

Sylvian Arachnoid Cyst Associated with Spontaneous Subdural Hematoma: A Case Report

(Spontan Subdural Hematom ile Birlikte Sylvian Araknoid Kist: Bir Olgu Sunumu)

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Abstract: A 26-year-old male with a type II sylvian arachnoid cyst of the middle cranial fossa developed spontaneous subdural hemorrhage. The only presenting sign was headache. The hematoma was evacuated and during surgery it was noted that the cyst was communicating with the subarachnoid and subdural spaces. Late postoperative radiological follow-up showed that the arachnoid cyst has not resolved. This report describes the details of the case.

Key words: Arachnoid cyst, middle fossa, spontaneous rupture, subdural hematoma

Özet: Tip II sylvian araknoid kisti olan 26 yaşındaki bir erkek hastada spontan subdural hematom tesbit edildi. Tek bulgu baş ağrısı idi. Hematom boşaltıldı ve ameliyat esnasında kistin subaraknoid ve subdural boşluk ile ilişkili olduğu gözlemlendi. Geç postoperatif radyolojik takip araknoid kistin rezolüsyona uğramadığını ortaya koydu.

Anahtar kelimeler: Araknoid kist, orta fossa, spontan rüptür, subdural hematom

INTRODUCTION

Intracranial arachnoid cysts are developmental anomalies. The potential outcomes in these cases include resolution, no change in cyst size, gradual enlargement of the cyst, or spontaneous rupture into the subdural space (4,5,15). Spontaneous resolution has been documented in cases of ruptured cysts and in situations where the cyst has remained intact (3,14,15,21,22). Most of the arachnoid cysts associated with subdural hematoma have been diagnosed incidentally after head trauma (2,9,18,19,20); however, a few reports have noted these cysts

presenting with spontaneous subdural hematomas (2,3,17,18,20). We describe a rare case of type II sylvian arachnoid cyst in which the patient's only diagnostic sign, headache, was caused by a spontaneous subdural hematoma.

CASE REPORT

A 26-year-old male was admitted to our clinic with sudden onset of severe headache. The patient had no history of trauma or systemic disease, nor had he performed Valsalva's maneuver. His neurological examination revealed no deficits. A

computed tomography (CT) scan demonstrated an arachnoid cyst in the right sylvian region, and also revealed that the cyst was communicating with an acute subdural hematoma (Figure 1). We evacuated the hematoma through a small temporoparietal craniotomy, and were able to see the connection between the cyst and the subarachnoid and subdural spaces. The patient did well after the operation. A contrast-enhanced CT scan done one month postsurgery revealed that the arachnoid cyst was still present (Figure 2). Since the patient was asymptomatic, we decided to follow him clinically and radiologically.

DISCUSSION

Arachnoid cysts are generally considered to be developmental anomalies of the arachnoid membrane that arise in the early intrauterine period. The lesion later causes secondary hypoplasia of the adjacent neural structures (5,7). The mechanism behind cyst growth is not fully understood, but may involve deficient communication between the spaces through which cerebrospinal fluid flows. It is also not clear how or why some of these cysts spontaneously resolve.

The hemorrhagic complications of arachnoid cysts include subdural, intracystic and extradural hematomas that may or may not be associated with

head trauma (2,9,13,16,17,19,20). Fragile leptomeningeal vessels and bridging veins within the cyst or the cyst wall are the main sources of subdural bleeding (1, 8,12). Vascular conditions, membranous adhesions and reduced compliance may be predisposing factors(13). Most subdural hematomas that accompany arachnoid cysts are chronic in nature (2,9-13,16,17), and it has been reported that young men diagnosed with these cysts are at greater risk of developing subdural hematoma (11,13). Interestingly, our patient developed an acute subdural hematoma without having suffered any head trauma.

Cysternographic studies are valuable for demonstrating communication between the cyst and the subarachnoid space (6,10). Galassi developed a classification system based on cyst size and shape, an discovered an inverse relationship between cyst size and the degree of communication with the subarachnoid space (6). Demonstration of the physical connection is important for planning the surgical treatment. In our case, the patient's CT scan showed that the cyst was communicating with both of the subdural hematoma and the subarachnoid space. We were able to visualize blood collected in the subdural, intracystic and subarachnoid spaces.

It is not uncommon for an arachnoid cyst to resolve spontaneously (3,14,21,22). Yamauchi and

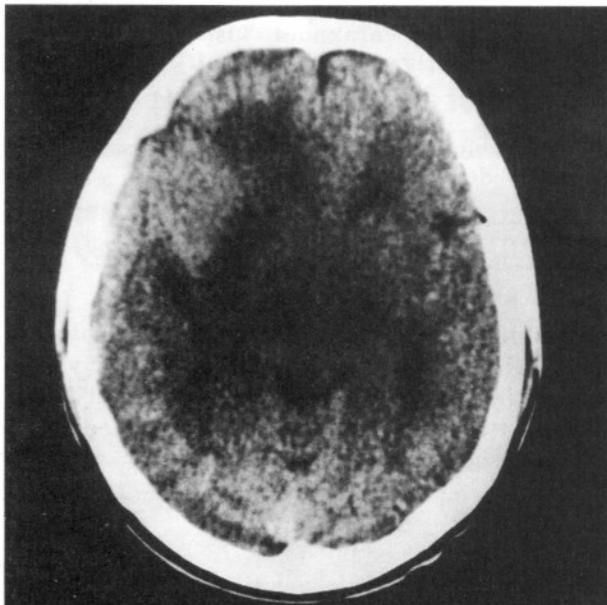


Figure 1: The patient's CT scan shows a hemorrhagic type II sylvian arachnoid cyst on the right side. The cyst is communicating with an acute subdural hematoma.

