ELSEVIER

The Spine Journal ■■ (2013) e1–e6

THE SPINE JOURNAL

Case Report

Spontaneous regression of posterior epidural migrated lumbar disc fragments: case series

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Received 1 November 2011; revised 27 June 2013; accepted 2 July 2013

Abstract

BACKGROUND CONTEXT: Posterior epidural migrated lumbar disc fragments is an extremely rare disorder. Surgical treatment was performed in all reported cases. To the best of our knowledge, there are no reported cases of the use of conservative treatment for posterior epidural migrated lumbar disc fragments.

PURPOSE: To report the possibility of a spontaneous regression of posterior epidural migrated lumbar disc fragments.

STUDY DESIGN: Case series.

METHODS: Four patients with posterior epidural migrated lumbar disc fragments were treated at Karatsu Red Cross Hospital between April 2008 and August 2010. Spontaneous regression of the posterior epidural migrated lumbar disc fragments with relief of symptoms was observed on magnetic resonance imaging (MRI) in three cases. Another patient underwent surgical treatment. The present and previously reported cases of posterior epidural migrated lumbar disc fragments were analyzed with respect to patient age, imaging features on MRI, the level of the lesion, clinical symptoms, treatment, and outcomes.

RESULTS: Conservative treatment was successful, and spontaneous lesion regression was seen on MRI with symptom relief in three cases.

CONCLUSIONS: Although posterior epidural migrated lumbar disc fragment cases are generally treated surgically, the condition can regress spontaneously over time, as do sequestrated disc fragments. Spontaneous regression of lumbar disc herniations is a widely accepted observation at present. Posterior epidural migrated lumbar disc fragments fall under the sequestrated type of disc herniation. In fact, the course of treatment for posterior epidural migrated lumbar disc fragments should be determined based on the symptoms and examination findings, as in cases of ordinary herniation. However, providing early surgical treatment is important if the patient has acute cauda equina syndrome or the neurologic symptoms worsen over time.

Keywords: Posterior epidural migrated lumbar disc fragments; Conservative treatment; Spontaneous lesion regression

Introduction

Although disc fragments are well known to migrate to superior, inferior, or lateral sites in the anterior epidural space, posterior epidural migrated lumbar disc fragments is an extremely rare disorder. Posterior epidural migrated lumbar disc fragments are often confused with other posterior epidural space-occupying lesions. The differential diagnosis of these epidural lesions includes cysts, abscesses, tumors, and hematomas. Cysts demonstrate a low-intensity signal on T1-weighted magnetic resonance imaging (MRI) and a very high-intensity signal on T2-weighted MRI. Patients with abscesses and infection exhibit fever and clinical laboratory test results that show abnormal values indicating inflammatory reactions. Tumors demonstrate various intensities on T1- and T2-weighted MRI. However, tumors typically do not show improvement during their natural course.

FDA device/drug status: Not applicable.

Author disclosures: ***KT:*** Nothing to disclose. ***KI:*** Nothing to disclose. ***YF:*** Nothing to disclose. ***OT:*** Nothing to disclose. ***TD:*** Nothing to disclose.

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1529-9430/$ - see front matter
http://dx.doi.org/10.1016/j.spinee.2013.07.430

Making a diagnosis between posterior epidural migrated lumbar disc fragments and hematomas is very difficult. Disc herniations with migration may retain contact with the disc space from which they arose, whereas hematomas can be distinguished from disc fragments by the lack of continuity with a disc space. As mentioned previously, we diagnosed our patients with posterior epidural migrated lumbar disc fragments based on the clinical symptoms and MRI findings. Posterior epidural migrated lumbar disc fragments usually cause radiculopathy or cauda equina syndrome. To the best of our knowledge, surgical treatment was performed in all reported 56 cases of posterior epidural migrated lumbar disc fragments, regardless of symptom severity [1–30]. Between April 2008 and August 2010, four patients with posterior epidural migrated lumbar disc fragments were treated at Karatsu Red Cross Hospital. We herein present four posterior epidural migrated lumbar disc fragment cases in which the treatment was determined according to the severity and course of the patients' symptoms. Previously reported cases of posterior epidural migrated lumbar disc fragments were also analyzed with respect to age, imaging features on MRI, the level of the lesion, clinical symptoms, treatment, and outcomes. This is the first report of spontaneous regression of posterior epidural migrated lumbar disc fragments.

