



Topical Review

Psychogenic Nonepileptic Seizures: Diagnosis, Management, and Bioethics



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ABSTRACT

BACKGROUND: The diagnosis and management of psychogenic nonepileptic seizures (PNES) is often challenging and fraught with discord and disagreement between patients, parents, and physicians. Furthermore, there are ethical challenges when making the diagnosis, communicating this information, and instituting management. **METHODS:** We reviewed the current body of knowledge regarding the characteristic differences between epileptic seizures and PNES, and the high incidence of psychiatric comorbidities. An ethical analysis was made of diagnosis and management based on ethical principles, virtue ethics, and the social contract that health professionals have with patients. **RESULTS:** Key distinctions between PNES and epilepsy lie in both patient and seizure characteristics. Long duration, eye closure, asynchronous movements, frequent recurrence in the same context, intra-ictal awareness, and lack of post ictal state are useful in helping establish the diagnosis. Psychiatric comorbidities, history of abuse, cognitive impairment, and multiple non specific somatic complaints are some salient patient features that should increase suspicion for the diagnosis of PNES. However, definitive diagnosis rests on capturing the events on video EEG. **CONCLUSION:** Effective diagnosis and management of PNES requires the use of video EEG and an early collaborative approach between pediatricians, neurologists, psychiatrists, nursing staff, and other professional colleagues. Ethical questions that may arise should be addressed with the virtues of competence, courage, compassion, prudence, and honesty; and the principles of respect beneficence, and the avoidance of unnecessary harm.

Keywords: non-epileptic seizures, psychogenic seizures, PNES, bioethics

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Psychogenic nonepileptic seizures (PNESs) are defined as paroxysmal and involuntary events characterized by changes in level of consciousness, behavior, motor activity, and autonomic function. PNESs are a consequence of maladaptive processing of psychologic or social stressors¹ that do not arise from paroxysmal neuronal dysfunction in the cerebral cortex and do not have the electroencephalographic (EEG) signature of epileptic seizures. In spite of this distinction, episodes of PNES may resemble epileptic

seizures, particularly to observers without extensive experience in their diagnosis and treatment, and be very distressing to patients and family members looking for pharmacologic antiepileptic management. What is more, the diagnoses of epilepsy and PNES are not mutually exclusive, further complicating the diagnostic picture.

Although there may be strong pressure on physicians to diagnose epilepsy and to treat as such, it is critical to differentiate between epileptic seizures and PNES, and from other movement and neurological disorders. In pediatrics, this distinction may be particularly challenging given parental anxiety in addition to the wide range of normal developmental behaviors and neurological pathologies. Yet, proper diagnosis of PNES cannot be compromised, as it prevents the unnecessary exposure of patients to antiepileptic drugs and their adverse effects, shortens the time to

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symptom control, and minimizes waste of medical resources. In this article, we will review the current body of knowledge regarding the characteristic differences between epileptic seizures and PNES, the high incidence of psychiatric comorbidities, and the associated bioethical issues that arise in an attempt to assist the proper diagnosis and management of the condition.

Patient and history characteristics

A detailed history, about both underlying patient characteristics and the context in which the seizure events occur, is an important starting point from which to differentiate PNES episodes from those of epilepsy. A preponderance in adolescent females¹ and in those with comorbid psychiatric conditions has been noted, with up to 84% of children² and 48.6% of adolescents³ with PNES also carrying a diagnosis of psychiatric illness. In particular, dramatic, emotional, and erratic personalities such as those found in cluster B personality disorders have been reported.⁴ The authors of multiple studies have indicated that a history of abuse, depression, anxiety, school phobia, mood disorders, separation anxiety, attention deficit hyperactivity disorder, panic disorder, and post-traumatic stress disorder, as well as cognitive impairment, learning disabilities, and a history of epilepsy are all risk factors for PNES in children.^{1,2,5–11} In older patients, precipitants include rape, significant injury, giving birth, loss of a loved one, earthquakes, motor vehicle accidents, and loss of a job.¹² Such a history of trauma, psychiatric diagnoses, and cognitive impairment is thought to contribute to a decreased ability to effectively process and express the emotions that are elicited by stressful events. PNES has thus been conceptualized as a type of conversion disorder, or a nonvolitional manifestation of social, psychological, or even physical distress.¹ To this end, Salpekar et al.¹³ found that children with PNES, compared to those with epilepsy, are more likely to complain of headaches, faintness, loss of voice, dizziness, weakness, trouble walking, difficulty participating in school, and sleep disturbances.

