EVALUATION OF NEONATAL SEIZURES AT A TERTIARY CARE CENTRE, BHUBANESWAR

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AIM

To know the etiology of neonatal seizures, their types and relation with the time of onset of seizure.

INTRODUCTION

The most prominent feature of neurologic dysfunction in the neonatal period is the occurrence of seizures. Determining the underlying etiology for neonatal seizures is critical. Etiology determines prognosis and outcome and guides therapeutic strategies. Causes are hypoxic ischemic encephalopathy, intracranial haemorrhage, malformation syndrome, haemorrhage, metabolic disturbances (hypoglycemia, hypocalcemia,) and meningitis, developmental defects (cerebral dysgenesis, neuronal migration), miscellaneous (polycythemia, maternal narcotic withdrawl, drug toxicity, local anaesthetic injection into scalp and phacomatosis).

Seizures incidence is higher during this period than in any period of life. 57.5 per 1,000 in infants with birth weights <1,500 gm and 2.8 per 1,000 infants weighing between 2,500 and 3,999 gm have seizure.

The biochemical effects of neonatal seizures include derangements of energy metabolism. Energy-dependent ion pumps are compromised, and adenosine diphosphate (ADP) levels rise. The rise in ADP stimulates glycolysis with the ultimate increase in pyruvate, which accumulates as a result of compromised mitochondrial function.

Neonatal seizures are 4 main types - subtle, clonic, tonic, myoclonic.

Subtle seizures - it include transient eye deviation, nystagmus, blinking, mouthing, abnormal extremity movements (rowing, swimming, bicycling, pedaling and stepping), fluctuation of heart rate, hypertension episodes, and apnea. It occur more commonly in premature than in full term infants.

Clonic seizures - It can be focal or multifocal. Multifocal clonic seizures incorporate several body parts are migratory in nature. The migration follows a non jacksonian trend, for example, jerking of the left arm can be associated with jerking of the right leg. Generalised clonic seizures is bilateral, symmetric and synchronous are uncommon in newborn.

Tonic seizures - This type refers to sustained flexion or extension of axial or appendicular muscle groups. It can be focal or generalized (generalized are more common). Focal tonic seizures include persistent posturing of trunk or neck in asymmetric way often with persistent horizontal eye deviation. Generalised tonic seizures are bilateral tonic limb extension or tonic flexion of upper extremities often associated with tonic extension of lower extremities.

Myoclonic seizures - These manifest as single or multiple lightning fast jerks of the upper or lower limbs. Myoclonic seizures are divided into focal, multifocal and generalized types. Focal myoclonic seizures characteristically affect the flexor muscles of upper extremities and sometimes associated with seizure activity on EEG. Multifocal myoclonic movements involve asynchronous twitching of several parts of the body and are commonly not associated with seizure discharges on EEG. Generalised myoclonic seizures involve bilateral jerking associated with flexion of upper and occasionally lower extremities.

Neonatal seizures are a risk factor that markedly increases rates of long-term morbidity and neonatal mortality. The presence of neonatal seizures is the best predictor of long-term physical and cognitive deficits. Complications of neonatal seizures may include the following: Cerebral palsy, Cerebral atrophy/Hydrocephalus ex vacuo, Epilepsy, Spasticity, Feeding difficulties.

MATERIAL & METHOD

Observational prospective study included 50 neonates admitted to NICU at Hi-tech medical college, during 2015-16 presenting with either of the generalized tonic, multifocal clonic, focal clonic, myoclonic, subtle motor movements with or without apneas or autonomic changes. Transient apnea without tachycardia or bradycardia and tetanus
neonatorum were excluded. Careful clinical observation by attending resident was done along with routine investigations of blood glucose, serum electrolytes, screening for sepsis and inborn errors of metabolism, lumbar puncture, cranial ultrasound, brain MRI and EEG.

RESULT & DISCUSSION

Birth asphyxia was the commonest cause of neonatal seizures (54%), followed by hypoglycemia (16%), hypernatremia (12%), septicemia including bacterial meningitis (8%), intraventricular hemorrhage (4%), hypocalcemia (4%) and hyperbilirubinemia (2%). Seizures due to birth asphyxia had onset within first three days of life (64%), hypoglycemic, hyponatremic and other types of seizure occurred after third and fourth day (36%). Subtle seizures were the commonest type of seizure (42%), followed by generalized tonic-clonic (28%), tonic-clonic (12%), generalized tonic-focal clonic (8%), generalized tonic (4%), focal tonic-clonic (2%) and multifocal (2%) and tonic type of seizures (2%).

Causes of septicemia-

- bacterial meningitis (8%)
- intraventricular hemorrhage (4%)
- hypocalcemia (4%)
- hyperbilirubinemia (2%)

REFERENCES


