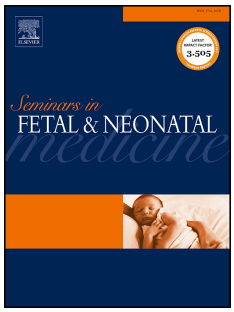
Accepted Manuscript



Amplitude-integrated electroencephalography for seizure detection in newborn infants

Lena Hellström-Westas

PII: S1744-165X(18)30033-7

DOI: 10.1016/j.siny.2018.02.003

Reference: SFNM 935

To appear in: *Seminars in Fetal and Neonatal Medicine*

Please cite this article as: Hellström-Westas L, Amplitude-integrated electroencephalography for seizure detection in newborn infants, *Seminars in Fetal and Neonatal Medicine* (2018), doi: 10.1016/j.siny.2018.02.003.

Amplitude-integrated electroencephalography for seizure detection in newborn infants

Lena Hellström-Westas*

Department of Women's and Children's Health, Uppsala University and University Hospital, Uppsala, Sweden

*Corresponding author. Address: Department of Women's and Children's Health, Uppsala University and University Hospital, SE-751 85 Uppsala, Sweden. Mobile: +46 (0)733 916330.

E-mail address: lena.westas@kbh.uu.se (L. Hellström-Westas).

SUMMARY

The amplitude-integrated electroencephalogram (aEEG) is a filtered and compressed EEG trend that can be used for long-term monitoring of brain function in patients of all ages. aEEG is increasingly used in neonatal intensive care units since several studies have shown its utility in high-risk newborn infants. Main indications for aEEG monitoring include early evaluation of brain function after perinatal asphyxia and seizure detection. The aEEG is usually recorded from one or two channels derived from parietal, central, or frontal leads. Although the aEEG is very useful for identifying high-risk infants and infants with seizures, the compressed trend has limitations with regards to detection of individual seizures. However, modern monitors also display the corresponding EEG (aEEG/EEG), which increases the probability of detecting single brief seizures. For improved evaluation of electrocortical brain activity the aEEG/EEG should be assessed together with repeated conventional EEGs or multi-channel EEG monitoring in a multi-disciplinary team.

Keywords:

Brain monitoring

Electroencephalography

Antiepileptic treatment

Neonatal encephalopathy

Intraventricular hemorrhage

White matter damage

1. Amplitude-integrated EEG

The amplitude-integrated electroencephalogram (aEEG) was created during the late 1960s by Maynard et al. at the London Hospital EEG department [1]. These researchers constructed a cerebral function monitor (CFM) for use in the intensive care unit with the aim