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Symptomatic arachnoid cyst of the left frontal convexity in an adult: A case report.

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Abstract

Background: Arachnoid cysts are benign intra-arachnoidal cystic lesions whose content is cerebrospinal fluid. Most locations is supratentorial in the middle cranial fossa. The location in the convexity of the frontal lobe is unusual.

Case Description: A previously healthy 21-year-old man was admitted to the emergency department for post-seizure loss of consciousness. Following imaging studies, a large cystic lesion in the convexity of the left frontal lobe was found. Total excision of the cyst wall was performed after craniotomy. The histology confirms the diagnosis of arachnoid cyst. Patient was followed up for the last 4 months without any symptoms or neurological deficit.

Conclusion: Arachnoid Cysts in the frontal convexity are rare. Clinical symptoms is nonspecific and depend on the volume. The definite treatment if it's symptomatic is surgery.

Keywords: Arachnoid Cyst; Intracranial; Surgery

1. Introduction

Arachnoid cysts (ACs) are benign masses containing cerebrospinal fluid (CSF)-like content. They represent 1% of all intracranial masses in adults. Symptoms are mostly due to compression effect on adjacent structures, and different symptoms can be expected based on the location of the cysts [5,8].

50 to 60% are found in the middle cranial fossa, anterior to the temporal lobes. Other locations include the suprasellar cistern and posterior fossa (10%), where they occur most commonly in the cerebellopontine angle cistern [4].

However, frontal convexity arachnoid cyst lesions are rare. In this report, we present a rare case of a previously healthy 21-year-old man with a large arachnoid cyst in the convexity of the left frontal lobe.

2. Case description

2.1. History and clinical presentation

21-year-old, right-handed man was admitted to the emergency department for a generalized tonic-clonic epileptic seizure with post-seizure loss of consciousness.

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The history of the disease is marked by the presence of headeache before 1 week that was associated with several episode of vomiting. He had no previous history of meningitis or trauma. Past medical and family histories were unremarkable. On physical examination, he was confused. Neurological examination showed no focal deficit. Ophthalmologic examination was normal.

2.2. Diagnosis assessment

Brain Computed tomography (CT) scan revealed a well-defined nonenhancing hypodense cystic mass in the left frontal lobe with the density of CSF (FIGURE 1). Magnetic resonance imaging showed a large cystic lesion in the left frontal lobe. The cyst was homogeneously hypointense on T1- and hyperintense on T2-weighted. The signal characteristic is similar to CSF. There was no enhancement of the cyst contents or cyst wall after the intravenous administration of gadolinium (FIGURE 2).

- Hematology and blood chemistry studies were normal.
- Based on these findings an intracranial arachnoid cyst diagnosis was considered.

2.3. Management

The patient underwent a left frontal craniotomy. After skin incision and cutting the periosteum, a large craniotomy was performed. The bone was then carefully separated from the dura mater. We opened the dura mater with a cross-shaped incision. We encountered a large thin-walled cyst containing clear CSF-like fluid. The pieces of cottonoid strips were gently inserted around the overlying cyst wall. The internal wall of the cysts was opened partially under direct vision. When the integrity of the cyst was evacuated the cyst membrane has been coagulated and excised. Normal brain cortex was observed adjacent to the medial surface of the cyst. After the removal, the dura was closed in a watertight fashion.

2.4. Outcomes and Follow-up

This patient's postoperative course was uneventful. The headaches decreased and he did not present epileptic seizures. Nevertheless, an antiepileptic therapy has been prescribed to prevent epileptic seizures. Pathological examination of the specimen confirmed the diagnosis of arachnoid cyst. The patient was discharged on fifth post-operative day with close follow-up. The patient has been followed 4 months without any symptoms or neurological deficit.

