**Results:** See table.

**Conclusion:** We can conclude that staff are achieving high standards in sample collection and utilisation, with only 1–2% of samples being insufficient. The infants in the group assessed following educational intervention were heavier, which may affect the degree of reduction in overdraw. We are currently modifying the educational package and aim to continue to review our phlebotomy practice. We suggest that learning by cumulative experience is sufficient to maintain high standards in neonatal phlebotomy practice.

**Tanney et al**

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<th>Mean weight (kg)</th>
<th>Mean % (SD) sample volume</th>
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<th>% Overdrawn (&lt;120%)</th>
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**GASTRIC EMPTYING AND GASTRIC RESIDUAL IN VLBW INFANTS IN BOLUS AND CONTINUOUS FEEDING**

1G Triantafyllidis, 1E Varhalama, 1F Kokari, 1I Grivea, 1V Makri, 1C Costalos, 1A Gournaris. 1Neonatal Intensive Care Unit, General Hospital of Nikea, Piraeus, Greece; 2NICU “A Lexandra” Regional Hospital Athens, Athens, Greece; 3University Neonatal Department, University Hospital, Larissa, Greece

Gastric residual volume constitutes an important marker of good feeding tolerance in a VLBW neonate. There is dispute in the literature as to where the upper limit of normal residual in bolus feeding should be. No evidence exists whatsoever for continuous feeding.

**Objective:** To examine the effects of bolus and continuous methods of feeding on gastric emptying and gastric residual volume (GRV) of VLBW neonates.

**Study design:** In a randomized cross over design study including 22 newborns (BW<1200 grams and GA<30 weeks), we measured gastric emptying by performing serial (7) ultrasound measurements of the antral cross-sectional area (ACSA) and also assessed GRV by aspiration, on two occasions: after bolus and during continuous feeding. Every newborn was administered the same quantity and quality of milk on both occasions. 11 newborns were randomly assigned to have the first measurement taken during bolus feeding and the remaining 11 during continuous feeding.

**Result:** A significant difference of the mean ACSA between bolus and continuously fed neonates was found in the last measurement (120’), (p = 0.0000). There was also significant difference (p = 0.0000) in the mean GRV between the two groups. Gastric residual was 4% in bolus feeding (median, range 0–25%) whereas in continuous feeding it was 44% (median, range 15–80%).

**Conclusion:** During continuous and bolus feeding, the finding of a residual volume in the stomach up to 80% and 25% respectively can be well tolerated. Thus, different upper thresholds of GRV are required as indicators of feeding tolerance.

**NASAL CPAP USED IN NEWBORNS WITH BRONCHOPULMONARY DYSPLASIA (BPD): 5 YEARS FOLLOW UP OF RESPIRATORY TRACT DISEASE**

M Theodoraki, A Tsadila, P Panagiotoukou, G Triantafyllidis, V Makri, A Gournaris. Neonatal Intensive Care Unit, General Hospital of Nikea, Piraeus, Greece

Increasing incidence of BPD leads to frequent hospital readmissions in later life.

**Aim:** We investigated whether nCPAP used in unstable infants with BPD affects later prognosis.

**Methods:** 45 VLBW infants with BPD (O32>28 days, + chest X-ray) comprised the study group. Of these, 27 (group A: BW: 977 ± 165 gr, GA: 27.5 ± 1.4 wks), were on nCPAP (diuretics and O32 when necessary) for 18 days after the 10th day of life (median 18, range 9–34). The control group (group B) comprised 18 newborns (BW: 1023 ± 218 gr, GA: 28 ± 2.1 wks) whose conservative treatment included theophylline (IV/PO), salbutamol and cortisone (IV/nebulizer), besides O32 and diuretics. These infants were either not in nCPAP after the 10th day of life, or were administered nCPAP<5 days. 25 group A (A1) infants and 15 group B (B1) were followed for 2 years for lower respiratory tract infections. 22 group A (A2) infants and 12 group B (B2) were followed from 3 up to 5 years of age.

**Results:** In the first year of life, 60% of group A1 infants were respiratory disease free in contrast to 20% of group B1 (p<0.05). In the second year, 68% of group A1 infants were respiratory disease free compared to 26.6% of group B1 (p<0.05). Between 3 and 5 years, 54% of group A (A2) infants were respiratory disease free and 33% of group B (B2) (p>0.05).

**Conclusions:** Use of nCPAP in infants with BPD appears to positively influence late prognosis, perhaps due to stabilization of the alveolus and thoracic cage.

**SEVERE MORBIDITY AND MORTALITY OF NEONATES TRANSFERRED TO A GREEK NEONATAL INTENSIVE CARE UNIT**

M Theodoraki, A Konstandinid, G Triantafyllidis, V Makri, S Papadakis, A Gournaris. Neonatal Intensive Care Unit, General Hospital of Nikea, Piraeus, Greece

Proper transport of newborns to an intensive care department affects subsequent outcome and prognosis.

**Objective:** The aim of the study was to assess severe morbidity (SM) and mortality (M) of neonates transported to our department and compare it with inborns.

**Method:** 601 and 777 newborns were admitted in years 1999–2000 and 2006–2007, respectively. Those included inborns, neonates transferred from public and private nurseries of Athens and rural areas. Neonates with severe morbidity (SM) comprised those with hypoxic-ischaemic encephalopathy, periventricular leukomalacia, intraventricular hemorrhage III–IV and retinopathy of prematurity requiring surgery. Neonates were categorized into those <1500, 1500–2500 gr and >2500 gr.

**Results:**

- Increased severe morbidity and mortality of term neonates transported from public nurseries and rural areas in 1999–2000 (14.2% p = 0.011, 13.3% p = 0.013).
- Increased mortality of term neonates transported from rural areas in 2006–2007 (7.1 p = 0.007).

**Conclusion:** It is evident that immediate measures should be taken in rural areas to ensure proper transport (intrauterine where possible) of newborns to the NICU.
TRANSMISSION OF CYTOMEGALOVIRUS TO VERY LOW BIRTH WEIGHT INFANTS THROUGH BREAST MILK

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Objective: To evaluate the rate and the risk factors of CMV infection in Very Low Birth Weight (VLBW) infants fed with breast milk.

Patients and Methods: We evaluated eighty VLBW preterm infants (gestational age (GA) <32 weeks and birth weight <1500 g) and their 68 mothers. All of the infants were breastfed for at least one month. At birth serological test for CMV was performed on maternal blood. Urine samples from each infant and samples of fresh breast milk were collected and processed for CMV culture once a week.

Results: Fifty-three mothers (78%) were positive for CMV IgG. In the milk samples CMV was isolated in 21 out of 53 (40%) seropositive mothers. CMV was detected in the urine samples of 9 out of 26 (35%) preterm infants, who were born from 7 virolactia positive mothers. We detected the same genotype gN in the mother’s milk and in the urine of the infected infants. Three of these infants showed a sepsis-like illness with bradycardia, tachypnea and repeated desaturations. The neutropenia was strictly related to CMV infection (P<0.005), as was the detection of an increase in conjugated bilirubin (P<0.05). The use of immunoglobulins with high titre of IgM in newborns with GA<28 ws was protective against CMV infection (P<0.05). Pre-existing bronchopulmonary dysplasia correlated with symptomatic infection (P<0.05).

Conclusion: According to our data, there is no reason not to use or to pasteurize the milk of all the mothers of preterm infants who are CMV seropositive.

SPONTANEOUS RESOLUTION OF CHOLELITHIASIS IN INFANTS

1L Trigu, 2M Jafour, 3F Safi, 1L Walha, 1H Ben Amar, 1A Ben Hamad, 1N Hnida, 1R Regaieg, 1A Gargouri, 1R Mhiri, 1A Rekik. 1Department of Neonatology, Hedi Chaker Hospital, Sfax, Tunisia; 2Department of Paediatric Surgery, Hedi Chaker Hospital, Sfax, Tunisia

Cholelithiasis in newborns and infants is rare. With the current widespread use of diagnostic ultrasonography, multiple neonates may be found with gallstones.

We describe three cases of cholelithiasis detected incidentally. One at the age of 30 days, the second at the age of 61 days and the third at the age of 90 days. All cases have been asymptomatic. No etiologic factor has been found and in all cases, spontaneous resolution has been noted.

Conclusion: Cholelithiasis may resolve without surgery meanly if no causal factor has been found. Ultrasonography is useful in following.

STAGES OF INTRODUCTION OF CRITERIA FOR BIRTH DEAD AND ALIVE UNDER RECOMMENDATIONS FROM THE WHO IN THE REPUBLIC OF UZBEKISTAN

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Introduction: The Ministry of Health of the Republic of Uzbekistan with the support of the Government have incurred obligations regarding performance towards the Convention on the Rights of the Child. In 2003 a pilot region began introduction of the international criteria for birth dead and alive under recommendations from the WHO. Also, clinical support has begun for primary reanimation of newborns under the recommendation of the WHO. At this stage the instruction, methodical recommendations and the training program for 3 days have been approved.

Results: In the pilot region 519 medical workers have been trained. Further, the pilot has extended to the city of Tashkent. In two pilot regions it has been ascertainment that extremely small body weight accounts for 1.5% of all children born. However, research has shown that a relative density of deceased newborns is in a larger weight category. Hence, the criteria was defined by rescue of this category of children not demanding high technology. On this occasion the interdepartmental commission (Ministry of Health, Ministry of Justice, Ministry of Work, State Committee of Statistics) worked. As a result of offers presented to the Government and according to the order of Ministry of Health, stage-by-stage training in other regions was proposed. For 5 years now, across the whole country, over 3000 medical workers have been trained.

Conclusions: Introduction of the international criteria for birth dead and alive promotes authentic statistics and a decrease in infantile death rate. Research in 2001 gave this parameter as 52.0 and in 2007 as 48.0.

HEARING LOSS AFTER POSTNATALLY ACQUIRED CMV INFECTION IN VERY PRETERM INFANTS

HLM van Straaten, W Baerts. Neonatology Department, Isala Clinics, Zwolle, The Netherlands

Introduction: A postnatal cytomegalovirus (CMV) infection in very preterm infants may present with hyperbilirubinemia, hepatosplenomegaly, pneumonia, and hematologic abnormalities. Central nervous system involvement is considered to be mild or absent.
To evaluate the prevalence of hearing loss (HL) in postnatally 2
CB was collected from 100 term neonates of smoking 1
From 2004–2007 early postnatal CMV infection was
To assess therapeutic strategies of PDA.
To compare WM and GM volumes between very
In infants of gestational age
To measure cord blood (CB) concentrations of (E3),
Nottingham, UK; ©Department of Radiology, University of
Children
1
2
3
Indomethacin was successful in closing the ductus
Arch Dis Child
Very preterm birth is frequently followed by altered
, 4
and all subscale scores except verbal comprehension (table)
BRAIN WHITE AND GREY MATTER VOLUMES IN PRETERM
CHILDREN ARE SMALLER THAN CONTROLS AND CORRELATE
WITH COGNITIVE FUNCTION AT 9 YEARS
1 GT Vasileiadis, P Morgan, H Mulder, N Pitchford, P Gowland, N Marlow.
2 Academic Division of Child Health, School of Human Development, The University of Nottingham, Nottingham, UK; 3Division of Academic Radiology, The University of Nottingham, Nottingham, UK; 4School of Psychology, The University of Nottingham, Nottingham, UK; 5School of Physics and Astronomy, The University of Nottingham, Nottingham, UK
Introduction: Very preterm birth is frequently followed by altered brain development which may result in impaired cerebral tissue growth. We investigated the growth of white (WM) and grey matter (GM) and their relationship with cognitive function in children at 9 years.
Objectives: To compare WM and GM volumes between very preterm born children and controls and to correlate them with cognitive function.
Methods: Children<31 weeks of gestation participated along with term born schoolmates matched by age and gender. MR at 1.5T with MP-RAGE sequence was acquired. FSL (FMRIB Oxford) was used to automatically segment the brain into GM, WM and CSF. Cognitive function was evaluated using WISC-IV.
Results: 26 very preterm (median gestational age was 28.2 weeks) and 15 term controls were studied at a median age of 9.8 years. WM volume was reduced by 15% and GM volume by 9.5% in preterm children compared to controls. No significant correlations with cognitive scores were observed in the control group. In the preterm group, WM volume was correlated with perceptual reasoning and full scale scores whereas GM volumes were correlated with full scale and all subscale scores except verbal comprehension (table)

<table>
<thead>
<tr>
<th></th>
<th>Verbal compr.</th>
<th>Perceptual reasoning</th>
<th>Working memory</th>
<th>Processing speed</th>
<th>Full scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM vol.</td>
<td>NS</td>
<td>0.46, &lt;0.05</td>
<td>NS</td>
<td>0.53, &lt;0.01</td>
<td>0.45, &lt;0.05</td>
</tr>
<tr>
<td>GM vol.</td>
<td>NS</td>
<td>0.59, &lt;0.01</td>
<td>0.42, &lt;0.05</td>
<td>0.61, &lt;0.01</td>
<td></td>
</tr>
</tbody>
</table>

Aim: To evaluate the prevalence of hearing loss (HL) in postnatally acquired CMV infection in very preterm infants.
Methods: In infants of gestational age <32 weeks who developed symptoms before term age a negative CMV status at birth (demonstrated by PCR from Guthrie card serum samples taken at day 5) and seroconversion and/or PCR CMV positive urine were considered proof of a postnatally acquired CMV infection. All infants underwent (automated) auditory brainstem response hearing screening. After a failed screening further audiologic diagnostics was performed.
Results: From 2004–2007 early postnatal CMV infection was detected in 11/383 (median gestational age 26 weeks; range 25–30). In 6/11 (55%) CMV infants HL developed. CMV was detected in the breast milk of the mother in 3/6 cases. Mild cochlear HL occurred in 1 case and moderate cochlear HL in 2 cases. In 3 cases auditory neuropathy (AN) was detected. In 2/3 AN interferes with normal speech and language development. In 1/3 AN was transient, either as a result of maturation or as a result of treatment with valgancyclovir.
Conclusions: Hearing loss may be a sign of early postnatally acquired CMV infection in very preterm newborns. Outcome of perinatal CMV infections may be more dependent on the developmental stage (i.e. gestational age) at the time of infection than on the mode of transmission.

MANAGEMENT STRATEGIES OF THE PATENT DUCTUS ARTERIOSUS IN PRETERM NEWBORNS
N Drazdiene, R Vankeviciene. Center of Neonatology, Vilnius University Medical Faculty, Vilnius University Children Hospital, Vilnius, Lithuania

Objective: To assess therapeutic strategies of PDA.
Methods: We studied 1555 preterm infants admitted from 2002 to 2007 to our centre. 395 preterm newborns were very low gestational age (less than 30 weeks). PDA was assessed by clinical signs and confirmed echocardiographically. A significant PDA was defined by left atrium aortic root ratio >1.4 or a ductal diameter of >1.5–2.0 mm with left-to-right shunt. All infants received indomethacin in three intravenous doses in 24 hours intervals.
Results: A hemodynamically significant PDA was diagnosed in 137 preterm infants (8.9%). 105 infants (76.6%) were less than 30 weeks, 52 (37.9%) infants less than 26 weeks. More than 30 weeks consisted of just 2.7% of preterm infants. The occurrence of PDA was frequent on the 6th–10th day of life. The treatment was effective for most of the newborns when using indomethacin. The surgical closure of PDA was used for 22 (16%) preterm infants. All of the operated newborns were less than 30 weeks of gestation. Mortality rate in the medical treatment group was 15%, in the group with surgical ligation 4.5% (one infant died after surgical closure of PDA because of the infection complication).
Conclusions: Indomethacin was successful in closing the ductus arteriosus in 115 (83.9%) of the patients. All infants who needed surgery had a gestation age of less than 30 weeks.

EFFECT OF MATERNAL SMOKING ON CORD BLOOD HORMONE CONCENTRATIONS
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Smoking during pregnancy affects the endocrine status of the fetus. Objective: To measure cord blood (CB) concentrations of (E3), (hPL), (beta-HCG), FSH, LH and cortisol in offspring of smoking and non-smoking women during pregnancy.
Methods: CB was collected from 100 term neonates of smoking mothers and 100 of non-smoking mothers. E3, hPL, beta-HCG, FSH and LH were determined by a radioimmunoassay and cortisol by a fluoroimmunometric assay.
Results: The E3, hPL, beta-HCG, and FSH CB concentrations were significantly lower in the neonates of smoking than in non-smoking mothers. The LH concentrations were lower in the offspring of smoking mothers but the difference was not significant. Conversely, the cortisol concentrations were significantly greater in the smoking mothers’ newborns. There was a significant negative correlation between number of cigarettes smoked/day and E3 (r = –0.163, p = 0.021), hPL (r = –0.205, p = 0.013), beta-HCG (r = –0.148, p = 0.044), FSH (r = –0.239, p = 0.029). Cortisol showed a strong positive correlation to the number of cigarettes smoked/day (r = 0.259, p<0.0001). Multiple linear regression analysis showed that maternal smoking during pregnancy is a determinant of CB E3, hPL, beta-HCG, and cortisol.
Conclusion: The E3, hPL, beta-HCG, and FSH concentrations were significantly reduced in CB of smoking mothers’ newborns, whereas the cortisol levels were significantly increased. The disturbed endocrine status of the fetus induced by the tobacco smoke could cause several adverse effects on the offspring since there are data indicating that hormones participate in fetal growth and development, including the fetal brain that is a target organ for hormonal actions.

Verbal compr. | 0.46, <0.05 | 0.53, <0.01 | 0.45, <0.05 | 0.61, <0.01
Perceptual reasoning | Working memory | Processing speed | Full scale |
GM vol. | NS | 0.42, <0.05 | 0.53, <0.01 | 0.61, <0.01

Vasileiadis et al
Conclusions: The reduction in WM volume in preterm born children was more marked than for GM. The WM volumes were related to cognitive scores but less strongly than GM.

NECROTIZING ENTEROCOLITIS AND COW’S MILK ALLERGY: IS THERE AN ASSOCIATION?

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Necrotizing enterocolitis (NEC) is a disease with significant morbidity and mortality. Pathophysiology remains incompletely understood. We here report systematic observations of NEC cases in our unit suggesting an increased incidence of cow’s milk allergy (CMA).

Method: We reviewed all cases of NEC between 2001 and 2006 in our unit. In addition to basic information, elements related to CMA were noted: type of enteral nutrition and eosinophils count.

Results: 106 patients presented with NEC in the study period; after exclusion of death and major congenital (cardiac and intestinal) anomalies, 70 patients were studied. Mean gestational age at birth (+ SD): 29.8 ± 5.6 wks, 87 (53%) born at ≥30 wks. Male:female ratio: 1.7:1. Age at first episode of NEC: 19 ± 11 days for the whole population but sooner in the ≥30 wks (14 ± 5 vs 25 ± 9 days). There was no difference in highest eosinophils count between infants diagnosed with vs no CMA (6.2 ± 4.3% vs 5.8 ± 6.3%). 9 infants (15% of the whole population) were discharged home with hydrolysed formula. CMA was noted as a diagnosis in 7 infants, all born at ≥30 wks, which represents 19% of this subgroup.

Conclusions: We observe a high incidence of CMA diagnosed by the time of discharge in our population of NEC survivors compared of the incidence of 1 to 3% reported in the literature for general infant population. Furthermore, diagnosis of CMA was found only in relatively older premature infants. Whether CMA is a consequence or a risk factor for NEC remains to be determined.

MODIFIED SELDINGER TECHNIQUE FOR 2-FRENCH PERIPHERALLY INSERTED CENTRAL VENOUS CATHETERS

1M Wald, 2CM Happel, 1L Kirchner, 1V Jeifler, 1M Sasse, 1A Wessel. 1Division of General Pediatrics and Neonatology, Medical University of Vienna, Vienna, Austria; 2Department of Paediatric Cardiology and Department of Internal Medicine, Centre of Paediatrics and Adolescent Medicine, Medical University Hannover, Hannover, Germany

Objective: Micro-introducers for insertion of a peripherally inserted central venous catheter (PICC) using the “Seldinger technique” are only available for catheters of at least 4-french diameter. Here we describe a modified “Seldinger technique” for insertion of 2-french micro-introducers.

Methods: We combined a 2-french peripheral arterial catheter suitable for Seldinger technique with the micro-introducer of a 2-french PICC. Therefore the arterial catheter was put into the micro-introducer instead of the steel needle (A). Thus, a device similar to that used in heart catherisation was created with the micro-introducer serving as sheath and the arterial catheter as dilator. After puncture of a peripheral vein with a peripheral venous catheter (22-G) the Seldinger wire guide of the arterial catheter was inserted (B). Consecutively the peripheral venous catheter was removed and the combined device (micro-introducer carrying the arterial catheter inside) was pushed forward over the wire guide into the peripheral vein (C). Thereafter, the Seldinger wire guide and the peripheral arterial catheter were removed and the PICC was safely inserted through the micro-introducer (D).

Results: With this method 14 out of a total of 16 2-french catheters could be inserted safely into peripheral veins of patients aged between one day and seven years.

Conclusions: With this modified “Seldinger technique” 2-french central venous catheters can be safely placed into peripheral veins. Thus successful insertion of a small peripheral venous catheter offers a possibility for the insertion of a central venous line.

OXYGEN SATURATION TARGETING

B Walsh, P Gallagher, J Helsin, S Tabassum, A Foran, D Corcoran, T Clarke. Neonatal Department, Rotunda Hospital, Dublin, Ireland

Objective: Our unit protocol for lower alarm settings is 87% and upper is 95% saturation. We audited compliance with these and how frequently spot saturation observations were within these values.

Background: The BOOST trial (1) showed that lower oxygen saturation targets of 91–94% versus 95–98%, significantly decreased the numbers with BPD, with NNT = 5.

Method: Twice daily recordings were taken on infants of gestational age 32 weeks or less, with a birth weight less than 1500 gm, on supplemental oxygen. Among the recorded measurements were spot oxygen saturations, oxygen saturation alarm settings, mode of ventilation, and fraction of oxygen administered.

Results: 16 infants were studied and 165 recordings were taken. The mean GA was 28.4 weeks (SD 2.25), and the mean CGA was 33.3 weeks (SD 4.61). The upper limit alarms were correct in 27%, and the lower in 85.6%. The upper was set at 100% in 38%. The saturations were within the unit’s target range 44% of the time, and were too high in 49%. There were 63 recordings in the subgroup with a CGA less than 34 weeks. The upper limit was correct in 46%, and high in 54%, the lower was correct in 84%. The upper was set at 100% in 30%. The saturations were within the unit’s target range in 74%, and too high in 18%.

Conclusion: The audit showed our compliance with the upper alarm settings is similar to that published in 2007 by Clucas (23.5%) (2). Our time within the target range was in keeping with that described in the AVIOx study (3).

AUDIT OF BLOOD CULTURE SAMPLING IN A REGIONAL NEONATAL UNIT

1CL Walsh, 1D Cassidy, 2D Millar. 1Neonatal Intensive Care Unit, Royal Jubilee Maternity Hospital, Belfast, N. Ireland, UK; 2Maynard Ward, The Ulster Hospital, Dundonald, Belfast, N. Ireland, UK; 3Children’s Haematology Unit, Royal Belfast Hospital for Sick Children, Belfast, N. Ireland, UK

Objective: Audit techniques of sampling blood cultures, volumes of blood taken and documentation in RJMH, Belfast.

Methods: The audit was performed from 8th January to 5th February 2007. Standards were prepared from a literature review. A data collection form was designed and completed by staff. Data collected included demographics, sampling technique, blood volume and documentation in medical and microbiology notes.

Results: See table.

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<table>
<thead>
<tr>
<th>Standard (%)</th>
<th>Result (%)</th>
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<tbody>
<tr>
<td>Appropriate preparation of skin</td>
<td>100</td>
</tr>
<tr>
<td>Sterile gloves worn</td>
<td>100</td>
</tr>
<tr>
<td>Blood taken from an appropriate site</td>
<td>100</td>
</tr>
<tr>
<td>A closed technique used</td>
<td>100</td>
</tr>
<tr>
<td>Minimum of 1 ml blood obtained from babies &gt;1 kg</td>
<td>100</td>
</tr>
<tr>
<td>Minimum of 0.5 ml blood obtained from babies &lt;1 kg</td>
<td>100</td>
</tr>
<tr>
<td>Details of site blood taken from documented on blood culture form</td>
<td>100</td>
</tr>
<tr>
<td>Clinical information provided on microbiology form</td>
<td>100</td>
</tr>
</tbody>
</table>
Conclusions: We recommend our standards for obtaining blood cultures are always met. A set of guidelines should be approved. All staff should be appropriately trained in taking blood cultures.

NO SEVERE EVENTS OBSERVED BY PARENTS AFTER IMMUNIZATION IN PRETERM INFANTS

EAM Westerbeek, NAT van der Maas, NMoorer, WPF Fetter, HN Lafeber, HM van Dijl, E. Department of Neonatology, VU University Medical Center, Amsterdam, The Netherlands; *National Institute for Public Health and Environment RIVM, Bilthoven, The Netherlands

Introduction and objective: Immunization of preterm infants is recommended for all infants after the chronological age of 2 months. Immunization of preterm infants has been generally considered safe, effective and particularly necessary. However, apnoea and cardiovascular events after immunization have been reported in preterm infants. The objective of this study is to observe if preterm infants develop minor and/or severe events after the first 3 immunizations in a non-clinical setting.

Methods: As part of a larger study, parents of infants born <32 weeks of gestation and/or birth weight <1500 gram were asked to prospectively observe their infants for 48 hours after the first 3 immunizations (DTaP-IPV-Hib (–Hebp) + PCV7) by standardized questionnaires (RIVM). Data were compared with published side-effects, observed in term infants.

Results: In total 72 questionnaires of 24 preterm infants (median GA 29.0 w, BW 1280 gr) were reviewed. Local reactions occurred after 29.2% of immunizations, hyperthermia <38.5°C was observed after 11%, fever >38.5°C was never observed. 18% of the infants had a changing feeding pattern, 47.5% had a changed sleeping pattern. Vomiting, diarrhoea, apnoea and cardiovascular events were not reported by parents. 20.8% of the immunized infants received antipyretic drugs. None of the infants had to be admitted to a hospital.

Conclusions: Preliminary data of 24 preterm infants who received the first 3 immunizations in a non-clinical setting show minor events comparable with a term healthy population. Parents did not observe severe events like apnoea and cardiovascular events.

FIBRINOGEN LEVELS ASSOCIATED WITH SEVERE INTRAVENTRICULAR HAEMORRHAGE IN VLWB INFANTS

M White, T O’Carroll, A Twomey, JFA Murphy, EJ Molloy. Department of Neonatology, National Maternity Hospital, Holles Street, Dublin, Ireland

Background: Reference ranges for coagulation screens in healthy preterm infants were formulated in the 1980s. Preterm infants are at risk of hypocoagulable states for a number of reasons: even mild degrees of hypoxia or respiratory distress syndrome can affect levels of coagulation factors and inhibitors 2, 3 and 4, and sepsis is a major risk factor for coagulation abnormalities.

Aims: This retrospective study aimed to assess coagulation profiles of Very Low Birthweight (VLWB) infants in our tertiary centre and to determine if abnormalities in coagulation screens were associated with adverse outcomes in our population.

Methods: All coagulation screens performed on VLWB infants 2005–7 were documented. Serial cranial ultrasound results were obtained from the VLWB database.

Results: 290 VLWBs were admitted during the study period. A total of 105 coagulation screens were performed on 54 babies <1500 g (19 unsuitable for analysis; 86 analysed). Profiles were available for 40 infants; prothrombin time (PT), international normalised ratio (INR), activated partial thromboplastin time (aPTT) and fibrinogen. Gestational ages were significantly lower in those with grade 3–4 IVH (27.3 + 2.3 versus 25.6 + 2.1; p < 0.05). Fibrinogen levels day 1/2 were not significant between the groups, but a difference was seen on day 3. No other comparisons were significant.

Discussion: Fibrinogen levels on day 1 were not significant, but by day 3 low fibrinogen was associated with increased incidence of severe IVH. This emphasises the need for further research on VLWB coagulation profiles and if and when treatment is warranted.

COST EFFECTIVENESS ANALYSIS FOR PREVENTION OF LONG-TERM CONSEQUENCES OF RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION IN PRETERM INFANTS

P Lázaro y de Mercado, JL Méndez Rubio, X Carbonell-Estrany, W Wittenberg.

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Results: 290 VLWBs were admitted during the study period. A total of 105 coagulation screens were performed on 54 babies <1500 g (19 unsuitable for analysis; 86 analysed). Profiles were available for 40 infants; prothrombin time (PT), international normalised ratio (INR), activated partial thromboplastin time (APTT) and fibrinogen. Gestational ages were significantly lower in those with grade 3–4 IVH (27.3 + 2.3 versus 25.6 + 2.1; p < 0.05). Fibrinogen levels day 1/2 were not significant between the groups, but a difference was seen on day 3. No other comparisons were significant.

Discussion: Fibrinogen levels on day 1 were not significant, but by day 3 low fibrinogen was associated with increased incidence of severe IVH. This emphasises the need for further research on VLWB coagulation profiles and if and when treatment is warranted.
This analysis showed that palivizumab represents a cost-effective means of prophylaxis against RSV in high-risk infants. The use of palivizumab results in undiscounted incremental cost-effectiveness ratios of $12,728 per quality-adjusted life-year (QALY) and $4,576/QALY without discounting, which increases to $16,678/QALY after discounting. Probabilistic sensitivity analyses confirmed the robustness of the model.

**Conclusion:** This analysis showed that palivizumab represents a cost-effective means of prophylaxis against RSVH in infants with hemodynamically significant CHD.

Funded by Abbott.

**LONG-TERM BEHAVIORAL OUTCOME AND NEUROPROTECTIVE EFFECT OF CREATINE AFTER CEREBRAL HYPOXIA ISCHEMIA IN NEONATAL RATS**

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**Objective:** In the current study we investigated long-term behavioral outcome after cerebral hypoxia ischemia in neonatal rats as a basis to evaluate the long-term benefits of creatine supplementation. Previous findings showed that creatine supplementation preserves energy metabolism and thus ameliorates the extent of brain edema seen after transient cerebral hypoxia-ischemia.

**Methods:** Creatine supple. for 3 days was followed by right common carotid artery ligation and exposure to hypoxia of 8% O₂ for 60 min on day 7. 22 animals were creatine supplemented, 14 of them underwent hypoxic-ischemic intervention (Cr/Hi). 11 animals underwent hypoxic-ischemic intervention without creatine suppl. (Hi) and 10 animals were kept at the same condition without intervention (Con).

**Results:** When compared with controls (Con) after 7–8 months, hypoxic-ischemic animals (Hi) performed significantly worse in all behavioral tests: 0.56 (0.0–1.4, 25–75% percentile) versus 1.68 (1.4–2.5) sec searching time in the platforme zone in the Morris water maze; 83 (70–126) versus 158 (128–206) sec running time on the rotarod (p = 0.029); 76.0 (24–218) versus 17.5 (6–30) asymmetric rotation after apomorphine injection (p = 0.013). Creatine supple. and hypoxic-ischemic animals (Cr/Hi) showed improvement compared with the hypoxic-ischemic animals (Hi) in children results in positive short- and long-term health economic benefits.

Funded by Abbott.
the morris water maze test and the rotorod without reaching statistical significance.

**Conclusions:** This is the first study on this model showing long-term behavioral deficits after cerebral hypoxia-ischemia; this is an important condition for long-term evaluation of potential neuro-protective interventions. Small group size may account for non-significant improvement after creatine suppl. suggesting further investigation.

### A CASE OF HARLEQUIN ICHTHYOSIS

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Harlequin ichthyosis is the most severe form of congenital ichthyosis. In the past, the disorder was invariably fatal due to dehydration, infection, restricted respiration due to the plating, or other related causes and sufferers rarely survived for more than a few days. We describe the successful management of a baby with harlequin ichthyosis.

A male infant born to consanguineous parents at 35±2 weeks gestation had thickened skin with shiny plaques and deep, erythematous fissures. He had severe ectropion with red, swollen eyelids, small, rudimentary pinnae, nasal hypoplasia and a fixed, wide mouth. The limbs were encased in thick, hyperkeratotic skin with swollen extremities. A clinical diagnosis of harlequin ichthyosis was made.

