

Transient Focal Lesion of Corpus Callosum in Epilepsy: A Case Report

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ABSTRACT

Introduction: Lesions of the splenium of the corpus callosum (SCC) are nowadays seen in a wide variety of medical conditions due to the increasing usage of magnetic resonance imaging (MRI). These lesions can be either reversible or irreversible depending on the etiology. However, in cases of epilepsy, they are called transient as they have been observed to resolve spontaneously after a period of time and this transient nature can be detected in its distinguishing features on MRI that differentiates it from other medical conditions.

Case proper: The case is about a 22-year-old male previously diagnosed with Generalized tonic-clonic seizure for the last 15 years who presented to casualty with irritability and aggressive behavior. On further evaluation, it was revealed that he had been taking antiepileptic drugs (AEDs) for the last 7 months and had suddenly stopped them. Magnetic resonance imaging revealed a transient focal cytotoxic lesion in the corpus callosum. Later both psychotic behavior and seizures were controlled and MRI during follow-up showed resolution of the focal lesion.

Conclusion: The classical findings in this patient with a history of epilepsy with sudden antiepileptic stoppage followed by behavioral symptoms along with an MRI showing a transient focal lesion in the corpus callosum with splenium with spontaneous resolution on follow-up are indicative of a favorable prognosis, which can be used to differentiate it from other medical conditions where splenial lesions are also found.

Keywords: Antiepileptic drugs, Carbamazepine, Cytotoxic lesion, Splenium.

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INTRODUCTION

Transient focal lesions in the splenial area of corpus callosum (SCC) are nowadays being detected in a wide variety of clinical conditions including seizures, AED therapy or withdrawal, metabolic disturbances, cerebrovascular diseases, infections, malignancy, drugs and toxins, eclampsia, alcohol use (Marchiafava-bignami disease), high-altitude cerebral edema, trauma, etc. due to the increasing use of MRI. Recently several terms like transient lesions of the splenium of the corpus callosum, cytotoxic lesions of the corpus callosum (CLOCCs), mild encephalopathy with a reversible isolated SCC lesion (MERS), reversible splenial lesion syndrome (RESLES)¹ have been described in different medical conditions which usually manifest with neurological symptoms, delirious behavior and seizures. Reversible lesions of the corpus callosum are not always associated with a favorable outcome and the prognosis has been observed to depend largely on the underlying etiology. However, in regard to epilepsy or AED induced lesions, the prognosis has been reported to be much better.²

Case Proper

A 22-year male diagnosed with Generalized Tonic Clonic Seizure for the last 15 years was taking tablets Phenytoin 300 mg/day. But for the last 4–5 years his seizures were poorly controlled on medication and gradually increased with episodes per day. These multiple seizures were later followed by periods of wandering tendency, irrelevant and increased talking, impulsivity, and irritability. A year back, following recurrent status epilepticus, the patient developed a postictal prolonged confusional state for which he had to be admitted to the hospital. An MRI done during the hospitalization revealed a normal study however, he was later discharged with the following medications: levetiracetam

