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Impact of umbilical cord arterial pH, gestational age, and birth weight on neurodevelopmental outcomes for preterm neonates

Background

The aim of this study was to determine the impact of umbilical cord arterial pH, gestational age, and birth weight on neurodevelopmental outcomes for preterm neonates.

Methods

We examined 112 neonates. Inclusion criteria were: Saturations greater than 88%, and heart rates between 100–205 beats per minute.

Measurements

We assessed several neurodevelopmental factors as part of the Brazelton Neonatal Behavioral Assessment Scale (NBAS), 4th edition, such as asymmetric tonic neck reflex (ATNR), motor maturity, response to sensory stimuli, habituation, and state regulation. Initial assessment parameters such as APGAR score and umbilical cord arterial pH were used to assess neonates.

Results

We found a strong correlation between the presence of the sucking reflex and umbilical cord arterial pH ($r = 0.32$; $p = 0.018981$). Umbilical cord arterial pH was also correlated with the presence of asymmetric tonic neck reflex ($r = 0.27$; $p = 0.047124$), cost of attention ($r = 0.31$; $p = 0.025381$) and general motor maturity ($r = 0.34$; $p = 0.011741$).

Conclusions

We found that the sucking reflex may be affected in infants with low umbilical cord arterial pH values. Practitioners and parents can use the NBAS to help determine neurodevelopmental factors and outcomes in preterm infants, possibly leading to safer and more effective feeding practices and interventions.

Biography

Roksana Malak currently works at the Department of Rehabilitation, Poznan University of Medical Sciences. Roksana does research in Physiotherapy, Pediatrics and Neurology.