

Arachnoid Cyst in the Sphenoid Sinus Presented with Headache and Proptosis

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Abstract Arachnoid cysts are benign lesions that contain content similar to cerebrospinal fluid. Arachnoid cysts may cause neurological symptoms but they are commonly asymptomatic. They are commonly located in the middle cranial fossa. Paranasal sinuses are rare locations of them. We present a case with a preoperative diagnosis dilemma about young male patient with headache, vomiting and proptosis. Cranial MR scanning showed large left temporal arachnoid cyst and other cystic lesion with different signal changes in the left sphenoid sinus which leads to enlargement of the sinus. In this article we are discussing the patient, that had cerebrospinal fluid (CSF) rhinorrhea; after his left sphenoid sinus explored at outside clinic, then getting up with conservative follow-up, with radiological imagings and literature findings. We should consider arachnoid cysts within differential diagnosis of intrasphenoidal cystic lesions.

Keywords: arachnoid cyst, sphenoid sinus, cerebrospinal fluid rhinorrhea

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1. Introduction

Arachnoid cysts are benign lesions that contain clear, colourless fluid resembling cerebrospinal fluid (CSF). These arachnoid malformations could be the primary event or be explained by an impairment of the cerebrospinal fluid drainage generated by venous agenesis [1]. Their congenital origin is usually accepted [2]. Variable neurological signs depending on location may be inaugural, although intracranial hypertension is the most frequent [3]. Asymptomatic cysts generally followed conservatively. Surgical approach needed for symptomatic arachnoid cysts.

2. Case Report

A 35-year-old male patient was referred to our clinic with clear nasal discharge. He was admitted previously to an outside otolaryngology clinic with headache, vomiting and proptosis existing for 1 month. Physical examination was normal except for left sided proptosis. The cranial MRI (Magnetic Resonance Imaging) and CT (Computed Tomography) reported a large temporal arachnoid cyst; causing resorption and displacement of the squamous portion of the temporal bone as well as the greater wing of the sphenoid bone, basisphenoid. An other cystic lesion with different signal changes was seen in the left sphenoid

sinus causing marked enlargement of the sinus (Figure 1A-B-C-D).

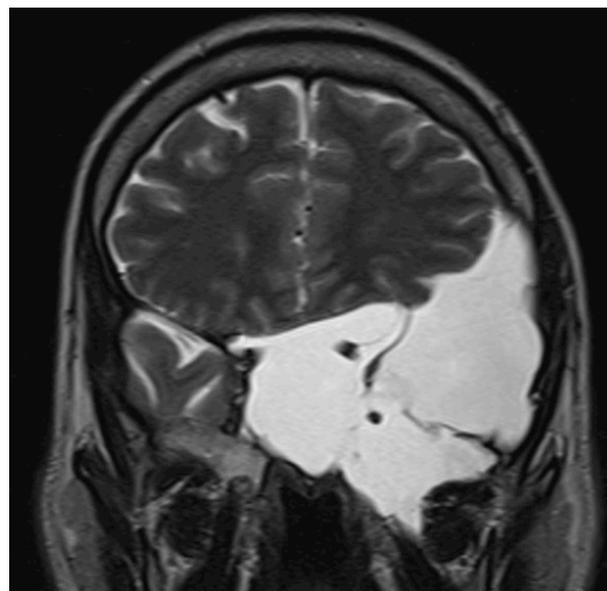


Figure 1A. MRI (Preoperatively)(Coronal T2) shows large temporal arachnoid cyst. An other cystic lesion with different signal changes was seen in the left sphenoid sinus causing marked enlargement of the sinus

Patient had undergone endoscopic endonasal left sphenoid sinus surgery with consideration that lesion was mucocele. After left sphenoid sinus ostium opened, the wall of pulsatile clear fluid filling cyst in the sphenoid

sinus was ruptured and whole fluid discharged. There had seen a defect at the lateral wall of sphenoid sinus and pulsatile another cyst had seen like in the sphenoid sinus. Upon low rate flow CSF (cerebrospinal fluid) discharge, operation terminated with sponge gel filled into the sphenoid sinus. Patient's headache and proptosis disappeared after surgery. Rhinorrhea has started one day after surgery from left nasal side. Patient referred to our clinic with rinorrhea. Biochemical analysis of rhinorrhea revealed positive B2 transferrin test. MRI cysternography was performed. The study revealed a large left temporoparietal arachnoid cyst with accompanying other cyst that resorbed from adjacent sphenoid and temporal bones. The resorbed cyst was in communication with a large fluid filled another cyst and expanded left pterygoid recess of the sphenoid sinus (Figure 2).

