Dorsally Sequestered Thoracic Disc Herniation

—Case Report—

Asuka MORIZANE, Junya HANAKITA, Hideyuki SUWA, Noboru OHSHITA,
Kazuo GOTOH, and Tokuhiko MATSUOKA

Department of Neurosurgery, Shizuoka General Hospital, Shizuoka

Abstract

A 53-year-old male presented with a rare dorsally sequestered thoracic disc herniation manifesting as acute low back pain and weakness. He had no history of trauma. Magnetic resonance (MR) imaging demonstrated a mass at T10-11 intervertebral level connected with the T-10 disc. Axial MR imaging showed the mass had surrounded and compressed the dural sac from the lateral and dorsal sites. MR imaging with gadolinium-diethylenetriaminepenta-acetic acid showed slight rim enhancement of the lesion. Computed tomography detected no abnormal calcification. The diagnosis was thoracic disc herniation. Laminectomy resulted in rapid and satisfactory recovery. The histological diagnosis was thoracic disc herniation. MR imaging was very effective for the diagnosis based on the connection between the mass and the disc space. The differential diagnosis includes metastatic epidural tumor, epidural hematoma, and epidural abscess.

Key words: thoracic disc herniation, dorsally sequestration, magnetic resonance imaging

Introduction

Thoracic disc herniation accounts for only 0.25–1% of spinal disc herniations.^{2–8)} In our hospital, thoracic disc herniation occurs in 0.87% (8/921) of all spinal disc herniations. Dorsal sequestration of the disc herniation is rare.⁶⁾ Dorsal herniations have been reported mainly in the lumbar region,^{9–11)} and such dorsal migration of the disc material occurs very rarely at the thoracic level.^{6–11)}

We describe a case of dorsally sequestered thoracic disc herniation and discuss the imaging and clinical features.

Case Report

A 53-year-old male had been in good health except for slight fatigue in the back persisting for 8 years. He suffered sudden onset of low back pain when he arose from a sitting position. There was no history of trauma or spinal motion causing the pain. On the next day, he experienced paresthesia in both legs and muscle weakness in the lumbar region. Three

days later, the paresthesia in the legs improved but the weakness in the low back and legs deteriorated. He had difficulty in walking and consulted our hospital 5 days after the onset.

On admission, he walked with a wide-based gait. The bilateral patellar tendon reflexes were hyperactive, but the Achilles tendon reflexes were normal. There was slight muscle weakness in his left quadriceps and tibialis anterior. Hypalgesia and paresthesia were present below the bilateral L-1 areas. He complained of cold sensation in both feet, but the temperature sensation was normal. Vibratory sensation in his right leg was decreased. Romberg's test was positive. Position sensation, straight leg raising test, and bladder function were normal. The pedis dorsal arteries were well palpable on both sides. There was no sacral sparing. The cerebrospinal fluid protein level was slightly high (127 mg/dl).

Radiography of the thoracic spine showed no calcification in the disc space or the intracanal space. Myelography showed a complete block at T10-11 intervertebral level (Fig. 1). Computed tomography

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Author's present address: A. Morizane, M.D., Department of Neurosurgery, National Cardiovascular Center, Suita, Osaka, Japan.

Fig. 1 Anteroposterior myelogram showing a complete dural block at T10-11 intervertebral level.

Fig. 2 Computed tomography scan of the T10-11 intervertebral level taken after myelography, showing no contrast agent in the dural sac. The dural sac is not clear. No abnormal calcification was found either in the yellow ligament or disc space.

Fig. 3 Sagittal T₁-weighted magnetic resonance image showing a relatively small mass posterior to the T10-11 disc space, which appears isointense like the disc.

(CT) after myelography also showed no contrast medium between T-10 and T-11. No abnormal calcification was noticed in the yellow ligament or disc space (Fig. 2). Magnetic resonance (MR) imaging showed a mass at T10-11 intervertebral level connected with the T-10 disc material. Axial MR imaging showed the mass had surrounded and compressed the dural sac from the lateral (right) and dorsal directions. The mass was isointense to hyperintense on both T₁- and T₂-weighted images. MR imaging with gadolinium-diethylenetriaminepenta-acetic acid demonstrated slight enhancement of the rim of the lesion. The diagnosis was a dorsally sequestered thoracic disc herniation based on the connection with the T-10 disc (Figs. 3 and 4). The differential diagnosis included metastatic epidural tumor, epidural hematoma, and epidural abscess.

Laminectomy of T-10 and T-11 was performed 14 days after the onset. The mass was found to compress the dural sac from the lateral and dorsal directions. There was slight adhesion between the compressing mass and the normal dural sac. The mass was connected with the T10-11 disc space. The T10-11 disc space was narrow and almost empty.

Histological examination of the mass revealed degenerated cartilage infiltrated with a small number

Fig. 4 Axial T₁-weighted magnetic resonance image showing the mass surrounding and compressing the dural sac from the lateral (right) and dorsal directions.

of lymphocytes. The final diagnosis was thoracic disc herniation.

Two days after the surgery, the patient got up from bed and walked. Recovery was rapid and satisfactory.

Discussion

Thoracic disc herniation with acute onset is usually associated with trauma.^{2,4-6,8)} However, our patient had no history of trauma or spinal motion causing the pain despite the sudden onset. He also did not have bladder dysfunction, which is common in thoracic disc herniation.^{3,4,8)}

Several mechanisms of dorsal sequestration of the disc material have been proposed.^{5,6)} Slight adhesion between the anulus fibrosus and the dural sac caused by previous asymptomatic disc herniation may accelerate the dorsal migration of the sequestered disc material. Remarkably acute strong pressure may push the disc material to the dorsal site of the dural sac. If the laceration of the anulus fibrosus is situated in the lateral point near the pedicle, the sequestered disc material may migrate along the medial site of the pedicle to the lateral and dorsal sides of the dural sac.

After the application of MR imaging for the spinal disorders, myelography has been yet performed as an essential examination in our department. The first reason why the myelography has been adopted in our department is that we can obtain the real time information about the whole intrathecal region by the myelography. The second reason is that the resolution quality by CT scan with the intrathecal contrast medium injection is usually better than that

of axial MR imaging findings. But in this case, MR imaging was very effective for the diagnosis of this rare pathological condition.¹⁾ The continuity between the mass and the disc space was the important point to obtain the correct diagnosis. The differential diagnosis includes metastatic epidural tumor, epidural hematoma, and epidural abscess.

For the thoracic disc herniation, conventional posterior approach, which requires cord retraction procedure to remove the disc material, has resulted in serious neurological deficits. Alternative anterolateral or posterolateral approach, such as transthoracic approach, costotransversectomy, or transpedicular approach, has been advocated. In the present patient, findings of MR imaging and CT after myelography showed that the compressive lesion was situated in the dorsal aspect of the spinal cord, so the conventional posterior approach was adopted.

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Address reprint requests to: A. Morizane, M.D., Department of Neurosurgery, National Cardiovascular Center, 5-7-1 Fujishirodai, Suita, Osaka 565-0873, Japan.