

CONTINUOUS EEG MONITORING BY A NEW WIRELESS HEADSET: DO WE STILL NEED EEG TECHNICIAN?

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In critically ill patients continuous EEG recording (cEEG) has been proposed, and it is recommended in several conditions.

Recently, a new EEG headset (Cereb Air®, Nihon-Kohden) has been suggested. It has 8 electrodes, connects wireless to electroencephalographer, and its positioning is proposed to be easier and faster than conventional 10-20 system. It is used in 10-beds-neuro-ICU at "A. Gemelli" Hospital from June 2017.

Primary aim of this study is to obtain a cEEG in a neuroICU without the need of EEG technician. In particular we investigated the feasibility of Cereb Air® for cEEG monitoring.

Each patient with indication to positioning of cEEG was included. Patients were divided in two groups according with the admission to Neuro ICU (Study group; 20 patients) or General ICU (Control group; 20 patients). In Study group, cEEG was recorded by the headset CerebAir® placed by a neuro ICU physician, while in Control group a conventional simplified 8 electrodes EEG recording, placed by a EEG technician, was performed.

Time for positioning of the electrodes was $6.2 \pm 1.1'$ in Study group and $10.4 \pm 2.3'$ in Control group ($t=7.36; p<0.0001$); the length of monitoring was 57 ± 12 hrs in Study group and 75 ± 15 hrs in Control group. During this time 35 interventions were necessary to correct artifacts in Study group and 11 in Control group. In Control group no cutaneous lesions were observed after electrodes removal; in Study group 17 patients showed pressure lesions, that spontaneously recovered.

Wireless system properly worked with no delay in all cases. No EEG technician intervention was required in Study group.

cEEG was obtained without the need of EEG technician in all cases in Study Group. In particular, CerebAir® seemed faster to position if compared to conventional techniques, and showed no significant side effects even when used for more than 24 hours.