Case report

Case 1

An 83-year-old man presented with a 1-month history of low back pain and right anterior thigh pain. Hypesthesia of the L3 dermatome on the right side and 5- of 5 strength on knee extension of the right leg were revealed. The patient did not have a fever, and the clinical laboratory data were normal. Magnetic resonance imaging demonstrated a mass in the posterior epidural space on the right side at the L2–L3 level. The lesion exhibited low- to isointensity on T1-weighted MRI and high and low intensities on T2-weighted MRI. After gadolinium (Gd) injection, the lesion demonstrated rim enhancement. The lesion was diagnosed as a posterior epidural migrated lumbar disc fragment because it was attached to the L2–L3 disc. Conservative treatment was administered because the symptoms were consistent with radiculopathy. The symptoms improved after oral administration of nonsteroidal anti-inflammatory drugs (NSAIDs) during outpatient clinic follow-up. All symptoms were relieved approximately 1 month after the first visit, and spontaneous regression of the lesion was observed on MRI 2 months later (Fig. 1).

Case 2

A 62-year-old man complained of left buttock and anterior thigh pain followed by low back pain. No sensory or motor disturbances were observed. The patient did not have a fever, and the clinical laboratory data were normal. Magnetic resonance imaging showed a posterior epidural lesion attached to the L2–L3 disc on the left side. The lesion exhibited rim enhancement after Gd injection. The lesion was diagnosed as a posterior epidural migrated lumbar disc fragment. Conservative treatment was administered because the symptoms were consistent with radiculopathy. The symptoms improved after the oral administration of NSAIDs during the outpatient clinic follow-up. A spontaneous regression of the lesion was observed on MRI 4 months later with the relief of all symptoms (Fig. 2).

Case 3

A 79-year-old man complained of left leg pain. Hypesthesia of the L4 and L5 dermatome on the left side and 4 of 5 strength on dorsiflexion of the left toes were revealed. The patient did not have a fever, and the clinical laboratory data were normal. Magnetic resonance imaging revealed a proximal migrated posterior epidural lesion attached to the L4–L5 disc on the left side. The lesion was diagnosed as a posterior epidural migrated lumbar disc fragment. Conservative treatment was administered because the symptoms were consistent with radiculopathy and were relieved by an oral administration of NSAIDs after a caudal block. A spontaneous regression of the lesion was observed on MRI 6 months later with the relief of symptoms (Fig. 3).

Case 4

A 53-year-old man presented with a 4-month history of right leg paresthesia. Acute low back pain, bilateral buttock pain, and neurogenic claudication appeared after the patient lifted a heavy load. The symptoms persisted during rest at home for 5 days before the first visit to our hospital. Hypesthesia was revealed in both legs, and 4 of 5 strength on dorsiflexion was observed in both feet. No bladder or bowel dysfunction was observed. The patient did not have a fever, and the clinical laboratory data were normal. The lesion exhibited low- to isointensity on T1-weighted MRI and high and low intensities on T2-weighted MRI. The lesion was diagnosed as a posterior epidural migrated lumbar disc fragment. Surgical treatment was performed because the symptoms worsened during outpatient clinic follow-up. L3–L4 laminotomy was performed. Intraoperatively, the mass-like lesion clearly compressed the dural tube and was adhered to the dura matter. The mass was removed piece by piece, and L3–L4 discectomy was performed. The removed materials were matched for disc fragments. The patient's neurologic symptoms were rapidly relieved after surgery. A full recovery with dorsiflexion of both feet was observed 3 months after surgery (Fig. 4).

Discussion

Lombardi [1] reported the first case of posterior epidural migrated lumbar disc fragments in 1973. Since then, 60

