



Case Report

Received: November 8, 2020
Revised: November 29, 2020
Accepted: December 15, 2020

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Intracystic Hemorrhage of an Arachnoid Cyst: a Case with Prediagnostic Imaging of an Intact Cyst

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Arachnoid cysts are benign lesions that are formed between the inner and outer layers of the arachnoid, accounting for 1% of all intracranial space occupying lesions. Usually, arachnoid cysts are asymptomatic. It can be symptomatic in case of complication such as intracystic hemorrhage or acute cyst expansion. We present a case of incidentally prediagnosed arachnoid cyst which undergone intracystic hemorrhage combined with ipsilateral SDH in a young male.

Keywords: Arachnoid cyst; Intracystic hemorrhage; Subdural hemorrhage

INTRODUCTION

Arachnoid cysts are benign lesions that are formed between the inner and outer layers of the arachnoid, and they account for 1% of all intracranial space-occupying lesions. Usually, arachnoid cysts are asymptomatic. However, they can be symptomatic in case of complication, such as intracystic hemorrhage or acute cyst expansion (1). There are several reported cases of arachnoid cysts with intracystic hemorrhage. However, cases with imaging study prior to a hemorrhagic event are very rare. We present a case of an incidentally diagnosed arachnoid cyst that developed intracystic hemorrhage combined with ipsilateral subdural hemorrhage (SDH) in a young male.

CASE REPORT

A 34-year-old man presented with intermittent, pulsatile headache for one week. The headache spontaneously resolved after a duration of 10-20 minutes, and there was a 1 hour interval between events. There was no other history of major trauma. The patient had headed a ball while playing football one month ago, but he did not develop any symptoms.

He had a previous brain CT scan about 8 months ago for health care work-up. It showed incidental cerebrospinal space (CSF) space widening in the left middle cranial fossa, suggesting an arachnoid cyst, Galassi type II (Fig. 1).

He had no other previous medical or neurological history. He was not taking any anticoagulant or antiplatelet agents. Initially, no abnormality was found on physical examination, neurological examination, or laboratory study.

Brain CT was performed at the time of event considering the possibility of intracranial hemorrhage. CT scans showed a well-circumscribed, hyperdense, extraaxial lesion in the



Fig. 1. Brain CT without contrast was performed for health care work-up. The axial image shows a Galassi type II left temporal arachnoid cyst.

left fronto-parieto-temporal lobe including the previously noted widened CSF space in the left middle cranial fossa, suggesting acute hematoma. A post-enhancement image showed no definite abnormal enhancement (Fig. 2).

He underwent trephination of the left parietal bone, without cisternostomy under the impression of acute subdural hemorrhage and intracystic hemorrhage of the arachnoid cyst. After opening the dura, the dark oil-colored, liquefied hematoma was evacuated.

The follow-up MRI 11 days after the operation showed fluid collection with a fluid-fluid level in the arachnoid cyst, probably a resolving status of intracystic hemorrhage (Fig. 3).

He was discharged after 12 days of the operation without any medical or neurological complications.

On follow-up CT scan after 40 days and one year from discharge, the cyst was still evident with CSF density without any significant change in its size compared to that on preoperative CT (Fig. 4).

