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Confusional Nonconvulsive Status Epilepticus: Report of two Cases

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Abstract:

Nonconvulsive status epilepticus (NCSE) is a form of status epilepticus that lacks the prominent motor symptoms typically associated with convulsive seizures. Instead, NCSE manifests through subtle alterations in consciousness, behavior, and cognition, making it challenging to diagnose.

Patients with NCSE often present with confusion, slow cognitive responses, and behavioral changes, which can be mistaken for psychiatric conditions or metabolic disturbances. EEG remains the gold standard for diagnosis, revealing continuous or intermittent epileptiform discharges without significant motor involvement. Treatment typically involves the administration of benzodiazepines, such as diazepam, and antiepileptic drugs like levetiracetam. Prompt recognition and intervention are critical to prevent long-term cognitive impairment and improve patient outcomes

The article discusses two illustrative cases: one involving a patient with a history of epilepsy presenting with restlessness and speech difficulties, and another with no prior epilepsy history exhibiting mild confusion and cognitive slowing. Both cases underscore the variability in clinical presentation and the crucial role of EEG in diagnosis.

Keywords: Nonconvulsive Status Epilepticus, Confusional State, Epileptic Seizures, Case Report

Introduction:

Nonconvulsive status epilepticus (NCSE) is a critical neurological condition characterized by prolonged seizure activity without the dramatic motor symptoms typically associated with convulsive seizures. This condition presents a diagnostic challenge due to its subtle clinical manifestations, which often include confusion, altered mental status, and behavioral changes rather than overt convulsions. As a result, NCSE can easily be misdiagnosed or overlooked, leading to delays in treatment and potentially severe outcomes for patients[1].

Recent advances in neurodiagnostic techniques, particularly the use of continuous electroencephalography (EEG) monitoring, have significantly improved our ability to identify NCSE. EEG remains the definitive tool for diagnosing NCSE, revealing patterns of epileptiform activity that might not be evident through clinical observation alone. Despite these advances, the varied presentations of NCSE necessitate a high index of suspicion among clinicians, especially in patients presenting with unexplained cognitive or behavioral disturbances[2].

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The importance of timely and accurate diagnosis cannot be overstated, as untreated NCSE can lead to substantial morbidity, including cognitive impairment and increased mortality. Treatment typically involves the administration of anticonvulsant medications, with benzodiazepines and other antiepileptic drugs playing a central role in the management strategy. Early intervention is crucial to prevent the long-term sequelae associated with prolonged seizure activity[2,3].

The article emphasizes the need for increased awareness among clinicians to consider NCSE in differential diagnoses, particularly in patients with unexplained cognitive or behavioral changes.

Clinical presentation:

Case 1: The first patient, a 57-year-old male, was admitted to the emergency department presenting with fluctuating consciousness disturbances that had been evolving over the past three days. His medical history revealed no significant previous neurological conditions. Upon arrival, he exhibited episodes of confusion and disorientation, primarily affecting his ability to accurately perceive time and space. Despite these symptoms, his initial clinical examination, including vital signs, cardiovascular, and respiratory assessments, were within normal limits. There were no signs of infection or other systemic abnormalities

Case 2: The second patient, a 63-year-old female, presented to the emergency department with a similar clinical picture. She had been experiencing fluctuating consciousness and disorientation over the same three-day period. Like the first patient, her past medical history did not suggest any prior neurological issues. During her clinical examination, she too showed normal vital signs and no notable findings aside from the intermittent episodes of temporo-spatial disorientation.

For both patients, a comprehensive set of paraclinical examinations was conducted to rule out potential underlying causes. These included an infectious workup (blood cultures, urine analysis), a blood ionogram (electrolyte levels), and a lumbar puncture to assess cerebrospinal fluid for any signs of infection or inflammation. All these tests returned unremarkable results, indicating no infection, metabolic imbalance, or other clear etiologies for their symptoms.

