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Early amplitude-integrated EEG monitoring 6 h after birth predicts long-term neurodevelopment of asphyxiated late preterm infants

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The present study aimed to assess the prognostic value of early amplitude-integrated Electroencephalogram (aEEG) in late preterm infants who were born at a gestational age between 34 0/7 and 36 6/7 weeks for the prediction of neurobehavioral development. Late preterm infants (n=170) with normal, mild and severe asphyxia underwent continuous recording of aEEG for 4–6 h starting 6–8 h after delivery. The recordings were analyzed for background pattern, Sleep-Wake Cycle (SWC) and seizures. Survivors were assessed at 18 months by neurological examination and Bayley Scales of Infant Development II. The incidence of adverse neurological outcome in the asphyxia group was significantly higher than in the normal group. For late preterm infants in the asphyxia group, abnormal aEEG pattern had a predictive potential of neurological outcomes with sensitivity of 78.57% (specificity, 87.80%; Positive Predictive Value (PPV), 68.75%; Negative Predictive Value (NPV), 92.31%; power, 85.45%). Non-SWC and intermediate SWC significantly were increased (25.45 and 52.73%, respectively) in the asphyxia group vs. the normal group. SWC pattern had neurological prognosis value in the asphyxia group with sensitivity of 64.29% (specificity, 87.80%; PPV, 64.29%; NPV, 87.80%; power, 81.82%). Early aEEG patterns are important determinants of long-term prognosis of neurodevelopmental outcome in asphyxiated late preterm infants.

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