Neonatology

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Poster List

In Provence
International Updates
Meet the Expert
Impact of Prenatal Diagnosis and Outcomes of Neonates and Fetuses with Complete AV-Block: Single Centre Experience in a Country with Limited Resources

R. Bejiqi 1, R. Retkoceri 1, H. Bejiqi 2, N. Zeka1, A. Gerguri 1, A. Retkoceri 1, A. Vuçiterena 1, M. Berisha 1, A. Maloku 1

1 Pediatric Clinic, University Clinical Center of Kosovo, Prishtina, Kosovo
2 Main Center of Family Medicine, Prishtina, Kosovo

Introduction Complete AV block (CAVB) can have diverse etiology and clinical futures depending from the age of manifestation and diagnosis and caries a significant morbidity and mortality, especially in fetal period of life. CAVB occurs in approximately 1 in 15000 – 18 000 live births and can be as a isolated or associated with complex congenital heart disease (CCHD), when prognosis is much worsens.

Materials and Methods Reviewing documentations of all patients presented to our Cardiology services with diagnosis of CAVB during the period 2002 - 2012 we investigated etiology, clinical manifestation and outcome of these children in fetal, neonatal period and early childhood.

Results Basing on this data 32 patients were diagnosed with CAVB of which 9 have been diagnosed in antenatal period, 11 were diagnosed in neonatal and 12 during the first year of life. Seven patients had an associated structural heart disease, 6 of them complex anomaly. Among fetal cases, maternal anti-Ro or anti-la antibodies were present in 5. Three fetuses had received prenatally (all in third trimester) Dexamethasone and/or beta mimetic. Total mortality rate was 15.6% (5/32 of which intrauterine and neonatal death was responsible 4. The presence of CCHD, fetal diagnosis, antibody and heart rate lower than 50/bpm was associated with higher mortality. Three children received pacemaker insertion during first year of life.

Conclusion CAVB antenataly diagnosed has association with maternal antibodies and CCHD and has poor outcome compared to that diagnosed postnataly. In selected cases steroids and Beta-mimetics may significantly prevent complication and reduce mortality.
THE USE OF SHORT MESSAGE SERVICES (SMS) TO PROVIDE MEDICAL UPDATING TO PARENTS IN THE NICU

T. Strauss; Globus O.; Leibovitch L.; Izen I.; Morag I.; Mazkereth R.; Glasser S.; Kaplan G.; Maayan-Metzger A.

Department of Neonatology, Edmond & Lily Safra Children Hospital, Gertner Institute for Epidemiology & Health Policy Research Sheba Medical Center and Sackler Faculty of Medicine, Israel

Introduction Premature labor and prolonged hospitalization of a preterm infant in the neonatal intensive care unit (NICU) are very stressful for parents and are accompanied by a sense of loss and anxiety. Advances in technology have led to increasing use of short message services (SMS) in the medical disciplines. To date, the use of SMS for updating patients and families with medical information has not been reported.

In our NICU we implemented the SMS technique to give parents daily health status updates regarding their preterm infant.

Aim of our study: To evaluate the use of SMS technology for providing parents of preterm infants with medical updates and to evaluate its impact on the parents and the medical staff.

Materials and Methods Parents and medical staff (nurses) completed questionnaires during two time periods – pre-SMS implementation (pre-SMSi) and post-SMS implementation (post-SMSi) – that included statements regarding medical information delivery, communication and trust between parents and medical staff, parental anxiety and overall satisfaction scale.

Results A comparison between the two time period study groups showed that in the post SMS implantation time period parents stated they felt the physician was more available when needed (p=0.002), they felt more comfortable in approaching the physician (p=0.001) and were more satisfied with the medical information provided by the staff (p=0.032).

The medical staff noted that SMS use reduced their workload (p=0.019).

Conclusion SMS updating is an easy and user-friendly technology that enriches the modalities of information delivery to parents of hospitalized preterm infants. The SMS technology was found to be a complementary and useful tool that encouraged and improved personal communication between the parents and the medical staff.
MECONIUM-STAINED AMNIOTIC FLUID AND THE NEED FOR PEDIATRICIAN ATTENDANCE

A. Maayan-Metzger MD 1,2; L. Leibovitch MD 1,2; I. Schushan-Eisen MD 1,2; T. Strauss MD 1,2; J. Kuint MD 1,2
1 Department of Neonatology, The Edmond and Lili Safra Children's Hospital
2 Sackler Faculty of Medicine, Tel Aviv University, Israel

Introduction To determine perinatal parameters among term newborn infants born by vaginal delivery with meconium stained amniotic fluid (MSAF) that needed pediatrician assistance.

Materials and Methods Pediatricians who were in attendance in the delivery room due to MSAF among term infants completed 775 reports regarding the infants' delivery conditions and the assistance provided. We defined "pediatrician attendance needed" for a subgroup of infants for whom we retrospectively determined that pediatrician attendance in the delivery room was required.

Results "Pediatrician attendance needed" was determined in 31 (4%) cases. Among cases with documented normal fetal monitor, only 10 (1.8%) were defined as "pediatrician attendance needed," a percentage significantly lower than among infants born following non-reassuring fetal monitor: 21 (9.7%) (P<0.001). "Pediatrician attendance needed" was predicted by non-reassuring fetal monitor (OR 6.02 [CI 2.72-13.31], P<0.001), maternal fever (OR 6.34 [1.92-20.92], P=0.002) and younger maternal age (for every year) (OR 0.889 [CI 0.82-0.96], P=0.003).

Conclusion Term newborn infants born by vaginal delivery with MSAF with documented normal tracing fetal monitor are at low risk of the need for pediatrician assistance. Pediatrician attendance in the delivery room in labor involving MSAF should be recommended when non-reassuring fetal monitor tracing is observed and should also be considered when maternal fever is recorded and/or thick meconium is observed.
MATERNAL ANTI-D PROPHYLAXIS DURING PREGNANCY AND RISK OF HEMOLYSIS AMONG PRETERM INFANTS

A. Maayan-Metzger MD; L. Leibovitch MD; I. Schushan-Eisen MD; I. Morag MD; T. Strauss MD
Department of Neonatology, the Edmond and Lili Safra Children’s Hospital,
Sheba Medical Center and Sackler Faculty of Medicine, Tel Aviv University, Israel

Introduction Anti-D immunoglobulins (IgG) administered to Rh-negative pregnant women cross the placenta and therefore carry a potential risk of red blood cells (RBD) hemolysis to Rh-positive fetuses. Among preterm infants born close to routine anti-D administration the higher titer of anti-D immunoglobulins may potentially have an impact on hematological parameters.

Objective: To evaluate whether Rh-positive preterm newborn infants born to Rh-negative mothers treated with prophylactic anti-D immunoglobulins exhibited signs of hemolytic reaction, including anemia and hyperbilirubinemia.

Materials and Methods Retrospective data were collected for 94 Rh-positive preterm newborns born at gestational age 28-34 weeks to 76 Rh-negative mothers and for matched controls.

Results The study and control groups were similar in all maternal and neonatal outcome parameters. We found 11.7% positive Coombs’ tests among infants in the study group and slightly higher bilirubin levels at birth and on the following three days. No differences were recorded between the study and the control groups for hematocrit levels throughout hospitalization, maximal bilirubin level, phototherapy treatment or the need for blood transfusion. Using logistic regression showed that low hematocrit and the need for phototherapy were not predicted by study group preterm infants.

Conclusion Among preterm Rh-positive newborn infants born to Rh-negative mothers there appears to be no evidence of significant hemolytic reaction derived from placental anti-D transfer. Further prospective studies are needed to confirm these findings in order to support anti-D administration close to preterm birth.
Introduction

Anaemia is a common morbidity in the NICU arising from various causes and often requires transfusion of packed red blood cells. Haematocrit equilibration following red cell transfusion occurs over time ultimately resulting in a stable packed cell volume (PCV). Knowledge of this equilibration process especially in relation to its duration is pertinent in the accurate timing of post transfusion (PT) PCV, which is important to avoid prolonged hospital stay among other reasons.

Materials and Methods

We conducted a prospective study to determine an appropriate timing for PT-PCV estimation on 47 stable anaemic babies at the neonatal Unit of National Hospital Abuja. PCV was determined before transfusion and at 1, 6, 12, 24, and 48 hours post transfusion using Biofuge Haemo Centrifuge (Heraeus instruments) at 10,000 revolutions per minute and values were read using haematocrit reader.

Results

Forty recruited subjects aged 1 to 91 days (22.7±20.6), with a gestational age range of 26 weeks to 40 weeks were analyzed. One hour PT-PCV (48.5%± 5.5%) was similar to the 6 hour PT-PCV (47.8% ± 5.6%) P=0.516, but both were significantly different from the 12 hours, 24 hours and 48 hours PT-PCVs. The 12 hours PT-PCV was similar to the 24 hour and 48 hours PT-PCVs (P =0.237 and 0.063 respectively).

Conclusion

In non-haemorrhaging and non-haemolysing young infants, PCV check can reliably be done at 12 hours after completing packed red cell transfusion.
EFFECTIVENESS OF KANGAROO CARE VERSUS CONVENTIONAL CARE AMONG PRETERM NEONATES AGED LESS THAN 36 WEEKS WEIGHING BELOW AND EQUAL TO 2000 GRAMS ON RAM CANNULA CONTINUOUS POSITIVE AIRWAY PRESSURE: A RANDOMIZED CONTROLLED TRIAL

C. Luistro
Section of Newborn Medicine, Pediatric Dept., University of the Philippines- Philippine General Hospital, Manila, Philippines

Introduction Preterm infants are at risk for developing Respiratory Distress Syndrome (RDS) leading to alveolar collapse from surfactant deficiency. They are given oxygen support using RAM cannula continuous positive airway pressure (RCPAP) designed to keep alveoli open. Kangaroo care is a novel practice in reducing hypothermia, apnea, and bradycardia for preterm infants, by mimicking the environment in-utero.

OBJECTIVES: This study aims to determine the effectiveness of kangaroo care in reducing morbidity and mortality rate among preterm neonates on RCPAP.

Materials and Methods This is a prospective, non-blinded, randomized controlled trial which was conducted in the Neonatal Intensive Care Unit over one year. Seventy preterm neonates weighing 1000 – 2000 grams, aged < 36 weeks with an Apgar score of > 7 at the first and fifth minute of life requiring RCPAP due to respiratory distress were included. Thirty-five subjects were randomly assigned to Kangaroo care group and thirty-five subjects to conventional care group. Maternal and neonatal characteristics were obtained. Outcomes determined were the length of RCPAP use, length of oxygen support, morbidity, mortality, sepsis, and length of hospital stay. Data were analysed using mean and standard deviation, independent sample T-test and percentage-frequency distribution.

Results The subjects in the kangaroo mother care (KMC) group had better thermoregulatory control during KMC (p-value 0.00). Results for oxygen saturations before (p-value 0.01), during (p-value 0.00), and after KMC (p-value 0.01) were found to be statistically significant. The mortality rate is higher at 8.57% among the conventional care group. Patients in the KMC group had a lower incidence of air leak syndromes (p-value 0.043), necrotizing enterocolitis (p-value 0.016), and late onset neonatal sepsis (p-value 0.014) which are statistically significant. The actual length of time the patient was on RCPAP (p-value 0.000) and oxygen support (p-value 0.000) are significantly less for the KMC group as compared to the conventional care group.

Conclusion Kangaroo mother care provided to preterm neonates on RAM cannula continuous positive airway pressure significantly decreases the duration of oxygen support and RCPAP. Physiologic responses such as temperature during the KMC position together with oxygen saturations before, during, and after the intervention, results revealed statistically significant differences. KMC also lowered the incidence of air leak syndromes, necrotizing enterocolitis, and late onset neonatal sepsis which were statistically significant.
Introduction Complete AV block (CAVB) in fetuses can have diverse etiology and clinical futures depending from the gestational age at diagnosis and carries a significant morbidity and mortality, especially second trimester of life. CAVB occurs in approximately 1 in 15000 – 18 000 live births and can be as isolated or associated with different congenital heart disease (CCHD), when prognosis is much worsens. Treatment of these fetuses is limited in Kosovo as a country with poor obstetric and cardiology services.

Materials and Methods Retrospective analysis of medical records of all foetuses presented to our Cardiology services and diagnosed with CAVB. We investigate aetiology, clinical manifestation and outcome of these foetuses during the pregnancy and soon after delivery.

Basic method for diagnosis was foetal electrocardiography findings.

Results Based on these recorded data, during the period January 2010 – December 2014, 23 fetuses were diagnosed with CAVB. The average age of gestation at diagnosis was from 19 weeks and 4 days (from 16 weeks and 3 days to 22 weeks and 5 days). Indication for fetal echocardiography (FE) in 9 pregnancies was fetal hydrops and dysrhythmia, noted from obstetricians during the routine echosonographic examination. In 8 fetuses indication for FE was suspected congenital heart disease (CHD) and, in remaining 6 fetuses indication was anamnestic data from mother for autoimmune disease. In 5 fetuses presented with severe form of hydrops and complex CHD associated with CAVB was registered. Despite of medical treatment all they died during the next 2-3 weeks. Remaining 4 fetuses has good response to medical treatment. All fetuses with CHD and CAVB have had good outcomes and normal delivery without any medical treatment. Among fetal cases, maternal anti-Ro or anti-le antibodies were present in 6 pregnancies. From these group 4 fetuses in third trimester initial signs of hydrops developed and medical treatment (Dexamethasone and/or beta mimetic) was initiated. In all of them pregnancy with normal delivery was finished. Total mortality rate was 21.7 % (5/23) of which intrauterine death was responsible 4 fetuses. The presence of CCHD, fetal diagnosis, antibody and heart rate lower than 50/bpm was associated with higher mortality. Three children received pacemaker insertion during first year of life.

Conclusion Our study shows that CAVB associated with complex CHD and hydrops has high mortality rate. Maternal or fetal response to medical treatment in our group is high and has good outcomes. In selected cases steroids and Beta-mimetics may significantly prevent complication and reduce mortality.
ULTRASONOGRAPHIC AND HAEMODYNAMIC STATUS FEATURES OF RESPIRATORY DISORDERS IN NEWBORNS

O.Zhadan, I. Safonova, G. Medvedenko, I. Lukyano, B. Tarasyuk
State Institution “Institute of Pediatrics, Obstetrics and Gynaecology NAMS of Ukraine”, Dept. of radiology and prenatal cardiology, Kyiv, Ukraine

Introduction Respiratory disorders are the most common causes of pathological conditions in the neonatal period. The purpose of this study was to establish ultrasonic and dopplerographic features for respiratory disorders in newborns caused by type 1 respiratory distress syndrome and pneumonia.

Materials and Methods The study involved 56 children aged 0-14 days, which were treated in the intensive care unit and had signs of RDS type 1 (Group 1 - 24 children) and pneumonia caused by congenital infection or massive meconium aspiration syndrome (Group 2 - 25 children).

All infants who were treated in the intensive care unit were held clinical and laboratory studies, which included ultrasonographic examinations (neurosonography with the assessment of cerebral blood flow, echocardiography (according to the extended protocol), abdomen research with the evaluation of kidney renal blood flow and radiography, if indicated.

Lung ultrasound is not a routine method of examination, but in cases of severe respiratory distress in infants, especially premature, and in failing to conduct X-ray examination, ultrasonography helps in the diagnosis of pulmonary condition and in treatment choice.

Results Examination of the respiratory system of main and control neonatal groups had showed the ultrasound picture capability assessment in healthy lungs and in pathological changes. Dynamic monitoring of the pulmonary haemodynamic with the use of echo dopplerography was prescribed for infants who had been suffering from respiratory disorders since the background of the transferred respiratory failure is often combined with pneumonia. Thusly, residual effects require constant monitoring with the use of timely treatment and preventive follow-up during the first year of life.

Conclusion 1. Ultrasound is an easy alternative method for diagnosing pneumonia, pneumothorax, fluid in the pleural cavity in newborns with respiratory problems. It provides the ability to determine the dynamics of pathological changes in the course of treatment, especially in case of failure of radiological examinations.
2. If respiratory problems in infants marked changes in intracardiac hemodynamics, signs of systolic disfunction of LV, increase of TV Vmax and Δp to TV regurgitation, indicating the preservation of pulmonary hypertension, increased pressure in RV.
3. Hypoxia with respiratory disorders are one of the factors which support patent ductus arteriosus. Considering this, closure of ductus arteriosus and elimination of hypoxia, first of all should be carried out by proper adequate respiratory therapy, oxygen saturation monitoring and indicators of acid-base balance.
PERITONEAL DIALYSIS IN EXTREMELY LOW BIRTH WEIGHT BABY USING SURGICALLY PLACED PD CATHETER

R.J HE 1; M. ELDADAH 1; W. CHENG 2
1 pediatric department, Beijing United Family Healthcare, Beijing, China
2 pediatric surgery department, Beijing United Family Healthcare, Beijing, China.

Introduction Acute kidney injury (AKI) leading to acute renal failure (ARF) is a serious and common complication in premature babies. Many factors lead to AKI including: kidney prematurity, nephrogenic medications, use of diuretics, hypovolemia and hypoxia. Renal replacement therapy should be applied for babies who fail medical interventions. Peritoneal dialysis (PD) is considered a safe and practical option for premature infants. It is safe and simple and produces efficient gentle removal of solutes and excess water. There are few reports of PD done in extremely low birth weight (ELBW) infants. The PD catheter commonly used in children and adults is reported to have more complications thus seldom used in premature babies.

Materials and Methods We describe an extremely low birth weight baby infant with gestational age of 26 weeks and birth weight of 700g (twin A), who developed ARF on the 30th day of life. Conservative treatment failed and serum creatinine continued to rise. PD was initiated on the 34th day via a commonly used pediatric size PD catheter. Indwelling and drainage of PD fluid was done manually. The placement; adjustment and removal of the PD catheter were performed by pediatric surgeon in the NICU.

Results The dialysis proceeded smoothly and the serum creatinine corrected after 10 days. The complications we encountered were minimal and easily controlled (leakage in the first day of PD, bleeding controlled with vitamin K and fresh frozen plasma). The infant continued to grow and eventually was discharged in good condition and normal renal function at adjusted age of 40 week (term).

Conclusion PD can safely be performed in ELBW infant using pediatric size PD catheter surgically placed.
ANTIBIOTICS IN NEONATOLOGY - IS THERE (AND WHEN IS) A PLACE FOR A PROPHYLACTIC USE?

