Early Posttraumatic seizures

Seizures that occur one week after head injury are called early seizures. These are not universally accepted definitions, as some studies have allowed up to 4 weeks after head injury for early PTS [1].

Asikainen et al expressed that children are more susceptible to early seizures, while juveniles and adults are more prone to late seizures [2] [3].

30% incidence in severe head injury (“severe” defined as: loss of consciousness (LOC) > 24 hrs, amnesia > 24 hrs, focal neurodeficit, documented contusion, or intracranial hematoma) and ≈ 1% in mild to moderate injuries.

Occurs in 2.6 % of children < 15 yrs of age with head injury causing at least brief LOC or amnesia [4].

Early Posttraumatic seizures may precipitate adverse events as a result of elevation of ICP, alterations in BP, changes in oxygenation, and excess neurotransmitter release [5].

Anticonvulsants (AEDs) may be used to prevent early posttraumatic seizures (PTS) in patients at high risk for seizures.

They were effectively reduced when phenytoin was used for 2 weeks following head injury with no significant increased risk of adverse effects [6].

Biomarkers

From a sample of 96 patients surviving moderate-to-severe TBI, Lutkenhoff et al. performed shape analysis of local volume deficits in subcortical areas (analysable sample: 57 patients; 35 no seizure, 14 early, 8 late) and cortical ribbon thinning (analysable sample: 46 patients; 29 no seizure, 10 early, 7 late). Right hippocampal volume deficit and inferior temporal cortex thinning demonstrated a significant effect across groups. Additionally, the degree of left frontal and temporal pole thinning, and clinical score at the time of the MRI, could differentiate patients experiencing early seizures from patients not experiencing them with 89% accuracy.

Conclusions and relevance: Although this is an initial report, these data show that specific areas of localised volume deficit, as visible on routine imaging data, are associated with the emergence of seizures after TBI [7].

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