

## CASE REPORT

### Epidural posterior migration of a disc fragment<sup>☆</sup>

R. Jové Talavera<sup>a</sup>, V. Altemir Martínez<sup>a,\*</sup>, A. Chárlez Marco<sup>a</sup>, J. Mas Atance<sup>a</sup>,  
E. Curiá Jové<sup>a</sup>, J. Aguas Valiente<sup>b</sup>

<sup>a</sup> Servicio de Cirugía Ortopédica y Traumatología, Hospital Universitario Arnau de Vilanova, Lleida, Spain

<sup>b</sup> Servicio de Neurocirugía, Hospital Universitario Arnau de Vilanova, Lleida, Spain

Received 20 April 2011; accepted 19 December 2011

#### KEYWORDS

Lumbar disc herniation;  
Posterior epidural space migration;  
Magnetic resonance imaging

#### PALABRAS CLAVE

Hernia discal lumbar;  
Migración posterior espacio epidural;  
Resonancia magnética

#### Abstract

**Introduction:** The posterior epidural migration of a fragment of lumbar disc herniation is a rare clinical presentation.

**Case report:** We report the case of a 76-year-old male patient with back pain and progressive paraparesis in the lower limbs, with the emergence of a cauda equina syndrome 4 days after admission. MRI showed lumbar spondylosis and a well-defined intra-spinal mass in the posterior epidural space. Surgical resection of the epidural mass was performed. The pathological study revealed an intervertebral disc fragment; thus, it was a complete migration of a herniated lumbar disc. The patient was healed after surgery and specific rehabilitation treatment.

**Conclusions:** Patients with posterior migration of disc fragment may present with severe neurological deficits, such as cauda equina syndrome. Because the radiological images of disc fragments are similar to those of other lesions, such as metastasis, synovial cyst, dural abscess or haematoma, definitive diagnosis is made by excision and pathological study. Emergency surgery is required to prevent severe neurological deficits.

© 2011 SECOT. Published by Elsevier España, S.L. All rights reserved.

#### Migración posterior epidural de fragmento discal

#### Resumen

**Introducción:** La migración posterior epidural de un fragmento de hernia discal lumbar es una presentación clínica infrecuente.

**Caso clínico:** Presentamos el caso de un paciente varón de 76 años, que acude por dolor lumbar y paraparesia progresiva en extremidades inferiores, con la aparición a los 4 días del ingreso de un síndrome de cauda equina. La resonancia magnética muestra espondilosis lumbar y una masa intrarraquídea bien delimitada en el espacio epidural posterior. Se realiza una exéresis quirúrgica de la masa epidural. El estudio anatomopatológico informó de fragmento de disco intervertebral, por lo que se trataba de una migración completa de una hernia discal lumbar.

<sup>☆</sup> Please cite this article as: Jové Talavera R, et al. Migración posterior epidural de fragmento discal. Rev Esp Cir Ortop Traumatol. 2012;56:224–26.

\* Corresponding author.

E-mail address: vicaltemir@hotmail.com (V. Altemir Martínez).

Tras la intervención quirúrgica y un tratamiento rehabilitador específico remitió la clínica del paciente.

**Conclusiones:** Los pacientes con migración posterior de un fragmento de disco presentan graves déficits neurológicos como el síndrome de cauda equina. Debido a que las imágenes radiológicas de los fragmentos del disco son similares a los de otras lesiones como metástasis, quiste sinovial, absceso dural o hematoma, el diagnóstico definitivo se realiza mediante exéresis y estudio anatomopatológico. El tratamiento quirúrgico urgente es necesario para evitar déficits neurológicos severos.

© 2011 SECOT. Publicado por Elsevier España, S.L. Todos los derechos reservados.

## Introduction

Posterior epidural migration of a herniated lumbar disc fragment is a rare clinical presentation. This infrequent presentation can be attributed to the existence of numerous anatomical structures that prevent posterior migration of the disc fragments,<sup>1,2</sup> such as the sagittal septum, epidural membrane, nerve root, dura mater, epidural vascular structures and epidural fat.<sup>3</sup>

Magnetic resonance imaging (MRI) is useful in diagnosing this entity. The differential diagnosis of a posterior epidural lesion includes metastases, tumours, abscesses, synovial cysts and haematomas,<sup>4</sup> but the appearance of a sequestered disc fragment should be considered.<sup>5</sup>

Faced with a patient with signs and symptoms of paraparesis and non-traumatic cauda equina, rapid and effective diagnosis is crucial. A thorough case history, examination and correct imaging tests help to discover the aetiology and take appropriate action.

