Conclusions While TH has changed the predictive values of initial HIE grades, clinical staging at <6 h correlates with outcome. The course of encephalopathy throughout TH is valuable in outcome prediction.

PS-155 COMPARISON OF CLINICAL AND ELECTROPHYSIOLOGICAL SIGNS OF ENCEPHALOPATHY IN NEONATES WITH PERINATAL ASPHYXIA QUALIFYING FOR HYPOTHERMIA

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Background and aims Early prediction of neurodevelopmental outcome following hypoxic-ischaemic encephalopathy remains a challenge. The aim of this retrospective study was to evaluate the aEEG background patterns and Thompson score on admission in asphyxiated neonates receiving hypothermia regarding outcome and neonatal variables.
Methods After excluding congenital malformations and muscle paralysis, 89 neonates (January 2008 to June 2012) were included (GA: 39.7 ± 1.8 wks; BW: 3504 ± 640 g). On admission the Thompson score and aEEG were recorded. aEEG was scored as Continuous Normal Voltage (CNV), Discontinuous Normal Voltage (DNV), Burst-Suppression (BS), Continuous Low Voltage (CLV) or Flat Trace (FT). The combination of one or more of the following event (s): death, cerebral palsy, and Griffiths DQ less than 85 at 18 months were considered an adverse outcome. ANOVA, correlation, and binary logistic regression analyses were performed.
Results Thompson scores (in mean ± sd) were associated with aEEG pattern (CNV: 8.3 ± 1.7; DNV: 8.9 ± 1.9; BS: 11.6 ± 3.6; CLV: 12.0 ± 2.1; FT: 13.1 ± 3.2; $p < 0.001$). Also, both aEEG and Thompson score were statistically correlated with Apgar 1 and 5 min scores ($p < 0.05$). Using a logistic regression model, both Thompson score (OR = 1.43; 95% CI = [1.15;1.77]) and aEEG pattern (BS: OR = 4.06; 95% CI = [0.74;22.16]; CLV: OR = 11.10; 95% CI = [1.38;89.66]; FT: OR = 13.35; 95% CI = [1.87;95.31]; reference group: CNV +DNV) were significant predictors of an adverse outcome.
Conclusions Both Thompson scores and aEEG are associated with outcome in neonates receiving hypothermia for perinatal asphyxia and with 1 min Apgar scores. Further studies are needed to identify which method is preferable for selection of neonates for hypothermia.

PS-156 ASSESSMENT OF MYOCARDIAL FUNCTION IN INFANTS RECEIVING THERAPEUTIC HYPOTHERMIA USING TISSUE DOPPLER IMAGING

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Introduction Hypoxic ischaemic encephalopathy (HIE) may lead to cardiovascular dysfunction in newborn infants and conventional echocardiographic measures such as fractional shortening (FS) and left ventricular output (LVO) may not accurately detect cardiac dysfunction in these patients.[1]
Objective To evaluate cardiac dysfunction in HIE using tissue Doppler imaging (TDI).[2]
Methods 20 infants born at ≥36 w gestation with HIE requiring therapeutic hypothermia (TH) were examined with serial conventional echocardiography and TDI on days 1, 2, 3 and after re-warming. Structural integrity of the heart was confirmed before obtaining measures of myocardial function (peak systolic (S'), early (E') and late diastolic (A') velocities, myocardial performance index (MPI) [using TDI], and FS and LVO). Measurements were also obtained from 10 healthy term infants as controls. Ethical approval and written parental consent were obtained.
Results Median gestation and birth weights of infants with HIE vs. controls was 39.6 w vs. 40 w and 3110 g vs. 3170 g. On days 1, 2, 3 all myocardial velocities (MV), except left ventricular A' on day 3, were significantly lower (<0.05) and MPI was significantly higher ($p \leq 0.05$) in the HIE group. After re-warming all MVs and MPIs were similar between the two groups. FS and LVO were similar between both groups on all days, except LVO on day 1 which was significantly lower in HIE infants ($p < 0.05$).
Conclusions TDI, compared to FS and LVO, may be better at detecting myocardial dysfunction in this group of babies and hence improve management of cardiac dysfunction.

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PS-157 MODERATE TO SEVERE NEONATAL ENCEPHALOPATHY IS PREDICTED BY RISING SERUM BUT NOT CSF BIOMARKERS

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Background Term infants with NE of hypoxic-ischaemic origin, have been exposed to generalised oxidative injury which may cause excessive cytokine production and release in serum and CSF. Cytokine levels may correlate with severity of brain injury and aid in outcome prediction.
Objective To investigate the relationship between serum and CSF biomarkers and NE in a group of term infants exposed to perinatal hypoxia-ischaemia compared to controls.
Design/Methods Levels of serum and CSF biomarkers [VEGF, IL-8, Epo, GM-CSF] were serially measured over day 1–11 in a group of term newborns with NE and controls (serum only). These values were compared to grade of encephalopathy defined by Sarnat score.
Results Twelve control and 82 cases had serum samples collected (Grade 0 NE = 6, Grade I NE = 23, Grade II NE = 42, Grade III NE = 11). Thirty-nine infants underwent TH, 4 infants died. Controls had significantly lower serum Epo on day 1–2 compared with cases (p-values < 0.05). Grade II/III NE was significantly associated with elevated serum Epo (Day 2), IL-8 (Day 2 and 6–8) (p-values < 0.05) and with decreased VEGF (Day 1). Grade II/III NE was best predicted by Epo and IL-8 (Day 2) and VEGF (Day 1) (p-values < 0.05). CSF biomarker levels (n = 34 infants) were not significantly associated with abnormal NE grade.
Conclusions Term infants exposed to perinatal hypoxia-ischaemia have elevated levels of serum biomarkers compared to