

# Subdural Hematoma Associated With An Arachnoid Cyst After Head Trauma: A Case Report

*Kafa Travması Sonrası Gelişen Araknoid Kist ile İlişkili Subdural Hematom: Olgu Sunumu*

Ayşe Karataş, Mehmet Akgül, Feyzullah Akyüz, Osman Akgül, Murat Döşoğlu

Düzce Üniversitesi Tıp Fakültesi, Nöroşirürji Anabilim Dalı

Arachnoid cysts are collections of cerebrospinal fluid within the arachnoid membrane. They are benign, congenital lesions, and are usually asymptomatic. Rarely, they may become acutely symptomatic, due to cyst enlargement, subdural or the presence of the intracystic hemorrhage. Intracranial arachnoid cyst associated with subdural hematoma is an uncommon after minor head trauma or spontaneous. The damage to the bridging veins within the cyst, or on the wall of the cyst, is thought to be a source of possible bleeding. We report here the case of a 29-year-old man who, after a minor head injury, developed subacute subdural hematoma associated with an underlying arachnoid cyst. It is important to keep in mind that arachnoid cysts can be associated with subdural hematomas.

**Key Words:** *arachnoid cyst, subdural hematoma, intracystic hemorrhage*

Araknoid kistler, araknoid membran içinde gelişen beyin omurilik sıvısı içeren birikimlerdir. Bunlar, doğumsal, selim seyirli lezyonlardır ve genellikle asemptomatikler. Nadiren, kistin genişlemesi, subdural veya kist içerisine kanama nedeni ile akut olarak semptomatik hale gelebilirler. Araknoid kistin spontan veya minor kafa travma sonrası kanaması ile gelişen subdural hematom olguları nadirdir. Kist duvarı veya içerisindeki köprü venlerinin hasarlanması muhtemel kanama kaynağı olarak düşünülmektedir. Bu yazıda, 29 yaşında erkek hastada minor kafa travmasından sonra gelişen altta yatan araknoid kist ile ilişkili subakut subdural hematom olgusu bildirilmiştir. Araknoid kistlerin subdural hematomlarla ilişkili olabililiğinin akılda tutulması önemlidir.

**Anahtar Kelimeler:** *Araknoid kist, subdural hematom, intrakistik kanama*

Intracranial arachnoid cysts are cerebrospinal fluid-filled collections between the arachnoid layers, which are benign developmental anomalies accounting for 1% of all atraumatic intracranial mass lesions (1). They are located in the middle cranial fossa in 25-80% of cases. Almost all of these cysts are unilateral, with a slight predilection for the left side and the male gender (1,2). They are often diagnosed in childhood as incidental findings in imaging. They usually remain fairly stable in size. However, 60-80% of cases ultimately become symptomatic (3). Seizures, signs of raised intracranial pressure, neurological defi-

cits, and, in children, macrocrania and developmental retardation are the main symptoms (2). However, very rarely they can be symptomatic due to hemorrhage of the cyst. Subdural hematomas are infrequent complications of arachnoid cysts, with or without preceding trauma (2). This report describes a patient with left middle fossa arachnoid cyst that presented as a subacute subdural hematoma after minor closed head injury.

Received: 28.07.2008 • Accepted: 16.10.2008

Corresponding author

Yrd. Doç. Dr. Ayşe Karataş  
Düzce Üniversitesi Tıp Fakültesi, Nöroşirürji Anabilim Dalı  
Phone : (533) 48 044 12  
E-mail address : aysekaratas@yahoo.com

## Case Report

A 29-year-old man was admitted to our emergency department with a severe headache and nausea. Results of a neurological examination were normal. His clinical history revealed a fall from a bicycle 2 months earlier. The patient had visited a private hospital 4 weeks after the initial injury, complaining of headache. A cranial computed tomography (CT) scan showed a left middle cranial fossa hypodense lesion in the region of the sylvian fissure, which was a type II arachnoid cyst, according to the Galassi classification, and thinning of the overlying calvaria at that time (Figure 1). The cyst was considered asymptomatic and the patient was given analgesic drugs.

However, the patient's headache worsened and he came to our hospital. A cranial CT scan revealed a left frontoparietal isodense subacute subdural hematoma, with a maximum thickness of 1.4 cm, compressing the left lateral ventricle, a 1.1-cm midline shift, and left hemispheric edema (Figure 2).

The patient underwent a two-burr-

hole surgery, on the frontal and parietal bones. The subacute subdural hematoma was confirmed and evacuated. Postoperatively, the patient reported headache relief. A control cranial CT study after evacuation of the hematoma revealed an arachnoid cyst in the middle cranial fossa. The patient was asymptomatic and cranial magnetic resonance imaging (MRI) revealed that the arachnoid cyst was the same size 5 months later.

