P - 326 Neonatal Amplitude Integrated EEG (aEEG): Contribution to Clinical, Etiology, and Prognosis

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INTRODUCTION

Amplitude integrated electroencephalogram (aEEG) is used as a bedside device for continuously assessing the cerebral electrical activity of newborns. (1) A single-channel amplitude integrated electroencephalogram recording is made from 2 biparietal electrodes. As the pattern of the background changes with gestational age, the technique can be used to assess brain maturation. (2)

The seizures usually present sublinical during neonatal period. Therefore, bedside neuromonitoring like aEEG provides great advantages to capture and early management of seizures in NICUs. (3)

OBJECTIVE

To evaluate neonatal aEEG and its contribution to the prognosis by comparing demographics, history, etiology, and diagnosis.

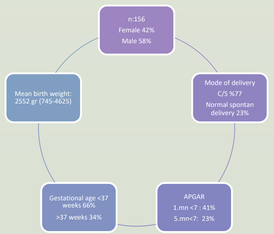

Table I: Demographic data

MATERIAL & METHOD

Neonatal aEEGs from NICU at Gazi University Department of NICU were retrospectively analyzed between 2017 and 2021. Detailed demographics, history including perinatal, natal and postnatal risk factors, diagnosis information were obtained from medical records. aEEG reports and trace records were retrospectively reviewed again.

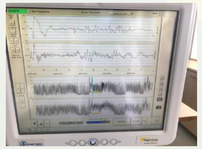

Figure I: Electrographic seizure

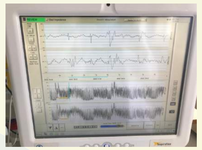

Figure II: Clinical and electrographic seizure

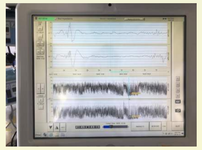

Figure III: Background supression during apnea

RESULTS

A total 156 newborns in whom 58% were boys and 42% were girls.(table 1)

The etiology is 34% HIE, 24% intracranial hemorrhage, 16% infectious causes, 6% stroke, 6% metabolic, 4% genetic, 4% structural and 6% other reasons . (Table 2)

The indications for aEEG monitoring were; seizure-like movements 58 (50%), apnea 32 (20.5%), seizure 26 (16.6%), otomatisms 6 (3.8%), hiccups 2 (1,2%) and subtle movements 6 (3.8%) respectively.

We hypothesized that seizure-like conditions requiring aEEG monitoring, such as apnea, may be caused by immaturity of the central nervous system. We observed suppression of background activity during apnea in 8 (5%) infants of which total numbers of apnea patients 32 (20,5%). Only 4 (2,5%) of apnea patients had electrographic seizure activity.

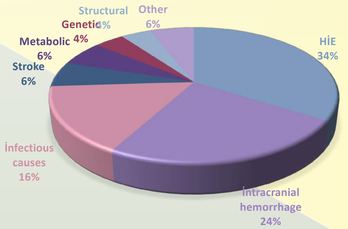

Table II: Etiologic diagnosis of patients

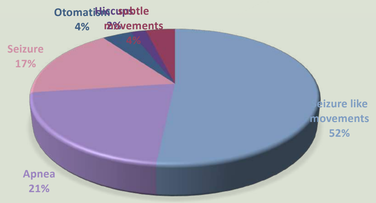

Table III: Indications of aEEG monitoring

CONCLUSION

Complicated births are still common and monitoring these newborns with aEEG is as effective as conventional EEG and vital for early neuro-critical intervention which can contribute to the prognosis. (4-6) In conclusion, evaluation of cerebral maturation and brain function by aEEG has great clinical utility in preterm management along with neuroimaging of the brain. Our results continue to support the value of aEEG as a bedside cerebral monitor, especially in the youngest and most vulnerable infants. With aEEG background maturation and cyclicity as signs of cerebral health and well-being, serial monitoring, especially following acute clinical deterioration can show response to treatment and recovery of brain activity. (7) Our results also show that movements that confused with seizures and apnea are quite common in preterms, but most of them are not associated with seizures.

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