

Women with prenatal diagnosis were not elderly, and most had previous pregnancies without abnormalities.

An important number of CNS malformations are associated with genes or chromosomal syndromes (24%), and the most frequently isolated cases correspond to NTD (42.2%), it believes that this group can be prevented by the intake of preconception folic acid.

#### PO-0452 HYPOXIC-ISCHAEMIC ENCEPHALOPATHY AND PERINATAL INFECTION: A PILOT STUDY

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**Background** Recent studies suggest a synergic effect of infection and hypoxia-ischemia in the causation of perinatal brain damage. Although an infection screening is warranted in cases of hypoxic-ischaemic encephalopathy (HIE), whether this screening should include more infrequent pathogens like neurotropic viruses is controversial.

**Objectives** To evaluate the importance of perinatal infection in HIE, focusing on neurotropic viruses.

**Methods** Prospective study including infants above 35 weeks gestation diagnosed of moderate or severe HIE in Burgos University Hospital during the period October 2011–2013. Antenatal and perinatal data were recorded, as well as details of the clinical course in the neonatal period. Serological studies were performed to the mother during pregnancy. Bacterial blood and cerebrospinal cultures, as well as viral tests (Cytomegalovirus, Epstein-Barr virus, Human Herpes virus, Enterovirus, Parechovirus) in cerebrospinal fluid were performed to the newborns at birth.

**Results** 12 newborns were included in the study. There were no confirmed cases of viral infection. There was a case of bacterial early onset sepsis and three cases of suspected sepsis due to clinical and/or analytical signs, but with negative cultures. An elevation of the C reactive protein (CRP) levels was the sole cause of suspicion in two of these cases.

**Conclusions** Our results confirm that an infection screening is important in HIE. These pilot results would not support universal screening for viral infection in cases of HIE.

#### PO-0453 MATURATIONAL CHANGES IN CORTICAL FOLDING IN EXTREMELY PRETERM INFANTS

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**Background and aim** Our aim was to analyse the development of cortical morphology in preterm infants, as alterations in cortical folding affect functional development.

**Methods** MRI was performed at 30 and 40 weeks corrected age in 19 preterm born infants (gestational age (GA) 24.71–27.86 wks, 11 males). After automatic brain tissue segmentation,<sup>1</sup> a 3D reconstruction of the inner cortical surface was computed and cortical sulci were labelled with Brainvisa software.<sup>2</sup> We measured global sulcal index (SI=folded/unfolded surface areas), and per sulcus surface area (SA, mm<sup>2</sup>) and mean geodesic depth (MGD, mm), all corrected for scan-age.

**Results** In 10 weeks, SI increased from 0.18 to 1.08 (6 times, 40 wks: right > left). Central sulcus, lateral fissure, and insula increased more in SA (resp. 2.3, 2.6, 1.7-times) than in MGD (resp. 1.2, 1.1, 1.3-times). The superior temporal sulcus (STS) expanded in SA with factor 16.3 left and 12.6 right (30 wks: right > left), and factor 1.6 in MGD (30 and 40 wks: right > left). White matter injury in these infants (9 IVH, 1 PVHI, 4 treated for PHVD) or GA did not significantly influence cortical morphology changes.

**Conclusion** Over this short period, cortical folding is immense in preterm newborns, and shows inter-hemispherical asymmetries. Sulci increased more in surface area than in depth, STS showed the largest increase. The influence of brain injury on cortical morphology needs to be elucidated in a larger cohort.

#### REFERENCES

- 1 Chita S, et al. *Medical Imaging* (2013)
- 2 Perot M, et al. *Medical Image Analysis* (2011)

#### PO-0454 IMPACT OF SYSTEMATIC PAIN AND SEDATION MANAGEMENT ON OUTCOME OF VERY LOW BIRTH WEIGHT INFANTS

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**Background and objectives** We retrospectively compared short-term and neurodevelopmental outcome of very low birth weight infants (VLBWI) before (n = 84) and after implementation (n = 69) of a protocol for the management of neonatal pain and sedation.

**Methods** Opiate exposure, time on mechanical ventilation, inotropic support, details on nutritional aspects, and growth were compared between baseline and after protocol implementation. Infants were evaluated at 12 months corrected age using standardised neurologic examination and Bayley Scales of Infant Development-II.

**Results** Cumulative mean  $\pm$  SD opiate dose (baseline dose of 14  $\pm$  39 mg/kg vs. intervention group dose of 84  $\pm$  222 mg/kg morphine equivalents; p < 0.0001) increased after implementation. Time on mechanical ventilation, inotropic support, time on parenteral nutrition, growth, and length of stay were similar before and after implementation. There were no differences in neurodevelopmental outcome variables before and after intervention (MDI: 85  $\pm$  14 vs. 84  $\pm$  16, p = 0.6; PDI: 87  $\pm$  19 vs. 83  $\pm$  19, p = 0.2; BRS: 74  $\pm$  27 vs. 68  $\pm$  32, p = 0.2). Multiple linear regression analysis identified opiate exposure as a possible risk factor for lower MDI (estimate = -0.15; p = 0.004)