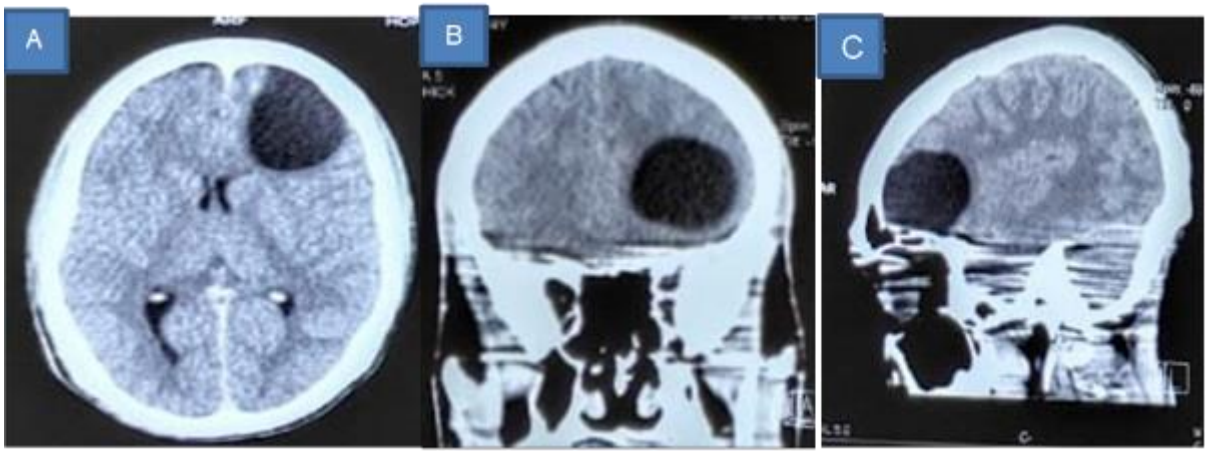

Figure 1 Computed Tomography Scan showed a cystic lesion with the density of CSF on (A) /Axial , (B)/Coronal and (C) Sagittal view.

