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Non-Convulsive Frontotemporal Lobe Epilepsy Secondary to Methamphetamine Intoxication

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Abstract Form

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Abstract

Introduction

Studies demonstrate stimulants including methamphetamine have been implicated in convulsive seizures. However, frontotemporal seizures are characterized by behavioral changes and automatisms rather than convulsive seizures and have a worse prognosis when accompanied by convulsions. Methamphetamine has been shown to affect the frontal lobe resulting in behavioral changes, and a few cases also describe temporal epilepsy secondary to methamphetamine. We demonstrate a case of a 48-year-old-male who presented in a confused state with behavioral changes and was diagnosed with frontotemporal epilepsy due to methamphetamine intoxication.

Methods

Ethical approval from IRB at Kern medical was obtained (ID# 21092). A single-patient case review was conducted.

Case Report

A 48-year-old male with a history of type 2 diabetes mellitus presented with five days of headache and confusion. He was oriented only to self and city but had limited responses to questions and an inability to follow commands on presentation. His physical exam was remarkable for blood pressure of 168/117 mmHg, and heart rate of 114 bpm. A neurological exam demonstrated an unsteady gait and lack of orientation to the exact date or situation. The remainder of the physical exam was unremarkable. Laboratory studies showed elevated glucose of 544 ng/dL with the normal comprehensive metabolic panel, complete blood count, and TSH. Infectious workup, including testing for syphilis and HIV, was negative. Urine analysis was normal however drug screen was positive for methamphetamine. He underwent CT and MRI of the head which were negative for any acute or chronic pathology. He was given insulin and his elevated glucose level was corrected. During hospitalization, he remained cooperative with the exams but would exhibit episodes of confusion and limited understanding. Lumbar puncture showed 1 WBC, 80 mg/dL glucose and protein of 69 mg/dL. CSF antibodies were positive for HSV-1 and HSV-2 IgG however HSV-1 and HSV-2 IgM antibodies were negative. During the first day of hospitalization, the neurological exam remained unchanged. He underwent continuous video electroencephalogram (CVEEG) monitoring which exhibited class III abnormal seizures with onset from the left frontotemporal lobe. He was given 2 grams of Keppra and Dilantin 100mg every 8 hours intravenously and remained on CVEEG monitoring. After starting antiseizure medications, his clinical and neurological status improved remarkably with complete recovery of consciousness and alertness. The EEG revealed resolution of nonconvulsive seizures from the left frontotemporal lobe. No interictal epileptic discharges were seen.

Discussion

Epilepsy has various subtypes and can present from convulsions to aphasic and behavioral changes. These seizures may be labeled as complex focal seizures. Methamphetamine use is known to trigger convulsive epileptic events. It affects neurotransmitter uptake which may lead to metabolic derangements and seizures. Autoimmune encephalitis is also known to present similarly, as MRI findings may not always be present. However, lumbar puncture in autoimmune encephalitis demonstrates lymphocytic pleocytosis and elevated protein. Amphetamine use should be considered in the differential diagnosis of first-time seizures as studies have shown that 4% of all first-time seizures are methamphetamine-associated. These presentations varied from disorientation to generalized tonic-clonic seizures. We demonstrated improvement in his clinical condition with cessation of offending agents (methamphetamine) and initiation of antiepileptic therapy leading to the conclusion that this patient had non-convulsive frontotemporal lobe epilepsy secondary to methamphetamine intoxication.