Arachnoid cyst complicated by spontaneous Chronic Subdural Hematoma in the infant

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Abstract

Arachnoid cyst is collections of fluid that develop within the arachnoid membrane because of splitting or duplication of this structure. Arachnoid cyst can present at any age with or without symptoms. Chronic Subdural Hematoma most common in elderly patients several weeks after a head injury prior to onset of symptoms. But here we report 1 year-old-boy presented with epileptic seizures for one month. Computed tomography and Magnetic resonance imaging of brain disclosed that left parietal an arachnoid cyst and fronto-temporo-pareital chronic subdural hematoma. After admission, cyst was excised and hematoma was evacuated through fronto-parietal craniotomy approach. The patient had a good recovery postoperatively. Arachnoid cyst with Chronic Subdural Hematoma in the infant is a serious condition with a high mortality rate. However, surgical resection seems to be very favorable.

Keywords: Arachnoid cyst, Infant, Spontaneous Chronic Subdural Hematoma

Introduction

Arachnoid cysts are benign, congenital, intra-arachnoidal space occupying lesions that are filled with clear Cerebral Spinal fluid (CSF) like fluid (11). However, they are most often found in the middle cranial fossa (2, 4). Cysts of the middle fossa occur nearly three times as often in males as in females and nearly twice as often on the left side than on the right. Trauma has been recognized as an important factor in the development of CSDH (1). Arachnoid cyst is a risk factor for chronic subdural hematoma after head injury (9). But our case report involves a one-year-old male having arachnoidal cyst with spontaneous chronic subdural hematoma.

Case Report

This one-year-old male presented with epileptic seizures on and off for one month. The seizures lasted about ten second with stiffness but not associated with fever, turning of eye, foaming around the mouth, or incontinence. There was no history of trauma. His medical and family histories were unremarkable. The neurological and physical examinations were normal. At the local hospital, computerized cranial tomography (CT) scan revealed a left parietal hypodense lesion “arachnoid cyst” (Figure 1 A) and left fronto-temporo-parietal iso-hypodense lesion “Chronic subdural hematoma” (Figure 1 B). Magnetic resonance imaging demonstrated hyper-intense on T2-weighted images “left parietal arachnoid cyst and left fronto-temporo-parietal chronic subdural hematoma” (Figure 2 A, B).

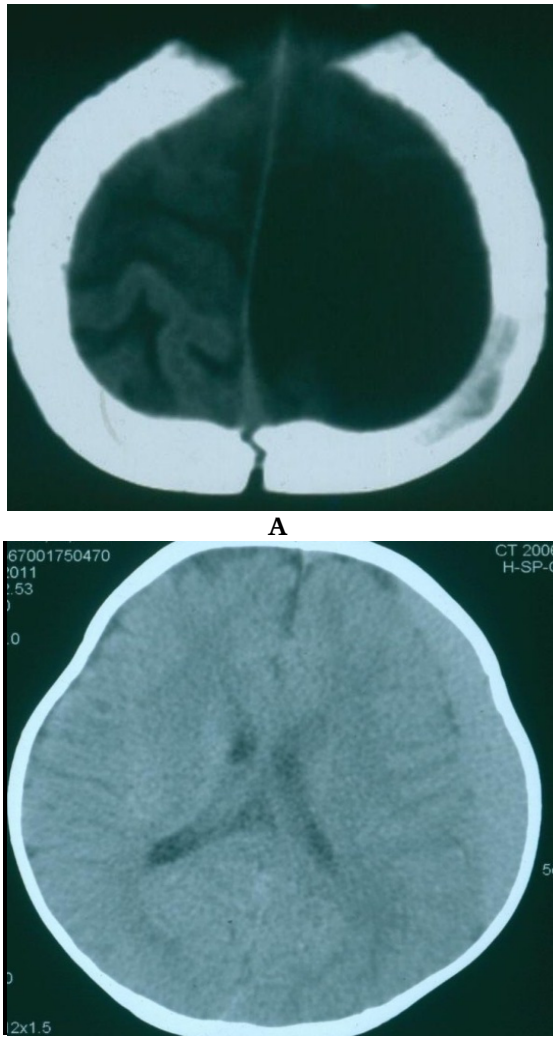

Figure 1 CT scan of brain showing left parietal arachnoid cyst and fronto-temporo- parietal chronic subdural hematoma