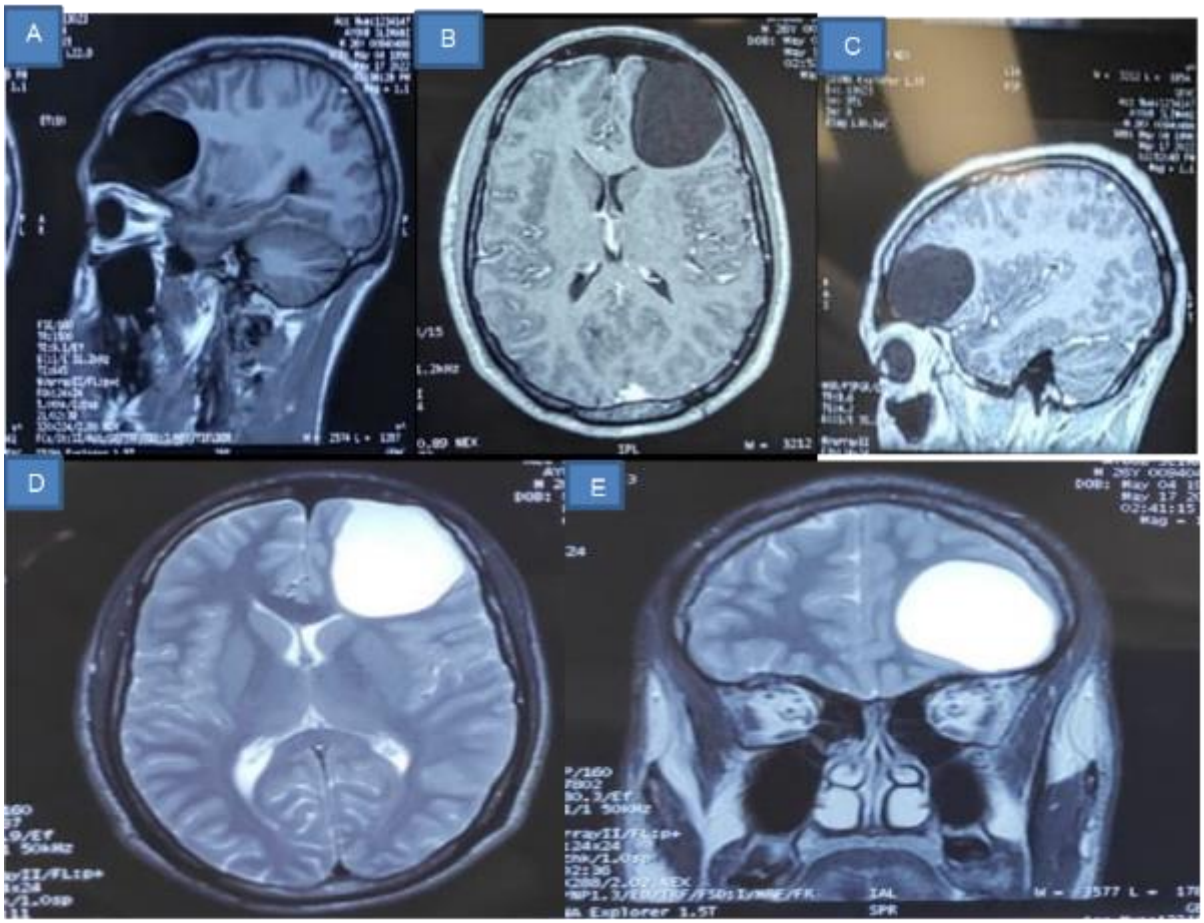

Figure 2 Sagittal T1-weighted (A) MRI demonstrating a well-defined hypointense cystic mass without surrounding edema. The cystic wall does not show contrast enhancement. Gadolinium-enhanced axial (B) and sagittal (C) T1-weighted. MRI signals appears hyperintense on T2-weighted sequences, and it demonstrate signal characteristics similar to CSF (D)/axial and (E) /coronal view.

3. Discussion

Arachnoid cysts (ACs) are benign masses containing cerebrospinal fluid (CSF)-like content. They represent 1% of all intracranial masses in adults. Symptoms are mostly due to compression effect on adjacent structures, and different symptoms can be expected based on the location of the cysts [5,8]. Most arachnoid cysts are supratentorial. 50 to 60% are found in the middle cranial fossa. Other locations include the suprasellar cistern and posterior fossa (10%), where they occur most commonly in the cerebellopontine angle cistern [4].

Frontal convexity arachnoid cyst lesions are a rare entity and there is a little direct reference in the literature.

The clinical manifestations of arachnoid cysts are variable and often unspecific. The onset of symptoms and signs is usually a result of 3 primary factors: cortical irritation, compression of the cerebral parenchyma, and obstruction of CSF circulation. The most common presenting symptoms are headache, weakness, seizures, hydrocephalus, cognitive decline, and visual loss. [7,2,10].

Erman et al described that epileptic seizures and headache are the most common presenting clinical features [2].

The preoperative diagnosis of an AC can be easily made with CT or MRI. On CT, arachnoid cysts are observed as extra axial cysts with the density of CSF, without any contrast enhancement. MRI signals appears hypointense on T1-weighted sequences and hyperintense on T2-weighted sequences, and it demonstrate signal characteristics similar to CSF on all sequences. There was no enhancement of the cyst contents or cyst wall after the intravenous administration of gadolinium. MRI is also adequate to evaluate the compression of cysts on neural structures [2,3,6].

The authors agree that symptoms of intracranial hypertension, intractable seizures, and focal neurological deficits warrant treatment [8,7,9,1].

In some patients, however, for symptoms such as a headache or seizures, medical treatment has been recommended and is generally accepted. Unfortunately, it was not always efficacious to control these nonspecific symptoms with conservative measures alone. Ultimately, surgical treatment was employed to obtain sustained resolution of the refractory complaints [10].

4. Conclusion

Intracranial Arachnoid cysts are relatively rare. The location in the convexity of the frontal lobe are unusual. Clinical symptoms depend on the volume. Surgical intervention is an effective approach to reduce or eliminate symptoms caused by intracranial arachnoid cysts. The outcomes are generally good after surgical treatment.

Compliance with ethical standards

Disclosure of conflict of interest

There are no conflicts of interest.

Statement of informed consent

Patient's consent not required as patients' identity is not disclosed or compromised.

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