Case Report

Teflon sponge shunt for recurrent arachnoid cyst

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A 50-year-old female presented with complaints of progressive ataxia. Investigations showed a large intradural arachnoid cyst located anterior to the brainstem. Following marsupialization of the cyst she improved remarkably in her symptoms. The symptoms recurred nine months later and investigations revealed recurrence of the cyst. The cyst was evacuated again and two Teflon sponge sheets were placed such that they traversed the length of the cyst cavity and extended into the cisterna magna. At follow-up after 25 months, there has been no recurrence of symptoms or the cyst. The role and advantages of Teflon sponge in such cases is evaluated.

Key words: Arachnoid cyst, cyst-subarachnoid shunt, Teflon sponge

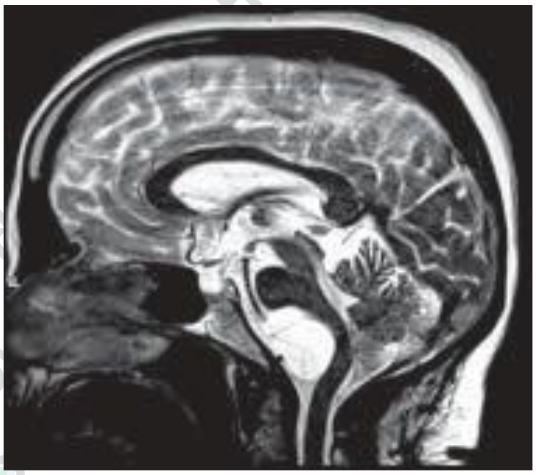

Figure 1: Sagittal view of T2-weighted MRI showing the large arachnoid cyst located anterior to the brainstem

Introduction

Symptomatic recurrence of arachnoid cyst after partial wall resection or marsupialization is a well-known phenomenon. A variety of shunt procedures have been advocated to prevent cyst recurrence. We report a case where the cyst was located anterior to the brainstem and a radical total resection of the cyst wall was not possible. Recurrence of the cyst was treated with a cyst to subarachnoid space Teflon sponge shunt. We believe that such a shunt could be a useful mode of treatment of arachnoid cysts.

Case Report

A 50-year-old- female presented with symptoms of headache and progressive ataxia. Neurological examination revealed mild papilledema and marked truncal ataxia. Magnetic resonance imaging (MRI) showed a large cyst located anterior to the brainstem and resulted in its significant posterior hump [Figure 1]. A posterior midline approach was adopted. The cyst containing clear cerebrospinal fluid (CSF) was drained after exposing it from between the lower cranial nerves. The entire surgical field collapsed as soon as the cyst was evacuated. This made identification of the cyst wall difficult and its safe isolation from the adjoining arachnoid membrane, cranial nerves and blood vessels impossible. The patient had rapid improvement of symptoms following surgery and she returned to her normal lifestyle. She followed up nine months after surgery with complaints of recurrence of symptoms of progressive ataxia. Repeat MRI showed recurrence of the large arachnoid cyst. The lesion was again approached from the same exposure. After evacuation of the cyst, two 4 mm thick, 8 mm wide and 30 mm long Teflon sponge strips were placed that extended from the cyst cavity to the cisterna magna. The Teflon sheaths were anchored with a stitch to the dura and arachnoid in the region of the foramen magnum. The patient improved again after surgery and at follow-up after 25 months there has been no recurrence of symptoms. A track of CSF could be seen along the site of the Teflon sheath, probably suggesting functioning of the shunt [Figures 2 and 3].

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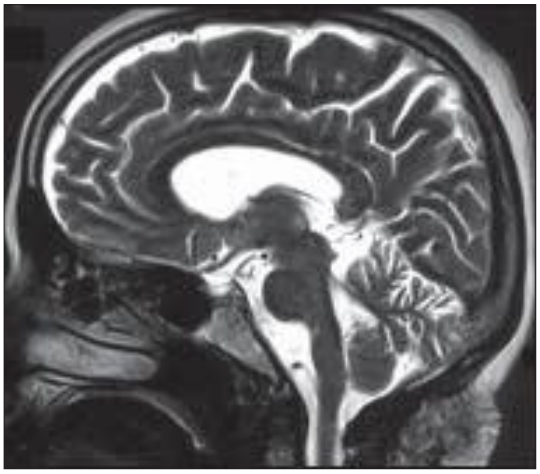

Figure 2: T2-weighted MRI showing evacuation of the arachnoid cyst

Figure 3: MRI showing the two linear tracts along the Teflon sheaths draining from the arachnoid cyst to the cisterna magna

Discussion

Arachnoid cysts are relatively uncommon and represent approximately 1% of all benign intracranial lesions.[1] Posterior fossa arachnoid cysts are uncommon. Of these, arachnoid cysts ventral to the brainstem form a small subset? Rengachary *et al.* found only 3% of cysts to be located in the retroclival region.[2] Since cysts located anterior to the brainstem are uncommon in practice, experiences in their management are limited and the best method of treatment for them remains unclear.

The indications of surgery for arachnoid cyst remain controversial. Progression of neural compressive symptoms forms a definite indication for surgery. A number of authors have indicated that radical resection of the cyst that includes the entire wall is curative for these benign lesions. On the other hand, marsupialization of the cyst contents is a straightforward surgical procedure and recurrences even in such cases are infrequent.[3] A number of shunting procedures have also been used successfully. Numerous types and techniques of shunts have been described for arachnoid cysts. External shunts include diversion of cyst fluid to the peritoneum, pleura and atrium of the heart.[1,4-7] Internal shunts include cyst-subarachnoid shunt and cysto-subdural shunt.[1,6-7]

Although total resection of the wall of the arachnoid cyst is a recommended form of treatment, complete resection of the wall may be not possible in many such cases. In the reported case, the location of the cyst anterior to the brainstem made radical resection of the cyst wall difficult. Placement of a Teflon sponge that extended from the cyst to the cisterna magna was seen to be effective. The non-absorbable and non-reactive nature of Teflon is ideally suited for intracranial use. Such a material has been used widely for the treatment of microvascular decompression surgery. The multiple porosities in the Teflon sponge have obvious advantages over a single tube shunt that is more susceptible to blockages or kinking. Our successful experience in the presented case suggests that such a Teflon sponge internal cyst-subarachnoid shunt could constitute an effective primary form of treatment of arachnoid cysts.

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