A small frontal lobe cavernoma presenting with headache mimicking migraine and complex focal seizure: A Case report

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Abstract

Cavernoma, or cerebral cavernous angioma, are hamartomatous lesions formed by sinusoidal vascular spaces without cerebral parenchyma in between. Cavernoma is a rare disorder that is diagnosed infrequently and incidentally, so it is called incidentaloma. However, cavernoma can present with seizures, headaches, and other focal neurological deficits, with seizures being the most frequent presentation. Cavernoma is angiographically concealed, and its diagnosis is challenging. So, the cavernoma is diagnosed based on an MRI. We present the rare case of a patient who presented with a complex focal seizure and migraine-like headache caused by a small frontal lobe cavernoma.

Keywords: frontal lobe, small cavernoma, complex focal seizure, headache

Introduction

Cerebral cavernous angioma, or cavernoma, is an occult vascular malformation of the central nervous system that frequently develops in the brain parenchyma. It can develop in any age group, but it often occurs between the ages of 30 and 40.[**1**] According to reports, the annual incidence of cavernous malformations is 0.15–0.56 per 100,000 people, and the annual hemorrhage rate is 0.61–11% per patient-year, which is variable across populations.[**2**]

Almost 80% of cerebral cavernomas are supratentorial, mainly affecting the subcortical region of the frontal and temporal lobes. Seizures are the most frequent clinical manifestation, mostly associated with hemorrhages but may also be associated with headaches and other focal neurological deficits.**[3]**

Only 30–50% of lesions are detected by MRI, regardless of whether contrast is administered, leading to an underdiagnosis of the disease. The main imaging method for evaluating and diagnosing cavernomas is MRI, which has a definite advantage over CT in terms of sensitivity.**[3]**

In this case, we report on a patient who presented with a complex focal seizure disorder associated with small frontal lobe cavernous malformations detected by MRI.

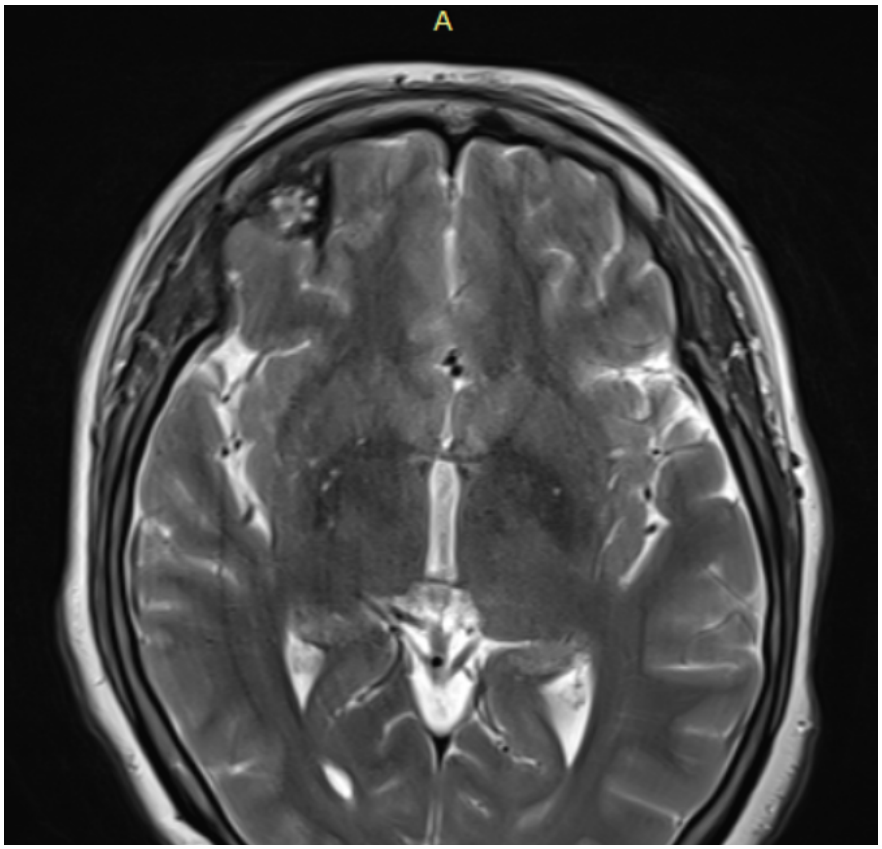
Case report

A 47-year-old female presented to the emergency department of our center with a history of 1 episode of jerky movement of the left upper limb following lip smacking lasting for about 15–30 seconds, followed by loss of consciousness and post-ictal confusion. However, there is no history of uprolling of the eyes, tongue biting, frothing of the mouth, generalized tonic-clonic movement, and bowel or bladder incontinence. Also, there was no history of fever, trauma, or previous seizure disorder. She also complained of 6-7 episodes of headache mimicking migraine from 1 year on and off, relieved by over-the-counter medications. She had been diagnosed with hypothyroidism for 6 years and is under levothyroxine. On examination, there were no signs of meningeal irritation with normal systemic examination. Her vital signs were within normal limits.