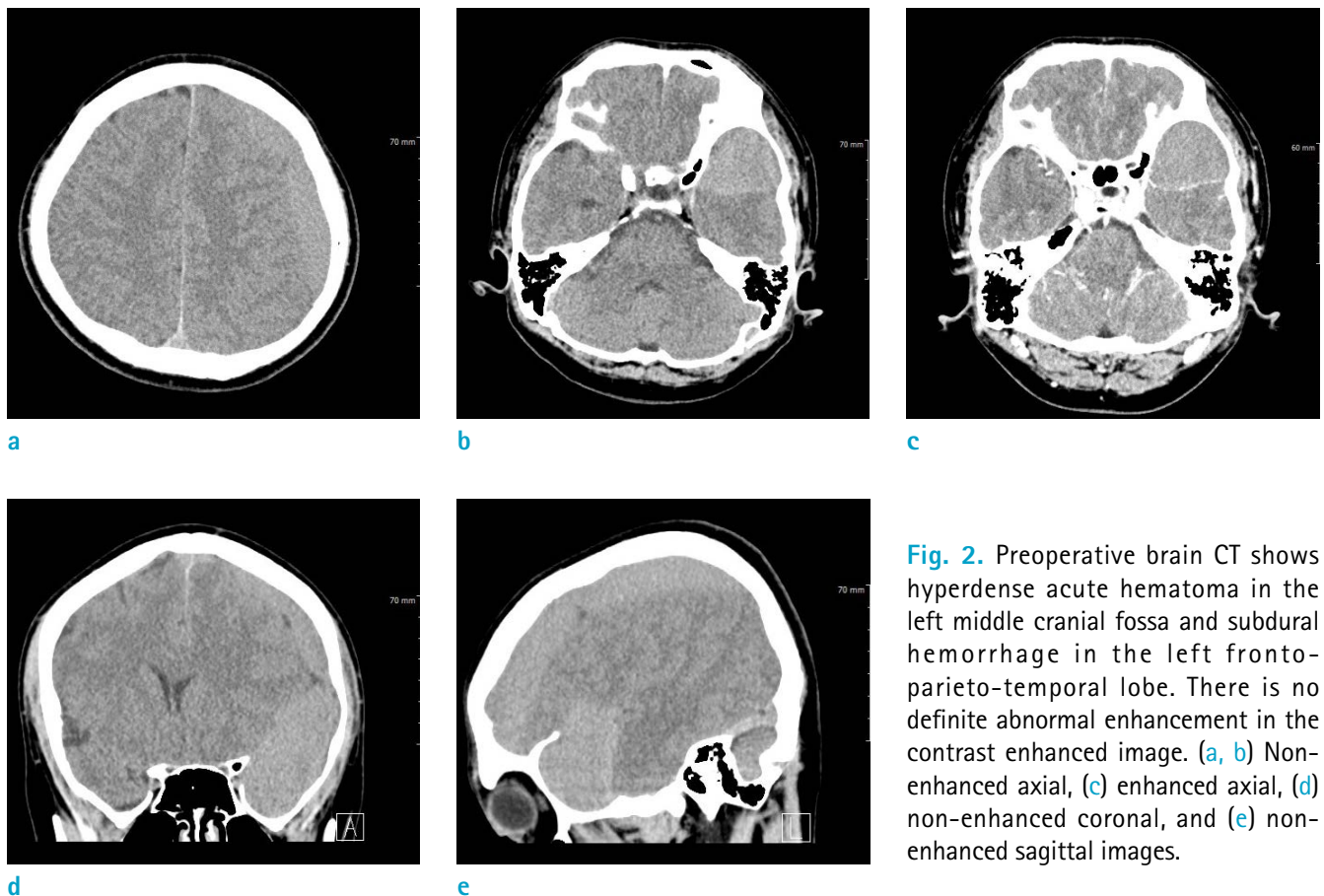


Fig. 2. Preoperative brain CT shows hyperdense acute hematoma in the left middle cranial fossa and subdural hemorrhage in the left fronto-parieto-temporal lobe. There is no definite abnormal enhancement in the contrast enhanced image. (a, b) Non-enhanced axial, (c) enhanced axial, (d) non-enhanced coronal, and (e) non-enhanced sagittal images.

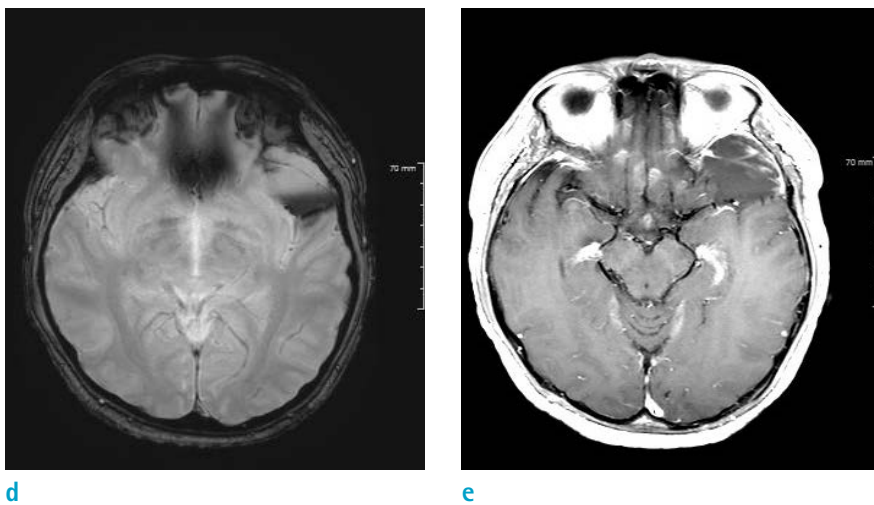
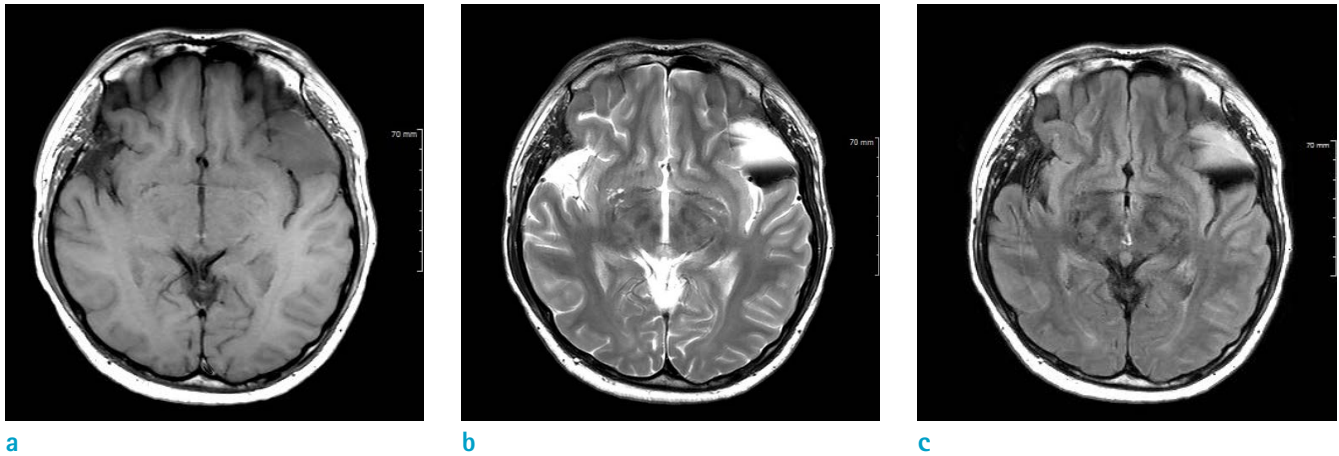