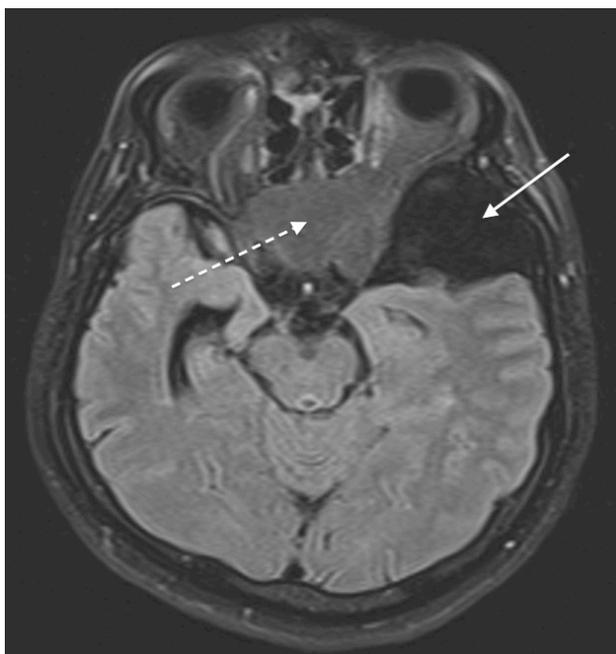


Figure 1B. MRI (Preoperatively)(Axial T2) shows different signal changes of two cystic lesions

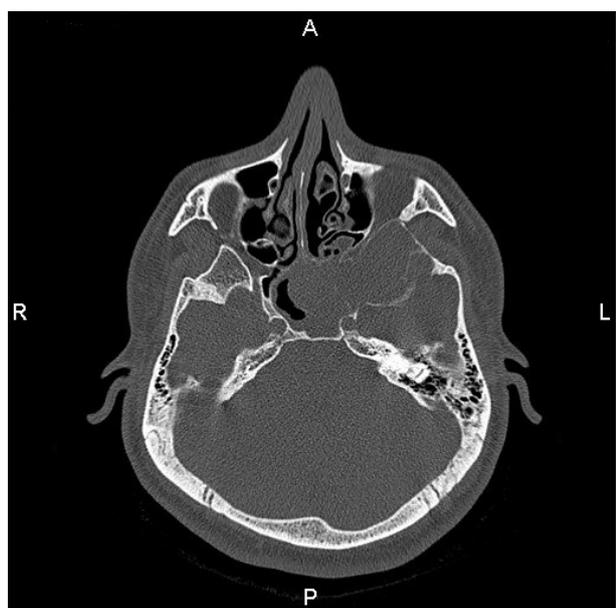


Figure 1C. CT (Preoperatively) (Axial) shows lesion that filling and expanding sphenoid sinus; resorption and displacement of the squamous portion of the temporal bone also seen



Figure 1D. CT (Preoperatively) (Coronal) shows expansion of lesion to left pterygoid process, temporal bone

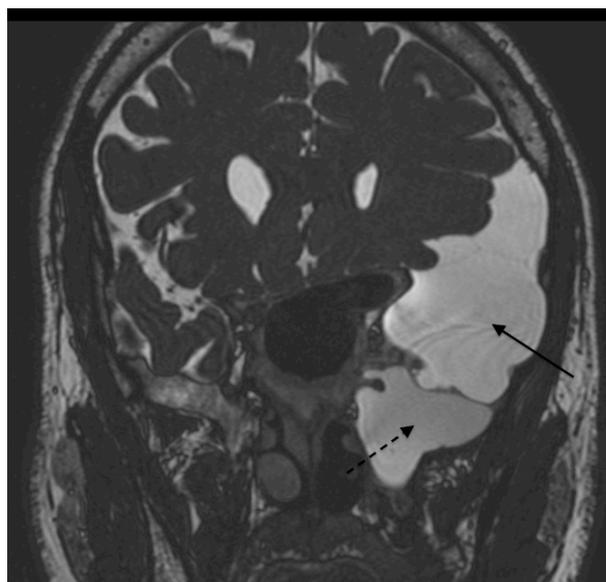


Figure 2. MRI Cysternography (Postoperatively) shows resorption of cyst from sphenoid sinus(discrete arrow)

Air bubbles and packing material related with prior surgery were also seen. Rhinorrhea was decreased and ceased within 15 days. No additional episode of rhinorrhea was noted during hospitalization. The patient was discharged with the decision of conservative follow-up and with instructions in case of recurrent nasal discharge. There was not any episode of rinorrhea in 9 months follow-up.