He was started on regular topical treatment of emollients to the skin every 2–3 hours, simple eye ointment to the eyes and oral acicretin. The harlequin skin gradually started to shed, leaving normal looking skin underneath. He was bottle fed from day 1. The weight gain was poor initially. It improved with high-calorie feed supplementation. He developed staphylococcal and pseudomonas eye infection treated with topical antibiotics. He was discharged home at 4 weeks of age. He has continued to make good progress with a relatively normal looking skin and good limb function.

The management of Harlequin ichthyosis has markedly improved recently most notably with the use of retinoids. Some patients have survived into adolescence and rarely to adulthood. Harlequin ichthyosis has now been linked to mutations in ABCA12 gene improving the chance of prenatal diagnosis.

### RISK FACTORS FOR RETINOPATHY OF PREMATUREY

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Unique to the neonate the retinopathy of prematurity has a complex etiology and multiple risk factors: low gestational age, sepsis, hypoxemia, hypercapnia, prolonged oxygenotherapy and many others.

**Objective:** Evaluation of the risk factors for retinopathy of prematurity, in very low birth weight infants that are included in the neonatal screening program.

**Methods:** This was a retrospective study done on 85 preterm newborns managed by The Neonatology Department of Obstetrics and Gynecology Clinic I in Cluj over a period of 15 months. Perinatal factors were assessed: birth, perinatal pathology, therapy received, incidence of retinopathy and the necessity for laser therapy. Statistics used Epilinfo6.

**Results:** The group was composed of 85 newborns with gestational age of 30.01 ± 2.18 weeks and birth weight of 1240.19 ± 347.41 g. The incidence of retinopathy of prematurity is highly correlated with the gestational age and with birth weight. Apgar score value at 1 and 5 minutes was significantly correlated with incidence of retinopathy. We did not find a significant correlation between duration of mechanical ventilation and retinopathy but the correlation is obvious with the duration of oxygenotherapy (p = 0.005) and FiO2 (p = 0.005). From prenatal factors we distinguished a high percentage (29.5%) of unfolwored pregnancies in newborns that developed retinopathy. Incidence of retinopathy was 39.02% and the necessity for laser therapy was imposed in 14.8%.

**Conclusions:** Incidence of retinopathy: 39.02%.

Risk factors for retinopathy of prematurity were: unfolwored pregnancies, Apgar score at 1 and 5 minutes, duration of oxygenotherapy and FiO2 applied.

### HEART RATE/RESPIRATORY FREQUENCY RATIO: A USEFUL TOOL TO IDENTIFY AROUSALS IN TERM AND PRETERM INFANTS?

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**Objective:** To find out whether a correlation of heart rate (HR) and respiratory frequency (RF) defined as HR-RF ratio (HRR) may be helpful to identify arousals in term and preterm infants.

**Methods:** Polygraphic recordings were performed in 25 term infants (gestational age 40.1 ± 1.1 weeks) and 25 preterm infants (gestational age 31.1 ± 1.3 weeks) during undisturbed daytime sleep. Arousals were scored as suggested by the “International Paediatric Work Group on Arousals” and divided into cortical (CA) and subcortical arousals (SCA). HRR was defined as HR over RF. Arousals were compared to a 30 s period preceding an arousals.

**Results:** Two-hundred arousals were scored (100 CA and 100 SCA). HRR increased during arousals in term infants (p<0.001). This was true for CA (p<0.001) and SCA (p<0.005) of term infants. By contrast, in preterm infants HRR remained unchanged during CA and SCA.

**Conclusions:** An increase of HRR during arousals is a simple parameter to identify arousals in term infants, but not in preterm infants suggesting that an unchanged HRR might be an indicator of an immature arousal response.
Poster session: nephrology

CHILDHOOD CHRONIC RENAL FAILURE (CRF): AN EXTRAORDINARY EXPERIENCE

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Objective: The aim of this paper is to report our extraordinary experience with childhood CRF in Iraqi children.

Methods: From January 1993 to July 2007, 80 patients with a diagnosis of chronic renal failure (CRF) were observed at the University Hospital in Al Kadhimiyia, Baghdad. Fifty one patients were males (65.75%) and 29 (36.25%) were females. The male-female ratio was 1.75, and the age at referral ranged from 2 months to 18 years (mean 9 years).

Results: The single most common cause of CRF was chronic glomerulonephritis (19%). The largest etiological group was hereditary disorders and genetic syndrome (28.8%). Cystinosis was the most common hereditary disorder causing CRF. Oculo-cerebro-renal syndrome and severe variant of Hinnman syndrome which are rare causes of CRF accounted for 10% of the patients. Most patients (93.6%) were treated by conservative measures with or without intermittent peritoneal dialysis (IPD). Five patients were treated with chronic hemodialysis. Only 2 patients received live related donor kidney transplants. In 14 (16.5%) patients acacia gum supplementation was added to the conservative measures and resulted in amelioration of the uremic symptoms and lowering of blood urea levels and delaying the need for dialysis. The longest survival of 6 years was achieved in 2 patients, both treated initially with IPD. One of the patients was transplanted and the other was treated with a combination of the traditional conservative measures and acacia gum supplementation.

Conclusion: The pattern of childhood CRF in Iraq is unique and differs from previous reports.

XANTHOGRANULOMATOUS PYELONEPHRITIS PRESENTING AS A PSEUDOTUMOR IN A 5 YEAR-OLD BOY

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Introduction: Xanthogranulomatous pyelonephritis (XGP) is a rare, chronic inflammatory renal disorder associated with both chronic infection and obstruction. Most common in middle-aged females, it is important to recognize in children because it may be confused with childhood renal malignancies, particularly Wilms’ tumor.

Case Report: We report a case of a 5-year old male patient with a 2-month history of unclear abdominal complaints, malaise, anorexia, weight loss and pale skin color. There was no history of urinary tract infections, symptoms or fever. Physical exam revealed a palpable left flank mass. The laboratory tests revealed anemia and leukocytosis. Urinalysis demonstrated pyuria with positive culture (Proteus mirabilis). Abdominal ultrasonography showed left renal enlargement with pelvicaliceal dilatation, parenchyma destruction and presence of calcifications. Abdominal CT scan confirmed global renal enlargement, parenchyma destruction, presence of calculi, spread of infiltration into de fat capsule, thickening of Gerota’s fascia and multifocal areas of varying density. Contralateral kidney was normal. Based on the clinical examination and imaging, above all, CT, the presumptive diagnosis of xanthogranulomatous pyelonephritis of the left kidney was made. A transperitoneal left nephrectomy was performed. The pathological report documented xanthogranulomatous pyelonephritis. The patient’s recovery was uneventful, and he has remained asymptomatic since surgery.

Conclusion: Xanthogranulomatous pyelonephritis is a relatively rare entity. The resultant unfamiliarity often delay diagnosis and therapy, which in turn affect the prognosis. Furthermore, this entity can be mistaken for renal tumors but nowadays this should be mostly eliminated with the advances in the imaging methods.

CYSTINURIA, A POSSIBLE CAUSE FOR NEPHRO/ UROLITHIASIS

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Introduction: Cystinuria is a rare cause of renal lithiasis, contributing to 7% of the cases of nephro/urolithiasis in childhood. An inherited autosomal recessive defect of the renal tubular and small intestine reabsorptive transport of cystine and dibasic amino acids leads to elevated excretion of cystine in the urine.

Methods: Retrospective study of patients in pediatric nephrology department with the diagnosis of nephro/urolithiasis and urinary increased excretion of cystine. The diagnosis of Cystinuria is made by urinary quantification of cystine. Cystinuria was detected when the cystine concentration is superior to 300 mg/L.

Results: We report three cases. The first one is a 5-months-old infant with gross hematuria. The renal ultrasound revealed renal bilateral lithiasis. The second case was a 15-years-old girl with urinary infection. The renal ultrasound detected bilateral stones. The last case is a 14-years-old boy, originating from Angola, with a personal history of repeated urinary infections and admitted with a severe renal chronic insufficiency. The work-up of renal disease confirmed the presence of renal bilateral lithiasis.

The medical therapy consists of increased oral fluids intake, urine alkalinization, low-salt diet, reduced rich foods in cystine and eventually the use of medication.

Conclusions: This is a disease with variable expression, which may be clinically obvious from the neonatal period or remain silent, being revealed later under the form of renal chronic insufficiency. It should be considered during the work-up for causes of nephro/urolithiasis.

PNEUMOCOCCUS-INDUCED HEMOLYTIC UREMIC SYNDROME

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Objective: Hemolytic uremic syndrome (HUS) is a severe complication of invasive pneumococcal infection and is considered to lead to higher mortality and long-term morbidity than the typical form. We report two cases in previously healthy children.

Methods: Case series.

Results: 1: An eleven-month-old boy with an otitis media was admitted to our hospital because of progressive decay and a left III cranial nerve paresis. Cranial computed tomography was normal. Cerebrospinal fluid showed data consistent with bacterial meningitis and blood culture was positive for S pneumoniae serotype 19F. He developed oliguric acute renal failure, microangiopathic haemolytic anemia (7.2 g/dl) and thrombocytopenia (24000/mm³) and he needed peritoneal dialysis. He underwent acute respiratory distress syndrome and needed mechanical ventilation, with refractory hypoxemia and coma. He finally died. 2: A three-year-old girl with pneumonia and empyema was referred to our hospital for suspected HUS (anemia 6.3 g/dl, schistocytosis, thrombocytopenia 45000/mm³, creatinine 2.21 mg/dl). She had received complete heptavalent
pneumococcal conjugate vaccination. She required mechanical ventilation and video-assisted thoracoscopy surgery was performed. *S. pneumoniae* was isolated from pleural fluid; it was resistant to penicillin and macrolides, with intermediate susceptibility to ceftriaxone/cefotaxime and vancomycin, so she was treated with levofloxacin plus ceftriaxone. We started continuous venovenous hemodiafiltration until a permanent peritoneal catheter was placed. She recovered normal renal function after 12 days.

**Conclusions:** HUS is a serious complication associated with *S. pneumoniae*, which involves establishing an appropriate antibiotic treatment together with supportive measures. In our country, it’s unusual the multiple pneumococcal resistance to antibiotics.

**TRACKING AND DETERMINANTS OF KIDNEY SIZE FROM FETAL LIFE UNTIL THE AGE OF 2 YEARS**

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**Objective:** An adverse fetal environment may lead to smaller kidneys and subsequently renal disease and hypertension in adulthood. The aims of this study were to examine whether kidney size tracks from fetal life to childhood and to examine whether maternal and fetal characteristics are associated with kidney size at the age of 2 years.

**Methods:** The study was conducted in 688 infants participating in a prospective cohort study from early fetal life onwards. Maternal characteristics were measured in early pregnancy. Fetal growth and placental characteristics were assessed in second and third trimester. Kidney size was measured in third trimester of pregnancy and at the postnatal ages of 6 and 24 months.

**Results:** Children tended to remain in the lowest and highest quartiles of kidney volume from third trimester to the age of 2 years (OR 2.05 (95% CI: 1.38 to 3.06) and 3.29 (95% CI: 2.22 to 4.87)). Maternal height and pre-pregnancy weight were positively associated with kidney volume at the age of 2 years. Third trimester fetal head circumference, abdominal circumference and estimated weight and postnatal length were positively associated with kidney volume at 2 years of age. Preferential fetal blood flow to the brain was associated with smaller kidneys.

**Conclusions:** Small kidney size in fetal life tends to persist in childhood. Maternal anthropometrics and fetal biometrics and blood flow patterns are associated with kidney size in childhood. Follow-up studies are needed to examine whether these variations in kidney size are related to renal function and blood pressure in later life.

**HANTA VIRUS INFECTION AND ACUTE RENAL FAILURE**

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A 14-year-old boy of previously good health was hospitalized with a history of fever, headache, nausea and lumbal pain. Within 4 days he developed acute renal failure and thrombocytopenia. Urine analysis disclosed proteinuria of 2 g/d and microscopic hematuria. Renal ultrasound showed enormously enlarged kidneys of 820 ml volume. Renal biopsy was performed and revealed interstitial infiltrates with immune cells and interstitial haemorrhage in the renal medulla, consistent with haemorrhagic interstitial nephritis. Based on the clinical manifestation, laboratory parameters and histological findings hanta virus infection was strongly suspected and confirmed by Western blot analysis.

On further questioning the patient reported that he frequently discharges rodents from mousetraps in the cellar. This makes inhalation of rodent excrement the most likely mode of infection in this case, with the bank vole being the main vector of hanta virus in this region of Germany.

The patient’s renal function recovered gradually and renal volume decreased to normal size. He was discharged after 8 days of hospitalization without any renal replacement therapy and remained well at 1 year follow-up.

**Summary:** Hanta virus nephritis should be suspected in every case with febrile back pain, thrombocytopenia and renal failure. A detailed history is helpful to disclose the mode of viral transmission.

**THE URINARY A1 MICROGLOBULIN (UA1M) UTILITY REGARDING RENAL FUNCTION FOR CHILDREN EXPOSED TO HEAVY METALS**

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**Objectives:** To appreciate childhood exposure to heavy metals in the Copas Mica area (the most polluted area in Europe); to evaluate the utility of UA1M in comparison with urea and creatinine blood levels concerning the early detection of kidney impairment.

**Methods:** There were studied 2 groups: 1st group consisted of 90 children exposed to heavy metals and the 2nd group consisted of 88 non-exposed children. The 2 groups were homogenous regarding the age and sex ratio. Inclusion criteria: no renal disease and age between 2–16 years. The groups were evaluated for lead, cadmium, urea and creatinine levels from blood. The UA1M was tested in 35 exposed children. According to Center for Disease Control classification, the exposed children were divided into 4 subgroups: 1st subgroup with blood lead level (BLL µg%) up to 9, 2nd with BLL 9–14, 3rd with BLL 14–19 and the 4th with BLL>19.

**Results:** The mean value for BLL for exposed children was 11.15 µg% as compared to non-exposed children (1.95 µg%), p = 0.000. The maximum BLL among exposed children was 24.95 µg%. The blood cadmium levels were normal for both groups; the urea and creatinine levels were also normal without statistically significant difference between the groups; the UA1M values were normal for all 35 exposed children.

**Conclusions:** The children from Copas Mica area are still exposed to lead; the study didn’t confirm exposure to cadmium; the normal mean value for UA1M didn’t confirm any kidney function impairment even for children with BLL>19 µg%.

**TREATMENT AND EVOLUTION PECULIARITIES IN AN INFANT WITH EAGLE-BARRETT SYNDROME**

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**Objectives:** To emphasize the diagnosis, treatment and clinical evolution particularities in an infant diagnosed with Eagle-Barrett (prune-belly) syndrome.

**Methods:** The authors present a 3 month-old male infant admitted for high fever. Regarding the medical history, we noted a surgical intervention (cutaneous ureterostomy to increase the urine passage) at the age of 2 months justified by a persistent urinary tract infection (UTI) complicated with Enterococcus septicaemia. The clinical exam in the emergency room revealed pallor skin, growth impairment, retroglossosptosis, mandibular hypoplasia, feeding problem, loss of appetite, systolic murmur, tachycardia, severe abdominal distention with wrinkled appearance, bowel loops visible, constipation, and cryptorchidism; hand pressure on the abdomen is followed by elimination of cloudy urine through the ureterostomy stoma.
Results: The laboratory investigations have shown anemia, positive inflammatory markers and an urine exam suggestive for UTI. The imaging findings have revealed atrial septal defect, dextrocardia and hydronephrosis. In evolution, the infant developed frequent episodes of UTI with a high frequency admission rate. The positive diagnosis was UTI in an infant with prune-belly syndrome, cardiac anomalies and Pierre-Robin sequence.

Conclusions: Although the ureterostomy was performed because of a previous complicated UTI, the risk of UTI has remained high, so we can consider the ureterostomy as an additional risk factor for developing recurrent UTI(s). The case prognosis could be appreciated as unfavorable. As a particularity, the cardiac malformations could be considered associated features in both Pierre-Robin sequence and Eagle-Barrett syndrome.

C1Q NEPHROPATHY IN TWO YOUNG SISTERS

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C1q nephropathy (C1qNP) is a controversial and uncommon form of glomerulonephritis characterized by mesangial immunoglobulin and complement deposits, predominantly C1q, with no evidence of systemic lupus erythematosus. Clinically it may present as nephritic syndrome and non-nephrotic proteinuria per se or associated with microhematuria, hypertension, or renal insufficiency.

We describe two sisters with C1qNP, who presented with steroid resistant nephrotic syndrome. Both sisters presented before the age of 2 years and they showed a poor response to other immunosuppressive therapy as well. Both girls had normal serum complement levels, negative antinuclear antibodies (ANA) and negative hepatitis B antigen. Renal biopsy in both patients showed histological features of mesangioproliferative glomerulonephritis with diffuse full house positive immunofluorescence reaction in the mesangial area. The immunofluorescent reaction for C1q was the most intense and co-dominant with IgG in both patients. Correspondingly, electron microscopy demonstrated dense deposits mainly in the mesangial areas too.

We report two young sisters with the characteristic features of C1qNP presented in early childhood. To the best of our knowledge this is the first report of C1qNP in siblings.

UNUSUAL CASE OF HYponatraemia: A CASE REPORT

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Background: Hyponatraemia in children is not uncommon. The list of causes is long. It needs prompt investigation and management.

Case: Patient presented at the age of 2 years with diarrhea and vomiting. On admission, he was in hypovolaemic shock. He was failing to thrive and had previous admission with similar presentation. Investigation revealed significant hyponatraemia, hyperkalaemia and metabolic acidosis. He was promptly resuscitated with intravenous fluids. Further evaluation revealed very low aldosterone, very high renin levels and normal 17 OH progesterone. He was diagnosed as a case of aldosterone synthase deficiency and was started on Flouinief.

Conclusion: Aldosterone synthase deficiency is a rare cause of hyponatraemia but should be considered in the differential diagnosis especially as management is relatively simple.

HYPOPHOSPHATEMIA DURING CONTINUOUS RENAL REPLACEMENT THERAPY (CRRT): THE EFFECT OF THE ADDITION OF PHOSPHATE TO DIALYSATE AND REPLACEMENT SOLUTIONS

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Introduction: Hyponatremia often occurs during CRRT in adults. No pediatric study has been done on this problem.

Objective: To analyze the efficiency and safety of the addition of sodium phosphate (P) to dialysate and replacement solutions.

Methods: Prospective study with intervention over two periods of time. Forty seven patients received CRRT with the standard solutions without P and 38 received CRRT with phosphate supplementation to dialysate and replacement solutions (0.8 ml/L).

We define mild hyponatremia as: P<4 mg/dL in<6 years, <3 between 6–16 years y<2 in>16 years, and severe hyponatremia: P<3 mg/dL in<6 years, <2 between 6 and 16 years y<1.5 in>16 years.

Results: The incidence of hyponatremia with standard solutions (without P) was 55% and severe hyponatremia 57%. This incidence decreased in patients with phosphate supplementation to hyponatremia 55% (p<0.01) and severe hyponatremia 16% (p<0.01).

The need for I.V. supplementation of P decreased from 36% to 10.5%.

There were no clinic or analytic complications. The addition of phosphate to solutions does not precipitate with calcium in these concentrations.

Conclusions: ► The incidence of hyponatremia in children is very high.

► The addition of phosphate to dialysate and replacement solutions decreases the incidence of hyponatremia. This method is safe and reduces the necessity of I.V. P reposition.

MYOCARDIAL FUNCTION IN CHILDREN WITH CHRONIC KIDNEY DISEASE

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Methods: We studied 76 patients with stage I CKD (group I: 22 non-diabetic, 14 male, 8 female; mean age 12.8±0.6 years; group II: 19 type I diabetic, 13 male, 6 female; mean age 14.2±0.7 years; group III (controls): 25 healthy children, 14 male, 11 female; mean age 13.1±0.7 years) by M-mode and pulsed Doppler echocardiography.

Results: Comparison of CKD patients and controls showed increased LV mass index in groups I and II (56.91±15.76 g/m2, p<0.05; 82.8±15.76 g/m2, p<0.05, respectively). The LV diastolic function (LVDF) was decreased. A velocity integral (A-VTI) (group I: 0.035±0.000037 m2, p<0.05; group II: 0.025±0.000055 m2, p<0.01), E deceleration time (DT) (group I: 0.118±0.0031 s, p<0.01; group II: 0.113±0.00171 s, p<0.05), E acceleration time (AE) (group II: 0.126±0.0018 s, p<0.05) and severe ratio of E velocity integral to A-VTI (group I: 5.014±0.038, p<0.05, ADT (group II: 0.043±0.000046 s, p<0.05) were lower compared to controls. Increased myocardial stiffness was discovered by assessment of E/A to 1/2 of EDT ratio (group I: 1.7±0.01, p<0.05; group II: 5.1±0.073, p<0.001).

Conclusions: The LVDF is already present in stage I CKD patients. non-diabetic and diabetic CKD patients have similar changes in myocardial function, which are more pronounced in diabetes due to serious metabolic disorders.
VENTRICULAR RESERVOIR PUNCTURES BY NURSES: AN IMPROVEMENT OF QUALITY OF CARE

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Background: Until recently punctures from a cerebral ventricular reservoir in neonates with hydrocephalus were performed only by physicians in our unit. We have educated the nursing staff to perform punctures from the reservoir.

Objectives: In the present study we describe the implementation of this technological innovation on our unit.

Methods: All 303 consecutive punctures were studied. The notes were reviewed for the state of the infant during the puncture, the caretaker who performed the puncture and time of the puncture.

To obtain support from the neonatal nurses, several meetings were held to explain the background of this implementation. All nurses were trained in how to perform a puncture from the reservoir. Following theoretical instructions, each nurse had to perform three ventricular punctures under supervision of a neonatologist.

Results: Within a seven month period, a total number of 303 punctures were studied. Of the 101 nurses working at our NICU, 81 (80%) received training. Twenty-two (22%) nurses were qualified in performing punctures from the ventricular reservoir.

Of the punctures performed during daytime, 93% were performed at the planned time and 7% were performed too late. There was no significant difference, whether the puncture was performed by a physician, nurse, physician assistant or under supervision. However, the punctures in the night shift were performed significantly more often at the scheduled time when the puncture was performed by nurses (p<0.001).

Conclusions: The implementation of this innovation has been a success. Nurses are willingly to puncture and have more control on their daily nursing routine.
Poster session: nursing management

RESERVED PROCEDURES IN THE NICU: CYCLICAL TESTING AND REGISTRATION
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Objective: The management of the Neonatal Intensive Care Unit of the Emma Children’s Hospital/Academic Medical Center in Amsterdam, in pursuance of Dutch legislation, decided to have a system developed to test and register all nurses concerning the procedures reserved for specialists to secure quality of specialised care. It is hospital policy to recertify all nurses every four years.

Methods: A working-group was formed. This group developed a cyclical system which aims to test and register a quarter of all nurses per year. A certificate is issued with a validity of four years. Testing takes place on the ward and in the skills lab. Existing protocols have been transferred into observation scales, describing the minimal knowledge and skills that has to be shown. The working-group (‘testers’) is authorised to test and register.

An evaluation of the system takes place each year by means of a questionnaire.

Results: To date 41 nurses and 9 students have been tested and registered. One year is enough to test. The system is highly valued (8.3 on a scale from 0 to 10). Mostly the testers are able to test during their shifts. The number of testers was not sufficient, so we increased the number from 8 to 10.

Some procedures had to be transferred to the skills lab.

Conclusions: We can conclude that we have developed an effective system of testing and registration of the reserved procedures for our ward. It is a system that meets the needs of the present time and will cope with future needs.

OPIOID AND BENZODIAZEPINE WITHDRAWAL PROTOCOL IN PEDIATRIC CARDIAC INTENSIVE CARE UNIT (PCICU)
1Y Gendler, 1M Keller, 1O Manor-Shulman, 2I Ronen, 1R Efrat, 1O Dagan. 1Pediatric Cardiac Intensive Care Unit, Schneider Children’s Medical Center of Israel, Petach-Tikva, Israel; 2Pain Management Unit, Schneider Children’s Medical Center of Israel, Petach-Tikva, Israel

Background: Prolonged administration of opioids and benzodiazepines in children in the PCICU may induce physiological dependence and withdrawal symptoms. In our unit, we use oral oxycodone and diazepam for the weaning process, with gradual decrease in dosing. Sedation withdrawal score (SWS) was used to determine withdrawal symptoms in infants and children after heart surgery, who received opioids and benzodiazepine for prolonged duration. The scoring was done every shift by the nursing staff and guided the rate of reduction.

Objective: To increase the awareness of the nursing staff to the possibility of withdrawal symptoms among patients who receive analgesia for long period of time. To determine a policy for identification, management and treatment of withdrawal syndrome.

Methods: A written “withdrawal protocol” was used on patients who received analgesia and sedation for more than 5 days. Patients were assessed for signs of withdrawal every 8 hours using the SWS. Further advance with the weaning process was done according to the score and symptoms.

Findings: Since January 1 2008, 18 children (2 weeks–18 months of age), who underwent cardiac surgery, were treated according to the “withdrawal protocol”. Six children showed severe to moderate withdrawal symptoms. Clinically significant symptoms developed on average of 3 days after the commencement of the weaning-process. The nursing staff compliance to filling in the SWS was 70%.

Conclusion: Further use of “withdrawal protocol” will improve the treatment of patients who suffer from withdrawal symptoms. Still, more research is needed to establish the optimal methods for prevention and management of withdrawal in PCICU.
Poster session: Nursing roles

ACCESS/UTILIZATION OF DENTAL CARE BY HOMELESS CHILDREN

1MA DiMarco, 2SM Ludington. 1The University of Akron, Akron, OH, USA; 2Case Western Reserve University, Cleveland, OH, USA

Homelessness in the United States has significantly increased with homeless women/children representing the fastest growing group. The Surgeon General’s report, Oral Health in America, declared dental caries the “silent epidemic” with the worst oral health found among the poor. A prospective repeated measures study elucidated predictors of oral health access, utilization, and oral health status for children in female-headed homeless families, and determined whether shelter-based care increased utilization. A convenience sample of 120 homeless families was recruited from a shelter. Predictor factors based on the Behavioral Model for Vulnerable Populations were measured. The families were followed up one month later and outcomes were measured. The level of health/oral health status of homeless children was also measured.

The level of health (the number of health conditions) found each homeless child (N = 236) had an average of 2–3 health conditions with only 24 children having no health conditions. Dental caries (n = 98) was the number one health problem of homeless children. Ten independent variables explained 33% of the variance in the dependent variable access barriers to care. Seven independent variables were significant; and the three most influential were mental health (B = −0.426), oral health beliefs (B = 0.243), and victimization (B = 0.185). Ten independent variables explained 24.3% of the variance of oral health status. Mother’s age (B = 0.351), no. of children at access (B = 0.337), and race (B = 0.154) had the most influence. Shelter-based care was effective in improving access because 43% of families were able to secure appointments and perceived access barriers decreased after shelter-based care (p<0.001).

CHARACTERISTICS OF THE WELCOME CARRIED THROUGH IN THE PAEDIATRIC INTENSIVE CARE UNIT (PICU) OF THE FERNANDO FONSECA HOSPITAL

JG Imaginario. Unidade Cuidados Intensivos E Especialis Neonatais E Peditricios, Hospital Fernando Fonseca, Lisbon, Portugal

When carrying out this inquiry work was considered, it was noted how important the achievement of a humanized welcome is, as it is during this period that the main signals of stress of the child and the parents are detected, also allowing these feelings to be minimized.

In order to improve the abilities of the nursing staff, we became aware of the necessity to make a diagnosis on our practice, so that adjusted specific behaviours could be developed.

The aim of the study is to identify the most frequent characteristics of the welcome carried through by the nurses in the PICU. This is a study lead in a natural way, of exploratory description character. The sample constitutes the nurses who work in the PICU.

The sample is not probabilistic, such as the sample method used, and it will be an anecdotal presentation, with fifteen nurses.

As data harvest technique, direct observation was adopted, and it will take place between 01/06/2008 and 31/08/2008. To carry through these observations it was elaborated one grade where some attitudes that the nurse will be able to present are described.

All the observed items will have data handling for descriptive statistics. The presentation of the results and conclusions of the study will take place during the congress.

NURSING COLLABORATION BETWEEN NICUS IN THE NETHERLANDS

1MA Osagia-Moret, 2A van den Hoogen, 3P Andriessen. 1NICU, Maxima Medical Center, Veldhoven, The Netherlands; 2NICU, Wilhelmina Children’s Hospital University Medical Center, Utrecht, The Netherlands

Objective: To describe a neonatal network in The Netherlands regarding the nursing collaboration between Neonatal Intensive Care Units (NICUs) on innovation and research.

In The Netherlands perinatal intensive care is highly organized in 10 centers spread over the country: >95% of premature infants (<32 weeks GA) are born in one of these centers. In 2006 a total of 4178 newborns were admitted in a NICU, yielding a mean admission rate of 418 per center (range, 255–578).(1) Each NICU has 1–2 satellite centers for post-intensive care management.

Methods: Information is obtained from the National Perinatal Registration, a survey of working groups, interviews and from the national Dutch group ‘Innovation and Research’.

Results: Nursing staff in the 10 NICUs enjoy several ways of cooperation. One of the nationwide associations is the National Dutch group ‘Innovation and Research’ (I and R). Members of this group are nurse practitioners, scientists in nursing research and nurse specialists from every participating NICU in The Netherlands. Frequency of meetings is 3 times per year. Goal of this group is in general promoting national nursing research projects and innovations regarding nursing issues.

A systematic review of evidence based recommendations for infant positioning was performed by all representatives of the Dutch NICUs to obtain data to develop an evidence based protocol regarding regular repositioning of the preterm infant in NICU to prevent cranial molding.

Conclusions: Collaboration between NICUs is beneficial for patients and nursing staffs.

Poster session: nursing

A GOOD MEDICAL HISTORY AND THE IMMEDIATE DECISION FOR BRONCHOSCOPY CAN SAVE CHILDREN WHO HAVE CHOKE ON A FOREIGN BODY

GG Ntamagka, S Alevra-Kokkali, D Agorogiannis, A Bouranta, I Tsiami-Agorogianni. Pediatric Department, General Hospital, Larissa, Greece

Objective: The insorption of a foreign body is the fourth highest cause of death for children because of an accident. We present 4 cases in which the patient’s history and the immediate decision for bronchoscopy saved the children’s life.

Methods: Retrospective review of medical records from children who had an episode of insorption and were transferred in our paediatric emergency department during one year (2006).

Results: One child had persistent cough for 20 days. The chest X-ray showed emphysema at the left lung. After asking thoroughly about the beginning of the cough, the mother revealed that the child had an episode of choking with hazelnuts 3 weeks ago. It was decided to conduct bronchoscopy and 4 pieces of hazelnut were removed. The second child presented also with persistent cough for 1 day. The physical examination and the chest X-ray were negative. Taking the medical history, we discovered that the cough had started after eating a fish. Bronchoscopy took place and a fish bone was removed. The other 2 children had choked with a piece of sweet bread and with pieces of an apple and were immediately transferred to our department with low oxygen saturation and dyspnoea. Both of the children were intubated and transferred in an intensive care unit. After bronchoscopy and removal of the foods the children’s health improved and they exited the intensive care unit.

Conclusions: A good medical history and the immediate decision for bronchoscopy can save the life of a child who has choked on a foreign body.

Bolfan-Stosic table 1 Results of one way analysis of variance on manifest area between 5 groups of children

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Bolfan-Stosic table 2 Coefficients of discrimination

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VOICE ANALYSES IN DIAGNOSTICS OF DYSPHONIA IN CHILDREN

N Bolfan-Stosic. Department of Logopedics, Laboratory for Voice Pathology, Zagreb, Croatia

The objective of this paper was to find and compare pathological voice characteristics of 56 boys (10 to 12) with sensorial hearing loss, dysarthria, Down syndrome and dysphonia.

Acoustical analysis was made by Brul and Kjaer Frequency Analyzer and Spectrogram 2.3. Results of one-way analysis of variance and discriminative analysis showed significant statistical differences between groups for frequency of fundamental (F0), number of columns around F0 as a laryngeal pathology indicator, and noise intensity levels between five harmonics. The voice parameters were measured in digitised live-voice productions of sustained vowel (a) produced by 56 boys. Obtained results showed significant differences in acoustical characteristics of children’s voices and importance of acoustical analyses as a representative method in diagnostics of disordered voices in children with different impairments.

