

Seizures in 204 comatose children: incidence and outcome

Abstract:

Seizures are common in comatose children, but may be clinically subtle or only manifest on continuous electroencephalographic monitoring (cEEG); any association with outcome remains uncertain. cEEG (one to three channels) was performed for a median 42 h (range 2-630 h) in 204 unventilated and ventilated children aged ≤ 15 years (18 neonates, 61 infants) in coma with different aetiologies. Outcome at 1 month was independently determined and dichotomized for survivors into favourable (normal or moderate neurological handicap) and unfavourable (severe handicap or vegetative state). Of the 204 patients, 110 had clinical seizures (CS) before cEEG commenced. During cEEG, 74 patients (36%, 95% confidence interval, 95% CI, 32-41%) had electroencephalographic seizures (ES), the majority without clinical accompaniment (non-convulsive seizures, NCS). CS occurred before NCS in 69 of the 204 patients; 5 ventilated with NCS had no CS observed. Death (93/204; 46%) was independently predicted by admission Paediatric Index of Mortality (PIM; adjusted odds ratio, aOR, 1.027, 95% CI 1.012-1.042; $p < 0.0005$), Adelaide coma score (aOR 0.813, 95% CI 0.700-0.943; $p = 0.006$), and EEG grade on admission (excess slow with $>3\%$ fast, aOR 5.43, 95% CI 1.90-15.6; excess slow with $<3\%$ fast, aOR 8.71, 95% CI 2.58-29.4; low amplitude, 10th centile $<9 \mu\text{V}$, aOR 3.78, 95% CI 1.23-11.7; and burst suppression, aOR 10.68, 95% CI 2.31-49.4) compared with normal cEEG, as well as absence of CS at any time (aOR 2.38, 95% CI 1.18-4.81). Unfavourable outcome (29/111 survivors; 26%) was independently predicted by the presence of ES (aOR 15.4, 95% CI 4.7-49.7) and PIM (aOR 1.036, 95% CI 1.013-1.059). Seizures are common in comatose children, and are associated with an unfavourable outcome in survivors. cEEG allows the detection of subtle CS and NCS and is a prognostic tool.