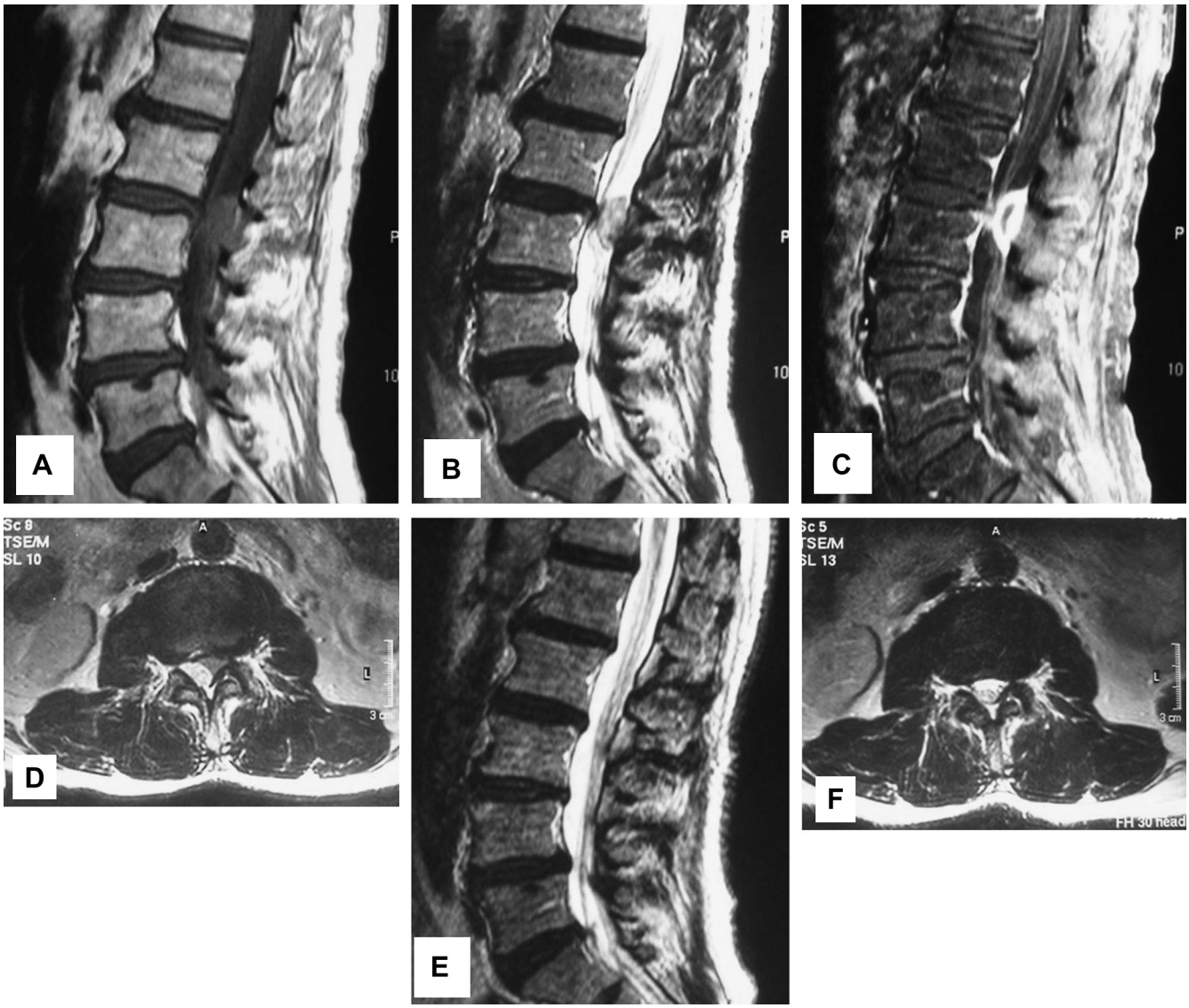

Fig. 1. (A, B) Sagittal T1- and T2-weighted magnetic resonance imaging (MRI) showing the lesion in the posterior epidural space at L2–L3. (C, D) The lesion demonstrated rim enhancement on Gd-enhanced MRI. (E, F) The posterior epidural migrated lumbar disc fragments showed spontaneous regression on T2-weighted MRI 2 months after the first visit.

cases of posterior epidural migrated lumbar disc fragments have been reported, including the present report. Previous reports include 46 male and 14 female patients with a mean age of 54.0 years (range 28–83 years). The location of the posterior epidural migrated lumbar disc fragments was confirmed at L1–L2 in 2 patients, at L2–L3 in 12 patients, at L3–L4 in 23 patients, at L4–L5 in 17 patients, and at L5–S1 in 6 patients. The presence of posterior epidural migrated lumbar disc fragments was confirmed in the upper level compared with ordinary lumbar disc herniation. Regarding the primary clinical symptoms, cauda equine syndrome was observed in 33 cases, radiculopathy in 25 cases, and lumbago in 2 cases.

