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PROGNOSTIC ACCURACY OF THALAMIC PROTON MAGNETIC RESONANCE SPECTROSCOPY FOLLOWING THERAPEUTIC HYPOTHERMIA IN NEONATAL ENCEPHALOPATHY

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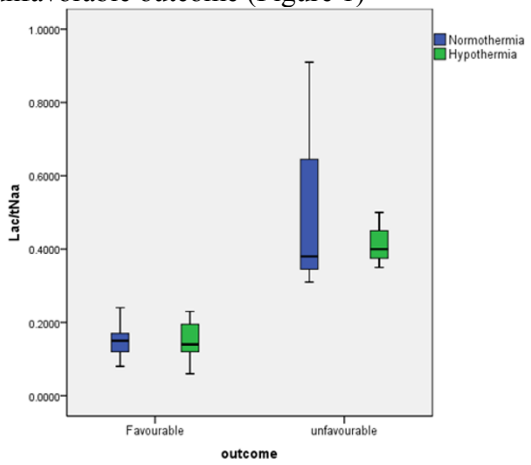
Background and aims: Deep grey matter lactate/N-acetylaspartate (Lac/NAA) peak area ratio on proton magnetic resonance spectroscopy (^{1}H MRS) is the best predictor of neurological outcome following neonatal encephalopathy (NE). We evaluated the prognostic accuracy following therapeutic hypothermia (TH).

Methods: We performed magnetic resonance imaging (MRI) in consecutive term babies with NE, over a 3 year period before and after introduction of TH. Death or severe neurodisability (BSID 3) at 12 months was considered as an unfavourable outcome.

Results: Of 28 babies studied, 11 babies received TH. The median (range) age at MRI was 10 (5,12) days. Thalamic Lac/NAA (>0.29) had 100% sensitivity and specificity for predicting adverse outcome in both normothermic babies and cooled infants (Table 1). The mean (SD) Lac/NAA was high in infants who had unfavorable outcome (Figure 1)



[Figure 1]

Test	Lac/NAA		Conventional MR	
	Normothermia	Hypothermia	Normothermia	Hypothermia
Sensitivity (95% CI)	100 (55,100)	100 (57,100)	100 (48 - 100)	66 (24 - 93)
Specificity(95% CI)	100 (90,100)	100 (84,100)	71 (60 - 71)	75 (59 - 85)
Positive predictive value(95% CI)	100 (55,100)	100 (57,100)	42 (20 - 42)	50 (18 - 69)
Negative predictive value(95% CI)	100 (90,100)	100 (84, 100)	100 (84 - 100)	85 (67 - 97)
Area Under the Curve (SE)	0.97 (0.03)	1.0 (0.0)	0.81 (0.09)	0.75 (0.19)

[Table 1]

Conclusions: The prognostic accuracy of ^{1}H MRS deep gray matter Lac/NAA peak area ratios is unaltered by TH.