HEMORRHAGIC ARACHNOID CYST OF THE POSTERIOR FOSSA : A CASE REPORT

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Abstract : Arachnoid cysts are reported to be occasionally associated with subdural hematoma or hygroma. Spontaneous disappearances of arachnoid cysts have been reported previously and in was emphasized that rupture of cyst membrane and subdural hematoma or hygroma must be essential for them to disappear. We report herein a case of hemorrhagic arachnoid cyst of the posterior fossa. The hemorrhagic cyst was not accompanied by subdural hematoma or hygroma and gradually reduced in size.

A 21-year-old man sustained a cerebral contusion and epidural hematoma of the frontal region from a head injury. Computerized tomography scanning obtained 12 hours after the injury revealed a hemorrhagic retrocerebellar arachnoid cyst. Magnetic resonance imaging performed on day 21 revealed that the hemorrhagic arachnoid cyst had high intensity on a T1-weighted image and relatively low intensity on a T2-weighted image without subdural hematoma or hygroma. Follow-up CT scans revealed that the hemorrhagic arachnoid cyst had reduced in size. The patient made an almost complete recovery and was discharged with no observable neurological deficits three months after admission.

Hemorrhage was not present in the first few hours after head injury but developed subsequently, confined strictly to the cystic cavity. This case report provides evidence that disappearance or reduction of arachnoid cysts can occur without the need for subdural hematoma or effusion.

Key words : arachnoid cyst, posterior fossa, hemorrhage, head injury

Arachnoid cysts are commonly considered to be congenital anomalies. Currently, many cases are detected incidentally by computed tomographic scanning following head injuries or complaints of headaches. However, the number of patient diagnosed as having arachnoid cysts tends to decrease with age. This may suggest that the cyst wall is ruptured by a minor head injury, and that its disappearance may occur undetected during the patient's lifetime. Arachnoid cysts are occasionally associated with hemorrhagic complications such as subdural[4, 9, 10, 13], intracystic[7, 8], and very rarely, extradural hematomas[5, 10], with or without preceding cranial trauma. The majority of these lesions occur as arachnoid cysts of the middle fossa. Complicated arachnoid cysts of the posterior fossa are rare[2, 3, 12].

We describe herein the case of a patient diagnosed as having a hemorrhagic arachnoid cyst of the posterior fossa following a severe head injury. The hemorrhagic arachnoid cyst was not accompanied by a surrounding subdural hematoma or hygroma. The hemorrhagic cyst presented no symptoms and gradually reduced in size.

CASE REPORT

A 21-year-old man was admitted with consciousness disturbance (Glasgow Coma Scale, 7) due to a head injury suffered in a road traffic accident. Computerized tomography (CT) scanning of the head upon admission revealed a right orbital roof fracture, right frontal contusion hemorrhage and a small bifrontal acute epidural hematoma (EDH) (Fig. 1A). Furthermore, the patient presented with pulmonary contusion and associated hemothorax, right clavicular fracture and left tibial and fibral fractures. He was intubated and these lesions were treated conservatively. A subsequent CT scan of the head, performed 12 hours after admission, showed that the size of the bifrontal EDH and intraparenchymal hematoma accompanying the contusion had increased. Simultaneously, a hemorrhagic retrocerebellar arachnoid cyst was detected (Fig. 1B), which was isodense to cerebrospinal fluid on the previous CT scan (Fig. 1A). Laboratory coagulation tests (prothrombin time, activated partial thromboplastin time) and platelet levels were normal. Neurological deterioration did not occur, so the patient was placed under observation only.

Magnetic resonance (MR) imaging performed on day 21 revealed that the hemorrhagic arachnoid cyst displayed high intensity on a T1-weighted image and relatively low intensity on a T2-weighted image. Neither a cerebellar contusion nor a subdural hematoma of the posterior fossa was detected (Fig. 2). Follow-up CT scans on 40 and 60 days after admission revealed a gradual resorption of the bifrontal EDH and intraparenchymal hematoma, and the hemorrhagic arachnoid cyst reduced in size (Fig. 1C, D).

The patient made an almost complete recovery without the need for surgery. He was discharged with no observable neurological deficits three months after admission.

