Background and aims Hypoxic-ischaemic (H-I) brain injury in the human perinatal period often leads to significant long-term neurobehavioral dysfunction in the cognitive and sensory-motor domains. The aim of the present study investigated that effect neuroprotective of different dosages of pentoxifylline in neonatal rat model of HIE.
Methods H/I was performed according to the Levine-Rice model on postnatal seven-day-old. Wistar rat pups were randomly divided into four groups as: sham-operated group (n = 17), H/I(n = 16), H/I and intraperitoneal Pentoxifylline 60 mg/kg-treated group (n = 17) and HI and intraperitoneal Pentoxifylline 100 mg/kg-treated group (n = 17). Twenty-three rat pups, twenty-four hours after hypoxia, the animals were killed for histopathological evaluation to detect apoptosis by caspase-3 immunohistochemistry method. The other rat pups were grown to 11 weeks. The synaptic plasticity and cognitive function of rats were evaluated using long term potentiation (LTP) and Morris water maze (MWM) test on D77–D82, respectively.
Results Pentoxifylline 60 mg/kg two doses treatment decreased the number of caspase-3 positive cells that showed the typical morphological features of apoptosis in only hippocampus (p0.05) but, total numbers of degenerative cell significantly diminished.
Conclusions Low dose pentoxifylline treatment is protective against both brain injury and memory impairment and synaptic plasticity.

PO-0401 IL-6 POLYMORPHISM AT POSITION-174 IN NEWBORN INFANTS WITH PERINATAL ARTERIAL ISCHAEMIC STROKE: ASSOCIATION WITH ADVERSE OUTCOME

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Background Inflammation has been proposed as a hallmark in the pathophysiology of stroke. A functional polymorphism in the interleukin (IL)-6 gene at position-174, encoding for the pro-inflammatory cytokine IL-6, is associated with an increased risk of neonatal brain injury or development of cerebral palsy. The aim was to study whether the IL-6-174 G/C polymorphism increased the risk of perinatal arterial ischaemic stroke (PAIS) or subsequent adverse sequelae.
Methods Infants born at or above 37 weeks gestation with PAIS diagnosed by neonatal MRI (n = 63) were included. Genotyping of the IL-6-174 G/C polymorphism was performed and compared to 1008 random population controls. Perinatal variables of case infants were reviewed.
Results There were no differences in IL-6-174 genotype between infants with PAIS and population controls. In a multivariable analysis, independent risk factors for adverse outcome after PAIS in a middle cerebral artery territory included CG genotype (OR 5.9; 95% CI 1.02–33.9) and male sex (OR 4.2; 95% CI 1.04–17.2).
Conclusion The distribution of the IL-6-174 C >G promotor polymorphism did not differ between infants with PAIS and population controls and therefore do not seem to play a role in stroke risk. However, the IL-6-174 GC genotype was more common among infants who had an adverse outcome following PAIS in the middle cerebral artery territory, suggesting that the level of inflammation does play a role in outcome after PAIS. This may be relevant for neuroprotective strategies.

PO-0402 CHALLENGING CURRENT CONCEPTS REGARDING LATERALITY AND DIRECTION OF BOLD SIGNAL CHANGES IN NEONATAL FUNCTIONAL BRAIN IMAGING

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Background Functional magnetic resonance imaging (fMRI) in preterm infants has been introduced as a non-invasive method to study information processing in the developing brain and to identify early signs of dysfunction. Studying the sensorimotor system, fMRI has so far delivered inconsistent brain activation patterns regarding laterality and direction of BOLD signal changes.
Aims To study evoked responses to unilateral passive sensorimotor stimulation in preterm infants using a customised neonatal head coil.
Patients/methods 14 preterm infants born less 30 weeks gestation were scanned using a block design (10 × 30 sec ON-OFF) at 3 T (Achieva, Philips, Best, NL) using a customised neonatal head coil (J. Nordmeyer-Massner and K. Pruessmann, ETH Zürich) at term equivalent age. Data were pre-processed (slice-time-correction, motion correction, anatomical co-registration with high-resolution T2-weigthed structural images, 6mm^3 smoothing) and analysed on an individual level using SPM8. Only activation clusters surviving $p < 0.05$ (FWE-corrected) were considered as statistically significant.
Results 5/14 scans had to be withdrawn due to movement artefacts (n = 4) or technical failure (n = 1). In the remaining sample of 9/14 subjects, unilateral passive sensorimotor stimulation elicited primarily positive BOLD responses, which were located in contralateral (8/9) and ipsilateral (1/9) primary sensori-motor cortex (SMC).
Conclusions The study results indicate that improved sensitivity of a size-optimised neonatal head coil is crucial for detection of primary SMC activity on an individual level and question the hypothesis of unfocused negative and bilateral BOLD responses in the premature brain.

PO-0403 USEFULNESS OF THE EVALUATION OF CEREBRAL BLOOD VOLUME TO PREDICT ADVERSE OUTCOMES IN INFANTS WITH ASPHYXIA

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Background and aims Increased cerebral haemoglobin oxygen saturation (rSO_2) and decreased cerebral fractional tissue oxygen

extraction (FTOE) 24 h after birth in infants have reported to be associated with adverse outcomes. Near-infraredtime-resolved spectroscopy (TRS) device enables the simultaneous assessment of quantitative hemodynamics, and absolute values of (rSO_2) and cerebral bloodvolume (CBV). The purpose of our study was to determine the usefulness of both rSO_2 and CBV measured by TRS in infants with asphyxia after birth.

