

EARLY EPISODES OF HYPOCARBIA AND EARLY-ONSET SEPSIS ARE RISK FACTORS FOR CYSTIC PERIVENTRICULAR LEUKOMALACIA IN THE PRETERM INFANT

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Background: The pathogenesis of cystic periventricular leukomalacia (cPVL) is based on an either hypoxic-ischemic and/or inflammatory processes with different risk factors having been postulated to be associated with its development. We aimed to evaluate risk factors for cPVL focussing on the influence of hypocarbia.

Patients and methods: Single centre retrospective cohort study at a tertiary care university NICU between 1999 and 2008. All preterm infants ≤ 35 weeks gestational age with diagnosis of cPVL by serial cranial ultrasound were compared with two controls matched for gestational age (± 1 week), birth weight (± 200 grams), sex, and year of birth.

Results: 47 preterm infants were diagnosed as having cPVL. Univariate analysis of risk factors revealed lower 5 and 10 minutes Apgar scores, and higher rates of neonatal seizures, early-onset sepsis, neonatal steroids, respiratory distress syndrome with surfactant replacement therapy, and episodes of hypocarbia significantly being associated with cPVL. In-vitro fertilisation, caesarean section, and preeclampsia were negatively correlated with cPVL. Following multivariate analysis using a logistic regression model and including all parameters with a level of significance below 0.1 early-onset sepsis and hypocarbia remained the only significantly associated risk factors ($p = 0.022$ and 0.024 , respectively). Lowest PaCO₂ values did not differ between cPVL cases and controls as did not the duration of hypocarbia, but the onset of hypocarbia was significantly later in cPVL cases.

Conclusion: Early episodes of hypocarbia and sepsis are risk factors for the development of cPVL in the preterm infant.