PARENTAL PERCEPTION OF EFFECTIVE COMMUNICATION AND SATISFACTION WITH CARE PROVIDED IN THE NEONATAL UNIT FOR BABIES ADMITTED OVER 28 DAYS

1JM Brown, R Sharma, R Lanlehin, 1N Aladangady, 1Homerton University Hospital, London, UK; 2City University, London, UK; 3Barts and The London School of Medicine, London, UK

Objective: To study parental perception of staff communication, and to relate this to baby and parent characteristics, and overall satisfaction of care.

Methods: This is a prospective questionnaire study. Parents of babies admitted to the Neonatal Unit were approached at the time of or soon after baby’s discharge/transfer/death. Data collected on baby and parent characteristics with staff communication.

The study was approved by the Research Ethics Committee.

Results: A total of 397 parents were approached and 210 (52.9%) responded. Out of the 210 respondents, 82 (39%) babies were admitted for over 28 days. The median gestational age was 29 weeks and birth weight 1095 gms. The median duration of admission was 57.5 days.

74 (90.2%) of parents reported that they had regular updates (everyday or 2–5 times weekly), while 8 (9.8%) felt they had not been seen or seen irregularly. 68 (82.9%) of parents reported overall satisfaction with care and 4 (4.9%) were dissatisfied. When asked whether doctors or nurses were the better communicators, 19 (23.1%) indicated doctors, while 16 (19.5%) indicated nurses. However 31 (37.8%) reported no significant difference, again 16 (19.5%) left this section blank.

There was no significant association between baby or parent characteristics and parents’ perception of communication, and satisfaction with care.

Conclusions: Majority of parents were updated regularly and satisfied with overall care provided. It is vital, therefore to provide...
regular and proper parent communication to ensure parental satisfaction with overall care.

AN INFLUENCE OF PERINATAL EDUCATION ON THE QUALITY OF BABY CARE

Evelina Children's Hospital, Paediatric and Neonatal Intensive Care Unit (PICU), Sheba Medical Center, Tel-Hashomer, Israel; Tel-Aviv University, Tel-Aviv, Israel

Objective: Analysis of information support provided for new mothers with reference to their participation in antenatal classes and the number of past pregnancies.

Methods: The study was conducted in the years 2006–2007 and involved 352 women in obstetric and neonatal wards in the chosen hospitals of Szczecin, Poland. A method of the diagnostic survey was applied with a support assessment questionnaire of the author’s own design. The results were subjected to statistical analysis with the Pearson chi-square test. Primiparas constituted 55.4% and multiparas 44.6% of all examined women; only 14.77% of the surveyed completed antenatal classes.

Results: Analysis of the data referring to the number of past pregnancies showed that primiparas significantly more often than multiparas obtained information about bathing a baby, care of baby’s umbilical cord, skin and mucous membranes. No statistically significant differences were found in such elements as nappy changing, dealing with burping, baby’s diet in the first year of life, baby’s safety, neonatal adaptation symptoms. Another analysed variable was participation in antenatal classes. The participants in antenatal classes significantly more often received information about bathing a baby, nappy changing, care of umbilical cord, dealing with burping and baby colic, baby’s diet in the first year of life, baby’s safety, and disturbing symptoms. Analysis of other variables did not reveal any statistically significant differences.

Conclusions: Irrespective of the number of past pregnancies and participation in antenatal classes, preparing women for baby care requires great involvement of obstetric and neonatal ward workers.

NASAL PRESSURE ULCERS: A NATIONAL SURVEY OF CURRENT PRACTICE AND OCCURRENCE IN PEDIATRIC AND NEONATAL CARE

IMC Ventilacion, IM Thruston, F Lynch, A Durward, S Tibby, Evelina Children’s Hospital, London, UK

Background: Pressure ulcers have detrimental effects on our patients both physically and emotionally and have financial implications for health care providers. A five-year audit of pressure ulcers reported in the Evelina Children’s Hospital, Paediatric Intensive Care Unit (PICU) identified that almost 50% were as a consequence of nasal endotracheal tubes.

Objective: A national survey was conducted to collect information on management of nasal endotracheal tubes and the perceived risk factors contributing to the formation of nasal pressure ulcers. The data gathered facilitated comparison of different techniques in methods of safe securement, skin protection and reduction of iatrogenic injury from nasal endotracheal tubes. The results add to existing knowledge around nasal pressure ulcers to contribute to the reduction of incidents.

Method: An electronic questionnaire was devised and circulated to twenty five Paediatric and Neonatal Intensive Care Units (NICU) in the United Kingdom and Republic of Ireland to gather information on current practice.

Results: The response rate was 88.5% (23/25). The results indicated that the incidents of nasal pressure ulcers in comparable units were similar. However, securement techniques, skin protection and methods to reduce injury were variable. This survey also identified no consistent method used for grading or reporting of pressure ulcers.
Conclusion: The survey identified nasal pressure ulcers as a national problem with no clear evidence of best practice, therefore, highlighting this issue as a priority for nursing research in PICU and NICU.

Can pediatric critical care nurses adequately evaluate the effects of routine care using traditional hemodynamic monitoring tools? Is the care and procedures beneficial or potentially harmful to children following surgical repair of congenital heart defects? How can this be assessed in “real-time”? Can newly advanced monitoring tools besides traditional vital signs; heart rate, blood pressure, pulse oximetry, respiratory rate and central venous pressure; help determine the optimal time to change inotropes, suction, bathe or reposition the child, rather than performing these tasks on certain shifts or time of day? Can these “real-time” monitoring tools guide nurses’ clinical decision making for when and how to provide care?

Continuous monitoring of global and/or regional oxygen saturation can provide “real-time” information of the balance between oxygen delivery and consumption. Many seemingly innocuous procedures can drastically increase oxygen consumption needs, beyond oxygen delivery capabilities.

Nurses have knowledge of physiological causes and exogenous interventions that can lead to increases in oxygen consumption. While most of these interventions are a necessity, continuous monitoring of global and/or regional oxygen saturation can help nurses at the bedside determine when the best time is to provide care, when an intervention is necessary and how the patient tolerates it.

In a time of soaring health care costs, a worldwide nursing shortage, and children undergoing increasingly complex cardiac repairs, there exists an obligation to decrease mortality and morbidity as much as possible. The best and most advanced technology providing an early warning is extremely vital in the crucial recovery period.
Poster session: nutrition

A BENEFICIAL EFFECT OF ACACIA GUM IN A PATIENT WITH NEPHROPATHIC CYSTINOSIS AND CHRONIC RENAL FAILURE

AJ Al Mosawi. Department of Pediatrics, University Hospital in Al Kadhimiyia, Baghdad, Iraq

Objective: Cystinosis is a rare disease presented initially with renal Fanconi syndrome, and renal glomerular failure develops later in childhood. Without cysteamine treatment, patients affected with cystinosis uniformly died during childhood in the absence of renal replacement therapy (RRT). Cysteamine is not available here and in some other areas of the world. The aim of this paper is to describe a beneficial effect of acacia gum in a patient with cystinosis and chronic renal failure.

Method: 9-year-old girl with cystinosis presented with symptomatic uremia as she didn’t receive cysteamine. Serum creatinine 7.4 mg/dl, blood urea 200 mg/dl. The girl was hospitalized and vomiting controlled with intravenous fluid and pyridoxine. Chronic dialysis was not available for her and the parents refused treatment with intermittent acute peritoneal dialysis. The girl was treated with a new therapeutic regimen (Therapy 2006;5(3):521) combining the traditional conservative management of CRF (dietary and pharmacologic) with addition of acacia gum (AG) 25 g/day as a urea lowering agent aiming at improving her condition without dialysis.

Results: Treatment was associated with amelioration of the uremic symptoms and improved general well being. After 2 weeks of treatment serum creatinine was 1.9 mg/dl, blood urea 69 mg/dl. During 4 months of follow-up she continued in experiencing improved well being and urea levels was kept below 70 mg/dl without dialysis.

Conclusion: It was possible to improve the health of patient with cystinosis despite the non-availability of cysteamine and the appropriate RRT.

ENTERAL FEEDING, ITS COMPLICATIONS AND MONITORING

1AJ Khatkat, 2SA Khan. 1Department of Human Nutrition, Agriculture University Peshawar, Peshawar, Pakistan; 2Agriculture University Peshawar, Peshawar, Pakistan

This study was conducted on 41 infant patients (mean age = 22.25 ± 6.1 days, mean wt = 2.1 ± 0.5 kg) admitted to the Pediatrics wards of two hospitals in Peshawar, NWFP Pakistan during 2007. The primary objective of the study was to evaluate the nutrients intake of the infants through nasogastric (NG) feeding, monitoring and complications of NG feeding. Data on NG feed was collected and analyzed for macro and micronutrients using food composition tables. Data on the NG associated complications, nutritional assessment and NG monitoring were collected from the patients’ medical records. The results show that mean energy intake was 115 ± 9 Kcal/day (47% of RDA), of which 65% and 35% was furnished by NG feed and via parenterally, respectively. The mean protein intake was 1.25 ± 0.07 g/day (27% of the RDA). Daily intakes of minerals (Ca, P, Zn, Fe, and Mg) and vitamins (A, D, E, B6, B12, folates, thiamin, and ascorbic acid) were much below the RDAs. Aspiration, reflux, tube blockage, tube displacement, gut infection and diarrhea were the complications observed. Monitoring protocol of NG feeding was satisfactory. The conclusion of the study is that the lower intake of protein and energy on NG feed and frequency of most of complications is an issue of concern. As a recommendation pressure must be applied to increase the energy and nutrient intake (particularly protein), further strengthening monitoring and to minimize associated complications.

NUTRITIONAL MANAGEMENT OF PKU IN SAUDI ARABIA

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Objective: Inborn errors of metabolism are a significant public health problem in Saudi Arabia. Incidence is estimated to be 5 times higher than in the US. Adherence to a special diet is essential for management of phenylketonuria (PKU) in order to prevent developmental disability. Our aim is to identify risk factors that lead to inadequate control over PKU and its diet for patients at King Faisal Specialist Hospital & Research Centre in Saudi Arabia to improve nutritional management.

Methods: Qualitative study: assessed nutritional knowledge, attitudes and practices: 5 interviews and 2 focus groups with health care providers; 6 interviews with patients; and 17 interviews with families. Quantitative study: anthropometric measurements, dietary intake, phenylalanine blood levels, developmental assessments, and questionnaires with 40 PKU patients and their families.

Results: Major qualitative themes: lack of sufficient services; limited dietary knowledge; limited resources; social and emotional attitudes towards diet and compliance. Quantitative initial results: Of the 40 patients 62% have developmental disabilities ranging from mild to severe. This is due to delayed diagnosis (77%), poor compliance (92%), limited knowledge or a combination of these.

Conclusion: In Saudi Arabia targeted nutrition management programmes need to be developed to support patients and their families. Education and metabolic care services need major improvements to be able to deliver optimal care.

NO GENDER DIFFERENCES IN VARIABILITY OF RESTING METABOLIC RATE IN PRE-SCHOOL CHILDREN

11X Djafarian, 12JR Speakman, 1DM Jackson. 1Aberdeen Centre for Energy Regulation and Obesity (ACERO), Rowett Research Institute, Bucksburn, Aberdeen, Scotland, UK; 2ACERO, School of Biological Sciences, University of Aberdeen, Aberdeen, Scotland, UK; 3Tehran University of Medical Sciences, Faredanesh Alley, Tehran, Iran

Objective: Given sufficient evidence regarding the role of gender on variation of RMR in adult and school children, few data are available about the gender effect on RMR in pre-school children. The present study attempted to investigate gender differences contribute to variations in RMR.

Methods: Information was obtained for thirty children aged 2–6 years. Measurements were taken of height, age, weight and total body composition which was determined using both DXA and deuterium dilution. The DXA was also used to determine body composition in different regions of the body. RMR was measured by indirect calorimetry.

Results: No significant gender differences were found with respect to age (F = 0, P = 0.998), weight (F = 0.02, P = 0.884), height (F = 0.33, P = 0.570), and BMI SDS (F = 0.51, P = 0.480). In addition, no significant difference was found between boys and girls for total fat free mass (FFM) (F = 1.30, P = 0.265) and log Fat Mass (FM) (F = 1.2, P = 0.228) measured by DXA, and total FFM (F = 0.79, P = 0.38) and log FM (F = 0.70, P = 0.41) obtained with deuterium after correction for age effect. This study demonstrated that there is no significant difference between pre-school boys and girls for RMR (F = 0.16, P = 0.690). In a multiple regression analysis, only log weight was significantly associated to RMR, variation of which amounted to 75.3%.

Conclusions: We found that no significant differences in body composition between pre-school boys and girls may lie behind the lack of gender effect on RMR in this age group.

A456 Arch Dis Child 2008;93(Suppl II):A456–A457
RESULTS from 1441 participants (52.4% girls) show that low birth weight, possibly in combination with postnatal catch-up growth, is associated with overweight and impaired glucose metabolism in adulthood. Therefore, the aim of our study is to assess the association if birth weight is related to anthropometry, blood pressure, and glucose metabolism in adolescence.

Methods: The TRAILS-GECKO study is a population-based cohort study among 2000 adolescents, presently aged 14–18 years. They have been assessed biennially from age 10 within the framework of the TReating Adolescents’ Individual Lives Study (TRAILS) in which amongst others birth weight data were collected. Data regarding anthropometry, body composition, blood pressure, and laboratory parameters have recently been collected in collaboration with the Groningen Expert Center for Kids with Obesity (GECKO).

Results: Results from 1441 participants (52.4% girls) show that only in overweight/obese participants, skinfolds, body fat %, circumferences, blood pressure, insulin, and HOMA index tended to be associated with birth weight. Regression analyses showed that height was associated with both low and high birth weight. Weight, BMI, skinfolds, and waist and hip circumference were significantly higher in the LGA category only; diastolic blood pressure (DBP) was significantly higher in the SGA category. After adjusting for BMI in adolescence, birth weight remained significantly associated with waist circumference and DBF. In addition, LGA was negatively associated with SBP, fasting insulin, and HOMA index.

Conclusions: Our results support an association between birth weight and anthropometry, blood pressure, and glucose metabolism in adolescence.

COMPARISONS OF METHODS TO ASSESS TOTAL BODY FAT IN SIX- AND SEVEN-YEAR OLD CHILDREN

Objective: To evaluate different methods of differentiating normal and high total body fat in large numbers of six- and seven-year-old children.

Methods: In 17 boys and 13 girls, 6–7 years, body fat was assessed using isotope dilution and dual energy x-ray absorptiometry (DEXA). These reference methods were compared to skinfold thicknesses (ST), waist circumference, body mass index (BMI) in children and adolescents. In this study, 751 children (3–12 yrs) and 554 adolescents (13–18 yrs) were included. The sample was representative of the Greek population in terms of sex and age.

Information on participants’ socio-demographic, dietary, anthropometric and physical activity characteristics were collected through telephone interviews. In children, BMI was significantly positively associated with BMI, and also a lifestyle pattern including a combination with postnatal catch-up growth, is associated with BMI, and also a lifestyle pattern including high eating frequency, breakfast consumption and high carbohydrate intake and breakfast consumption (all p values <0.05). When principal component analysis was applied for the identification of the participants’ lifestyle patterns, seven components were identified, explaining 85% of the total variance. In the total sample, multiple regression analysis revealed that, after adjusting for potential confounders (age, sex, parental education and low energy reporting), BMI was negatively associated with a lifestyle component characterized by high eating frequency, breakfast consumption and high KIDMED score (standardized beta coefficient = -0.118, p<0.001). Results of the present study revealed specific lifestyle factors associated with BMI, and also a lifestyle pattern including a combination of factors that may be intercorrelated and act synergistically in explaining overweight in young people.

Conclusion: Total body fat estimated using the Goran as well as the Deurenberg equation are the best non-invasive methods to detect total body fat in six- and seven-year-old children.

SEVERE MALNUTRITION IN BREASTFED 4-WEEK NEONATE

Objective: To evaluate associations between lifestyle patterns, including dietary-related factors, and body mass index (BMI) in children and adolescents. In this study, 751 children (3–12 yrs) and 554 adolescents (13–18 yrs) were included. The sample was representative of the Greek population in terms of sex and age.

Comparison of methods: Total body fat was assessed using the Goran as well as the Deurenberg equation are the best non-invasive methods to detect total body fat in six- and seven-year-old children.
QUALITY ASSURANCE IN PAEDIATRIC CARDIAC CATHETERIZATION: IS VOLUME AN ADEQUATE MARKER?

C Lilje, TP Le, U Gottschalk, J Weil. Paediatric Kardiologie, Universitaets-Herzzentrum Hamburg, Hamburg, Germany

Background: Cardiac catheterization is a cornerstone in the management of congenital heart disease. Therapeutic techniques are rapidly emerging. They are prestigious and highly reimbursed. Few centres are competing about expertise, reputation, and scarce resources. A high volume of procedures is commonly regarded as key qualifying marker. Exposure generates training. However, poorly indicated, poorly performed, and unintended redo procedures increase numbers, too.

Objective: To assess the validity of this key single marker and to develop an enhanced concept for quality assurance in paediatric catheterization.

Proposal: We suggest a scoring system that takes into account the 1. number of patients followed; 2. number of referrals from outside; 3. validity of indications; 4. complexity of diseases and procedures; 5. procedure and fluoroscopy time; 6. success rate; 7. frequency and severity of complications; 8. frequency of unintended redo procedures. It requires a 9. standard reporting form for the above data; 10. benchmarking mechanism; 11. automated software algorithm that integrates the reported data and generates the eventual overall score; and 12. a quality evaluation committee that supervises this process.

Discussion/Conclusions: A minimum number of procedures will assure minimum safety and quality. However, shooting for large numbers may lead to unethical practice. Additional criteria are needed. The above scoring system provides for a profound quality assessment and operator ranking. It guides patients, physicians in training, and resource allocation officials in their choice among centres. And it eventually improves overall service quality.

SEEKING A PAEDIATRIC SOLUTION FOR EWTD COMPLIANCE FOR JUNIOR DOCTORS HOURS IN ADVANCE OF 2009

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Background: In August 2009 junior doctors hours will reduce to 48 hours per week averaged out over 17 weeks. RLC are currently a National Workforce Projects Working Time Directive (WTD) Pilot site, aiming to develop solutions that would achieve compliance within paediatrics. Recognising that no one solution will address WTD, the project consists of a number of initiatives.

Method: A Rapid Improvement Structured and Targeted approach was utilised. Existing team structure, number of posts at each level, requirements for on-call were reviewed. Consideration was given to cross cover or on-call from home out of hours. Rota-planning technology was used to develop compliant rotas.

A Paediatric Early Warning system was implemented. Specific attention was given to developing the out of hours cover so that patient safety was maintained. A multidisciplinary Hospital @ Night (H@N) team was developed, and bleep-filtering was trialled.

Results: Total hospital commitment is required to achieve solutions which meet local service requirements. Rota planning was difficult particularly within teams with unfilled posts or providing regional cover over several sites. Collaborative working within H@N worked well. Demonstrated benefits included increased practical support, improved communication and team-working. Bleep-filtering identified that a proportion of the out of hours work was non-urgent and could be carried out by senior nurses with additional training. The multidisciplinary collaborative model of working could be implemented effectively to the entire out of hours period. Longitudinal data from bleep-filtering can be used to further develop the out of hours clinical cover so that there is optimum resource utilisation.
Poster session: pain and sedation

REDUCING PAIN DURING FEEDING TUBE INSERTION IN PRETERM INFANTS

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Background: Gavage feeding is required in preterm infants who cannot feed by themselves. Insertion of the feeding tube is painful, however, and reducing the discomfort in these patients is considered important. The aim of this study was to assess pain and discomfort during insertion of a feeding tube, and to evaluate different measures for pain relief.

Material and Methods: We included 24 preterm infants with postmenstrual age 28–32 weeks in stable clinical condition. Prior to nasal tube insertion, the infants were given a pacifier or not; and oral fluids (none, sterile water, or 30% sucrose) in a 2-by-3 factorial design. Each infant acted as his own control over a 5 week period. The order of interventions was randomised.

Pain and discomfort was assessed by at least two independent and experienced observers using the pain assessment tool “Premature infant pain profile” (PIPP, range: 1 to 21). Score >12 indicates moderate to strong discomfort.

Results: Mean PIPP score during the procedure was about 9 and gradually decreased towards the baseline score of 4 in about five minutes. Significantly best pain relief was achieved by combining a pacifier with oral sucrose. Sterile water without a pacifier seemed to increase discomfort.

Conclusion: Insertion of a feeding tube in preterm infants causes pain and discomfort as measured by the PIPP pain assessment tool. Pain relief is best achieved by combining a pacifier with 30% sucrose.


NURSE AND ORGANIZATIONAL CONTEXT CONSIDERATIONS FOR KNOWLEDGE USE IN PAIN CARE: A GUIDING FRAMEWORK

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Nurses are involved in many of the painful procedures performed on hospitalized children. In collaboration with physicians, nurses have an exceptional responsibility to have knowledge to manage the pain; however, the evidence indicates this is not being done. Issues may be twofold: opportunities to improve knowledge of better pain care practices and/or ability to use knowledge. Empirical evidence is available that, if used by health care providers, can reduce pain in hospitalized children. Theory guided interventions are necessary to focus resources designated for learning and knowledge translation initiatives in the area of pain care.

Objective: This paper presents the Knowledge Use in Pain Care (KUPC) conceptual model that blends concepts from the fields of knowledge utilization and work life context, including human resource management which are believed to influence the translation of knowledge to practice. The four main components in the KUPC model include those related to the organization, the individual nurse, the individual patient and the sociopolitical context. The KUPC model was conceptualized to account for the complex circumstances surrounding nurse’s knowledge uptake and use in the context of pain care.

Conclusion: The model provides a framework for healthcare administrators, clinical leaders and researchers to consider as they decide how to intervene to increase knowledge use to reduce painful experiences of children in hospital.

VENIPUNCTURE, A MORE HUMAN METHOD FOR BLOOD SAMPLING IN NEONATES

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Background and Objective: Premature and sick neonates are exposed to numerous painful procedures during the NICU period. Heelstick is the most frequent procedure for blood sampling. The pricking and squeezing necessary to collect blood from heelstick are painful stimuli. Venipuncture is a less painful and more effective method of collecting blood for analysis. Non-pharmalogical pain relief methods such as swaddling, containment and pacifier with sucrose are included in the preparations for the procedure. If possible, the procedure should be performed after feeding to reduce painful stimuli for the babies, a procedure for venipuncture was developed. Scalp veins were chosen as they are available and facilitate the procedure with minimum disturbance.

Method: Nurses were instructed and systematically trained in performing venipuncture. Both the venipuncture, and the role of the assisting nurse in providing pain relief, were stressed. No extra resources were provided. To evaluate the procedure, a compulsory questionnaire was administered to the nurses.

Results: Nurses were overall positive when evaluating the procedure. Despite the workload added, nurses appreciate the pain-reducing effect in venipuncture compared with heelstick. Nurses also perform the venipuncture at the most favourable time for the baby. Average time needed to perform venipuncture was 11–15 minutes and did not differ with experience.

Conclusion: In nurses’ opinion, venipuncture seems to be a less painful method for blood collection. The procedure requires resources as one nurse offers pain relief by containment, swaddling and a pacifier with sucrose, while the other nurse performs the venipuncture.

THE EFFICACY OF FACILITATED TUCKING DURING ENDOTRACHEAL SUCTION IN PRETERM INFANTS

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Background: Most infants cared for in a Neonatal Intensive Care Unit receive mechanical respiratory support. Consequently they undergo painful and stressful interventions e.g. endotracheal suctioning (ETS) and heel punctures. Pain relief by analgesia is frequently discussed in the literature. Non-pharmacological pain management like sucrose in combination with non-nutritive sucking is well studied. Recently, studies concerning facilitated tucking (FT) to comfort infants who undergo short mild or moderate painful procedures are published. In the current practice nurses provide FT to infants who undergo ETS. What is, however, the state of the art with respect to pain and stress reduction during ETS?

Objective: This review describes the effectiveness of facilitated tucking in infants during endotracheal suctioning.

Method: Systematic search was performed in electronic databases including PubMed, Cochrane library and CINHAL to identify literature published from January 1988 to January 2008. Used keywords were facilitated tucking, pain management, and suction. Included were articles concerning neonates from 24 to 32 weeks gestation.
Results: Ten articles out of 621 generated hits were selected, two crossover studies concerning ETS, three crossover studies concerning heel lance, one study during routine care, one systematic review concerning non-pharmacological pain management and three general articles concerning non-pharmacological pain management including FT.

Conclusion: There was little high-level evidence for FT. All studies conclude that FT may be an effective non-pharmacological intervention during short painful procedures. FT had a favourable effect on pulse rate, respiration and on reduction of motor activity. Additionally, FT provided by parents may be effective in pain management.
QUALITY AND SAFETY EDUCATION USING TRANSFORMATIVE NURSING CARE AT THE BEDSIDE

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The Institute of Healthcare Improvement (IHI) and Robert Wood Johnson Foundation responded to the Institute of Medicine’s report of thousands of lives lost due to adverse events including medication errors, unexpected infections or falls by establishing the Transforming Care at the Bedside (TCAB) program for model hospitals and schools of nursing. The goals of TCAB are to enable staff nurses, guided by their clinical leaders, to identify areas of incremental change that can affect expected outcomes. After 4 years of multiple sites integrating concepts of TCAB, the nursing staff has embraced the ability to solve problems in a self directed and incremental manner. The transformative care implementation innovations include; quiet time during shift change, medication reconciliation, tranquility rooms for nursing, and enhanced communication through “huddles” that use multidisciplinary representatives. Physician nurse collaboration was the primary predictor of successful safety and quality initiatives.

The outcomes of the various units changed significantly in the categories of:
- medication reconciliation
- number of falls
- decreased number of codes
- vitality of nursing staff
- voluntary turnover
- patient satisfaction indicators
- increased time for direct nursing care.
- decreased adverse events

Data is presently being analyzed to determine the most significant outcomes.

The primary overarching finding of TCAB is that all health care providers need to unite in an intense effort to prevent the thousands of preventable deaths per year. TCAB is an excellent model to achieve this goal.
ACUTE HEMORRHAGIC EDEMA OF INFANCY: REPORT OF A PECULIAR CASE

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Background: Acute hemorrhagic edema of infancy (AHEI) is an acute cutaneous benign leukocytoclastic vasculitis seen in children <2 years old. The principal differential diagnosis of this pathology is Henoch-Schönlein Purpura. The main differences are: age of appearance, nature of the lesions and minor risk of relapses. Usually there is a previous history of upper respiratory tract infection. AHEI presents with fever, tender edema (face, hands and feet) and purpuric lesions (face and extremities). Platelet count, urinalysis and coagulation study are normal.

The authors’ aim is to describe a typical case of AHEI, to highlight the condition and emphasize its benign nature.

Case report: Thirteen month old child that was previously healthy. She had an upper respiratory tract infection 2 weeks earlier. In the ER admission she had purpuric lesions with 24 h evolution, fever and a bloody dejection. The purpuric lesions started in the lower limbs and then affected the face. She appeared well except for the rash. The coagulation study was normal, the platelet count was elevated and E. coli was isolated in the urine culture. The purpuric lesions diminished progressively in a few days. There were no relapses.

Discussion: AHEI is a clinical diagnosis. It is important to recognize this pathology because despite it having an exuberant clinical presentation, the prognosis is good with spontaneous recovery. The concomitant diagnosis of urinary tract infection makes this case peculiar.
COST-EFFECTIVENESS OF PALIVIZUMAB FOR RESPIRATORY SYNCTIAL VIRUS PROPHYLAXIS IN PREMATURE INFANTS WITH A GESTATIONAL AGE OF 32–35 WEEKS IN CANADA

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Objective: To evaluate the cost-effectiveness (CE) of palivizumab as respiratory syncytial virus (RSV) prophylaxis in premature infants 32 to 35 weeks gestational age (GA), without chronic lung disease.

Methods: A decision analytic model was designed to compare direct and indirect medical costs of the patient with future lost productivity and benefits of prophylaxis. Five types of sensitivity analyses were performed to ascertain robustness of the model based on mortality, health utility scales, variable discounting rates, administration costs and vial sharing.

Setting: Canadian publicly funded health care system (base-case analysis).

Primary Outcomes: Expected costs and incremental CE ratio expressed as cost per quality-adjusted life-year (QALY) gained using $ Canadian (CAD) 2006.

Results: Expected costs were higher for palivizumab prophylaxis compared with no prophylaxis. The incremental CE ratio for the base-case scenario was $17,253 per QALY after discounting, which is considered highly cost-effective. The model was not sensitive to variation in the RSV mortality rate. Sub-analyses varying the number of risk factors in a Canadian validated risk-scoring tool were sensitive to the resulting variation in RSV-related hospitalization rates. In instances where one risk factor or less was present, palivizumab was not cost-effective. However, for infants with two or more risk factors, or at least moderate risk, palivizumab had incremental costs per QALYs that indicated moderate to strong evidence for adoption (range: −$2,881 [cost savings] to $77,668 per QALY).

Conclusions: Palivizumab was cost-effective and our model supports prophylaxis for infants born at 32 to 35 weeks GA, particularly those with two or more risk factors.

PEDIATRIC SUBSPECIALTY WORKFORCE

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Objective: Gaining timely access to pediatric subspecialists is becoming increasingly difficult in the United States. Hospitals, primary care providers, families, and health plans are struggling with alternative ways to address this critical workforce shortage in pediatrics. One approach is to expand the reach of existing state and regional networks of pediatric subspecialty services and the other approach is to strengthen the capacity of primary care providers (PCPs) with more consultation support and coordination from pediatric subspecialists. Unfortunately, there are several barriers that impede expanded pediatric subspecialty access and increased coordination between primary and specialty care. These barriers primarily pertain to the supply of pediatric subspecialists, communication and coordination between primary and specialty pediatric providers, and funding.

Methods: A Federal Expert Work Group on Pediatric Subspecialty Capacity, comprised of experts in pediatric health care, was established in 2005 to: 1) assess the scope and impact of pediatric subspecialty workforce problems; 2) identify promising practices; and 3) develop a tactical plan to improve access to pediatric subspecialty care within the context of comprehensive, community-based medical homes.

Result/Conclusions: Through several meetings of the Expert Work Group, 10 innovative approaches were identified related to referral, consultation, and shared management. An analysis of these approaches will be presented.
Aeroallergen sampling is carried out by different devices 

EPIDEMIOLOGY OF ALLERGIC RHINITIS IN SCHOOLCHILDREN 
POPULATION OF TBILISI AND WESTERN GEORGIA REGION 

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Goal of our research was allergic rhinitis (AR) epidemiological study in schoolchildren population of Tbilisi and Western Georgia Region (2007).

Materials and Methods: Research was conducted through questioning of the random and representative groups of population, by epidemical research cross-section method. Schools and groups for study were selected by simple random method.

First stage of research covered 5569 children (53.7% boys and 46.3% girls) from 6 to 16. We divided population into younger (6 to 10–49%) and older (11 to 16–51%) groups. At second stage of research part of children’s population who gave positive answers to the questionnaire, with signs of AR for last one year period was subject to clinic-allergic study.

Statistical data processing was provided by software package SPSS/v12.

Research results: During one year, according to questioning, repeated sneezing episodes were identified in 13.2% (57.1% younger group; 42.9% elder group). Nose pruritus was indicated in 15.7% (41.7% elder group; 58.3% in younger group). Rhinorrhea was stated in 16.4%, mostly among older schoolchildren (76.2%). Nasal obstruction was identified in 15.9% of respondents, with high frequency in younger schoolchildren (71.3%). Epiphora and eye pruritus was indicated in 5.7%.

Spread of the symptoms of AR was reliably higher among boys (p<0.05) compared with the girls.

Thus, through questioning and anamnesis data a spread of AR in the children’s population was shown – 14.1% in Tbilisi, 15.3% – Adjarian Region, Batumi, 7.8% – Kutaisi and 4.3% – Chokhatauri.

POLLEN COUNT IN AIR SPACE OF ZANJAN CITY

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Objective: Aeroallergen sampling is carried out by different devices and variable methods. The purpose of our study was to detect the common air pollens of Zanjan city.