P. Branimir 1; I. Bilic Cace 1; O. Petrovic 2; H. Haller 2; B. Lucic 2
1. Neonatology Division, Department of Gynecology and obstetrics, Clinical Hospital Center Rijeka, Rijeka, Croatia
2. Department of Gynecology and obstetrics, Clinical Hospital Center Rijeka, Rijeka, Croatia

Introduction Several factors increase the risk of serious bacterial infection in term newborn. Such newborns may be symptomatic at birth or show no signs of disease, however, signs of neonatal infection can be subtle, and difficult to recognize. Delay in initiating antibiotics treatment when needed significantly increases neonatal morbidity and mortality. On the other hand, prophylactic use of antibiotics in all asymptomatic newborns born to mothers with risk factors for infection will result in antibiotic treatment of many healthy newborns, and could lead to more frequent complications of antibiotic therapy. There does not appear to be a generally accepted strategy for the use of antibiotics in asymptomatic neonates born to mothers with risk factors for infection, and it often depends on hospital preferences and personal experience. Although it is believed to be more secure to prescribe antibiotics when in doubt, question- how much is too much? - remains open.

Materials and Methods In order to determine the exact portion of the prophylactic use of antibiotics in our Department, we conducted a retrospective trial, and randomly analyzed 139 medical histories of the term newborns born in our hospital who received antibiotics in the last year.

Results Out of 139 newborns treated with antibiotics, only 17 (12.2%) had clinical signs/symptoms of bacterial infection. Risk factors were meconial amniotic fluid -67 cases (48.2%), premature rupture of membranes (>12 hours)- 54 (38.8%), maternal fever during labor.

Laboratory evidence proving infection-positive culture of gastric aspirate was seen in 29 cases (20.8%). Laboratory evidence suggesting infection- elevation of C-reactive protein (CRP>15) was seen in 52 (37.4%) newborns.

Conclusion Our investigation demonstrated that vast majority of term newborns treated with antibiotics in our hospital had no clinical and/or laboratory signs of infection. Bearing in mind that there are no sufficient evidence that prophylactic versus selective antibiotic use affects neonatal outcome, authors believe these results demonstrate antibiotic over-usage at our NICU. Such an observation urge for changes regarding the selectivity of antibiotic usage in the future.
NORMAL KIDNEY SIZE IN NEONATES BY ULTRASOUND

S. Ranjani 1; R. Shanmugasundaram 2; A. Ramalingam 3

1 Pediatric Dept., Malathi Manipal Hospital, Bangalore, India; 2. Neonatology Dept., Dr Mehta Childrens’ Hospital,Chennai, India; 3. Radiology Dept., Dr Mehta Childrens’ Hospital,Chennai, India.

Introduction

Diseases may present with renal size changes prior to echo texture changes. Normal data is used to compare, identify changes, for follow-up and identify disease progression. Normal data are baseline references & surrogates for functional reserve. Size depends on BMI, height, gender, age etc. Nephromegaly is reduced from 17.3 to 1.6% if standard reference is used.

Materials and Methods

Observational study from Apr ’12-Mar ’13 at Dr. Mehta’s Hosp. Those with antenatally detected renal anomaly, abnormal USG & from NICU excluded. Sample size calculated based on study by A Otiv et al with 95% CI and 90% power was 95. Informed consent obtained. Measurements done by a single person & USG machine. Babies examined at 48-72 hrs of life, 1 hr after feeds, in supine position with a curved probe. Renal length, width and depth noted. Volume measured by $V = L \times T \times W \times 0.5233$. Birth weight (BW), gestational age (GA), head circumference (HC), length & sex noted. Values compared using student t-test. Co-relation done using Karl Pearson correlation coefficient method. P<=0.05 taken significant. All tests are two sided.

Results

Good co-relation found b/w right renal length & BW (p=0.001, r=0.35) & b/w left renal length & BW (p=0.01, r=0.23).

There was a co-relation b/w right renal width & BW (p=0.01, r=0.26); b/w left renal width & GA (p=0.01, r=0.24) & b/w left renal width & BW (p=0.01, r=0.23).

We also found that the right renal depth co-related with BW (p=0.05, r=0.23) & the left renal depth also co-related with BW (p=0.001, r=0.28).

The BW had maximum effect on right and left renal volumes (p=0.001, r=0.33; p=0.001, r=0.34).

There was no relation b/w renal length, depth, volume & sex, GA, HC & length of the baby. There was no relation b/w renal width & sex, HC and length.

Conclusion

Renal size according to BW

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Renal size according to GA

<table>
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Length, width, depth in cm, volume in cm3
**PRETERM VS. TERM EQUIVALENT AGE MRI FOR THE EVALUATION OF PRETERM WHITE MATTER INJURY**

A. Malhotra; M. Fahey; F. Wong, E. Carse; M. Ditchfield  
*Malhotra A1,2,3, Fahey M2,3, Wong F1,2,3, Carse E1, Ditchfield M2,4*  
1Monash Newborn, Monash Children’s Hospital, Melbourne, Australia  
2Department of Paediatrics, Monash University, Melbourne, Australia  
3The Ritchie Centre, MIMR- PHI Institute of Medical R  

**Introduction**  
Preterm white matter injury (WMI) is a significant cause of adverse neurodevelopment in childhood. Changes on MRI brain when done at term equivalent age (TEA) are known to be strongly predictive of adverse neurodevelopment at two years of age. This study was done to compare the radiological information obtained from MRI brain done at 32-34 weeks to one done at TEA.

**Materials and Methods**  
Premature infants born below 30 weeks were recruited into the study if cranial ultrasounds showed evidence or suspicion of WMI. Infants underwent 2 MRI brain scans – one at preterm age (31-34 weeks) and other at TEA (38-48 weeks). The preterm age MRI was conducted using an MR-compatible incubator with a dedicated head coil (Lammers Medical Technology, Lubeck, Germany) on a Siemens 1.5T MRI (Erlangen, Germany). WMI was scored using a semi-quantitative scoring system and classified as mild, moderate or severe according to predefined criteria.

**Results**  
14 preterm infants with a median (range) gestation of 28(25-29) weeks and birth weight of 1254(680-1557) grams were studied. Preterm MRI was undertaken at 33(31-34) weeks. 1 infant suffered an acute collapse in the interval period between the 2 scans and was excluded. The injury was classified as mild in 7(54%) of the remaining infants. The correlation between the WMI scores (mean, preterm = 3.3 vs. term = 3.1) for the 2 MRI scans was high (Spearman correlation=0.9, p=0.001).

**Conclusion**  
Preterm MRI is a viable option for assessment of preterm WMI and analysis of data obtained from preterm MRI is comparable to that obtained from a TEA MRI.
HISTOPATHOLOGICAL AND RADIOLOGICAL ASPECT OF PROTECTIVE LUNG VENTILATION - EXPERIMENTAL MODEL

N. D.Videnovic 1; S.Z. Trpkovic 1; M.R. Zdravkovic 1; P.V. Videnovic 2; S.S. Mihajlov 2
1 Faculty of medicine in Kosovska Mitrovica Serbia
2 Department of neonatology General hospital in Leskovac Serbia

Introduction The aim of this research was to indicate histopathological and radiological changes on experimental model, resulting from the application of protective mechanical ventilation on healthy and previously injured lungs.

Materials and Methods The research was conducted as a prospective experimental study, which included 10 experimental animals (pigs). Experimental animals were divided into two groups. In the control group (ventilation of healthy lungs) is applied CMV with low tidal volume (6-8 ml/kg) and PEEP 7 mbar. In the study group (before initiation of mechanical ventilation in the lungs through the tracheostomy cannula inserted gastric contents in the amount of 2 ml/kg body weight) was carried out the same type of mechanical ventilation, but with a gradual increase in PEEP from 7 to 15 mbar. Duration of mechanical ventilation of the lungs is limited to 240 min. Monitoring is included VT, Ppeak, Paw.mean, PEEP and X-ray of the lungs. Monitoring parameters were measured at intervals of 60 min. The second phase entailed taking samples of lung tissue of experimental animals at the end of the four-hour mechanical ventilation and send them to histopathological examination. Statistical analysis of the results were performed with Wilcoxon rank sum test (p<0.05) and t-test of mean values (p<0.01).

Results PEEP in both groups of experimental animals prevented the formation of significant edema of perivascular, interstitial and alveolar space, which was accompanied by the presence of small number of inflammatory cells. At the same time, PEEP was holding open the largest number of alveoli and small airways. Microatelectasis are weakly present in healthy lungs while not seen in injured lungs; rupture of alveolar septum was more prevalent in the study group. Rank sum test did not give statistical significance (p>0.05). Subpleural cysts are visible on X-rays of the lungs of pigs from study group only after 240 min. of mechanical ventilation (p<0.05). Student’s t-test showed a statistically significant difference (p<0.01) in mean values of Ppeak, Paw.mean and PEEP between the control and the study group.

Conclusion PEEP as an integral part of the protective lung ventilation keeps the alveoli and small airways open during the respiratory cycle with minimal expressed to totally absent histopathological and radiological changes in the parenchyma of healthy and previously injured lungs.
DOPAMINE AND NS FOR INITIAL TREATMENT OF ARTERIAL HYPOTENSION IN ELBW

D. Kryuchko; E. Baibarina

Federal State Budget Institution “Research Center for Obstetrics, Gynecology and Perinatology”
Ministry of Healthcare of the Russian Federation, Moscow, Russia

Introduction Arterial hypotension is a common problem in NICU. The incidence of arterial hypotension is 16-52%. Reduced perfusion of organs such as the brain, kidneys, heart, and gastrointestinal tract may lead to acute dysfunction and be associated with permanent injury. Various therapeutic strategies are used for cardiovascular support, including volume expansion, inotropes, corticosteroids. But the initiating therapy has traditionally been volume expansion. As we know, AH is poorly correlated to blood volume in preterm infants and hypovolemia is a rare reason of AH, especially in extremely preterm newborns. Also the excess volume expansion in condition of PDA can lead to deterioration of respiratory problems. The goal of our study was: To compare two ways of therapy of AH - Dopamine and volume expansion in ELBW.

Materials and Methods Criteria of inclusion were: ELBW + Arterial Hypotension (Mean BP˂GA in weeks). Criteria of exclusion were: congenital anomalies, obvious signs of a hypovolemia and shock. Randomization: odd-numbered infants received Dopamin and even-numbered – Normal saline. Intervention: Dopamine starting from 2 µg/kg/min with dose increase until BP became normal (BP≥GA), NS - 10 ml/kg in 30 min. Sometimes one, sometimes two boluses were used, but never more, than two. If NS was inefficient, Dopamine was prescribed. We checked efficiency of therapy (BP normalization (mBP≥GA)) after one hour, Diuresis (before/after intervention, within a day), effective dose of Dopamine (if needed), total dose of Dopamine within a week, total duration of inotrope support. Also we evaluated the heart hemodynamics (CO, EF, SF) and regional hemodynamics in ACA, AR, AMS (Ri, Tamx, Pi, MD), blood sample (pH, lactate, BE, HCO3) and outcomes (PDA, MV duration, BPD, NEC, PVL, mortality before discharge, stay in NICU) 41 newborns were accepted according to the criteria of inclusion, 2 was excluded due to congenital heart diseases.2 groups were founded (18 in NS group, 21 – Dopamine group).

Results After one hour the mean BP was higher than GA in all newborns from Dopamine group (100%) and 38.8% in NS group exhibited the need for Dopamine for BP normalization. There were increasing of the diuresis and ejection fraction in both groups after infusion. The cerebral, renal and mesenterial blood flow were normalized. We found out that in the Dopamine group the cardiac output (CO) didn’t increase, but in NS group the CO increased more, than 1.5 times. At the same time the efficiency of Dopamine in normalising the BP was 100%, and efficiency of the isolated volume loading – 61.2%. The effective daily dose of Dopamine (if needed), µg/kg/min was significantly higher in those, who had previously received NS (3.6±0.63 vs 1.85±0.64, p<0.0001) Duration of mechanical ventilation and observing in NICU was more in NS group, than in Domamine group (p=0.02 and p=0.03). Children from NS group had the bigger diameter of PDA also (1.6±1.44 vs 2.6 ±1.47, p=0.04).

Conclusion Dopamine was more effective in BP normalization than isolated NS for ELBW. If Dopamine was required, the dose sufficient for pressure normalization was higher for newborns who had previously received NS. Dopamine increases EF more effectively, but NS increases CO more effectively. Dopamine and NS are equally effective in blood flow normalization in ACA, AR, AMS. The incidence of sPDA and severe BPD were higher in newborns who received NS for AH treatment. The duration of MV and stay in NICU were longer for newborns who received NS for AH treatment. It is not obvious, that we should use volume loading for treatment of arterial hypotension in ELBW without obvious signs of a hypovolemia and shock. Further researches, without volume expansion use are needed.
STUDY OF HISTOLOGICAL CHORIOAMNIONITIS ASSOCIATION AS A MODULATOR OF BRAIN INJURY IN PREMATURE INFANTS

G. Fernandes; P. Margotto; I. Firmino
HOSPITAL REGIONAL DA ASA SUL, BRASÍLIA - DF, BRAZIL

Introduction The study of histological chorioamnionitis association as a modulator of brain injury in premature brain in premature shows inconsistent results. Prematurity is often associated with chorioamnionitis. The transfontanellar ultrasound is a noninvasive diagnostic method to diagnose brain injury in newborns. The main objective of this work is to investigate the association between chorioamnionitis defined by histological examination and changes in premature transfontanellar ultrasound of newborns at Hospital Regional da Asa Sul (HRAS), Brasília, DF, Brazil.

Materials and Methods Retrospective study in newborns between 26 and 32 weeks gestational age at birth were born in HRAS maternity April 2011 to November 2011. The neonatal variables studied included: gestational age at birth, patent ductus arteriosus, sepsis, intraventricular hemorrhage and periventricular echogenicity. All newborns underwent ultrasound transfontanellar between 4 and 15 days old. Statistical analysis was performed using SPSS software version 16.0. The analysis of continuous variables and mean comparison was applied Student's t test. For analysis of categorical variables we used the chi-square test, obtained relative risk values and confidence intervals. The p value was established as statistically significant p <0.05.

Results We selected 51 patients who met all inclusion criteria. In this study, 55% of placentas had histological diagnosis of chorioamnionitis. The intraventricular hemorrhage (IVH) was described in 20% of the selected who had histological chorioamnionitis and 14.3% in those who did not have, OR: 1.5; CI (0.29 -7.7), P: 0.66. However, after statistical analysis it was found that chorioamnionitis was not associated with higher incidence of IVH. Regarding hyperechogenecity this was described in the 25% who had selected chorioamnionitis and 47.6% in those who had no RR: 0.36 (0.09 to 1.3); Q: 0.13. Just as in IVH, this study also showed no statistically significant relationship between hyperechogenecity observed in transfontanellar ultrasound and the presence or absence of chorioamnionitis.

Conclusion This study highlights the importance of the study of comorbidities affected by premature infants related to chorioamnionitis. Although the study failed to achieve results with statistical significance, the literature data emphasize this condition. An initial database is in HRAS and can be added to many other studies that will trace the profile of the newborn, as well as an analysis provided assistance to him and to pregnant women over time.
CHORIOAMNIONITIS, MECHANICAL VENTILATION AND SEPSIS AS MODULATORS OF BRONCHOPULMONARY DYSPLASIA

G. Fernandes; I. Firmino; P. Margotto
HOSPITAL REGIONAL DA ASA SUL, BRASÍLIA, BRAZIL

Introduction The histologic chorioamnionitis is associated with reduced risk of respiratory distress syndrome (RDS), but increases the risk of bronchopulmonary dysplasia (BPD), suggesting that intrauterine infection accelerates lung maturation but increases the vulnerability to early lung postnatal injuries. The objective of this study is to investigate the presence of bronchopulmonary dysplasia in premature infants of mothers with histological chorioamnionitis and correlate postnatal outcomes such as sepsis, need for mechanical ventilation and patent ductus arteriosus as taxpayers in chronic lung injury.

Materials and Methods An observational retrospective cohort of neonates with 26-32 weeks, born from April to November 2011. Statistical analysis was performed using SPSS version 16.0 software, and used the chi-square tests of association, t-Sudent, the hazard ratio with confidence interval. The significance level was 0.05.

Results We studied 51 preterm infants, and 23 underwent antenatal infection. Mothers with chorioamnionitis had a higher number of previous pregnancies were less submitted to cesarean section. Receiving corticosteroids as were mothers without infection. Newborns who underwent maternal infection, were born with gestational age and lower weight but a smaller number needed resuscitation at birth. Had 10 times more early-onset sepsis, a higher incidence of patent ductus arteriosus and a 2 times greater tendency to develop bronchopulmonary dysplasia.

Conclusion The chorioamnionitis is a contributing factor for bronchopulmonary dysplasia but the small sample size limited the findings of this study.
EARLY VS LATE WITHDRAWAL FROM NASAL CPAP IN PRETERM BABIES FROM 26 - 30 WEEKS OF GESTATION AGE WITH ANTECEDENT OF RESPIRATORY DISTRESS SYNDROME AND SURFACTANT ADMINISTRATION

G. Cordero; L. Betanzos ; L. Echaniz ; E. Yllescas; S. Carrera
Neonatal intensive care unit, Instituto Nacional de Perinatología, México City.

Introduction Current trend in ventilatory treatment of preterm babies with respiratory distress syndrome, has aimed increasingly to application of continuous positive airway pressure (nCPAP). Results of studies like COIN, CURPAP and SUPPORT have left clear benefits of its use as a primary intervention alone or in combination with surfactant. Evidence indicates that once achieved clinical and blood gas stability, patient can be off from ventilatory support, however since one of the mechanisms of fetal lung development is pressure of alveolar distension due to pulmonary fluid in uterus, some studies have raised the hypothesis that providing a continuous positive pressure to airway could help to complete lung growth that was stopped with premature birth, suggesting continuing with nCPAP for at least up to 36 weeks of gestational age, at which the stage of formation of alveoli ends; however there are very few references to this point

Materials and Methods A retrolective cohorts study was performed with data from clinical charts of all newborn babies from 26-30 weeks of gestation and birthweight less than 1250 g that received nCPAP after surfactant administration at the NICU of the Instituto Nacional de Perinatología (México City) from January 1st to December 31, 2013. The aim of the study was to compare clinical and ventilatory outcomes between those patients who were taken off from nCPAP early vs late. Exclusion criteria were intraventricular hemorrhage grade III-IV, congenital heart diseases or mayor congenital malformations. Patients were assigned to early group if they were taken off from nCPAP maximun at 24 h after have reached clinical and ventilatory stability (A) or late group (B) if they were taken off posterior 24 h and until 72 h. Demographic variables were: birthweight, sex, and gestational age. Respiratory and gasometric variables were: success to the nCPAP withdrawal (not need nCPAP or mechanical ventilation for more than 72 h after the retirement), number of hours in nCPAP, FiO2 before it was stopped, need for oxygen supplement after the nCPAP, failure to the withdrawal and causes of failure. In the cases of failure were assesed: need and days of mechanical ventilation, bronchopulmonary dysplasia; and as gasometric outcomes hypercarbia (CO2 > 50 mmHg) or hypoxemia (O2 < 50 mmHg) at capillary blood gases. Mean and standart desviation were calculated for descriptive analysis of quantitative variables and percentages for qualitative ones. For comparations t student and X2 were performed

Results 51 patients were included in the study, 20 in group A and 31 in group B. No statistical differences were found between groups at the analysis of demographic variables. The outcomes with statistical significance were only in the group of patients that failure to nCPAP withdrawal: days of mechanical ventilation (group A 12 vs group B 4.9 p<0.001), days of supplemental oxygen (A 60 vs B 54 p< 0.001), and FiO2 at the moment of the withdrawal (A 31% vs B 27% p< 0.001) all in favour to the late group; clearly hours of CPAP (A 15.6 vs B 242 p=0.05), were in favour group A.

