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## Introduction

Psychogenic non-epileptic seizures (PNES) are paroxysmal time-limited episodes of altered behavior that resemble epileptic seizures but are not the result of ictal epileptiform activity. The estimated incidence of PNES is up to 4.90 per 100,000 persons per year (1). The etiology of PNES is unclear but the literature suggests a psychological and behavioral mechanism; they have previously been referred to as “pseudoseizures” or “psychogenic seizures.” Among substance use disorders, there is a causal and dose-dependent relationship between alcohol and seizures. In a patient presenting with alcohol withdrawal, distinguishing PNES from alcohol withdrawal seizures (AWS) can present a diagnostic challenge. This case report highlights features that may be more suggestive of a PNES diagnosis in the setting of alcohol withdrawal to avoid unnecessary administration of antiepileptic medications.

## Case Report

- A 35-year-old male patient with a past medical history of severe alcohol use disorder and anxiety was admitted for alcohol withdrawal.
- He presented with visual and auditory hallucinations, agitation, and tremors.
- On admission, the patient was tachycardic and hypertensive. Initial labs showed an elevated anion gap of 12, elevated glucose at 132, elevated LFTs, leukocytosis of 11.5, ethanol level of 294, and negative urine drug screen.
- Initial CIWA was 26.
- He received diazepam 5 mg IV, lorazepam 1 mg IV, and parenteral thiamine in the ED.
- The patient was started on phenobarbital and gabapentin, along with symptom-triggered lorazepam monitored with CIWA checks.

## Hospital Course

- The patient had four seizures during this hospitalization, which were described as tonic-clonic and all occurring around the same time at night.
  - All seizures were witnessed by the medical staff, who noted that each 10-30 minute episode occurred after visiting times were over.
- The first reported seizure occurred on Day 2 after the patient had received 450 mg of phenobarbital and the second seizure occurred on Day 4 after he received 640 mg of phenobarbital.
  - During both seizures the patient manifested generalized tonic-clonic movements in the upper extremities with closed eyes.
- The third seizure occurred on Day 5 with a similar presentation, but this time the patient did not respond to medical treatment.
- He became apneic and was intubated in response for airway protection, and an intravenous infusion of levetiracetam was started at this time.
- The patient was evaluated by the Neurology team and an EEG was performed, which revealed no epileptiform activity. While the patient was intubated, he remained on phenobarbital, diazepam, gabapentin, and levetiracetam. He was extubated after six days.
- On day 13 of admission, the patient had his fourth seizure with similar presentation to those previously described.
- He was again unresponsive to treatment, apneic, and was intubated for airway protection. He was extubated the following day.
- On the evening of day 15, the patient again started to demonstrate tonic-clonic activity, at which point the primary team had a discussion with the patient that these were not true seizure episodes.
- A subsequent multidisciplinary team discussion between Neurology, Addiction Medicine and Psychiatry led to the tapering of all seizure medications, and the patient did not experience any further episodes of seizure-like activity.

## Discussion

Alcohol exerts its effects specifically on GABAA and NMDA receptors. The reduction in synaptic GABAA receptor activity is associated with impaired inhibitory tone, and the compensatory up-regulation of NMDA receptors predisposes to withdrawal seizures. More than 90% of AWS emerge within the first 48 hours.

Clinical features and semiotics can help in distinguishing PNES from AWS. An ictal episode lasting more than 10 minutes is more likely secondary to PNES, as demonstrated by the duration of 20-30 minutes of each episode in this patient. Another feature pointing to PNES is the patient’s resistance to multiple anti-epileptic medications: barbiturates, benzodiazepines, levetiracetam, and ketamine. During true clonic-tonic seizures, the eyes remain open (during PNES they are frequently tightly closed) as reported above. A psychogenic etiology should be considered when AWS are refractory in regards to the seizure frequency.

## Conclusion

When no physiologic basis for seizure can be identified, the first step is to slowly de-escalate the antiepileptic treatment. More research is needed to evaluate abrupt discontinuation in contrast to supervised tapering. Clear communication of a somatoform disorder diagnosis to the patient is a vital first step in management. Multiple prospective studies demonstrate PNES free periods after diagnosis and explanation of the condition (3,4)

## References

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