Comparison between trained specialist and medical student in performing neurological assessment of high-risk infant by Hammersmith infant neurological examination (HINE)

A standardized neurological examination is important for evaluation of infants in high-risk infant follow up clinics. The Hammersmith Infant Neurological Examination (HINE)[1,2] is a simple method for detection of early signs of cerebral palsy in infants between 2 and 24 months of age and it includes assessment of cranial nerve functions, posture, movements, tone and reflexes. Various studies were being done to develop software or use electronic media to improve the performance of this screening tool.[3] HINE not only identifies children at risk of CP but also often provides additional information on the type and severity of the motor sequelae. It often allows identification of early abnormal signs related to other aspects of neurological function such as cerebral visual impairment or feeding abnormalities. Therefore, it also allows better assessment of the overall severity of CP, not limited to motor impairment. Hence appropriate and timely intervention can be planned aiming at the specific component rather than doing a general intervention. Despite its general utility, HINE currently lacks a standardized training or widely available course.

A descriptive cross sectional study was done in Paediatric outpatient unit at a Tertiary care Teaching Hospital to compare the Neurological Assessment of high risk infant by HINE between a specialist and a final year MBBS student having basic knowledge of paediatrics.

Fifty high-risk infants of age group 2-12 months with either history of prematurity or term babies with birth asphyxia were enrolled whereas those with refractory seizures were excluded. The student was trained by paediatric faculty and provided with proper handouts and videos of HINE. First 5 cases done by student were supervised and those cases were not included in the study. After taking proper informed consent from parents, HINE was done on each infant by both student and faculty independently, results were sealed in envelope and later analyzed.

Mean age of infants enrolled was 4.2 months with M: F ratio of 3:2. Out of them, 35 (70%) were term and 15 (30%) were preterm. Out of them, 15 had history of neonatal seizures; 18 had respiratory distress; 7 were ventilated; 5 had apnea and 23 had jaundice during hospital stay. The inter-rater reliability was assessed using a two-way mixed, absolute agreement, single measures Intraclass coefficient (ICC) to find the degree of reliability between the two observers. The ICC value was high (ICC = 0.98, 95% CI, $P < 0.001$) and value of Cronbach's alpha was high (0.99). It suggests high degree of reliability between the student and the faculty in the scoring of HINE. Although motor milestones were not being scored in HINE but assessment done by both was similar when assessed individually. Behaviour state cannot be compared between the two as the infants were assessed at different time of the day.

We propose that HINE can be done routinely by primary care physician in a resource poor country like ours for early detection and referral of cases of cerebral palsy in the community. Regular training, monitoring and feedback of primary care physician would definitely help in mitigating problems in these children. More studies are also required involving large number of subjects.

Conflicts of interest

There are no conflicts of interest.

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