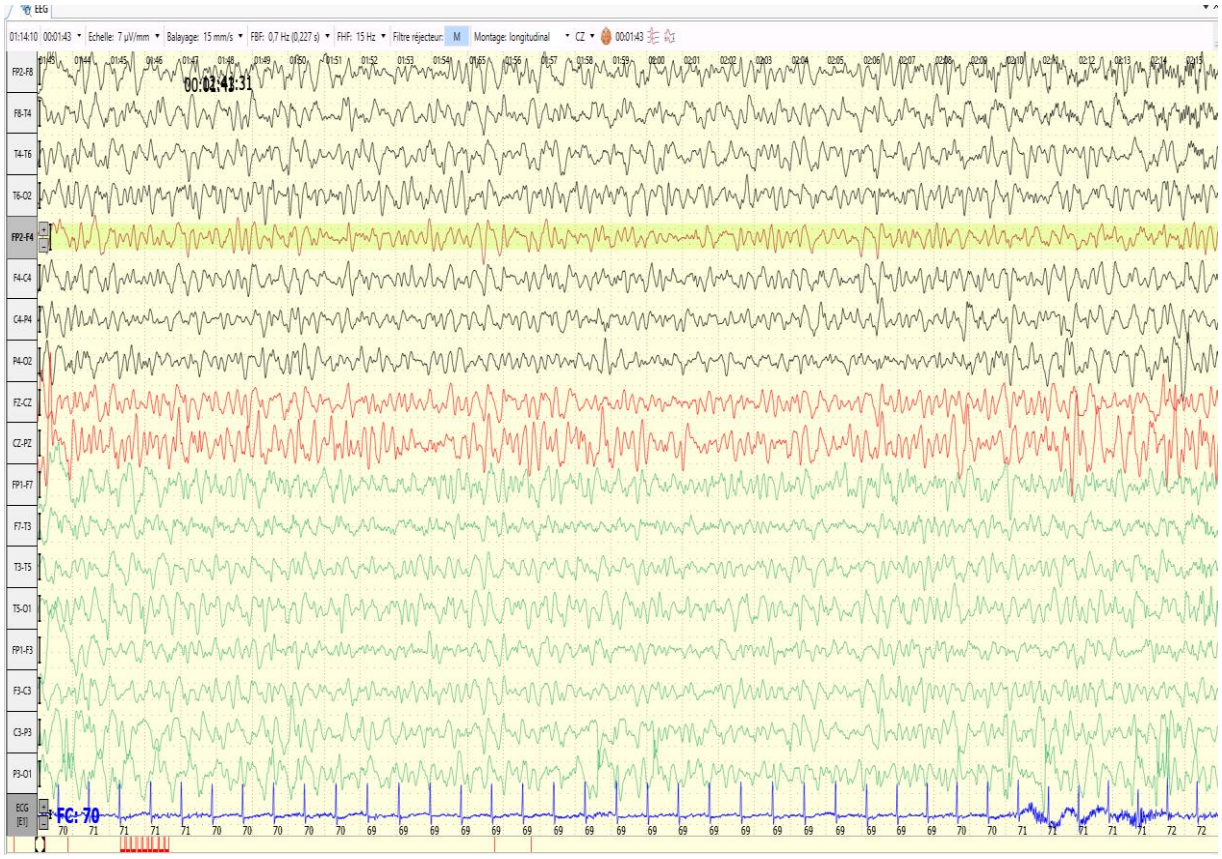


Figure 2: EEG recording of the same patient after benzodiazepine injection showing a cleaning of the trace

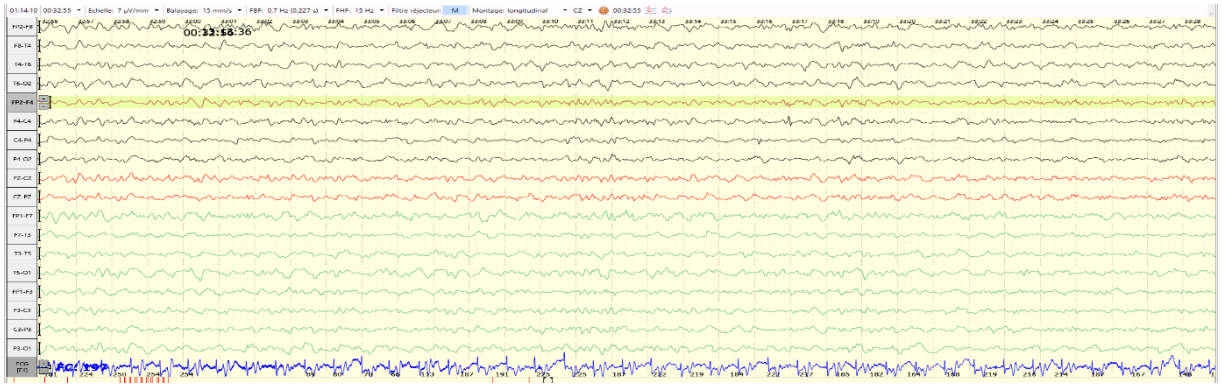


Figure 1: EEG recording of a 63-year-old woman admitted for confusion; EEG shows objective generalized electrical discharges

