

# Psychogenic convulsive status epilepticus: a case report and review of medical literature

## Abstract

Psychogenic non-epileptic events (PNEEs) can mimic epileptic seizures and may present as prolonged convulsive episodes mimicking convulsive (CSE) and non-convulsive status epilepticus (NCSE), leading to unnecessary- and potentially harmful- treatment. We report the case of a 20-year-old male with no significant past medical history who presented to the emergency department with a 5-hour history of continuous jerky movements of all limbs. In the ED he was diagnosed with CSE and administered 2 mg of midazolam and then loaded with levetiracetam. Neurological examination and routine investigations were unremarkable. Bedside continuous video EEG monitoring showed no epileptiform discharges or surface EEG correlate to the ongoing “ictal” event, supporting a diagnosis of psychogenic CSE. Following multidisciplinary and psychological evaluation, the patient was diagnosed with psychogenic CSE and managed with antidepressants, anxiolytics and cognitive behavioral therapy.

**Keywords:** psychogenic non-epileptic events, cognitive behavioural therapy, electroencephalogram, convulsive status epilepticus

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**Abbreviations:** PNEEs, psychogenic non-epileptic events; CBT, cognitive behavioural therapy; EEG, electroencephalogram; CSE, convulsive status epilepticus

## Introduction

Psychogenic non-epileptic events (PNEEs) can closely mimic convulsive seizures without an accompanying surface EEG correlate. The etiology is thought to be psychological, and the disorder is hence at times included under the broader category of functional neurological disorders (FND). When prolonged, they may be mistaken for CSE, resulting in unnecessary use of antiepileptic drugs and intravenous sedatives. Clinical examination and continuous video EEG monitoring help distinguish PNEEs from CSE. Early diagnosis facilitates appropriate psychological management, including cognitive behavioral therapy, and helps avoid unnecessary interventions and treatments such as intubation and intravenous sedation. We present a case of a 20-year-old male with prolonged convulsive-like movements, initially treated for CSE. He was subsequently diagnosed with psychogenic CSE.

## Case report

A 20-year-old male with no significant past medical history presented to the ED with 5-hour history of continuous jerky movements of all limbs. In the ED he was diagnosed with CS. Following the administration of 2 mg of intravenous midazolam, he was loaded with 1 gram of levetiracetam. He was shifted to the neurological intensive care unit. Before the critical care team could intubate and administer Propofol, the on-call neurologist arrived. During the ictal event, the patient was able to respond coherently when asked his name and date of birth. The limb movements were asynchronous (out-of-phase), and back-arching was observed. Routine blood tests including CPK were unremarkable. Bedside continuous video EEG showed no surface EEG correlate to the ongoing ictal movements. A diagnosis of psychogenic CSE was made. Intubation and Propofol administration were withheld and gentle sedation with 1 mg of intravenous lorazepam every 8 hourly was initiated. The next day, the psychologist

assessed him. Psychological assessment revealed significant social anxiety symptoms, which appeared to have increased following his recent transition from home to hostel. He also reported obsessive-compulsive symptoms and suicidal ideation. Recent interpersonal stress, including rejection by a girl he was emotionally attached to, was identified as a significant source of distress. Psychological support and psychoeducation were provided, and cognitive behavioral therapy was initiated. He was prescribed sertraline and lorazepam and was discharged with advice to continue follow-up on an outpatient basis.

## Discussion

Psychogenic non-epileptic events (PNEEs), at times also referred to as ‘pseudo seizures’, are clinical episodes that resemble epileptic seizures but occur without abnormal epileptiform cerebral activity. When prolonged, they may mimic CSE, resulting in unnecessary administration of antiseizure medications, intravenous sedatives and procedures such as intubation and mechanical ventilation.<sup>1,2</sup> Numerous studies have demonstrated considerable overlap in the clinical presentation of PNEEs with epileptic seizures, emphasizing the importance of careful clinical assessment of clinical semiology and correlation of the same with electroencephalography.<sup>3</sup> This is especially important when the presentation is atypical as in our patient who presented with a history of abnormal movements of the limbs and impaired consciousness for the past 5 hours.

The aetiology of PNEEs has been examined from a biopsychosocial perspective.<sup>4</sup> It is suggested that affective disorders, borderline personality disorder, anxiety, depression and Post Traumatic Stress Disorder (PTSD) contribute to the development of PNEEs. Social factors such as family disturbance, trauma and abuse may also play a role.<sup>4</sup> Besides, some functional MRI studies have found PNEE patients to have aberrant brain connectivity and network activation.<sup>5</sup> Clearly, the development of PNEEs depends upon the interaction of many complex and varied factors. However, given the strong association between PNEE and psychological disturbance (as also evidenced by the term ‘psychogenic’), psychological examination assumes great importance in diagnosis and management.

