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BRAIN INJURY FOLLOWING WHOLE BODY COOLING AFTER NEONATAL ENCEPHALOPATHY IN A SOUTH INDIAN NEONATAL UNIT

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Efficacy of therapeutic hypothermia (TH) in encephalopathic infants with co-existent sepsis is unknown; we assessed brain tissue injury using magnetic resonance (MR) biomarkers in a South Indian public sector neonatal unit.

Methods: We randomly allocated 33 infants (age ≥36 weeks, birth weight ≥1800g) with neonatal encephalopathy (NE) (19 stage I, 11 stage II, 4 stage III) to TH (rectal temperature 33.5^0C for 72 hours) or standard care, within 6 hours of birth. MR images were acquired between days 7 and 11 using a 1.5 Tesla Siemens Avanto and scored by a single examiner (FC).

Results: Baseline characteristics were similar in the cooled (n=17) and standard care (n=16) groups; 4 cooled and 2 standard care infants died. Trends towards increased sepsis (53% versus 19%) and higher background EEG abnormality on day 4 (47% versus 29%) were seen in the cooled infants. The MR imaging brain injury scores in the basal ganglia (odds ratio (95% CI) 3.4 (0.5,22)), white matter (WM) (0.5 (0.08,2.6) and cortex (4.7 (0.7,30) were similar in both groups. No intergroup differences were seen in tract based spatial statistics or in fractional anisotropy over the anterior and posterior limbs of the internal capsule.

Conclusions: TH did not reduce the brain injury apparent on MR imaging. This effect may be 'real' due to the different population co-morbidities in a high-sepsis setting or 'false' due to poor discriminatory power of the MR imaging biomarkers used[2]. Carefully controlled local clinical trials are required before TH is routinely in these settings.