Methods Twenty-six infants with asphyxia (Apgar score < 7 at 1 min after birth) were divided into 2 groups: those with hypoxic-ischaemic encephalopathy (HIE; HIE group, n = 5) and those without hypoxic-ischaemic encephalopathy (non-HIE group, n = 21). rSO_2 and FTOE were measured by TRS at 12, 24, 48, and 72 h after birth.

Results rSO_2 was significantly higher and FTOE was significantly lower in the HIE group (n = 5) than in the non-HIE group (n = 21) at 12, 24, 48, and 72 h after birth. CBV was significantly higher in the HIE group (n = 5) than in the non-HIE (n = 21) from 3–6 h after birth through all measurement time points.

Conclusions Changes in CBV occurred earlier than those in rSO_2. Thus, CBV may be an early predictive parameterfor adverse outcomes in infants with asphyxia after birth.

PO-0404 3D SURFACE IMAGING OF HEAD SHAPE AND HEAD DEFORMITIES IN HEALTHY NEWBORNS – A CROSS-SECTONAL STUDY

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Background and aims Congenital cranial asymmetry is a precursor for the development of head deformities. However, early changes are often subtle and can be overlooked. Surface imaging improves detection of postnatal head deformities. The purposes of the present study were 1) to determine normative values of head shape at birth with a 3D laser system and 2) to identify potential risk-factors for congenital head shape abnormalities.

Methods In a cross-sectional study design healthy neonates born in a university hospital between 2/2013 and 3/2014 were scanned between 12 and 72 h after birth with a non-invasive laser scanner (STARScanner™). Normative values of established indices (Cranial Index - CI; Cranial Vault Asymmetry Index - CVAI) were computed. Infants with cranial asymmetry were analysed for pre- and perinatal risk factors.

Results Scans of 1095 newborns (m557, f538; 3373 ± 477g) were analysed. 1) Normative values of cranial measures and indices were calculated and are presented. 2) Cranial asymmetry was due to Cephalohematoma or Caput succedaneum in 4.5% of infants. In remaining infants it was not related to multiple birth, gender, gestational age, birth-presentation or delivery mode.

Conclusions The present study provides normative cranial data from 3D surface scans in a cohort of healthy newborns in the first 72 h of life. This allows a precise classification of head shape and an improved identification of abnormalities. In contrast to previous investigations, head asymmetry was not associated with any prenatal and perinatal factors. Long term consequences of congenital head shape abnormalities need to be further investigated in longitudinal studies.

PO-0405 ERYTHROPOIETIN CONCURRENT WITH HYPOTHERMIA FOR NEONATAL HYPOXIC ISCHAEMIC ENCEPHALOPATHY

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Background Hypothermia (HT) within the first six hours of life provides neuroprotection in newborns with hypoxic ischaemic encephalopathy (HIE). Erythropoietin (EPO) has been found to enhance erythropoiesis and exert anti-inflammatory, immunomodulatory, antiapoptotic and neuroprotective effects.

Aim To evaluate the efficacy and safety of EPO therapy in neonates with HIE.

Methods 15 newborns with HIE displaying no congenital malformations of life-threatening pathologies, received treatment with HT(n = 3), EPO (n = 3) or HT+EPO (n = 9). Once informed consent had been obtained, rhEPO was iniciated subcutaneously in the first 24 h of life at a dose rate of 400 UI/k/q48h/2weeks.

Results Baseline clinical data for the three study group are shown in figure1. No intergroup differences were recorded for incidence of clinical and electrical seizures over the first 24 h. Neurological examination at 12 months revealed a reduction in death rates and in severe disability rates (p = 0,021). Brain damage biomarkers level were lower. No complications were recorded following treatment with rhEPO. Data were analysed using the ChiSquare test for qualitative variables and the kruskal-Wallis test for quantitative variables; the level of significance was set at $p < 0.05$.

Conclusions Hypothermia has been demonstrated the only therapeutic option against brain damage in newborns with HIE but rhEPO is an effective, safe, affordable cytokine with potential neuroprotective effects. It could be used in combination with HT for treating HIE. Further research are required to define the optimum treatment in these patients.

Abstract PO-0405 Table 1 Baseline characteristics of enrolled infants

	GROUPS TREATMENT			
	HT(n=3)	EPO (n=3)	HT+EPO (n=9)	*P*
Gender (M/F)	2/1	0/3	6/3	0.117
GA (weeks)	39.33±1.52	36.66±4.93	39.66±1.22	0.192
Birth weight (g)	3722.33±329.5	2333.33±784.60	3243.11±308.50	0.005*
Apgar score (1 min)	2	1	2	0.816
(5 min)	3	2.66	3.66	0.606
(10 min)	5	5.33	5.22	0.937
pH acid	6.88±0.10	6.80±0.00	6.86±0.17	0.466
Base deficit	22.67±3.51	22.63±1.09	17.78±8.99	0.490
Lactate acid (mmol/L)	17.40±3.12	18.30±2.94	16.75±4.22	0.834
Delivery mode (V/C)	0/3	0/3	1/8	0.700
Sentinel event (%)	100	100	100	1
Sarnat grade (II/III)	½	3/0	5/4	0.745
Glucose (mg/dL)	79±	64±	151±	0.220
T° (°C)	35.8±	36.2±	34.1±	0.044*

PO-0406 THE CONTRIBUTION OF PROTHROMBOTIC DISORDERS TO PERINATAL ARTERIAL ISCHAEMIC STROKE (PAIS): A STUDY OF CASE-CONTROL PARENT-CHILD PAIRS

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