A PubMed search for similar cases of PNEE was carried out and case reports filtered. PNEEs presenting with CSE are rare, but there is a wealth of literature discussing them. It is estimated that the incidence of PNEEs today is 4.9 cases per 100 000 people per year.<sup>6</sup> Around 30% of patients monitored for epilepsy have PNEEs.<sup>7</sup> They can occur at any age, more commonly in women, and can significantly impair the patient's quality of life.<sup>8</sup> Patients presenting with 'convulsive' PNEE are frequently intubated for suspected status epilepticus, which may have harmful consequences that were fortuitously avoided in our case. Their limb movements are asynchronous (out-of-phase) and pelvic thrusting may be seen. Patients respond to painful stimuli and keep their eyes tightly shut (resist passive eye-opening).<sup>9,10</sup> It is though important to factor in complexities in diagnosis and communication. In some instances, psychogenic seizures may present as almost identical to epileptic seizures and therefore may be difficult to diagnose.<sup>9</sup> PNEEs mimicking juvenile myoclonic epilepsy have been documented,<sup>11</sup> and while symptoms like stuttering are thought to indicate PNEEs, they may also occur with true epileptic seizures.<sup>12</sup> Additionally, one case report noted that while borderline personality disorder is a risk factor for functional (nonepileptic) seizures, it can also make disclosing the diagnosis more difficult.<sup>9</sup>

It will now be helpful to consider the broad features of PNEEs specifically in the context of how they presented in our patient. Clinical features of PNEEs that help distinguish them from epileptic seizures include, as noted, the presence of irregular and asynchronous limb movements as opposed to the rhythmic in-phase jerking seen in true epileptic seizures.<sup>8</sup> Other signs include arching of the back, pelvic thrusting, forced eye-closure coupled with unresponsiveness and 'self-protective' manoeuvres for avoiding painful stimuli.<sup>13</sup> Some of these were observed in our patient, when examined during the SE. While 'convulsing', he was able to verbalize and answer questions appropriately. Clinical semiology was characterized by asynchronous limb movements and arching of the back. He also demonstrated self-protecting behaviour in response to a painful stimulus. Continuous video EEG monitoring remains the gold standard for differentiating PNEEs from epileptic seizures particularly when a typical convulsive clinical event is captured without corresponding surface EEG correlate.<sup>1</sup> EEG findings should always be interpreted in conjunction with clinical presentation and seizure semiology.

PNEE masquerading as CSE can lead to inappropriate escalation of treatment for status epilepticus. Prompt recognition is therefore important to avoid unnecessary antiseizure medications, intravenous sedation, and potential complications of intubation and mechanical ventilation.<sup>2</sup> In our case, had the correct diagnosis been delayed, Propofol would have been administered and the patient intubated and mechanically ventilated. Once the diagnosis of psychogenic CSE is confirmed, management should focus on clear communication of the diagnosis to the patient and family, identification of potential precipitating factors, ensuring patient safety, psychological and psycho-pharmacological interventions such as initiation of treatment with a selective serotonin reuptake inhibitor.<sup>1,14</sup>

Anxiety disorders, dissociative disorders, affective disorders and PTSD have been shown to be linked to PNEEs, and psychological factors such as stress, dissociation and coping mechanisms may contribute to their development and persistence.<sup>15,16</sup> Cognitive Behavioral Therapy (CBT) is an important component of treatment for PNEEs and has demonstrated benefits in reducing event frequency and improving psychosocial outcomes.<sup>17,18</sup> Psychoeducation is used to help patients and family members understand how psychological stress and emotional factors can manifest as physical symptoms and events. During CBT, patients are helped to identify the thoughts,

emotions and social situations that may precede an event and learn ways of responding to these triggers more effectively. They are also taught to recognise early warning signs and use mindfulness-based approaches to manage distress.<sup>19,20</sup> Psychotherapy, particularly CBT, has been associated with a reduction in event frequency and improvement in psychosocial functioning.<sup>17,19,20</sup>

Our case highlights the importance of considering psychogenic CSE in patients presenting with prolonged seizure-like activity. Timely video EEG evaluation can facilitate accurate diagnosis, prevent unnecessary treatment, and allow early initiation of appropriate psychological management.<sup>1,2</sup>

## Conclusion

Psychogenic convulsive status epilepticus is an important differential diagnosis in patients presenting with prolonged seizure-like activity. Video EEG and neurological examination play a key role in distinguishing psychogenic events from epileptic seizures and preventing unnecessary treatment. Early diagnosis, clear communication, and appropriate psychological intervention, including cognitive behavioural therapy, are essential for effective management and better outcomes.

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## Conflicts of interest

The authors declare that there are no conflicts of interest.

## Author contributions

GN, NKS, SS, RG & VT drafted the manuscript. All authors contributed equally to the manuscript and share first authorship status.

## Disclosures

The views expressed are those of the authors and do not necessarily reflect the views of the organizations they work for. Written informed consent was obtained from the patient for the publication of the clinical data. A standard single-patient case report is generally not considered "research" under federal regulations (like the Common Rule) because it lacks a hypothesis and the intent to produce generalizable knowledge; thus, our manuscript did not require IRB review or a formal waiver at all.

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