this study were to analyse the clinical impact of morbidities and to identify predictors of in-hospital mortality in preterm infants with low birth weight.

**Methods** Between January-2011 and November-2012 were included 81 preterm infants at our centre with low birth weight or ≤ 32 weeks gestation. Perinatal variables were included in risk factor analysis. Data are expressed as gestational age (GA) <28 or between 28–32 weeks and birth weight defined as: low <2500 grams, very low 1000–1500 grams and extremely <1000 g. Results: The mean GA was 29 ± 2 (23–32 weeks) and mean birth weight was 1230.8 ± 368 (510–2000 g). The neonatal mortality rate was 17.3%. Preterm infants who died had lower birth weight than were alive, 797 ± 249 vs. 1332 ± 315, p < 0.001. The overall incidence of respiratory distress syndrome was 86.3%, septicemia 24.7%, neurological damage 18.5% and necrotizing enterocolitis was 7.4%. The SNAP II, SNAPPE II and CRIB II scores showed a high discriminatory power for predicting hospital mortality, ROC area 0.863, 0.925 and 0.925, p < 0.001, respectively. Multivariate analysis of predictors of in-hospital mortality were necrotizing enterocolitis, risk scores, low 5-min Apgar score, inotropic support, and protectors were: the absence of intraventricular haemorrhage, cardiopulmonary resuscitation and increased GA.

**Conclusion** The survival in preterm infants in addition of GA or birth weight, it depends on the presence of morbidities. The use of risk scores on admission is useful for prediction in-hospital mortality.

**References**

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**PO-0641** **NEURODEVELOPMENTAL OUTCOMES OF VLBW CHILDREN AT 6–8 YEARS OF AGE**

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**Background** There is growing awareness that the majority of non-disabled survivors encounter more “subtle” problems such as academic under achievement, behavioural problems, and deficits in executive functions.

**Objective** To compare gross motor function, cognitive function, academic competence and behavioural problems at school age between VLBW children and controls.

**Methods** We enrolled children aged 6-to 8-year-old, who were born with BW ≤1,500 g and have been followed-up at our long-term, follow-up clinic. They were tested for cognitive function and academic achievement using Wechsler Intelligence Scale for Children-III(WISC-III) and Wide Range Achievement Test (WRAT). Child Behaviour Checklist for emotional/behavioural assessment was completed by the care givers. Gross motor function was assessed using Gross Motor Function Classification System (GMFCS).
Results Thirty VLBW children were assessed at mean age of 7.5 years; 30 children born at term (matched for age, sex, and family income) served as controls. WISC-III scores were comparable between the two groups (99.8 ± 2.4 and 105.8 ± 1.7; p = 0.072 in VLBW and control group, respectively) as well as the WRAT scores. GMFCS-mild dysfunction was found only in 2 children (6.7%) of VLBW group. In contrast, VLBW children had more behavioural/emotional problems, especially in attention deficit/hyperactive (26.7% in VLBW group vs. 3.3% in controls, p = 0.026).

Conclusions In our cohort study, VLBW children at school age are at higher risk for behavioural/emotional problems, especially in attention deficit compared with children born at term. However, no differences in cognitive, academic, and gross motor function were found.

MACROPHAGE ACTIVATION SYNDROME IN A NEWBORN INFANT BORN TO A MOTHER WITH AUTOIMMUNE DISEASE

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We reported a newborn infant with macrophage activation syndrome (MAS) born from a mother with positive anti-nuclear (ANA) and anti-SSA/Ro antibodies. The 2,500 g girl was born at 37+6 weeks of gestation in good condition. Mother had been diagnosed with adult onset Still disease 10 years previously. During pregnancy, she did not take any medication as she was free of symptoms. The baby was admitted due to tachypnea and fever 12 h after birth. Initial laboratory findings showed mild anaemia with thrombocytopenia, and mild elevation of alanine aminotransferase (ALT). A work-up of infectious aetiology, including agents responsible for congenital infection, was negative. On the 10th hospital day (HD), the baby showed severe abdominal distension caused by hepatosplenomegaly, and persistent, high fever despite empirical antibiotic therapy. We identified positive ANA and anti-SSA/Ro antibodies from the infant, compatible with those found in the mother. The baby’s electrocardiography was normal. On the 18th HD, she showed deterioration of overall condition with high ferritin, ALT, and profound thrombocytopenia. The baby received intravenous immunoglobulin, steroid (pulse and oral), and cyclosporine. Gene study for perforin, K-ras, and N-ras was negative. Her general condition showed improvement after treatment, although mild fever and organomegaly remained. We maintained high dose steroid and cyclosporine, and all medication was tapered and stopped at 12 weeks of age. We suggest that transplacental transfer of maternal auto-antibodies may be associated with the infant’s MAS.

WHITE LIGHT SPECTROSCOPIC TRANSCUTANEOUS MEASUREMENTS OF BILIRUBIN LEVELS IN JAUNDICED INFANTS INCLUDING KRAMER ZONES

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Background Jaundice is a common problem affecting 8–10% of preterm and term newborn babies in the first week of life. Efforts have been made to have non-invasive diagnostic devices available for reliable and quick bedside testing of bilirubin levels in order to avoid painful blood taking and delays due to awaiting results from the laboratory. Several transcutaneous devices can estimate bilirubin levels in the newborn and have mostly been tested in term infants. The correlation co-efficient between transcutaneous and laboratory values have been reported to be 0.46 to 0.89 depending on the device. The device cannot be used after phototherapy has started as bilirubin isomers are produced. Thus a non-invasive device which can measure after the start of phototherapy in preterm and term infants is warranted.

Objective To establish whether the non-invasive white light spectroscopic (WLS) device (Bilispect (R), MBR Optical Systems, Wuppertal, Germany) can measure bilirubin in the skin of preterm and term newborn babies in the first week of life. Efforts have been made to have non-invasive diagnostic devices available for reliable and quick bedside testing of bilirubin levels in order to avoid painful blood taking and delays due to awaiting results from the laboratory. Several transcutaneous devices can estimate bilirubin levels in the newborn and have mostly been tested in term infants. The correlation co-efficient between transcutaneous and laboratory values have been reported to be 0.46 to 0.89 depending on the device. The device cannot be used after phototherapy has started as bilirubin isomers are produced. Thus a non-invasive device which can measure after the start of phototherapy in preterm and term infants is warranted.

Methods Prospective single centre study of preterm and term infants who had their bilirubin levels taken for clinical reason in a convenience cohort sample. Best measurement site on skin was determined by comparing WLS measurements at 4 Kramer zones (forehead, sternum, forearm and foot) in 9 infants. Forearm measurements and two observers. The ethics committee issued a favourable opinion and informed consent was obtained from parents.

Results Comparisons were obtained in 47 preterm and term infants (range 24–40 weeks gestation, birth weight 564–4220 g), who had 51 paired bilirubin samples done. Ten were taken after phototherapy had started. Correlation coefficients for samples taken after phototherapy was 0.87 and 0.9 without phototherapy. Intra-observer and inter-observer variability were 0.67 and 0.69 respectively.

Conclusions The results show a good correlation between the laboratory and non-invasive bilirubin values. The WLS seems to be a suitable method for estimating bilirubin levels after phototherapy has started and particularly in preterm infants. Further field studies re required in order to obtain nomograms for this device.