In the rest of the variables and causes of failure to nCPAP withdrawal there were any statistical difference.

Conclusion Advantages for the group of late retirement in our population were only in the group of patients that failure to nCPAP withdrawal and were: less FiO2 at the moment of the withdrawal and less days of supplemental oxygen, and in patients that were re-intubated less days of mechanical ventilation. However its use for longer periods did not improve percentage of success of patients without nCPAP and it hadn’t any impact on the gasometric outcomes or in the prevention of bronchopulmonary dysplasia. However we recognize our limitations because this is a retrospective study with a small size of patients, and we only analized clinical variables (no hystologic or functionally variables) so that question about the utility of this maniouver is still open.
WORSENING RDS AND EXTUBATION-FAILURE IN PRETERM NEWBORN AFFECTED FROM ASSOCIATION BETWEEN INTRALOBAR PULMONARY SEQUESTRATION AND BRONCHIAL ISOMERISM.

N. Todisco; M. Visconti; A.R. Frascogna; A. Plantulli; V. Della Monica; A. Criscuolo; M. Corbo
U.T.I.N. - University Hospital "San Giovanni di Dio e Ruggi d'Aragona", Salerno - Italy

Introduction Weaning and extubation remain important steps of neonatal ventilation management, specially in preterm babies, in order to minimize complications. After a first apparent stabilization succeeding the birth event, extubation-failure occurs in almost one third of attempts and it could be necessary an additional period of assisted ventilation before next extubation successfully accomplished. Special attention require cases in whom extubation fails despite resolution of their primary disorders as, for example, RDS due to prematurity and primitive surfactant deficiency.

Materials and Methods Because few are, if any, useful tests to indicate readiness for extubation this field remain a case of trial and error. In these cases there may be an unrecognized coexisting condition responsible of unexplained deterioration of respiratory pattern thus resulting unsuccessfully extubation, although primary disorder had resolved. Major causes of extubation-failure include many pulmonary diseases such as primary unresolved diseases and broncho-pulmonary dysplasia.

Results We describe the clinical case consisting in a 32 wks female preterm (birth weight 1050 gr; APGAR score 5/6) who received intubation and surfactant administration during the first day of life because a progressive severe RDS then was assisted for a three days period of ventilation (SIMV) before extubation and appearance of respiratory stabilization by cPAP. At first echocardiographic routinely examination identified presence of little significant PDA (successfully treated with paracetamol) and wide DIV (ostium secundum type). At 38th day of life, the patient was again intubated and received moreover a new surfactant dose because rapidly deteriorated respiratory profile and severe RDS.

Chest X-Ray was demonstrative for a wide opacity at the right lung with mediastinal retraction; CT scan revealed a large atelectasis involving the same district and a coexisting less extensive atelectasis regarding left lung. The entire radiologic report was thus explained as a complicated pneumonia then was started therapy with Meropenem and Amikacin (based on BAL-positivity for serratia pn.) and cyclic lung selective instillation of Poractant-alpha (Pulmozyme). A following bronchoscopy resulted doubtful about an extrinsic compression on the left main stem bronchus, as a possible vascular ring, and revealed mild bronchomalacia.

The unresponsive clinical RDS exhorted us to submit the patient, now aging two months, to other Centre of excellence on respiratory diseases where, on the basis of chest Angio-CT, was finally diagnosed the condition of intralobar pulmonary sequestration associated to left-sided bronchial isomerism.

Conclusion Intralobar pulmonary sequestration represents an uncommon congenital anomaly (0.2-6.4 % of all congenital pulmonary malformation) including a mass of non-functional and dysplastic lung: this part of parenchyma results non communicating with the normal tracheo-bronchial tree and, at the same, receiving blood supply by systemic circulation. When symptomatic, this condition can lead to recurrent infections in the sequestered lung segment and early resection of the sequestration seems as a preferred and elective treatment. Bronchial isomerism, on the other hand, is a condition more difficult to explain but almost never causes symptoms. Actually four types of bronchial isomerism have been described (differing by other associated anomalies). In the simple isolated form the bronchial anatomy on the right side reflects a mirror image of the left side. The rare association of two uncommon congenital anomalies in the our case led to wide fields of interests (neonatologists; bronchoscopists; radiologists; pediatric surgeons) and must aware physicians of necessary diagnosis and treatment of any possible associated illness.
TWIN TO TWIN TRANSFUSION SYNDROME: NEONATAL OUTCOMES IN A THIRD LEVEL HOSPITAL IN MÉXICO CITY.

G. Cordero; B. Frías; S. Carrera; E. Corral; I Barrera; E. Yllescas
Instituto Nacional de Perinatología, México City, México

Introduction 95% of monochorionic-monoamniotic twins have veno-arterial placental anastomoses with blood transfusion from one baby to the other. Without treatment, both babies are affected with an overall mortality of 90% and sequelae of 50% of which, neurologic ones are the most frequent.

Materials and Methods Retrospective analysis was performed of pre and postnatal outcomes of 55 monochorionic-monoamniotic pregnancies that were treated at the Instituto Nacional de Perinatología (INPer) in México City, from January 1999 to July 2014. Data were obtained from clinical charts of mothers and their babies; for descriptive analysis percentages, means and standard deviations were calculated and comparisons for quantitative variables were done by t student, with SPSS v. 20.

Results From 55 pregnancies, 48 babies born alive, 38 died before birth and 20 discontinued treatment at INPer. Survival correlated with Quintero stage at the moment of diagnostic and treatment: stage 1 (83%), stage 2 (35%), stage 3 (67.5%), stage 4 (50%). Mean gestational age at lasser coagulation was 23.3 weeks. 93.7% were born by cesarean section, in average at 31.2 weeks (mean 56 days after coagulation); mean birthweight was 1399.8 g. 41.6% of the babies needed cardiopulmonary resuscitation. 38% were treated with prophylactic surfactant and 6% as rescue; 65% underwent mechanical ventilation. There was statistical difference in hematocrit values between donors (47.2 ±10) vs receptors (48.9 ±11.2) (P=0.000); no statistical difference was found in others variables. Most frequent complications were: hydrops (4%), necrotizing enterocolitis (4%) and thrombosis (upper or lower extremities) (2%). Principal morbidities reported were retinopaty of prematurity (14%), bronchopulmonary dysplasia (10%) and alterations in neurodevelopment (10%).

Conclusion survival and outcomes of twin to twin transfusion syndrome patients is close related to Quintero stage and gestational age at birth, so that best chance of living without sequelae for these babies is correct and early detection in order to offer lasser coagulation as soon as possible when it is needed.
ARDS RECURRENCE IN A YOUNG CHILD AFFECTED FROM ASSOCIATION OF TRACHEOMALACIA AND CHIARI MALFORMATION.

N. Todisco; V. Della Monica; A. Plantulli; A.R. Frascogna; M. Visconti; M. Corbo; G. Alfano; A. Criscuolo
N.I.C.U. Unit, University Hospital "San Giovanni di Dio e Ruggi d’Aragona" of Salerno, Salerno, Italy

Introduction Tracheomalacia is estimated in almost 30% of children undergoing bronchoscopic examination for respiratory distress. This condition, that rarely necessitates any treatment, can be diagnosed only incidentally in mild presentation nevertheless the usual condition include signs and symptoms as prolonged expiration (responsible of pneumothorax), cyanosis, brassy cough, apnea, feeding problems and recurrent pneumonia. Chiari malformation (CM) is a congenital or acquired abnormality consists in a variable grading of cerebellar erniation through the foramen magnum so determining a small posterior fossa condition. Type1-CM is defined as isolated protrusion of the cerebellar tonsils of 5 mm or more. Although in many cases asymptomatic, this condition can determine headaches, ocular and oto-neurologic disturbances, lower cranial nerve signs, ataxia or spasticity. Onset occur usually in the third decade of life. Its prevalence is still unknown and inheritance recurs in 10-15% of cases.

Materials and Methods Bronchoscopy, performed in spontaneous breathing, revealed severe tracheomalacy (lumen occlusion 90% or more) including the entire trachea. Positioning of tracheostomy allowed restored to health respiratory functionality and spontaneous breathing.
Video-polysomnography revealed presence of central apneas (until 27 episode/hour). MNR in next issue demonstrated the downward displacement through the foramen magnum of cerebellar tonsils, in agreement with description of type1-CM.

Results We describe the case of a 20 months male subject born at 30th week of gestational age from a twin birth pregnancy who at birth was treated for an early acute respiratory distress with mechanical ventilation (for some days), exogenous surfactant administration, then ibuprofen administration at the aim of closure of patent ductus arteriosus. When finally discharged, after eight weeks from birth and weight of 2.600gr, the baby was in full healthy conditions. Only few months ago he began to present wheezing, recurrent vomiting, disturbed sleep and sleep disorders, respiratory difficulties until lower healthy intervals and the patient was hospitalized many times always in emergency. At 11 months of life, during a severe ARDS complicated by pneumothorax the infant, previously admitted in pediatric reanimation unit, underwent bronchoscopy that resulted non diagnostic, in course of curaric medication. Another following episode of acute and severe respiratory distress, only few months after, was the occasion for a repeated bronchoscopy that, during spontaneous breathing, revealed severe tracheomalacy (lumen occlusion 90% or more) regarding the entire trachea until 1 cm before carina. Tracheostomy allowed to restore to normal respiratory functionality. A brief normal status followed until recurrence of vomiting, continuous high perspiration and, particularly, sleep disordered breathing including hypo-saturations and sleep central apneas (until 27 episode/hour). At MNR scan was observed the downward displacement below 16 mm through the foramen magnum of cerebellar tonsils. Surgical enlargement of the foramen magnum, as only measure, led to the complete and quick regression of the whole symptoms. Actually, at the age of 20 months after birth, the patient is waiting for tracheostomy removal. Twin, until now healthy, has also revealed at NMR a mild erniation of cerebellar tonsils for less to 3 mm (now in follow-up for asymptomatic type1-CM).
**Conclusion** The clinical case described highlights some original aspects needing to be considered.
First, the rare association between rare diseases for itself, tracheomalacia and Type1-CM, in a premature twin newborn and both leading to severe respiratory distress syndrome of various origin.
Second, the very early onset of Type1-CM, before the second year of life, despite of common reports.
Third, the familiar recurrence trend of the Type1-CM, already reported, in this case regarding both twins by different grading.
Last, tracheomalacia as model of ill, maybe at the same time complication of prematurity, and cause of acute life-threatening condition which diagnosis is so much apparently simple and, when necessitating, at the same results treatment. Finally, only spontaneous maturation of cartilaginous rings allow normal respiration in spite of any treatment.
CONSEQUENCES OF WORK RATIONING IN NEONATAL INTENSIVE CARE UNITS

B. Rathwell 1; S.P. Clarke 2; C.M. Rochefort 3
1 McGill University, Montreal, Canada
2 Boston College, Boston, United States of America
3 McGill University, Montreal, Canada

Introduction Registered Nurses (RNs) in the Neonatal Intensive Care Unit (NICU) play an important role in providing comfort care to infants and preparing parents and infants for hospital discharge. International evidence suggests that in circumstances of understaffing and inadequate resources, NICU RNs often engage in rationing of nursing care and omit care activities, such as care coordination, discharge planning, parental support and teaching, or infant comfort care. However, it is unknown if nurses’ perceptions of rationing of nursing care activities are related to their perceptions of parents and patients readiness for discharge and patient comfort. The purpose of this study was to assess these relationships.

Materials and Methods A cross-sectional mail survey was sent to 284 RNs working in all NICUs in the province of Quebec (Canada) in the fall of 2014. The questionnaire contained validated measures of rationing of nursing care, patient and parent readiness for hospital discharge, and patient pain control/comfort, as well as items measuring RNs characteristics. Multivariable logistic regression was used to examine the associations between care rationing, readiness for hospital discharge and patient comfort, while adjusting for RNs' characteristics and clustering within NICUs.

Results A total of 125 RNs completed the survey. In total, 28.0% of respondents reported rationing care coordination and discharge planning “often” or “very often”, while 40.0% reported rationing infant comfort care “often” or “very often”. In addition, 15.2% of respondents felt parents and infants were not well prepared to go home and 54.4% of nurses reported that pain was not well managed on their unit in the past month. In the regression model, RNs’ perceptions of increased rationing of discharge planning and care coordination were negatively related to perceptions of infant and parent readiness for discharge. In addition, increased rationing of parental support and teaching and infant comfort care was related to decreased levels of perceived pain control.

Conclusion RNs perceptions of infant and parent readiness for hospital discharge and comfort care in the NICU appear to be influenced by the extent to which several important nursing care activities in the NICU are rationed. Further research on the impact of care rationing on patient and family outcomes is warranted.
EPILEPSY AND BRUGADA SYNDROME IN INFANTS: CLINICAL AND GENETIC CORRELATION

L. Gigli 1; A. Gallizia 2; A. Rimini 3; E. Piccotti 2; M. I. Tagliasacchi 1; M. E. Derchi 3; A. Siboldi 3; M. Servetti 1; B. Tubino 2; M. Vandone 2; P. Striano 5, M. Mancardi 5; A. Palmieri 2,4

1 Cardiology Dept, S. Martino Hospital, Genoa, Italy
2 Emergency Dept, G. Gaslini Children's Hospital, Genoa, Italy
3 Cardiology Dept, G. Gaslini Children's Hospital, Genoa, Italy
4 Sudden Infant Death Syndrome and Apparent Life Threatening Events Centre

Introduction
The beginning was a clinical case (patient # 1) in which the electrocardiogram (EKG) recorded in the post-critique phase of a seizure showed a pattern diagnostic for Brugada Syndrome (BS) spontaneously normalized to 72 h. The BS is characterized by an ST-segment elevation in the right precordial EKG leads, a high incidence of sudden death and structurally normal heart. Compared to the general population, patients with epilepsy have a higher mortality. This is also due to sudden death, otherwise known like Sudden Unexpected Death in Epilepsy (SUDEP).

The mechanism most frequently charged for SUDEP was asphyxia/suffocation, however, several pathophysiological conditions could provide alternative explanations. In particular, cardiac alterations as malignant arrhythmias can be present. Some authors have already proposed the association between epilepsy and BS and during these years there was a growing interest in the association between epilepsy and cardiac channelopathies.

Materials and Methods
Observational, prospective and multicenter study. The project is divided into three phases.

Patient’s # 1 sodium channels genes mutations genetic testing.
Systematic acquisition of clinical data from adult and paediatric patients with epilepsy, in ambulatory and emergency department, aimed to identification of BS patterns through EKG recording within a short time from a seizure. Define whether the first phenotype observed (diagnosis of epilepsy and Brugada EKG pattern during post-critical phase of an epileptic seizure), reproduced in phase 2, underlies a genetic mutation can correlate BS and epilepsy.

Results
Among the first 23 patients, 7 were in paediatric age (25,9 %). Mean age was 4 years and 3 months old. 4 were male (57,1%) and 3 female (42,9%). 7 patients had a generalized seizure. Seizure during sleep was documented in 1 patient. In all patients, the first EKG was recorded within 24 hours from the epileptic attack, the second within 72 hours. Any Brugada pattern has been documented. Among first EKGs, the mean QTc was 406 msec and there were not significant difference with second EKGs. Until now, any brady/tachy-arrhythmic event has been recorded.

Conclusion
This is an on-going study, so we can’t draw robust conclusions. However, we believe that this study could be able to demonstrate if the BS is more frequent among epileptic patients and if an EKG after seizure can be considered an important diagnostic tool to identify patients at major risk of sudden death.
A TALE OF TWO EPOCHS: REVISITING MECONIUM ASPIRATION SYNDROME – INCIDENCE, RISK FACTORS AND MANAGEMENT

W.W.C. Ho; V.R. Baral; W.B. Poon
Department of Neonatal and Developmental Medicine, Singapore General Hospital, Singapore

Introduction This is a review of the incidence, risk factors, and management of meconium aspiration syndrome (MAS) in the contemporary era as compared to the 1990s, to assess the impact of improvements in obstetric and neonatal care.

Materials and Methods Retrospective cohort study on all neonates admitted to a single tertiary referral centre (Singapore General Hospital) from January 2012 to February 2015 (epoch II) with meconium-stained amniotic fluid (MSAF). MAS was defined as respiratory symptoms in newborn infants born through MSAF with abnormal chest radiograph, whose symptoms cannot be otherwise explained. Comparison was made with the published data from the same centre from Jan 1991 - Dec 1993 (epoch I).

Results Out of 4,255 livebirths in epoch II, 495 (11.6%) had MSAF. 23 (4.6% among MSAF, 0.5% among birth cohort) developed MAS. Compared to epoch I with 12,268 livebirths, 1893 (15%) MSAF and 174 (1.4%) developed MAS, there was a statistically significant reduction in MSAF OR 0.72, 95%CI [0.65 - 0.80] and MAS OR 0.38, 95%CI [0.24 - 0.58]. There was no mortality among MAS babies, compared to 2% mortality in epoch I.

Multiple logistic regression revealed Apgar scores at 1 minute and thick meconium stained amniotic fluid to be independent predictors for MAS. Other significant predictors included foetal distress caesarian delivery, non-vigorous and needing active resuscitation at birth. 34% were acidotic at birth and complications associated with MAS included air leak syndromes (21.7%), persistent pulmonary hypertension (PPHN) (13%) and hypoxic ischaemic encephalopathy (4.3%). Minor complications included coagulopathy (4.3%), severe thrombocytopenia requiring transfusions (17.4%) and neonatal jaundice requiring phototherapy (43.5%).

18 (78.3%) of MAS infants required some form of respiratory support of which 8 (34.8%) developed severe MAS requiring invasive ventilatory support. Median length of stay in hospital was 7 days for MAS compared to 2 days without.

