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DOES ATTAINMENT OF FULL ORAL FEEDING PREDICT BRAIN MRI ABNORMALITIES RELATED TO HYPOXIC-ISCHEMIC INJURY IN INFANTS TREATED WITH HYPOTHERMIA?

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We hypothesize that clinical recovery following cooling predicts brain MRI abnormalities, and that clinical status 1 week after cooling indicates which infants need MRI.

Objective: To determine whether clinical evaluation, including oral feeding ability, 1 week after cooling predicts abnormalities on post-cooling brain MRI.

Methods: 71 consecutively cooled infants who had brain MRI were reviewed. Oral feeding ability, spontaneous activity, need for mechanical ventilation, and clinical seizure activity were evaluated (as proposed by Nelson and Ellenberg) for assessment of encephalopathy and as neurodevelopment markers. Logistic regression analysis was performed using all 4 co-variates, with an abnormal MRI as the primary outcome.

Results: Brain MRI was abnormal in 29 (41%) infants. Forty-two of 71 infants attained full oral feeds by 1 week after cooling and 34 of these had a normal MRI. Univariate analysis identified all criteria as significantly associated with an abnormal MRI. On multivariate analysis, only full oral feedings ($p< 0.010$, OR 0.1, 95% CI 0.01-0.6) and absence of seizures ($p< 0.001$, OR 0.05, 95% CI 0.01-0.3) by 1 week after cooling remained significantly associated with reduced risk of adverse outcome. Areas under the ROC curve for feeding difficulties (0.77, 95% CI 0.7-0.9), seizure activity (0.74, 95% CI 0.6-0.9), and both combined (0.9, 95% CI 0.8-1.0) indicated high accuracy to predict the primary outcome.

Conclusions: Infants attaining full oral feeds and without seizures by 1 week after cooling are unlikely to have an abnormal brain MRI. This information is useful in prognostication and in deciding which infants need MRI.