Fig. 3. Follow-up brain MR after 11 days from the operation shows a fluid-fluid level in the arachnoid cyst, suggesting resolving state of intracystic hemorrhage in the left cranial fossa. There is a thin linear septa-like structure with T1 low, T2 high signal intensity, and enhancement crossing the hemorrhagic cystic lesion. It would be an interface between the arachnoid cyst and subdural hematoma or a possible postoperative finding. It is not visible on the previous CT image probably due to a limitation of the modality. (a) T1-weighted, (b) T2-weighted, (c) T2-FLAIR, (d) T2 fast-field-echo, and (e) T1-weighted contrast-enhanced images.

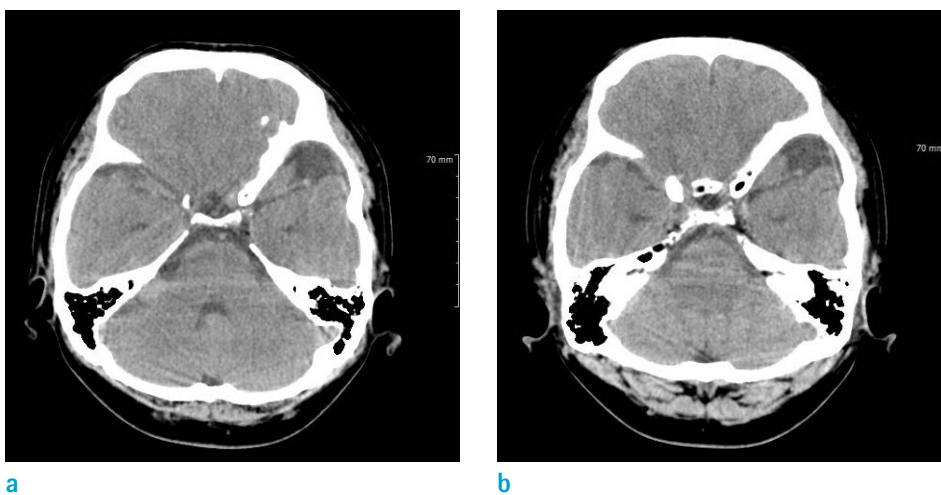


Fig. 4. Follow-up CT image after 40 days (a), and one year (b). Arachnoid cyst with resolved intracystic hemorrhage is noted in the left cranial fossa with CSF density.

DISCUSSION

Arachnoid cysts are benign lesions that are formed between the inner and outer layers of the arachnoid, and they account for 1% of all intracranial space-occupying lesions. Their origin can be explained by a meningeal maldevelopment theory: the temporal and frontal arachnoid coverings fail to merge when the sylvian fissure is formed, thereby creating a noncommunicating fluid compartment entirely surrounded by arachnoid membranes (1).

They are found in the middle cranial fossa in 50–65% of cases, with a predilection for the left side and male gender. Computed tomography and MR imaging have increased the detection of incidental asymptomatic arachnoid cysts as in our case. Although generally asymptomatic, they can very rarely become symptomatic because of complication, such as acute cyst expansion or intracystic or subdural hemorrhage following head trauma (1, 2).

According to Wester and Helland (3), chronic SDH was found in 4.6% of the total 241 patients; all of them harboring a temporal arachnoid cyst. For temporal cysts, the hematoma frequency was 6.5%. Hematomas occurred equally frequently in individuals with small, middle-sized, and large temporal cysts.

We presented a rare case of incidentally diagnosed arachnoid cyst that developed an intracystic hemorrhagic change. There are several reported cases of arachnoid cysts with intracystic hemorrhage (2, 4–7), and other very rare cases with an imaging study prior to the hemorrhagic event (8, 9).

It is well known that intracranial hemorrhage can occur more easily with mild trauma or even without trauma in patients with an arachnoid cyst. In our case, it can be controversial whether heading a ball one month ago contributed to hemorrhage due to minor trauma. The postoperative follow-up CT scan demonstrated complete resolution of hemorrhage only after trephination.

Therefore, we suggest that in case of a previously

diagnosed arachnoid cyst, it is important to be aware of the possibility of intracranial hemorrhage even without trauma or with suspicious mild head trauma.

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