SPINAL EXTRADURAL ARACHNOID CYST IN THE THORACIC

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Abstract : Spinal extradural arachnoid cysts are relatively rare, and the pathogenesis is still unclear. Here, we report a case with a Type I-A lesion by Nabors' classification (extradural arachnoid cyst without spinal nerve root fiber involvements) treated surgically. A 38-year-old female patient presented with a complaint of low back pain and bilateral hypesthesia of the legs. Physical examination showed no abnormality. Magnetic resonance imaging (MRI) showed an extradural cerebrospinal fluid (CSF)-containing lesion without involvement of the posterior epidural fat at Th11-L1. CT with bone algorithms revealed bone erosion with widening of the canal, foraminal enlargement and scalloping of the vertebral body. Resection of the cyst wall and closure of the ostium were easily performed. This procedure resulted in the relief of her symptoms. Postoperative MRI demonstrated that both the cystic lesion and nerve root compression had disappeared. Histological examination showed clusters of meningothelial cells, which are a typical feature of arachnoid cysts. Radical cyst removal and dura defect closure are the surgical intervention of choice in patients with symptomatic extradural arachnoid cyst.

Key words : spine, extradural arachnoid cyst, thoracic

INTRODUCTION

Extradural arachnoid cysts are uncommon expanding lesions in the spinal canal which may communicate with the subarachnoid space. Most spinal arachnoid cysts are asymptomatic and detected incidentally during magnetic resonance imaging or myelography. The etiology of intraspinal arachnoid cyst is not yet clear[1,2].

So far, the classification of spinal meningeal cysts (MC) is indistinct, confusing, and in certain categories histologically misleading. Nabors et al.[3] proposed a classification comprising three categories: spinal extradural MC without spinal nerve root fibers (Type Ⅰ); spinal extradural MC with spinal nerve root fibers (Type Ⅱ); and spinal intradural MC (Type Ⅲ) based on a series of 22 cases. Moreover, they divided Type Ⅰ into 2 types, Type Ⅰ-A (extradural arachnoid cyst) and Type Ⅰ-B (occult sacral meningicele).

Here, we report a woman with a symptomatic Type I lesion by Nabors' classification (extradural arachnoid cyst without spinal nerve root fiber involvements) treated surgically.

CASE REPORT

A 38-year-old female presented with a complaint of low back pain and hypesthesia of both legs. She had no history of trauma or spinal surgery. On admission, physical examination

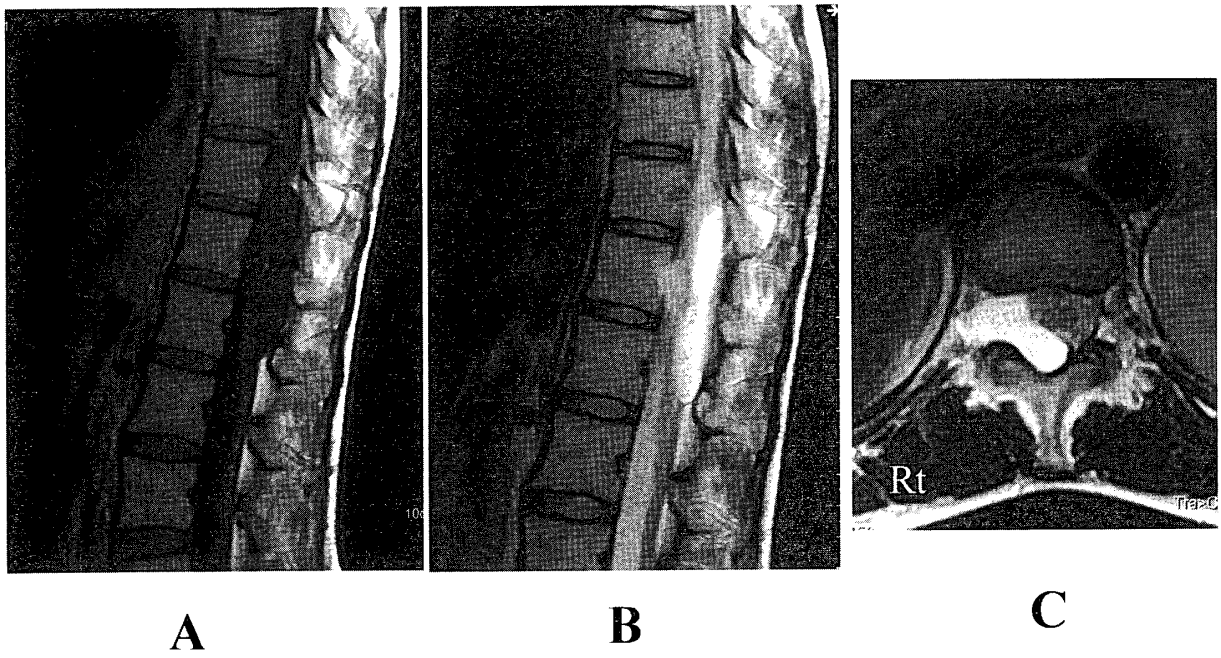

Fig. 1. Sagittal T1 (A) magnetic resonance imaging (MRI) and sagittal (B) and axial T2 (C) MRI showed an extradural CSF-containing lesion without involvement of the posterior epidural fat at Th11-L1.