Methods: We provided a model 20 Rotorod sampler which is a small, portable device that is most often used for field research. Airborne pollen grains and particles larger than 3 μm in diameter could be captured at high efficiencies by that. Most patients who have been referred to allergy clinics had signs and symptoms especially at early morning and evening, thus we regulate our intermittent sampling strategy at the same times. We used duty cycle regulator. Therefore, our sampler has worked at 6.00–8.00 AM and 5.00–7.00 PM, concomitant with sunrise and sunset times. The sampler was installed near to meteorology devices in an aluminum cover and 150 cm above the ground. Each transited and storage vial holds up 2*6 = 12 collector rods and we collected nodes weekly. After 6 weeks we completed one vial for transport to laboratory for sample assessment. Each pair of rods has shown the one week pollen and 2 completed vials also could identify season airborne pollen.

Results: The airborne pollens collected from June to October 2006 were studied; mulberry, walnut, pillow, cottonwood and cedar (tree family), grass and weeds (pigweed and amaranth) were common pollens of Zanjan and the concentration of them were 8–226 per cubic meter of air.

Conclusions: The pattern pollination in Zanjan was similar to other studies of the world but the pollination of grass was later in respect to similar temperate regions. This may be a factor for increasing the sensitivity of patients to this allergen.

SPONTANEOUS CHYLOTHORAX IN DOWN SYNDROME TREATED WITH OCTREOTIDE

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Congenital chylothorax is a rare condition. It is the commonest cause of pleural effusion causing respiratory distress in the neonatal period. The optimal method of treatment remains controversial. Currently, conservative treatment includes the use of a low-fat high-protein diet, supplemented with medium chain triglycerides or total parenteral nutrition combined with pleural drainage. The frequency and timing of spontaneous resolution is variable. Recent reports have suggested that somatostatin (or its longer acting synthetic analogue, Octreotide), has been utilized in the treatment of congenital chylothorax. Herein, we report a case of congenital chylothorax in which resolution was aided with Octreotide. Our case is a female born at term to a 45 year old mother, diagnosed to have trisomy 21 with atioventricular canal defects, managed with anti-failure medications, exclusively breast fed, and at 35 days of life developed tachyypnea with desaturation. Chest x-ray showed moderate size right pleural effusion (fig 1). A chest drain was inserted and managed per NICU protocol (fig 2). In view of the usual conservative management, still the chylothorax remained there, Octreotide was commenced on day 3, and treatment was associated with prompt respiratory improvement prior to cessation of pleural drainage over 6 days (fig 3).

SEDENTARY LIFESTYLE AND ASTHMA

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Objective: According to the exercise hypothesis, regular exercise and physical fitness are protective against asthma. The aim of the study was to examine the influence of the sedentary lifestyle,
through TV-watching/computer games-playing time, on asthma in young adolescents.

**Methods:** In a project conducted in 8 cities of R. Macedonia, the self-reported data by 1272 adolescents aged 12/16 years from Tetovo obtained through the ISAAC phase 3 written questionnaires were analysed. The daily TV-watching/computer games-playing time adjusted for confounding factors (sex, body mass index, passive smoke exposure, mother’s educational level, truck passage through the residential street, cat ownership) was correlated to wheeze ‘ever’, current wheeze, current sleep-disturbing wheeze, current exercise-induced wheeze and asthma ‘ever’. International cut-off points for overweight by age and sex were used. Odds ratios (OR, 95% CI) in binary logistic regression for statistic analysis of the data were performed.

**Results:** TV watching/computer games playing more than 3 hours a day significantly increased the risk of wheeze ‘ever’ (OR 2.34, 1.55 to 3.53, p = 0.000), current wheeze (OR 1.76, 1.01 to 3.09, p = 0.048) and exercise-induced wheeze (OR 1.60, 1.01 to 2.55, p = 0.046). A significant association between the TV-watching/computer games-playing time and severe wheeze or ever-diagnosed asthma was not found.

**Conclusion:** The results support the exercise hypothesis of a positive association between the sedentary lifestyle and asthma symptoms.

**NEOPTERIN AND LACTATEDEHYDROGENASE (LDH)—DIAGNOSTIC MARKERS OF NON-SPECIFIC DISEASES OF RESPIRATORY SYSTEM**

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The respiratory tract infections are usually mild and self-limited. Owing to their frequency, recurrent respiratory tract infection among children and adults constitute a major global health problem. The goal of our study was to observe 20 children with recurrent respiratory tract infections. The control group consisted of 15 healthy children. The study was conducted by the simple randomization method. The LDH level in study group was 178.2 ME/l, and in control group 64.2 ME/l (p <0.01).

According to our research results, neopterin level (19.5 nmol/l) was higher in the study group than in a control group (7.2 nmol/l) (p<0.01). During the infection the neopterin level usually increased before the first symptoms appeared and before formation of specific antibodies become detectable.

**SEVERITY SCORE IN IDIOPATHIC PULMONARY HEMOSIDEROSIS (IPH)**

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**Objective:** Idiopathic pulmonary hemosiderosis (IPH) is a rare disease, with unknown etiology and variable outcome, characterized by recurrent episodes of hypochromic anemia, alveolar bleeding and pulmonary infiltrates. Because IPH has a severe outcome, we established a severity score with the purpose of analyzing some of the most important parameters in the progression of an IPH pediatric patient.

**Methods:** We carried out a multiple center retrospective study in five Romanian Pediatric Departments, using cases diagnosed with IPH between 1957 and 2007. We analyzed 8 parameters which were able to influence the prognosis of our patients. The parameters used were: age at onset, average delay until diagnosis, hemoglobin level at onset, frequency and severity of crises, presence of both syndromes (anemic and respiratory) at onset, crises therapy, long-term therapy and survival. For each parameter we assigned a score from 0 to 2.

**Results:** We selected 25 cases diagnosed with IPH. The final score had two stages of severity: high, 0–7 points and moderate, 8–15 points. Most of our cases received a 7 or less score, hence they were severe. The highest score was 12 points, from a patient who survived 17 years after the onset of the disease. The smallest score was 3, from a patient with severe episodes of anemia.

**Conclusion:** The analysis of these parameters is useful for the assessment of the IPH prognosis.
SPECIFIC IMMUNOGLOBULIN E IN PEDIATRIC ALLERGIC RESPIRATORY DISEASE

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For a quarter of a century the prevalence of allergic diseases has increased among children. There is a growing interest in the use of quantitative analysis of IgE antibody responses for allergy diagnostic purposes among children.

Objectives: a) to assess the specific IgE in children with allergic respiratory disease; b) to correlate the intensity of allergic reactions with the type of clinical manifestation of the allergic respiratory disease.

Methods: a) study group: 200 children with allergic respiratory disease; with age between 2 months–17 years; b) Pediatric Panel: immunoblot test, which contains 20 allergens and positive control.

Results: Children with asthma represented 84% from the studied pediatric patients, 8% with recurrent wheezing and 8% with allergic rhinitis. Specific IgE were positive in 76% of patients (Pediatric Panel). Monosensitivity was obtained in 6% of children and polysensitivity in 94% of them. The most frequent allergens with positive results were cat and dog hair, and dust mite. The intensity of allergic reactions was expressed in 4 levels. The most intense reactions (level I) were to allergens like dust mite and grass pollen, and they directly correlated with asthma.

Conclusions:
1. Specific IgE were positive at 76% of children with allergic respiratory disease.
2. The most intense reactions were to allergens like dust mite and grass pollen, and they directly correlated with asthma.

AUDIT OF MANAGEMENT OF COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN IN A DISTRICT GENERAL HOSPITAL

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Objective: Community acquired pneumonia (CAP) is a common cause for hospitalisation in children. The British Thoracic Society (BTS) has published guidelines for management of CAP in children.

This audit was aimed at determining whether clinical diagnostic criteria, initial investigations, general management and antibiotic treatment of children presenting with CAP are in line with the British Thoracic Society (BTS) guidelines.

Methods: Retrospective data were collected from the inpatient medical records of 20 children with a clinical diagnosis of CAP admitted to this District General Hospital over a six-month period.

Results: Practices conforming to the BTS guidelines:
1. The presenting clinical features were consistent with clinical diagnosis of CAP in all patients.
2. Hospitalisation criteria were based on hypoxia, poor intake and/or dehydration, and severity of respiratory distress.
3. Amoxicillin was the most commonly used oral antibiotic. Macrolide antibiotics were used in all children aged above 5 years. Practices not conforming to the BTS guidelines:
   1. Blood tests for acute phase reactants were performed in the majority of patients. Chest X-ray was performed in all patients.
   2. Nasopharyngeal aspirate for viral antigen detection was not consistently requested for children below the age of 18 months.
   3. Most antibiotics were initially administered via the intravenous route.

Conclusions: 1. Oral antibiotics are safe and effective. Intravenous route should only be used when oral intake or absorption is a problem, or when the clinical course is complicated. 2. Most children with CAP can be managed in the community with appropriate advice and support to parents.

MBL DEFICIENCY AS RISK FACTOR FOR SEVERE OUTCOME OF LUNG DISEASE IN CYSTIC FIBROSIS CHILDREN

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Background: Mannose binding lectin (MBL) deficiency, encoded by variant MBL2 genotypes, seems to influence severity and outcome of lung disease in cystic fibrosis (CF) patients. Literature data are uncertain regarding the role of MBL deficit as a predictor factor for poor outcome in CF.

Objectives: The assessment of serum MBL levels among CF children with severe lung disease and evaluation of MBL deficiency as risk factor.

Methods: Group 1 included 15 children with classic CF, F508 homozygotes, age between 6–18 years, with severe lung disease. Group of controls included 14 healthy children. Patients were age and gender matched. Children associating diseases who influence MBL level were excluded. Clinical data, lung function parameters and microbiology results were obtained from our National CF Centre’s database. MBL was dosed using MBL ELISA Oligomer kit. Data were statistically analyzed with ANOVA and Students t test.

Results: Among group 1 (children with CF) serum MBL levels average was 3042.747 ng/ml, with 30% lower comparing to controls. Deficit of MBL serum levels was recorded in 57% CF children; others had normal or increased MBL levels.

Conclusions: Lower MBL average in CF patients sustains MBL deficiency as associated factor for severe CF lung disease. Possible explanation of increased MBL level in CF patients could be increased growth hormone levels in childhood or predominance of wild MBL2 genotype in our patients. Longitudinal evaluation of MBL levels and MBL2 genotyping would be useful to identify the patients predisposed to worse lung disease outcome.

HUMAN METAPNEUMOVIRUS INFECTION IN HOSPITALIZED CHILDREN

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Introduction: Human metapneumovirus (hMPV) is a newly recognized pathogen associated with respiratory tract disease.

Objective: Characterize hMPV infection in a pediatric department in Lisbon.

Methods: Retrospective study from November/2007–February/2008. Nasal wash specimens were analysed for hMPV using an enzyme immunoassay (Biotrin).

Results: Forty-one cases were observed, median age 7 months (17 days–3 years); <12 months 67%, 61% male, 39% had a smoking parent, 59% older siblings, 28% were not breastfed and 31% attended day-care. Twenty-four percent were born prematurely, 8% had chronic pulmonary disease, 24% a previous wheezing episode and 3% gastro-esophageal reflux. At presentation median duration of illness was 4 days (1–8 days), main complaints: coriza (89%), cough (78%), respiratory distress (67%), fever (54%–>39°C 26%), feeding difficulties (59%) and gastro-intestinal symptoms (11%). Median WBC count was 13900/μL (3800–36400/μL), and 19% patients had CRF >5 mg/dL (14% had bacterial co-infections). Chest roentgenograms revealed interstitial infiltrates (38%), atelectasis (22%), hyperinflation (28%), consolidation/lobar pneumonia (9%), and were normal in 28%. Complications occurred in 23 children (64%): hypoxemia (47%), atelectasis (19%), bacterial superinfection (19%) and hypercapnia (11%). There were no fatalities. Treatment consisted of bronchodilators (72%), antibiotics (51–17% bacterial co-infections), oral corticosteroids (17%) and respiratory rehabilitation (67%). Four patients (11%) needed intensive care
and three were ventilated. Median duration of hospitalization was 6 days (2–22 days). Day-care attendance was associated with occurrence of complications (p = 0.04).

Conclusions: There was an elevated complication rate in our patients. The hMPV disease is still underrecognized and under-reported in our country. The spectrum of disease is similar to other respiratory virus.

**CEFEPIME RESTRICTION IMPROVES GRAM-NEGATIVE OVERALL RESISTANCE PATTERNS IN CHILDREN WITH ACUTE PNEUMONIA**

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Objective: Antibiotic restriction can be useful in maintaining bacterial susceptibility. The objective of this study was verify if restriction of cefepime, the most frequently used cephalosporin in our children with acute pneumonia, would ameliorate broad-spectrum susceptibility of Gram-negative isolates.

Methods: Nine hundred and ninety-five children with acute pneumonia were divided into 3 cohorts, according to the prevalence of cefepime use in the unit: Group 1 (n = 596) comprised patients admitted from January 2004 to December 2005, a period in which cefepime was the most used broad-spectrum antibiotic. Patients in Group 2 (n = 549) were admitted when amoxicillin/tazobactam replaced cefepime (January to December 2006) and in Group 3 (n = 250) when cefepime was reintroduced (January to December 2007). Meropenem was the alternative third-line antibiotic for all groups.

Results: Multiresistance was defined as resistance to 2 or more unrelated antibiotics, including necessarily a third or fourth generation cephalosporin, piperacillin/tazobactam or meropenem. Statistics involved Kruskal-Wallis, Mann-Whitney and logrank tests, Kaplan-Meier analysis. Groups were comparable in length of stay, time of mechanical ventilation and age. Ninety-eight Gram-negative isolates were analyzed. Patients were more likely to remain free of multiresistant isolates by Kaplan-Meier analysis in Group 2 when compared to Group 1 (p = 0.017) and Group 3 (p = 0.008). There was also a significant difference in meropenem resistance rates.

Conclusions: Cefepime has a greater propensity to select multi-resistant Gram-negative pathogens than amoxicillin/tazobactam and should not be used extensively in children with acute pneumonia.

**CONSERVATIVE MANAGEMENT OF MIDDLE LOBE SYNDROME ASSOCIATED BRONCHIECTASIS**

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Right middle lobe syndrome (RMLS) includes a spectrum of clinical and radiological presentations, from persistent/recurrent atelectasis to pneumonitis and bronchiectasis. RMLS may be due to intra or extra-airway causes; in children it’s usually secondary to bronchial inflammatory stenosis. The gold standard for diagnosis is high-resolution CT scanning; bronchofibroscopy is important to evaluate the degree of stenosis and, sometimes, as a therapeutic tool. The management of RMLS has been conservative, but bronchiectasis has been an indication to surgery.

We present the case of a six-year-old girl with a history of recurrent respiratory tract infections since 15 months of age, who had RMLS secondary to stenosis of the medial branch of RML bronchus. She was diagnosed with bronchiectasis located to RML and lingula by chest CT scanning four years after the initial symptoms. We started conservative management with chest physiotherapy, inhaled corticosteroids and antibiotic therapy for acute exacerbations; she has also been receiving influenza and pneumococcal immunisations.

The indications for surgery of RMLS associated bronchiectasis have been limited in recent decades because the newer diagnostic/therapeutic techniques and more potent antibiotics have made conservative management possible. On the other hand, it has been suggested that bronchiectasis in children may be a dynamic process and that the majority of children without progressive underlying disorder may improve with appropriate medical treatment. RMLS usually improves as the child grows older and the diameter of RML bronchus enlarges, even when it is stenosed. Regarding this, we discuss the diagnosis, treatment and follow-up of RMLS.

**ANTIBIOTIC TREATMENT OF INITIAL OR INTERMITTENT PSEUDOMONAS AERUGINOSA LUNG INFECTION IN CYSTIC FIBROSIS**

S Fustik, T Jakovska, I Spirevska. University Pediatric Clinic, Skopje, Macedonia

Objective: Chronic pulmonary infection with Pseudomonas aeruginosa (PA) is responsible for most of the morbidity and mortality in cystic fibrosis (CF). In 2000, we introduced an eradication regime at time of initial or intermittent PA isolation consisting of inhaled colistin or gentamycin and oral ciprofloxacin for 6 weeks. If unsuccessful, a course of intravenous anti-PA antibiotics for 2 weeks was advised.

Methods: The aim of the study was to evaluate the efficacy of the PA eradication regimen by microbiological studies of oropharyngeal swab samples and/or precipitating antibodies against PA in serum samples. Chronic PA infection was defined as persistent presence of PA for at least 6 consecutive months and/or presence of two or more PA precipitants. Intermittent PA colonization was defined as a culture of PA at least once and presence of normal levels of precipitating antibodies against PA (0–1).

Results: During the study period from 2000 to 2006, eradication therapy was performed in 39 (range 1–5) CF patients. Six of the treated patients (15.6%) developed chronic PA infection. Chronic PA infection was already established in 3 patients when they first attended the clinic and in 2 patients who were lost at follow-up for longer periods. In contrast, in the period from 1994 to 2000, only 4 out of 21 intermittently colonized CF patients remained free of PA.

Conclusions: Regular patients’ controls and early eradication therapy can effectively delay acquisition of chronic PA infection in a considerable proportion (84.4%) of patients with CF and decrease disease progression.

**LONG TERM PULMONARY AND NEURO-SENSORIAL SEQUELAE OF BRONCHOPULMONALY DYSPLASIA IN SCHOOL-AGE CHILDREN**

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Aim: To assess spirometry tests, type and frequency of respiratory infections, and neurodevelopamental and neurosensorial disorders in children aged 8–12 with bronchopulmonary dysplasia (BPD).

Material: Retrospective study, which included 90 school age children: 36 with BPD, 29 born preterm without BPD and 25 healthy, born at term without complications in neonatal period. Spirometry tests comprised 9 parameters.

Results: Mean values of VC, FEV1, FVCEx, PEF, MEF75, MEF50 and MEF25 in children with BPD were significantly lower than in control. In 94% of children with BPD VC, in 75% FVCEx and MEF50, in 62% FEV1 were lower than normal values. In school age children without BPD similar abnormalities were noted: PEF in 80%, MEF75 in 82%, VC in 64% and FEV1 in 46% of these children were below predictive values. Neurosensorial abnormalities in children with BPD were found in 19 (53%): cerebral palsy – 4 (11%), neurodevelopmental retardation – 11 (31%), epilepsy – 4 (11%), hypoaucasia – 15 (56%), myopia – 8 (22%), hyperopia – 2 (6%), strabismus – 5 (14%), articulation disorders – 4 (11%).
Conclusions: BPD and other severe respiratory disorders requiring treatment by mechanical ventilation using oxygen in premature born neonates induce in school age children persistent pulmonary dysfunction, mainly increased airways resistance and reactivity and increased morbidity rate of severe respiratory tract infections. Severe complications of neonatal period in preterm babies, especially with BPD, are associated with serious neurosensorial injuries in school age children. Not only is special medical attention required for these children, but also appropriate home environment and early rehabilitation are necessary to improve their quality of life.

INVASIVE PNEUMOCOCCAL BACTEREMIA IN A NINE-YEAR-OLD BOY WITH PNEUMONIA: CASE REPORT

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Background: Streptococcus pneumonia is the most common cause of community acquired pneumonia in children below five.

Case report: We describe the case of a nine-year-old boy, who subsequently developed an abscess of pleura and invasive pneumococcal bacteremia. The boy was admitted by a surgeon when he presented with abdominal pain and vomiting accompanied by mild cough and fever.

Investigations showed: CRP–386 mg/l, ESR–140 mm/h, WBC–30 G/l (15 bands/79 seg/8 lymph), fibrinogen–496 mg/dl, D-dimer–2225 ng/ml and FDPs.

Chest X-ray revealed lower left lobe consolidation with pleural inflammation. A repeat chest X-ray performed five days after admission, because of increasing dyspnea, disclosed progression of inflammatory process in the left lung and pleural effusion. Chest CT showed extensive interstitial-alveolar changes in the left lung with atelectasis and pleural effusion causing reduction of lung volume up to the fourth rib.

Since hospital day six suction drainage and intrapleural administration of alteplase were continued for 5 days. Intravenous antibiotics were administered for 32 days, initially cefuroxime and benzylpenicillin (15 days), then cefotaxime and clindamycin for 14 days. Intravenous immunoglobulin were administered on 3rd and 5th day of treatment. Course of disease was complicated with labial herpes and acute adenoviral gastroenteritis, despite concurrent treatment since the first day of treatment.

In an otherwise normal following examination (one month after treatment) only a tiny pleural adhesion in the left costophrenic angle was found.

Conclusions: Intrapleural administration of alteplase enhanced efficacy of suction drainage and saved the patient from invasive surgical intervention. Administration of pneumococcal conjugated vaccine could have prevented invasive pneumococcal disease in the boy.

MASSIVE ATELECTASIS IN CHILD WITH ASTHMA

Z. Jelcic, M Raos. Children’s Hospital Srebrnjak, Zagreb, Croatia

Minimal atelectasis, as a complication of asthma, is relatively common. On the other hand massive atelectasis, although rarely seen, could have potential fatal outcome in this disease. The aim of this case report is to show massive atelectasis in an asthmatic 8-year-old child who seeks medical help because of asthma exacerbation.

Clinical findings included severe clinical condition, oxygen saturation of 85%, dyspnea, respiratory rate 44 per minute, cough, dullness over right hemithorax under percussion and auscultatory absent breath sound. Then the assessed acid-base status was as follows: pH 7.38; BE 0.1 mmol/l; HCO3 24.3 mmol/l; pCO2 5.71 kPa; O2 6.69 kPa; satO2 79%.

Spirometry could not be performed, because of severe general condition. Chest radiogram showed atelectasis of right middle and lower lobes, with elevation of right diaphragm and shift of mediastinum and position of heart to right side with compensatory hyperinflation of left hemithorax.

As the possibility of foreign body presence could not be excluded, urgent bronchoscopy was consequently performed and copious amounts of secretion and mucoid plugs were aspirated. Foreign body was not seen.

A postbronchoscopy chest radiogram and general condition (oxygen saturation 96%) showed significant improvement.

After bronchoscopy, conservative treatment was continued (salbutamol, methylprednisolone, physical therapy).

Patient was discharged on 10th day of treatment with normal clinical findings and ventilatory parameters (FEV1%) and normal chest radiogram. Antiasthmatic therapy has been continued.

The patient regularly attends follow-up visits and has not had asthma exacerbation since then.

EVALUATION OF ORDINARY PARACLINICAL TEST RESULTS FOR 200 CHILDREN ADMITTED TO THE HOSPITAL WITH PNEUMONIA

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Objective: Pneumonia is one of the most common diseases of childhood resulting in hospital admission. It is caused by different reasons including bacteria, viruses, fungus, mycoplasma, chlamydia as well as non-infectious causes such as GER, foreign body, etc.

This study was conducted due to the critical nature of the disease and its management. Its main objective was the analysis of lab data for tests conducted on children hospitalized under diagnosis of pneumonia.

Materials and Methods: 200 children were referred with fever and tachypnea to Ali Asghar Hospital and had been admitted under the diagnosis of pneumonia were studied retrospectively in a descriptive cross-sectional research. 63% of patients were male, 37% were female and the average age was about 17 months.

Results: The results of paraclinical tests are shown in the table.

Positive blood culture was observed in 6.5% of patients and positive urine culture was seen in 4% of the patients but the organisms were not the same.

ABC abnormality: Metabolic acidosis was the most common in 63% and hypoxemia in 36.9% of the patients was noticed.

Conclusion: Based on the above research CBC and diff can be considered worthy. ESR and CRP are trustworthy. Renal tests, electrolyte Abg results show that conducting and evaluating these lab tests are very important and are strongly recommended in severe cases of pneumonia.

Kalbassi and Salehi

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Abnormal</th>
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<tr>
<td>Leukocytosis</td>
<td>13.5%</td>
<td>67% PMN</td>
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<tr>
<td>Anemia</td>
<td>11.5%</td>
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<tr>
<td>High ESR</td>
<td>44.9%</td>
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<tr>
<td>CRP</td>
<td>66%</td>
<td></td>
</tr>
<tr>
<td>Hyperkalemia</td>
<td>24%</td>
<td></td>
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<tr>
<td>Hypokalemia</td>
<td>2.5%</td>
<td></td>
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<tr>
<td>Hyponatremia</td>
<td>26%</td>
<td>No sign of SIDH</td>
</tr>
<tr>
<td>BUN ↑</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Creatinine ↑</td>
<td>19.5%</td>
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</table>
To find the prevalence of doctor diagnosed asthma, as reported by parents, in school children of South Punjab, Pakistan.

Methods: It was a cross sectional, questionnaire based, descriptive survey of children aged 3–18 years, in randomly selected primary and secondary schools, from October 2002 to March 2003. The data were then analyzed by the co-author with Statistical Analysis System (SAS).

Results: Of 6120 questionnaires sent to the parents/guardians, we received 3180 back (52%). Of the 3180 respondents, 1767 (56%) were for boys and 1413 (44%) were for girls. The median age was 8.25 years. Around 71% of children were between 4 to 11 years of age. The parents reported asthma only in 129 (4%) of their children as was told to them by their doctor with almost equal distribution in boys (60) and girls (69) of 2%, respectively. Of these 129 children with doctor diagnosed asthma, 60 (47%) were boys and 69 (53%) were girls. Of the 1767 boys, the doctor diagnosed asthma as reported by parents was 3% (60). Of the 1415 girls, the doctor diagnosed asthma as reported by parents was 5% (69). The asthma was not reported in the 14–18 years age group.

Conclusion: Asthma is stigmatised in our society and as such is not reported or disclosed, but rather denied. An extensive educational media campaign is required for improving awareness of the population at large.

**Physician diagnosed asthma as reported by the parents in school children of South Punjab, Pakistan**

**Objectives:** To find the prevalence of doctor diagnosed asthma, as reported by the parents, in school children of South Punjab, Pakistan.

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**Conclusion:** Asthma is stigmatised in our society and as such is not reported or disclosed, but rather denied. An extensive educational media campaign is required for improving awareness of the population at large.

**Granulomatous Disease in Childhood: Confirming a Rare Diagnosis**

**Introduction:** Granulomatous diseases are rare in children and, when they occur, diagnostic differentiation with other clinical entities with different treatment and prognosis is required. Sarcoidosis is a systemic granulomatous disease of unknown etiology, relatively rare in childhood. Children younger than 4 years present with the triad of skin, joint, and eye involvement without typical pulmonary disease; in older children, involvement of the lungs, lymph nodes, and eyes predominates.

**Case report:** An 8-year-old Caucasian girl presented with erythema nodosum associated with fatigue, malaise and low grade fever for four days. Pulmonary X-ray revealed bilateral mediastinal lymphadenopathy, with biopsy of these lymph nodes showing non-casing epithelioid cell granulomas. Bronchoalveolar lavage fluid revealed lymphocytosis with an augmented CD4+/CD8+ T-lymphocyte ratio. Lung functional tests showed a combined restrictive and obstructive pattern. Tuberculosis was excluded. The diagnosis of sarcoidosis was made (stage I) and treatment was started with prednisolone, which was maintained for six months, with good response.

After a three-year follow up, she presents with no abnormalities on chest X-ray, normal functional lung tests and no relapses.

**Renal Calcium Excretion and Inhalatory Steroids in Asthma**

**Introduction:** Management of childhood asthma with inhalatory corticosteroids (ICS) has recently increased. Influence of systemic corticosteroids on increased renal calcium excretion is well known. Several studies in adult patients treated with ICS revealed increased urinary excretion of calcium (Ca).

**Aim:** To determine ICS influence on urine Ca excretion in children with asthma.

**Methods:** 57 children with asthma on ICS therapy are enrolled in this study. Control group consists of 26 healthy children. There was no difference in terms of age and sex between the asthmatic and the control groups. Calciuria is measured from urine Ca/Cr ratio, (mg/mg), in first morning spot urine. 24 hour urine was analysed in older children. Values of Ca excretion are compared before and 12 weeks after introduction of ICS therapy in group I (50 children), and group II (27 children) in first morning spot urine Ca/Cr ratio (mg/mg), measured 12 weeks after introduction of ICS therapy. The study did not include children treated with systemic corticosteroids and diuretics.

**Results:** The morning values of Ca/Cr were compared to wt; p < 0.05). Moreover, Did-mice showed a diminished count of eosinophils in bronchoalveolar lavage fluids (21% compared to wt; p < 0.05). This attenuation was reflected in ovalbumin-specific IgE levels. In Did-mice, the rise in allergen-specific IgE levels was reduced (54% compared to wt; p < 0.05). Moreover, Did-mice showed a diminished count of eosinophils in bronchoalveolar lavage fluids (21% compared to wt). To assess lung function, we used head-out body plethysmography. Sensitized wt mice developed dose-dependent airway hyperresponsiveness to methacholine. In contrast, in Did-mice the airway hyperresponsiveness was completely abolished (p < 0.05).

In conclusion, the airway hyperreactivity in a murine model of chronic asthma is prevented by modifications of the classical antigen-binding site in the CDR-H3.

**Comments:** The authors present this case to alert for a rare disease in the paediatric population that should be suspected in the presence of typical clinical findings. Differential diagnosis with other clinical entities must be made and an extensive work-up with invasive procedures and a multidisciplinary approach is needed. Prolonged and close follow-up is necessary to monitor treatment and possible relapses. The main goal of therapeutic intervention, when indicated, is to prevent fibrosis.
BILATERAL AND EXTENSIVE PULMONARY EMBOLISM IN AN ADOLESCENT
RB Rocha, S Costa, T Pontes, A Antunes, H Antunes. Pediatrics Department, Hospital S. Marcos, Braga, Portugal

Pulmonary embolism in children is a rare, but potentially life threatening condition. The clinical characteristics overlap with conditions more frequent in children and can mislead the diagnosis.

We report a case of a 15-year-old girl who presented to our emergency department with a one week history of progressive dyspnea, initially on exertion and then at rest, associated with chest pain and palpitations. Two months before she had started treatment for acne with oral contraceptive. Physical examination was unremarkable, except for tachypnea and tachycardia. No deep venous thrombosis was evident on physical examination. Lab results demonstrated a normal troponin levels but elevated d-dimer (4554 ng/mL) and hypoxia in arterial blood gas analyses. Global clotting times (aPTT and PT) were normal. ECG showed a Q wave and an inverted T wave in lead III. Mild right atrial and ventricular dilation, right ventricular hypertension and pulmonary hypertension (SPAP 55 mmHg) were the main findings on echocardiogram. High resolution multidetector computed tomographic angiography revealed an extensive thrombus in right main pulmonary artery and a smaller thrombus in left main pulmonary artery extending to lobar and segmental arteries. The girl started enoxaparin and warfarin with rapid resolution of symptoms and increasing physical capacity. Posterior lab workup showed an elevated total cholesterol level (214 mg/dL), lipoprotein a (52 mg/dL) and IgM anticardiolipin (4554 ng/mL) and hypoxia in arterial blood gas analyses. Global clotting times (aPTT and PT) were normal. ECG showed a Q wave and an inverted T wave in lead III. Mild right atrial and ventricular dilation, right ventricular hypertension and pulmonary hypertension (SPAP 55 mmHg) were the main findings on echocardiogram. High resolution multidetector computed tomographic angiography revealed an extensive thrombus in right main pulmonary artery and a smaller thrombus in left main pulmonary artery extending to lobar and segmental arteries. The girl started enoxaparin and warfarin with rapid resolution of symptoms and increasing physical capacity. Posterior lab workup showed an elevated total cholesterol level (214 mg/dL), lipoprotein a (52 mg/dL) and IgM anticardiolipin (19 U/mL). She is heterozygous for Factor V Leiden and for MTHFR mutation.

This association of risk factors explains the severity of the case. High index of suspicion is needed for the diagnosis of pulmonary embolism.

TWO YEAR FOLLOW-UP OF FULL TERM BORN BABIES HOSPITALIZED FOR ACUTE BRONCHIOLITIS
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Aim: 2 year follow up of children with acute bronchiolitis; to determine the frequency of recurrent wheeze; to determine whether there is a link between recurrent wheeze and risk factors such as: mail gender, IgE, parental smoking habits, eczema, history of atopy in family, crowded living space; investigation in the next 6–7 years.

Method: Detailed history including information about allergen presence, breastfeeding, prior illnesses, prenatal and ante-natal tobacco exposure, atopy in family; regular check ups every 2 months; telephone interview twice a year.

