

Post-Ictal Psychosis Manifestation Associated with Temporal Lobe Cavernoma

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ABSTRACT

Background: Cavernoma or also known as cerebral cavernous malformation (CCM) is a developmental vascular anomaly characterized by clusters of small blood-filled cavities lined by a layer of endothelium. Only 20%-30% of affected individuals become symptomatic. Cavernoma usually manifest with convulsion, cerebral hemorrhage, persistent headache, and progressive neurologic deficit. Psychotic symptoms are uncommon. But a few were found in a case of frontal and temporal lobe cavernoma.

Case Presentation: A 68-year-old man with history of right temporal lobe cavernoma presented to emergency department with psychotic event, characterized by aggressive behavior and auditory hallucination. Patient was showing hostility towards his family members and these symptoms started after a tonic-clonic convulsion. On brain CT scan showed a result of hypodense lesion with multiple calcifications on the right temporal lobe suspected of artery-venous malformation (AVN). Angiography was done with findings of low-flow vascular malformation suggestive of CCM. MRI showed a blooming artefact consistent with the imaging characteristics of cavernoma.

Discussion: The classic presentation of cavernoma found in temporal lobe was usually convulsion. Psychotic episode was

rarely found. Our patient presented with post-ictal psychosis which is one of the rare manifestations can be found in temporal lobe cavernoma.

Conclusion: While convulsion is the most frequent manifestation of temporal lobe cavernomas, this patient uniquely also presented with post-ictal psychosis, which is a rare phenomenon. Atypical clinical manifestations, such as psychotic episodes, should be recognised as possible clinical manifestations when diagnosing cavernoma.

Keywords: Cavernoma, Convulsion, Psychosis, Temporal Lobe

INTRODUCTION

A cavernoma, also known as a cavernous angioma, is a vascular malformation composed of dilated sinusoidal vessels lined by endothelial cells, without any surrounding connective tissue.^(1,4) This anomaly has an estimated prevalence of 10–25% among all intracranial vascular malformations.⁽²⁾ Cavernomas are benign, and only about 20–30% of cases become symptomatic.^(1,6) The most common clinical manifestation of cavernomas is seizures, followed by intracerebral hemorrhage, persistent headache, and progressive neurological deficits. In addition, although very rarely reported, some patients may present with psychotic symptoms. These psychotic manifestations resemble those

seen in schizophrenia, including hallucinations and behavioral or mood changes. (3,6,7,8) Psychotic episodes are predominantly observed in patients with cavernomas located in the frontal and temporal regions. (3) This case report aims to highlight the rare manifestation of psychotic symptoms in a patient with a temporal lobe cavernoma.

CASE PRESENTATION

A 68-year-old man presented to the emergency department in an agitated and restless state. According to family members, approximately 30 minutes prior to arrival, the patient experienced a generalized tonic-clonic seizure lasting about one minute. Following the seizure, he appeared confused and became increasingly agitated. Upon arrival at the hospital, the patient exhibited aggressive behavior, shouting and

attempting to harm his family members. He also reported hearing voices that were “chasing” and “coming to get” him, indicating the presence of auditory hallucinations. Based on the heteroanamnesis, this was the first occurrence of such symptoms. The patient had a known history of cavernoma diagnosed in 2021, for which no definitive surgical treatment had been performed.

A non-contrast head CT scan revealed a poorly defined hypodense lesion with multiple calcifications in the right temporal lobe, suggestive of an intracranial vascular malformation consistent with a cavernoma. The patient subsequently underwent digital subtraction angiography (DSA), which demonstrated a low-vascularized space-occupying lesion (SOL), further raising suspicion for a cavernoma.

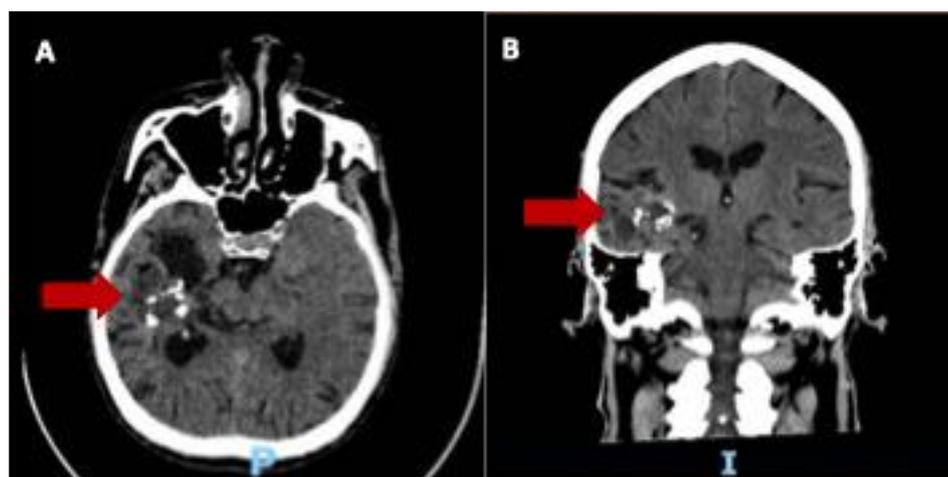


Figure 1. Non-contrast head CT scan. In the axial (A) and coronal (B) sections, there is an ill-defined hypodense lesion with multiple calcifications in the right temporal lobe

In addition, a non-contrast MRI showed a clustered mass exhibiting a characteristic of “blooming artifact” in the right temporal lobe, appearing hypointense with hyperintense components to the surrounding gray matter. These imaging findings supported the diagnosis of a right temporal lobe cavernoma.