## Clinical case

This was a 76-year-old male patient, with a history of slight arterial hypertension and a lumbar spine operation 18 years earlier for a right L5-S1 disc herniation. The patient came to emergency services complaining of several days' pain, radiating to the lower limbs (LL), which had progressively worsened. In the days before this, he had fallen twice, due to LL paraparesis and had stayed in bed since. The lumbar pain radiated to both LL with no set area. The patient reported hypoesthesia in a sensitive L5-S1 area in the lower right leg (LRL).

The physical examination revealed notable quadriceps atrophy (the right more than the left), abolition of the bilateral Achilles osteotendinous reflexes (OTR) and decreased patella OTR. The abdominal cutaneous reflexes were normal, the right Babinski was indifferent and the left, normal. Sensitivity was preserved and the patient did not present clonic spasm, sphincter alterations or signs cauda equina.

On the 4th day after admission, he presented a bladder alteration with urinary retention, which was correlated with cauda equina syndrome.

The MRI (Fig. 1) revealed signs of lumbar spondylitis and a well-defined intraspinal mass in the L3-L4 posterior epidural space, 3.1 cm × 0.9 cm × 0.8 cm, canal stenosis in L3-L4 and L4-L5 and radiculopathies in the last 3 lumbar levels. There was significant bladder distension. The electromyography (EMG) showed complete bilateral L5-S1 denervation and bilateral L4 bilateral subacute denervation (mostly right).

Given these data and the clinical worsening with the appearance cauda equina, we decided on an urgent surgical intervention with the collaboration of the neurosurgical service. The epidural mass was excised and sent for study; we performed an instrument L3-L4 lumbar arthrodesis using the Legacy® system (Medtronic, USA).

The anatomopathological sample study indicated an intervertebral disc fragment. Consequently, it was a complete migration of a herniated lumbar disc.

During the postoperative period, the patient's symptoms improved, with partial recovery of the motor deficits and some sequelae. He was transferred to a specific rehabilitation centre.

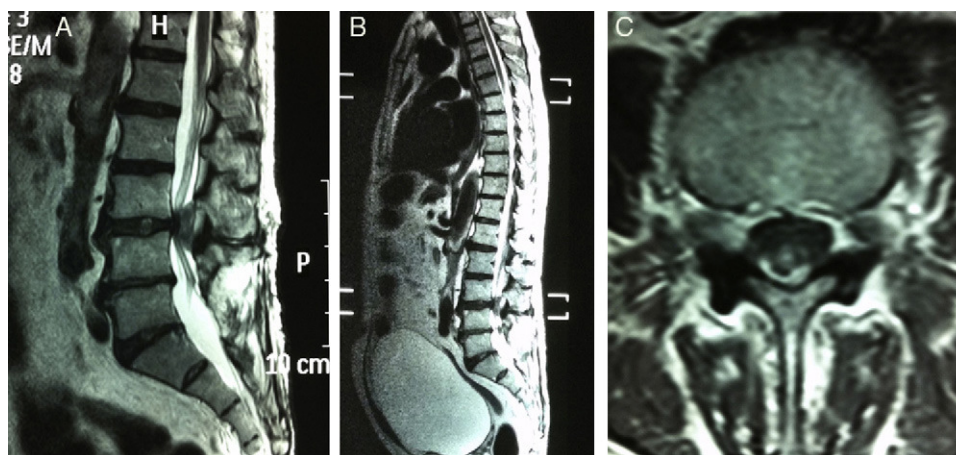
Two years after the surgery, the patient now walks with a crutch and presents LRL sensitive and 3/5 motor deficits in the L5-S1 area as the only alteration. There is complete recovery from the cauda equina syndrome.

## Discussion

Migration of intervertebral disc fragments is well known in relation to herniated discs. Such a migration can cause the appearance of different types of clinical alterations at the level of the lower limbs, together with cauda equina syndrome. According to various authors, 28.6% of symptomatic herniated discs present sequestered disc fragments.<sup>6</sup> These fragments can migrate within the spinal canal, in a cranial, caudal and lateral direction.<sup>7,8</sup> Posterior epidural migration of a disc fragment was first described by Lichtor<sup>9</sup> and 31 cases<sup>10</sup> have been reported in the literature to date. Of these, 18 presented cauda equina as a symptom, with Lombardi<sup>11</sup> being the first to describe this association. Various authors attribute the infrequency of these lesions to the presence of anatomical barriers like the sagittal septum, which extends along the midline in the space between the vertebral body and the posterior longitudinal ligament, seeming to limit the migration. Once a fragment passes beyond the epidural membrane, epidural fat and epidural venous plexus, the nerve root impedes against posterior migration. Conditions of overexertion, traction or hypermobility can predispose posterior disc fragment migration.