Conclusion There was a significant decline in the incidence of MAS between the two eras studied which potentially reflects better intrapartum and neonatal care. However, morbidities associated with MAS continue to pose a challenge and Apgar scores at 1 minute and consistency of meconium were the most reliable predictors for developing MAS.
ELABORATING THE CARE OF THE HEALTHY NEWBORN PACKAGE IN IRAN

M.F. Bassir 1;  M. Heidarzadeh 2
1 Pediatrician Neonatologist- Shahid Beheshti university of medical sciences
2 Pediatrician Neonatologist- neonatal health department -ministry of Health and medical Education

Introduction

The most critical period of a newborn's life is in the first few days after birth. The mortality rate is highest during this period. More than 90% of births occur in health centers and hospitals.

The "healthy newborn package "contains the guidelines for the care of newborns during those first few critical days. This package also provides the guidelines to help identify high risk babies, and provides the best methods to follow during the first few days of life.

Materials and Methods

Strategy:
- selecting the topics by professionals (doctors, midwives and nurses and officials at the Ministry of Health)
- advanced review of literature to write a evidence-based guideline
- assessing of the current situation
- elaborating the national experts panels for final comment
- and finally acquiring the consent of the Iranian Neonatal Society, Iranian Society for Promotion of Breastfeeding, Iranian society of perinatology
- implanting the guideline in all public and private maternity and hospitals

Results

Objectives:
- the immediate care of newborn entails the establishment and support of respiration, providing warmth and preventing hypothermia and identifying any potential problem that may occur.

The assessment of the newborn in the first few hours of life must determine how vulnerable or high risk the newborn is and determine the special care needed.

In the case of a healthy birth, it’s important to assist the family through this "sensitive period" of significant change. This transition is critical in the enforcement of mother-baby attachment and bonding. When healthy newborns are placed skin to skin on their mothers chest immediately after birth, the mother’s body helps to keep the newborn appropriately warm, the baby is less stressed and the mother experiences incredible joy while bonding. This is also known to be the first step towards successful breastfeeding. In this critical period, caregivers must remember that the care provided to mother-newborn should be continuous, comprehensive, coordinated, compassionate and effective.

Other steps that are significant in the health of a newborn include:
- Changing the timing of cord clamping from immediately after delivery of a vigorous baby to 1 minute after delivery improves the iron status of the infant.
- Encouraging early and frequent skin-to-skin contact and rooming-in for easy access breastfeeding and early attachment are well recognized.
- Applying a standard method for identification of baby after birth, sensitizing all health care providers for the risk of newborn abduction and reinforcing the hospital security system hospital are essential to provide babies security and safety.
- At the time of discharge, it is important to include an assessment of the newborn, breastfeeding information, newborn screening and a vaccination schedule. Equally important is parent education and follow up pediatric visits for the newborn.

Conclusion

These clinical guidelines are systematically developed to help practitioners and to change clinical practice and influence patient outcome. Farther researches are needed to evaluate how the guideline is used and its efficacy on patient’s outcome.
RECURRENT NEONATAL SUPPURATIVE PAROTITIS

X. Tian; M. Eldadah; W. Chen
Pediatric Dept., Beijing United Family Hospital, Beijing, China

Introduction Neonatal suppurative parotitis is rare.

Materials and Methods We present a case of recurrent neonatal suppurative parotitis and a brief review of the literature.

Results A 17-day-old male newborn presented with 1-day history of fever and left-sided periauricular swelling. Prenatal, delivery and postnatal history was unremarkable. Physical examination revealed high grade fever 39°C, diffuse swelling and erythema of the left parotid gland which was firm to palpation. Pus was seen at the opening of the parotid duct. Facial ultrasound showed an enlarged left parotid gland with decreased echogenicity and increased blood flow signals, measured 2.9*2.8*1.7 cm. Empiric therapy with intravenous (IV) ampicillin and cefotaxime was initiated. No surgical intervention was done because of the good response of conservative therapy. After 5 days of IV antibiotics, the patient was discharged and continued on oral cefixime for 4 days at home.

The patient was readmitted 1 week after the end of cefixime with recurrence of his fever and left parotid area swelling. Pus excretion from the opening of parotid duct was sent for culture twice. Empiric therapy was started with clindamycin and metronidazole. The child again became afebrile soon after admission and parotid swelling resolved. Pus culture grew staphylococcus aureus (not MRSA). Sensitivity tests showed resistance to clindamycin. Clindamycin was switched to vancomycin on day 7 of hospitalization. The surgical team irrigated the parotid duct on day 8 because of the persistence of pus excretion from the parotid duct opening. The patient was discharged after 5 days of vancomycin therapy. He was continued on cefradine orally for 5 more days at home. The child had no further complications and no readmissions.

Conclusion Staphylococcus aureus is the most common causative organism of neonatal suppurative parotitis. Antibiotics therapy is usually effective and sometimes surgery intervention is required.
THE USE OF INFRARED SPECTROSCOPY IN VARIOUS DISEASES IN THE NEWBORN

L. Olariu 1; G. Olariu2; S. Olariu 2
1 University of Medicine and Pharmacy “Victor Babes”, Pediatrics Department, Timisoara, Romania
2 Timisoara Municipal Hospital, Neonatology Department, Timisoara, Romania

Introduction
Infrared spectroscopy (NIRS) is a noninvasive method for monitoring in real time regional tissue oxygenation status.

Materials and Methods
NIRS was used in comparison, through somatic regional oxygen saturation (rSO2S), cerebral saturation (rSO2C) and cerebro-somatic oxygenation ratio (ROCS) in a group of 30 newborns with gestational age (GA) between 24-39 weeks, birth weight 600-3100 grams, from day 3 until day 21 of life, over a 1-5 day, period required for causal diagnosis, in which we clinically presumed a decrease in mesenteric blood flow. The group included 12 newborns with ulceronecrotic enterocolitis (NEC), 6 newborns with intrauterine growth retardation (IUGR), 6 newborns with congenital heart malformation (CHM) and 6 infants with sepsis. rSO2S and ROCS were compared with each other to determine which of the two parameters are faithful for detecting changes in tissue perfusion. To verify statistical hypothesis which states that there are significant differences regarding rSO2S value and ROCS depending on the type of the disease were used ANOVA statistical tests, Bonferroni option and Pearson correlation.

Results
In the NEC group the rSO2S average was 40.37 compared with 44.94 for CHM group, 51.86 in IUGR group and 53.08 for the sepsis group. The ROCS average achieved was 0.59 for NEC, 0.68 in CHM group, 0.97 in sepsis group and 0.73 for IUGR. No statistically significant differences were found for rSO2S (F = 1.69, p = 0.18, p > 0.05) inside the group and between groups values but were significant for ROCS (F = 2.82, p = 0.04, p < 0.05).

Conclusion
The study shows that continuous noninvasive monitoring with NIRS technology can show that impaired intestinal perfusion increases with decreasing GA. Decreases of the two parameters are influenced by GA (rSO2S: p = 0.008; ROCS: p = 0.03). The lowest values of intestinal perfusion are in NEC (rSO2 = 40.37, ROCS = 0.59), followed by CHM (rSO2S = 44.94, ROCS = 0.68), IUGR (rSO2S = 51.86, ROCS = 0.73) and sepsis (rSO2S = 53.08, ROCS = 0.97). rSO2S value is less statistically significant (F = 2.82, p = 0.18) compared with ROCS (F = 2.82, p = 0.04) in patients with NEC compared to those with CHM, sepsis or IUGR.
ROCS is the most accurate parameter in determining intestinal perfusion changes and the use of NIRS remains a very good method for early detection of lower intestinal perfusion in various diseases.
ROLE OF INTRAVENOUS IMMUNOGLOBULIN IN THE MANAGEMENT OF TRANSIENT NEONATAL MYASTHENIA GRAVIS

S. Suryaprakash 1; S.J. Vohra 2; K.M.W. Liew 3; V.S. Rajadurai 2
1 Duke NUS Graduate Medical School, Singapore; 2 Department of Neonatology, KK Women’s and Children’s Hospital, Singapore; 3 Department of Paediatric Neurology, KK Women's and Children's Hospital

Introduction Myasthenia gravis (MG), a postsynaptic neuromuscular transmission defect is rare presentation in neonatal period. It can either present as congenital MG which is an autosomal recessive disorder or as transient neonatal myasthenia gravis (TNMG) which occurs in infants born to women with acquired MG through passive-transfer of acetylcholine receptor (AChR) antibodies.

Materials and Methods

Results Term male infant born to mother with history of MG on pyridostigmine, was delivered by caesarian section for decreased fetal movements and polyhydramnios. Baby had no respiratory effort at birth requiring endotracheal intubation and positive pressure ventilation. Clinical examination of baby revealed profound generalized hypotonia with absent moro reflex and multiple small joint contractures of both hands. AChR antibody titres were elevated (344nmol/L). Attempts to wean the baby off ventilator were unsuccessful and hence anticholinesterase agent, pyridostigmine was started on day 22 of life. Though the baby was able to be extubated to room air, he continued to be hypotonic and symptomatic with sucking-swallowing incoordination requiring intragastric feeding and frequent oropharyngeal suctioning. On day 38, Intravenous Immunoglobulin (IVIG) infusion was administered at a dose of 2gm/kg over 3 days. Following IVIG infusion, there was improvement in muscle tone and decrease in oropharyngeal secretions and the AChR antibodies titres decreased to 44nmol/L. Repeat course of IVIG was administered on day 60 resulting in remarkable clinical improvement in tone, power and anti-gravity movements. Infant was discharged on intragastric feeds and maintenance dose of pyridostigmine.

Conclusion Though IVIG has been used in adults with moderate to severe MG along with plasmapheresis, it has had very limited use in TNMG. Literature review shows that there are only 2 reported cases that used IVIG in the treatment of TNMG. Despite being given supportive treatment and pyridostigmine, there was little clinical improvement in our patient and this led us to use IVIG.

In conclusion, this case illustrates that TNMG is an important differential to consider in a floppy neonate. In addition to pyridostigmine, IVIG may hasten the clinical recovery process and shorten the hospital stay in infants with this disorder. However, looking at the transient nature and spontaneous improvement in most cases of TNMG, the role of IVIG in the management of TNMG needs further study.
RESPIRATORY MORBIDITY AFTER NICU DISCHARGE OF PRETERM BABIES WITH CHRONIC LUNG DISEASE

C. McKnight; S. Somisetty
Luton & Dunstable University Hospital NHS Foundation Trust, Luton, England

Introduction The study aims to investigate respiratory morbidity of preterm babies with chronic lung disease, CLD.

Materials and Methods All preterm babies born between 2008 and 2010 (inclusive) at less than 32 weeks gestation treated at, and local to, Luton and Dunstable university hospital NHS Foundation trust, LDH, were enrolled retrospectively. Data on morbidity and readmission was obtained from electronic hospital records.

Results 32 of 38 eligible babies with CLD represented to hospital at least once during the observational period, on a total of 182 occasions. 84 of 182 (46%) presentations were with respiratory illness by 25 babies; 10 of whom required high dependency care, HDU, at least once for a total of 20 HDU admissions, and 2 required transfer to paediatric intensive care, PICU, on a total of 3 occasions. Respiratory admissions’ cumulative length of stay, LOS, was 368 days, 73 of which required HDU care, equating to almost one-fifth of all days.

Conclusion Pre-term babies born before 32 weeks who develop CLD have frequent re-presentations to hospital with predominantly respiratory illnesses. With increasing numbers of extremely pre-term babies surviving, (Costeloe et al. 2012), paediatric in-patient services need to ensure adequate facilities and availability of HDU care.
THE IMPORTANCE OF USING NEAR INFRARED SPECTROSCOPY IN THE NEONATAL INTENSIVE CARE UNIT

N. Ionita 1; M. Dima 1,2; I. Enatescu 1,2; R. Tanase 1; A.E. Agoston-Vas 1
1 County Emergency Hospital Timisoara, Romania
2 University of Medicine “Victor Babes” Timisoara, Romania

Introduction
Near Infrared Spectroscopy (NIRS) technique is based on the optical properties of the brain tissue due to the natural chromophores, hemoglobin, deoxyhemoglobin and cytochrome oxidase with different characteristic absorption spectra in the visible and near-infrared wavelength range. To convert the changes in absorption and attenuation in concentration of the chromophores it is used the Modified Lambert Law. Non-invasive methods of investigation are very useful in the Neonatal Intensive Care Unit (NICU). NIRS is a non-invasive and real time technique which provides information about cerebral tissue oxygenation and cerebral blood flow. Our aim to demonstrate that observing regional cerebral oxygenation (rSO2) simultaneously with cerebral ultrasound gives a helpful hand in choosing the most appropriate therapeutic procedures and establish an early diagnose in order to prevent the onset of irreversible brain damage.

Materials and Methods
This is a prospective study including 62 premature newborn infants (gestational age= 24 – 31 weeks) admited in the NICU in our Hospital between January 2013 and July 2014. They all had perinatal acute asphyxia. We had a control lot of 19 premature born infants with gestational age of 32 weeks with a good adaptation at extrauterine life. We excluded from the study all the infants having more than 32 weeks gestational age, with major congenital malformations, multiple births and the newborn infants who died 24 hours after birth.

We monitored all the infants using pulsoximetry, near infrared spectroscopy, cerebral ultrasound, we monitored blood gases, blood pressure and all the others parameters routinely monitored in the NICU. For NIRS we had an INVOS 5100 monitor and so we could evaluate rSO2. We used neonatal sensors – OxyAlert Sensor specialy designed for the cerebral monitoring. We rigorously respected the indicatons for the placement of the sensors. We had no accidents; in literature and in the users guide are specified skin burns. If there were artefacts because of light penetration under the sensor, we excluded the record from the study. The first recorded value of oxygen was considered the baseline value and we set the minimum and the maximum references ranges. The nurses from the NICU were trained in using the INVOS device. The doctors and the nurses had to select from the device menu every manipulation of the infant, including drug administration, repositioning, feeding, endotracheal tube suction or if the infant had apnea or seizures.

Results
We studied the variations of the most important parameters of the postnatal adaptation: SpO2 (peripheral oxygen saturation), blood pressure, blood gasses (PaO2, PaCO2), blood sugar, heart rate, hemoglobin, hematocrit. We considered these parameters could influence the degree of cerebral oxygenation. All these data were corroborated with cerebral ultrasound aspects.

We strateted the monitoring of cerebral oxygenation 4 hours after birth during 72 hours. In 3 cases we started the monitoring right after birth and we compared rSO2 with SpO2 values and the utility uf NIRS in making the decision of resuscitaiton, especially regarding the need of oxygen administration.

Monitoring cerebral oxygenation, blood pressure and blood gases identifies premature born infants with high risk of severe cerebral haemorrhage and helps the doctor to intervene rapidly and to take therapeutical decissions for prevention. There is a strong correlation between median blood pressure value and the fraction of oxygen extracted by the cerebral
tissue. The limits for the rSO2 were set at 55 – 85%. Under 50% we speak about hypoxia, over 85% is hyperoxia. We considered the area under the curve (AUC) as being an important indicator of pathological aspects: it showed over 180 minutes of rSO2 < 55%. A median blood pressure value of 24 – 25 mmHg determined a decrease of cerebral oxygenation with 15% under the baseline value. We performed cerebral ultrasound in the 3rd and 14th day of life. **Conclusion** During transition period after birth, the brain is one of the most vulnerable organs to hypoxic-ischemic injury. Pulsoximetry is used routinely in the NICU to determine systemic oxygenation; it needs detection of arterial pulse and blood flow. It is not conclusive for appreciating cerebral oxygenation compared to INVOS. NIRS is a noninvasive method which it is not routinely used in the NICU, it determines in the capillaries the balance between the O2 which is delivered to the tissue and the O2 which is utilized; there is no need for pulse or blood flow detection. NIRS has organ and region specificity. The oxygen values registered using NIRS must be interpreted in the clinical context (blood pressure, blood gasses, peripheral oxygenation). NIRS is a very reliable method of investigation, real time and as the devices are portable, we can monitor at bedside. Cerebral hypoxia and hyperoxia are feared events in the NICU because they are involved in increasing mortality and morbidity of infants. Hyperoxia shows especially in the newborn infants with hypoxic ischemic injury in the phase of cerebral reperfusion, due to a lower metabolism in critical patients who are not receiving supplementary oxygen; these events are correlated with a poor prognosis. Cerebral ultrasound is also a noninvasive method used to identify and to diagnose cerebral injury and for long term investigation of cerebral development, but it is not useful if we intend to prevent the occurrence of the lesions.
EVALUATION OF NEONATAL SEPSIS MARKERS IN OUR NEONATAL INTENSIVE CARE UNIT

N. Ionita 1; M. A. Dima 1,2; I. Enatescu 1,2; A. Grecu; A.-E. Agoston-Vas 1
1 County Emergency Hospital Timisoara, Romania
2 University of Medicine “Victor Babes“ Timisoara, Romania

Introduction Sepsis is one of the most important causes of neonatal morbidity and mortality. For extremely low birth weight premature infants (ELBW) – gestational age between 24 – 32 weeks - it can be considered the main cause of mortality. The vulnerability of these category of patients is due to multiple causes like: the absence of natural defence barrier, global umoral and celular immune system deficiency, unresponsive reaction to the infectious aggression, prolonged parenteral feeding, no breastfeeding, multiple invasive maneuvers and procedures, prolonged hospitalization (multiresistant germs). Lately in our country and in our hospital we have remarkable progresses in the surveince of ELBW premature infants.

Materials and Methods This is a retrospective study including premature infants with gestational age between 24 – 36 weeks, admitted in the Neonatal Intensive Care Unit in our Hospital during 2 years (between 2012 – 2013). We evaluated maternal risk factors for prematurity and the relation between these factors and neonatal sepsis. We had a study lot including 40 premature infants and a control lot including 29 newborn infants apparently healthy. Admission criteria for the study lot: gestational age = 24 – 32 weeks, confirmed or suspected perinatal infection, neonatal sepsis. Admission criteria for the control lot: gestational age = 34 – 40 weeks, good evolution after birth, no local or systemic infection.

The evaluation of maternal parameters included: social and economic background, education, job, smoking, alcohol consumption, blood group and Rh; pathologic aspects: allergies, anemia, diabetes, hypertension, infection; medication during pregnancy: vitamins, hormones, antifungical, antispasmodics, non steroid anti-inflammatory, antibiotics (cephalosporin, aminoglycosides). The aim was to evaluate blood parameters of sepsis in the newborn infants like: procalcitonin (PCT), interleukin-6 (IL-6), C reactive protein (CRP), mannose bounded lectin (MBL) and we correlated them to the parameters routinely investigated in neonatal sepsis.

