

Results Ninety-one healthy term infants aged 1 to 36 hrs were studied (< 6 hrs – 21, 6–12 hrs – 47, 13–24 hrs – 11, and 25–36 hrs – 12). A well-developed SWC was evident as early as within the first 6 hrs after birth. The mean (SD) percentage of active sleep (AS) was 52.1% (12.9), quiet sleep (QS) – 38.6% (12.5). AS was longer and QS shorter in infants delivered by elective caesarean section (CS) compared to infants delivered by vaginal delivery (AS: $p=0.01$; QS: $p=0.02$) or emergency CS (AS: $p=0.04$, QS: $p=0.02$). Five infants did not have any SWC present. Disrupted SWCs correlated significantly with the absence of a spontaneous onset of labour ($p=0.03$).

Conclusion This is the first time that SWC composition has been quantified using EEG monitoring so early in the postnatal period. AS dominates and SWC is clearly present immediately after birth. SWC composition appears to be influenced by labour and mode of delivery.

1080 3D DIGITAL CAPTURE OF HEAD GROWTH IN NEONATES - CORRELATION OF HEAD CIRCUMFERENCE AND HEAD VOLUME

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Background Head circumference (HC) is measured in newborns to evaluate head growth. It is not known, whether HC is always an appropriate measure of head volume (HV). Digital capture of the neonatal head offers information on HC and HV.

Aims To determine

- overall correlation of HC and HV and
- with regard to postmenstrual age (PMA) and
- with regard to the actual body weight (BW).

Methods Head measurements with STARscanner laser shape digitizer (Vorum research Corp., Vancouver, BC) were performed in preterm infants prior to discharge over a 12 month period. Data on HC and HV were calculated with STARscanner Laser Data Acquisition System (Orthomerica, Orlando, FL) and analyzed in different subgroups.

Results Included were 243 neonates at time of discharge (mean HC 32.8 ± 1.9 cm, mean HV 356.7 ± 64.3 ml). a) There was an overall correlation between HC and HV ($r=0.90$, $R^2=0.81$, $p<0.001$). Correlation between HC and HV was: b) in infants with a PMA < 37 ($r=0.71$, $R^2=0.52$, $p=0.001$) vs. PMA > 37 weeks ($r=0.92$, $R^2=0.85$, $p<0.001$) and c) in BW < 2500g ($r=0.69$, $R^2=0.49$, $p=0.04$) vs. BW > 2500g ($r=0.88$, $R^2=0.77$, $p<0.001$).

Conclusions Neonates with comparable HC can show very different HV, especially in infants with low PMA or BW. Thus additional measurement of HV enables to detect variable patterns of head growth and shape. Underlying causes and the meaning for neurological outcome need to be determined.

1081 LEVELS OF SERUM N-TERMINAL PRO-BRAIN NATRIURETIC PEPTIDE, CYSTATIN C, AND URINARY β 2 MICROGLOBULIN IN NEWBORNS WITH HYPOXIC ISCHEMIC ENCEPHALOPATHY

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Background and Aim Levels of serum N-terminal pro-brain natriuretic peptide (NT-proBNP), cystatin-C ve urinary β 2 microglobulin in newborns with hypoxic ischemic encephalopathy (HIE) were examined in this study.

Methods In this study, 25 infants diagnosed with HIE were evaluated prospectively. The diagnosis was made according to criterias of American Gynaecology and Obstetric Academy (ACOG, 2003). Serum creatinine, NT-proBNP, cystatin C and urinary β 2 microglobulin in all patients were measured on the 1st and 5th days of hospitalization.

Results The mean gestational age was 38.7 weeks and the birth weight was 3255 grams. Patients were classified as stage-1 (n=5), stage-2 (n=15) and stage-3 (n=5) HIE according to Sarnat classification. Therapeutic hypothermia was established in 6 patients. Acute renal failure (ARF) developed in 3 cases with stage 3 HIE. Peritoneal dialysis was performed for 2 of them. First day serum creatinine levels were higher than the 5th day levels ($p=0.01$). NT-proBNP and cystatin-C levels was significantly lower on the fifth day ($p=0.01$). Although not statistically significant, urinary β 2 microglobulin (mg/g cre) levels on the 1st day were higher than the 5th day ($p=0.40$). On the first day of hospitalization, a statistically significant correlation between NT-proBNP and creatinine ($p=0.02$), cystatin-C ($p=0.01$) and urinary β 2 microglobulin levels ($p=0.01$) were determined. NT-proBNP and cystatin-C levels were significantly high on the first day in infants developing ARF.

Conclusion It may be beneficial to evaluate serum N-terminal proBNP ve cystatin-C with creatinin levels in HIE patients for the diagnosis, severity and follow-up of ARF.

1082 BLOOD PRESSURE AND AMPLITUDE INTEGRATED ELECTROENCEPHALOGRAPHY CORRELATIONS IN FULL TERM NEONATES WITH HYPOXIC ISCHAEMIC ENCEPHALOPATHY

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Background The correlation between systemic blood pressure (BP) and amplitude integrated electroencephalography (aEEG) in full term neonates with hypoxic ischaemic encephalopathy (HIE) is clinically complex, affecting therapy and prognosis.

Method Term infants with HIE and < 48 hours of age were identified from a prospectively kept database. Mean (MAP), systolic and diastolic blood pressure was recorded over a four hour period. aEEG patterns and corresponding output (in μ V) of crosshead, right and left leads over the same period were recorded and analysed. The cohort was analysed according to a range of variables including treatment or non-treatment of hypotension and degree of encephalopathy.

Results Twenty-nine episodes of hypotension experienced by twenty-one full term neonates with HIE were recorded. In the cohort, MAP was correlated with aEEG changes two and three hours after hypotension at with a correlation coefficient (r) of 0.454 and 0.477. In the non-treated group, there was a significant correlation between MAP and all leads across the time period with r ranging from 0.498 to 0.768. Neonates with HIE stage III had a significantly stronger correlation between BP and aEEG over the time period compared to those with HIE stage II.

Conclusions There is a correlation between blood pressure and aEEG in neonates with HIE. This is especially evident in non-treated and the most encephalopathic neonates. These results may guide clinical practice in NICUs.

1083 THE HIGHLY SELECTIVE SIGMA-1 RECEPTOR AGONIST PRE-084 REDUCES INFLAMMATION-SENSITIZED HYPEROXIA-INDUCED INJURY IN THE DEVELOPING RAT BRAIN

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