

cerebral oximeter index (COx), to estimate adequacy of autoregulation. The lowest mean arterial pressure at which the COx was ^{1,2}

Results Incidence of cerebral desaturations across the patient population was 30.3%(n = 10). Very premature neonates with severe haemodynamic instabilities undergoing surgery presented greater depressions in S_cO₂. Additionally they showed evidence of impaired autoregulation compared to hemodynamically stable neonates. Incidence of loss of CA according to COx was 33% (n = 11) in this patient group.

Discussion Results obtained demonstrate that sick neonates are more prone to decreased S_cO₂. Further research, with a bigger patient population is needed to determine the incidence more accurately, and its significance and consequences for outcome of these findings.

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PO-0420 WITHDRAWN

PO-0421 CRANIAL ULTRASOUND FINDINGS IN ASYMPTOMATIC FULL TERM INFANTS

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Background There has been no study assessing cranial ultrasound (cUS) scans in well newborn infants in Armenia. Our study objective was to assess the cUS scans of asymptomatic term newborns in postnatal ward and identify CUS abnormalities by using high quality ultrasound.

Methods Cohort of otherwise healthy term newborns born between 20 March 2013 and 26 April 2013 in RCMCHP, Yerevan, Armenia, were scanned by single investigator (PM) accordingly a standart protocol using zone ultra Convertible Ultrasound System machine with a 7.5 frequency microconvex C9–4t tightly curved array transducer.

Results Data from 121 infants scanned at a median age of 2.5 postnatal days were analysed. Mean birth weight was 3357 g (± 401), gestational age - 39.6 weeks (± 0.7), Apgar score at 1st and 5th minutes - 9, number of males - 67 (55%) and twins - 4 (3.3%). Majority of infants were born by spontaneous cephalic mode - 85%, emergency and planned C - sections were performed respectively in 7% and 8% of cases.

Only 79% of scans were considered normal. Most frequent finding was lenticulostriate vasculopathy found in nine infants

(7.4%). Isolated focal peritrigonal white matter echogenicity was seen in eight (6.6%), subependymal pseudocysts in two (1.6%), choroid plexus cysts in three (2.5%) and lateral ventricle asymmetry in four (3.3%) infants.

Conclusions We did not find any correlation between perinatal data and cUS findings. Asymptomatic term Armenian newborns in 21% of cases had abnormalities on cUS. This study can provide data for comparison with findings in sick and premature infants from similar population.

PO-0422 EVALUATION OF CEREBRAL PERFUSION IN SMALL FOR GESTATIONAL AGE NEONATES IN THE FIRST POSTNATAL WEEK USING COLOUR DOPPLER SONOGRAPHY

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Background and aims Small for gestational age neonates (SGA) living in conditions of chronic hypoxia during fetal life may develop different autoregulation mechanisms in cerebral perfusion in order to maintain oxygen delivery to the brain in comparison to appropriate for gestational age (AGA) neonates.

The aim of the current study was to estimate brain perfusion in SGA neonates during first postnatal week with the use of colour Doppler sonography.

Patients/methods Transcranial Doppler sonography from the temporal acoustic window was performed bilaterally with CX50 PHILIPS device using S8–3 transducer in the first, third and seventh day of life of SGA neonates with mean gestational age 31.6 ± 2.2w and to comparable AGA ones. Recorded parameters were Peak Systolic Velocity (PSV), End Diastolic Velocity (EDV), Mean Velocity (MV), Pulsatility Index (PI) and Resistance Index (RI) in middle cerebral artery MCA.

Results 26 SGA and 26 matched for GA control AGA neonates were prospectively enrolled with statistically significant difference in birth weight (1.201, 9 ± 369.1 vs 1.805, 3 ± 431.7, p < 0.0001), in head circumference (27.4 ± 2.8 vs 30.0 ± 2.4, p = 0.01) and haemoglobin in first postnatal day (17.7 ± 1.7 vs 15.9 ± 1.6, p < 0.0001). Fetal Doppler were pathological in 6 SGA neonates. Doppler study showed a gradual increase in PSV and MV during the first week bilaterally in both groups with statistically significant difference between them in MV in the third day (Right p = 0.017, Left p = 0.05). EDV in right MCA was also found higher in SGA neonates in the second measurement (p = 0.04). No statistically significant differences were found in the resume parameters.

Conclusion Increased brain metabolism in the first postnatal days is responsible for the observed augmentation of cerebral perfusion in order to maintain the balance between oxygen

Abstract PO-0423 Table 1 Comparison of brain oxygenation and perfusion between SGA neonates with different gestational age

	1st measurement		2nd measurement		3rd measurement	
	28–32w	32–36w	28–32w	32–36w	28–32w	32–36w
TOI right	68.34 ± 9.48	74.06 ± 7.45	72.75 ± 6.49	72.33 ± 6.60	69.97 ± 9.31	70.24 ± 8.70
TOI left	67.80 ± 8.49	73.24 ± 8.56	69.62 ± 11.37	71.32 ± 6.30	70.86 ± 7.50	71.19 ± 7.51
FTOE right	0.31 ± 0.10	0.24 ± 0.09	0.22 ± 0.07	0.27 ± 0.06	0.30 ± 0.10	0.28 ± 0.09
FTOE left	0.30 ± 0.10	0.26 ± 0.10	0.25 ± 0.12	0.27 ± 0.06	0.30 ± 0.07	0.28 ± 0.08
THI right	1.81 ± 0.81	1.18 ± 0.98	1.23 ± 0.47	1.33 ± 0.8	1.71 ± 1.13	1.22 ± 0.50
THI left	1.10 ± 0.55	1.38 ± 0.78	1.56 ± 1.05	1.36 ± 1.06	1.25 ± 0.73	1.62 ± 1.00

delivery and consumption. It seems that SGA neonates manage to develop compensatory mechanisms probably with an increase of their brain perfusion.