The MRI is the most sensitive and specific test for evaluating a herniated lumbar disc and migration, if applicable.<sup>9,12,13</sup>

With clinical signs and symptoms of cauda equina and an MRI image, differential diagnosis can be performed with metastases, extradural tumours (whether malignant—multiple myeloma, lymphoma, osteogenic sarcoma, chondrosarcoma and Ewing sarcoma—or benign—osteoid



**Figure 1** Sagittal (A and B) and axial (C) T2 images that show the sequestered disc fragment at the posterior epidural level of L3–L4. (B) Significantly distended bladder.

osteoma or haemangioma, abscesses, synovial cysts and haematomas).<sup>4</sup> However, a sequestered disc fragment should also be considered.<sup>5</sup> The behaviour of the disc fragment in T1 and T2 MRI imaging, as well as the contrast capture in its profile varies according to development over time. For that reason, diagnosis is delayed until after surgery and the results of the anatomopathological study.

Both traumatology and neurosurgery intervened in our present case to cover the various surgical possibilities that might be required according to the nature of the process.

A patient with progressive spastic paraparesis and cauda equina symptom is an emergency.

Coordinating the diagnostic and surgical activities is of interest in performing the earliest operation possible. Surgical decompression is the treatment of choice to prevent paraplegia.

Among the various possible diagnoses, posterior herniated lumbar migration is rare. However, it should be considered when the patient has a neurological deficit.

## Level of evidence

Level of evidence V.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this investigation.

**Confidentiality of Data.** The authors declare that no patient data appears in this article.

**Right to privacy and informed consent.** The authors declare that no patient data appears in this article.

## References

- Schellinger D, Manz HJ, Vidic B, Patronas NJ, Deveikis JP, Muraki AS, et al. Disk fragment migration. *Radiology*. 1990;175:831–6.
- Wiltse LL, Fonseca AS, Amster J, Dimartino P, Ravessoud FA. Relationship of the dura, Hofmann's ligaments, Batson's plexus, and a fibrovascular membrane lying on the posterior surface of the vertebral bodies and attaching to the deep layer of the posterior longitudinal ligament: an anatomical, radiologic, and clinical study. *Spine*. 1993;18:1030–43.
- Bullough PG. Pigmented villonodular synovitis and synovial cysts of the spine. *Am J Neuroradiol*. 1992;13:167–8.
- Neugroschl C, Kehrl P, Gigaud M, Ragragui O, Maitrot D, Manelfe C, et al. Posterior extradural migration of extruded thoracic and lumbar disc fragments: role of MRI. *Neuroradiology*. 1999;41:630–5.
- Masaryk TJ, Ross JS, Modic MT, Boumpfrey F, Bohlman H, Wilber G. High-resolution MR imaging of sequestered lumbar intervertebral disks. *Am J Roentgenol*. 1988;150:1155–62.
- Baker JK, Hanson GW. Cyst of the ligamentum flavum. *Spine*. 1994;19:1092–4.
- Ebeling U, Reulen HJ. Are there typical localisations of lumbar disc herniations? A prospective study. *Acta Neurochir*. 1992;117:143–8.
- Manabe S, Tateishi A. Epidural migration of extruded cervical disk and its surgical treatment. *Spine*. 1986;11:873–8.
- Lichter T. Posterior epidural migration of extruded lumbar disk. *Surg Neurol*. 1989;32:311–2.
- Sengoz A, Kotil K, Tasdemiroglu E. Posterior epidural migration of herniated lumbar disc fragment. *J Neurosurg Spine*. 2011;14:313–7.
- Lombardi V. Lumbar spinal block by posterior rotation of annulus fibrosus. Case report. *J Neurosurg*. 1973;39:642–7.
- Coscia M, Lepzig T, Cooper D. Acute cauda equina syndrome. Diagnostic advantage of MRI. *Spine*. 1994;19:475–8.
- Sandhu FS, Dillon WP. Spinal epidural abscess: evaluation with contrast enhanced MR imaging. *AJNR Am J Neuroradiol*. 1991;12:1087–93.