Results We determined the relation between maternal risk factors and prematurity and we evaluated the relation between these maternal risk factors and the presence of neonatal sepsis. Mothers' social and economic background (rural or urban), education and job are potential risk factors of prematurity. Using statistics we had no significantly differences between our study and control lots regarding social and economic background. We observed that the mothers having a superior education gave birth to a significant lower number of premature infants compared to the others. Prematurity was not influenced by mothers' jobs. Alcohol consumption and smoking are potential risk factors of prematurity, but in our study we had no influence. Unlike the Rh of the mothers, the negative Rh represented a risk factor in our study. Diverse pathological condition of the mothers can influence premature birth. In our study there was no relation between allergies, anemia, diabetes and hypertension.

Gestational age and birth weights were significantly influenced by mothers infections during pregnancy. Medication used during pregnancy did not influenced premature births. IL-6 and MBL values had a high variance related to gestational age. PCT and IL-6 had higher values in boys. All of the markers were higher in the infants with sepsis.

Conclusion In the NICU it is absolutely necessary to early diagnose sepsis. It is very important to know the cause, the risk factors. If the sepsis is not diagnosed on time, it can lead to multiple organ dysfunction. It is also important to differentiate the infants with sepsis from
the infants who don’t have sepsis, to know if the cause of the sepsis is related to the mother or not. Determination of the markers we previously mentioned and comparing them to routinely used laboratory tests helps us for a more correct and precocious therapeutic decision. Extreme prematurity (gestational age = 24 – 32 weeks) represented almost 50% of the premature infants admitted in our NICU so we find it very important to use modern strategies of diagnose in neonatal sepsis.
MATERNAL AND CORD BLOOD SCLEROSTIN AT THE EXTREMES OF FETAL GROWTH: THE IMPACT OF MATERNAL DIABETES

D.D. Briana 1,2; T. Boutsikou 1; M. Boutsikou 1; M. Xagorari 2; D. Gourgiotis 2; A. Malamitsi-Puchner 1

1 Department of Neonatology, Athens University Medical School, Athens, Greece
2 Laboratory of Clinical Biochemistry-Molecular Diagnostics, 2nd Department of Pediatrics, Athens University Medical School, Athens, Greece

Introduction During pregnancy changes occur in the maternal calcium homeostasis to fulfil fetal demand. Pregnancies complicated by fetal growth disturbances are associated with impaired mineral homeostasis and bone metabolism. Sclerostin is a glycoprotein produced by osteocytes, which inhibits osteoblast differentiation and bone formation, by directly blocking the Wnt signalling pathway. We aimed to prospectively evaluate maternal and cord blood sclerostin concentrations in pregnancies with abnormal fetal growth and investigate the possible association of the above concentrations with a variety of perinatal parameters.

Materials and Methods Plasma sclerostin concentrations were determined by ELISA in 80 maternal and 80 cord blood samples from asymmetric intrauterine growth-restricted (IUGR, n=30), large-for-gestational age (LGA, n=30) and appropriate-for-gestational-age (AGA, n=20) singleton full-term pregnancies. Fourteen out of 30 mothers with LGA offspring presented with diabetes mellitus (DM). Fetuses were classified as IUGR, LGA or AGA, based on customized birth-weight standards, adjusted for significant determinants of fetal growth.

Results Maternal and fetal sclerostin concentrations did not differ among LGA, IUGR and AGA groups. However, in the LGA group, maternal sclerostin concentrations were elevated in cases of DM (b=13.009, 95%CI 1.425-24.593, p=0.029). Furthermore, maternal and fetal sclerostin concentrations were similar in all studied groups. In a combined group and in the IUGR group, maternal sclerostin concentrations were elevated in older mothers (b=0.788, 95%CI 0.190-1.385, p=0.010 and b=0.740, 95%CI 0.042-1.438, p=0.039, respectively).

Conclusion Maternal and fetal sclerostin concentrations may not be differentially regulated in pregnancy complications leading to abnormal fetal growth. However, maternal sclerostin concentrations are higher in cases of DM, probably contributing to the previously documented alterations in bone properties and architecture, leading to poor bone quality and increased bone fragility in women with DM. Furthermore, sclerostin up-regulation with aging may be one of the molecular pathways responsible for the observed age-related decline in bone formation leading to accelerated bone loss in humans.
IS BENEFICIARY THE PRENATAL SURGERY OF MIELOMENINGOCELE

M. Pinto 1; F. Rybertt 1; H. Villalon 1; F. Otayza 2; T. Rybertt 3
1 Neonatology Dept., Clínica Las Condes, Santiago, Chile
2 Neurosurgery Dept., Clínica Las Condes, Santiago, Chile
3 Intern of Medicine, Universidad Católica de Chile

Introduction Prenatal surgery of mielomeningocele (MMC), has shown to significantly decrease the need of derivative valves installation as treatment of hydrocephalus in post natal stages. Moreover, it can reduce the proportion of children with herniation, and significantly improves neurodevelopment at 30 month of follow up.

Materials and Methods 10 children undergone prenatal surgery of MMC, in a hospital in Santiago, Chile, were followed and assessed when they were one year old. BW average, 1806 +/- 543 gr. Median of surgery, 24 weeks of GA (22-26) and median of GA at birth, 33 weeks (25-36). All of them were followed and assessed with urologist, neurologist, neurosurgeon, gastroenterologist and attending paediatrician up to one year of age.

Results Only one patient required hydrocephalus shunt (10%, 1/10) and also one (10%) presented a neurodevelopmental delay, Nevertheless, neurologic impairment of lower limbs was present in 90%, neurogenic urinary bladder dysfunction in 70%, and anal dysfunction (severe constipation) in 60%.

Conclusion In spite of the small number of cases, our experience is similar to that reported in the international references, related to the reduction of the necessity of hydrocephalus shunting and a better neurodevelopment outcome. However, a high rate of motor, bladder and anal dysfunction is seen at one year of age.
BREASTFEEDING AND NEONATAL COMPLICATIONS IN A IDMS COHORT

A. Poloniato; G. Giudicatti; M. Fomasi; R. Rovelli; G. Barera
Division of Neonatology, Department of Pediatrics, San Raffaele Scientific Institute, Milan, Italy

Introduction We describe neonatal complications and breastfeeding prevalence in a IDMs cohort (hypoglycaemia, prematurity, macrosomia).

Materials and Methods We studied 415 infants born at San Raffaele Hospital (2010-2013): 328 newborns of mothers with gestational diabetes (DG) and 85 newborns of mothers with pregestational diabetes mellitus type 1 and 2 (DM). DG: 25 infants born late preterm (33-36 GA) and 3 severe preterm (≤32 GA). 43 newborns were LGA (macrosomia) and 29 had hypoglycaemia (glycaemia≤45 mg/dl), 4 of them corrected by dextrose 10% infusion. DM: 22 babies born late preterm and 3 severe preterm. 36 newborns were LGA and 37 had hypoglycaemia (20 infusion). Hypoglycaemia is treated with early feeding (glycaemia 30-45 mg/dl) or with dextrose 10% iv (glycaemia≤30 mg/dl). Feeding at discharge is divided into breastfeeding (HM), mixed feeding (HM+FA) and formula feeding (FA). Chi-square test was used to assess statistical differences.

Results

• Nutrition
DG: 66.5% of infants had HM, 30.2% had HM+FA and 3.3% had FA. DM: 41.1% of newborns had HM, 51.8% HM+FA and 7.1% FA.
Controls OSR: 72.2% of infants had HM, 24% HM+FA and 3.5% FA.
• Hypoglycaemia and nutrition
8.8% of newborns DG presented hypoglycaemia (51.7% HM, 48.3% HM+FA), 4 of them required infusion (50% HM+FA, 50% HM). Hypoglycaemia occurred in 43.5% of babies DM (29.7% HM, 64.9% HM+FA, 5.4% FA). Among the 20 infants requiring infusion, 35% had HM, 55% HM+FA and 10% FA.
• Prematurity and nutrition
DG: 7.6% of infants are late preterm (48% HM, 44%HM+FA, 8% FA); severe prematurity occurred in 0.9% of babies (1 fed with HM+FA and 2 with FA). DM: 25.9% of infants are late preterm (36.4% HM, 59.1% FA+HM and 1 with FA). Severe prematurity occurred in 3 newborns (3.5%), 2 fed with HM+FA and 1 with FA.
• Macrosomia and nutrition
DG: 42.3% of newborns were LGA (33.3% HM, 55.6% had HM+FA and 11.1% FA). DM: 13.1% of infants were LGA (69.8% HM, 25.6% HM+FA, 4.6% FA).

Conclusion Hypoglycaemia, prematurity and macrosomia occurred more in the DM group compared to the DG group. Hypoglycaemia treated by dextrose 10% infusion is the main adverse outcome as regard feeding, particularly in DM (overall DT1). In DG breastfeeding rate was a slightly inferior than in OSR controls while formula rate is the same. In DM (overall DT1 infants) exclusive breastfeeding rate is inferior than OSR controls and formula feeding rate is double compared to controls (not statically significant).
AN AUDIT OF INCUBATOR HUMIDIFICATION IN PRETERM INFANTS LESS THAN 32 WEEKS GESTATION

S. Arunachalam 1, L.K. Goh 2, W.B. Poon 3, V.R. Baral 4
1 Associate Consultant, Department of Neonatal and Developmental Medicine, Singapore General Hospital, Singapore
2 Resident in Paediatrics, Department of Neonatal and Developmental Medicine, Singapore General Hospital, Singapore
3 Consultant, Department

Introduction Silverman1 et al described the positive effects of environmental humidification in reducing mortality and morbidity in preterm new born infants more than 50 years ago. The immaturity of the stratum corneum and the exposure to the ex-utero gaseous environment from an aqueous one in foetal life predisposes infants to increased Trans-epidermal water losses (TEWL). Humidification of neonatal incubators reduces this water loss leading to better control of fluid and electrolyte balance particularly in infants < 1500 g. However, there are concerns regarding the safety of incubator humidification systems and potential risks of nosocomial infections. There are also concerns regarding greater temperature variations with its use in tropical climates. As a result, humidification of neonatal incubators was not routinely practiced in our level 3 NICU until recent concerns regarding electrolyte imbalance and temperature instability prompted a change in practice. As a result, this is now a standard practice in our unit since March 2014.

Materials and Methods This was an audit of all preterm infants < 1500 g and < 32 weeks gestation born in our institution before introduction of incubator humidification. A review post-guideline implementation was undertaken to close the audit loop. The parameters analysed included presence of metabolic acidosis, serum sodium, renal function and time to regain birth weight. We also audited the incidence of sepsis pre and post guideline implementation. Preterm infants > than 32+1 weeks gestation, those not nursed using humidification and infants undergoing surgery were excluded from the audit.

Results 47 preterm infants were audited in the pre humidification implementation group of which 23 were <1000g (ELBW) and 24 were between 1000-1500g (VLBW). In our re-audit following implementation of humidification, 32 infants were enrolled of which 15 were 145mmol/l) compared to 41% prior to the use of humidification.

2. Incidence of metabolic acidosis reduced by 27% from 77% in the first week of life.
3. Infants < 1000 g regained birth weight on day 13 compared to a median of 17 days pre humidification. However, this weight gain was less apparent in infants > 1000 g (14 days pre and 13 days post humidification).
4. The incidence of nosocomial sepsis (defined as blood culture positivity) remained the same at 6% before and after implementation of humidification.

Conclusion Our audit demonstrates that humidification of neonatal incubators for preterm infants is safe and beneficial particularly for preterm infants < 1500 g. Humidification helps maintain fluid and electrolyte homeostasis, improves time to regain birth weight and if appropriate precautions and infection control measures are adhered to, does not lead to an increased incidence of nosocomial sepsis.
INTRAUTERINE GROWTH RETARDATION- RISK FACTOR FOR NECROTIZING ENTEROCOLITIS IN NEWBORN INFANTS WITH GESTATIONAL AGE UNDER 28 WEEKS

S. Olariu 1, L. Olariu 2, G. Olariu 1
1 Emergency Municipal Hospital, Neonatology Department, Timisoara, Romania
2 University of Medicine and Pharmacy “Victor Babes”, Pediatrics Department, Timisoara, Romania

Introduction Intrauterine growth retardation (IUGR) is an important factor in the occurrence of necrotizing enterocolitis (NEC) in newborns, which increases the risk of this disease especially in premature infants.

Materials and Methods There were studied over a period of 4 years, 3392 newborns with gestational age (GA) less than 32 weeks in nine level III centers from Romania. The lot was divided into two categories according to GA: under 28 weeks and between 28-32 weeks, with or without NEC. To identify if IUGR was a risk factor, depending on GA, in NEC etiology, we used Chi-square statistical test and Wald binomial logistic regression test.

Results The NEC group had a smaller average of birth weight (BW) and GA (858.06 g; 26.48 weeks) than the group without NEC (952.69 g; 26.69 weeks). The group with NEC had a higher percentage (46.94%) of the cases who presented IUGR compared to the group without NEC (30.45%).

The tests identified that a GA under 28 weeks significantly increases the risk of NEC if the infant is with IUGR: $\chi^2 = 11.01; p = 0.001$ (OR, 95% CI 2.02; 3.08). The tests are not statistically significant if the GA is between 28-32 weeks: $\chi^2 = 1.32; p = 0.15$ (OR, 95% CI, 1.32, 0.90 - 1.94).

Conclusion IUGR is an important risk factor for NEC especially in infants with GA under 28 weeks. At a GA between 28-32 weeks IUGR has no statistical significance in the occurrence of NEC.

For an overall incidence of NEC of 6.28% in our study group, IUGR infants have a double chance to develop NEC if the GA is below 28 weeks.
OUTCOME OF PERINATAL CARE AT THE LIMITS OF VIABILITY

J. Smisek; P. Simjak; Z. Hajek
Department of Obstetrics and Gynaecology, 1st Faculty of Medicine, Charles University, Prague, Czech Republic.

Introduction The aim of this retrospective study was to evaluate the outcome of infants born from pregnancies terminated at the border of viability, in so-called "gray zone" and to determine factors with impact on the outcome.

Materials and Methods A group of 96 pregnant women who gave birth between 22 + 0/7 to 25 + 6/7 weeks of pregnancy at Department of Obstetrics and Gynecology, General Faculty Hospital in Prague in 2009 - 2013 were retrospectively studied. Perinatal and neonatal characteristics together with placental histology were obtained and statistically evaluated.

Results A total of 126 infants were enrolled. 18 (14.3 %) stillbirths or early neonatal deaths at delivery room occurred. 108 (85.7 %) live born infants were provided with intensive care and 76 (73.4 %) of them were later on discharged from hospital. In logistic regression analysis, each additional gestational week leads to increase of survival (OR= 3.47; 95% CI: 1.97, 6.12) and with every extra 100g of birth weight, the newborn has a greater chance of survival (OR= 1.8; 95% CI: 1.21, 2.68). Delivery by caesarean section significantly increased survival rate when compared to vaginal delivery (OR= 2.96; 95% CI: 1.26, 6.95). Completed course of antenatal corticosteroids leads to a 5.67-fold increase in survival rate (OR= 5.67; 95% CI: 1.81, 17.74). Histologically verified intraamnial infection or elevated markers of inflammation in maternal serum did not significantly increase mortality, but influenced incidence of bronchopulmonary dysplasia (OR = 5.11; 95 % CI 1.87 to 14.01, p = 0.0015) and incidence of retinopathy of prematurity (OR = 3.5; 95 % CI 0.72 to 17.01, not statistically significant). Severe grades of IVH were much more common in newborns 23rd and 24th weeks of gestation (OR = 4.4; 95 % CI 1.7 to 11.5; p = 0.0023) but was not significantly influenced by other factors.

Conclusion The outcome of infants from pregnancies terminated at the limit of viability depends most importantly on gestational age. Most important factors contributing to mortality were birth weight, completed course of corticosteroids, mode of delivery but long term morbidity was significantly influenced by presence of intraamnial infection.
NEONATAL LISTERIOSIS: REVIEW OF 2 CASES

R. Mata Fernández; A. Trumm; K. Holak; J. Hübner
Kinderklinik und Kinderpoliklinik im Dr. von Haunerschen Kinderspital, LMU Klinikum, Munich, Germany

Introduction Listeriosis is a relatively rare cause for neonatal sepsis. Early onset is usually associated with sepsis, respiratory distress and meningitis. We present two cases of neonatal early-onset listeriosis in preterm babies.

Materials and Methods We reviewed the clinical features, laboratory findings, timing of treatment of these two patients, who were admitted in our ward between 2005 and 2014.

Case Reports Case 1: Preterm baby, 30+5 gestational weeks, born by caesarean delivery. Risk factors for infection were premature rupture of membranes, suspected chorioamnionitis (maternal C-reactive protein 8.6 mg/dl, IL-6 in amniotic fluid 42990 pg/ml), abnormal cardiotocography with early decelerations, green stained amniotic fluid. He developed respiratory distress, petechial rash at the trunk and head, long capillary refill, edema, initially leucopenia (min. 3000 G/l) followed by extreme leukocytosis (max. 76800 G/l), trombopenia (min. 53000 G/l), serum C-reactive protein max. 14,4 mg/dl, IL-6 max. 1809 pg/ml. He was invasive ventilated for 3 days and non invasive ventilated until seventh day of life. Listeria monocytogenes was isolated from blood culture, ear swab and gastric aspirate. He was treated with ampicillin and cefotaxim for 4 days, followed by 17 days monotherapy with ampicillin. A lumbar puncture was not performed because of clinical instability and a grade II / III intraventricular haemorrhage. Due to anemia and trombopenia he required several transfusions. He showed a good clinical progress. No neurological involvement was observed.

Case 2: Preterm baby, 29+6 gestational weeks, born by caesarean delivery. Risk factors for infection: suspected chorioamnionitis (maternal CRP 6 mg/dl). He developed respiratory distress, arterial hypotension, leucopenia (min. 2800 G/l) followed by leukocytosis (max. 38000 G/l), serum C-reactive protein max. 11,5 mg/dl, IL-6 max. 9200 ng/ml. No invasive ventilation was needed. He required 5 days of non invasive ventilation. He was initially treated with Ampicillin, Cefotaxim and Tobramycin for 7 days followed by Ampicillin and Tobramycin 7 days. Listeria species was isolated from blood culture. Cerebrospinal fluid was sterile and no neurological symptoms were observed.

Conclusion Two preterm babies were diagnosed of listeriosis in our neonatal unit between 2005 and 2014. Signs of sepsis were already observed at birth. They showed a favourable evolution under antibiotic therapy. Both survived with no sequelae.
Introduction Creating an early Mother-Baby Bond is one of the main therapeutic goals to achieve in the first days and is a key component of the prevention of mid and long term psychosocial difficulties. Goal: assess main difficulties in several types of Mother – Baby bond creation strategies in the NICU during the baby’s first week.