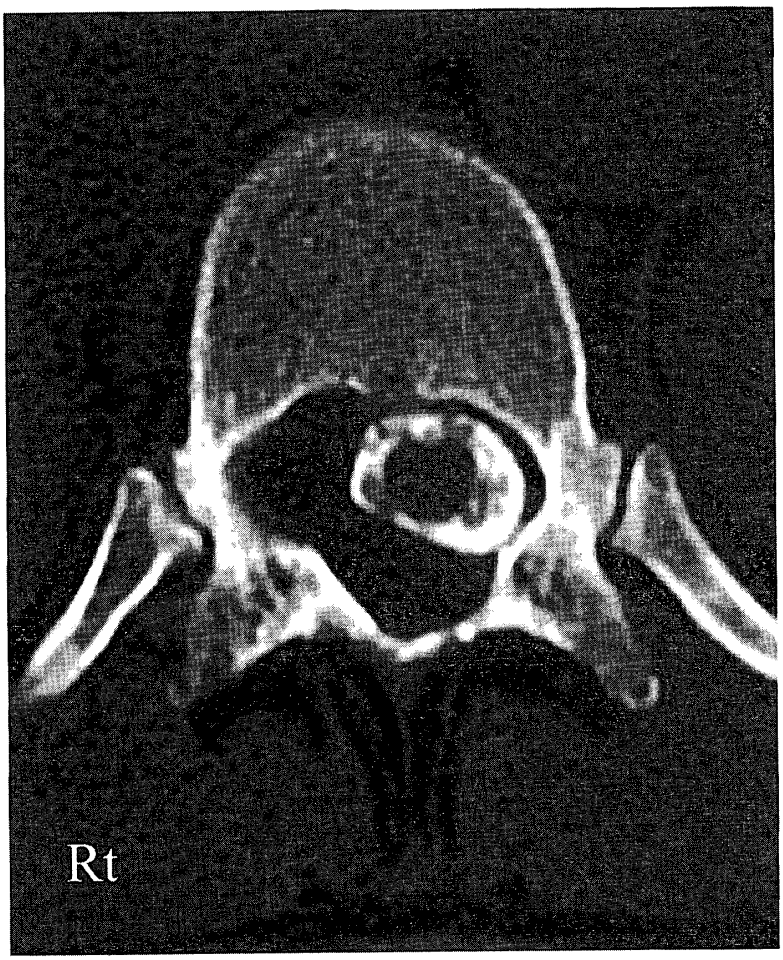

Fig. 2. Computerized tomographic myelography (CTM) demonstrated disclose a filling defect at the lesion which compressed the spinal cord, but did not reveal communication between the cyst and the subarachnoid space, and revealed bone erosion with widening of the canal, foraminal enlargement and scalloping of the vertebral body.

showed no abnormality. Neurological examination revealed hyperreflexia in the lower extremities and hypesthesia below Th10 level. Plain radiographic examinations of the lower thoracic vertebrae disclosed no abnormality. However, magnetic resonance imaging (MRI) showed an extradural cerebrospinal fluid (CSF)-containing lesion without involvement of the posterior epidural fat at Th11-L1 (Fig. 1). Computerized tomography (CT) with bone algorithms revealed bone erosion with widening of the canal, foraminal enlargement and scalloping of the vertebral body. Myelography and CT myelography (CTM) disclosed a filling defect at the lesion, but did not reveal communication between the cyst and the subarachnoid space (Fig. 2). Spinal angiography showed no tumor stain and Adamkiewitz artery derived from Th11 in the left. In the operation, the cystic lesion was exposed via limited laminectomy extending from Th11-L1. The cyst wall was white, fibrous, and tense. During the resection of the tough cyst wall, separate dura defect was found adjacent to the right Th12 nerve root. Total removal of the cyst wall and closure of the ostium were performed. Intraoperative motor evoked potential (MEP) showed no abnormality during the