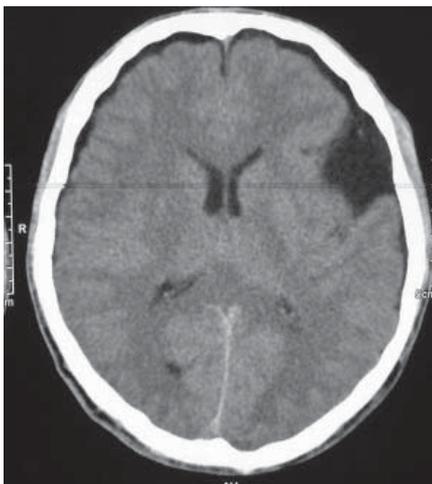
## Discussion

The natural history of arachnoid cysts is still not well defined. While many are silent, in some cases they become symptomatic if there is acute cyst enlargement, subdural effusions after rupture of the cyst, or subdural or intracystic hemorrhage. Hemorrhage into or around an arachnoid cyst is primarily precipitated by minor trauma and, very rarely, can be spontaneous. Several reports have been published on the association of arachnoid cysts with subdural hygroma and subdural hematoma after minor head injuries. There

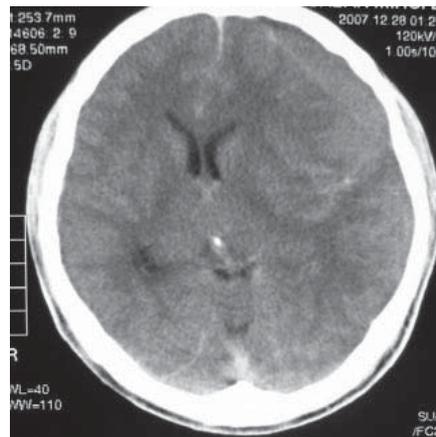
is no clear explanation for the pathogenesis. However, damage to the bridging veins within the cyst, or on the wall of the cyst, is thought to be a source of possible bleeding (2). Additionally, the cyst can be ruptured, then returned to a hygroma, and transformed into a hematoma. Intra-cystic or subdural hemorrhage can mask the presence of an arachnoid cyst and can make it difficult to distinguish an arachnoid cyst on CT. The subacute intracystic or subdural hematoma is typically isodense on CT. MRI is useful in such cases.

The management of arachnoid cysts is still controversial; it includes both conservative non-operative and operative treatments. Operative treatments include cyst surgery (fenestrating, resection or extirpation of cyst membranes), cyst shunting, or combinations of the two methods (2,3). Asymptomatic arachnoid cysts do not require treatment and no evidence exists to suggest that operative treatment prevents bleeding (2). The annual hemorrhage risk for chronic subdural hemorrhage in patients with a middle cranial fossa cyst remains about 0.04% (2).

In our case, the cyst was asymptomatic until the injury, and the patient, were treated by irrigating the hematoma through burr holes; this was because his symptoms were considered to be primarily due to the increased intracranial pressure caused by the subdural hematoma. The patient's symptoms resolved immediately after the operation; thus, no cyst surgery was performed. The patient was followed up using magnetic resonance imaging. No subdural hematoma recurred during the postoperative period of 5 months, and the arachnoid cyst was not enlarged.



**Figure 1.** On an initial computed tomography image, the arachnoid cyst showed a well-defined cystic mass, 3.2×4 cm, in the left middle fossa.



**Figure 2.** On a subsequent CT image, a left frontoparietal isodense subdural hematoma was seen, 1.4 cm thick, as was a 1.1-cm midline shift and left hemispheric edema.

Arachnoid cysts of the middle cranial fossa, revealed with subdural hematomas, can be operated on in two ways: first, the subdural hematoma should be evacuated as an emergency treatment, as in our case, and delayed cyst surgery should be performed if the cyst

has become symptomatic on follow up (2). However, if a craniotomy is performed to evacuate the space-occupying collection, cyst surgery can be done during such a procedure.

## Conclusion

It is important to keep in mind that arachnoid cysts can be associated with subdural hematomas. We recommend irrigation of the subdural hematoma as the initial procedure of choice in such cases.

## REFERENCES

1. Iaconetta G, Esposito M, Maiuri F, et al. Arachnoid cyst with intracystic haemorrhage and subdural haematoma: case report and literature review. *Neurol Sci* 2006; 26: 451-455.
2. Parsch CS, Krau J, Hofmann E, et al. Arachnoid cysts associated with subdural hematomas and hygromas: Analysis of 16 cases, long-term follow-up, and review of the literature. *Neurosurgery* 1997; 40: 483-490.
3. Donaldson JW, Edwards-Brown M, Luerssen TG. Arachnoid cyst rupture with concurrent subdural hygroma. *Pediatric Neurosurg* 2000; 32: 137-139.