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Epileptic Disorders

Determinants of postictal agitation and recovery after tonic-clonic seizures in generalized and focal epilepsy*

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Objectives

- The aim of our study was to analyze postictal behavior after tonic-clonic seizures in various focal epilepsies, as well as idiopathic generalized epilepsy

- The study was focused on postictal agitation and time to recovery

Methods

- We identified 15 patients each with idiopathic generalized epilepsy (IGE), left temporal lobe (LTLE), right temporal lobe (RTLE) and frontal lobe epilepsy (FLE). We validated localization in focal epilepsy by good outcome after resective surgery at 1-year follow up. For each patient, the first TCS with reliable ictal and postictal data (video and EEG) was analyzed

- We defined postictal agitation as mild and marked
  - Mild - if the patient demonstrated horizontal movements or rotation of the trunk and pelvis while lying or sitting in bed and/or trying to remove medical equipment (EEG leads, nasal cannula, etc.) but was easily directed to stop this.
  - Marked - if patients attempted to get out of bed, were kicking or boxing, tried to remove medical equipment/ interfered with nursing care, and were difficult to direct

Methods

- We defined time to responsiveness as the time between clinical seizure end and the time the patient became oriented.

- One of the authors (AD) reviewed the video and EEG of all patients to collect clinical, ictal and postictal variables. Another reviewer (SZ) who was blinded to clinical information analyzed seizure videos for presence or absence of agitation.

- The video and EEG for each selected seizure was analyzed from clinical or EEG onset (whichever was first) until the patient started to follow commands. If recovery had not yet occurred by the end of the video clip, the end of the clip was presumed to be the end of the postictal phase in one preliminary analysis. These seizures were excluded from a second TTR analysis.

Results

- We reviewed 60 TCS in 15 patients with IGE and 45 patients with focal epilepsy (15 RTLE, 15 LTLE, 15 FLE).

- We found that seizure duration was longest in the left temporal epilepsy group and shortest in the generalized epilepsy group, 1-minute vs 4 minutes ($p < 0.05$); there was no difference between groups regarding duration of tonic-clonic phase.

- We found postictal agitation in 14 of 60 patients (23.3%); half (7) of these had left temporal lobe epilepsy. On the other hand, only 1 in 15 patients with generalized epilepsy had agitation ($p = 0.035$; Fisher Exact test).

- Agitation was mild in all but one patient who had RTLE.

- We did not find a relationship between agitation and gender, psychiatric illness, ictal characteristics, presence of postictal EEG suppression, oxygen administration, or suctioning in the postictal period.

Results

- Time to responsiveness was assessed in a subgroup of 28 patients (about half of the whole group) as videos were clipped before patients recovered in the remaining half.

- Time to recovery was shortest in patients with frontal lobe epilepsy, closely followed by generalized epilepsy; FLE group (6.6 minutes) followed by IGE (7.2 minutes), RTLE (10 minutes), LTLE (15.7 minutes) groups
  - Pairwise differences in TTR were statistically significant for FLE vs. LTLE and IGE vs. LTLE
- Time to responsiveness was 1.8 times longer in patients with agitation than without agitation. (13.9 minutes vs. 7.7 minutes; p=0.048) .

Conclusions

- In light of these results, we conclude that in order to mitigate harm, patients must be monitored carefully after tonic-clonic seizures, especially patients with left temporal lobe epilepsy.