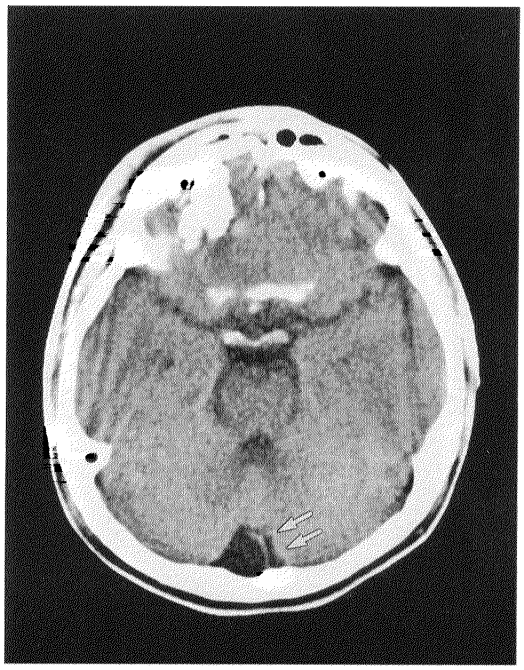
DISCUSSION

Cross-sectional imaging has enabled intracranial arachnoid cysts to be diagnosed more frequently. These cysts are thought to be congenital, intra-arachnoid, leptomeningeal malformations and those of the posterior fossa, particularly in the retrocerebellar region, are found in 9-12% of cases[6, 16].

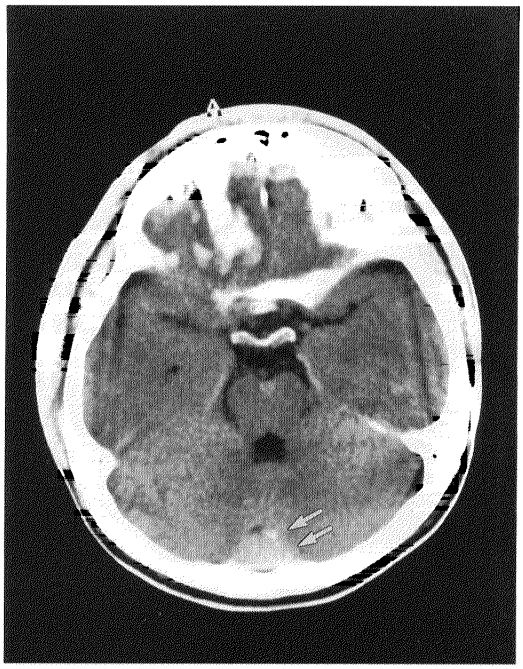
Symptomatic arachnoid cysts of the posterior fossa are rare. Few studies report cases concomitant with hydrocephalus, or ataxia[1, 2, 10]. These are usually caused by local compression of the surrounding neural structure as space occupying mass lesion.

Arachnoid cysts are known to be occasionally associated with subdural hematoma or hygroma[1, 4, 9, 10, 13, 14, 15]. This association is thought to result from the tearing of the outer wall of the cyst after a head injury[14]. Arachnoid membranes of the cyst are easily torn, even in minor head injuries. These subdural hematomas or hygromas are complications of arachnoid cysts of the middle cranial fossa and are associated with cysts of other regions only in particularly rare cases[1]. In the present case the hemorrhagic arachnoid cyst was not accompanied by surrounding subdural hematoma or hygroma. Generally subdural hematoma of the posterior fossa is infrequent.

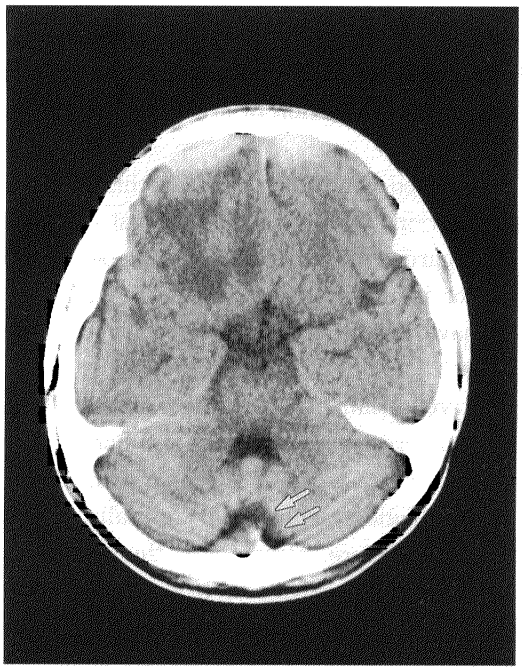
A number of reports describe the disappearance of arachnoid cysts after head injury[1, 9, 13] and emphasize that rupture of the cyst wall appears to be essential, and after rupture, subdural effusion must develop around the cyst in order that the arachnoid cyst disappear



