CASE REPORT

Is that lumbar disc symptomatic? Herniated lumbar disc associated with contralateral radiculopathy

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SUMMARY

Herniated lumbar disc may be asymptomatic or associated with lower limb radiculopathy. Most spinal surgeons would offer surgery following a period of conservative measures if the radiological and clinical findings correlate. However, the existing dictum that lumbar radiculopathy should correlate with ipsilateral lumbar disc herniation may not be accurate as it can rarely present with contralateral sciatica. Literature regarding this phenomenon is scarce. Therefore, we report a patient with herniated lumbar disc presenting with predominantly contralateral motor weakness radiculopathy, which resolved after discectomy.

with moderate-to-markedly narrowed central canal (figure 1).

TREATMENT

The patient underwent an urgent L3/4 laminectomy encompassing the lower two-thirds of the L3 lamina, the upper third of the L4 lamina as well as a left-sided L3/4 microdiscectomy.

OUTCOME AND FOLLOW-UP

Postoperatively, his right-sided foot drop immediately improved to 3/5 power (figure 2) with return of normal 5/5 power at 4 weeks postoperative (video 1).

BACKGROUND

It is important to be aware that herniated lumbar disc (HLD) can cause contralateral symptoms. Decompressive surgery could possibly alleviate symptoms. Therefore, these patients should not be dismissed without being offered surgical option.

CASE PRESENTATION

A 35-year-old man presented with subacute left-sided sciatica of 10 days in duration without preceding trauma. His left-sided symptoms resolved but developed acute and rapidly progressive right-sided foot drop (Medical Research Council scale of 0/5) within 48 h. His bladder and bowel function were normal.

INVESTIGATIONS

MRI of his lumbosacral spine showed a large (11×4×17 mm) left L3/4 paracentral disc extrusion

DISCUSSION

Herniated lumbar disc is a common entity with an estimated incidence of 1–2% per annum. MRI studies showed that nerve root compressions are often asymptomatic. Boden *et al*¹ reported that 20% of those aged less than 60 years and 36% of those above 60 years old with no history of radicular pain, have HLD on MRI. Spinal surgeons base their decision to operate if MRI and clinical findings correlate.

There have been several reports suggesting a phenomenon whereby an HLD resulted in contralateral radiculopathy, similar to Kernohan's phenomenon in the brainstem. Various pathophysiological mechanisms have been suggested in the literature to explain this clinical syndrome.

Anatomical factors are the most common reported causative factors that explain this syndrome. Significant spondylotic changes in lumbar

Figure 1 (A) T2-weighted axial image demonstrating acute left L3/4 disc prolapse (white arrow) with compression of the cauda equina and complete loss of any hyperintense cerebrospinal fluid signal; (B) T2-weighted axial image demonstrating a normal L4/5 disc level.

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Figure 2 Clinical photos (A) preoperatively demonstrating 0/5 power in dorsiflexion and (B) postoperatively demonstrating normal power.

facet joints and ligamentum flavum hypertrophy leading to lateral recess stenosis may render the traversing nerve roots susceptible to even the mildest lateral displacement. This may be bilateral² or unilateral,³ resulting in contralateral radiculopathies from a large HLD. Anatomical anomalies of the ipsilateral nerve root with a high or low take-off may be protective against compressive forces. Conversely, anomalies of the contralateral nerve root, such as a conjoint origin or shorter lateral recess course, may render it more susceptible to compressive or tractional forces akin to the aetiology of the cervical C5 nerve root syndrome.^{2,4}

Abnormalities of the dural attachments of the posterior longitudinal ligaments (Hoffman ligaments) have also been proposed in the mechanisms of this syndrome. Kornberg⁵ proposed that the absence of Hoffman's ligaments may allow posterior displacement of the ipsilateral nerve root without compression but lateral shift of the contralateral nerve root into a tight lateral recess. In contrast, Akdeniz *et al*⁶ suggested that it was entrapment of the contralateral nerve root in the lateral recess by the presence of Hoffman's ligaments that was the causative factor.

Our patient had radiculopathy initially on the left, which resolved before developing an acute right-sided foot drop suggestive of an L5 nerve lesion. This may be caused by a migrating disc fragment as reported by Mobbs and Steel⁷; however, a subsequent MRI showed only a large left-sided paracentral HLD at L3/4 with a normal disc and canal dimensions at L4/5. We believe that due to the size of the disc prolapse, our patient's symptoms were attributable to direct lateral shift and compression of the traversing fibres of the contralateral nerve roots against the contralateral pedicle and facet joint in the lateral recess, or potentially acute tethering and stretch of the traversing nerve root fibres. Alternatively, overlap in myotomal distribution may explain the foot drop without an L4/5 lesion. Owing to the severity of his weakness, a decision was made for bilateral decompression and left-sided discectomy. Sucu and Gelal⁴ and Akdeniz *et al*⁶ have suggested in their case series that discectomy on the side of the disc extrusion would be sufficient for resolution of the contralateral symptomatology, and this will be considered in future practices.

Herniated lumbar disc can rarely present with radiculopathy on the contralateral side. Spinal surgeons should be aware of

Video 1 Clinical video demonstrating severe weakness preoperatively and progressive recovery following surgery.

this phenomenon and decompressive surgery indicated in certain situations. Unilateral discectomy on the side of the disc herniation may be sufficient for resolution of the contralateral radiculopathy; however, this should be considered on a case-by-case basis.

Learning points

- ▶ Clinicians should be aware that herniated lumbar disc can present with contralateral symptoms.
- ▶ Pathophysiological mechanism to explain this phenomenon include contralateral lateral recess stenosis, anatomical anomalies of ipsilateral nerve root escaping compressive forces, contralateral nerve root being displaced and entrapped in the lateral recess secondary to abnormalities in dural attachments and migration of disc fragment.
- ▶ Decompressive surgery might alleviate symptoms from contralateral disc herniation and these patients should not be dismissed without offering surgery as an option.

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