VOLUMETRIC MAGNETIC RESONANCE IMAGING (MRI) AT TERM PREDICTS MOTOR DEVELOPMENT AT 2 YEARS IN PRETERM INFANTS WITH POST-HEMORRHAGIC VENTRICULAR DILATATION

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Background: Premature infants with Post-Hemorrhagic Ventricular Dilatation (PHVD) have a high risk of disabilities but prediction of grade of motor and mental outcome is difficult using ultrasound.

Aims: To investigate the correlation of both qualitative and volumetric MRI at term with neurodevelopmental outcome at 2 years.

Methods: 36 premature infants with PHVD, had cerebral MRI at term. MR images were assessed by two observers unaware of treatment or outcome. Brain regions were assessed and abnormalities scored. In a subgroup of 25 infants, total and regional cerebral volumes were calculated using a manual segmentation technique. Bayley Scales of Infant Development were examined at 2 years past term. As many infants scored below 50 on the Bayley scales, Developmental Quotients (DQ) were calculated from Developmental Age Equivalent scores to provide continuous variables for all.

Results: Qualitative analysis correlated weakly with motor and mental DQ. Total brain volume, excluding ventricles, showed strong positive linear correlation with motor, but not mental DQ (p 0.001).

[MR vol v DQ]

Brain volume < 296 ml had 100% positive predictive value for DQ < 55. Thalamic volume and cerebellar volume correlated strongly with motor but not mental DQ. 29.5% of infants showed normal posterior limb of internal capsule (PLIC) but had mean motor DQ 67.

Discussion: Volumetric brain measurements provided a better prediction of motor development than did qualitative assessment.