Given the absence of abnormalities in routine tests and the persistent cognitive disturbances, EEG monitoring was performed for both patients. The EEGs revealed generalized electrical discharges consistent with ongoing seizure activity, yet without the typical convulsive movements, characteristic of nonconvulsive status epilepticus (NCSE). Following the administration of benzodiazepines, these discharges were promptly cleared, confirming the diagnosis.

Based on the EEG findings and clinical presentation, both patients were diagnosed with confusional nonconvulsive status epilepticus. They were treated with benzodiazepines, which resulted in significant improvement in their states of consciousness. The administration

of these anticonvulsant medications effectively halted the seizure activity, leading to a rapid recovery of their cognitive functions. Subsequent follow-up showed sustained improvement with no recurrence of symptoms.

Discussion:

Non-convulsive and confusional status epilepticus represent urgent clinical challenges, often presenting in two distinct forms: absence status (AS) and complex partial status (CPS). Diagnosis of these conditions solely based on clinical features can be difficult and requires immediate electroencephalogram (EEG) confirmation[4,5].

AS, commonly referred to as "Petit Mal status," stands as the prevailing type of non-convulsive confusional status epilepticus. It is characterized by fluctuating levels of confusion, often accompanied by pediculic myoclonus. EEG recordings typically reveal widespread critical discharges that respond positively to benzodiazepines, resulting in an improvement in consciousness[5].

Literature elucidates significant nosographic diversity within AS. It can be subdivided into four main categories: typical AS, which manifests within the context of idiopathic generalized epilepsy; atypical AS, associated with symptomatic or cryptogenic generalized epilepsy; "de novo" AS in adults, triggered by toxic or metabolic factors; and AS with focal features observed in the context of pre-existing partial epilepsy[6].

Temporal CPS is identified by continuous or recurrent temporal discharges, occasionally exhibiting cyclical patterns—a presentation that, while characteristic, is relatively rare. Due to their resistance to treatment and the heightened risk of cognitive sequelae, temporal CPS necessitates aggressive therapeutic intervention. Frontal CPS poses a distinct diagnostic challenge, often presenting with perplexing clinical manifestations and frequently indicative of an inaugural event. Approximately one-third of cases are symptomatic of a focal lesion, underscoring the importance of thorough diagnostic evaluation in such scenarios[7,8].

In both clinical cases, we are presented with patients exhibiting fluctuating consciousness disturbances over a three-day period, without significant prior neurological conditions. This symptomatology suggests a potential non-convulsive status epilepticus, particularly absence status (AS) or complex partial status (CPS). Given the absence of overt signs of infection or systemic abnormalities, neurological etiologies become more plausible.

The differential diagnosis in both cases should consider other potential causes of altered mental status, including metabolic disturbances, intoxication, structural brain lesions, or psychiatric conditions. However, given the recurrent and fluctuating nature of symptoms over several days, coupled with the absence of overt systemic abnormalities, non-convulsive status epilepticus emerges as a primary consideration.

Given the urgency of the situation and the potential for cognitive sequelae if left untreated, immediate EEG evaluation is warranted in both cases to confirm or exclude non-convulsive status epilepticus. Prompt initiation of appropriate antiepileptic therapy, tailored to the specific subtype identified on EEG, is crucial to mitigate the risk of further neurological compromise and improve clinical outcomes[9].

Conclusion:

Nonconvulsive status epilepticus represents a complex and challenging clinical entity with varied presentations and diagnostic hurdles. This article sheds light on the intricacies of

recognizing and managing this condition, emphasizing the importance of heightened awareness among healthcare professionals. By understanding the diverse clinical manifestations and promptly initiating appropriate diagnostic and therapeutic interventions, clinicians can mitigate the risk of irreversible neurological sequelae and improve patient outcomes. Moving forward, continued research and education are crucial to enhance our understanding of nonconvulsive status epilepticus and refine our approach to its diagnosis and management in clinical practice.

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