Implementation of cEEG/qEEG in neurointensive care unit: proposal of a standardized training program for intensivists

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Continuous electroencephalography (cEEG) in neurointensive care unit (ICU) is recommended for the detection of seizures and ischemia and to assess both regional and global cerebral condition. Quantitative EEG (qEEG) has been developed as a promising tool allowing to monitor EEG trends over time. Objective of this study was to evaluate the effectiveness of a standardized training program aimed at training neurointensivists in interpreting cEEG/qEEG. Our proposal of a standardized training program includes three phases: (I) didactic lectures on basics of monitoring, montages, physiological bases, and main clinical applications; (II) laboratory training consisting of at least 10 to 20 supervised cEEG/qEEG interpretations; and, (III) clinical training which should be divided into two parts: the supervised phase including 720 hours of cEEG/qEEG monitoring per trainee, and the personal learning curve at the end of which a clinical audit with the teaching neurophysiologist is needed to verify the competence achieved. Prior to pass to phase III, trainees are expected to meet a minimum passing score in evaluating at least 10 cEEG/qEEG. Seven neurointensivists naïve were enrolled. Phase III is still ongoing. At the end of phase II, each intensivist enrolled was anonimously evaluated in his/her ability (1) to assess the prevailing underlying rhythm, (2) to evaluate symmetry, (3) to assess reactivity to stimulus; (4) to recognize paroxysms; (5) to recognize seizures, (6) to recognize artefacts. Agreement with the teaching neurophysiologist was assessed using Cohen's kappa. There was a good agreement in the abilities 1, 2 and 3 ($p<0.05$); moderate in ability 5 ($p<0.05$) and weak in abilities 4 and 6 ($p<0.05$). These preliminary data suggest that a standardized training protocol may be promising for cEEG/qEEG spread and implementation. Outcomes of such a training program and its clinical effects should be evaluated.