CASE REPORT

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Septated Extradural Arachnoid Cyst in Thoracolumbar Spine Causing Myelopathy

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Spinal extradural arachnoid cyst is uncommon and rarely cause neural compression. We report a rare case of severe cord compression due to septated spinal extradural arachnoid cyst. A 35-year-old woman has developed back pain 3 months prior to her visit, but recently motor weakness and urinary incontinence occurred. Magnetic resonance images showed an extradural cyst posterior to the cord, which was flattened and displaced from T12 to L2. Urgent decompressive laminectomy and cyst removal was performed. Histopathological examination confirmed that cyst wall was formed by nonspecific fibrous connective tissue without a single-cell layer of inner arachnoid lining. Motor weakness and voiding difficulty were recovered completely after operation.

KEY WORDS : Severe cord compression · Spinal extradural arachnoid cyst · Thoracolumbar spine.

Introduction

Extradural arachnoid cysts of the spine are uncommon cause of myelopathy secondary to spinal cord compression. These cysts are extradural outpouchings of the arachnoid that communicate with the intraspinal subarachnoid space through a small defect in the dura[1,9,10,16,17]. They are most common in the thoracic spine and can cause spinal cord compression if they enlarge[5,7,8,13,15,16]. They give rise to fluctuating symptoms as a consequence of internal changes in pressure resulting from changes in the hydrostatic pressure of the cerebrospinal fluid caused by physical exertion, coughing, sneezing, straining, and so on[3].

As we experienced a rare case of severe cord compression due to spinal extradural arachnoid cyst, we report the case with a review of the literature.

Case Report

A 35-year- old woman, who had back pain for the previous 3 months but did not receive any specific treatments, visited emergency room primarily as she developed motor weakness of the lower extremities and voiding difficulty on the previous day of the visit. Neurologic examination revealed paraparesis(Grade IV/GradeIV), predominantly on the right side with the right iliopsoas and quadriceps muscles being slightly weak and deep tendon reflexes increasing when compared to the left. No sensory disturbance was apparent. Radiographs of the thoracolumbar spine showed thinning of the right pedicles at L1 and L2 (Fig. 1). Magnetic resonance images of thoracolumbar spine revealed an septated extradural cyst posterior to the cord, which was flattened and displaced anteriorly from T-12 to L2 (Fig. 2). The cyst contained fluid that demonstrated the same signal intensity as cerebrospinal fluid. We performed urgent total laminectomy at T12-L2 and the

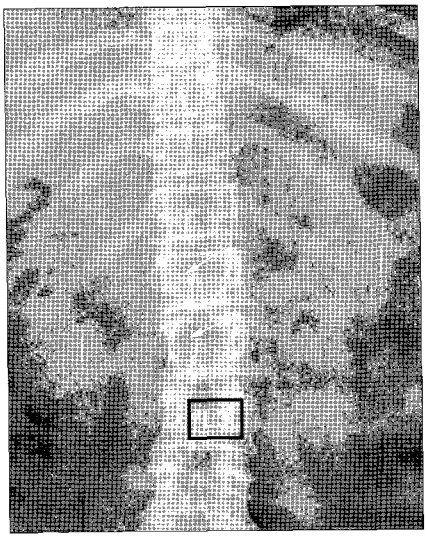

Fig. 1. Radiography of thoracolumbar spine revealed thinned right side pedicles at L1 and L2.

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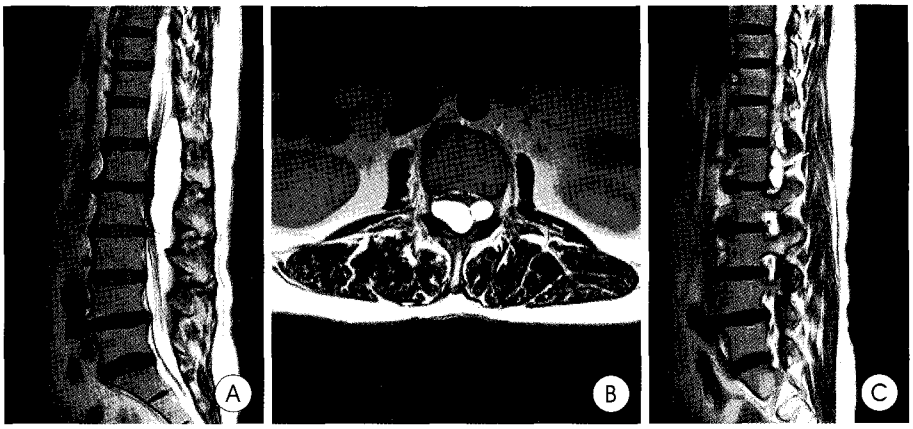

Fig. 2. A, B : Sagittal and axial T2- weighted magnetic resonance images reveal two septated extradural cysts separated by septations posterior to the spinal cord, which is compressed severely forward. C : Sagittal T2-weighted magnetic resonance image shows that the cyst protrudes through intervertebral foramen.

