Effectiveness of the Lacey Assessment of Preterm Infants to Predict Neuromotor Outcomes of Premature Babies at 12 Months Corrected Age

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Abstract : Background: The Lacey Assessment of Preterm Infants (LAPI) is used in clinical practice to identify premature babies at risk of neuromotor impairments, especially cerebral palsy. This study attempted to find the validity of the Lacey assessment of preterm infants to predict neuromotor outcomes of premature babies at 12 months corrected age and to compare its predictive ability with the brain ultrasound. Methods: This prospective cohort study included 89 preterm infants (45 females and 44 males) born below 35 weeks gestation who were admitted to the neonatal intensive care unit of a government hospital in Dubai. Initial assessment was done using the Lacey assessment after the babies reached 33 weeks postmenstrual age. Follow up assessment on neuromotor outcomes was done at 12 months (± 1 week) corrected age using two standardized outcome measures, i.e., infant neurological international battery and Alberta infant motor scale. Brain ultrasound data were collected retrospectively. Data were statistically analyzed, and the diagnostic accuracy of the Lacey assessment of preterm infants (LAPI) was calculated -when used alone and in combination with the brain ultrasound. Results: On comparison with brain ultrasound, the Lacey assessment showed superior specificity (96% vs. 77%), higher positive predictive value (57% vs. 22%), and higher positive likelihood ratio (18 vs. 3) to predict neuromotor outcomes at one year of age. The sensitivity of Lacey assessment was lower than brain ultrasound (66% vs. 83%), whereas specificity was similar (97% vs. 98%). A combination of Lacey assessment and brain ultrasound results showed higher sensitivity (80%), positive (66%), and negative (98%) predictive values, positive likelihood ratio (24), and test accuracy (95%) than Lacey assessment alone in predicting neurological outcomes. The negative predictive value of the Lacey assessment was similar to that of its combination with brain ultrasound (96%). Conclusion: Results of this study suggest that the Lacey assessment of preterm infants can be used as a supplementary assessment tool for premature babies in the neonatal intensive care unit. Due to its high specificity, Lacey assessment can be used to identify those babies at low risk of abnormal neuromotor outcomes at a later age. When used along with the findings of the brain ultrasound, Lacey assessment has better sensitivity to identify preterm babies at particular risk. These findings have applications in identifying premature babies who may benefit from early intervention services.

Keywords : brain ultrasound, lacey assessment of preterm infants, neuromotor outcomes, preterm

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