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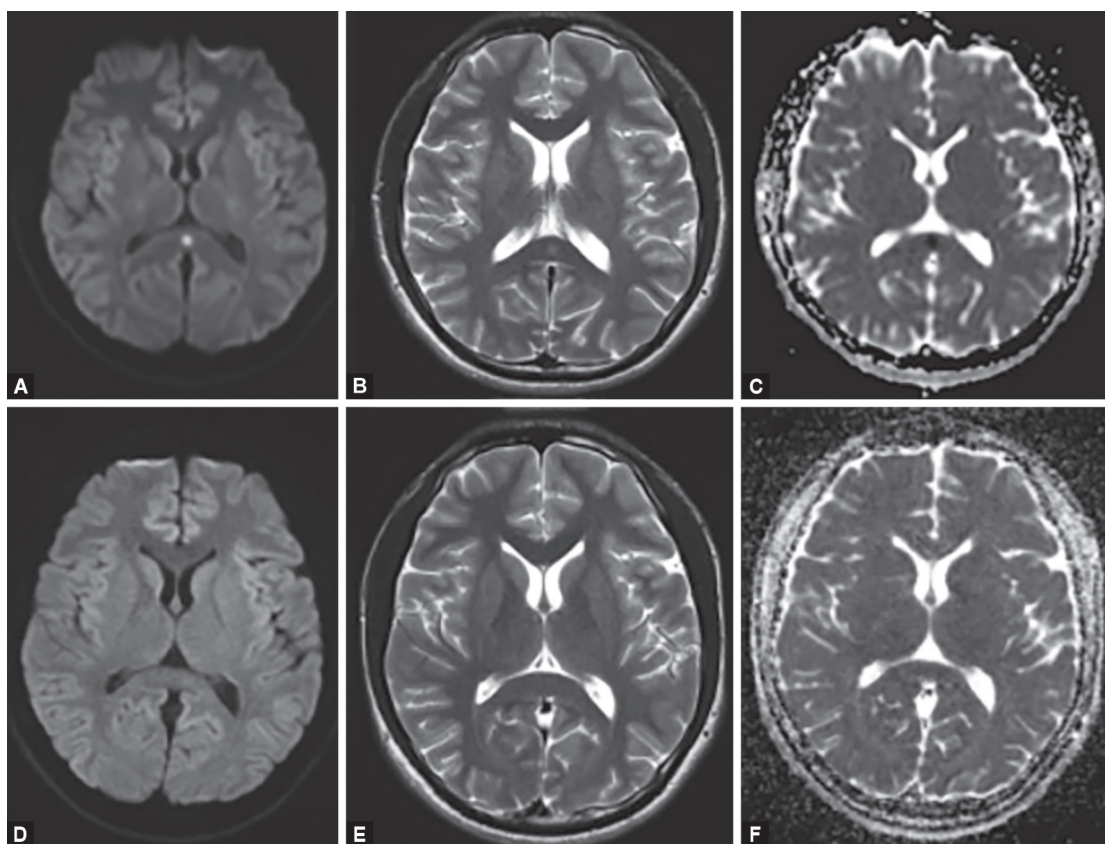
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1000 mg/day, Phenytoin 300 mg/day, carbamazepine (CBZ) 600 mg/day. His seizures were well controlled on these medications. But 7 months later, the patient suddenly missed the medications following which he started developing confusional behavior with repetitive talking, irritability and aggressive behavior and was brought to casualty on an emergency basis with proper history and documents unavailable at the time. He was prescribed tab. sodium valproate 1000 mg per day, Olanzapine 10 mg per day, Clobazam 10 mg per day, and was advised an MRI which revealed a transient cytotoxic lesion in the splenium of the corpus callosum. Patient's symptoms gradually improved and were well controlled by 3 weeks while Olanzapine was gradually tapered and withdrawn and Sodium Valproate had to be increased in the subsequent follow-up. Two months later when the patient came for a follow up, MRI was done which revealed a normal study indicating full resolution of the lesion previously seen (Fig. 1).



Figs 1A to F: (A) Diffusion weighed; (B) T2 weighed showing hyperintensity in SCC; (C) Restricted diffusion in SCC on ADC; (D, E, F) Follow-up MRI 2 months later shows resolution of the previous lesions

DISCUSSION

In epilepsy, transient isolated SCC lesions are seen due to the seizures themselves without medication or with the use of antiepileptic medications, even sudden abrupt discontinuation or reduction or withdrawal of AED in both seizure disorder or without seizure disorder.³ Among all the AEDs CBZ has mostly been found to be associated with transient splenial lesions (TSL) in studies. Though there is still no clear cut pathophysiology, the most accepted mechanism in AED has been its effect on the fluid balance system by arginine vasopressin system (AVP levels) causing cytotoxic edema, while other mechanisms are believed to lead to these similar lesions in other medical conditions. Focal splenial lesions in other medical conditions or causes have also been found to present with confusional and psychiatric manifestations.

These lesions can only be appreciated on MRI. Small well-defined oval-shaped lesions in the midline are typically seen in seizures or AED discontinuation cases, while bigger and extensive lesions are indicative of other pathophysiology.⁴

CONCLUSION

Based on the patient's clinical course of frequent seizures, the sudden withdrawal of AEDs especially CBZ, MRI findings of a classical lesion seen in epileptic patients, and recovery within weeks are the favorable explanations for the transient cytotoxic lesion seen

in the corpus callosum. Thorough awareness and familiarity with the condition can prevent misdiagnosis while dealing with other conditions that present with similar MRI findings and presentation. The use of antiepileptics especially CBZ should be highly suspected in such cases and at the same time avoid non-essential diagnostic techniques. Also, careful tapering should be considered while dealing with AEDs.

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