3. Review of Literature & Discussion

Arachnoid cysts are cavities with a content similar to cerebrospinal fluid. Arachnoid cysts of paranasal sinuses are rarely seen. Arachnoid cyst in the sphenoid sinus is also rarity. There were 4 reported cases in the english literature. Mewes et al. reported a 34-year-old female with a history of chronic headaches and a suspected mucocele of the sphenoid sinus in CT and MRI studies. An extended arachnoid cyst was found in the enlarged sphenoid sinus, which was obliterated with collagen, fibrin glue and abdominal fat [4]. Kandogan et al. reported a 66-year-old female with a history of chronic headache. CT scan demonstrated a suprasellar right-sided arachnoid cyst, destructing the sphenoid sinus. Though surgery was advocated, patient refused it [5]. Cohen et al. described the case of a 56-year-old man who presented with a

multiloculated arachnoid cyst of the middle cranial fossa that extended into the sphenoid sinus. The lesion was identified on computed tomography of the head, which had been obtained for an unrelated investigation. However, establishing a definitive diagnosis proved to be difficult. Because the cyst had caused extensive skull base erosion, the patient was managed conservatively with close observation [6]. Tuomilehto et al. described a 19-year-old female had a history of recurrent headache. MRI confirmed an expansive 3.8 x4.6x 2.1 cm cystic mass in the left sphenoid sinus extending through the lateral wall of the sphenoid to the skull base widening partly the diploic space and invading the pterygoid plates. Patient underwent transnasal endoscopic transtympanic approach to open the sphenoid. Inside the sphenoid sinus, a thin-walled cystic lesion was detected. As the anterior wall of the sphenoid bone was removed, the thin mucosa of the cyst extending through the ostium was ruptured spontaneously. No anticipated mucoid fluid typical of a mucocele was seen, instead a pulsating, clear fluid reminiscent of cerebrospinal fluid, appeared from the cyst. Re-operation was scheduled with a neurosurgeon with craniotomy was performed to the left fronto-temporal area. The dura was opened and the intracranial part of the arachnoid cyst was exposed. The fistula in the temporal fossa was occluded with a fat graft. Thereafter the sphenoid sinus was packed with a haemostatic sponge, which was fixed by commercial tissue adhesive. Key imaging findings in the MRI were the signal intensity of the lesion, the bony defect of the skull base and the absence of enhancement [7].

In our case similarly with literature, initial complaint was headache. Various from similar cases in the literature, patient had proptosis symptom. There was intrasphenoidal cystic lesion enlarging the sphenoid sinus showing different signal changes from arachnoid cyst. Cystic lesion in the sphenoid sinus showing different signal changes was main cause of complaints developed in the last period. Sphenoid sinus exploration that performed in outside clinic, looks alike marsupialisation procedure for mucoceles. After operation, upwising clinical state shows that cyst in the sphenoid sinus expanded recently and that was cause of whole clinical picture. With considering MRI findings, cystic content in the sphenoid sinus showing different signal changes from arachnoid cyst, radiologically showing different protein content;

nevertheless do not give opinion about that is different structure or not. Preoperatively, it was hard to decide if the intrasphenoidal lesion was arachnoid cyst because of location and signal change of the lesion. Meanwhile, in preoperative radiological imagings there could not seen communication between two cysts, but in postoperative imagings there had seen communication between them. Because of disappearing rinorrhoea and better clinical state with conservative observation, additional surgical procedure was not planned. Consequently, in our case, there was similar "key imaging findings"[7]. Differential diagnosis of sphenoidal cystic lesions should include mucocele, craniopharyngioma, Rathke's cleft cyst, epidermoid cyst, dermoid cyst, aneurysmal bone cyst, giant cell tumor. By the way we should also consider arachnoid cyst in differential diagnosis.

4. Final Comments

Clinical approach to these rare lesions is still remain in suspense. We offer a patient based approach to these lesions because of rarity of these cases and an absence of clinical trials. Surgeon who is going to perform skull base surgery; ideally should confirm intralesional CSF possibility.

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