Patient- or family-reported seizure descriptions thought to be fairly unique to PNES include recurrence in the same context, occurrence only in the presence of others, frequent recurrence, long duration, intact memory of the event, and negative history of event-related injury.^{8,10,11,14} Frequent seizures that predictably occur in a setting such as school, which tests a child's academic achievement or ability to relate to peers, strongly support the diagnosis of PNES. The tendency for events to happen only in the presence of others suggests that external stressors are an important trigger and that PNES may be an attempt to communicate emotional discomfort. Although poorly controlled or severe epilepsy may present with daily seizure events or frequent status epilepticus, such a history in an otherwise physically well patient should raise clinical suspicion for PNES.⁸ With the exception of status epilepticus, epileptic pediatric seizures are on average shorter than 3 minutes. In contrast, episodes longer than 10 minutes are typical in PNES,^{6,8} and patients with PNES are frequently diagnosed initially "in status."¹⁵

The manner in which patients with PNES relate these events differs from those with epileptic seizures.^{6,8,16}

Patients with PNES tend to perceive their seizures as catastrophic to their life and as a "place or space"¹⁷ to which they are brought. This catastrophizing, which itself negatively affects emotional function, is consistent with the dysfunctional emotional processing thought to be the pathogenesis of PNES. These patients also have a tendency to focus on the details and circumstances surrounding the episodes rather than on the symptoms experienced during the episodes themselves. On the other hand, patients with epilepsy tend to normalize their seizures as a part of everyday life, and as external, independent phenomena that act upon them. Their accounts more often focus on the subjective symptoms experienced intraictally.¹⁶

Seizure semiology, either reported or physician observed, forms the other half of the initial diagnostic evaluation. Convulsive and atonic/catatonic episodes appear to be the most common PNES types, followed by absence-like events.^{8,18} Myoclonic, tonic, and tonic–clonic epileptic seizures involve synchronous movements of the neck, waist, or extremities, whereas the movements in convulsive PNES are often asynchronous,^{8,14,18} such as a bicycling motion of the legs. The oft-cited side-to-side head shaking of PNES contrasts with the head nods seen in atonic epilepsy and the fixation of the head in one direction that can be seen in tonic and tonic–clonic epilepsy. Eye closure, with or without opposition to opening, has been found to be both a sensitive and specific predictor of PNES, with a positive predictive value of 0.943 in one study of both children and adults.¹⁹ In addition, tremor, while not specific for PNES, is a commonly seen feature in pediatric patients.^{6,18} Interestingly, although pelvic thrusting has often been used as a distinguishing feature of PNES in adults, it is rarely seen in the pediatric population.¹⁸

During and after PNES events, patients may verbalize comprehensible, emotive content, unlike the primitive utterances sometimes heard at the beginning of epileptic seizures.^{6,8} The timing of these coherent vocalizations in PNES aligns with the tendency for patients to remember their episodes and to return to baseline at their conclusion, without a postictal state. Furthermore, patients with PNES also retain the ability to respond to verbal and distracting stimuli during and immediately after the episodes.⁶ It is important to stress that nonetheless, many believe that patients with PNES do not have volitional control over their ictal behavior.²⁰

Say et al.¹⁸ additionally classify the features of PNES in adolescents by gender. Between the two most common types of PNES events, girls were much more likely to experience atonic falls (34% vs 5.6%, $P = 0.02$), while boys were more likely to exhibit convulsive, tonic–clonic–like movements (16.7% vs 2.3%, $P = 0.036$). Girls were also more likely to have episodes that last longer than typical epileptic seizures, with 84% of girls, compared with 61% of boys, experiencing events longer than 2 minutes. In addition, within the broad category of "psychosocial stressors," girls most commonly reported difficulties with peer interactions, though not significantly more so than boys, whereas boys most commonly cited academic struggles, and significantly more so than girls (83.3% vs 47.7%, $P = 0.009$). With respect to psychiatric comorbidities, major depressive disorder was more common in girls, and attention deficit hyperactivity disorder was significantly more common in boys.

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