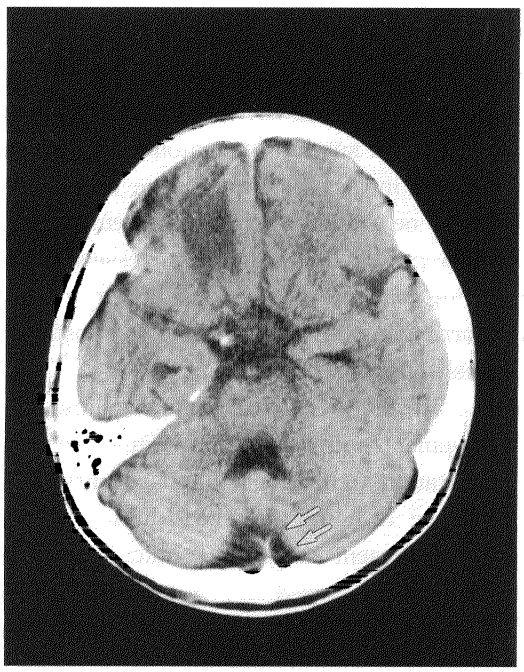
A : CT scan upon admission shows right frontal skull base fracture, concomitant with contusion and epidural hematoma. Retrocerebellar arachnoid cyst is isodense to CSF (arrows).



B : CT scan performed 12 hours after admission. Retrocerebellar cyst shows high density (arrows).

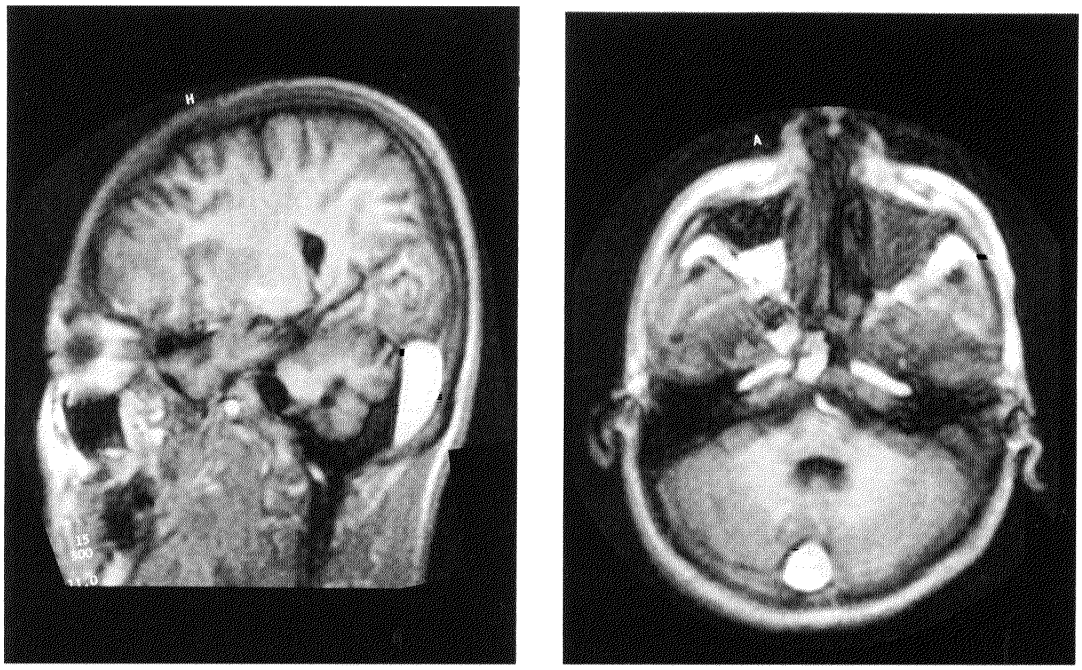


C : CT scan on 40 days after admission.



D : CT scan on 60 days after admission, revealing reduction in size of the cyst and resolution of contusion hemorrhage.

Fig. 1.



Left : Sagittal view of magnetic resonance imaging of the head reveals retrocerebellar arachnoid cyst displayed in high intensity on T2-weighted image.

Right : Axial view shows no evidence of cerebellar contusion or subdural hematoma or effusion associated with hemorrhagic arachnoid cyst.

Fig. 2.

13). In the present case, however, hemorrhage developed after head injury and was confined strictly to the cystic cavity. This case report suggests that reduction of arachnoid cysts can occur without subdural hematoma or hygroma.

Isolated intracystic hemorrhage is a rare but recognized complication of arachnoid cysts and may be the initial clinical presentation[7]. Bridging veins within the cyst or cyst walls, as well as fragile leptomeningeal vessels, have been regarded as possible bleeding sources. Bleeding may be spontaneous, due to minor trauma or it may follow more severe trauma[6]. Hemorrhagic arachnoid cysts of the posterior fossa have not been previously reported in the English-language literature.

The advent of CT has enabled clinicians to observe serially the progress of hematoma development and resolution. Many hematomas are not present in the first few hours after head trauma but develop subsequently. In the present case the CT scan of the head, performed 12 hours after head injury, showed a hemorrhagic arachnoid cyst initially, which was not present on the CT taken upon admission. Therefore, bleeding in this case was thought to be caused not by a hematoma capsule[14, 17] or the breakage of bridging vessels[10] but by oozing from the richly vascularized cyst wall.

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