



Absence Seizures During Sleep: Who Would Have Thunk It?

Electroclinical Features of Absence Seizures in Sleep.

Sadleir LG, Farrell K, Smith S, Connolly MB, Scheffer IE. *Epilepsy Res* 2011;93:216–220.

PURPOSE: To analyze electroclinical features of absence seizures during sleep. **PRINCIPAL RESULTS:** 30 children with genetic generalized epilepsy had 52 paroxysms of GSW >2 s during sleep. 18/52 (35%) demonstrated a clinical sign. Ictal GSW lasted an average of 6.5 s. **CONCLUSION:** Motor manifestations are seen during GSW > 2 s in sleep. 72% likely represent true ictal motor features while the rest may be serendipitous sleep phenomenon.

Commentary

Two of the most fundamental aspects of caring for children with epilepsy is knowledge of seizure type and frequency of seizures. The recent report by Sadleir calls for a reassessment of each.

What is an absence seizure? The 1981 International League Against Epilepsy (ILAE) classification system of seizures described the features of an “absence attack” to include its “sudden onset, interruption of ongoing activities, a blank stare ... usually the patient will be unresponsive when spoken to” (1). The five types of absence seizures listed include: absence with impairment of consciousness only, absence with clonic components (eyelids and mouth specifically noted), absence with atonic components, absence with tonic components, and absence with automatisms. Embedded in this definition is the assumption of an electrical correlate to complete the electroclinical seizure definition. In the case of absence, it is a generalized spike or polyspike-slow wave (GSW) discharge of >2.5 Hz.

This raises the ongoing discussion of a semiological classification of seizures (2) versus one in which the EEG correlate is part of the definition. Without knowing the interictal or ictal EEG, it is not certain that the description above would correctly classify a seizure of generalized versus focal onset. This is reflected in the ILAE Glossary of Descriptive for Ictal Semiology in which the word “absence” is not to be found (3). Rather, the EEG neutral term “dyscognitive” is used to describe those “... events in which disturbance of cognition is the predominant or most apparent feature and ...” specific features of cognition are impaired such as perception, attention, memory, and executive function. This discussion is most relevant to the child or adult at the initial evaluation for an event of impaired consciousness indicating that prior knowledge of the patient’s evaluation shapes how we define and quantify ongoing events.

This uncertainty is not present in the article under consideration as these children were selected on the basis of known absence or idiopathic generalized epilepsy based on the electro-clinical correlation, in addition to having sleep recorded on a routine EEG. Of note, the question of what constitutes a typical absence seizure has resulted in a lively and scholarly discussion in the recent literature, including such issues as which phase of the discharge is measured to determine frequency and age range for inclusion (4, 5).

The need for further refinement of the criteria for absence seizures is pushed by the current report in which two specific questions arise. First—Should an event be considered an absence seizure if there is no detectable impairment of consciousness? Second—Should sleep be required as an EEG-activating procedure as part of the determination of seizure freedom in children with childhood absence epilepsy (CAE)?

The observation is that in this study of 30 children with CAE or idiopathic generalized epilepsy not otherwise specified (IGE NOS), who had sleep as part of a routine EEG, 52 GSWs > 2 seconds during sleep were recorded. Of these, 18 had associated body movements, 13 of which were similar to behaviors accompanying impairment of consciousness while awake (chin, eyelid, eyebrow jerks, eyes opening), and the remainder were considered to be serendipitous movements. So is it reasonable to assume that these associated movements are sufficient to count as “absence seizures”? In 1975, Penry et al. (6) reported that 45% of absences were accompanied by clonic movements, 87% of which involved the eyelids. An early study demonstrated that greater than 80% of symptoms begin as few as 2 seconds after ictal onset and that only 10% of typical absences are not accompanied by some type of visible symptoms: automatisms, clonic movements, increased or decreased tone, or autonomic behavior (7). Automatisms and clonic movements were present in 75% and 55% of absences, respectively. These findings were confirmed and expanded by a study that reported that only 15.5% of typical absence seizures were not accompanied by motor features (8). Furthermore, bursts of GSW greater than 500 milliseconds were accompanied by delayed reaction times in 80% of patients tested! Thus, the



presumption (Sadleir et al.) that the motor manifestations observed in sleep associated with a GSW burst of >2 seconds would have been accompanied by some degree of impairment of consciousness if awake seems most reasonable.

What do these findings mean for our surveillance of seizure frequency in children with CAE as all of the above data were gleaned from patients in the *awake* state? If we accept that lack of GSW > 2 or > 3 seconds (9) is the criterion for medication success/seizure freedom, then recording of at least 10 minutes of sleep with video should be performed in children with CAE if local resources allow. Ultimately, we would like to know the consequences of GSW awake and asleep on development and long-term seizure freedom. However, until that is known, we should endeavor to reduce the burden of seizures, short and long, awake and asleep, as much as possible. Perhaps a new term needs to be invented to describe the ictal motor semiology associated with GSW bursts in sleep noted in children with CAE by establishing a logical “synonymy” (i.e., absence seizure type X = unresponsiveness + clonic eyelid movement + GSW, while awake = clonic eyelid movement + GSW, while asleep). Another approach would be to add clonic seizures during sleep to the constellation of seizure types associated with CAE.

by Jeffrey Buchhalter, MD, PhD

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