

## HOW GOOD IS THE CORRELATION BETWEEN EARLY MAGNETIC RESONANCE IMAGING (MRI) AND LATE MRI IN INFANTS WITH HYPOXIC ISCHEMIC ENCEPHALOPATY (HIE) TREATED WITH HYPOTHERMIA?

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**Background:** MRI in the second week of life predicts brain damage in HIE. However, little is known about MRI in the first days of life and the changes that may account with hypothermia.

**Aims:** To assess:

- 1) the correlation between early (first 4 days) and late (second week of life) application of a specifically designed MRI scoring system;
- 2) the relationship between DWI and conventional MRI scores;
- 3) the correlation between MRI scores and HIE clinical severity and death.

**Methods:** 49 newborns with HIE evaluated for hypothermia at 3 university-based centers in Spain were included. An attempt was made to image the patients as soon as they were stable and a second scan was performed during the second week of life. Each MRI study was evaluated, blinded to clinical data, using an empirical MRI scoring system. The severity of HIE was graded by a scale particularly designed for this purpose.

**Results:** 37/49 newborns underwent at least one MRI scan. 46 MRI scans were obtained (16 early scans including DWI and 30 late scans). We found a relationship between early and late MRI severity ( $r_s$  0.852;  $p=0.04$ ). DWI correlated with both early ( $r_s=0.770$ ;  $p< 0.0001$ ) and late MRI scores ( $r_s=0.777$ ;  $p=0.0014$ ). Furthermore, the MRI score correlated with the clinical score of HIE ( $p=0.011$ ) and mortality ( $p=0.02$ ).

**Conclusions:** This preliminary study shows the feasibility of using an early MR scoring system to assess brain damage in the first few days after birth. Follow-up studies will establish its predictive value for neurodevelopmental outcome.