Results: The study included 92 children. Group A consisted of 65 children who had no breathing difficulties one year after hospitalization. Recurrent wheezing was experienced by 27 children (group B), 7 are using steroid prevention and 11 without prevention. In group A 54 patients presented with mild bronchiolitis and 11 patients presented with a moderate form. In group B 18 children presented with a moderate bronchiolitis and 9 patients had a mild form. We determined the link of recurrent breathing problems in the first year of the follow up with factors such as: male sex and IgE. The link between breathing difficulties in the first year of the follow up and parental smoking habits, eczema, history of atopy in family, and crowded living space wasn’t proved. In the second year we found no link between respiratory problems and included parameters.

Conclusion: Investigation in the next 6–7 years is inevitable to determine the prevalence and risk factors for asthma and allergic sensibilisation development in children up to 7 years; and also to define the key age for coming down with bronchiolitis in terms of asthma development.

TARGETED “ONE STOP” INVESTIGATION IN CHILDREN WITH ‘DIFFICULT ASTHMA’ HAS A HIGH YIELD
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Background: Our protocol for the assessment of difficult asthma includes flexible bronchoscopy (FB), blood for immunology and allergy tests, pH probe and naso-ciliary biopsy under general anaesthesia.

Aim: We report additional findings from FB that influenced further management.

Methods: Retrospective analysis of FB recording the diagnoses and treatment changes. Children with cystic fibrosis were excluded.

Results: Around 300 children with asthma are seen annually in our clinic. Sixteen FBs were performed on children with ‘difficult’ asthma between July 2005 and March 2008 (median 6 (range 2–16) years).

Bronchomalacia was seen in 9 of 16 (56%). Significant reflux was noted in 3 of 16 (18%) aged 5–15 years.

Additional information leading to new diagnosis or treatment change was gained in 94% (15/16). Asthma medication was discontinued in 25%. Better disease management was achieved in 14 patients (87%).

Conclusion: Targeted one-stop investigation yielded a high percentage of new information enabling better management in a difficult patient population.

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Whitney U test: Z = 0.89; p = 0.37 and Z = 0.52; p = 0.61, respectively). The only significantly difference was found between the distribution of Ca/Cr values smaller than 0.05 measured in the morning before and after applying fluticasone (0.0%; 29%; Fisher exact test: p = 0.02).

Conclusion: Our investigation showed that middle dose fluticasone, unlike systemic corticosteroids, does not increase urinary Ca excretion. Observed hypocalemia might be compensatory, due to maintaining normal Ca levels in serum.

Saraswatula et al Investigation findings in children with ‘difficult’ asthma

<table>
<thead>
<tr>
<th>Main finding</th>
<th>Associated findings</th>
<th>Treatment changes</th>
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<tbody>
<tr>
<td>Severe malacia (6)</td>
<td>Low FAB (5/6), significant allergy (2/6)</td>
<td>Stopping bronchodilators, antibiotic prophylaxis, pneumovax b &amp; Hib booster, referral to allergy specialist</td>
</tr>
<tr>
<td>GORD (3)</td>
<td>Mild malacia (1/3), significant allergy (2/3), low FAB (1/3)</td>
<td>Pneumovax b &amp; Hib booster</td>
</tr>
<tr>
<td>Low FAB (2)</td>
<td>Referral to allergy specialist</td>
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</tr>
<tr>
<td>Significant allergy (1)</td>
<td>Mild malacia</td>
<td>Antibiotic prophylaxis</td>
</tr>
<tr>
<td>PCD (1)</td>
<td>Mild malacia</td>
<td>Lobectomy</td>
</tr>
<tr>
<td>Inhaled FB (1)</td>
<td>Low FAB</td>
<td>Steroids, Hib booster</td>
</tr>
<tr>
<td>ABPA (1)</td>
<td>Low FAB</td>
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GORD, gastro-oesophageal reflux disease; FAB, functional antibodies; PCD, primary ciliary dyskinesia; FB, foreign body; ABPA, allergic broncho-pulmonary aspergillosis.
CONGENITAL PULMONARY MALFORMATIONS: CLINICAL, IMAGING FINDINGS AND OUTCOME

1. L Sfaihi Ben Mansour, 2 B Maalej, 1 A Bouraoui, 1 H Aloulou, 1 Chabchoub, 1 M Mekki, 1 A Nouri, 2 Z Mnif, 1 Th Kammoun, 1 M Hachicha, 1 Service Pediatrie, CHU Hedi Chaker, Sfax, Tunisia; 2 Service de Chirurgie Pediatrie, CHU Fattouma Bourguiba, Monastir, Tunisia; 3 Service Radiologie, CHU Habib Bourguiba, Sfax, Tunisia

Background: Congenital malformations of the lung are rare and vary widely in their presentation and severity. The evaluation of affected patients frequently requires multiple imaging modalities to diagnose the anomaly and plan surgical correction.

Materials and Methods: From January 1987 to March 2008, a total of 18 patients from birth to 5 years of age (median, 5.76 months) with congenital pulmonary malformation were included in this study. Profiles of clinical manifestations, chest radiographs, echocardiograms, computed tomography (CT), and magnetic resonance imaging (MRI) were analyzed to confirm the diagnosis of congenital pulmonary malformations.

Results: During 21 years, 18 patients were diagnosed with congenital malformations of the lung, which included bronchogenic cyst (1 case), cystic adenomatoid malformation (3 cases), congenital lobar emphysema (8 cases), pulmonary sequestration (1 case), pulmonary agenesis (2 cases), and pulmonary hypoplasia (2 cases). One patient had three simultaneous abnormalities (pulmonary sequestration, bronchogenic cyst and cystic adenomatoid malformation).

Common clinical presentations were respiratory distress (2 cases), respiratory infections (5 cases), and dyspnoea (11 cases). Diagnostic modalities included chest radiography (18 cases), CT scan (14 cases), MRI scan (1 case), and bronchoscopy (5 cases). Thoracotomy with excision of the lesion by lobectomy or pneumonectomy resulted in survival of 14 patients (77%). Four deaths (23%) were due to pulmonary sequestration (1 case), nosocomial infection (1 case) and chronic respiratory insufficiency (2 cases).

Conclusion: These data demonstrate that congenital bronchopulmonary malformations usually can be diagnosed by plain chest x-ray films. Computed tomography may occasionally be necessary. All lesions, including symptomatic lesions in neonates, can be managed surgically soon after diagnosis.

BREAST FEEDING AND ALLERGIC DISORDERS IN INFANCY AND CHILDHOOD

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Aim: Infancy is a vulnerable period in which infants are at increased risk of becoming sensitised to food allergens. Atopic dermatitis (AD) occurs with high incidence during the period of infancy. Human milk (HM) provides passive and likely long-lasting active immunity. To evaluate the effect of breast feeding on allergic disorders development in infancy and childhood.

Material and Methods: Occurrence of allergic disorders, such as AD and asthma, was registered (noted) in a group of 468 children born during the period 1 January 1996–31 December 2000 with follow-up period from the birth to 31 December 2007. According to the feeding in the first six months of the life examined infants were divided into two groups. The first group were exclusively breast fed (BF) infants (n = 500), 62.4%. The second group of infants were complementary fed (CF) with cow milk formula (n = 168) 37.6%.

Results: In the period of infancy AD occurred in 3.4% (11/300) of the BF and 2.9% of the CF children (p 0.05). Among the children with AD in the follow-up period asthma occurred in 36.3% (4/11) of the BF and 38.7% (12/31) of the CF children (p>0.05). In the same time, among children without AD asthma occurred in 2.5% of the BF and 2.9% of the CF children (p>0.05).

Conclusions: Our results suggest the protective effect of breast feeding on the development of allergic disorders, as well as the role of AD as the first step in the allergic march.

PYRAZINAMIDE PAEDIATRIC FORMULATION AS A SUBSTRATE FOR A MULTIRESISTANT ENTEROCOCCUS FAECALIS

1 AN Silva, 2 J Marto, 1,2 A Salgado, 1,2 A Almeida, 1,2 A Duarte. 1Imed, Research Institute for Medicines and Pharmaceutical Sciences, Faculty of Pharmacy, Lisbon, Portugal; 2Microbiological Control Laboratory, Faculty of Pharmacy, Lisbon, Portugal; 3Pharmaceutical Technology Laboratory, Faculty of Pharmacy, Lisbon, Portugal

Pyrazinamide is an important anti-tuberculosis drug, currently unavailable in dosage forms for paediatric use, and thus it is necessary to compound extemporaneous medicines. However, manipulation may cause problems due to the risk in dispensing contaminated compounded oral liquid forms.

In a previous study, pyrazinamide oral suspension in simple syrup had no activity against vancomycin resistant Enterococcus faecalis. The aim of this study is to confirm the mechanism of E faecalis survival in the pyrazinamide suspension.

Pyrazinamide suspensions (50 mg/ml) in simple syrup were contaminated with E faecalis CIP 106996 and the antimicrobial activity was evaluated during 21 days. Mueller-Hinton broth and simple syrup (placebo) were used as controls. Drug content was assessed using HPLC. As a control, an identical set of experiments were carried out with methicillin resistant Staphylococcus aureus.

At day 21, E faecalis showed >3x10^4 cfu/ml in suspension and in placebo 14 cfu/ml, whereas pyrazinamide concentration decreased 50% in the same period. Unpredictably, no pyrazinamide acid could be detected in the suspension. Despite a 6 log reduction of S aureus in suspension and placebo, by day 21 the pyrazinamide content remained unchanged. Regardless, both microorganisms survived in Mueller-Hinton without affecting drug content.

Results suggest that the E faecalis may use pyrazinamide as a substrate and further investigations are being performed to elucidate these findings. Nevertheless, the need for GMP application during compounding and a thorough microbiological control of oral liquid forms must be emphasized.

POSSIBILITIES OF STOPPING THE ALLERGIC MARCH

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Objectives: 1) Establishing a preventive therapy before the exposure to a risk factor; 2) decreasing the risk of food allergy and atopic dermatitis; 3) blocking the appearance of asthmatic symptoms by the atopic individuals, by long term treatment with antihistamines.

Material and Method: 342 cases have been studied from the Pediatrics II Hospital, over a period of 3 years (2004–2007). Actions have been taken to stop the allergic march evolution. Thus, for those allergic to cow milk proteins, it has been replaced with hypoallergenic hydrolysate of proteins. For those with atopic dermatitis the allergens were eliminated, and antihistamines, topical cortisones and Elidel were administered. In cases of allergic rhinitis topical local therapies and antihistamines were administered; in cases of asthma, treatment was administered according to GINA.

Results: In Pediatrics II Hospital there were 342 cases over the three year period: 48 were allergic to cow’s milk, 46 had atopic dermatitis, 41 allergic rhinitis, 114 asthma, 57 asthma with rhinitis, 36 with allergic conjunctivitis. Of the 48 cases allergic to milk proteins, 5 developed atopic dermatitis by not respecting the diet and prescribed therapy. From the 46 with atopic dermatitis, 4 have
developed allergic gastroenterocolitis by not respecting the diet, 6 with allergic rhinitis and 12 are chronically evaluated. From 41 allergic rhinitis cases, 4 cases developed asthma, by not respecting the therapy. The asthma cases had a good evolution under treatment.

**Conclusions:** Applying preventive actions and adequate therapeutics, the appearance of more allergic diseases may be stopped or limited.

**SEROLOGICAL TESTS (ESPECIALLY SPECIFIC IMMUNOGLOBULIN E) IN DIAGNOSIS AND TREATMENT OF PAEDIATRIC ASTHMA**

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The determination of allergen specific IgE is very important in childhood. They are useful on occasions when skin test could not be performed (if asthma attack or eczema is active and treatment is being given). Specific IgE can be performed at any age. There are studies demonstrating association between serological tests and asthma in childhood.

Data were collected from 52 children (32 boys, 20 girls) age 1–14 years. They had frequently experienced broncho-obstructions, family history and atopic dermatitis or recurrent wheezing early in life. First serological tests were positive for 39 of them, with mean values: total IgE 571.45 IU/ml, ECP 59.6 ng/ml (Immulate). Then spec.IgE tests (RIDA Allergy screen) were performed. Mean values were: spec.IgE on Dermatophagoides ptenonyssinus 47.05 IU/ml in 51 cases (75%), Derm. farinae 41.97 IU/ml in 27 (69%), pollens 20.78 IU/ml in 13 (33%), pets 16.35 IU/ml in 8 (20%), fish 11.91 IU/ml in 4 (10.25%), Penicillium notatum 15.09 IU/ml in 3 (7.6%), egg white 21.03 IU/ml in 10 (25.6%), cow’s milk 15.01 IU/ml in 3 (7.6%), wheat flour 3.9 IU/ml in 2 (5.1%), soya 2.9 IU/ml in 3 (7.6%), peanuts 5.5 IU/ml in 5 (12.8%).

**Conclusion:** Serological tests are very useful for the diagnosis and management of paediatric asthma (identification and avoidance of allergens and gradual continuous prophylactic treatment in stepwise approach). The only disadvantage of the method is its higher price but there is no risk for systemic reaction.

**AZITHROMYCIN IN THE PAEDIATRIC POPULATION OF DIFFICULT CHRONIC ASTHMA**

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**Objective:** Low dose, long term macrolide antibiotic therapy is thought to inhibit lymphocyte proliferation, decrease neutrophilic accumulation and decrease IL-8 release from eosinophils. Macrolides are thought to decrease corticosteroid requirement in steroid-dependent patients and improved pulmonary function test and asthma symptoms.

**Methods:** A retrospective chart review was done to determine if azithromycin had a positive effect in asthma control in children. Azithromycin was started in 10 children (aged between 2 and 15 years). All patients were on a high dose of corticosteroids, budesonide 4 mg/day (nebulised) and 800 μg/day (inhaled) n = 9 or fluticasone propionate 1000 μg/day n = 1. In addition, all children took a leukotriene antagonist (dose tailored for their age) and maximum dose of long acting β2 agonist. Seven children were on daily prednisolone and two patients were on subcutaneous terbutaline infusion. Other diagnoses were excluded. Azithromycin (10 mg/kg) was started for 3 days a week.

**Results:** A comparison was made 1 year before and after treatment. All patients were on azithromycin during the study period. There was a decrease in hospital admission (OR = 0.8, 95% CI –1.2 to 0.3) and frequency of asthma exacerbations (OR = 0.9, 95% CI –1.7 to 1.6). A decrease in hospital admission OR = 1.14 (1.02–2.25), p = 0.034. No significant effect was detected for FEV1, Quality of Life criteria and additional medication. As an exploratory result, patients in the TCM group had fewer days of acute febrile infections when compared with the control group (1.14 (1.4) vs. 2.66 (2.5), p = 0.18). In conclusion, this pilot study generates the hypothesis that the interactive treatment of lung and large intestine according to TCM by laser acupuncture and probiotics has a beneficial clinical effect on bronchial hyperreactivity in children with intermittent or mild persistent asthma and might be helpful in the prevention of acute respiratory exacerbations. These results should be confirmed by further studies.

**LASER ACUPUNCTURE AND PROBIOTICS IN SCHOOL AGE CHILDREN WITH ASTHMA: A RANDOMIZED, PLACEBO-CONTROLLED, DOUBLE-BLIND PILOT STUDY**

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Aim of this pilot study was to investigate in asthmatic children whether treatment with laser acupuncture and probiotics according to Traditional Chinese Medicine (TCM) portends a clinical benefit to standard medical treatment performed according to pediatric guidelines. Seventeen children aged 6–12 years with intermittent or mild persistent asthma were enrolled. Eight patients received laser acupuncture for 10 weeks and probiotics (Enterococcus faecalis) for 7 weeks. Nine patients in the control group were treated with a laser pen which did not emit laser light and were given placebo drops. Peak flow variability (PFV) and forced expiratory volume in 1 s (FEV1) was measured and Quality of Life was assessed by a standardized questionnaire. Laser acupuncture and probiotics significantly decreased mean (standard deviation) weekly PFV as a measurement of bronchial hyperreactivity by −17.4% (14.2) in the TCM group vs. 2.2% (22.5) in the control group (p = 0.034). No significant effect was detected for FEV1, Quality of Life criteria and additional medication. As an exploratory result, patients in the TCM group vs. 2.2% (22.5) in the control group (p = 0.034). No significant effect was detected for FEV1, Quality of Life criteria and additional medication. As an exploratory result, patients in the 7.6% of patients who were on interventional treatment, the appearance of more allergic diseases may be stopped or limited.

**Conclusion:** Serological tests are very useful for the diagnosis and management of paediatric asthma (identification and avoidance of allergens and gradual continuous prophylactic treatment in stepwise approach). The only disadvantage of the method is its higher price but there is no risk for systemic reaction.

**MACROLIDE THERAPY IN DIFFICULT ASTHMA**

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Macrolide antibiotics have been known to have both antimicrobial and immunomodulatory activities. Low dose, long term macrolide has been shown to inhibit lymphocyte proliferation, decrease neutrophilic accumulation, mucus secretion and bronchial tissue contraction. It also suppresses pathogens like Chlamydia and Mycoplasma pneumoniae which have been associated with persistent airway inflammation.

**Aim:** This review was to determine if the immunomodulatory effect of azithromycin has a positive impact on asthma control in children with difficult asthma.

**Method:** A retrospective chart review was carried out on 10 children where azithromycin was used as part of their anti-asthma treatment. We looked at their frequency of exacerbation, need for oral steroids, symptom control, number of hospital admissions and
the ability to step-down in treatment regime 1 year before and after commencing azithromycin.

**Results:** Eight of 10 (80%) patients showed a good improvement in their overall symptom control. There was a decrease in the frequency of exacerbations in six patients (60%). We discontinued regular daily prednisolone in 3 patients (38%) and decreased prednisolone dose in 4 patients. 2 patients had their nebulised treatment discontinued and was recommenced back to regular inhaled therapy only. There was a decrease in the frequency of hospital admissions in 6 patients (75%).

**Conclusion:** Low dose, long term macrolide antibiotics are a promising addition to anti-asthma regimen in difficult asthma patients. The salutary effect is probably due to their distinct immunomodulatory properties and the eradication of persistent airway infections with *Chlamydia* and *Mycoplasma pneumoniae*. More studies are needed to address these issues.

**FREQUENT PARACETAMOL INTAKE INCREASES THE RISK OF ALLERGIC DISEASES**


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**Objective:** Regarding the suggested positive association between paracetamol use and allergic diseases with impaired oxidant/antioxidant balance and promotion of atopy as proposed mechanisms, the study was aimed to explore the influence of frequent paracetamol use on asthma, hay fever and eczema.

**Methods:** The self-reported data obtained through ISAAC phase 3 questionnaires of 5507 children aged 12/16 years from 8 cities in R. Macedonia were used. The frequency of current paracetamol use adjusted for confounding factors (outdoor antioxidants: fruit, vegetables, cereals and fish intake; outdoor oxidants: truck passage through the residential street, tobacco smoke exposure, gas/wood cooking, wood/coal/oil heating) was correlated to current wheeze, speech-limiting wheeze and ever-diagnosed asthma; current rhinoconjunctivitis, interference of its symptoms with daily activities and ever-diagnosed hay fever; current itchy rash, sleep-disturbing itchy rash and ever-diagnosed eczema. The data were statistically analysed by odds ratios (OR, 95% CI) in binary logistic regression.

**Results:** Paracetamol use at least once monthly, compared to its use at least once yearly/never, increased the risk of current wheeze (OR 1.53, 1.21 to 1.94, p = 0.000), speech-limiting wheeze (OR 2.06, 1.36 to 3.12, p = 0.001), current rhinoconjunctivitis (OR 1.80, 1.46 to 2.23, p = 0.000), interference of its symptoms with daily activities (OR 1.66, 1.41 to 1.96, p = 0.000), speech-limiting wheeze and ever-diagnosed asthma; current rhinoconjunctivitis and ever-diagnosed eczema (OR 1.55, 1.21 to 1.98, p = 0.000), current itchy rash (OR 1.69, 1.27 to 2.26, p = 0.000) and ever-diagnosed eczema (OR 1.43, 1.03 to 1.98, p = 0.033).

**Conclusion:** The findings suggest increased risk of asthma, hay fever and eczema by frequent paracetamol use. Paracetamol use was not found to influence ever-diagnosed asthma probably because of its low prevalence of 1.8% in our respondents.
UROLITHIASIS IN RENAL TUBULAR DISORDERS
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Objectives: Little is known about the incidence of urolithiasis in childhood renal tubular acidosis (RTAs). The aim of this paper is to study the incidence of urolithiasis/nephrocalcinosis in children with RTDs.

Patients and Methods: From June 2000 to April 2007, 42 children with suspected RTD were evaluated to determine the type of tubulopathies. Ages at referral ranged from 8 months to 14 years (mean 4.8 years).

Results: Urolithiasis or nephrocalcinosis (lithiasis group) were found in 20 patients (60%) including 9 patients (27%) with idiopathic hypercalciurias (IH), 5 patients (15%) with cystinuria, and 5 patients (15%) with renal tubular acidosis (4 distal, 1 proximal), and one patient with primary isolated hyperoxaluria.

Conclusion: Urolithiasis occurred in 60% of children with RTD in this sample, with IH the most commonly RTD associated with urolithiasis.

SIX YEAR-DIALYSIS FREEDOM IN END-STAGE RENAL DISEASE
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Objectives: 4-year dialysis freedom with improved wellbeing has been reported in end-stage renal disease (ESRD) using a new therapeutic approach combining conservative measures and acacia gum (AG) supplementation. The aim of this paper is to report the achievement of 6 year dialysis freedom.

Methods: During December 2001, six patients with ESRD were enrolled in a clinical trial investigating the use of a new therapeutic approach combining conservative measures and AG supplementation, aiming at improving wellbeing and providing patients with ESRD dialysis freedom. Three patients were treated with the new therapy. One patient complied with protocol for only 10 days and died after 6 months despite intermittent peritoneal dialysis (IPD). Two patients completed one year. Both patients maintained serum creatinine and urea levels not previously achieved without dialysis. The other three patients were managed with IPD, and all died within less than 6 months. Of the 2 surviving patients on AG supplementation, one patient stopped AG supplementation after one year and died within one month despite IPD. The other patient continued to be treated with this novel therapy and continued to experience improved wellbeing and dialysis freedom during 4 years.

Results: During 6 years of therapy the girl continued in good wellbeing and some degree of genue vulgum has resulted.

Conclusions: 6 year dialysis freedom is achievable in ESRD.

NEW TREATMENT PROTOCOL FOR PRIMARY NOCTURNAL ENURESIS IN CHILDREN ACCORDING TO ULTRASOUND BLADDER MEASUREMENTS

Objective: To evaluate the response rate of various modalities of therapy in primary nocturnal enuretic children according to ultrasound BVWI (bladder volume and wall thickness index) measurements.

Methods: From February 2006 to November 2007 a total of 31 children aged 6 to 12 years old were enrolled in a clinical trial. Based on BVWI they were divided into 3 groups as follows: Ten children in group 1 (BVWI<70%) who were treated with oral desmopressin and oxybutynin. Sixteen children in group 2 (70%<BVWI<130%) were treated with oral desmopressin. Five children in group 3 (BVWI>130%) were treated with oral desmopressin accompanied by double-voiding technique and schedule voiding. All of them were treated for three months.

Results: Significant reductions in mean bed-wetting frequency before and after first treatment cycle were observed in all groups (p<0.05). The complete response rate was 70%, 25% and 20% in group 1, group 2 and group 3, respectively. Overall the complete and partial response rate was 9 of 10 children in group 1 (90%), 13 of 16 in group 2 (81%), and 3 of 5 in group 3 (60%). Bedwetting frequency significantly decreased at the first and second treatment cycles in group 2 (p<0.05 for each pair wise comparison).

Conclusion: The proposed treatment representation according to ultrasound measurements of bladder wall thickness achieves favorable response rates in the treatment of children with primary nocturnal enuresis. We suggest that this treatment should be used to develop the management of enuresis in children.
THE ANTIBIOTIC SUSCEPTIBILITY OF GRAM NEGATIVE STRAINS IMPLICATED IN URINARY TRACT INFECTION IN CHILDREN: VARIABILITY OR STABILITY

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Objective: The etiology of urinary tract infection (UTI) is dominated by gram negative bacilli. Antibiotic susceptibility of the implicated germs can change in time, with different factors being involved in this process. Establishing antibiotic susceptibility for gram negative bacteria; emphasizing their place in the etiology of UTI; monitoring the susceptibility to obtain useful information for the antibacterial therapy.

Methods: 917 cases of uncomplicated UTI admitted in our clinic between 2000–2007: 720 – E coli, 95 – Proteus, 70 – Klebsiella, 19 – Enterobacter, 13 – Pseudomonas. The antibiotic susceptibility was tested by common diffusion method. We have tested the susceptibility for Ampicillin, Amoxicillin + Clavulanic Acid (Au), Cephalosporins, Gentamicin, Trimethoprim-Sulfamethoxazole (Bi), Nalidixic Acid (Nx)—the most used drugs in children’s UTI.

Results: The testing performed for antibiotic susceptibility showed the following: E coli proved a high sensitivity (>80%) to Cephalosporins, Nx, Gentamicin, Bi, and significant resistance (>60%) to Ampicillin, Au; Proteus: high sensitivity (>90%) to Bi, Nx, and significant resistance (>70%) to Ampicillin, Au, Gentamicin; Klebsiella: significant resistance (>70%) to Au, Cephalosporins, Gentamicin, Bi; Enterobacter and Pseudomonas (inconstant tested): 100% sensitivity to Nx, respectively Cephalosporins, Gentamicin.

Conclusions: The susceptibility remained constant for the majority of antibiotics, but we have noticed a significant increase of sensitivity for all tested germs in the case of Bi (25% up to 90%), and a significant decrease for Au (30% down to 30%).

VIDEOURODYNAMICS IN THE DIAGNOSIS OF THE URINARY TRACT ABNORMALITIES

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Objective: To reveal the function and morphological anomalies together are very important and the videourodynamics (VUD) combined with conventional voiding cystourethrography (VCUG) seemed to be the most appropriate method.

Materials and Methods: During an 18-year study period (January 1990 to December 2007) 712 children (ages ranging between 5 days and 20 years) prospectively underwent VUD to further define their urinary tract abnormalities. The selection criteria included a history of recurrent urinary tract infections (UTI) in 528 patients (pts) (74%), urinary tract dilatation without UTI in 50 pts (7%), suspected neurogenic bladder dysfunction in 71 pts (10%), and voiding difficulties in 64 pts (9%). VUD consists of cystometry (CM), which is the measurement of detrusor pressure during controlled bladder filling and subsequent voiding which was combined with VCUG using X-ray contrast material.

Results: The VUD diagnosis was of normal bladder function in 64 (9%), vesico-ureteric reflux (VUR) in 306 (43%), unstable bladder dysfunction in 221 (31%), neurogenic bladder dysfunction in 50 (7%), urine outflow obstruction in 21 (3%), wide bladder neck in 28 (4%), vaginal reflux in 14 (2%), and neurogenic bladder dysfunction was excluded in 7 (1%).

Conclusion: VUD is a useful technique for a complex investigation of the lower urinary tract function and X-ray morphology. The advantage of these studies is that they combine the objectivity of urodynamics with the visual radiographic image which uses lower radiation doses, and makes for a far more logical interpretation of the results.
Turkish Validity and Reliability of Diabetes Problem Solving Measure for Adolescents

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Objectives: Research was planned to test the Turkish validity and reliability of “Diabetes Problem Solving Measure for Adolescents (DPSMA)” in adolescents with type 1 diabetes ages 13 to 17 years.

Methods: The scope of the research was the registered adolescents with type 1 diabetes ages 13 to 17 years in pediatric endocrinology departments of a university hospital and a state hospital in Istanbul, Turkey. The sample were 145 adolescents who were suitable for the eligibility criteria as follows: diagnosed with type 1 diabetes, ages 13 to 17 years, came to hospital for routine clinic appointment, not hospitalized during the data collection, did not used insulin glargine, and were willing to participate in the research. The measure was translated into Turkish and then translated back into English, and pilot tested to linguistic equivalence. Cronbach’s alpha was calculated for the reliability and asked for the opinions of 12 experts for the content validity. After then according to the recommendations measure as rearranged. Permission from the ethics committee and hospitals in which the research was done. Data were analyzed using SPSS (Statistical Package for Social Sciences) version 10.0.

Results: Total mean score provided from DPSMA was 29.16±3.99 (16 to 54). Cronbach’s alpha was 0.71 for the English version and 0.73 for the Turkish version.

Conclusions: DPSMA had good validity and reliability. This measure can be used to determine the area needed to be improved in problem solving skills in adolescents with type 1 diabetes in Turkey.

Involving Children in Decision-Making: Shared Consensus or Contested Domain?

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The United Nations Convention on the Rights of the Child (1989) clearly established the importance of children’s right to participate in matters that directly affect them. Children’s participation in healthcare decision-making is seen as leading to positive outcomes such as: increased internal locus of control, decreased fears and concerns, feeling valued, sense of competence, enhanced adaptation and satisfaction with healthcare. Paediatric organisations recommend that children participate in decision making commensurate with their development; children provide assent to care whenever reasonable; and health care providers do not exclude children from decision making without persuasive reasons.1 2 But how is this principle translated into practice and are there any difficulties with implementing this principle? This paper will consider the different philosophical positions on involving children in decision-making. This will provide the backdrop to a discussion of the difficulties with implementing this principle into practice drawing upon a systematic review of the research literature. This paper will suggest an approach to involving children that not only recognises children’s abilities and vulnerabilities and children’s rights, but at the same time, acknowledges and respects parental and professional responsibilities.


Turkish Validity and Reliability of Pediatric Quality of Life Inventory 3.0 Cancer Module Child and Parent Reports (ages 8–12)

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Objectives: Research was planned to test the Turkish validity and reliability of “Pediatric Quality of Life Inventory 3.0 Cancer Module (PedsQL 3.0 Cancer Module)” in children who were diagnosed with cancer ages 8–12 years.

Methods: The scope of the research was the registered children who were diagnosed with cancer ages 8–12 and their parents in two different university hospitals in Istanbul, Turkey. The sample were 146 children and their parents who were suitable for the eligibility criteria as follows: ages 8–12, willing to participate in the research, not having old cancer story, came to hospital for routine clinic appointment, not hospitalized during the data collection. The measure was translated into Turkish and then translated back into English, and pilot tested to linguistic equivalence. Cronbach’s alpha was calculated for the reliability and asked for the opinions of 30 experts for the content validity. After then according to the recommendations measure was rearranged. Permission was given from the ethics committee and hospitals in which the research was done. Data were analyzed using SPSS (Statistical Package for Social Sciences) version 11.5.

Results: Cronbach’s alpha was 0.91 for children and 0.92 for parents in the English version and 0.85 for children and 0.87 for parents in the Turkish version; also factor analysis was calculated. Measure variance was found to be 77.04%.

Parental Uncertainty in the Acute Care Setting—Validation of a Scale

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Objective: The purpose of this study was to validate a scale developed to measure parental uncertainty in the emergency setting (Perception of Parental Uncertainty Scale-Acute: PPUS-A). Parental perception of uncertainty in relation to acute childhood illness is an important yet under investigated variable of stress.

Acute illnesses are common among children, are stressful for parents and often bring a family to attend an emergency department. The development and validation of a scale to measure parental uncertainty in the emergency setting may have significance for further research into this important construct.

Methods: This was a modification and validation of a scale developed to measure parental uncertainty. The study entailed three phases: 1) content validation, 2) face validation, and 3) construct validity and reliability. For the third phase, construct validation and reliability, 34 parents of children with a fever under the age of 2 years were recruited to complete the scale pre and post visit with the physician in the Emergency Department.

Results: Descriptive statistics will be generated using SPSS. Categorical data will be analysed using χ2 and Fisher’s exact test. Cronbach’s alpha will be used to assess internal consistency for the entire scale and for each of the four subscales. Validity analyses will include concurrent validity and construct validity.

Conclusion: Data entry will be completed by 30 May 2008. Data analysis will be completed in time for presentation.
Conclusions: This measure had good validity and reliability, and can be used to assess the quality of life in Turkish children diagnosed with cancer ages 8–12.

THUMBSUCKING IS EVIDENCE FOR HUMAN (MAMMALIAN) IMPRINTING

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Objective: The objective is to (1) analyse the logic of reasons given for non-nutritive thumbsucking and (2) find other reasons for thumbsucking. 