Posterior epidural migrated lumbar disc fragments are often confused with other posterior epidural space-occupying lesions. The differential diagnosis of these epidural lesions includes cysts, abscesses, tumors, and hematomas. Magnetic resonance imaging is a routine diagnostic tool used in the evaluation of spinal lesions. In the previously reported posterior epidural migrated lumbar disc fragment cases, the primary diagnostic tool was MRI: 48 of 60 cases involved MRI of the spine, whereas Gd was injected in 32 of these 48 cases. Cysts, abscesses, and tumors can be easily diagnosed based on clinical symptoms and MRI findings. However, it may be rather difficult to distinguish between hematomas and posterior epidural migrated lumbar disc fragments. Komori et al. [31] described hematomas as normally showing high-intensity signal on T1- and T2-weighted images, whereas sometimes exhibiting intermediate intensity signal on T1-weighted views, similar to disc materials. They concluded that epidural hematomas cannot be ruled out completely. In previous reports, posterior

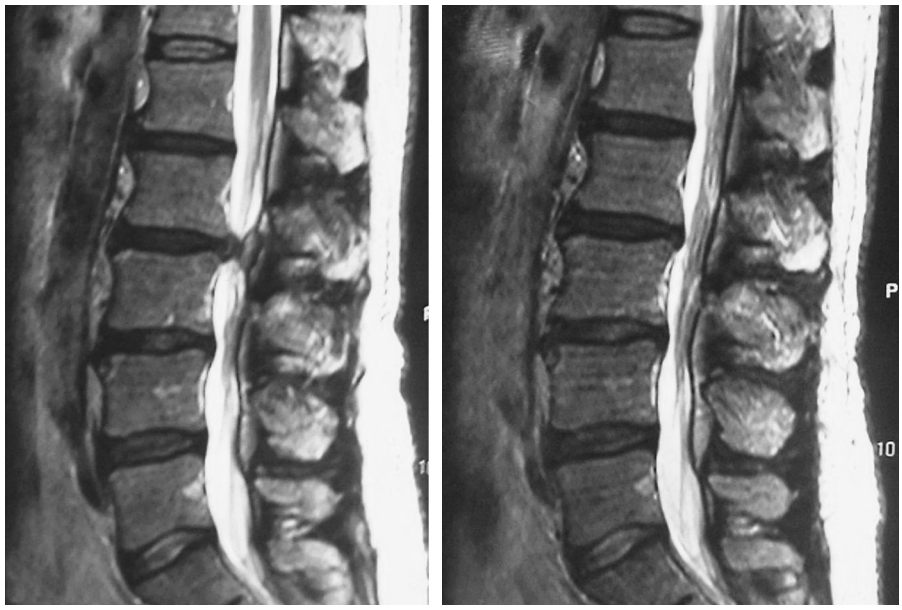

Fig. 2. (Left) Posterior epidural migrated lumbar disc fragments were observed at L2–L3 on sagittal T2-weighted magnetic resonance imaging (MRI) at the first visit. (Right) Spontaneous regression of the posterior epidural migrated lumbar disc fragments was revealed on sagittal T2-weighted MRI at the final follow-up.

epidural migrated lumbar disc fragments tended to demonstrate low- to isointensity signals on T1-weighted MRI. However, on T2-weighted MRI, the lesions demonstrated low- to high-intensity signals. Gd-enhanced MRI was performed in 32 cases, of which, rim enhancement of the lesion was seen in 30 cases and diffuse enhancement was observed in 2 cases. Rim enhancement might indicate the presence of vascular proliferation surrounding posterior epidural migrated lumbar disc fragments. In all our cases, the lesions were low- to isointense on T1-weighted MRI, whereas showing high and low intensities on T2-weighted MRI. Two of our four patients underwent Gd-enhanced MRI, and rim enhancement was observed in all these cases. As to the aforementioned MRI findings, our conservatively treated patients exhibited findings compatible with a diagnosis of posterior epidural migrated lumbar disc fragments. In addition, the

Fig. 3. (Left) Posterior epidural migrated lumbar disc fragments were observed at L3–L4 on sagittal T2-weighted magnetic resonance imaging (MRI) at the first visit. (Right) Spontaneous regression of the posterior epidural migrated lumbar disc fragments was observed on sagittal T2-weighted MRI at the final follow-up.