Materials and Methods 110 Mother – Baby dyads were assessed during a 15-month period in a third-level NICU in a private hospital in Santiago de Chile using the “An Observation Scale of the Bond Mother- Baby Admitted in NICU” (Santos, 2008) standard, which has been validated for Latin America. This assessment includes 5 functions: Maternal Closeness, Physical, Visual, Verbal and body language. A measurement of the Profile of the Level of Maximum Achieved Bond for the general group.

Results The average birth weight was 1925 +/- 729 grs, the median of EG 33 weeks (25-40). 59.1% (65/110) of the mothers were primiparity and the age median was 33 years (23-42). The average values for each parameter were as follows: Maternal Closeness, 2.5; Physical, 2.78; Visual, 3.0; Verbal, 0.98; y Body Language, 3.0. Overall, a significant decrease in the verbal and physical functions was detected.

Conclusion This assessment enables the creation of strategies of intervention of early bonds. Each NICU should identify the needs of their patients and take proactive action as difficulties in Mother-Baby bonds could generate mid and long term problems.
RETROSPECTIVE PRE-AUDIT SURVEY OF HHHFNC USAGE IN INFANTS BORN AT ≥ 30 WEEKS GESTATION

W. S. Muhsen; A. Holgate ; R. Roy
Neonatal Intensive Care Unit, Norfolk and Norwich University Hospital, Norwich, England.

Introduction HHHFNC (Humidified Heated High Flow Nasal Cannula) introduced in our unit in 2008. Gradually it became one of the main modes of non-invasive respiratory support. However, the general feeling was; HHHFNC, on occasions, was applied to late preterm, near term and term infants when they could have managed with other modes of non-invasive respiratory support such as Low-Flow Nasal Cannula (LFNC), ambient oxygen or its application could have delayed the initiation of mechanical ventilation in infants with severe respiratory failure.

Materials and Methods It was a retrospective study, targeted patients admitted to Neonatal Intensive Care Unit (NICU), Norfolk and Norwich University Hospital (NNUH) from 01/01/2014 till 01/04/2014. Its inclusion criteria were; 1- patients born at ≥ 30 weeks gestation, 2- received HHHFNC as initial support, 3- no major or incompatible with life congenital abnormalities. Badger-net system used to identify eligible candidates. Originally, 22 were selected, 3 of them excluded. Hence, 19 patients were included in the final analysis.

Results All the patients were presented with respiratory distress signs. Grunting was the most common symptom. However, 90% of medical records did not contain detailed description of the clinical respiratory status of the patients. 85% had blood gases analysis prior to initiation of HHHFNC; only 10% of them were arterial blood samples. 50% of pre- HHHFNC blood gases analyses showed acidaemia secondary to respiratory failure. 58% required ≤ 0.30 FiO2 at the initiation of HHHFNC. 21% of patients required mechanical ventilation; 75% of them were the most premature i.e. < 34 weeks gestation at birth.

Conclusion Initial symptoms and their severity (Mild, moderate or severe) together with indications for initiation of HHHFNC therapy should be clearly stated. Documentation must also show unequivocal management plans with clear display of thinking process. In other word, is HHHFNC is the appropriate respiratory support; could other mode of respiratory support such as LFNC alleviate patient’s symptoms? Or application of mechanical ventilation is required.
EXTREMELY LOW BIRTH WEIGHT INFANT AND BREASTFEEDING: IMPACT OF KANGAROO MOTHER CARE, EXPERIENCE AND RESULTS AT ONE YEAR OF CORRECTED AGE IN A COHORT OF 737 INFANTS DISCHARGED HOME IN KANGAROO POSITION (2001-2015)

E. Rodriguez 1; N. Charpak 2; A Montealegre 2; S. Fernandez 2; L. Rosero 1; L. Pulido 1
1 Kangaroo Mother Care Program, Hospital Universitario San Ignacio, Bogotá, Colombia
2 Kangaroo Foundation, Bogotá, Colombia.

Introduction Objective: To evaluate the rate of breastfeeding and growth results at one year of corrected age in a cohort of extremely low birth weight preterm (<1000g) treated in our ambulatory KMC program between 2001 and 2015 (3.5% of the total cohort of 20835 LBW or premature infants followed during the same period).

Materials and Methods Prospective cohort of 737 ELBWI infants (BW<1000g) discharged home in kangaroo position (KP) with periodical follow-up until 12 months of corrected age. Promotion of breastfeeding is one of the main components of the KMC intervention.

Results 737 eligible infants (≤ 1000 at birth) were admitted to the ambulatory KMC program. 91.6% of them were less than 30 weeks of GA at birth, 28% with IUGR, 99.3% were admitted more than one month with 87% UCI graduate with a median of 61 days of hospital stay, Nosocomial infection was reported in 41% of the infants 81.4% were receiving oxygen at entry and weight of weaning was 4622 gr in average with 150 days of chronological age. Exclusive breastfeeding at 40 weeks of gestational was reported in 15% of the infant and 77.2% receiving mix feeding. At 12 months of corrected age 20.6% of the cohort were still breastfeed. Anthropometric data at 40 weeks were for weight 2627 g, height 45 cm and 33.6 cm for head circumference. At one year the weight was in average 7730 g, height 70 cm and head circumference 44.4 cm. The overall mortality was 2.7% from discharge up to one year of corrected age, 10% were lost to follow up and 11.8% lost their health insurance.

Conclusion Considering the beneficial effects of breast milk on digestive tolerance, nutritional quality and protection against infection and the anthropometric results of this cohort, the argument to stimulate the feeding of the extremely preterm babies with milk from their own mother is valid. Breastfeeding the premature and/or LBWI is the cornerstone of KMC nutrition strategy and one of the 3 components of the KMC method and go in parallel with the strategy of open unit 24 hours /day to parent and family. Colombia modifies the maternity leave a few years ago and mothers of premature infants are recuperating the time of prematurity up to 37 weeks. We hope to begin to see the impact on exclusive breastfeeding at 40 weeks and 3 months of corrected age.
Developmental Assessment of Healthy Preterm Babies of a Kangaroo Mother Care Program Using a Test Based on the Bayley Scales of Infant Development, Third Edition, and a Test Based on the Griffiths Scales of Mental Development, Revised Edition.

M. Cristo 1; M. Minski 1; P. Cárdenas 1; A. Salazar 1; C. Sánchez 1; S. Moreno 2
1 Kangaroo Foundation and Kangaroo Mother Care Program, Hospital Universitario San Ignacio, Bogotá, Colombia.
2 Pontificia Universidad Javeriana, Bogotá, Colombia

Introduction Babies who are born prematurely may present delays in the cognitive and motor development. Constant evaluation of children at risk requires stable assessment methods that are also supported by an appropriate body of evidence. This has generated major interest in the assessment of the development of these infants and in determining short and long-term outcomes for babies born prematurely. Thorough understanding of child development and the use of a comprehensive, well-researched measure are essential in the evaluation process for preterm babies. Assessment measures can be used effectively in the early identification of developmental delays during the first year of life and in preventing barriers to learning and development later on.

Objective: To describe the development of a group of preterm infants by obtaining the normative values from two different assessment methods at 3, 6, 9 and 12 months of the child’s chronologically adjusted age.

Materials and Methods Descriptive longitudinal comparative study with a total of 306 preterm healthy babies, 169 (55.2%) girls and 137 (44.8%) boys. The median birth weight is 2107grs and the median gestational age is 34 weeks. Participants were randomly assigned to a test, and within 8 days they were assessed with the second test. This procedure was repeated at 3, 6, 9 and 12 months. The two assessment methods used in the present study were a test based on the Bayley Scales for Infant and Toddler development (third edition) and a test based on the Griffiths Scales of Mental development (revised edition).

Results The test based on the Bayley–III shows that participants obtain a higher average composite score for the cognitive area, and that throughout the first year the language area scores are lower than the other areas, while the motor area scores seem to decrease with time. Results from the test based on the Griffiths Scales show that at every point, both the subscale and the total scores are equivalent to the infants’ age at each moment of evaluation.

Conclusion Results from both tests indicate no clear developmental delays in any particular area for preterm babies. Both assessment methods allow for an adequate evaluation of the infant’s development. Further analyses are required in order to fully compare the developmental outcomes from both methods.
MORBIDITY AND NEURODEVELOPMENTAL PROGNOSIS IN A PROSPECTIVE SAMPLE OF 10140 NEAR TERM PREMATURE INFANTS (34 0/7 TO 36 6/7 WEEKS) FOLLOWED UP TO 1 YEAR OF CORRECTED AGE IN AN OUTPATIENT KANGAROO MOTHER CARE PROGRAM (KMCP) AT BOGOTA, COLOMBIA.

A. Montealegre 1; E. Rodriguez 2; S. Rodriguez 2; N. Charpak 3; L. Rosero 2
1 Pontificia Universidad Javeriana, Bogotá, Colombia
2 Kangaroo Mother Care Program, Hospital Universitario San Ignacio
3 Kangaroo Foundation, Bogotá, Colombia

Introduction
Low birth weight (LBW) deliveries are highly prevalent, particularly in middle and low income countries (12% in Colombia). Since 1993 The Kangaroo Foundation is monitoring around 1000 LBW infants per year in the outpatient KMCPs.

Materials and Methods
Prospective cohort of 20.835 premature (<37 weeks) and/or LBW (<2500 g) infants followed up to one year of corrected age in the outpatient Kangaroo Mother Care Programs at Bogotá, Colombia, between 2001 and 2014. 48,7% was near term infants. Variables: Weight and gestational age at birth; acute fetal distress; anoxia; stay in NCIU; any grade of inter ventricular hemorrhage; seizures; bronchopulmonary dysplasia; neurologic exam at 3, 6, 9 and 12 months of corrected age; Somatic growth and breastfeeding rate; psychomotor development at 6 and 12 months of corrected age; neurosensory sequel and mortality rate at one year of corrected age.

Results
Near term infants represented 48,7% of the total cohort. 43,5% received prenatal corticoids for lung maturation, 33% required immediate resuscitation, and 79% had IUGR. During the hospital stay, 26,7% presented a pathologic jaundice, 6,9% had symptomatic hypoglycemia, 2% had an IVH and 20% were discharged with ambulatory oxygen. 35% were NICU graduates and 27% of them had been ventilated. 5,2% had history of nosocomial infection at entry.

Post-natal age at entry was for 27% within first 7 days; 40,5% between 8-14 days; 20,7 % between 15-30 days and for 11,6% more than 1 month. 33,8% of patients were readmitted at least once up to one year. Average weight, length and head circumference were 2138 g; 45 cm; 32 cm at birth, 2968 g; 47,5 cm; 34,7 cm at term (65,5% Exclusive Breastfeeding and 32,6% BF + Formula), and 8779 g, 73 cm and 46 cm at one year of corrected age. Retinopathy was detected in 1,4 %, ophthalmic surgery with laser in 0,3%, and blindness in 0,04%. 2% had a myopia diagnosed before one year. Diagnosis of high risk of cerebral palsy at one year was 3,1%. Neurological exam was not normal in 27% at 6 months of corrected age and in 5% at one year of corrected age. Mean developmental coefficient at 6 months was 91,6 and at 12 months was 100,7 with 12,8% borderline or less. Lost to follow up was 13,5 % from entry into KMC to one year of corrected age and 12,1% lost their health insurance. Overall mortality was 0,6 % up to one year, 83% of deaths occurring between discharge and 3 months.

Conclusion
KMCP is a good strategy and unique opportunity in Colombia. One year of corrected age is the minimum acceptable follow up for these children, taking into account the data obtained from our 20 years quality monitoring, that demonstrate they cannot be assimilate to term infants. The opportunity for close monitoring and intervention is essential to detect and reduce reversible alterations in growth and development.
QUALITY OF CARE OF KANGAROO MOTHER CARE PROGRAMS EVALUATED IN 20835 INFANTS IN COLOMBIA.

E. Rodriguez 1; N. Charpak 2; A. Montealegre 2; S. Fernandez 1
1 Kangaroo Mother Care Program, Bogotá, Colombia
2 Kangaroo Foundation, Bogotá, Colombia

Introduction Rational: Low birth weight (LBW) deliveries are highly prevalent, particularly in middle and low income countries (12% in Colombia). Since 2001 The Kangaroo Foundation is monitoring around 1000 LBW infants per year in the outpatient Kangaroo Mother Care Programs.

Objective: To evaluate the performance of a Kangaroo Mother Care Program (KMCP) in terms of selected health outcomes achieved and compliance with evidence-based processes.

Materials and Methods Cohort of 20835 NB less than 37 weeks and/or less <2500 g, followed up to one year of corrected age in the outpatient KMCP at Bogota and Medellin, Colombia between 2001 and 2014.

Neonatal Outcomes: NCIU stay; any grade of intraventricular hemorrhage; mechanical ventilation; seizures; bronchopulmonary dysplasia; nosocomial infection; days of hospital stay; neurologic exam at 3, 6, 9 and 12 months of corrected age; somatic growth at 40 weeks and 1 years of CA; psychomotor development at 6 and 12 months of corrected age; neurosensory sequel and high risk of cerebral palsy and mortality rate at one year of corrected age.

Results 20835 eligible infants (≤2500 g. at birth and or less than 37 weeks GA) were admitted in the ambulatory KMC programs. GA less than 30 w 11,3%; 31-34 39,2%; 35 to less than 37 33,2%; more than 37 w 16,3%. 11,3% of mothers was adolescents and 13,5% had more than 35 years old. 28,6% of mothers were toxemic, 32,9% had IVU, 10,3 % gynecologic infection and 39,5% bleeding. Of the infants of GA less than 34 weeks, 71,1% had lung maturation. 70,4% of deliveries was by cesarean section. Post-natal age at entry was between 1-15 days for 51,7%. 44,5 % was NICU graduates and 47% of them had been ventilated. 30% of infants were oxygen-dependent at entry and 9,3% had any grade of intraventricular hemorrhage. 12,7% had history of nosocomial infection at entry. Lost to follow up was 13,8 % from entry into KMC to one year of corrected age. Overall mortality in the cohort was 0,9 % up to one year, 2,6% of deaths occurring between discharge and 3 months (10% in 1994 versus 0,3% in 2013). 0,6% of patients were readmitted at least once. Average weight, length and head circumference were 2926 g, 47cm, and 34,6 cm at term (36% Exclusive Breastfeeding y 60% BF + Formula), and 8661 g, 71,9 cm and 45,6 cm at one year of corrected age. Retinopathy was detected in 6 %, ophthalmic surgery with laser in 1,1%, and blindness in 0,1%. Diagnosis of high risk of cerebral palsy at one year was 4%. Mean developmental coefficient at 6 months was 91,2and at 12 months was 100,0.

Conclusion The KMCP is a good strategy and unique opportunity for the follow up of high-risk infants as the premature or low birth weight newborn in Colombia. One year of corrected age is the minimum acceptable follow up for these children, taking into account the data obtained from this 20 years quality monitoring. The opportunity for close monitoring and intervention is essential to detect and reduce reversible alterations in growth and development.
TRANVERSAL SURVEY OF A COHORT OF 569 EXTREMELY LOW BIRTH WEIGHT (<1000GR) OR EXTREMELY PRETERM INFANTS (< 29 WEEKS) DISCHARGED AT ONE YEAR OF CORRECTED AGE FROM AN AMBULATORY KANGAROO MOTHER CARE PROGRAM TO A NORMAL HEALTH INSURANCE FOLLOW UP IN A MIDD

A. Montealegre 1; N. Charpak 2
1 Kangaroo Foundation, Bogota, Colombia
2 Pontificia Universidad Javeriana, Bogotá, Colombia

Introduction In Colombia the Kangaroo Mother Care Program (KMC) monitors high-risk premature infants for twelve months. However, less is known about the experience of premature infants after discharge. This information is particularly important regarding extremely premature infants who create a strain on the public health system especially in middle resources countries.

Objective: Explore the clinical course of a cohort of newborns <1000gr or <29 weeks of gestational age at birth after they are discharged from KMC.

Materials and Methods Telephone interviews with parents of a cohort of 569 premature babies managed by three KMC between 2002 and 2012.

Results The study contacted 65.4% of the cohort, averaging 4 years old. 34 patients (6%) passed away, 65% during the first 6 months of life. 63% were re-hospitalized, 32% previously presented intraventricular hemorrhage, 30% had chronic lung disease, 5.2% cerebral palsy or mental retardation, and 2.7% convulsions. 72% were followed by a pediatrician, 65% needed physical therapy and 39% speech therapy. 7% repeated years in school and 9% of those over 4 years old had not begun to write. 4% of those who could write had difficulties. 81% of those over 6 years old had difficulties dressing themselves; 55% did not practice sports

Conclusion Extremely immature or under weight premature babies have a higher level of respiratory and neurological consequences that impact their quality of life and that of their family. It is important to strictly monitor their health after 12 months in order to promptly detect and manage neuro-psychomotor and sensorial development disorders.
CLINICAL COURSE AND PROGNOSIS AT ONE YEAR OF CORRECTED AGE OF A 6135 COLOMBIAN LOW BIRTH WEIGHT (LBW) INFANTS COHORT DISCHARGED HOME IN KANGAROO POSITION WITH AMBULATORY OXYGEN: A 15 YEARS EXPERIENCE

A. Montealegre 2; E. Rodriguez 1; L. Rosero 1; N. Charpak 2; S. Fernandez 1; A. Parra 1
1 Kangaroo Mother Care Program, Hospital Universitario San Ignacio, Universidad Javeriana, Bogota, Colombia.
2 Kangaroo Foundation, Bogota, Colombia.

Introduction Objective: To evaluate clinical course and prognosis at one year of corrected age of a cohort of 6235 oxygen dependent preterm infants cared in our ambulatory KMC program between 2001 and 2015.

Intervention: 1) Continuous KP (skin-to-skin contact 24 hours), 2) Exclusive breastfeeding whenever possible and 3) Early discharge in KP with close monitoring and follow-up (dynamic oxymetry each day until reaching a daily weight gain of 15g/kg/day, then each week up the weaning).

Materials and Methods Prospective cohort of 6235 oxygen dependent (OD) preterm infants discharged home in kangaroo position (KP) with periodical follow-up until 12 months of corrected age to determine survival, growth, development and morbidity.