Methods: A critique of present explanations for thumbsucking is developed and an explanatory paradigm for thumbsucking is found by literature search.

Results:
(1) The critique of common reasons given for thumbsucking:

i. Need to suck VS If it were a need to suck then infants would suck on any object to fulfill this need.

ii. It is normal behaviour VS It only occurs in other mammals when they are human reared and does not occur in societies where the infant has free access to the breast/ nipple.

iii. It does no harm VS Thumbsuckers are more likely to develop facial malocclusions and dummy suckers are more likely to develop orthodontic media. Thumbsucking, a self fixation may also last into adulthood. 

iv. It is learnt behavour VS Learned behaviour does not explain the emotional distress when the infant is denied access to the fixated object for sucking.

(2): The best explanation for thumbsucking is the behaviour recorded across the spectrum of mammals and is referred to as “teat preference” “teat specificity” “teat selection” “teatterritoriality” and “nipple confusion”.

Conclusions: The mammalian preference for selecting one teat for sucking is a genetically determined survival strategy to attach the newborn to the source of nutrition. Sucking is used to form an emotional relationship with the sucked object and thumbsucking is displacement onto a decoy.

A COMPARISON OF THE IMPACT OF TWO HOSPITALS’ PHYSICAL ENVIRONMENTS ON SOCIAL SUPPORT FOR CHILDREN WITH CANCER AND THEIR FAMILIES

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Social support has been shown to positively influence coping and healthcare outcomes.1 Family-to-family support does not seek to replace professionally-mediated support, but rather is a unique resource that promotes individual and family strengths through shared experience.

Objective: To describe and compare the ways in which the physical aspects of a US hospital with a single patient room plan and a UK hospital with an open ward plan affect social support for children with cancer and their families

Methods: Participants included 22 hospitalized children ages 7–18 years receiving treatment for cancer in the US or UK. Quantitative and qualitative methods were used within a grounded theory approach, and included interview, observation, and three drawings (Person Picking an Apple from a Tree, Scariest Image, Closure).

Results: Children and parents at the US site received limited support from other children and parents. Children and families at the UK site received a high level of support from other children and families.

Conclusion: Hospital environments affect the opportunity for supportive relationships. Hospitals that provide spaces for children and families to interact with other children and families promote social interaction, which leads to a higher level of social support than hospital environments that do not or that provide them in less accessible areas.2


NURSING RESEARCH: THE EXPERIENCE OF AN INTRODUCTORY TRAINING MODULE AT THE BAMBINO GESU CHILDREN’S HOSPITAL IN ROME, ITALY

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Although their role in research is potentially important, compared to physicians nurses enjoy little opportunities for postgraduate research training.

An introductory module in research methods was implemented by the Office for Nursing Research and the Epidemiology Unit of the Bambino Gesù Children’s Hospital in Rome, Italy. The module was aimed at presenting basic quantitative research methods as a tool for investigating and answering problems arising during paediatric nursing hospital practice. Main teaching methods included teaching by objectives; small-group work; tutoring. The teaching agenda was modelled after the steps necessary for preparing a real research proposal: defining the research question; specifying the target population; identifying variables to be measured; selecting the strategy for data collection, or study design; presenting results of group work to colleagues for plenary discussion. Module duration was 8 hours, divided in 2 morning sessions. There were 4 frontal lectures; each lasted 20 minutes plus discussion. An anonymous self-administered questionnaire was distributed at the end of the module to measure students’ satisfaction and obtain suggestions for future editions.

Twenty-two nurses participated. 19 answered the questionnaire. Only 7 of them had previous research experiences. The most appreciated aspects were group work (53% of respondents), followed by frontal lectures (26%) and tutoring (16%). The least appreciated aspect was insufficient time, particularly for group work; 72% suggested that future editions should last longer; 17% would like to participate in a second-level course; 17 out of 19 students felt they would be proposing a nursing research project in the near future.

CHILD RIGHTS

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Taking care of children, bringing them up healthy, happy and socially adjusted, results in a healthy community. In 1973 there were no rules to protect children. In spite of the law intervention, Western countries, statistics showed an increase around child abused protection from 749 persons in 1960 to 1 million persons in 1995. Child abused protection rights were discussed for many years. According to this article the nature, main construction and child rights process in Isfahan are questioned and surveyed.

Method: Grounded theory approach is used in this research. Detection of child rights from the psychological aspect and its description is the main purpose here. The samples of 43 participants (children, parents and teachers) were interviewed and by observation in public places and schools or the information was gathered by recorder.
Findings: The contexts of extracted interviews have been analyzed and the codes extracted once more. Later these codes were classified to the major themes. Related sub-categories are explained in the discussion section.

Discussion and Suggestion: Findings show that the concept of “right” for children in Isfahan includes personality and psychological aspects. The results suggest that parents, teachers and persons who play an important role in the life of a child need educational skills in child protection and should learn about child rights. In this regard they can be a strong source for improvement of child behavior. Surveys around different concepts of child rights and an increase in perception of children and the society of these rights are recommended for more research.
Poster session: respiration

INHALED NITRIC OXIDE IN THE TREATMENT OF PERSISTENT PULMONARY HYPERTENSION IN NEWBORNS WITH MECONIUM ASPIRATION SYNDROME

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Meconium aspiration syndrome (MAS) is a common severe respiratory disease in full term infants. Since persistent pulmonary hypertension of the newborn (PPHN) is one of the major causes of death in infants with MAS we investigated if the treatment with inhaled nitric oxide (iNO) makes any difference in survival of newborns with MAS and PPHN. We evaluated and compared the results of treatment with iNO with results of other PPHN treatments before use of iNO. The study included 123 newborns with mild to severe form of MAS and PPHN.

The control group included 35 neonates who were not treated with iNO (before iNO era). From those, 22 newborns (63%) were mechanically ventilated. The average time of mechanical ventilation was 6 days and average number of hospital days was 18. Pneumothorax was a treatment complication in 7 (32%). From 22 mechanically ventilated, 12 (55%) died. The second group included 88 newborns, 68 (77%) were mechanically ventilated. In 48 mechanically ventilated newborns iNO was used. Twenty-two of them were matched to control and the outcome was compared. The average time of mechanical ventilation in the second group was 8 days and average number of hospital days was 31. Pneumothorax developed in two (9%), three (14%) died, and 19 (86%) were cured.

Conclusion: Treatment with iNO statistically improved the outcome and reduced mortality of newborns with severe form of MAS and PPHN.

DEXAMETHASONE IN TREATMENT OF RESPIRATORY DISTRESS IN CHILDREN

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Introduction: Croup is a common viral disease in children under 6 years old with incidence rate of 2–6%. The mainstay of treatment is airway management. Treatment focuses on respiratory distress, using cold mist, epinephrine, heliox and corticosteroids. In this study we tried compare the effectiveness of fluticasone spray with intramuscular dexamethasone.

Materials and Methods: In this clinical trial, 107 children with croup were randomly assigned into two groups. The study group was treated by fluticasone propionate and the control group was treated by intramuscular dexamethasone. Croup scoring was performed at the 6th and 12th hours from initial administration according to Westley croup score.

Results: Improvement was observed in 83% of the study group and 66% of the control group, 6 hours after initiation of treatment. In both groups 10% of the patients didn’t respond to treatment (p = 0.03).

12 hours after treatment the study group response was 85% and the control group response was 90% (p = 0.4)

Conclusion: We found that fluticasone propionate and dexamethasone have similar efficacy in treatment of respiratory distress; considering the simple method of using fluticasone spray, it can be suggested as a good treatment for croup.
Poster session: respiratory/mechanical ventilation

CURRENT PRACTICES OF MECHANICAL VENTILATION IN NEONATAL AND PEDIATRIC INTENSIVE CARE UNITS IN SOUTHEAST BRAZIL

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Objective: To describe how mechanical ventilation (MV) is employed in neonatal and pediatric intensive care units in the southeast of Brazil (Rio de Janeiro).

Methods: Cross-sectional study of all patients on MV at the day of the visit to the unit (January 2007 to March 2008).

Results: Of the 100 existing units, 51 were studied (22 NICU, 17 PICU, 12 mixed). Of the 314 admitted patients, 71 (22%) were on MV (16% in NICUs, 63.5% in PICUs and 11.5% in mixed units). In NICUs 64% were female and in PICUs 42%. In PICUs and mixed units, 10% were newborns, 51% infants, 23% pre-schoolers, 9% schoolers and 7% adolescents. The median time of MV was 8.2 days (0–26), excluding 16 patients on chronic MV (>30 days). Only 3 patients (newborns) were on non-invasive MV. The main indications for invasive MV were sepsis and pneumonia in children, followed by neurological diseases and respiratory distress syndrome in newborns. Most had an oral endotracheal tube without cuff (tracheotomy rarely used in older children). Non-synchronized intermittent mandatory ventilation (IMV) was the most used ventilatory mode, followed by SIMV with pressure support. The complication rate was 25% (18 patients) and the main complication was pneumonia.

Conclusion: In most units traditional IMV is still the most used way to ventilate children, although other modes are available. The knowledge of current practices may become an important tool to aid in educational programs to improve the practice of MV in neonatal and pediatric intensive care in our country.

RELIABILITY OF E-COVX SPIROMETRIC MEASUREMENTS AFTER ENDOTRACHEAL SUCTION IN CRITICALLY ILL CHILDREN

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Objective: To determine the immediate effect of open endotracheal suction (ETS) to remove obstructive secretions on spirometry (TVexp, Fw, Compliance, PEEP, PIP, RR), VO2 – VCO2 measurements and calculated respiratory quotient (RQ) and resting energy expenditure (REE) in mechanically ventilated (MV) critically ill children by means of a prospective observational clinical study.

Methods: A total of 650 pulmonary 1-min gas exchange measurements were recorded for 50 consecutive minutes before (B) and 50 after (A) the standardised suctioning procedure in 15 children without lung pathology, MV for sepsis or head injury. The patients were well sedated but not paralysed and were able to breathe spontaneously.

Results: There was no difference between the A and B set of measurements in VO2 (121 ± 15 ml/min vs. 119 ± 15 ml/min) or VCO2 (104.8 ± 17 ml/min vs. 105.3 ± 18 ml/min) or calculated RQ (0.87 ± 0.008 vs. 0.85 ± 0.009) or REE (847 ± 106 kcal vs. 835 ± 108 kcal). Ratio differences of A and B means after Bland & Altman were kept within the clinically acceptable limits of 10% (VO2 –1.8%, VCO2 0.5%, RQ 1.6%, REE –1.2%). Ratio differences between the 25-first and 25-second sets of measurements did not differ in either group. Similarly, FiO2, SaO2, Spirometric (TVexp, Fw, compliance, PEEP, PIP, RR) and hemodynamic measurements did not differ between groups.

Conclusions: Accuracy of VO2 and VCO2 measured by E-COVX is not influenced by endotracheal suction in MV children without lung pathology.

NON-INVASIVE VENTILATION IN CHILDREN WITH ACUTE PNEUMONIA

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Objective: To describe our experience of non-invasive positive-pressure ventilation (NIPPV).

Patients and Methods: We performed a retrospective study of all children who underwent NIPPV in our unit over a 12-month period. To assess the effectiveness of NIPPV, respiratory rate, heart rate, inspired oxygen, and arterial blood gases PaO2 and PaCO2 were evaluated before and 2 hours after initiating NIPPV.

Results: 40 children with a mean age of 12.2 years underwent a total of 24 NIPPV trials. Indications for NIPPV were: hypoxemic acute pneumonia (40 trials—conventional ventilators were used in 4 trials and specific noninvasive ventilators were used in 36). In all groups, significant decreases in respiratory distress, defined as a reduction in tachypnea (34 ± 16 breaths/min pre-treatment vs. 26 ± 12 breaths/min post-treatment; p = 0.001), and tachycardia (152 ± 27 beats/min pre-treatment vs. 118 ± 22 beats/min (after or post) post-treatment; p<0.001) were observed after initiation of NIPPV. The oxygenation index PaO2/FiO2 also improved (191 ± 109 pre-treatment vs. 274 ± 104 post-treatment; p = 0.010). Ten patients (25%) required intubation and conventional mechanical ventilation after NIPPV, of which three were aged less than 3 days.

Conclusions: NIPPV should be considered as a ventilatory support option in the treatment of acute pneumonia in children.

HIGH-FREQUENCY OSCILLATORY VENTILATION IN NEWBORNS WITH ACUTE RESPIRATORY FAILURE AFTER SEVERE ABDOMINAL SURGERY: A SINGLE-CENTER EXPERIENCE OF 47 CASES

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Introduction: The present article reports our experience with high-frequency oscillatory ventilation (HFOV) in newborns with acute respiratory failure (ARF), who deteriorated on conventional mechanical ventilation.

Methods: The chart records of 47 consecutively HFOV-treated newborns from 1 January 2005 to January 2008 were retrospectively analyzed. The parameters of demographic data, cause of respiratory insufficiency, Pediatric Index of Mortality score, oxygenation index and PaCO2 were recorded and calculated at various time points before and after the start of HFOV, along with patient outcome and cause of death.

Results: The overall survival rate was 58%. The oxygenation index was significantly higher before and during HFOV in newborns with acute respiratory failure than in newborns with conventional mechanical ventilation. The PaCO2 prior to HFOV was higher in conventional mechanical ventilation patients compared with newborns with acute respiratory failure after the initiation of HFOV.
Conclusion: HFOV rescue therapy was associated with a high survival percentage in a selected group of newborns. Patients with HFOV rescue therapy primarily had oxygenation failure. Future studies are necessary to evaluate whether the outcome in this group of patients may be improved if HFOV is applied earlier in the course of disease. Patients with conventional mechanical ventilation primarily had severe hypercapnia and HFOV therapy was very effective in achieving adequate ventilation.

RENOPULMONARY INTERACTION DURING MECHANICAL VENTILATION OF HEALTHY LUNGS: AN EXPERIMENTAL STUDY

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Objective: To prove the existence of renopulmonary interaction during mechanical ventilation and to identify the affecting factors.

Design: Experimental, closed, randomized, comparative.

Material and Methods: The study included a total of 15 healthy domestic piglets. Group A – spontaneously breathing piglets. Group B – piglets ventilated for 12 hours, VT 6 ml/kg. Group C – piglets ventilated for 12 hours, VT 10 ml/kg. Clinical monitoring and laboratory tests were recorded 1 hour after beginning of this experiment and after 12 hours (groups B and C). Mechanical ventilation was assessed by lung mechanics and ventilatory indexes, cardiovascular system by measurement of systemic pressure and echocardiography. The renal function was assessed by one-hour diuresis, laboratory tests, glomerular filtration, free water clearance and fractional excretion of sodium. The obtained data were statistically analyzed. Values of p<0.05 were considered statistically significant.

Results: After 1 hour of mechanical ventilation the following parameters were decreased in both groups: global function of right ventricle (p<0.05), glomerular filtration (p<0.020), free water clearance (p<0.015) and fractional excretion of sodium (p<0.005). The decrease of the above parameters after 12 hours of mechanical ventilation was even more significant in group C (p<0.003). Left ventricle performance, systemic arterial pressure and one-hour diuresis were not influenced in the course of this study.

Conclusion: Mechanical ventilation induces renopulmonary interaction. Tidal volume of 10 ml/kg and time influence systemic as well as regional hemodynamics and contribute to the decrease of glomerular filtration, sodium and fluid retention.

EARLY CLEFT REPAIR IN INFANTS WITH ROBIN SEQUENCE

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Palatal cleft repair in infants with Robin sequence (RS) is usually recommended to be performed between 18–24 months of life.

Objective: To present our treatment philosophy and experience with early cleft repair executed concurrently with subperiosteal release of the floor of the mouth (SRFM) in over 100 cases of infants with RS, and to show that our approach is effective in treatment of both feeding difficulties and respiratory distress symptoms.

Methods: Surgical procedure presented comprises minimally invasive palatoplasty in combination with subperiosteal release of the floor of the mouth. We perform this routinely in young infants with RS at about the fourth month of life. Success of our approach is rooted in the pre-surgical medical treatment comprising permanent insertion of an NG feeding tube to assure both feeding and patency of the upper airway, until palatal surgery accompanied by SRFM is performed.

Results and Conclusions: Our medico-surgical protocol enabled us to eliminate from the management of infants with RS such aggressive procedures like tracheotomy, glossopexy, gastrostomy and Nissen fundoplication. Early primary cleft palate repair is of paramount asset for infants with RS in restoring normal feeding and breathing patterns and influences positively development of undisturbed speech articulation.

SPONTANEOUS PNEUMOTHORAX IN PATIENTS WITH CYSTIC FIBROSIS (CF): 10 YEARS EXPERIENCE

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Spontaneous pneumothorax is a major cause of morbidity and mortality in cystic fibrosis (CF) patients.

Aims: To look for spontaneous pneumothorax in patients with CF over a 10 year period.

Methods: Retrospective study was done over 10 years to look for the incidence of spontaneous pneumothorax. Different variables included age, sex, age of diagnosis of cystic fibrosis, age at the time of pneumothorax, pulmonary function test pre and post pneumothorax, treatment, incidence of death, and time of death.

Results: 7 patients were identified who had developed pneumothorax. 57% were female and 43% were male. The median age of diagnosis was 105 months. The median age of pneumothorax was 11.75 years. Chest pain, cough, and dyspnoea were found in all the patients as common symptoms. All patients needed oxygen. 64% had left sided and 36% had right sided pneumothorax. 3 patients were tried on nitrogen wash out which was unsuccessful. Chest drain was put in all 7 patients. Average time of insertion of chest drain was 2.2 days ranging from 1–8 days. No patient had needle aspiration. 100% had close thoracotomy with chest drain and 14% had blood pleurodesis following this. 28% had recurrent pneumothorax. Average length of time of recurrence was 36 days (22–50 days). Mortality rate post pneumothorax was 28% between 30–52 days.

Conclusion: Spontaneous pneumothorax is an important and common problem and late complication in chronic cystic fibrosis patients. Patients with any respiratory signs should consult the medical team in view of higher rate of both unilateral and contralateral pneumothorax. A multicentre study is needed to determine the optimum timing and method of treatment.

COMPARISON OF MAGNESIUM SULFATE TO SALINE AS A VEHICLE FOR NEBULIZED SALBUTAMOL IN CHILDREN WITH ACUTE ASTHMA: A CLINICAL TRIAL

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Objective: There are only a few studies about nebulized magnesium sulfate in treatment of asthma attacks in children. This study aimed to determine the safety and efficacy of magnesium sulfate as a vehicle for nebulized salbutamol in asthma exacerbation.

Method: In a double blinded trial, 40 asthmatic children (mean age = 5.55 years) were randomly enrolled into two study groups. Each group in the study were treated with nebulized salbutamol. As a vehicle, 2.5 ml of either saline or isotonic magnesium sulfate was mixed with salbutamol for comparison of their potential effects. Respiratory distress scores are measured before and one hour after the second course of the treatment. Mean days of hospital stay and mean hours of need for oxygen are determined.

Results: The difference in improvement of mean scores of respiratory distress in the magnesium sulfate and saline groups was insignificant (2.8 ± 1.0 vs. 2.5 ± 1.0, p = 0.97). The mean duration of oxygen therapy in the magnesium sulfate and saline groups were 15.2 ± 12.5 vs. 19 ± 14.3 hours, respectively (p = 0.000). The mean days of hospitalization in the magnesium sulfate and saline groups
were 19 ± 0.9 vs. 2.1 ± 8.6 days, respectively (p = 0.73). There were no side effects from the magnesium sulfate in the study group.

**Conclusion:** Use of magnesium sulfate as a vehicle for nebulized salbutamol decreases the mean duration of oxygen therapy in patients with asthmatic attack. There was no difference in hospital stay and improvement of respiratory distress score in the study groups.

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**MECHANICAL VENTILATION WITH HELIOX FOR RESPIRATORY SYNCYTIAL VIRUS LOWER RESPIRATORY TRACT DISEASE**

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**Objective:** Respiratory syncytial virus (RSV) infection is characterized by increased airway resistance, air-trapping and hypercapnia. Mechanical ventilation (MV) with heliox could reduce these symptoms by reducing respiratory system resistance (Rrs).

**Methods:** 13 previously healthy infants mechanically ventilated for RSV lower respiratory tract disease (LRTD) were included within 24 hrs after PICU admission. At baseline, 30, 60 and 90 mins Rrs was measured using the AVEA ventilator, PaCO\(_2\) from arterial blood samples. Airtrapping was characterized by end-expiratory lung volume (EELV), and assessed using Electrical Impedence Tomography (EIT). Ventilator settings were kept constant, patients were sedated and paralyzed. Gas mixture was switched to heliox (60% helium) after baseline measurements, at 30 mins to conventional gas and at 60 mins to heliox (60% helium). Statistical analysis was performed using the Wilcoxon signed rank test. Data are expressed as mean ± standard error.

**Results:** MV with heliox resulted in a significant decrease in Rrs (69.1 ± 6.9 cmH\(_2\)O/L/sec to 50.1 ± 6.0 cmH\(_2\)O/L/sec, p = 0.015) and a trend towards decreased EELV (ΔEELV = -23.4 ± 4.6 to -12.3 ± 10.7). However, this was not accompanied by a significant decrease in PaCO\(_2\). After reintroduction of conventional gas, Rrs significantly increased to 70.7 cmH\(_2\)O/L/sec (p = 0.019), EELV further decreased and PaCO\(_2\) increased both non-significantly. Rrs significantly decreased after reintroduction of heliox (42.9 ± 5.2 cmH\(_2\)O/L/sec, p = 0.002) and PaCO\(_2\) non-significantly decreased.

**Conclusions:** MV with heliox decreased Rrs and EELV in RSV LRTD without improved CO\(_2\) clearance. Further studies are warranted.

**AZITHROMYCIN DOES NOT IMPROVE DISEASE COURSE IN RESPIRATORY SYNCYTIAL VIRUS LOWER RESPIRATORY TRACT DISEASE**

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**Background:** Nearly half of all hospitalised infants with respiratory syncytial virus (RSV) lower respiratory tract disease (LRTD) are treated with (parenteral) antibiotics. We hypothesized that the use of antibiotics would not lead to a reduced duration of hospitalisation.

**Methods:** Seventy-one patients <24 months of age with a virologically confirmed clinical diagnosis of RSV LRTD were randomized to azithromycin 10 mg/kg/day (N = 32) or placebo (N = 39) in a multi-centre, randomized, double-blind, placebo-controlled equivalence trial during three RSV seasons (2002–2004 through 2005–2006). Primary endpoint was duration of hospitalisation, secondary endpoints included duration of oxygen supplementation and nasogastric tube feeding, course of RSV symptom score, number of PICU referrals and number of patients who received additional antibiotic treatment. Data were analyzed according to the intention-to-treat principle using the Mann-Whitney U test or chi-square test considering p<0.05 statistically significant.

**Results:** Included patients were comparable with respect to baseline demographics, clinical characteristics, laboratory and roentgenologic investigations. The mean duration of hospitalisation was not significantly different between patients treated with azithromycin or placebo (132.0 ± 10.8 versus 139.6 ± 7.7 h, p = 0.528). Azithromycin was not associated with a stronger resolution of clinical symptoms represented by the RSV symptom score. Four patients were treated with antibiotics after 72 h, three of them were assigned to placebo (p = 0.406).

**Conclusions:** Infants and young children with RSV lower respiratory tract disease do not benefit from routine treatment with antibiotics (ISRCTN number 86554665).

**CHRONIC LUNG DISEASE IN CHILDREN WITH CONGENITAL DIAPHRAGMATIC HERNIA**

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The clinical course of patients with congenital diaphragmatic hernia (CDH) is often complicated by lung hypoplasia and pulmonary hypertension. The implementation of gentle forms of ventilation and extracorporeal membrane oxygenation (ECMO) led to improved survival rates, but patients with CDH are still at risk of developing pulmonary sequelae including chronic lung disease (CLD).

We performed a retrospective analysis of all neonates with CDH treated at our institution between 2002 and 2007. CLD was defined as the need for supplemental oxygen or mechanical ventilation for at least 28 days after birth, and its severity was graded according to the respiratory support after 56 day postnatal age or discharge.

9.3% of all 259 neonates with CDH presented with severe concomitant disease or ongoing asphyxia, did not receive maximum therapy and died within the first days of life.

123 of the remaining 235 patients did not need ECMO therapy. All 123 patients survived and 44 developed CLD (35.8%).

112 patients met ECMO criteria. 69 patients survived (61%) and 61 patients developed CLD (54%).

Overall survival was 81.7%. CLD was evident in 44.7% of all patients.

Patients in the ECMO-group were significantly longer on mechanical ventilation than patients who did not require ECMO-therapy (median 27.9 d vs. 13.6 d).

Children with CDH have a significant risk of developing chronic lung disease, which is increased in children who received ECMO therapy. Follow-up studies with focus on lung function tests and strategies to prevent pulmonary infections are needed to evaluate the long term outcome for these children.

**INDICATIONS AND COMPLICATIONS OF MECHANICAL VENTILATION IN PEDIATRIC INTENSIVE CARE UNIT PATIENTS**

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Mechanical ventilation is a widely used lifesaving intervention in pediatric intensive care units (PICUs), but as a complex and invasive intervention it is associated with numerous complications.

**Objective:** To assess the indications, complications and outcome of mechanical ventilation in PICU patients.
ON-LINE RESPIRATORY MECHANIC MONITORING IN NEWBORNS: REPRODUCIBILITY AND EFFECT OF VENTILATORY MODE

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Objectives: Neonatal ventilator softwares provide information on respiratory mechanics (RM). Integration of those values with clinical variables could improve ventilation management. We investigated accuracy and reproducibility of those variables in Assist Control (AC) and Synchronised Intermittent Mandatory Ventilation (SIMV) modes.

Methods: Data (Ventilation pressures, Tidal Volume (VT), Minute Ventilation (MV), Compliance (C), Resistance (R)) from a Babylog 8000 ventilator were collected during 9 minutes in 15 infants ventilated in AC. Variability of individual values was compared to that of the 1 and 3 minute(s) mean periods. For each period, C, R and VT were calculated from one demonstrative respiratory loop reconstructed from continuous recordings. Nine newborns ventilated in SIMV were recorded in SIMV and AC.

Results: In AC, VT, MV, C, and R variability of individual values represents 12, 12, 13 and 20%, respectively, and improves to 5.5, 7.6, 7, and 10% using one minute average and 3.5, 5.6, 4.7, and 5.8% with three minutes average. Variability in SIMV has a similar pattern. Calculated values from loops are within 20% of ventilator values. SIMV values for mean pressures and VT were calculated from one demonstrative respiratory loop reconstructed from continuous recordings. Nine newborns ventilated in SIMV were recorded in SIMV and AC.

Conclusions: In both modes continuous ventilator RM data are difficult to integrate into clinical practice. Averaging those parameters allows for more reproducible values that could be used for trend monitoring. Non-assisted breaths interfere with calculation of RM values. RM assessment of patients on SIMV ventilation should be done with a brief switch to AC.

WHY USE NON-INVASIVE VENTILATION IN INFANTS WITH SPINAL MUSCULAR ATROPHY TYPE 1. REPORT OF TWO CASES


Objectives: Spinal muscular atrophy (SMA) is an autosomal recessive neuromuscular disorder characterised by degeneration of

Methods: Prospective observational study performed in a Pediatric Intensive Care Unit (PICU) in a University Hospital. Eighty-seven patients were included. Clinical and epidemiological data were collected. Conditions precipitating respiratory failure were classified into two groups: type 1 ARF (hypoxemic) – 29 episodes; and type 2 ARF (hypercapnic) – 58 episodes.

Results: Fifty-three patients were males (60.9%). Median age was 9.1 months (0.5–169.1), and median weight was 8.4 kg (2.3–40). Most common admission diagnoses were pneumonia (59.7%) in type 1 ARF and broncholitis (41.4%) and asthma (36.5%) in type 2 ARF. Respiratory rate decreased from 53.5 ± 13.8 before NIV began to 36.4 ± 9.1 at 6 hours (p < 0.001), while heart rate decreased from 163.1 ± 29.7 to 153.6 ± 25.5 (p < 0.001) and FiO₂ from 0.44 ± 0.24 to 0.39 ± 0.16 (p = 0.092). Face masks were used in 61 episodes and nasal masks in 25. NIV median duration was 39 hours (range: 2–575). Sedatives were administered in 63.2% (continuous perfusion in 50.6%), and enteral nutrition was given in 48.2% of the children. Complications secondary to NIV were detected in 21 episodes (24.1%): non-severe skin lesion in 17, pneumothorax in 3, and upper airways bleeding in 1. Four children died, but none of deaths was related to NIV use. NIV success rate was 86.2% (72.4% in type 1 ARF and 93.1% in type 2 ARF).

Conclusions: NIV is a safe and useful respiratory support technique in pediatric patients, even in small toddlers. Sedative use is frequent.
spinal cord anterior horn cells, leading to muscular atrophy. The authors report two cases of SMA type I.

Methods: Descriptive case report. The patients were in the Pediatric Intensive Care Unit (PICU) of a tertiary medical center.

Results: A 3 month-old female and a 5 month old male admitted to the PICU with acute respiratory failure and generalized muscular weakness. Chest X-ray showed a pulmonary atelectasis in both. Neurophysiology studies were performed, demonstrating an axonal motor polyneuropathy and signs of chronic denervation. Genetic analysis revealed homozygous state for a deletion of the survival motor neurone 1 (SMN1) gene. The first case started non-invasive ventilation and no intubation was necessary. The second case was intubated on admission. The weaning protocol was started with mechanically assisted cough via the tube and then extubation to continuous nasal ventilation and no supplemental oxygen. Both patients were discharged with nasal intermittent positive pressure ventilation.

Conclusions: SMA Type 1 is a rare entity, but it is important for the pediatrician to be familiar with this disease because of its severe implications. The use of non-invasive ventilatory support associated with mechanical coughing aids can decrease the need for intubation and can also permit extubation and, thereby, decrease the need to resort to tracheostomy. With a non-invasive respiratory approach, these patients have a chance to develop the ability to communicate verbally and maintain some autonomous breathing ability.

STATUS OF THE UPPER AIRWAYS IN CHILDREN WITH ASTHMA

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Objectives: Disorders in the upper and lower airways are linked epidemiologically, pathogenetically and therapeutically. In this study we compared the occurrence of symptoms of upper airway diseases and critical dimensions of the upper airways in children suffering from asthma and age and sex-matched controls.

Methods: The study group comprised 27 children with asthma (m/f = 13/14 age = 4.2). The control group included 28 children recruited from 5 kindergartens (m/f = 11/17, age = 4.2). They underwent ENT and pulmonary examinations. Their parents completed questionnaires including VAS-scales, about upper and lower airway symptoms. Acoustic rhinometry, skin prick test and X-rays of the epipharynx were performed.

Results: The asthmatics had significantly higher scores than the controls. The site of obstruction appears to be the epipharynx. Incidence of symptoms of rhinitis and upper airway obstruction for the development of childhood asthma cannot be excluded, and should be further investigated.

CHILD WITH SEVERE STATUS ASTHMATICUS RESCUED BY EARLY HFOV

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Introduction: The use of HFOV in the treatment of pulmonary disease with increased airway resistance is controversial. The risk of dynamic air trapping, and its complications, are the main concerns. The use of HFOV in conditions such as viral bronchiolitis and status asthmaticus is increasingly advocated.

Case Report: A 3.5-year-old boy was admitted with respiratory failure from status asthmaticus. Upon initial presentation, there was a pneumothorax that required drainage. Despite conventional mechanical ventilation, applying high pressures (Ppeak 45 cmH2O) and low respiratory rate, severe respiratory acidosis (pH 7.06 and PaCO2 110 mm Hg) persisted. We subsequently switched to HFOV using the following open airway strategy. The initial mean airway pressure (mPaw) was 23 cm H2O. mPaw was increased stepwise to 41 cm H2O in order to stent the airways. Power was set at maximum. The frequency was lowered from 7 to 5 Hz. After 24 hours the mPaw could be lowered to 30 cm H2O and frequency increased to 7 Hz. Additional therapy: steroids, intravenous salbutamol, magnesium, muscular paralysis and inotropes. The use of inotropes was most likely required due to HFOV-associated circulatory compromise. During HFOV a de novo pneumothorax was drained. On day 4 he was weaned to conventional ventilation and chest drains were removed. He was successfully extubated at day 6.