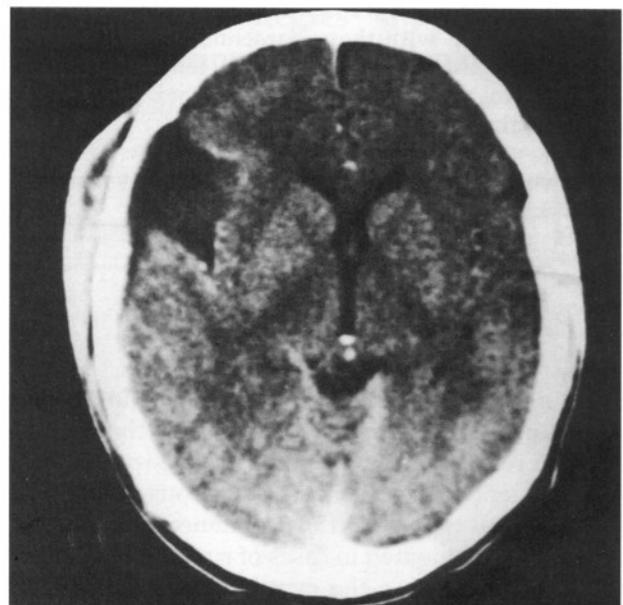


Figure 2: Contrast-enhanced CT scan one month postsurgery shows that the arachnoid cyst has not resolved.

colleagues reported the spontaneous disappearance of such a lesion in a pediatric patient 5.5 years after the cyst had been diagnosed. They suggested that surgical treatment is not always indicated for a child who develops an asymptomatic arachnoid cyst in the middle cranial fossa. It was speculated that their patient's cyst ruptured due to crying and extreme breath holding. The authors' theory was that this had increased the intracystic tension and accelerated spontaneous rupture (21). Once the cyst wall tears spontaneously or something else leads to communication between the cyst and the subarachnoid and/or subdural spaces, the cyst is less likely to resolve if its internal pressure is equal to or lower than the pressure within the spaces. However, cyst resolution also depends on the elasticity of the underlying brain tissue. Even when the pressure inside the cyst cavity is higher than that in the subarachnoid and/or subdural spaces, fenestration will not result in resolution if the elasticity of the brain is poor. Regarding medical treatment, one group of authors reported a single patient with an infected arachnoid cyst that disappeared after antibiotic treatment alone (22).

Most cases of arachnoid cyst that present with clinical signs are treated surgically. This involves fenestrating the cyst such that it communicates with the subarachnoid space and in turn, the subdural spaces (2,7,13,16,17,19). In line with the concepts explained above, surgical fenestration yields better results when the intracystic pressure exceeds that in the connected spaces. One surgical alternative for noncommunicating cysts that are causing a mass effect on adjacent structures is to place a shunt between the cyst cavity and the peritoneum. In our case, we did preoperative radiological studies that demonstrated blood within a cystic lesion, and hemorrhage in the subdural and subarachnoid spaces. During surgery, we also confirmed the communication between the cyst and the subarachnoid and the subdural spaces. This patient's cyst had undergone spontaneous fenestration. Since it was communicating with the subarachnoid space, we opted against placing a shunt. Instead, we drained the hematoma through a small craniotomy, broke down adhesions that had formed between the cyst wall and the arachnoid membrane, and then surgically fenestrated the cyst to connect it with the subarachnoid and subdural spaces. It is valid to question the need for surgical exploration in this case. We decided to treat the patient surgically on the basis that eliminating the adhesions and draining both the clot and the cyst fluid would produce the most rapid

healing. The cyst remained visible on radiological follow-up at 3 month, 6 month, and 1 year postsurgery. We attribute this to the pressure inside the cyst being equal or lower than that in the subarachnoid space. Parsch et. al advocated conservative treatment for arachnoid cysts with chronic subdural hematomas and hygromas, although they treated 14 of 16 cases in their series surgically (13). Conservative treatment may be preferred in cases of chronic subdural hematoma; however, when there are clinical signs and acute bleeding, the method of choice is to remove the clot and drain the cyst contents into the subarachnoid space. In conclusion, spontaneous subdural hematomas are rare complications of arachnoid cysts. Acute cases should be treated surgically.

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Radiological differentiation of intracranial epidermoids from arachnoid cysts.

Dutt SN, Mirza S, Chavda SV, Irving RM.

Both arachnoid cysts and epidermoids are characteristically well demarcated and have a homogeneous low density, similar to cerebrospinal fluid on computerized tomographic scan, showing no contrast enhancement. On MRI, epidermoids and arachnoid cysts usually appear hypointense on T1-weighted images and hyperintense on T2-weighted images. On fluid-attenuated inversion recovery, an arachnoid cyst tends to follow cerebrospinal fluid intensity, whereas an epidermoid becomes hyperintense. On echo planar diffusion scanning, an epidermoid remains bright.