

THE REAL TRUTH BEHIND SEIZURE COUNT

Epilepsy: Accuracy of Patient Seizure Counts. Hoppe C, Poepel A, Elger CE. *Arch Neurol* 2007;64(11):1595–1599. **OBJECTIVE:** To evaluate the effects of a daily patient reminder on seizure documentation accuracy. **DESIGN:** Randomized controlled trial. **SETTING:** Monitoring unit of an academic department of epileptology. **PATIENTS:** Consecutive sample of 91 adult inpatients with focal epilepsies undergoing video-electroencephalographic monitoring. **INTERVENTION:** While all patients were asked to document seizures at the beginning of the monitoring period, patients from the experimental group were reminded each day to document seizures. **MAIN OUTCOME MEASURE:** Documentation accuracy (percentage of documented seizures). **RESULTS:** A total of 582 partial seizures were recorded. Patients failed to document 55.5% of all recorded seizures, 73.2% of complex partial seizures, 26.2% of simple partial seizures, 41.7% of secondarily generalized tonic-clonic seizures, 85.8% of all seizures during sleeping, and 32.0% of all seizures during the awake state. The group medians of individual documentation accuracies for overall seizures, simple partial seizures, complex partial seizures, and secondarily generalized tonic-clonic seizures were 33.3%, 66.7%, 0%, and 83.3%, respectively. Neither the patient reminder nor cognitive performance affected documentation accuracy. A left-sided electroencephalographic focus or lesion, but not the site (frontal or temporal), contributed to documentation failure. **CONCLUSIONS:** Patient seizure counts do not provide valid information. Documentation failures result from postictal seizure unawareness, which cannot be avoided by reminders. Unchanged documentation accuracy is a prerequisite for the use of patient seizure counts in clinical trials and has to be demonstrated in a subsample of patients undergoing electroencephalographic monitoring.

COMMENTARY

Trusting patients' count of seizures is a practice in which many clinicians engage, and sometimes it is the only way antiepileptic regimens are planned for a particular individual. Review of calendars, notebooks, agendas, and all sorts of visual aids for that purpose are part of a routine visit to the epilepsy clinic. But, the implications go beyond this clinical practice, because large-scale clinical trials (including those testing for new antiepileptic medications), population-based questionnaires, and other epidemiological studies also use patient feedback and reporting to determine optimal therapy regimens. The article by Hoppe et al. confirms, although with a larger patient population, what has been described before: a great number of patients underreport the occurrence of seizures (1,2). Although, this study was restricted to adult patients with partial seizures, underreporting also was seen in secondarily generalized seizures. What is unknown from the report by Hoppe and colleagues is whether underreporting also occurs with primarily generalized seizures. Their study indicates that underreporting does not take place because patients lack reminders to count seizures—in fact, their embedded, randomized, controlled trial show no improvement with reminders. Rather, their investigation revealed that underreporting was related to the patient's lack of awareness of the event.

Lack of awareness of a seizure was seen mainly in patients with an epileptogenic focus on the left hemisphere, which can be used as a localizing sign, particularly for temporal lobe onset

(2,3). Their finding confirms previous information indicating that “consciousness can be disturbed much easier by the ictal activity in left temporal seizures” (4). Thus, the dominant hemisphere may be important in generating a state of alertness. Patients with left hemispheric seizures, particularly of left temporal lobe origin, experienced a significantly longer state of postictal confusion, which is something that cannot be explained by postictal aphasia alone. The question of whether patients forget their seizures or fail to recognize them is yet to be answered (5).

A technique that may allow greater accuracy in seizure counting is ambulatory EEG (6). This device is superior to the standard, sleep-deprived, 20 to 30 minute EEG recording for capturing seizures (7), although no comparative studies with prolonged video-EEG have been performed. Even though it is an expensive tool, inpatient seizure monitoring offers the advantage of video recording events and close surveillance of the technical quality of the EEG recording. Yet, the potential advantages of long-term ambulatory recordings in the patients' familiar environments are compelling as well. Many specific clinical questions, such as frequency of absence seizures or occurrence of unwitnessed nocturnal seizures, may be most easily answered with ambulatory EEG. Video capabilities can be adapted and incorporated into ambulatory EEG; in this way, the limitation of visual clinical correlation of electrographic and patient-identified events can be eliminated. Still, rigorous cost-effectiveness analysis should be applied to ambulatory EEG using adequate methodology and high-quality clinical data.

An interesting finding from the Hoppe et al. study is the possible interaction between seizure awareness and the specific

antiepileptic medication used. In particular, patients on levetiracetam had better documentation accuracy than those on other medications—a finding that could be due to a sampling problem; however, changes in the semiology of seizures after the introduction of a new antiepileptic medication are sometimes seen in the outpatient setting as well. For some drugs, the changes are positive, particularly if the new semiology incorporates an aura not previously perceived prior to a seizure. In contrast, the disappearance of an aura may endanger somebody who previously had used them as a warning. The mechanisms underlying differences in documentation accuracy on various medications are not clear; larger studies, including a larger sample of patients each on a different antiepileptic medication, are needed.

Finally, it is important to take into account that this study was performed in an artificial environment. It is true that patients are unaware of most of their seizures, but there are always clues that a seizure just happened: a crowd of people suddenly showing up, friends or family members caring for the patient, paramedics arriving or taking the person to the hospital, among others. Furthermore, in the Hoppe et al. study, the majority of seizures not reported by patients happened during sleep—a time during which ambulatory EEG may be useful. However,

in regard to daytime seizures, the question asked by clinicians should continue to be: “How many seizures have you had since the last time I saw you?”

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References

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