Conclusions: This case illustrates that HFOV can successfully be used in severe status asthmaticus using the open airway strategy. Dynamic hyperinflation only caused some circulatory compromise. Pre-existing and de novo pneumothoraces were managed without difficulties.

PHYSIOLOGIC DEFINITION OF BPD: IS THERE SOMETHING NEW?

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Objective: To verify if “physiologic definition” of BPD is more useful than classic definition.

Methods: Neonates with BW 500–1250 g were prospectively studied to evaluate incidence of BPD. Respiratory outcome at 28 days and/or 36 wks PMA was defined in 2 ways: a clinic one based on O2 administration and a physiologic one based on O2 administration and saturations. Neonates who received FiO2 < 30 with or without CPAP were eligible. The test was divided into 3 parts, baseline, challenge and post-test: every minute we recorded ptcCO2, ptcCO2, HR, RR, SpO2. Presence of apnoea (breathing cessation > 20 sec) and bradycardia (HR < 80 bpm < 10 sec) was noted. Failure was defined as ptcO2 80–90% for 5 minutes with ptcO2 < 50 mmHg, or SpO2 < 80% for 1 minute, or occurrence of an adverse event during the test or a FiO25% increasing one hour after reduction.

Results: 21 neonates were tested, 2 were examined at 28 days and 36 wks PMA. At 28 day BPD incidence passed from 50.8% (clinical definition) to 44.2% (physiological definition), because 4/15 (27%) passed the test.

At 36 wks PMA BPD incidence passed from 21.3% to 15%, because 4/8 (50%) passed the test.

The mean ptcCO2 was significantly higher in neonates that failed the test (p<0.05) in respect to those who overcame it both at 28 days and 36 wks PMA, while the mean SpO2 was always lower but significant only at 28 days (p<0.05).

Conclusions: In our study the test was used as a clinical guide and performed not only at 36 wks PMA as reported in the literature but also at 28 days and in neonates with CPAP. The ptcCO2 and SpO2 resulted in being good criteria for predicting test’s failures.
**PRECISION OF RSV MOLECULAR VIRAL LOAD DETECTION IN SEVERE RSV BRONCHIOLITIS**

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**Objective:** Real-time PCR is a validated technique for the detection of RSV viral loads. However, test processing includes adequate laboratory performance (isolation of RNA, production of cDNA, and amplification) and clinical sampling. Whether laboratory processing and clinical sampling influences test precision needs to be determined.

**Methods:** During the winter of 2007–2008 ventilated infants with an RSV bronchiolitis at the PICU were enrolled. Undiluted nasopharyngeal aspirates (NPAs) and tracheal aspirates (TAs) were taken at admission to determine viral loads with real-time PCR (t1). To investigate laboratory processing (I) aspirates were divided into three aliquots to detect viral load. Ct values (Cts) of the different aliquots were averaged and differences calculated. To investigate the influence of the time point of clinical sampling (II), sampling was repeated after 2–6 hours (t2) and viral loads were compared (t1–t2).

**Results:**
I: On 10 NPA’s 3 PCR tests were performed; the mean (SD) viral load was 24.9 (3.0) Ct. The maximal difference from the mean was 1.07 Ct. On 9 TA’s the 3 PCR tests showed a mean of 23.6 (4.9) Ct. The maximal difference from the mean was 0.67 Ct.
II: Six NPAs and six TAs were tested at t1 and t2. The mean difference between t1 and t2 was 1.2 (3.9) and 3.7 (3.5) Ct, respectively.

**Conclusions:** Laboratory processing does not lead to variability in viral load detection by real-time PCR. However, preliminary data show that clinical sampling within relatively short time intervals can lead to considerable variability in test results.

**EFFICACY AND CARDIOVASCULAR CONSEQUENCES OF TOTAL LIQUID VENTILATION (TLV) IN EXPERIMENTAL RESPIRATORY DISTRESS SYNDROME (ARDS)**

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**Objective:** TLV is an effective strategy in ARDS. However, cardiovascular influence of TLV is still controversial. This study evaluates efficacy, and cardiovascular influence of TLV in a controlled animal trial.

**Methods:** 17 anesthetised-paralysed gas-ventilated newborn-lambs instrumented for monitoring of systemic and pulmonary cardiovascular parameters using thermodilution technique (PC-8000-PICCO-VOLEF monitor, Pulsion-Medical-System.ge). Lung injury established using Hcl saline lavages. Post-injury, animals randomised into 3 groups: 1) GV = 6; who remained GV in PRVC (Fr = 60/min, Vt = 10 ± 1 ml/kg, PiP = 20–25 cm.H2O, PEEP = 9 ± 1 cm H2O, FiO2 = 1.0); 2) TLV = 11, with lungs filled with either 25 ml/kg perfluorooctylbromide (PFOB, n = 5) or perfluorodecalin (PFDEC, n = 6) (F2-chemicals, UK) and ventilated with volume-controlled-pressure-limited-liquid ventilator (INOLIVENT) (Fr = 3–5/min, Vt = 20 ml/kg, FiO = 1.0). Mean arterial pressure (MAP) were maintained using crystalloid volumes and vasopressors. Gas exchanges, Lactate/Pyruvate ratio (L/P) and cardiovascular parameters were recorded (30 min intervals) for 240 min.

**Results:** Mean PaO2, PaCO2 and pH were similar in all groups and maintained in the targeted range at a significant low mean airway pressure during TLV. Mean systemic and pulmonary cardiovascular parameters were similar in all groups. As compared to post-injury value a transient but significant decrease in MAP was observed in the TLV groups, with no difference in L/P, however. This could be the result of a significant increase in intrathoracic pressure combined with a decrease in the sympathetic autonomic system reactivity due to anesthesia. No significant differences could be demonstrated between the two FFC tested.

**Conclusion:** 1) TLV can maintain physiologic gas exchanges without significant cardiovascular effects; 2) Despite a different biophysical profile, PFDEC is as effective as PFOB.

**A CASE SERIES OF THREE PATIENTS WITH RARE PAEDIATRIC CONDITIONS CAUSING A DELAY IN DIAGNOSIS OF CYSTIC FIBROSIS**

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Cystic fibrosis is a complex but common inherited condition resulting from abnormalities in the gene that code for the cystic fibrosis transmembrane conductance regulator. The clinical picture is variable, but usually includes symptoms from injury to the primary organs involved (exocrine pancreas, lung, sinus, liver, intestine) as well as an array of secondary complications. Recently we have experienced three cases of cystic fibrosis occurring in the setting of other rare conditions – Jervell Lange Neilson, pyridoxine dependent seizures and ataxia telangectasia. Each of these obscured the symptoms and hence led to a delay in the diagnosis. One of the cases involved a child with a normal sweat test but genetic confirmation of cystic fibrosis. By describing these cases we hope that practitioners will consider a diagnosis of cystic fibrosis even when faced with other conditions which could contribute to the symptoms.
REVALUATION OF THE CASES OF CONGENITAL HYPOTHYROIDISM WITH THYROID IN SITU IN CALABRIA REGION AND GRADUATED REDUCTION OF SUBSTITUTIVE THERAPY

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Objectives: Congenital hypothyroidism (CH) is the most frequent endocrinopathy of infancy caused by thyroid dysgenesis, omo-rogenesis defects or ipotalamo-hypophyseal alterations preventable through neonatal screening. We studied in Calabria the impact on neonatal screening for CH of the TSH new cut-off (8 mU/L) that was introduced from 2002, and the revaluation of cases of CH with thyroid “in situ” with graduated reduction of substitutive hormonal therapy.

Methods: From January 1991 to December 2006, 202 patients (85M-117F) with CH have been identified through neonatal screening and followed for almost one year after diagnosis. The parameters valued for the suspension of the substitutive therapy were: age >1 year and unchanged therapy since the diagnosis.

Results: From 1991 to 2001 positive cases/year have always been <10; from 2002 they have been >20. In patients with thyroid dysgenesis TSH average values at the first sample of neonatal screening (2002–2006), was 223 mU/L (range 15–1100) while with thyroid “in situ” was 60 mU/L (range 8–390). Etiology was: 47% thyroid “in situ”, 22% hypoplasia, 21%agenesis, 10% ectopia.

45 males and 29 females had thyroid “in situ”, 10 were detected in 1991–2001 and 64 in 2002–2006: 7 patients have interrupted therapy; 33 are now in graduated reduction therapy; 34 are going on with therapy. These will be followed up to the 18th year.

Conclusions: Most of these patients have had a transitory CH. It is important the follow-up after a break in therapy to detect future deficits tied to the neonatal transient malfunction of the thyroid. It is possible that some more CH patients with thyroid “in situ” would not have been diagnosed with the preceding TSH cut-off (20 mU/L).

FACTORS INVOLVED IN MATURATION OF HIP JOINT: ANALYSIS ON AN UNSELECTED INFANT POPULATION

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Objective: To assess the incidence of DDH and to evaluate the role of feeding, D vitamin implementation, sex, age and fetal position as predictive factors for the withdrawal of the nucleus of ossification of the femoral head in an unselected population of infants.

Methods: 1997 infants aged between 4 and 14 weeks (average age 9.8 ± 1.95 weeks; M/F = 1015/957) studied in a Pediatric Ward between 2006 and 2007 have been recruited. All subjects were examined by ultrasound with Graf’s method; their parents received a questionnaire for anamnestic data.

Results: The incidence of pathological cases resulted in agreement with the European data (5%) even if the cases of physiologically immature hip appeared lower compared to these data (4.5%). The average age of nucleus of ossification’s withdrawal was 10.7 weeks.

The presence of the nucleus of ossification was correlated with weight at birth (p = 0.005), weight (p = 0.007) and age at the time of the examination (p = 0.000) and female gender (odds ratio = 2.720), where neither the position during pregnancy, nor the kind of feeding (breast feeding or formulated milk), nor the D vitamin addition seemed to interfere significantly with the hip maturation.

Conclusions: Our observations suggest that bone maturation is conditioned by individual constitutional elements, as if bony transformation of cartilaginous nucleus would be, for each subject, determined by previous factors (genetics, hormonal) and therefore less influenced by external elements (nutritional, mechanical).

INDICATIONS AND TIMING OF THYROID FUNCTION TESTS IN NEWBORNS

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Background: Thyroid disorders affect approximately 1 per 3000 term infants. The majority are congenital hypothyroidism picked up by newborn screening (Guthrie). International guidelines advise checking TFTs in infants born to mothers if there is an autoimmune basis to the maternal thyroid disease or unknown cause. Testing should be deferred until 72 hours after delivery.

Aims:
► Audit TFTs performed on neonates in the Rotunda.
► Assess if the test was: indicated, done at the right time and an adequate sample.

Methods:
► Internal laboratory computer system.
► Chart review.

Results:
► 57 infants had TFTs Jul–Dec ’07.
► 15/89 samples (17%) were insufficient.
► 5 with abnormal results: 4 detected by Guthrie and 1 presented with hypoglycaemia.
► 17 infants had TFTs as a result of maternal thyroid disease. Of these: 11/17 were taken for the wrong reason or at the wrong time. 4 too late (>day 14) and 4 too early. 8/17 had TFTs performed unnecessarily as the mothers had previous surgery for benign thyroid lesions. None of these samples yielded positive results.

Conclusion:
► The Guthrie remains the gold standard screen for identifying infants with thyroid disease.
► This audit highlights the need for a guideline indicating appropriate indications and timing of TFTs for infants born to mothers with thyroid disease.
► In high-risk mothers with known antibodies or no known cause for their thyroid disease then samples must be correctly timed, to avoid repeated phlebotomy and missing potentially life-threatening thyrotoxicosis.

SCREENING DIFFICULTIES IN CONGENITAL HYPOTHYROIDISM: A CASE SERIES

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Objectives: To emphasize the screening flaws regarding 2 cases with normal TSH values at birth who were later diagnosed with hypothyroidism.

Methods: The authors present 2 cases. First case, a 1 month old neonate, was admitted for impaired suction and growth. The clinical examination revealed jaundice, epicranial haematoma, shineless hair and umbilical hernia. The second case, a 4 year old girl, was investigated in the context of mental retardation. The clinical exam has shown obesity, mental retardation and severe speech delay.
Results: In the first case, the investigations have shown ABO incompatibility, increased bilirubin blood level, increased TSH level and low levels for FT3 and FT4 hormones. In the second case, the thyroid function tests have revealed very low levels not only for TSH, but also for thyroid hormones.

Conclusions: The differential diagnoses were made for persistent neonatal jaundice in the first case and for obesity and mental retardation in the second case. The screening procedures in our country for hypothyroidism need to be re-evaluated: it is mandatory to complete the evaluation of the thyroid function (TSH, FT3 and FT4) in cases with low TSH levels.

EARLY HEARING SCREENING: WHAT IS THE BEST STRATEGY?

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Objectives: The purpose of this study was to assess and compare the results of early hearing screening and its impact on the parent–infant relationship according to the time at which screening was performed: during the infant’s stay in the maternity unit, in the first strategy, or two months after discharge, in the second strategy.

Patients and Method: 5,790 infants participated in the study: 3,202 were included in the first strategy and 2,588 were included in the second strategy. Within this population, 143 mother–infant pairs were submitted to psychological assessment. We compared the number of infants screened: the number of first positive tests, the number of false-positive tests and the number of infants not reviewed after screening. Adverse effects on the parent–infant relationship were evaluated in terms of maternal anxiety and the quality of early interactions.

Results: A statistically significant difference in favor of newborn screening was demonstrated for all screening endpoints. Analysis of the results of the psychological assessment showed that screening per se did not have any impact on parent–infant relationship, regardless of the screening strategy used. However, the result of the test had a significant impact. Announcement of a positive result increased maternal anxiety and affected the quality of early interactions. As the number of positive results is significantly lower in newborn hearing screening, there are consequently fewer psychological side effects with this strategy than with the second strategy.

Conclusion: This study demonstrates that universal newborn hearing screening is the most efficient strategy.

POSTNATAL TESTING OF THYROID FUNCTION IN NEWBORNS: ARE THEY ALL NECESSARY AFTER ROUTINE SCREENING IN THE UK?

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Objective: To report 20 cases with phenylketonuria (PKU) detected by neonatal screening program in Thailand

Method: Blood samples were collected by filter paper method before the newborns were discharged from the hospital. Elevated blood phenylalanine was identified by the Guthrie test. The diagnosis was confirmed by plasma amino acid analysis and testing for tetrahydrobiopterin deficiency.

Result: A total of 5,243,841 newborns were screened, with 16 cases being confirmed as having PKU. 4 additional cases of PKU who were siblings of screening detected cases were not screened. The patients who were diagnosed through the newborn screening program after treatment have a normal growth and development, except 2 cases who subsequently were found to have a 6-pyruvoyl-tetrahydropterin synthase deficiency. Another 4 cases who were not screened presented with delayed development, microcephaly, hypopigmented hair and skin, and one case developed seizure. Although these patients were treated with a phenylalanine restricted diet, all of them had moderate to severe psychomotor retardation.

Conclusion: 20 cases of PKU including 16 cases who were detected by the newborn screening program have a good outcome due to early detection and treatment, and 4 cases who were diagnosed later have psychomotor retardation. The results of this study confirm the benefit of early detection and treatment of PKU through the screening program.
Poster session: sepsis/nosocomial infections

**BACTEREMIA IN PEDIATRIC PATIENTS WITH VENTILATOR ASSOCIATED PNEUMONIA**

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**Introduction:** The objective of this study was to compare bacteremic and non-bacteremic ventilator associated pneumonia (B-VAP and NB-VAP) in terms of risk factors, organisms and outcomes.

**Methods:** A retrospective, single center, observational, cohort study was performed in a pediatric intensive care unit. All patients, requiring mechanical ventilation, and identified as having VAP in a 4-year prospective surveillance database (2004-2007) were included. Criteria of the CDC were used for the diagnosis of B-VAP and NB-VAP. The two groups were compared in terms of risk factors, organisms and outcomes.

**Results:** During the study period, 39 patients developed 40 episodes of VAP, accounting for an incidence rate of 3.5 per 100 admissions and a density incidence rate of 5.2 per 1000 patient-days. B-VAP was documented in 11 patients (27.5%) of the 40 microbiologically confirmed VAP episodes. B-VAP occurred later than NB-VAP (18.5 ± 15.9 vs 8.4 ± 3.5 days; \( p = 0.002 \)). There was no difference between the two groups concerning the use of antibiotherapy, invasive procedures and sedation.

*Pseudomonas aeruginosa*, involved in 27.2% of bacteremic episodes and 51% of non-bacteremic episodes, was the most common organism causing VAP in the two groups. The mortality rate was higher in the Bacteremic group (65.6% vs 20.7%; \( p = 0.02 \)). The estimated relative risk of death for bacteremic cases was 3.6 (95% CI 1.3 to 10.2).

**Conclusion:** B-VAP occurred later during intensive care unit stay, was often caused by *Pseudomonas aeruginosa* and was associated with increased intensive care unit mortality.

**JAUNDICE, UNREMITTING HYPERPYREXIA, HAEMATURIA AND IMPELLING SHOCK IN A 16 YEAR OLD BOY**

DM Chan, MO Chan. Department of Pediatrics, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada

**Objective:** To demonstrate the successful salvage of a 16 year old boy suffering from multiple organ failure, severe sepsis with impending Gram negative shock with aggressive combination antibiotic treatment.

**Method:** Case presentation: A 16 year old boy returning from India presented with a five day history of unrelenting fever up to 41°C, non-responsive to treatment with amoxicillin and clavulanic acid, becoming severely lethargic, jaundiced and passing black stools. Initial laboratory tests showed a WBC of 29000, platelet of 467,000, mean heart rate was 154.5 pm, initial average white blood cells becoming severely lethargic, jaundiced and passing black stools. Initial laboratory tests showed a WBC of 29000, platelet of 467,000, mean heart rate was 154.5 pm, initial average white blood cells

**Results:** Aggressive salvage treatment: IVIG 20 grams given together with normal saline in 5% dextrose, IV tigecycline 100 mg and linezolid 600 mg, given simultaneously with dexamethasone 12 mg IV. He was completely afebrile. IV linezolid was discontinued after 36 hours with immediate resumption of fever. Tigecycline was not sufficient to control the Gram positive sepsis. Reintroduction of linezolid induced immediate response.

**Conclusion:** 7 days of resistance defensive antibiotics is life saving.

**KINGELLA KINGAE ENDOCARDITIS WITH CEREBRAL EMBOLI IN A 10-MONTH-OLD CHILD**

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*Kingella kingae* is a fastidious gram-negative bacillus that is being increasingly recognized as pathogen in both children and adults. It is the second most frequent germ involved in arthritis affecting young children, and with the help of polymerase chain reaction (PCR) is currently being described as the first germ involved in arthritis affecting infants under two years old. Other unusual septic localizations have been described, such as endocarditis, or meningitis.

**Case report:** Patient A was a previously healthy, immunocompetent 10-month-old female. She was admitted with a sudden left hemiplegia. No event except an isolated fever since five days was reported. The brain MRI showed a recent right tempo-parieto-occipital and left occipital stroke with embolic occlusion of the right middle artery and of the left posterior cerebral artery. Clinical examination revealed a cardiac systolic murmur not previously heard. The echocardiogram showed normal cardiac anatomy with good left ventricular function but highlighted an aortic endocarditis.

**Discussion and Conclusion:** This unusual case of *K kingae* endocarditis with cerebral emboli in a young infant with no congenital heart defect emphasizes the pathogenicity of this microorganism. This story can suggest that endocarditis must be systematically checked in children presenting with *K kingae* arthritis. *K kingae* must be searched for by specific PCR in cases of negative blood culture endocarditis in children under two years old. Probabilistic anti-infectious treatment has to be discussed.

**DESCRIPTIVE STUDY OF NON-NOSOCOMIAL SEPSIS CASES DURING THE NEONATAL PERIOD**

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**Objective:** Description of the non-nosocomial sepsis cases during the neonatal period.

**Methods:** Retrospective descriptive bicentric review from January 2004 to December 2007 of the neonates in which non-nosocomial infection was suspected. Related risk factors and clinical and laboratory data were analysed.

**Results:** 227 neonates in which infection was suspected were admitted to the unit during this period. The mean gestational age was 37.4 w, the mean weight was 2297.94 g and the average neonatal age at the diagnosis was 92.5 h of life. In all cases a lumbar puncture was done and a sample for blood culture obtained. 67.4% of the cases were early sepsis. There were no associated risk factors in most of the cases. 77.1% of the neonates had symptoms when diagnosed, of which fever was the most common (57.4%). The mean heart rate was 154.5 pm, initial average white blood cells...
account was 14233.5/mm³ and the initial mean RCP level was 12.5 mg/L. The blood culture was positive in 14.5% of the cases. The bacterial pathogens encountered were: *S. agalactiae* (33.3%); gram negative bacillus (33.3%). In 5.3% of the newborn, meningitis was diagnosed after abnormal CSF values. In 33% of the cases a pathogen was isolated from the CSF culture (50% enterobacteria). 12.8% of the neonates were diagnosed with urinary tract infection: *E. coli* was isolated in 69% of these cases.

**Conclusions:** In this study nosocomial sepsis cases during the neonatal period are reviewed. The results obtained were similar to other published studies.

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**INFECTIVE ENDOCARDITIS DUE TO NEISSERIA MENINGIDITIS: AN INTERESTING CASE REPORT**

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**Objective:** To report the case of a child with infective endocarditis caused by *Neisseria meningitidis*.

**Description:** A 21 month old was transferred to our intensive care unit from our accident and emergency department with a provisional diagnosis of bronchiolitis/pneumonia with increasing respiratory distress. On admission, the child was hemodynamically compromised, and needed mechanical ventilation. As the child was being stabilized, she deteriorated rapidly into pulseless electrical activity and could not be revived despite full cardiopulmonary resuscitation. Echocardiography performed during the process of resuscitation was inconclusive. As the diagnosis was uncertain, a full post mortem examination was performed. This revealed large vegetations of the aortic valve with destruction of cusps and abscess formation of the myocardium. Blood culture grew *Neisseria meningitidis* isolate.

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**THE INCIDENCE OF THE INFECTIONS AND THE SENSITIVITY OF KLEBSIELLA STRAINS ISOLATED IN PEDIATRICS WARD**

**EMERGENCY COUNTY HOSPITAL**

1 R Stoicescu, °C Mihai, ¹A Balasa, ⁴V Cuzic, ²L Mihai, ³M Stefan, ⁵E Gorun. ¹Discipline of Microbiology, Faculty of Medicine, Constanta, Romania; ²Discipline of Pediatrics, Faculty of Medicine, Constanta, Romania; ³Marmedic Laboratory, Constanta, Romania; ⁴Prodiagnostic Laboratory, Constanta, Romania

**Objectives:** To investigate the incidence of infections with *Klebsiella* spp in the Pediatric ward of the Emergency Clinical Hospital in Constanta and to detect the sensitivity to antibiotics of isolated strains, during a period of one year.

**Methods:** The pathological specimens were represented by urine, sputum, throat specimen, ear secretion, pus, stools. The disk diffusion method Kirby Bauer was used in the bacteriology laboratory for the detection of the sensitivity of the isolated strains and tested the sensitivity for 16 antibacterial drugs.

**Results:** A total number of 38 strains have been isolated: 17 strains (44.76%) from urine, 6 strains (15.78%) in sputum, 2 strains (5.26%) in blood culture, 1 strain (2.63%) in ear secretion, and 12 strains (31.5%) in stool cultures. The sensitivity to antimicrobial agents of isolated strains was as follows: 29 (76.31%) sensitive to ciprofloxacin (the highest sensitivity in our study), 23 (60.52%) sensitive to amikacin, 25 (65.78%) to ceftazidime, 26 (68.42%) to imipenem, 20 (52.63%) to aztreonam, 21 (55.26%) to gentamycin, and 22 (57.84%) to netilmicin.

**Conclusion:** *Klebsiella* spp are responsible for a significant number of hospital-acquired urinary infections, pneumonia, septicemias, wound infections, diarrhoea. The reservoir is the gastrointestinal tract and the hands of hospital personnel. They tend to aquire rapid resistance to antimicrobial drugs. In our study the best sensitivity was obtained for quinolones, imipenem and third generation of cephalosporins.

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**CAN A NEGATIVE EAR CULTURE RULE OUT AN EARLY ONSET SEPSIS?**

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**Objective:** Neonates are frequently treated with antibiotics direct postnatally. Given the low rate of early onset sepsis (EOS) and the side effects of antibiotics, a restrictive approach is necessary. Negative blood cultures are considered helpful to evaluate discontinuation of antibiotic treatment. When results of blood cultures are not available, other cultures may be helpful. We determined the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of an ear culture taken for the diagnosis of EOS.

**Methods:** Data of simultaneously taken blood cultures and ear cultures were retrospectively analyzed in neonates admitted between 1998 and 2004 to a tertiary neonatal intensive care unit on the first postnatal day.

**Results:** In 156 of 369 neonates a positive ear culture was found and 15 of 369 neonates had a blood culture proven EOS. 12 positive ear cultures were found in 13 neonates with a blood-culture proven EOS. One blood culture was positive for a coagulase negative staphylococcus after 3 days, but the ear culture was negative. The sensitivity, specificity, PPV and NPV were 95%, 60%, 7.7% and 99.5%, respectively.

**Conclusions:** A negative ear culture almost completely rules out the presence of an EOS. When no blood culture is taken or when there is doubt about the reliability of the blood culture, a negative ear culture can help in the evaluation to discontinue antibiotic treatment.

**van den Broek et al. Microbiologic results of ear cultures and blood cultures obtained on the first day of life**

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**A NEW CASE OF INFANT BOTULISM DUE TO PACIFIER DIPPED IN HONEY**

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**Introduction:** We report a case of infant botulism caused by artisanal honey. Infant botulism results from a heat-labile neurotoxin produced by ingested *Clostridium botulinum* which blocks voluntary motor and autonomic functions. There is no consensus about treatment.

**Case report:** A four-month old girl, without any previous history, was hospitalized in emergency for acute hypotonia and lethargy. Parents reported poor feeding, and constipation. She rapidly developed respiratory failure and needed supportive intensive care, including mechanical ventilation. Clinical examination showed a major hypotonia with slow pupil response. She developed an antidiuretic hormone excess. The virological, bacteriological, toxicological and metabolic check-up was negative. MRI and electrocardiogram were normal. Belatedly, the parents confessed to dipping the patient’s pacifier in artisanal honey over a few weeks. Blood, stool and honey samples were sent for culture. Stool cultures showed neurotoxin of *Clostridium botulinum* type B. The patient’s clinical status improved spontaneously with good recovery.

**Discussion:** The possible origins of botulinic spores are dust and honey. Treatment consists of nutritional and respiratory support until new motor endplates are regenerated. There is no indication...
for antibiotics; it has been reported that it would increase bacteria proliferation and toxin liberation. An antidiuretic hormone excess is described.

**Conclusion:** Infantile botulism classically presents with bulbar palsies, ptosis, constipation and poor feeding. Diagnosis is clinical. Sometimes a classic electromyogram pattern can be found. Diagnosis is confirmed by isolating the organism or toxin. This case, like others described in literature, leads us to recommend that honey should not be given to very young infants.

**EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO) FOR ACUTE RESPIRATORY DISTRESS SYNDROME DUE TO PNEUMOCYSTIS JIROVECI PNEUMONIA IN AN INFANT WITH AIDS**

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**Background:** The use of extracorporeal membrane oxygenation (ECMO) for septic patients is still not generally accepted. To our knowledge there are no reports on ECMO for paediatric patients with severe respiratory failure due to known HIV infection.

**Case report:** We report on a 3½ month old female infant with failure to thrive and recurrent respiratory tract infections who was admitted to hospital with pneumonia. Empiric antibiotic therapy was commenced but within several days the child deteriorated to ARDS. Intensive care management included high frequency oscillation ventilation (HFOV), inhaled nitric oxide (iNO), corticosteroids and repeated surfactant instillation. *Pneumocystis jiroveci* could be detected in the tracheal aspirate and advanced septic work-up revealed infection with HIV type 1. As no satisfactory oxygenation could be achieved, we decided to apply ECMO (venovenous, 15 French cannulae, flow maximum 120 ml/kg/min) achieving respiratory as well as hemodynamic stability. The infant could be weaned off ECMO after 12 days. As soon as the diagnosis of HIV infection was established a highly active antiviral therapy (HAART) was commenced, resulting in a significant reduction of virus load. After 136 days the child could be discharged. So far only treatment on outpatient basis has been necessary.

**Discussion:** We show that the application of ECMO in early infancy for treatment of severe respiratory failure due to AIDS can be successful. As new antiviral treatment regimens may offer better outcome results the indication for implementing invasive therapeutic strategies such as ECMO in those children has to be discussed.
Poster session: social paediatrics

THE GENERATION GAP IN NUMBERS: PARENT-CHILD DISAGREEMENT ON YOUTH'S EMOTIONAL AND BEHAVIOURAL PROBLEMS. A GREEK COMMUNITY BASED-SURVEY

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Objective: To evaluate discrepancies between parent and child reports on youth’s emotional and behavioural problems in a representative, community based sample of Greek 18-year-olds, and to identify associated factors.

Methods: A total of 2927 completed pairs of parent–child questionnaires were studied, including the Child Behavior Checklist (CBCL) and the Youth Self-Report (YSR). Multinomial logistic regression analysis was used to identify both child and parental factors significantly associated with overestimation and underestimation of scores for youth's on the Internalizing, Externalizing and Total problems scales, compared to parent–youth agreement on the above scale scores.

Results: Although there was a strong correlation between scores on the YSR and CBCL corresponding scales, parents were more likely to underestimate their youths’ problems when the latter were girls, had a good academic performance, were dissatisfied with their self-image or their lives in general, and overvalued sexual activity. Parental factors that were likely to bring about the same outcome were: having many children, mothers working outside home, and lack of awareness of child’s leisure activities. On the contrary, maternal stress and low paternal education were significantly associated with overestimation of youths’ delinquent behaviour.

Conclusion: The associations found highlight the contributions of both parents and children to the discrepancies on emotional and behavioural problems in adolescence. This study may facilitate constructive parenting practices through generations.

ADOLESCENTS WITH ADHD IN TRANSITION TO ADULTS AND NOWHERE TO GO?

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Objective: Adolescents with ADHD are now leaving children’s services often with no support. There are no protocols or guidelines on management of this particular group. Objective of this study was to gather and disseminate information on management of adolescents with ADHD during transition to adults and feed this information into the planning process.

Methods: Retrospective review of case notes of ADHD patients born during 1989 to 1992, who had been seen and discharged or in process of discharge in 4 year period between 2005 and 2008.

Results: 16 cases were identified. Of these 14 (87%) were on medications. Medications prescribed were short-acting methylphenidate in 4 (28%); long-acting methylphenidate in 9 (64%), and omega 3 in 1 (7%). CASMMeS were involved in 10/16 (62.5%). Of 16, 9 (57%) patients did not require any further referral. However, 7 (43%) of them needed medication into adulthood and were referred for follow-up at 16 years of age. Of 4/7 patients first referred to the general practitioners, 2 were felt to be inappropriate by them and 1 further was also felt to be inappropriate by mental health services (MHS). Of 3/7 patients first referred to MHS, 1 was followed up and 1 was felt to be inappropriate. There was no uniform referral policy and management plan for adolescents with ADHD.

Conclusion: Our data show the impending need for transitional ADHD services to deal with this complex disorder. The data also highlight the need for planning process which should involve representatives of primary care, CAMHS, Community Paediatrician and Adult Mental Health.

PSYCHOSOCIAL FUNCTIONING AND SLEEP PATTERNS IN CHILDREN AND ADOLESCENTS WITH CLEFT LIP AND PALATE (CLP) COMPARED TO HEALTHY CONTROLS

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Objective: The aim of this study was two-fold: to assess psychosocial functioning, interactional competencies, and sleep patterns in children and adolescents with cleft lip and palate (CLP); to compare these results with those from age- and gender-matched controls. It was hypothesized that participants with CLP would show increased difficulties in psychological functioning, more interactional difficulties and poorer sleep patterns.

Methods: Thirty-two children and adolescents with CLP, and 34 controls were recruited. Ages ranged from 6 to 16 years. For psychosocial assessment, the Strength and Difficulties Questionnaire (SDQ) and a questionnaire on interactional competencies (PIELCQ) were completed; for sleep assessment, a sleep log was completed for seven consecutive nights.