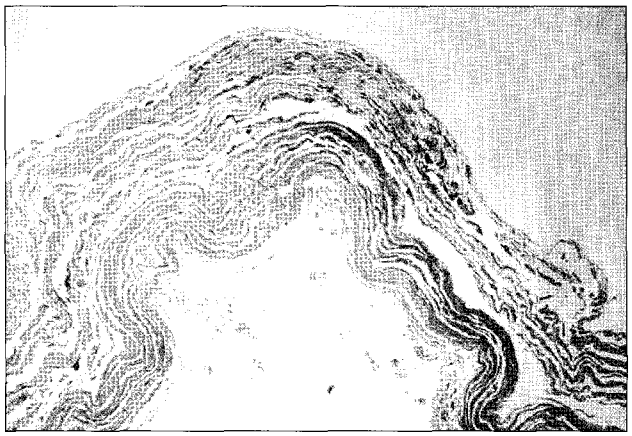

Fig. 3. Photomicrograph of the cyst wall demonstrate a fibrocollagenous layer without an inner arachnoid layer. (H&E, original magnification x 40).

Table 1. Extradural arachnoid cyst of cervical and thoracic spine reported in Korea

Level	Symptom	Operation	Year
C5-C7	Radiculopathy	Partial resection	1996
C6-C7	Myelopathy	Total resection	1996
T6-T11	Myelopathy	Closure of dural rent with total resection	1998
T12-L3	Back pain and radiculopathy	Closure of dural rent with partial resection	1998
T12-L2	Back pain and radiculopathy	Closure of dural rent with total resection	2002
T12-L3	Polyradiculopathy	Closure of dural rent with partial resection	2002
T12-L2	Myelopathy	Closure of dural rent with partial resection	This case

cyst was removed. Intraoperatively, we found a thin walled extradural cyst occupying the canal. The dilated extradural venous plexus was also observed around the cyst wall. When the cyst wall was opened, the cyst was found to be filled with a colorless fluid arising from a small dural defect at right L1 nerve root sleeve. The small dural rent was repaired using prolene 5-0 selectively followed by glue coating (Greenplast. Green-Cross Co. Seoul. Korea). It was impossible to remove the total cysts wall occupying intervertebral foramen without spinal instability but part of the cyst wall was removed as fully as possible. Histopathological examination of the cyst wall showed nonspecific fibrous connective tissue. No singlecell layer of inner arachnoid lining was observed (Fig. 3). After surgery, the patient experienced complete relief of the symptoms.

Discussion

Spinal meningeal cysts are uncommon, accounting for about 1% of all spinal tumors[4,11]. Spinal meningeal cysts occur most frequently in the thoracic spine (65%), followed by the lumbar and lumbosacral spine (13%), the thoracolumbar spine(3.3%)[1]. Most of the lesions are located posteriorly in the spinal canal. The classification of spinal meningeal cysts in the literature is indistinct and, in certain categories, histologically misleading. Goyal, et al. observed that extradural arachnoid cysts were synonymous with sacral meningoceles, arachnoid pouches, arachnoid diverticula, and meningeal cysts[6]. Nabors, et al. have simplified the classification of spinal meningeal cysts into three major categories : extradual cysts without nerve root fibers (Type II); extradural cysts with nerve root fibers (Type I); and intradural cysts (Type III). Type I A is a so-called extradural arachnoid cyst, Type I A B is a sacral meningocele (occult sacral meningocele), Type III is a Tarlov perineural cyst or a spinal nerve root diverticulum, and Type III is an intradural arachnoid cyst[14]. It seems likely that many cases are related to meningeal defects, origin congenital, allowing herniation of the arachnoid through a dural defect[1,13]. In the present case, there was no history of trauma, surgery, or evidence of arachnoiditis revealed by imaging studies. The bone changes observed on radiographs and at the time of surgery suggested a long-standing lesion with a congenital origin. Symptoms are generally related to compression of the spinal cord or nerve roots. The most common presenting symptoms are pain and progressive spastic or flaccid paraparesis, which are often asymmetrical. The symptoms are fluctuating with remission and exacerbation. The intermittent exacerbation of symptoms has been explained by most authors as occurring because the

inflated cyst causes some degree of spinal cord compression, when cerebrospinal fluid pressure is temporarily raised and fluid enters the cyst on straining and coughing[4,5,12]. The standard treatment is surgery, which includes complete resection of the cyst wall and closure of the communication site between the cyst and the subarachnoid space after laminectomy of the affected vertebrae (Table 1). However, in a giant cyst like this case, it is impossible to remove the total cyst wall with-out causing spinal instability because the cyst sometimes extends over more than five vertebrae and often protrudes through an intervertebral foramen. Instability, malalignment, and worsening scoliosis are well-recognized postoperative complications of an extensive laminectomy. To prevent these complications, some have performed laminoplasty after resection of the cyst[2,4]. The cyst in this report protruded through intervertebral foramen and was able to be treated by selective closure without spinal instability.

Conclusion

In a rare case of severe cord compression caused by septated spinal extradural arachnoid cyst, prompt neurological recovery is achieved by early surgery.

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