Neonatal seizures management

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Seizures are more prevalent during the neonatal period than at any other time in the human lifespan. During early development, neonates are developmentally predisposed to excitatory neuronal activity increasing their susceptibility to seizures.

Seizures occur in from 1.8 per 1000 to 3.5 per 1000 live births, occurring with greater frequency in premature or low-birth weight infants compared with full-term and normal weight infants. Although the prognosis of neonatal seizures has improved over the past several decades, approximately one third of survivors are still left with neurologic sequelae including motor deficits, mental handicap, and epilepsy.

Conventional EEG has been used for decades to assess brain function state, and degree of maturation, revealing cerebral lesions, and identifying the presence of electrographic seizures.

Recently Amplitude-integrated EEG (aEEG) is introduced in majority of modern NICUs and is rapidly gaining popularity among neonatologists. It is a simplified way of monitoring cerebral function, and can enhance seizure detection significantly.

Determining the underlying etiology for neonatal seizures is critical. Etiology determines prognosis and outcome and guides therapeutic strategies.

Although the treatment of neonatal seizures has not changed significantly in the last several decades, there has been substantial progress in understanding developmental mechanisms that influence seizure generation and responsiveness to anticonvulsants. New anti-epileptics like topiramate and levetiracetam, and most recently a loop diuretic (Bumetanide) were found to have promising results in treating neonatal seizures.

Finally, as part of the Global Campaign against Epilepsy, ILAE, in conjunction with the World Health Organization (WHO), established a new initiative to create clinical guidelines, diagnostic and management algorithms for the care of neonates with seizures that can be applied worldwide, especially in the developing countries with limited or varied medical resources.