Aims

It is not known, whether HC is always examined in newborns with hypoxic ischemic encephalopathy (HIE). Serum creatinine (NT-proBNP), cystatin C and urinary β2 microglobulin in all patients were measured on the 1st and 5th days of hospitalization. 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 β2 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 β2 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.

Methods

In this study, 25 infants diagnosed with HIE were evaluated prospectively. The diagnosis was made according to criterias of American Gynecology and Obstetric Academy (ACOG, 2003). Serum creatinine, NT-proBNP, cystatin C and urinary β2 microglobulin in all patients were measured on the 1st and 5th days of hospitalization. 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 β2 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 β2 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 and cystatin-C with creatinin levels in HIE patients for the diagnosis, severity and follow-up of ARF.

**Abstracts**

**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=0.003).

**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.

**Background and Aim**

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 pre-term infants prior to discharge over a 12 month period. Data on HC and HV were calculated using 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 536.72±64.3 ml). There was a correlation between HC and HV (r0.90, R=0.81, p<0.001). Correlation between HC and HV was: b) in infants with a PMA < 37 (r=0.71, R²=0.52, p<0.001) vs. PMA > 37 weeks (r=0.92, R²=0.85, p<0.001) and c) in BW < 2500g (r=0.69, R=0.49, p=0.04) vs. BW >2500g (r=0.88, R²=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.

**Levels of Serum N-Terminal Pro-Brain Natriuretic Peptide, Cystatin C, and Urinary B2 Microglobulin in Newborns with Hypoxic Ischemic Encephalopathy**

**Background and Aim**

Levels of serum N-terminal pro-brain natriuretic peptide (NT-proBNP), cystatin-C ve urinary β2 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 Gynecology and Obstetric Academy (ACOG, 2003). Serum creatinine, NT-proBNP, cystatin C and urinary β2 microglobulin in all patients were measured on the 1st and 5th days of hospitalization. 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 β2 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 β2 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.