Case Report

The Association Between Arachnoid Cysts and Subdural Hygroma and Spontaneous Resolution of Subdural Higroma

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Abstract

The association between arachnoid cyst and subdural hygroma (SH) is rare. We report a case, presenting of left middle cranial fossa arachnoid cyst with traumatic SH and spontaneous resolution of SH. The patient was totally asymptomatic prior to the injury and his arachnoid cyst was detected incidentally during investigations following minor head trauma. Our case with normal neurological examination was treated symptomatically without surgical intervention and SH was resolved spontaneously.

Key words: Arachnoid cyst, subdural hygroma, spontaneous resolution

INTRODUCTION

Although a vast majority is generally asymptomatic, arachnoid cysts may clinically manifest such as enlargement of head size, headache, focal deficits or epileptic seizures. These clinical symptoms sometimes occur due to complications including intracystic hemorrhage, subdural hematoma, acute cyst expansion, and subdural hygroma (SH) following rupture. The association between arachnoid cyst and SH is infrequent and arachnoid cyst may present with SH.

We report a case of arachnoid cyst with SH. The patient with normal neurological examination was treated symptomatically, and SH was resolved spontaneously.

CASE PRESENTATION

An eight-year-old boy was admitted with headache, nausea and vomiting. Three days prior to his admission, he suffered a mild head injury due to fall from a height. There was a slight swelling with tenderness at the left frontoparietal region. His neurological examination was normal. Plain
radiographs of the skull showed asymmetrical enlargement of the left middle cranial fossa and thinning of the temporal bone. A computed tomographic (CT) scan obtained at admission showed a left-sided middle cranial fossa arachnoid cyst and subdural fluid collection that overlying arachnoid cyst (Fig. 1).

Neither compression of the lateral ventricles or shift of the midline structures was observed. CT scan with bone window settings revealed a widely dilated left temporal fossa and thinning of the overlying bone, confirming a pre-existing lesion. Magnetic resonance imaging (MRI) done 5 days after the trauma also demonstrated the arachnoid cyst and SH iso-intense with CSF (Fig. 2).

DISCUSSION

Arachnoid cysts are considered as benign developmental lesions in relation to the arachnoid membrane, constituting about 1% of all intracranial space-occupying lesions\textsuperscript{1,14,15}. Most arachnoid cysts remain asymptomatic throughout life and are diagnosed incidentally on CT or MRI. Arachnoid cysts may be symptomatic when it is enlarged or complicated with subdural hematoma, intracystic hemorrhage and hygroma following trauma or spontaneous rupture of them.

The association between arachnoid cyst and SH is rare\textsuperscript{1,2,5,7,8,10,11,16,18}. The pathogenesis of development of a subdural CSF collection or a SH is not yet clear; this may be related to the structure of the cyst, as well as the status of intracystic pressure. There can be two possible mechanisms for the pathogenesis of this lesion. The first is a connection between the cyst and subarachnoid space due to head injury with a flap-valve mechanism so that there is a flow of CSF from the subarachnoid space to into the cyst. This results in an increase in pressure and the size of the cyst leading to a rupture of the cyst into subdural space. This communication between the arachnoid cyst and SH has already been demonstrated by scintigraphy and during operation\textsuperscript{2,20}. A
second possible mechanism is a sudden transient increase in intracranial pressure leading to a rupture of the cyst wall into the subdural space during a Valsalva manoeuvre\textsuperscript{6,13,15}.

Treatment of asymptomatic arachnoid cyst is a matter of debate. Most neurosurgeons do not recommend any treatment of asymptomatic cysts\textsuperscript{4,17}. However, surgery is generally recommended for symptomatic cysts causing seizures, hydrocephalus, raised intracranial pressure or focal deficits\textsuperscript{9,11}. In cases of complications such as subdural hematoma, intracystic hemorrhage and rupture into subdural space surgical treatment may also be necessary. Data are insufficient for recommending the ideal treatment of subdural effusions associated with arachnoid cysts. Craniotomy and fenestration, subdural-peritoneal shunt and subdural drainage has been tried in the past\textsuperscript{1,3,18}. In addition, in three cases reported in the literature, they showed a gradual resolution of a spontaneously or traumatically ruptured cyst without surgical intervention\textsuperscript{4,17,19}. There is also a case which was initially managed with acetazolamide but subsequently required drainage of the subdural effusion\textsuperscript{11}. Our case with neurologically intact patient was treated only symptomatically because of mild symptoms and absence of shift of midline structures in imaging studies.

SH resolved spontaneously on subsequent CT scans and with clinical improvement as arachnoid cyst remained unchanged. Two possible mechanism can be suggested for that. One explanation may be, based on one-way valve mechanism, CSF leakage from arachnoid cyst to the subdural space following cyst rupture. It is difficult to say that possibility’s validity in our case. Because, there is no objective proof. Existence of communication between arachnoid cyst and SH was not confirmed by neuroradiologic studies. Additionally, we didn’t have a chance to observe surgically the lesion. Another explanation may be that two lesions were incidentally occurred in the same region. In our opinion, thinking that scenario for likely etiological possibility should be too optimistic speculation. As result, although we do not have enough proof, we believe that former explanation is more reasonable.

**CONCLUSION**

The association between arachnoid cyst and subdural hygroma is rare. We report a case of asymptomatic arachnoid cyst with SH after mild head injury which was resolved spontaneously. Asymptomatic cases can be resolved without surgical intervention.

**REFERENCES**


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