During hospitalization, no seizures or worsened neurological deficits were observed. The psychotic symptoms, including agitation and hallucinations, resolved after six days of treatment. And at a one-month follow-up after discharge, the patient had returned to normal daily activities, remained seizure-free, and exhibited no residual psychotic symptoms.

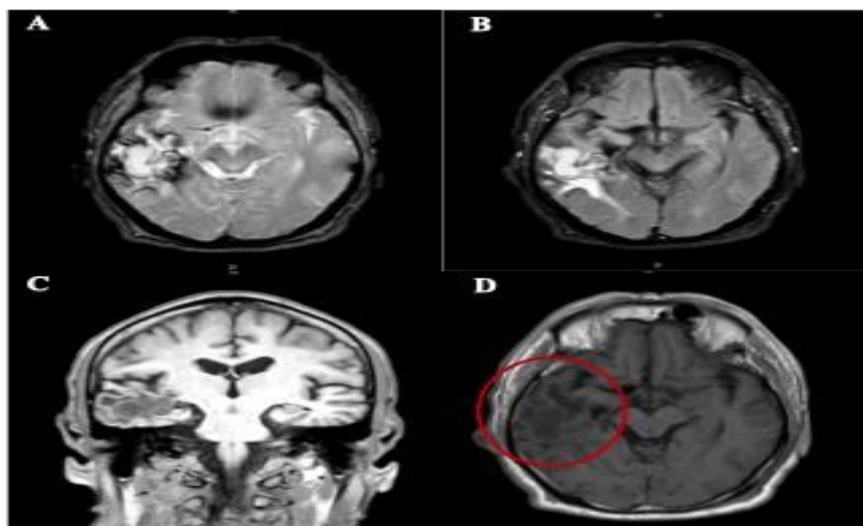


Figure 2. Cerebral MRI. In the T2-weighted sequence (A) and the T1-weighted sequence (C), a hyperintense area with a hypointense rim is observed, forming a blooming artifact in the right temporal lobe. The axial FLAIR image (B) demonstrates minimal perilesional edema. In the axial T1 sequence (D), the lesion appears hypointense in the right temporal lobe without definite contrast enhancement, consistent with the non-enhancing characteristics of a cavernoma

DISCUSSION

A cavernoma is a vascular malformation composed of clusters of thin-walled sinusoids lacking of surrounding smooth muscle tissue.^(1,9) The prevalence of cavernomas remains low, affecting approximately 0.4%–0.8% of the general population, and many cases are diagnosed incidentally due to their typically asymptomatic nature.^(5,9) The size of cavernous malformations varies widely, ranging from less than 1 mm to several centimetres, and they may occur in various locations throughout the central nervous system (CNS).^(3,9) Clinical manifestations are diverse and may include seizures, neurological deficits, headache, or intracerebral hemorrhage.^(1,3,5)

Psychotic manifestations in patients with cavernomas are considered rare. The literature indicates that psychosis is often associated with structural abnormalities of the brain, particularly those involving the limbic system, which plays a key role in emotional regulation. One study reported that up to 20% of temporal lobe cavernoma cases may present with psychotic symptoms.^(3,6,8,10) In addition, the temporal lobe is known to have a higher epileptogenic potential compared to other supratentorial regions.⁽⁸⁾ In this case, the

patient developed psychotic symptoms—manifested as aggressive behavior and auditory hallucinations—following a generalized tonic–clonic seizure. This presentation suggests possible involvement of the limbic system and the inherently epileptogenic nature of the temporal region. In this case, the non-contrast head CT scan revealed a hypodense lesion with multiple calcifications in the right temporal lobe, suggestive of an intracranial vascular malformation consistent with a cavernoma. The patient’s DSA findings, demonstrating a low-vascularized space-occupying lesion (SOL), further supported the diagnosis of cavernoma. This distinguishes cavernomas from arteriovenous malformations (AVMs), which typically exhibit high-flow, high-vascularized characteristics.^(1,9) Definite diagnosis was obtained through cerebral MRI, which demonstrated a lesion in the right temporal lobe appearing hypointense with hyperintense components relative to the gray matter on T2-weighted imaging, consistent with a “blooming artifact” appearance. Following contrast administration, no contrast enhancement was observed. These findings are characteristic of a cavernoma. The “blooming artifact”, also described as a “popcorn-like” appearance, represents the

typical MRI feature of cavernomas and reflects the presence of clustered hemosiderin deposits.^(1,6,9)

The patient's agitation and auditory hallucinations resolved by the sixth day of hospitalization. During the course of treatment, no seizures or additional neurological deficits were observed. At a one-month follow-up after the post-ictal psychotic episode, the patient remained free of recurrent seizures, hallucinations, and any mood disturbances. He was able to carry out daily activities independently.

Post-ictal psychotic symptoms should also be considered as a possible clinical manifestation in the diagnosis of cavernoma, provided patient has no prior history of psychosis suggestive of a primary psychiatric disorder.

CONCLUSION

This case highlights a patient with a right temporal lobe cavernoma presenting with post-ictal psychosis, illustrating an atypical neuropsychiatric manifestation of temporal lobe cavernomas. The findings highlighting the role of limbic system involvement and the intrinsic epileptogenicity of the temporal lobe in the development of post-ictal psychotic symptoms. Therefore, neuropsychiatric manifestations should be recognized as part of the broader clinical spectrum of cavernomas, warranting careful evaluation in patients with lesions involving the temporal region.

Declaration by Authors

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