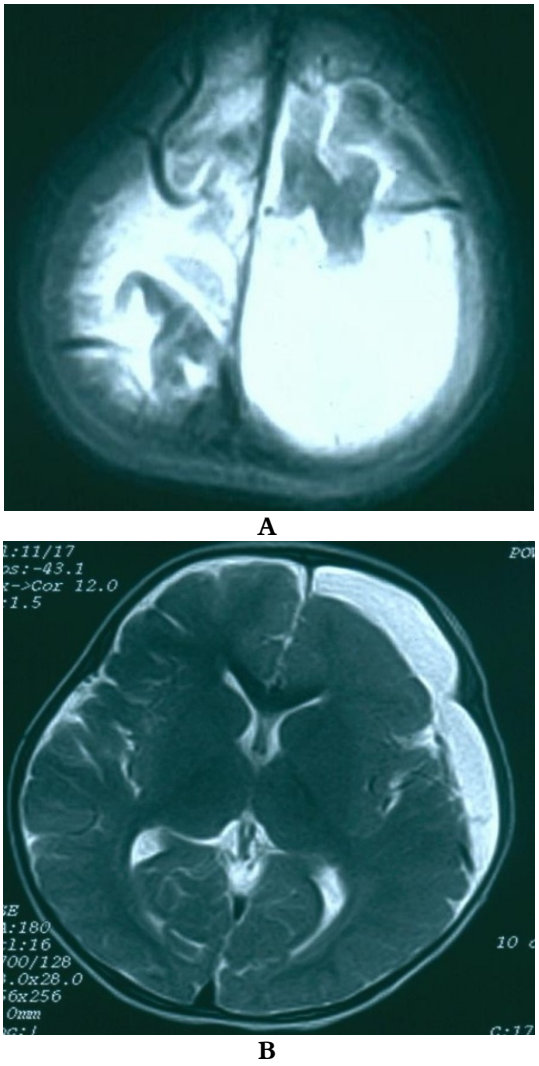

Figure 2 Magnetic resonance examination of brain also showing left parietal arachnoid cyst and fronto-temporo-parietal chronic subdural hematoma

Workup for coagulopathy was negative. A left fronto-parietal craniotomy was performed. Dura was intact with tension. It was separated carefully from cyst wall and removed dark red blood about 50ml by drainage and irrigation. Arachnoid cyst was in yellow, tough envelop having maximum blood vessels adhesion and also compression of brain tissue. The arachnoid membrane was also excised under microscope and sent for pathological examination.

The operative course was uneventful. A postoperative the computerized cranial tomography (CT) showed obliteration of arachnoid cyst and subdural hematoma (Figure 3). The pathological examination and culture showed negative for infection.

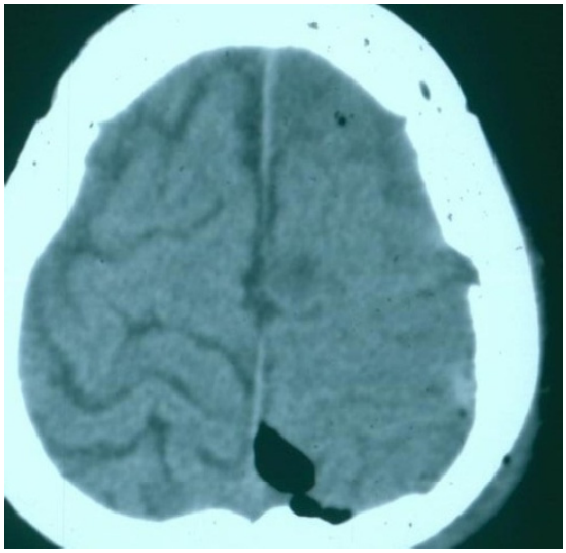

Figure 3 A postoperative CT scan shows the absence of subdural hematoma and an arachnoid cyst

Discussion

Arachnoid cysts represent 1% of all non-traumatic intracranial masses. The most common site is sylvian fissure (49%) followed by cerebellopontine angle (11%), supracollicular (10%), vermian (9%), sellar, suprasellar (9%), interhemispheric (5%), cerebral convexity (4%) , and clival (3%) (8). Most arachnoid cysts are asympotomatic. However, they may become symptomatic as they progressively enlarge and interfere with adjacent neural structures or with cerebrospinal fluid circulation. Symptoms and signs include cranial enlargement, localized cranial bulging, clinical manifestations of increased intracranial pressure, epileptic seizures, psychomotor retardation, and focal neurological deficits (2, 3). The most important diagnostic tools are CT and MRI. These tools have increased the detection of incidental asymptomatic arachnoid cysts as well (2, 10).

Chronic subdural hematoma (CSDH) tends to occur more commonly in elderly patients with a history of mild head injury (9). Occurrence of CSDH in infant is rare. It is also extremely rare without trauma. Our case is interesting in how the two distinct clinical entities sporadically occurred in the same patient. In our knowledge, firstly the arachnoid cyst may enlarge over time as a result of the production of fluid from the cyst walls and leads to increased pressure inside cyst. An arachnoid cyst can even rupture spontaneously. Secondly, tearing of the outer wall of the arachnoid cyst is associated with subdural hemorrhage caused by rupture of bridging veins, unsupported blood vessels around the cyst wall, and leptomeningeal vessels in the base of the cyst (5). J chan et al. said an association between arachnoid cysts and subdural hematomas was first noted in 1971 (7). Since then, there have only been about twenty cases reported in medical literature6. To our knowledge, we couldn't find any case of two distinct clinical entities sporadically occurring in an infant in literature. So our case report will be the first reported case.

The treatment of CSDH associated with arachnoid cyst is still controversial. A conservative approach should be chosen if a child with a cyst has no symptoms, is neurologically intact, and undergoes close clinical and radiological observation. In SDH cases, the conventional therapy has been drainage and irrigation through a burr-hole. In arachnoid cases, membranectomy and cyst communication to the basal cisterns must be performed (5, 10). Page et al. recommended craniotomy, membranectomy, and hematoma drainage for middle fossa ACs complicated by CSDH (10). In our case, we performed fronto-parietal craniotomy and confirmed

the presence of the chronic SDH and evacuated it. When the arachnoid cyst membrane was revealed, we fenestrated the cyst wall and widely resected the membrane under microscope to prevent recurrence. We performed operation successfully with low operative risk and an excellent outcome.

Conclusion

Spontaneous chronic subdural hematoma with arachnoid cyst is extremely rare in infant which could not find in the literature. The operation is helpful and successful treatment for the symptomatic patients with an arachnoid cyst combined with chronic subdural hematoma.

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