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.

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 β2 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 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.
Background and Aims  Perinatal asphyxia may result in transient myocardial ischaemia, confirmed by elevated Troponin T levels. Gold standard echocardiographic measures of contractility (ejection and shortening fraction) may not pick up subtle ischaemic changes. Tissue Doppler imaging (TDI) allows assessment of systolic and diastolic function. Used in conjunction with Troponin T TDI may offer superior measure of myocardial contractility. Methods  Term infants with evidence of Neonatal Encephalopathy (NE) underwent echocardiography on Day 1 & 7 of life. Healthy term controls had one echocardiogram on Day 1. Serum Troponin T levels were recorded in infants with NE. Myocardial velocities were obtained using a pulsed wave doppler from an apical four chamber view. Peak systolic (S’), early diastolic (E’) and late diastolic (A’) velocities were recorded.

Results  17 patients with evidence of NE and 20 term controls were recruited. Mean birthweight (SD) was 3.6 kg (0.9) and gestation 39 (5) weeks. TDI systolic and diastolic velocities increased between Day 18±7 in infants with NE. All 1 day measures in the NE group were less than the controls. There was no significant difference between the shortening/ejection fraction on day 1 between the two groups (NE: 33.7–35.3%; Control: 64.3–67.4%). Troponin levels were significantly elevated on Day 1 compared to Day 7 in NE group (p<0.05) (0.53–0.38ng/ml).

Conclusions  TDI measures in infants with NE are less than controls on Day 1. Troponin levels were initially significantly increased providing further evidence of myocardial ischaemia in infants with NE.

In animal models, neonatal seizures (NS) alter hippocampal development and lead to long-term deficits. Whether NS similarly affect humans is not known. The goal of this study was to assess whether NS are associated with altered hippocampal microstructure in neonates with hypoxic-ischemic encephalopathy.

We included 6 neonates with and 27 without seizures. All were treated with therapeutic hypothermia after birth. Neonatal (median 5 days) and 6-month diffusion tensor imaging was used to measure apparent diffusion coefficient (ADC) from regions of interest (ROIs) in the hippocampus, basal ganglia, thalamus and frontal white matter.

ADC was significantly lower on the 6-month scan as compared to the neonatal scan for all ROIs. There were no significant differences in ADC on the early scan when comparing neonates with and without seizures. At 6 months, infants with seizures as neonates had a 6% higher hippocampal ADC (95% confidence interval: 0–11%, p<0.05). There was no significant difference in ADC for the other ROIs.

These preliminary results suggest that NS are associated with altered hippocampal structural development. Because the difference was seen only in the hippocampus, and on follow-up imaging but