Case Report

Fracture of Posterior Vertebral Endplate Mimicking Lumbar Disc Herniation: Case Report

Bulent GUCLU1, Burak KAZANCİ2, Atilla KAZANCİ3, Ozkan TEHLİ4

1Dr Lutfi Kirdar Eğitim ve Araştırma Hastanesi, nöroşirurji, istanbul, Türkiye 2Ufuk Universitesi Hastanesi, nöroşirurji, Ankara, Türkiye 3Ataturk Arastirma ve Egitim Hastanesi, nöroşirurji, Ankara, Türkiye 4GATA Askeri Hastanesi, Nöroşirurji, Ankara, Türkiye

Summary

We report a 21-year-old man who was admitted to a physical therapy clinic and had low back and left leg pain for 6 months. Magnetic resonance imaging (MRI) showed L5-S1 central disc herniation and the patient underwent physical therapy for 2 weeks. However, patient's symptoms were worsened, and before surgical intervention, more radiologic investigations were planned. X-ray and computed tomography (CT) scan showed an L5 posterior endplate fracture. MRI is the standard modality for diagnosing lumbar disc herniation, but other diseases mimicking lumbar disc herniation may be overlooked in an MRI. As there are many different diseases that might be misdiagnosed as lumbar disc herniation, for accurate diagnosis, other diagnostic modalities besides MRI should be used to provide the appropriate surgical strategy.

Key words: Computed Tomography Scan, Endplate Fracture, Lumbar Disc Herniation, Magnetic Resonance Imaging, X-ray

INTRODUCTION

Lumbar disc herniation is one of the most common causes of low back pain and leg pain. It occurs mostly in young and middle-aged patients and is more prevalent among men. Lumbar disc herniation may
occur at any level, but 95% occur at L4-5 or L5-S1. MRI is the commonly accepted standard for diagnosing lumbar disc herniation, but X-Ray, CT, CT myelography, positron emission tomography (PET), bone scintigraphy, single-photon emission computed tomography (SPECT), and discography can also be used for diagnosis. In the literature, many diseases mimic lumbar disc herniation. We present a patient with a fracture in the posterior aspect of the inferior endplate of the L5 who experienced low back and left leg pain and was misdiagnosed as having L5-S1 central disc herniation on MRI, and who was eventually diagnosed by X-ray and CT.

**CASE PRESENTATION**

A 21-year-old man was admitted to physical therapy clinic with a 6-month history of low back and left leg pain. He did not have any trauma, morning stiffness, night pain, fever, or weight loss, and the patient's symptoms decreased with rest. A physical examination revealed limited back extension, left paravertebral muscle spasm and tenderness along the left sciatic nerve. A neurological examination revealed positive left straight leg raising at 60 degrees, hypoesthesia in the left S1 dermatome, hypoactive left Achilles reflex, and no motor deficit. Magnetic resonance imaging (MRI) showed an L5-S1 central disc herniation (Figure 1). CBC, C-reactive protein, sedimentation, biochemistry, urine analysis, and ESR were normal, and the brucella agglutination test was negative. The patient was advised to take three days' bed rest, medical therapy, and physical therapy for 2 weeks. However, the patient's symptoms worsened, and the patient was referred to a neurosurgery clinic for surgical therapy. Before the operation, more radiology tests were planned. An X-ray showed a fracture in the posterior aspect of the inferior endplate of L5 (Figure 2), and an axial CT scan the through inferior body of L5 showed a posterior endplate fracture, bony ridge, and posterior midline defect in the vertebral body of L5 (Figure 3). No operation was performed, the patient was treated with bed rest and appropriate physical therapy.

![Figure 1: a) Axial T2 weighted MRI showing L5-S1 central disc herniation. b) Sagittal T2 weighted MRI showing L5-S1 central disc herniation](image-url)
**Figure 2:** X-ray showing large corner defect in posterior aspect of inferior endplate of L5 vertebra (arrow).

**Figure 3:** a) Axial CT scan through inferior body of L5 showing posterior endplate fracture and bony ridge (arrow). b) Axial CT scan through inferior body of L5 showing posterior midline defect (arrow) in vertebral body of L5.
DISCUSSION

Endplates are the parts of the corpus vertebra that come in direct contact with the intervertebral disc to form an article, and each vertebra has two endplates: a superior and an inferior. Endplate fracture clinically resembles an acute disc prolapse with low back pain and radiculopathy in young patients, but may present with neurogenic claudication due to spinal stenosis in older patients. The lesions may be asymptomatic, incidental findings at imaging. In the literature there are many articles relating presentation, symptoms, diagnosis and treatment of the endplate fractures.(1,4,5,6,10,15,17) Plain radiographs are diagnostic in about 40% cases. CT shows the fracture fragment and vertebral defect in most cases, but the fracture fragment may be overlooked in an MRI.(3) Accurate diagnosis is essential because the surgical technique for disc herniation is inadequate for endplate fractures.

More than 90% of all sciaticas were caused by nerve root compression caused by lumbar disc herniation. However, the literature describes many cases mimicking lumbar disc herniation. Erten et al. reported a case of end-plate chondroma in the lumbar spine mimicking intervertebral disc herniation.(7) Tekin et al. reported lumbar epidural capillary hemangioma presenting with low back pain and L4 hypoesthesia and mimicking lumbar disc herniation.(14) Bakar et al. reported a 71-year-old woman who had low back and left leg pain and was operated for fragmented lumbar disc herniation and was diagnosed as periradicular abscess after operation.(2) Umur et al. reported adult tethered cord syndrome cases mimicking lumbar disc disease symptomatically, but diagnosed after somatosensory evoked further investigation.(16) Hirsh et al. reported intradural sacral nerve root metastasis mimicking herniated disc.(8) Ozgocmem et al. reported brucella disc infection mimicking lumbar disc herniation.(12) Maurice-Williams et al. reported ossification of the posterior longitudinal ligament mimicking cord compression from a dorsal disc protrusion.(11) Konishi et al. reported cauda equina tumor mimicking an intradural disc herniation.(9) Sinar et al. reported spinal extradural tumor mimicking a lumbar disc protrusion.(13) Many other pathologies mimicking lumbar disc herniation have been reported in the literature. We report a 21-year-old man with a fracture of the posterior vertebral endplate who had low back and left leg pain and was misdiagnosed as having L5-S1 central disc herniation by MRI.

MRI is the typically accepted standard for diagnosing lumbar disc herniation and has very high sensitivity and specificity. However, other pathologies mimicking lumbar disc herniation may be overlooked on an MRI. Clinical symptoms, physical examination, and other radiological examinations can be helpful for exact diagnosis. Considering our case and other cases mimicking lumbar disc herniation in the literature, it should be noted that many other pathologies can resemble lumbar disc herniation and may cause diagnostic problems.

CONCLUSION

More than 90% of low back pain cases and radiculopathies are caused by lumbosacral nerve root compression due to disc herniation. However many different pathologies have been reported as mimicking lumbar disc herniation in the literature. MRI is the traditional standard for diagnosing lumbar disc herniation, but sometimes other pathologies mimicking lumbar disc herniation may be overlooked by an MRI. X-ray and CT can help to diagnose the pathologies mimicking lumbar disc herniation.
REFERENCES