Results 20835 eligible infants (≤37 weeks of gestational age or weight ≤ 2500 at birth) were admitted in the ambulatory KMC program during this period. 6235 infants (30%) were discharged home with supplementary oxygen. Weight at birth for 37% of infants was under 1500g and for 9.6% was under 1000g, 30% weighted more than 2000g. 27,5% of patients were less than 30 weeks of GA, 38% were less than 32 and even 4,7% were more than 37 weeks of GA. Post-natal age at entry was between 1-15 days for 33%, 16-30 days for 30,3% and more than 1 month for 37% of them. 70% were NICU graduates, 57% of them had any kind of ventilatory support. The median length of stay was 20 days. 40,2% was diagnosed with BPD at entry and 11,5% had intraventricular hemorrhage. 14,3% had history of nosocomial infection at entry. Lost of follow up was 11% from entry into KMC to one year of corrected age. Overall mortality in the cohort was 1,5% up to one year, with 72% of deaths occurring between discharge and 3 months. 21% of infants were readmitted at least once. At 3 months 16% of the cohort has been readmitted for acute respiratory infection and at one year 25% of the cohort has been readmitted at least one. In average, oxygen was discontinued at a median of 72 days of chronological age and with an average of 4135 g of weight. 45% received exclusive breastfeeding up to term. Average weight, length and head circumference were 2915 g, 47 cm, 34.6cm at term and 8663g, 72 and 45,7 cm at one year of corrected age; Retinopathy was detected in 9,7%, laser surgery 2,3% and blindness in 0,2%. Risk of cerebral palsy at one year was 3,6%. Mean developmental coefficient at 6 months was 90,5 and at 12 months 98,6 (Griffiths + Bailey II behavioral subscale).

Conclusion Our experience shows that weight, over age, is a major indicator of oxygen discontinuation. Weaning in our cohort reached its peak at 3830g and 72 days of chronological age. Our ambulatory KMC program has the experience of following more than 6000 of oxygen dependent premature infants and our feeling is that early discharge in kangaroo position (median of 20 days) allows less intrahospitalary infections, higher rate of breast feeding with better somatic growth, and probably better and earlier bonding with the mother and family without considering economic impact. More studies are needed to compare these results with other practices like discharge after oxygen weaning.
FROM A CLOSE TO AN OPEN 24 HOURS NEWBORN UNIT: A TRANSITION EXPERIENCE.

A. Montealegre 1; N. Charpak 1; Z. Grosso 2; C. Fajardo 3; A. Riveros 2
1 Kangaroo Foundation, Bogotá, Colombia.
2 Kangaroo Mother Care Program, Hospital Universitario San Ignacio, Bogotá, Colombia.
3 Hospital Universitario San Ignacio, Bogotá, Colombia.

Introduction Integrating the emotional and traditional care of the newborn in the San Ignacio teaching hospital followed with the implementation of the Kangaroo Mother Care Program (KMCP) provided an opportunity to transform the closed newborn unit in an open 24 hours a day unit for the family. This transition included the development of a program to educate and train health care personnel towards the management and control of their emotions when treating newborns.

Objective: Consolidate actions to guarantee the comprehensive care of newborns, to include the parents in a more active role in the care of their infant during the process of hospitalization.

Materials and Methods The implementation of this technique was developed over a period of two years, while working on strengthening the emotional bonds. During this period of time, workshops and seminars about the management of emotions were held. Additionally studies were conducted including analysis of clinical cases to evaluate emotional impact. Also, the staff worked with parents in the management and care of their child inside the unit. During the same period of time, the adaptation of the KMCP was strengthened at the hospital, a vital condition for the success of the implementation of a 24 hours open neonatal intensive care unit (NICU).

Results The results of this experience, in conjunction with the implementation of the KMC method in the hospital as routine care for the newborn, identified a decrease in the incidence of sepsis due to cross-infection. An accompaniment to parents by the interdisciplinary team decreased the resistance and fears of health care personnel against the permanent presence of families; it also helped parents to feel more confident towards newborn care. Other benefits included a marked reduction in hospital stay as well as a significant increase in exclusive breastfeeding.

Conclusion This type of work permitted the implementation of the KMCP in the hospital without restrictions; parents continued their roles as primary caregivers in the unit. An interdisciplinary group was created; with the ability to understand the emotions parents have to deal with, as a result of infant care in NICU and routine invasive procedures. The hospital team was able to support parents undergoing a stressful experience according to the needs of the family, with critical eye and self-evaluation of their professional actions.
BARRIERS IN REFERRING NEONATAL PATIENTS TO PERINATAL PALLIATIVE CARE: A FRENCH MULTICENTER SURVEY

B. Tosello 1-2; L. Dany 3,4; P. Bétrémieux 5; P. Le Coz 1; P. Auquier 6; C. Gire 2; MA. Einaudi 1
1 Aix-Marseille University/EFS/CNRS, UMR 7268 ADÉS, Espace Éthique Méditerranéen, Hospital La Timone, 13005 Marseille, France
2 Assistance Publique-Hôpitaux de Marseille, Hospital Nord, Department of Neonatology, 13015 Marseille, France
3 Aix-Marseille Un

Introduction When an incurable fetal condition is detected, some women (or couples) would rather choose to continue with the pregnancy than opt for termination of pregnancy for medical reasons, which, in France, can be performed until full term. Such situations are frequently occurring and sometimes leading to the implementation of neonatal palliative care. The objectives of this study were to evaluate the practices of perinatal care french professionals in this context; to identify the potential obstacles that might interfere with the provision of an appropriate neonatal palliative care; and, from an opposite perspective, to determine the criteria that led, in some cases, to offer this type of care for prenatally diagnosed lethal abnormality.

Materials and Methods We used an email survey sent to 434 maternal-fetal medicine specialists (MFM) and fetal care pediatric specialists (FCP) at 48 multidisciplinary centers for prenatal diagnosis (MCPD).

Results Forty-two multidisciplinary centers for prenatal diagnosis (87.5%) took part. In total, 102 MFM and 112 FCP completed the survey, yielding response rate of 49.3%. One quarter of professionals (26.2%) estimated that over 20% of fetal pathologies presenting in MCPD could correspond to a diagnosis categorized as lethal (FCPs versus MFM: 24% vs 17.2%, \( p = 0.04 \)). The mean proportion of fetal abnormalities eligible for palliative care at birth was estimated at 19.30% (± 2.4) (FCPs versus MFM: 23.4% vs 15.2%, \( p = 0.029 \)). The degree of diagnostic certainty appears to be the most influencing factor (98.1%, \( n = 207 \)) in the information provided to the pregnant woman with regard to potential neonatal palliative care. The vast majority of professionals, 92.5%, supported considering the practice of palliative care as a regular option to propose antenatally.

Conclusion Our study reveals the clear need for training perinatal professionals in perinatal palliative care and for the standardization of practices in this field.
MEAN VALUES OF ARTERIAL BLOOD PRESSURE FOR INFANTS BELOW 24 WEEKS’ GESTATION WITHIN THE FIRST WEEK OF LIFE

A.Takahashi; S.Watabe; K.Waki; Y.Aراكaki
Department of Paediatrics, Kurashiki Central Hospital, Okayama, Japan

Introduction

Many neonatologists agree that the suitable minimum value of a mean arterial blood pressure (ABP) is equivalent to the gestational age in weeks. But few reports have estimated the normal range of blood pressure and urine volume in 22 and 23 weeks gestational infants.

The aim of this study is to investigate the relationship of mean ABP and urine volume during the first week of life in preterm infants below 24 weeks gestation.

Materials and Methods

We conducted a retrospective study of 28 surviving inborn infants below 24 weeks of gestation at our hospital from 2007 to 2011. All surviving infants had no congenital malformations and no complication of sepsis, severe intra-cerebro-ventricular hemorrhage or intestinal perforation within the first week of life. For all infants, mean ABP and urine volume values were obtained from nursing flow sheets. Mean ABP was routinely measured using arterial catheters and recorded hourly for several days, and then checked every 2 or 3 hours. Urine volume was summarized every 8 hours. We excluded data taken from 12 hours after indomethacin administration and within the first 24 hours of life, because of the unclear cooperative relation of the two parameters.

Results

For infants born at 22 and 23 weeks of gestation, mean ABP (+-standard error: SE) was 25 mmHg (+3.6) for urine volume every 8 hours under 1.0ml/kg/h, and 31 mmHg (+-5.2) for urine volume every 8 hours over 1.0ml/kg/h (p<0.01). Receiver operating characteristic curves (ROC) analysis showed that the optimal cutoff value of mean ABP for oliguria was below 28 mmHg for both groups of infants. This level had high predictive values of sensitivity (72%) and specificity (79%) in both groups.

Conclusion

Our results suggest that keeping the mean ABP over 28mmHg is appropriate for the blood pressure control in infants born at 22 and 23 weeks of gestation within the first week of life.
THE APGAR SCORE, ITS VALIDITY IN ASSESSING THE NEWBORN

L. Radulescu 1; A. M. Rosoga 2; A. Sirbu 2; M. Mihai 2; M. Urucu 2; A. Dan 2
1 UMF Carol Davila, resident doctor Department of Neonatology, Bucharest University Emergency Hospital
2 Department of Neonatology, Bucharest University Emergency Hospital

Introduction The Apgar score underlies the decision of neonatal resuscitation and evaluates its effectiveness by rapidly assessing the condition of the newborn at birth. Our study proposes a review of the validity and utility of Apgar score given to the fact that significant improvements in survival rates of very small newborn preterm due to the development of medicine has led to neonatal resuscitation indications constantly changing.

Materials and Methods We examined in a retrospective study all newborns admitted between 2013-2014 live in the Neonatology Department of the Bucharest University Emergency Hospital. Data was obtained from the observation sheets of newborns and contained Apgar scores at 1 and 5 minutes, type of birth and associated pathologies.

Results Apgar score was not affected by newborns sex. Prematurity rate was 13.8% (863/6251) and 74.1%. Prematurity associated with low birth weight or with low AS required cardiopulmonary resuscitation in the delivery room or in the first 5-7 hours NICU, as well as more frequent intubation, positive pressure ventilation and umbilical cord catheterization. The average age at which death occurred in infants with perinatal average hypoxia was 304 hours and 108 hours in those with severe perinatal hypoxia. Other factors that negatively impacted the value of AS were respiratory depression due to maternal administered anesthetics, obstetrical trauma, congenital anomalies, infections and hypovolemia.

Conclusion In spite of its simplicity, speed and standards the Apgar score does not have the same predictive value as it did in the past. Although multiple influences caused by physiological immaturity of the newborn and the type of health care, the correlation that stands its ground being low and persistent Apgar scores and early neonatal mortality.
RETINOPATHY OF PREMATURITY

A. Dan 1; A.M. Rosoga 2; A. Mateescu 2; C. Ionita 2; A. Cercasov 2; E. Szini 2; L. Radulescu 1
1 Neonatology Department, Bucharest University Emergency Hospital Bucharest
2 UMF Carol Davila, resident doctor at the Neonatology Department, Bucharest University
Emergency Hospital Bucharest

Introduction Retinopathy of prematurity (ROP) is a multifactorial vasoproliferative disease developed in premature infants due to an abnormal development of retinal blood vessels, whose incidence is increasing around the world. We conducted a retrospective study in order to establish associations between risk factors and the incidence of ROP in premature infants, as well as newborn outcomes based on the severity of the disease.

Materials and Methods We analyzed all infants admitted into the Neonatal Department of the University Emergency Hospital Bucharest during 01.01.2012-31.12.2014. Inclusion criteria for the study were VG <34 weeks and diagnosis of retinopathy. Neonates with severe malformations and those who had died before the first ophthalmologic examination were excluded from the study.

Results The incidence of retinopathy of prematurity in this study was 14.5%. Significant associated risk factors were low birth weight (<1500g), low gestational age at birth (7 days), blood type, neonatal catch-up growth and frequent blood transfusions.

Conclusion Although multiple risks are associated with this pathology, randomized clinical long-term longitudinal trials are necessary in order to prevent a debilitating diseases such as retinopathy of prematurity.
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NEONATAL CONGENITAL ANOMALIES – RISK FACTORS AND INCIDENCE

L. Radulescu 1; O. Munteanu 3; M. Urucu 2; A.M. Rosoga 2; M. M. Cirstoiu 3; A. M. Dan 2
1 University of Medicine and Pharmacy Carol Davila, resident doctor at the Neonatology Dept. of the Bucharest University Emergency Hospital, Bucharest, Romania
2 Neonatology Dept. of the Bucharest University Emergency Hospital, Bucharest, Romania
3 Obstet

Introduction  Congenital malformations represent a major cause of neonatal morbidity and mortality.
In order to assess the prevalence, the types of neonatal congenital anomalies and the associated maternal risk factors we conducted a study over a period of 5 years at the Bucharest Emergency University Hospital.

Materials and Methods  During 01.01.2010-31.12.2014 all birth were evaluated (n = 19670) in a retrospective study. Data was extracted from the patients medical records who gave birth and the newborns that were born during this time. The classification system was based on anatomical malformations affected according to WHO classification of congenital malformations.

Results  With a general prevalence of 14.9% (2930/19670), the most affected system was the musculoskeletal system, especially deformities of the hip. Congenital anomalies were more frequently associated with low birth weight, prematurity, multiparity, consanguinity and caesarean section. Most mothers belonged to the age group 18 to 26 years.

Conclusion  A systematic approach is necessary for a correct diagnosis of congenital malformations and a competent management both prenatal and postnatal.
FALSE POSITIVE NEONATAL TOXOPLASMA SEROLOGY FOLLOWING FRESH FROZEN PLASMA TRANSFUSION

V. Kistareddy; A. Abdelhadi
1 Aberdeen Maternity Hospital, Neonatal unit, Aberdeen, United Kingdom, AB25 2ZL

Introduction
Congenital Toxoplasmosis during the neonatal period is a serious infection, resulting from the vertical transmission of Toxoplasma gondii, transplacentally from a parasitemic mother to her offspring. This is a rare case of positive toxoplasma serology in a newborn baby after receiving Fresh frozen plasma. Transfusion-associated toxoplasmosis has been described in neonates but never from Fresh frozen plasma transfusion. Maternal ante-natal saved serology and the baby’s serology three months after delivery were negative for toxoplasma indicating that it was a false positive toxoplasma serology. We decided to write up this case because of the rare presentation of findings, no previous publications and the sensitiveness of the diagnosis to the parents and family.

Case report
A male infant was born at term following emergency caesarean section for foetal distress. He was symmetrical IUGR. He was born in a good condition with Apgars of 8 and 9 at 1 and 5 minutes respectively. Maternal medical and ante-natal history was unremarkable. He was admitted to the neonatal unit at 4 hours of age in view of hypoglycaemia of 1.6mmol/L and prolonged bleeding from heel prick. The coagulation screen was deranged. The prothrombin time was 26 seconds, INR was 2.2, activated partial thromboplastin time was 61 seconds and Fibrinogen was 0.4 g/l. This was corrected with vitamin K and a transfusion of FFP on day 1. His platelet count at admission was 58,000 and his platelet count improved spontaneously. Cranial ultrasound scan done on day 2 showed speckles of intracranial calcification. Subsequently, serology for Toxoplasmosis was requested in view of the baby being Symmetrical IUGR, having a low platelet count and intracranial calcification. Both the IgM and IgG were positive. A blood sample from baby was sent for PCR but was deemed not suitable for analysis. PCR assay was inhibited by substances within the blood sample. Unfortunately, there was no blood sample from the baby prior to FFP to be tested for Toxoplasmosis serology. Maternal ante-natal (saved blood sample) and post-natal Toxoplasmosis serology were tested and negative. Urine CMV PCR was negative. The serology was confirmed by the regional Toxoplasmosis reference laboratory. Since maternal serology was negative, the baby’s protective antibodies were most likely acquired from the FFP. The Blood transfusion service were confident the treatment and storage of FFP prior to transfusion prevents transmission of Toxoplasmosis. The baby’s Toxoplasmosis serology at 3 months was negative for both IgM and IgG and he did not show any signs of Toxoplasmosis infection. This indicates that the baby’s initial positive Toxoplasmosis serology must have been acquired from FFP he received.

Conclusion
Neonatal Toxoplasmosis serology has to be interpreted cautiously and should correlate with maternal serology. There were no published cases of transmission of Toxoplasmosis antibodies through FFP in literature.

- False positive Neonatal Toxoplasmosis serology may follow transfusion of blood products including Fresh Frozen Plasma.
- Fresh Frozen Plasma is treated to remove Toxoplasmosis parasites. However blood donors with recent Toxoplasmosis infection may still have IgM antibodies.
- Antenatal as well as post natal maternal Toxoplasmosis serology will help to clarify the false positive neonatal serology.
INTRODUCTION

Having a low birth-weight or preterm baby is a stressful experience, which forces parents to assume the special care requirements that these children need. The Kangaroo Mother Care (KMC) is a technique that improves bonding, nutrition and reduces infections. Under KMC, the incubator is replaced with 24-hour skin-to-skin contact between the mother’s and the baby’s chest. KMC also includes exclusive breast-feeding, parents training at the hospital and early baby discharge, as soon as is stable, gaining weight and able to suck and swallow. Although the majority of kangaroo parents pass through this process successfully, some of them are reluctant to go home and express insecurity feelings and lack of power. This pilot study explored the perceptions on four parents of kangaroo babies, aiming at discovering improve-opportunities for a neonatal unit in a tertiary-care Colombian hospital.

MATERIALS AND METHODS

Pilot focus group with four parents reluctant to the discharge of their kangaroo babies. The focus group was audio recorded and transcribed verbatim. Three authors coded the transcription independently for categories identification. Final categories and relations among them were developed by consensus and summarized in a semantic network.

RESULTS

Kangaroo parents have a high load of uncertainty about the future health of their babies, which in turn, generates feelings of sadness, fear, insecurity, helplessness and lack of power. Additionally, they believed that having a LBW or preterm child is an abnormal situation that leaved them handicapped and restricts their autonomy. This fact generates difficulties in their adaptation to discharge and home-care. The parents said that they need to strengthen autonomy in some aspects of babies care previous to discharge with more learning based in experiences.

CONCLUSION

Kangaroo parents need full support by all the nursery personnel since their babies first hours. Nursery visits open 24 hours each day, training since hospitalization and a check list that allow to know if the parents and their preterm baby are prepared for discharge are crucial for a safe discharge. Some parents with special conditions need more support, and are reluctant to discharge. Our results stressed the importance of identifying these parents and explore their perceptions in aim to offer humanized and individualized attention.
INVESTIGATING THE EFFECT OF THE PASTEURISATION PROCESS ON TRACE ELEMENTS IN DONOR BREAST MILK

N. Mohd Taufek 1; D. Cartwright 1,2; M. Davies 1,2; A. K. Hewavitharanara 1; P. Koorts 1,2; H. McConachy 2; N. Shaw 1; K. Whitfield 1,2

1 The University of Queensland, Queensland, Australia
2 Grantley Stable Neonatal Unit, The Royal Brisbane & Women’s Hospital, Queensland, Australia

Introduction Premature infants often receive donor breast milk when the mothers are unable to produce sufficient breast milk. It is widely accepted that donor milk has considerable advantages over formula milk. Donor milk undergoes a pasteurisation process but there has been little work undertaken on the effects of this process on trace elements. This study investigated the effect of pasteurisation on a range of trace elements in donor milk.