Neurological assessment was normal, along with unremarkable laboratory findings. The EEG was done and showed no epileptiform discharge. The CT head also shows no abnormality.

Thus, she was admitted for neurological monitoring and further evaluation. An MRI of the brain was planned, which revealed a small lobulated popcorn appearance lesion of size 10*9.5*8.5 mm with a central high and peripheral low intensity rim in the right frontal lobe and white matter showing tiny enhancing areas within, blooming in SWIs with mixed bright and dark phase images (Figure 1: MRI of brain on right)and altered low T2 signal intensity (Figure 1: MRI of brain on left) around them, suggestive of frontal lobe cavernoma.

Figure 1



The patient was given injection levetiracetam 500mg twice daily, which effectively controlled seizure activity. Also, the risk and benefits of surgery were discussed with the patient and her family. However, the patient denied surgery. Thus, he was discharged with oral levetiracetam 500mg twice daily and advised to follow up on a regular basis in outpatient department. On follow up after 2, 4, and 6 months of discharge, there was no repeat seizure activity.

Discussion

Cavernoma is a benign low flow vascular malformation with an unknown etiology. However, it has been linked to cranial radiation, coexisting vascular malformations, genetic and hormonal variables, and other causes.[**4**] The majority of cavernoma is supratentorial in location, but it can also be found in spinal cord as well as the extra axial region. Most of the cases of cavernoma are asymptomatic and detected on autopsy incidentally. [**5**] In patients with cerebral cavernous malformations (CCMs), epileptic seizures are the most prevalent symptom. It has been suggested that repeated microhemorrhages and hemosiderin deposits in the surrounding cortical tissue lead to hyperexcitability because iron ions produce free radicals and lipid peroxides. [**6**]

Cavernomas are angiographically concealed malformations; thus, the identification of cavernomas is more challenging than that of other vascular disorders. Some of the cutting-edge methods utilized for the diagnosis of CMs include conventional T1- and T2-weighted MR imaging, gradient echo sequences, high-field MRI, susceptibility-weighted imaging, diffusion tensor imaging, and functional MRI.[**7**]In our case, CT findings were insignificant, and cavernoma was diagnosed on an MRI of the brain.

Antiepileptic medications are preferred as a first line of treatment in CCM patients who have had a single episode rather than immediately doing surgery, and antiepileptic medications were found to be 47–60% effective in controlling newly diagnosed cavernoma-related epilepsy. So, routine follow-up with a neurologist is advised. Early surgery should be taken into account for patients who have a significant risk of bleeding, who are unable to adhere to AED therapy, and who have a strong desire to finally cease using AEDs.[**8**] Our patient responded with anti-epileptic drugs.

A similar case with seizures and migraine-like headaches was described in a case report published in 2017 by Chirchiglia D et. al. We hereby present the rare case of small frontal lobe cavernoma presented with complex focal seizures and migraine like headaches that are effectively controlled with antiepileptic medications.

Conclusion:

Even small cavernoma can cause seizures and headaches. Furthermore, In some cases a headache can mimic migraine which leads to misdiagnosis. Even on suspicion, diagnosis of cavernoma is challenging as it is occultated on CT and angiography. MRI is a better diagnostic tool for cavernoma.

Author Contribution

Prakriti Adhikari: Conceptualization; data curation; methodology; writing – original draft.

Anil Nepali: Conceptualization; supervision; validation; writing – original draft; writing – review and editing.

Amit Shah: Data curation; methodology; validation; writing – original draft; writing – review and editing.

Shailes Paudel: Conceptualization; formal analysis; supervision; validation; writing – original draft; writing – review and editing

Prakriti Bhandari: Conceptualization; data curation; validation; writing – original draft; writing – review and editing.

Prakash Nepali: formal analysis; supervision; validation; writing – review and editing

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Conflict of Interest statement

None declared.

Ethics Statement

Ethical approval was not required for the case report as per the country's guideline.

Informed Consent

Written informed consent was obtained from the patient to publish the report.

Data Availability Statement

Data openly available in a public repository that issues datasets with DOIs.

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