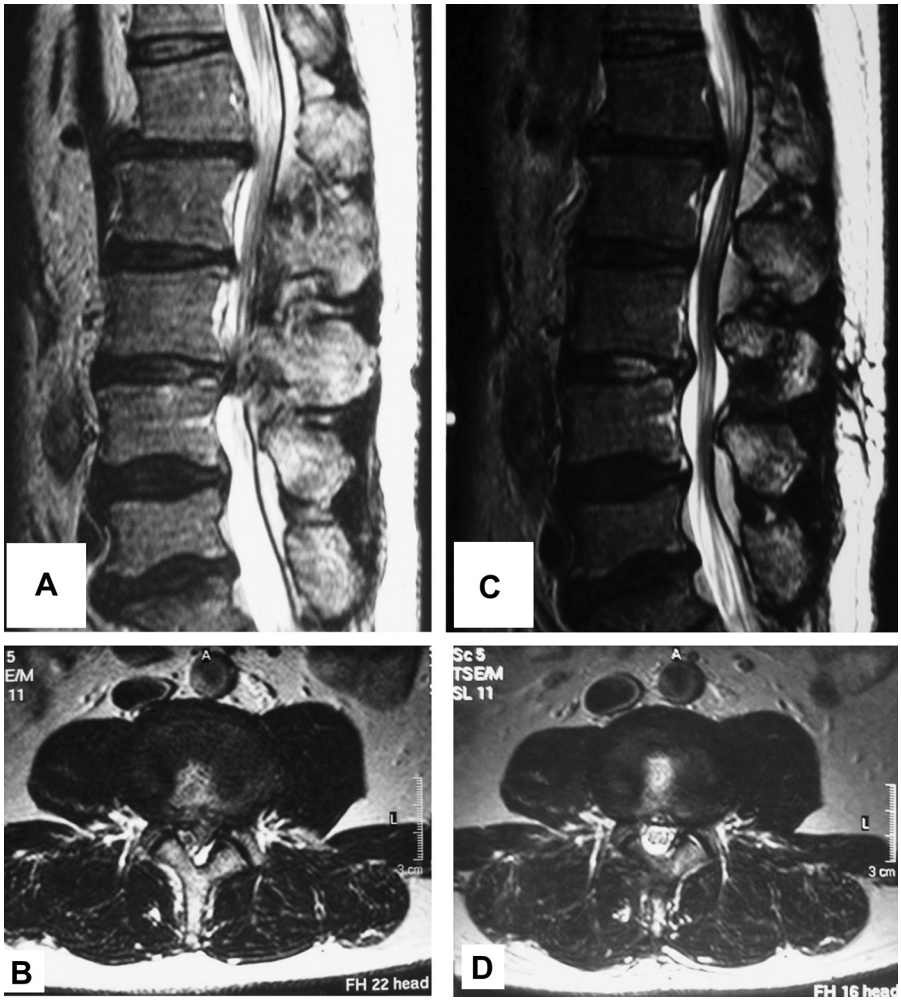

Fig. 4. (A, B) Posterior epidural migrated lumbar disc fragments were observed at L3–L4 on T2-weighted magnetic resonance imaging at the first visit. (C, D) Magnetic resonance imaging showed the disappearance of the posterior epidural migrated lumbar disc fragments 3 months after surgery.

lesion in our surgically treated case was proven to be a posterior epidural migrated lumbar disc fragment.

All previous and one present patient with posterior epidural migrated lumbar disc fragments underwent surgical treatment. Only the present three patients underwent conservative treatment and obtained symptom relief. Complete recovery was seen in the 39 surgically treated cases, and improvement was seen in the 16 surgically treated cases. The three patients who underwent conservative treatment, including the oral administration of NSAIDs and a caudal block, were confirmed to have achieved a complete recovery. In the surgically treated cases, the outcomes appear to be unrelated to both the duration from the onset of symptoms until surgery and the clinical symptoms present before surgery. The factors affecting the outcomes remain unclear. The reason for surgical treatment in the reported cases was that posterior epidural migrated lumbar disc fragments usually cause cauda equina syndrome or radiculopathy. Sengoz et al. [29] described early surgical treatment for posterior epidural migrated lumbar disc fragments as being important, as a first choice for preventing severe neurologic deficits. On the other hand, the spontaneous regression of lumbar disc herniations is a widely accepted observation at present. Haro et al. [32] reported that the infiltration of inflammatory cells is more prominent in transligamentous extrusion or sequestration-type lesions. Significant and progressive decreases in the size of herniated nucleus pulposus in some cases of transligamentous and sequestration-type herniated nucleus pulposus have been demonstrated. The diagnosis of posterior epidural migrated lumbar disc fragments falls under the sequestrated type of disc herniation. In the present cases, the posterior epidural migrated lumbar disc fragments were treated as ordinary lumbar disc herniations, and spontaneous regression of the lesions with relief of symptoms was observed on MRI in three cases. The spontaneous lesion regression on MRI with symptom relief observed in these three cases clearly demonstrates the possibility of spontaneous regression of posterior epidural migrated lumbar disc fragments, such as that seen with the more common sequestrated lumbar disc herniations.

Consequently, the treatment for posterior epidural migrated lumbar disc fragments should therefore be determined based on the severity and course of the patient's symptoms. However, providing early surgical treatment is important if the patient has acute cauda equina syndrome or the neurologic symptoms worsen over time.

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