

medical needs of patients and families. There is urgent need to refine current TH protocols and encourage clinical trials of additional neuroprotective treatments.

1111 PILOT CASE SERIES ON THE USE OF MAGNESIUM SULPHATE AS NEUROPROTECTION IN HIE BABIES IN THE COOLING ERA

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Background and Aims A recent RCT suggested improved neurological outcome at discharge for moderate to severe perinatal asphyxia babies given iv magnesium sulphate. However, this trial was performed in babies who were not cooled.

Methods We present a pilot case series of 3 patients with moderate to severe HIE who satisfied the criteria for cooling and received both cooling and iv magnesium sulphate loading of 200mg/kg. Serum Magnesium levels were monitored at 0, 12, 24, 48, 72 hours of cooling.

The babies were reviewed for adverse effects of magnesium sulphate in terms of hypotension, arrhythmia, feed intolerance, respiratory depression and hypocalcemia.

Results One patient received systemic cooling and two other patients received selective head cooling. In addition to iv magnesium sulphate loading, decision was made to institute continuous infusion of iv magnesium sulphate in one of these patients for 4 days at 20–40 mg/kg/h for PPHN. All babies achieved serum magnesium levels of > 1.2 mmol/l within 24h of the loading dose, which was similar to the level aimed for in the previous RCT.

Magnesium sulphate was well tolerated with only mild hypotension requiring one day of dopamine (max 5 mcg/kg/min) in one patient. No babies had respiratory depression, arrhythmia, feed intolerance or hypocalcemia. Neurodevelopmental outcome to date is also presented.

Conclusions Magnesium sulphate is well tolerated in babies with moderate to severe HIE in the cooling era. A large RCT is required to assess its efficacy, long term impact and further look into adverse effects.

1112 A TERTIARY NEONATAL UNIT'S EXPERIENCES IN ESTABLISHING AN IN-HOUSE COOLING SERVICE

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Background Hypoxic Ischaemic Encephalopathy (HIE) affects 1–2 per 1,000 live births in UK. The TOBY study showed that therapeutic hypothermia (TH) is beneficial for babies with moderate HIE. In view of this we established an in-house cooling service.

Aim To review our experiences in establishing an in-house cooling service.

Methods The Badger electronic database was used to identify babies who received TH in the last 2 years (01/01/10 to 31/12/11). The management and outcomes were analysed.

Results In the last two year, 27 babies' commenced in-house TH. 3 babies were transferred out to another unit for TH for bed capacity reasons. A further 3 babies died before discharge home. 19 babies received the full 72 hours of cooling in our centre. We did not encounter any major complications with the servo-controlled cooling mattress. Only 50% of babies had their MRI in the defined time period as per the TOBY guidelines. All babies are being followed up by a dedicated consultant Neonatologist and neurodevelopmental

physiotherapist to assess their neurodevelopment up to the age of 2 years.

Conclusion We have safely established an in-house cooling service by following the TOBY guidelines. The servo-controlled cooling mattress provides a safe cooling process with a rectal probe. Identifying these babies early and the interpretation of CFAM was an important aspect of training. Our main challenge was to get an MRI post cooling in a timely fashion. This has been resolved with an agreed dedicated slot for these babies at Birmingham Children's Hospital.

1113 3D DIGITAL CAPTURE OF HEAD CIRCUMFERENCE AND VOLUME IN NEONATES - A METHOD EVALUATION

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Background Manual measurement of head circumference (HC) is used to quantify head growth in preterm infants. Laser shape digitizers offer semi-automatic HC measuring and additional information on head volume (HV). Reliability and accuracy in obtaining HC and HV in neonates has not been investigated yet.

Aims

1. To determine intraobserver and interobserver variability of HC and HV measurements in neonates with a 3D digital capture system.
2. To compare the method with manual HC measurements.

Methods Standard weekly HC measurements on a neonatal unit were conducted manually and digitally with STARScanner laser shape digitizer (Vorum Research Corp., Vancouver, BC) over 12 months. Method comparison was performed using Passing-Bablok-Regression (PBR), Cusum test and Bland-Altman (BA) analyses. Multiple scan examinations by different trained observers were performed to obtain intraobserver/interobserver data.

Results

1. Intraobserver coefficient of variation was low for HC (0.1–0.9%) and HV (0.54–1.1%). BA (mean percentage of difference M_d ; 95% CI) of interobserver data showed interchangeability for HC ($M_d -0.005$; CI-0.39–0.39) and HV ($M_d 1.51$; CI -1.17–4.1).
2. Method comparison data was acquired from 446 measurements in 258 infants (HC 318 ± 19.5 mm). Overall agreement was good ($M_d -0.82$; CI -4.89–3.24), PBR showed no significant systematic or proportional differences ($\alpha=1.03$, CI 0.99–1.06; $\beta=-7.06$ CI -17.7–3.01). There was no significant deviation from linearity ($p=0.62$).

Conclusions Infant head shape capturing with the examined device is reliable, accurate and save. It offers additional information on HV. Possible benefits of HV in quantifying head growth in preterm infants need to be further investigated.

1114 RESUSCITATION WITH HYDROGEN GAS MIXED INTO SYNTHETIC AIR REDUCES APOPTOSIS IN NEONATAL HYPOXIA-ISCHEMIA PIGLET MODEL

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Background and Aims Asphyxia and subsequent reoxygenation cause a burst of oxygen free radicals. A gas mixture of ambient air and hydrogen may provide early neuroprotection.

Hydrogen may act as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals and thereby contribute to less apoptosis.