Results: Participants with and without CLP did not differ with respect to emotional problems, conduct problems, or hyperactivity. With respect to interactional competencies, participants with CLP were six times more likely to report difficulties. Unfavorable sleep patterns were associated with psychosocial strain, but not with the presence of CLP.

Conclusions: Results indicate that children and adolescents with CLP may complain about sleep irregularities as much as people without CLP. In adolescence, the presence of CLP may cause increased difficulties. Consequently, skill training to improve context-related social competencies may be appropriate.

FOOTBALL IS GOOD FOR YOUR SLEEP: EVIDENCE OF POSITIVE ASSOCIATIONS BETWEEN REGULAR SPORTS ON SLEEP IN MALE ADOLESCENT FOOTBALL PLAYERS

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Objective: Commonplace and the scientific community hold that physical activity exerts a favorable impact on sleep in adulthood. For adolescence, research is scarce, although restoring sleep is crucial for psychological functioning and cognitive–emotional performance during this period of life. The aim of the present study was, therefore, to investigate the impact of regular football training on sleep patterns in adolescents.

Method: A total of 36 male regular football players and 34 controls (mean age: 16 years; average time spent for physical exercise per week was 12 hours for the regular football players, and 1.5 hours for the controls). Exercising consisted of four...
training sessions and an official game on a weekend day. Participants were controlled for educational level, and for depression and anxiety scores. They completed a sleep log for seven consecutive days.

Results: Compared to controls, regular football players reported significantly shorter sleep onset latency (SOL), less awakenings after SOL, and higher scores of sleep quality and mood. They referred higher scores of concentration and lower scores of tiredness during the day. The variability of sleep duration and bedtime from weekday to weekend was significantly smaller among regular football players when compared to the control group.

Conclusions: The study’s findings suggest that for male adolescents, regular sports is positively associated both with quantitative and qualitative dimensions of sleep. Moreover, regular physical activity on weekends such as playing football games seems to reduce unfavorable variations of sleep duration and bed time on weekends.

IS THE INCREASE OF HYPOMANIC STAGES DURING ADOLESCENCE GENDER- AND DEVELOPMENTAL TASK-RELATED?

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Objective: Hypomanic states are observable among patients suffering from bipolar II and minor bipolar disorders, and in non-clinical samples. Furthermore, there is evidence that females may be at risk for developing affective disorders. We studied hypomanic stages in adolescents, focusing on ‘active/elated’ and ‘risk-taking/irritable’ hypomania scores and on gender.

Methods: Of 107 adolescents (mean age: 17.98; SD = 1.33) sampled, 60 indicated they experienced intense romantic love, while 47 had a longer lasting relationship or were singles. Following a screening interview for psychiatric participants, physicians completed the Hypomania Check List (HCL-32, Angst et al, 2005). Their data were compared with those of adult patients suffering from bipolar II disorders.

Results: Scores of adolescents in intense romantic love did differ from those from controls, but not from those of patients suffering from bipolar II disorders. Comparisons of factor analytic scores revealed that both groups of adolescents displayed higher overall scores for the factor ‘irritable/risk-taking’ hypomania. Furthermore, a gender-related pattern was found, with greatly increased scores for female adolescents.

Conclusions: In professional contexts, adolescents’ developmental tasks surrounding experiences in social, psychosexual and substance-use-related engagement will be encountered. These experiences may lead to temporarily and gender-dependent hypomaniac-like stages.

WHERE SHOULD JOINT EFFORTS OF FAMILY-COMMUNITY-MEDICINE BE ON IN KOREA? ATOPY-FREE PROJECT OF KOREAN GREEN FOUNDATION-HAMS OA CLINIC

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Objective: To investigate the understandings on AD intervention of child-care institutions and to assess the dermatological changes of their AD patients after herbal medical treatment additionally.

Methods: Children in child-care institutions around Seoul were screened and diagnosed to be treated with herbal medicine within 2 months. Circumstances, understandings over AD and modified Children’s Dermatology Life Quality Index (CDLQI) questionnaire were answered by teachers in charge.

Results: 61 patients enrolled. Age average was 9.0 ± 3.4, height and weight percentile was 40.3 ± 28.8 and 42.6 ± 51.6, respectively. 54 questionnaires were answered and analyzed. 49 patients (90.7%) were 24-hour living in their institution and age of first finding AD was 6.7 ± 3.6 years old. 52 patients (96.8%) were out of institutional extra AD program, and the reasons were ‘slight symptoms’ (54.5%), ‘expected parents management’ (17.1%), and ‘not enough budget’ (8.6%), etc. However, 51 answers (94.4%) were ‘needs medical treatment’ and the most important factors for the treatment were answered; ‘active and sustainable treatment’ (21.3%), ‘medical aid for low-income family’ (18.5%), ‘skin hygiene’ (15%), ‘familial concerns and efforts’ (15.1%), and ‘food control’ (14.8%), etc. CDLQI analysis showed the improvements by herbal treatment as follows: sleep loss (~59.3%), pruritus (~57.2%), depression (~54.1%), clothes stimuli (~40.4%) and classmates’ ignorance (~59.5%) significantly.

Conclusions: This study showed AD patients in a child-care institution need: 1) Earlier diagnosis on AD, 2) Medical and Budgetary support for low-income family, 3) Psychological stability within friendship and teacher-patient relationship by the institutional AD program and 4) Education for inducing familial concerns on their child.

MEDICAL AND LEGAL EVALUATION OF FEMALE CHILD ABUSE IN HUNGARY

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Objective: To summarize the characteristics of child sexual abuse, and explore common features that may be utilized as targets for methods of prevention.

Methods: We involved 209 girls who had been exposed to sexual abuse who visited our Department. We prospectively collected data regarding the characteristics of all cases. Legal procedures were evaluated.

Results: 76% of the victims were students, and 47% were between 11 and 14 years of age. Perpetrator was familiar to the victim in 66% of the cases, and a stranger in 34%. Fifty-two (25%) perpetrators were intrafamiliar. He was the victim’s father in 11%, and the stepfather in 10%. The abuse occurred on multiple occasions in 21%. Occurrence rate of assault was the highest in the summer season (59%). 39% of victims were accompanied by their mothers and 45% by the police. Vaginal penetration was the type of abuse in 80%, and sexual perversión in 20%. 66 victims were physically injured; the presence of sperm could be confirmed on vulvovaginal smears in 38 cases. 127 cases were reported to the police and as a result of legal proceedings 56 perpetrators have been sentenced.

Conclusion: A high proportion of female child sexual abuse takes place within the family and is revealed only after multiple episodes. Low reported prevalence of sexual assault is the consequence of the lack of harmony between the conditions of emergency care in Hungary and the Hungarian criminal law. Prevention requires vigilance at off-school times, education, early involvement of health professionals, and adjustment of jurisdiction.
THE MICROBIOLOGICAL AND POLICY IMPACT OF GUIDELINES ON TREATMENT OF ACUTE OTITIS MEDIA

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Background and Aim: Over-prescription of antibiotics in otitis media has been a major factor in the evolution and spread of resistant strains of bacteria. This has led to many organisations in many countries producing guidelines somewhat restrictive of clinical freedom to prescribe antibiotics in acute otitis media. We sought evidence on whether these had sufficiently controlled the problem as perceived in the 1990s.

Methods: We searched for review and major primary evidence of two main types: (1a) clinical opinion/awareness surveys; (1b) activity databases on prescriptions and consultations; (2) specific studies on carriage and prevalence of resistant strains where changed clinical behaviour could be confidently invoked as cause of reduced resistance.

Results: There was congruent but limited and not strong or highly-controlled evidence from both sources for beneficial effects. The argument is still most directly supported by microbiological studies in small numbers of individuals or on only moderately controlled comparisons internationally and/or over time.

Conclusions: (1) The introduction of guidelines favouring rational prescribing has probably had beneficial effects, but it is difficult to claim consequent massive reductions in resistance or to be sure that there have been no consequent harms. (2) Some countries with healthcare systems and beliefs lacking strong feedback mechanisms or sanctions are still performing poorly. (3) The implementation of universal preventive programmes targeting OM would reduce resistance both directly and indirectly via herd immunity, and would offer stronger support for conservative and rational prescribing via lowered perceived risk.

OUR LITTLE PAINTERS

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Objective: Anaesthesia, surgical intervention and hospitalisation have a significant effect in children’s later negative behaviour changes. In order to entertain the children we have started to age from mother and child shelters formed the control group. Children’s growth, psychomotor development, neurotransmitter (catecholamines), neuroendocrine (growth hormone) and immune (CD3, CD4, CD8) systems were investigated.

Results: The lower parameters of infants’ physical growth and psychomotor development in institutions compared to control were shown. A decrease in plasma growth hormone and serotonin levels in the basic group were noted too. Altered correlations between norepinephrine and dopamine concentrations in deprived infants indicated a blunted stress response among them. Dysregulation between CD4 and CD8 levels showed abnormal immune system maturity in deprived infants compared to the infants with maternal care in shelters.

Conclusion: Maternal deprivation induces growth and developmental retardation, high morbidity and abnormal stress response, associated with altered neurotransmitter level and disrupted processes of immune regulation.

MUNICH: THE EFFECT OF MULTICULTURALISM ON THE PSYCHOSOCIAL AND DEVELOPMENTAL DISABILITIES OF CHILD IMMIGRANT AND MINORITY POPULATIONS IN CYPRUS

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Objective: As part of an extended, multicultural study, our purpose was to evaluate the psychosocial status and developmental disabilities of child immigrant and minority populations in Cyprus and compare them with the Greek-Cypriot children of the predominant host society.

Methods: 560 parents completed Strengths and Difficulties Questionnaires, for children 4–13 years old, using Greek, English (UK) and Russian versions.

Results: There was statistical difference between migrant-minorities and Greek-Cypriot children, only for peer relationship problems subscale (Chi-square = 18.643, 2df, p<0.001, see fig). Total difficulties score were 7.5% abnormal for immigrants and 5.9% for Greek-Cypriots. Emotional problems were abnormal 11.8% and 13.4% respectively, whereas conduct problems were abnormal in 13.7% for immigrant-minorities, and 9% for Greek-Cypriots. Hyperactivity/inattention were almost the same, 5.6% and 5.5%, respectively. Prosocial behavior problems were 5.1% for immigrants-minorities and 2.4% for Greek-Cypriots.

Conclusions: Further study and analysis is needed to evaluate the factors involved, the etiology and the impact of the differences noted in order to provide adequate interventions.

MATERNAL DEPRIVATION INDUCED STRESS BIOLOGICAL MARKERS IN INFANTS

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Objective: Significance of the environment for health is increasingly being recognised. Child neglect in institutions is associated with adverse psychological and behavioral outcomes, increased morbidity and mortality among them. However, there are very few published studies about neurodevelopmental consequences of neglect. The present study is aimed for understanding the early effects of maternal deprivation on infants’ biological stress response systems.

Methods: The infants from Tbilisi Infants Orphanage at age from 1 month to 3 years were investigated. Infants of the same age from mother and child shelters formed the control group. Children’s growth, psychomotor development, neurotransmitter (catecholamines), neuroendocrine (growth hormone) and immune (CD3, CD4, CD8) systems were investigated.

Results: There was statistical difference between migrant-minorities and Greek-Cypriot children, only for peer relationship problems subscale (Chi-square = 18.643, 2df, p<0.001, see fig). Total difficulties score were 7.5% abnormal for immigrants and 5.9% for Greek-Cypriots. Emotional problems were abnormal 11.8% and 13.4% respectively, whereas conduct problems were abnormal in 13.7% for immigrant-minorities, and 9% for Greek-Cypriots. Hyperactivity/inattention were almost the same, 5.6% and 5.5%, respectively. Prosocial behavior problems were 5.1% for immigrants-minorities and 2.4% for Greek-Cypriots.

Conclusions: Further study and analysis is needed to evaluate the factors involved, the etiology and the impact of the differences noted in order to provide adequate interventions.
provide them with colour pen sets and notebooks and children started to paint.

Methods: Sixty children, aged 5–15 years, both genders, who were treated for different abdominal surgical procedures and spent more than two postoperative days in hospital, were included in the study. All children were provided with colour pen sets and notebooks in order to paint what they want. Our psychiatrists observe the children, analyse their paintings, and interpret them.

Results: During the observations 42 children draw their own houses, because they want to go back home as fast as possible. 20 of 28 girls draw flowers, dolls and butterflies. They express the way they see the world in their paintings. Initially those children older than 12 years refused to collaborate, but they started to involve themselves in the drawings and painting activities after a while. Drawing and painting activities help children communicate with each other and create lovely friendships. The psychiatrist’s perception was that the child was not deeply affected by their condition and treatment did not change the child’s emotional response to the disease.

Conclusions: Multiple interventions have been suggested to treat the preoperative behavioral stress responses in children; almost no outcome studies have evaluated the effects of the period during postoperative hospitalisation. We recommended this way of rehabilitation for all children who are in hospital rooms.

GROWTH PATTERNS IN A GROUP OF CHILDREN WITH CEREBRAL PALSY (CP) AND OTHER MOTOR DISORDERS ATTENDING A CHILDREN’S DEVELOPMENT CENTRE (CDC)

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Introduction: Poor growth in children with cerebral palsy (CP) has been well described in the literature.

Objective: This study assessed the growth of infants and children with CP and other motor disorders attending a CDC for treatment/rehabilitation, and fed only orally.

Subjects and Methods: 170 children, 96 males (56.5%), mean decimal age 4.3 ± 3.5 years, were recruited. Corrected age was used if the subject was <2 years old. Measurements included weight (Wt), length (L)/height (Ht), head circumference (HC), body mass index (BMI), and target height (TH). All data were compared with the national reference growth charts for healthy children. All measurements were performed by the same experienced paediatrician using equipment of great accuracy (Wunder electronic scales with seat mode, SECA 210 measuring mat, SECA 202 stadiometer).

Results: 6 children (35%) were born premature, and 23 (13.5%) resulted from twin pregnancies – 15 (65%) being twin I. Mean gestational age was 36 ± 4.2 weeks. In the boys’ group mean birth Wt (bWt) was 2.5 ± 0.9 Kg, bl 46.7 ± 6.6 cm, bHC 32.6 ± 3.9, TH 176 – 9 cm. At the time of measurement mean Wt was 15.8 ± 12.5 Kg, Ht 93.3 ± 23.9 cm, HC 46.7 ± 4.4 cm, and BMI 16 ± 2.8. In the girls’ group the parameters were: bWt 2.4 ± 0.9 Kg, bl 46.5 ± 4.8 cm, bHC 32 ± 3.8, TH 167 ± 5.3 cm, Wt 15 ± 13 Kg, Ht 92 ± 22.5 cm, HC 46 ± 4.4 cm, and BMI 16 ± 3. Only 21 boys (20%) and 11 girls (10.6%) were reaching two centiles of the 104 THs available.

Conclusions: Growth retardation among children with CP mainly is often attributed to feeding dysfunction and malnutrition, communication difficulties that inhibit requests for food, impaired expression of hunger or food preferences, and lack for self-feeding skills. Identification of risk factors associated with undernutrition is important for its early detection, treatment, and prevention of later behavioural and health consequences.

ATYPICAL EATING DISORDER IN A PRESCHOOL GIRL: COLLABORATIVE TREATMENT BETWEEN PAEDIATRICS AND CHILD AND ADOLESCENT PSYCHIATRY

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Objective: Clinicians have to be aware of psychological causes in cases of somatic complaints. Individualized treatment regimen and interdisciplinary treatment can optimize outcome.

Method: A six-year-old girl was presented to a paediatric ward with extremely low BMI (11.15 Kg/m², <3 perc.), weight loss, severe excciosis, bradycardia and central hypothyroidism. The girl complained about abdominal pain and pain on swallowing. After three weeks of intensive diagnostic work up without finding any somatic cause, the girl was seen in liaison by a child psychiatrist and moved to child psychiatric inpatient unit. During the stay at the paediatric ward parental nutrition was necessary and rooming in was provided for the parents.

Results: The patient presented with depressed state, loss of affect modulation and age inappropriate behaviour. Psychopathology and IQ (79) were assessed and the diagnosis of an atypical eating disorder (DSM-IV 307.50, ICD-10 F50.8) with concomitant depression and anxiety was verified. A CBT therapy program was established (token-system, cognitive modulation of triggers for anxiety). Rooming in was abandoned due to an inadequate (overprotecting) child–parent relationship. No substitution of nutrition was provided under strict control of vital signs and labs. Within a short period the girl starts drinking and eating. Two weeks later symptoms had disappeared and mood was normalized, and the central hypothyroidism which had normalized under parenteral nutrition didn’t reappear.

Discussion: Interdisciplinary treatment in cases of children with both somatic complaints and psychopathological symptoms is important and may shorten inpatient treatment. In this case it led to the final treatment success.

PARENTAL SMOKING AND INCREASED LIKELIHOOD OF FEMALE BIRTH

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Introduction: Over the past few decades, birth registries of developed countries have shown a significant decline in the male to female (M: F) sex ratio. The reason for this reduction is unknown, although increasing exposure to cigarette smoke at home has been reported as a possible contributor.

Aim and Methods: This was a retrospective cohort analysis to investigate the association of parental smoking with the offspring ratio among 8960 women who delivered singleton live births at the Liverpool Women’s Hospital between 1998–2003 and among mothers of 3038 children who were part of a community respiratory health survey conducted in 1998 and 2006.

Results: The prevalence of maternal pregnancy smoking was 32.7% and 32.4% for the hospital and community sample, respectively. The male to female ratio was 1.08 for the hospital sample and 0.97 for the community sample. The chance of female birth with pregnancy smoking was 1.2 times increased with the hospital sample and 1.4 times increased with the community sample. There was a significant dose response association of maternal smoking
with the fetal sex ratio, with heavy smokers (>10 cigarettes/day) more likely to deliver a female baby than light smokers for both community and hospital samples (p = 0.001 and p = 0.05, respectively). There was an independent association of parental smoking with a female birth, after controlling for year of birth registration, household deprivation, alcohol exposure and body mass index (adjusted odds ratio: 1.41, 1.12 to 1.92, p = 0.001) with the hospital sample.

**Conclusion:** Maternal cigarette smoke exposure prior to and during pregnancy increased the likelihood of a female birth.

**AN INNOVATIVE APPROACH TO SUPPORTING THE MILITARY CHILDREN OF ARMED FORCES FAMILIES: THE MILITARY YOUTH DEPLOYMENT SUPPORT PROGRAM**

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**Objective:** Emotionally connecting and engaging family support is crucial to maintaining military force prepared to perform vital combat missions. The authors’ collaboration with the American Academy of Pediatrics (AAP) is a model that has led to innovative funding to study and provide resources to military youth.

**Methods:** Objective data on the effects of current military deployments on child and adolescent mental health is only now becoming available. Work products from the AAP Health People 2010 Chapter Grant Program are included in the results section.

**Results:** 1. Creation of a DVD entitled Mr. Po and Friends Discuss Family Reunion After Deployment; 2. Creation of an AAP sponsored deployment support web site entitled Helping Children and Adolescents Through the Difficulties of Deployment in the Family; 3. Creation of a DVD entitled Military Youth Coping with Separation: When Family Members Deploy; 4. The Adoption of an AAP Resolution that was given a top ten prioritization at the 2007 Annual Leadership Forum; and 5. Development of a research protocol designed to measure the effectiveness of the video interventions as well as the mental health effects of deployment on military youth.

**Conclusions:** 100,000 copies of each video production were distributed and delivered to military youth across the world. It is anticipated that the awareness generated by this program will ignite a more urgent and comprehensive effort among researchers and policy makers to commit increased academic investigation and resources to the understanding of military youth during times of increased stress such as family deployment.

**MILLENNIUM GOALS OF PERINATAL HEALTH CARE DEVELOPMENT IN SERBIA**

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**Objective:** To perceive the indicators for MDGs follow-up perinatal health care in goal 4 (infant mortality reduction) and 5 (maternal health improvement), current and desired condition until 2015 in Serbia.

**Methods:** Analytical-descriptive study of demographic and vital indicators in the period 1991–2006.

**Results:** All mortality rates are continually decreasing: newborns (14.6–7.4/1000 livebirths), perinatal (14.3–9.1/1000 livebirths), neonatal (7.7–5.2/1000 livebirths). The main causes of death are respiratory distress and congenital anomalies. Ratio of children with low birth weight is maintaining (5.4%). Maternal mortality rates vary (1990–1994: 15.5, average 2000–2004: 5.6/100,000 livebirths). Fertility rate decreased 1.72–1.5. Deliveries under medical assistance are constant (99.6%). MDGs up to 2015 in relation to 1991 are: (1) decrease of mortality rate of children <5 for 2/3 (from 16.8 to 5); of newborns from 14.6 to 4.5; perinatal from 14.3 to 6.5, neonatal from 8 to 3; (2) follow-up and preventive of vulnerable groups; (3) increasing coverage of pregnant women by primary health care and early breast-feeding (from 15 to 30%).

**Activities:** Prenatal care strategy and plan of action; strengthening of mother and child health care services; education and evidence-based guidelines.

**Conclusion:** Achieving of MDGs in Serbia require receiving of demographic and epidemiological transition, improvement of information systems, follow-up of risky lifestyle indicators, regional and gender differences. Prenatal and early neonatal mortality are the most sensitive indicators of the health status of population in Serbia.

**THE POTENTIAL RISK OF THE SOCIOECONOMIC FACTORS FOR RECURRENT RESPIRATORY INFECTIONS IN BABIES**

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**Objective:** The risk factors for respiratory infections in children were analyzed in different studies realized in different countries, but they are variable according to the geographical area. Our goal was to analyze this factors in babies who presented more than 3 episodes of respiratory infection in the first year after birth.

**Methods:** We undertook a retrospective study on 230 babies who were hospitalized because of respiratory infections, at least 3 times a year in the general pediatric department. The study excluded premature babies, and children with underlying immune diseases or biological problems.

We analyzed the following socioeconomic factors: type of family, standard of life, ethic origin, family income, education background of the mother, number of siblings and smoking habits of the parents.

**Results:** 78% of the respiratory infections had bacterial complications and more than 3 recurrences were correlated with the low income of the family (unemployed, Roma ethnic origin).

In 15% of cases, all risk factors were identified for the same patient. They have been correlated with the high number of hospitalizations in the first year of life (more than 6), and with the abandonment of the child in the hospital in 2% of cases.

**Conclusion:** The identification of the socioeconomic risk factors for each hospitalized child may reduce the risk of subsequent illnesses, by the intervention of the social assistance services.

**HUMAN (MAMMALIAN) ORAL IMPRINTING: THE EVIDENCE IS THUMB AND DUMMY SUCKING**

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There are logical flaws in the current explanations of fixed thumb and dummy sucking.

1. The need to suck: This does not explain why infants fixate on one sucking object, say one digit out of 10 when thumb-sucking.

2. Hunger: There is no nutrition in thumbs and dummies; thumb-sucking will also occur after feeds.

3. It is normal behaviour: In societies where the babies are carried close to the bare breast then fixated thumb-sucking is rarely observed. Other mammals also fixatedly thumb or body part suck,
such as fixated penis sucking in monkeys when they are human reared.

4. It does no harm: Just as a monkey will suck the penis to the point of it becoming gangrenous, so human infants suck their thumbs to the point of excoriation and to the point of developing facial malocclusions.

5. It occurs as part of learning: One-teat preference, also known as teat fidelity, teat selection, teat territoriality, teat preference and nipple confusion is present across the mammalian spectrum, both altricial, premature and precocious.

It is important to differentiate between (1) bonding (adult type behaviour), (2) attachment (which occurs in infancy from about 6 months of age when the whole mother is recognised and differentiated from the environment), and (3) imprinting (which in the mammal is oral, occurs quickly after birth, and is on part of the mother or, as in thumb and dummy sucking, on a decoy). Oral mammalian imprinting can be considered a vestigial remnant and an evolutionary survival strategy.

PERCEPTION AND GENERAL KNOWLEDGE OF A CHILD MALTREATMENT PROBLEM AMONG MEDICAL STUDENTS

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Background: A problem of child maltreatment is often underestimated during medical education. According to a survey performed in Poland in 2002 10% of parents used at least one act of violence against their child.

Aim: The aim of the study was to learn the perception of a child maltreatment problem among medical students.

Materials and Methods: A cross-sectional study was performed among students in their 4th year of medicine in the Medical University of Warsaw. The validated (kappa score 0.8) self-fulfilled survey was administered to 245 students. The response rate was 68%.

Results: In the students’ opinion, medical professionals face the problem of domestic violence often (64% answered with this option (95% CI 60% to 68%)). Most of the students estimated their knowledge regarding the problem of domestic violence as not enough (55%) (95% CI 50% to 59%). The most known form of domestic violence was physical maltreatment of a child (82%) (95% CI 78.2% to 85.7%). 32% (95% CI 27% to 37%) of students believed they were able to recognize symptoms of child abuse. Most of them (83%, 95% CI 79% to 86%) were aware of the medical diagnosis of child maltreatment according to ICD10. A large group of medical students (89%, 95% CI 86% to 92%) declared difficulties in the interpretation of law rules regarding duties of medical staff in a case of diagnosis of child maltreatment.

Almost all students (98%, 95% CI 96.7% to 99.3%) found lectures and workshops dedicated to the problem of child maltreatment very useful and highly expected.

Conclusions: Knowledge regarding child maltreatment among medical students was poor; more educational activities are expected in this field.

TRANSLATING THE TEARS: YOUNG CHILDREN’S PAIN-RELATED COMMUNICATION WITH THEIR PARENTS

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Aim: Little is known about pain and illness communication between young children and their parents. We aimed to gain an in depth understanding of how parents make sense of their young children’s pain and illness expressions and how they respond to them.

Methods: 48 parents of children (1–5 years inclusive) participated in focus group discussions at 7 children’s centres across England. Parents were asked to describe their children’s communication of everyday pain and illness. Thematic analysis was used to encode the data.

Results: Three main themes were identified: 1) Parents believed children’s pain communication served multiple purposes including expression of physical and emotional distress, and the pursuit of various goals such as pain relief, attention seeking, and situation avoidance. 2) Parents faced challenges in interpreting their children’s pain behaviours due to limitations in children’s cognitive development and communication skills, but also due to their own beliefs towards childhood pain and illness. 3) Parents described some uncertainty in decision making about the nature and severity of children’s pain; this was associated with considerable distress regarding the best course of action for pain management and a fear of over- or under-treatment. Parents were critical of the health care system and reported that they are not always listened to by general practitioners.

Conclusions: Parents have well developed, although personal, ways of recognising and responding to their children’s communication of pain and illness; they need to be included as more active partners in their children’s pain assessment and management.

HAIR-THREAD TOURNIQUET SYNDROME IMITATING NON-ACCIDENTAL INJURY: A REPORT OF TWO CASES AND REVIEW OF LITERATURE

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Objective: Hair-thread tourniquet syndrome is an unusual condition and is often confused with non-accidental injury (NAI). We report 2 cases of hair-thread tourniquet syndrome presenting as NAI followed by a brief review of literature.

Methods: Case reports and literature review.

Results: Two children were referred with suspicion of non-accidental injury with circumferential wounds affecting the digits. The first child, an 11 week old boy, had a cut encircling the right third toe at the level of the distal interphalangeal joint. Swelling and erythema were present distal to the lesion. On further assessment the inside of the child’s socks was noticed to have loose threads. Grandmother reported pulling out a thread from the lesion sometime earlier. The other child, a 2 month old girl, presented with a similar lesion on the right thumb. She was noticed to be playing with mum’s hair frequently. Examination under an operating microscope revealed a hair within the lesion, which was removed. Both children recovered uneventfully.

Conclusions: Hair-thread tourniquet syndrome is a rare condition affecting the appendages, mostly in infants and young children. This can involve fingers, toes and sometimes genitals, when they are accidentally strangled by a hair or thread. This leads to obstruction of the circulation resulting in swelling, ischaemia and eventually necrosis. Early diagnosis and treatment is essential to prevent permanent damage. Awareness of this interesting condition, coupled with a thorough history, will prevent misdiagnosis as non-accidental injury.

DISRUPTIVE BEHAVIORS OF CHILDHOOD AND KARATE-DO. A WAY TO SELF REGULATION

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Objective: To confirm the efficacy of Karate, a complex psychomotor activity that enhances executive function, social
reading, and attentional skills, in the treatment of externalizing conditions of childhood. Externalizing conditions of childhood include a variety of clinical situations ranging from ADHD (attention deficit hyperactivity disorder) to conduct disorder. Externalizing behaviours are also seen in normal development, as temperamental traits and as part of social cognitive disorders such as autism spectrum conditions. The disruptive nature of these conditions represent a significant stressor for families and a major source of strife in social contexts such as school. They may as well represent predictors of future deviance.

Methods: Following up on published evidence, 24 children who met DSM IV diagnostic criteria for ADHD and Oppositional Defiant Disorder (ODD) were studied. Twelve children were referred to a program of Wa Do Ryu Karate as the sole intervention for a period of 10 months, while 12 received other treatment modalities (behavioral therapies and parent training approaches). The 12 children following the Karate class were assigned to a group of typically developing youngsters. Three domains of temperament felt to contribute to the clinical manifestations of externalizing symptoms were studied: adaptability, intensity of response, and mood regulation.

Results: A significant improvement in all temperamental variables was noted in all participating children compared to controls.

Conclusions: Karate, when properly taught, may be a valid and effective adjunct, if not the sole treatment, in the multi-modal approach to externalizing conditions of childhood.

KARATE AND AUTISM SPECTRUM DISORDERS: SPORT AS TREATMENT FOR SOCIAL COGNITION DEFICITS

Objective: To verify the efficacy of Karate, a complex psychomotor activity that enhances executive function and social reading, in the treatment of autism spectrum disorders (ASD). ASD comprise a group of complex neuro-developmental conditions, the core symptoms of which, variedly expressed clinically, include abnormal language development, both quantitative and qualitative, social-cognitive difficulties ranging from extreme social isolation to interpersonal rigidity and obsessive-like behaviours, along with repetitive motor behaviours, either tic-like stereotypies or more complex sequences which, however, appear to be purposeless. ASD are a significant source of social and financial stress for families and caregivers and are life long conditions.

The treatment approach to ASD is by definition multimodal and must address all clinical manifestations. Physical activity and sport in particular have been used effectively in the treatment of developmental disorders, particularly as an ancillary modality.

Methods: A group of seven children with ASD participated in a Wa Do Ryu Karate program alongside typically developing peers. A group of seven age matched children with ASD did not participate and received standard multimodal therapies and/or medication.

Results: Clinically and statistically significant improvements were noted in the Karate group with regards to social skills, including language and attention, as well as motor behaviours characteristic of ASD, as measured through standardized severity scales.

Conclusions: The present study confirms the effectiveness of Karate, as described elsewhere, in the treatment of developmental disorders and as part of a normalization approach to childhood psychiatric conditions through the use of sport.

PREVALENCE AND RISK FACTOR OF DELTOID FIBROSIS IN 3 COMMUNES IN VIETNAM


Method: We conducted a retrospective analysis of 24 children between 1 and 9 years of age who visited the paediatrician over the last 5 years with behavioural eating disorders without medical problems or history. A pedagogic parental program was started in the outpatient or inpatient setting (depending on the severity of the disorder) in a paediatric ward of a general hospital.

Results: At presentation the toddlers showed growth retardation in weight (−0.9 SD) and height (−0.8 SD). 10 patients (42.7%) started with 10 months outpatient treatment and 14 patients (58.3%) started directly with 2 weeks of inpatient treatment. In the outpatient group, 4 (40%) succeeded and 6 (60%) failed and were enrolled in the clinical program. After clinical intervention 3 patients were treated successfully and 3 still had an eating disorder, bringing the success rate to 70%.

From the inpatient group 8 (57.1%) were treated successfully, and 6 (42.9%) failed and were enrolled in an outpatient program. After the outpatient intervention, all 6 patients still had an eating disorder.

Growth parameters showed an increase in weight of 0.2 SD and height of 0.2 SD in the group with successful treatment.

Conclusion: Behavioural eating disorders can be treated in the paediatric outpatient setting; when outpatient treatment fails, short clinical intervention with a pedagogic program is a successful continuation. Herewith, paediatricians have a powerful tool for resetting behavioural eating disorders.