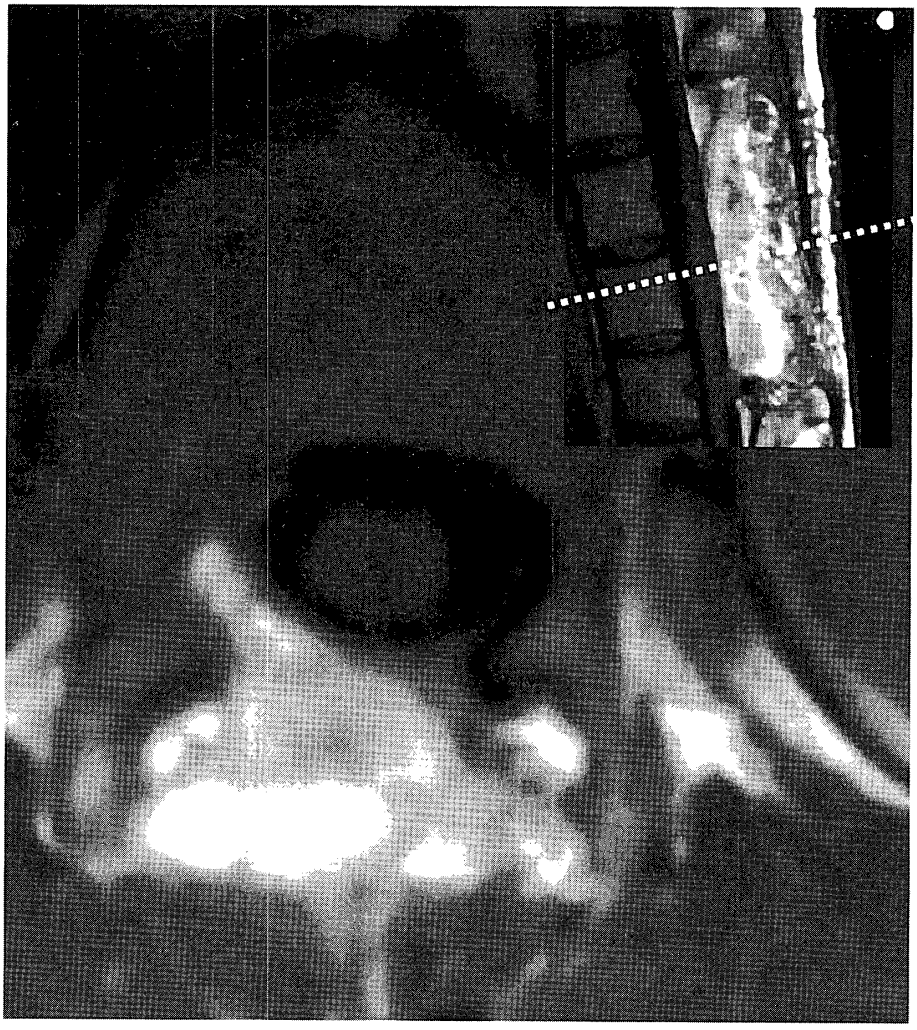

Fig. 3. Postoperative MRI demonstrated that both the cystic lesion and spinal cord compression had disappeared.

procedure. The postoperative course was uneventful with the relief of her symptoms and slight hypestheia of the right Th12 level. Postoperative MRI demonstrated that both the cystic lesion and spinal cord compression had disappeared (Fig. 3). Histological examination showed a fibrocollagenous tissue with an inner single-cell lining and meningothelial cells, which was compatible with arachnoid cyst.

DISCUSSION

Extradural arachnoid cysts arise from a congenital dural defect which allows the arachnoid membrane to herniate through the adjacent dura mater. The cysts have a pedicle which connects them to the subarachnoid space, located dorsally or along a root sleeve. They commonly occur in the mid- or lower thoracic spine, less frequently in the lumbar region and lie posteriorly or posterolaterally within the spinal canal. They may be single or multiple. The mechanism of enlargement is supposed to be a one-way valve effect at the neck of the diverculum[4]. Thoracic extradural cysts occur mainly in adolescents. Symptoms are related to compression of the spinal cord or nerve root. The most common presenting symptoms are pain and progressive spastic or flaccid paraparesis, often asymmetrical.

The diagnosis is usually established by MRI, myelography and CTM. However, the neck of the arachnoid diverticulum may be so narrow that evensoluble contrast medium may not enter the cyst during myelography. In these cases, delayed CT may be required to demonstrate filling of the cyst. Cinematic MRI (cine-MRI) was reported to be useful to show a pulsating flow voiding on the location of the communication site[2]. Also, Doita et al.[5] reported that cinematic MRI study demonstrated that pressure changes which occur in the extradural space as well as in the arachnoid cyst might cause spinal cord compression and result in intermittent exacerbation of symptoms. Final characterization is based on operative inspection and histological examination for all three categories.

The aim of surgical treatment is neural decompression and prevention of refilling of the cyst which is best accomplished by complete resection of the cyst and closure of the communication between cyst and subarachnoid space[3, 6]. Evacuation may result in only temporary relief of symptoms.

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