PO-0423 DIFFERENCES IN CEREBRAL OXYGENATION AND PERFUSION OF SGA NEONATES ACCORDING TO GESTATIONAL AGE DURING THE FIRST POSTNATAL WEEK

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Background and aims Low birth weight in conjunction with the immature autoregulation mechanisms noted in preterm neonates may influence brain perfusion and consequently the neurodevelopmental outcome.

The aim of this study was to assess the potential variations in brain oxygenation and perfusion in SGA neonates of different gestational age during the first postnatal week with the use of Near Infrared Spectroscopy (NIRS).

Patients/methods SGA neonates born at 28–32 weeks and 32⁺¹–36 weeks respectively consisted the two study groups. Three measurements of forty minutes each were performed with NIRO-200 NX instrument in the first, third and seventh day of life. Tissue oxygenation index (TOI), fraction tissue oxygen extraction (FTOE) and tissue haemoglobin index (THI) were the recorded parameters.

Results 38 neonates were prospectively enrolled; 12 were born at 28–32 weeks gestation and 26 at 32⁺¹–36 weeks. Mean birth weight and head circumference were 1.062 ± 265 vs 1.656 ± 401 and 26.0 ± 2.5 vs 30.4 ± 1.8 respectively in the study populations. Haemoglobin in the first day didn't show any significant difference between the two subgroups (16.4 vs 17.8). NIRS monitoring found higher FTOE at the right side in more preterm SGA neonates (p = 0.018) in the first postnatal day. All the other parameters were similar in the two groups.

Conclusion It seems there aren't significant differences in cerebral oxygenation and perfusion between SGA neonates of different gestational age during the first postnatal week.

PO-0424 DOES SUPPLEMENTARY OXYGEN DURING A DESATURATION CAUSE CEREBRAL HYPEROXIA IN PRETERM NEONATES?

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Background Supplementary oxygen is often administered when preterm neonates experience desaturations i.e. after apnea, sometimes resulting in cerebral hyperoxia during recovery. Whether this post-hypoxic cerebral hyperoxia is induced by the supplementary oxygen, remains unknown.

Aim To compare the regional cerebral oxygen saturation (rcSO₂) and cerebral fractional oxygen extraction (cFTOE) following a desaturation, between preterm neonates who did and did not receive supplementary oxygen.

Methods As part of a larger prospective cohort study, near infrared spectroscopy (NIRS) was used to measure rcSO₂ during days 2 to 5 after birth. We collected 50 consecutive desaturations (SpO₂ <80%). cFTOE was calculated: [(SpO₂-rcSO₂)/SpO₂]. We

used a Wilcoxon signed rank test to compare mean rcSO₂ and cFTOE ten minutes before to ten minutes after desaturation. The Mann-Whitney U test was used to compare these values in neonates who did and did not receive supplementary oxygen.

Results We included 50 desaturations in 16 preterm neonates (median GA 28+4/7 (range 25+0/7–30+0/7) weeks; birth weight 1144 (800–1630) grams). Supplementary oxygen was administered in 60% of the events. We found higher rcSO₂ values following desaturation (mean 76.9%) compared to before desaturation (mean 70.2%, p = 0.001). There was no difference in rcSO₂-increase between neonates who did and who did not receive supplementary oxygen (p = 0.79). cFTOE was lower after desaturation (0.17%) compared to cFTOE before desaturation (0.22%, p < 0.001).

Conclusion Cerebral hyperoxia after desaturation in preterm neonates indeed occurs, but is not induced by supplementary oxygen administration. The decrease of cFTOE after desaturation supports the hypothesis that post-hypoxic reperfusion might cause cerebral hyperoxia after desaturation.

PO-0425 MOTOR DEVELOPMENT AND QUALITY OF MOTOR PERFORMANCE IN RELATION TO COGNITIVE ABILITY IN VERY PRETERM CHILDREN

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Background and aim Early motor and cognitive development are interdependent. Poor motor ability decreases possibility to explore and interact with the surrounding environment. Very preterm infants (VPT) and extremely preterm infants (EPT) frequently display atypical motor performance during their first year but little is known whether this predicts later cognitive ability. Is level of motor development (LMD) and quality of motor performance (QMP) at 10 months corrected age (CA), with regards to gestational age (GA) and gender, associated with cognitive ability at 2 ½ years CA.

Method Very preterm infants (n = 85, 48 boys, 37 girls) born 2004–2007, with a mean of 28.5 (22.3–31.9) gestational weeks (EPT n = 30, VPT n = 55) and birth weight 1188 (520–2030 g). Structured Observation of Motor Performance in Infants (SOMP-I), which measures LMD and QMP separately, was performed at 10 months CA. Cognitive ability was assessed with Bayley Scales of Infant Development III (BSID III) at age 2 ½.

Results Statistically significant associations were shown between LMD (r = 0.344; p = 0.001) and QMP (r = -0.256; p = 0.018), respectively, and BSID III cognitive scaled scores. When separated for gender and GA significant associations were shown for boys (r = 0.392; p = 0.006) and EPT children (r = 0.531; p = 0.003) for LMD only.

Conclusion Motor development at 10 months is associated with cognitive development at 2½ years. Level of motor performance had a stronger correlation with cognition than QMP, and when analysed for subgroups, was present only in boys and children born extremely preterm.

PO-0426 WITHDRAWN