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A survey of relative frequency of etiologies, time of onset, efficacy of drug therapy and risk factors for clinical neonatal seizures

Summary:

Objective: Seizure is a common condition in neonatal period and may become first feature of neurologic dysfunction. In most cases, diagnosis of neonatal seizure and its different etiologies are based on history, clinical manifestations and identification of risk factors. I conducted this study to evaluate relative frequency of etiologies, time of onset, efficacy of drug therapy and risk factors for clinical neonatal seizures.

Methods and materials: Between March 2002 and March 2003, a cohort of 4632 live born neonates in Alavi hospital of Ardabil, Iran were assessed as a retrospective cross-sectional study. 79 of these infants have been diagnosed with clinical neonatal seizures which only 70 included in the study because of inadequate or low reliability of information in medical records. In first step, a descriptive study of relative frequency of neonatal seizures was performed, followed an analytical study of time of onset, efficacy of drug therapy and risk factors.

Results: Hypoxic-ischemic encephalopathy was the most common etiology of neonatal seizures. Infections, acute metabolic disorders and intracranial hemorrhage were the next three important etiologies. The average time of onset in preterm infants was second day of life compared with term infants that was first day of life ($P=0.021$). In comparison with female infants, male infants were more affected with seizures and in light of efficacy of drug therapy, clinical seizures were mainly controlled with two antiepileptic drugs in preterms compared with terms whose clinical seizures were mainly controlled with one drug ($P=0.005$).

Multivariate analysis using logistic regression showed that, birth weight less than 1500 gr ($P < 0.001$) and male gender ($P = 0.012$) were two significant risk factors for preterm infants. For term infants, significant risk factors included small birth weight for gestational age ($P = 0.001$), birth by cesarean section ($P = 0.005$), primiparity ($P = 0.01$) and male gender ($P = 0.017$).

Conclusion and suggestion: This study confirmed relatively high frequency of HIE among different etiologies and the effect of low birth weight on the risk of clinical neonatal seizures in preterm and term infants. Because of high incidence of seizure in this hospital and increased risk of seizure among infants born by cesarean section and to primiparous mothers, further evaluation for assessing the role of these two factors is needed.

Keywords: seizure, newborn, etiology, risk factor, drug therapy