Materials and Methods A total of 16 participants were recruited to this study, who donated to the milk bank at Royal Brisbane & Women’s Hospital (RBWH). A 2ml sample was collected pre- and post- pasteurisation, and frozen at -80°C. The information on lactational stage of the milk was documented. Inductively-coupled plasma mass-spectrometry was used to analyse the following trace elements – zinc (Zn), copper (Cu), selenium (Se), manganese (Mn), iodine (I), iron (Fe), molybdenum (Mo) and bromine (Br). The study received ethical approval from RBWH and the University of Queensland Ethics Committee.

Results No significant difference was found between the levels of any of the trace elements tested pre- and post-pasteurisation, except iron. The following p-values were calculated – Zn (0.44), Cu (0.86), Se (0.71), Mn (0.88), I (0.44), Fe (0.03), Mo (0.88), Br (0.44). The following ranges in µg/L of trace elements were reported – Zn (365.4-5460.0), Cu (147.4-820.5), Se (10.6-23.7), Mn (0.6-3.2), I (66.4-215.3), Fe (101.5-473.1), Mo (0.2-5.5), Br (704.9-3379.0). Spearman’s rank correlation analysis showed significant correlations between lactational stage of milk and the trace elements, Zn, Cu, Se, Fe and Mo. No significant correlation was found for Mn, I, and Br.

Conclusion This study found that the pasteurisation process had minimal effect on trace element levels in donor breast milk, except iron. It was noted that there was a correlation between lactational stage of donor milk and Zn, Cu, Se, Fe and Mo. Further research is needed to establish factors that may influence the levels of trace elements in donor milk.
THE INFLUENCE OF NEONATAL RESUSCITATION PROGRAM ON THE INCIDENCE AND THE SEVERITY OF NEONATAL PNEUMOTHORAX

Y.Kawase; K.Tamaki; K.Hine; S.Hagihara; N.Mizukaki; H.Arai; H.Yoda
Department of Neonatology, Toho University Ohmori Medical Center, Tokyo, Japan

Introduction

To determine whether the change in neonatal resuscitation program influences the incidence and the severity of neonatal pneumothorax.

Materials and Methods

A retrospective study of 94 term infants with radiologically confirmed pneumothorax admitted from January 2005 to December 2014. The severity of pneumothorax was defined as the mild and the severe according to the treatment. Infants requiring chest tube drainage and/or ventilatory support were classified to the severe case, and infant responding to conservative therapy were classified to the mild case. Infants were divided into two groups according to the birth year, early group (born between 2005 and 2010) and late group (born between 2011 and 2014) according to the change in neonatal resuscitation program. Perinatal conditions including meconium stained amniotic fluid and rupture of membrane, mode of delivery, and method of resuscitation were reviewed in all cases. The incidence and the severity of pneumothorax were compared between early and late groups.

Results

32 infants were classified to severe cases. There were 11 severe cases in early group and 21 severe cases in late group. There were no statistically differences in perinatal conditions and mode of delivery between early and late group, but infants with meconium stained amniotic fluid tended to have severe pneumothorax. 5 severe cases in late groups were resuscitated with CPAP.

Conclusion

There was significant increase in severe pneumothorax after the changes in resuscitation program. The use of CPAP in resuscitation may deteriorate the neonatal spontaneous pneumothorax.
NEURODEVELOPMENTAL OUTCOMES AT 7-YEARS’ CORRECTED AGE IN PRETERM INFANTS FED HIGH-DOSE DOCOSAHEXAENOIC ACID TO TERM EQUIVALENT: A FOLLOW-UP OF THE DINO RANDOMISED CONTROLLED TRIAL

C.T.Collins 1,2,3; R.A.Gibson 2,3; A.J. McPhee 2,4; M. Makrides 1,2,3; the DINO Trial Investigators
1 Women’s and Children’s Health Research Institute
2 South Australian Health and Medical Research Institute
3 The University of Adelaide
4 Women’s and Children’s Hospital; Adelaide Australia

Introduction In the DINO trial, between 2001 and 2005, 657 infants born <33 weeks’ gestation from five Australian tertiary centres were randomised to receive a high-docosahexaenoic acid (DHA) diet (∼1% of total fatty acids) or a standard-DHA diet (∼0.3% total fatty acids) from within five days of the first enteral feed until 40 weeks’ corrected age. Stratification was by centre, birth weight (<1250 and ≥1250 g) and infant sex. Improvements were found in neurodevelopment at 18 months’ corrected age; we therefore aimed to determine if these improvements were sustained through to early childhood.

Materials and Methods Follow-up at 7 years’ corrected age of the DINO trial participants. 626 of the 657 children randomised were eligible to participate (i.e. had not withdrawn or died). The primary outcome was the Full Scale Intelligence Quotient (FSIQ) of the Wechsler Abbreviated Scale of Intelligence (WASI).

Results 604 children (92% of the 657 originally randomised) consented to participate. The FSIQ scores were not significantly different between groups (high-DHA 98.3, SD 14.0, standard-DHA 98.5, SD 14.9; adjusted mean difference -0.3, 95% CI -2.9 to 2.2; P=0.79). There were no significant differences in any secondary outcomes. In pre-specified subgroup analyses girls receiving the high-DHA diet scored significantly higher (poorer outcome) on parent reported measures of executive function and behaviour compared with girls receiving the standard-DHA diet, although scores were within the normal range.

Conclusion A high-DHA diet to term corrected age provides short-term cognitive gain with no evidence of benefit at 7-years’ corrected age.
CASE PRESENTATION OF SUPPORTIVE MANAGEMENT OF PERSISTENT PULMONARY INTERSTITIAL EMPHYSEMA AND SPONTANEOUS RESOLUTION

P. Mexi-Bourna 1; V. Sideri 1; C. Vliora 1; A. Daskalaki 1; E. Kapsambeli 1; N. Podimatas 1; S. Spanou 1; G. Kyrkou 1; M. Soulioti 1; E. Tsekoura 1; C. Salakos 2; E. Alexopoulou 3; V. Papaevangelou 1
1 3rd Pediatric Department, University Hospital Attikon, Athens Greece
2 Surgical Department, University Hospital Attikon, Athens Greece
3 Radiology Department, University Hospital Attikon, Athens Greece

Introduction Persistent pulmonary interstitial emphysema (PPIE) is a rare condition that occurs in both term and preterm infants. It is thought to arise from a disruption of the basement membrane of the alveolar wall, allowing air entry into the interstitial space. It can be classified as localized or diffuse. The localized form is associated with larger cysts in selected lobes. Diffuse forms have smaller cysts found in all lobes of the lung. PPIE has a characteristic appearance on chest CT, showing up as solid linear or dot like structures with air-filled cysts.

Materials and Methods A premature female infant of 30 weeks GA presented with localized PPIE

Results A premature female infant of 30 weeks GA was born with C-section due to maternal preeclampsia. She had an Apgar score of 6/1min, 8/5min. The mother was multiparous with an otherwise unremarkable history and had not received prenatal steroids. On admission to the NICU, the infant was placed on nCPAP and a dose of surfactant was administered (insure) Shortly after, she developed pneumothorax and a billaw chest-tube was inserted. On the 2nd day of life surfactant was readministered (mist) with subsequent improvement of her clinical course. The billaw was removed on the 4th day of life. She continued receiving O2 through nCPAP, and 8 days later she received diffuse O2, which she kept receiving until the 16th day of life.

On the 20th day of life, she developed apnoic spells with concurrent bradycardia, alternating with intermittent tachypnoea. A chest X-ray was performed revealing left lung emphysema, with medial line deviation to the right.

On the 22nd day of life a chest CT followed, showing hyperexpansion of the left upper lobe, with significant mediastinum deviation to the right. A certain degree of atelectasis was noted on the right lung and the left lower lobe. Left upper lobe lung architecture was severely affected with the presence of multiple cystic formations, inside which numerous linear and circular radiopaque elements could be found. This CT guided us towards the diagnosis of persistent interstitial emphysema. Therapeutic management was supportive, including laying the infant on her affected side and continuing caffeine administration until the 39th day of life. Gradually her clinical course improved and she was discharged, presenting both normal respiratory effort and a normal chest X-ray.

Conclusion In the literature only a few cases of (PPIE) with supportive management and spontaneous resolution have been described. Most cases of localized PPIE were treated surgically. Surgery was typically undertaken in those infants that could not be weaned from mechanical ventilation. However, among those infants with minimal respiratory and cardiovascular symptoms (like our patient) the conservative approach to localized PPIE was adopted. The management of PPIE depends largely on the severity of respiratory symptoms. CT imaging is a key tool in the diagnosis of PPIE based on its unique radiological findings.
A DOSE RESPONSE STUDY TO DETERMINE THE EFFECT OF HIGHER DOSE
DOCOSAHEXAENOIC ACID (DHA) ON ERYTHROCYTE PHOSPHOLIPID LEVELS IN
PREMATURE INFANTS.

A.J. McPhee 1,2,3; C.T. Collins 2,3,4; M. Stark 1,2,5; M. Makrides 2,3,4; T.R. Sullivan 6; R.A
Gibson 2, 4,7
1 Neonatal Medicine, Women’s and Children’s Hospital
2 South Australian Health and Medical Research Institute
3 School of Paediatrics and Reproductive Health, The University of Adelaide
4 Women’s and Children’s Health Research Institute
5 The Robinson Research Institute, The University of Adelaide
6 School of Population Health, The University of Adelaide
7 School of Agriculture, Food and Wine, The University of Adelaide; Adelaide, Australia

Introduction The omega-3 docosahexaenoic acid (DHA) given to preterm infants born <33
weeks gestation at a dose designed to approximate the in-utero accumulation rate still
resulted in DHA levels (6.8% of total fatty acids) less than those born at term (≈8.0 % of total
fatty acids). We therefore aimed to determine the dose response relationships for DHA
administered orally to preterm infants in order to assist with the design of future supplement
studies.

Materials and Methods 31 infants born <33 weeks gestation were randomised to one of
three enterally delivered DHA rich emulsions supplying DHA at either 1) 40 mg/kg/day, 2) 80
mg/kg/day or 3) 120 mg/kg/day over a 28 day period. A non-randomised reference group of
11 infants born <33 weeks’ gestation who had no supplementary DHA was also included
(group 4). Erythrocyte phospholipid fatty acid levels were determined at baseline then
weekly.

Results The DHA rich emulsions were well tolerated with 74% (n=23) receiving all ordered
doses and 87% (n=27) receiving >85% of ordered doses, with no difference between
randomised groups. There was no difference between groups in the number of days in which
one or more feeds were interrupted and the number of days taken to reach full enteral feeds.
Baseline erythrocyte DHA status was 4.7% total fatty acids (SE 0.2%), 4.7% (0.2), 4.7% (0.2)
and 4.6% (0.2) in groups 1, 2, 3 and 4 respectively. There was a dose response effect in the
increase in erythrocyte phospholipid DHA with the 40 mg/kg/d group resulting in a 27%
increase (P=0.0002), the 80 mg/kg/d group a 41% increase (P<0.0001) and the 120 mg/kg/d
group a 43% increase (P<0.0001) relative to the un-supplemented group. Arachidonic acid
levels were similar at baseline (17.1% (SE 0.4), 16.6% (0.4), 16.5% (0.3) and 16.5% (0.3) with
no significant difference between the groups after 28 days (14.7% (SE 0.4), 14.1% (0.4),
13.6% (0.3), 14.7% (0.4)).

Conclusion The DHA status of very preterm infants can be improved in a dose dependant
manner and enteral DHA supplementation directly to the infant rather than through human
milk or formula represents a safe and effective intervention.
SKIN MICROCIRCULATION IN ASPHYXIATED NEWBORNS TREATED WITH HYPOTHERMIA

S. Fredly 1; D. Fugelseth 2; C.S. Nygaard 3; T. Stiris 4; K. Kvernebo 5
1,2,3,4 Department of Neonatal Intensive Care, Oslo University Hospital, Ullevål, Oslo, Norway
1,2,4,5 Faculty of Medicine, University of Oslo, Oslo, Norway
5 Department of Cardiothoracic Surgery, Oslo University Hospital, Ullevål, Oslo, Norway

Introduction Therapeutic hypothermia (TH) decreases metabolic demand and has become standard treatment for severe and moderate hypoxic-ischemic neonatal encephalopathy (HIE). Oxygen delivery may fail to sustain cellular metabolism and organ function. By noninvasively assessments of skin microcirculation with use of Laser Doppler Perfusion Measurements (LDPM), Computer Assisted Video-Microscopy (CAVM) and Diffuse Reflectance Spectroscopy (DRS) during TH and after rewarming, we wanted to describe the changes in microvascular morphology and function induced by TH in HIE infants.

Materials and Methods Twenty-eight HIE infants were included (median (range) GA 39.7 (36.0-41.9) week, BW 3486 (2117-5200) g, 10 min Apgar score 5.0 (0-9), umbilical artery pH 6.92 (6.59-7.19), lactate 15.5 (5.0-29.0), base deficit 13.7 (4.5-24.0)). They fulfilled the Norwegian National Guidelines for whole-body TH for three days (33.5°C). Chest skin examinations were performed day one and three of TH and day four after rewarming. A historical control group consisted of 25 healthy term non-cooled infants. LDPM was used for quantification of blood cell flux. CAVM was used to obtain film sequences for measuring capillary density and flow velocity. Microvascular oxygen saturation was obtained by DRS.

Results Survival rate was high (93%). Two died. One within 24 hours due to multiorgan failure, the other day 27 after redirection of care due to severe pathology. Six had severe and 13 minor MRI pathology at day eleven.
LDPM decreased significantly during cooling (p<0.01). LDPM after rewarming was equal to controls. Functional capillary density was significantly higher during and after TH compared to controls (p<0.01). Capillary flow velocity was significantly reduced during cooling (p<0.05), normalized after rewarming. Tissue oxygen extraction was significantly higher during TH than after rewarming (p<0.01), normalized after rewarming.

Conclusion LPDM perfusion was decreased, capillary density and oxygen extraction increased during TH. Reduced oxygen delivery is explained primarily by reduced capillary flow velocities. Compensatory mechanisms to sustain cellular respiration during TH are most likely the explanation for these findings. The insult per se may have contributed to the results.
ASSESSMENT OF THE INCIDENCE OF EARLY NEONATAL HYPOGLYCEMIA PERFORMING UNIVERSAL SCREENING. CAN WE VALIDATE ALL TRADITIONAL RISK FACTORS?

Ruben Bromiker 1,3; Assaf Perry 2; Floris Levy 2,3
1 Neonatology Department, Shahre Zedek Medical Center, Jerusalem, Israel
2 Pediatric Department, Shahre Zedek Medical Center, Jerusalem, Israel
3 School of Medicine, Hebrew University, Jerusalem, Israel

Introduction Hypoglycemia is common in the first hours of life, generally asymptomatic with no further consequences. Controversy exists regarding its definition, risk factors and screening protocols for normal healthy neonates. We sought to examine the incidence of early postnatal hypoglycemia and validate the traditional risk factors in healthy term newborns in the well-baby nursery.

Materials and Methods Blood glucose concentrations of all infants admitted to the nurseries in our hospital between June 1st and September 9th 2014 were recorded using “point of care” analyzer ACCU-CHEK Performa (Roche, Indianapolis, IN). Potential hypoglycemia risk factors and other demographic data were recorded, and their association with the first blood glucose concentration was evaluated. Two hypoglycemia cutoffs (blood glucose concentrations <40 or <47 mg/100ml) were analyzed independently.

Results 3991 infants were admitted during the study period; 315 were excluded because of lack of information on maternal glucose tolerance status and 14 had no available glucose values, remaining 3662 eligible subjects. Mean birth weight was 3322±439 gr and gestational age was 39.4±1.3 (36-42 weeks). First glucose test was obtained at a mean age 1h 08min (±1:54). At this time 120 (3.3%), and 432 (11.8%) infants had blood glucose levels 3800 gr were not associated with early neonatal hypoglycemia, while maternal diabetes, low birth weight (<2500 gr) and twin delivery had a significant association on univariate analyzes. On multivariate analyzes, only gestational age remained significant (p<0001).

Conclusion For both cutoffs, gestational age was the most significant risk factor. Other traditional risk factors of neonatal hypoglycemia, were not validated. We speculate that high birth weight was not associated with hypoglycemia in our population because of tight management of diabetes during pregnancy. Low birth weight is associated with neonatal hypoglycemia via its association with younger gestational age in the affected infants rather than as independent risk factor.

To our knowledge, this is the first study to evaluate risk factors for early neonatal hypoglycemia using universal blood glucose screening in the well-baby nursery. Long term follow up is necessary in order to evaluate the consequences of transient neonatal hypoglycemia and a possible clinical validation for selective or universal early glucose screening.
BREASTFEEDING EXPERIENCE OF AN ADOPTED INFANT BY A MOTHER AT 14TH YEAR OF INFERTILITY

H. Tatar Aksoy 1, A. Yılmaz 2, F.İ. Arıkan 3, Y. Dallar Bilge 3
1. Department of Pediatrics, NICU, Ankara Training and Research Hospital, Ankara, Turkey
2. Department of Pediatrics, Pediatric Neurology, Ankara Training and Research Hospital, Ankara, Turkey
3. Department of Pediatrics, Ankara Training and Research Hospital, Ankara, Turkey

Introduction Adoptive breastfeeding is possible with good planning and preparation, and more frequently, mothers planning on infant adoption are considering this option as a way to promote attachment. Here we report an adopted 32 day old infant breastfed by his mother at 14th year of infertility. The breastfeeding continued till the baby was 1 year old.

Materials and Methods We had mother pumped her breasts by using a double-electric model, every two to three hours on both breasts for ten to fifteen minutes during the day and once during the night. While pumping the breast we also used galactogoge herbals and domperidone. Within a week, some milk appeared. Also we used a breastfeeding aid that provides a supplement while allowing the baby to still suck at the breast. We used a modified breast supplementer made with a nasogastric tube, injector, intravenous solution set by us (Picture 1-2). A thin tube attached to the intravenous solution set and injector reservoir; is taped to the mother's nipple. The baby sucked at the breast and simultaneously received a supplement from the injector reservoir. The more breastmilk the mother produced, the less supplement the baby took in from the breast supplementer. After a while when the mother produced approximately 400 cc milk a day, she breastfed her baby without breast supplementer. The baby was breastfed after 2 weeks. The baby was breastfed till he is 1 year old (Picture 3-4).

Conclusion Breast milk is a treasure but breast feeding of an adopted child is a nondescript relationship between adopted child and his new mother. An adopted baby will nurse with a breast supplementer even if no breastmilk at all is produced. But with the help of this modified breast supplementer we were successful of breastfeeding of an adopted child and duration of it till the baby was 1 year old. Breastfeeding must be tried on every adopted baby. Besides the benefits of breast milk, the mother and her child have a closeness that the mother shall always treasure.