

Clinical Study

# Differential diagnosis of intraspinal and extraspinal non-discogenic sciatica

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## Abstract

The aim of this study is to present a series of 11 patients with non-discogenic sciatica (NDS), and to review the diagnostic techniques of careful clinical and radiological examination. The cases include lumbar radicular herpes zoster, lumbar nerve root schwannoma, lumbar instability, facet hypertrophy, ankylosing spondylitis, sacroiliitis, sciatic neuritis, piriformis syndrome, intrapelvic mass and coxarthrosis. The pain pattern and accompanying symptoms were the major factors suggesting a non-discogenic etiology. Pelvic MRI and CT scans, and sciatic nerve magnetic resonance neurography were the main diagnostic tools for diagnosis of NDS. The treatment of choice depended on the primary diagnosis. Detailed physical examinations with special attention paid to the extraspinal causes of sciatica and to pain characteristics are the major components of differential diagnosis of NDS.

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## 1. Introduction

Sciatica is common, and is frequently caused by lumbar disk herniation.<sup>1</sup> However, some intraspinal or extraspinal pathologic processes along the sciatic nerve may also cause sciatica. Whereas lumbar spine imaging reveals the causes of intraspinal non-discogenic sciatica (NDS), extraspinal sciatica is often misdiagnosed because routine diagnostic tests focus on the lumbar spine.<sup>2</sup> Extrapelvic causes affect the nerve as it progresses distally from the sciatic notch. A careful patient history and clinical examination are important in identifying extraspinal sciatica. Further diagnostic imaging may clarify the diagnosis.

In general, studies of NDS tend to focus on only one disorder.<sup>1–7</sup> This study reports a series of 11 patients with

NDS, and overviews the different causes of intraspinal and extraspinal sciatica.

## 2. Patients

The patients, 6 female and 5 male, were aged between 25 and 65 years old. There were 4 patients with extraspinal NDS, 4 with intraspinal NDS, and 3 with sciatica secondary to both spinal and extraspinal processes.

### 2.1. Intraspinal non-discogenic sciatica

#### 2.1.1. Lumbar radicular herpes zoster (Patient 1)

A 64-year-old woman was admitted with a 1-week history of left leg pain that was not responding to analgesics. A neurological examination revealed no abnormal findings. A lumbar MRI showed degenerative changes (Fig. 1a). A physical examination revealed typical skin lesions along the L3 and L4 dermatomes (Fig. 1b). The patient was referred to the dermatology department, where the lesions

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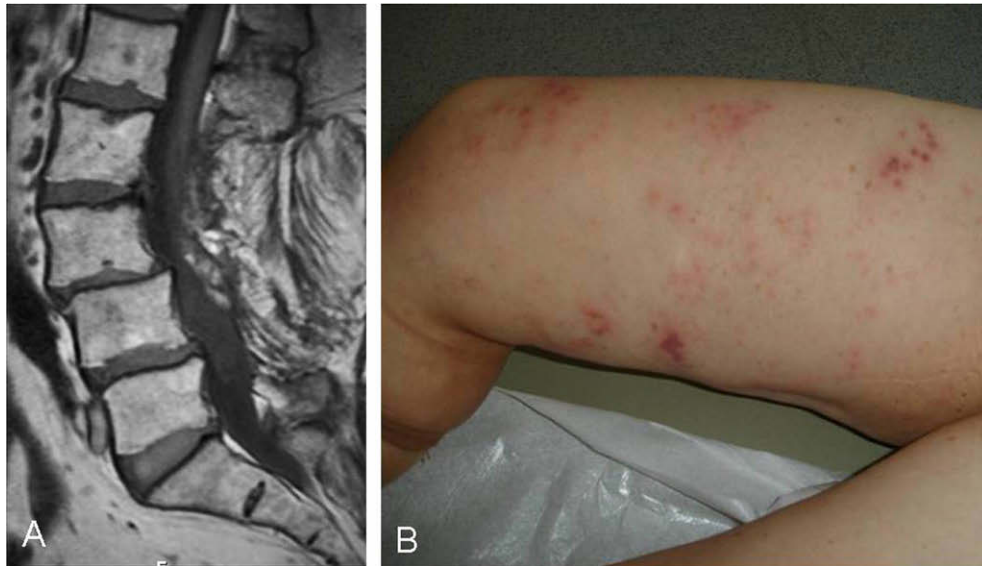


Fig. 1. (A) Sagittal T1-weighted lumbar MRI showing degenerative changes. (B) Skin lesions along the trajectories of the L3 and L4 nerve roots.

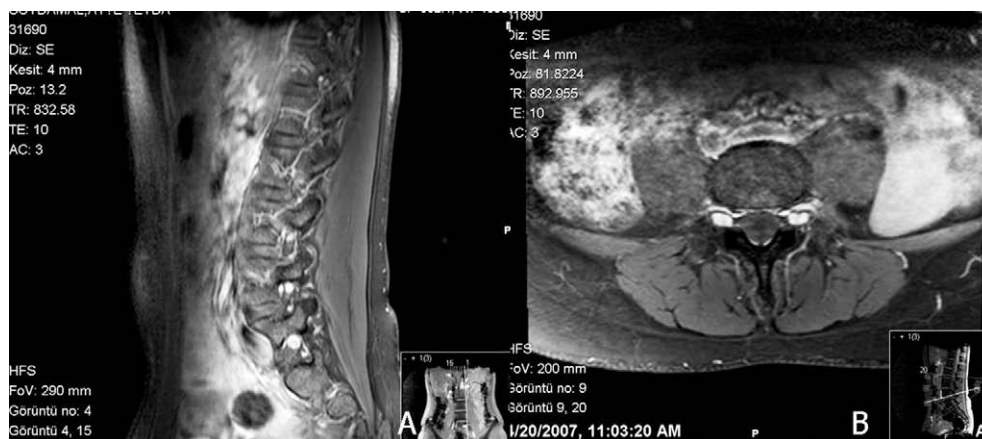


Fig. 2. (A) Sagittal postcontrast T1-weighted lumbar MRI, and (B) axial fat-saturated T1-weighted lumbar MRI showing multiple schwannomatosis.

were determined to be caused by herpes zoster. After receiving medication for herpes zoster, the patient's symptoms resolved.

#### 2.1.2. Schwannomatosis (Patient 2)

A 27-year-old female patient was admitted with a 2-month history of low back pain (LBP) and left leg pain. Physical examination revealed a positive straight leg raising (SLR) test at 45°, and hypoesthesia at the left S1 dermatome. Lumbar MRI showed multiple schwannomatosis of the bilateral L5 and left S1 nerve roots (Fig. 2). The symptoms improved after medical therapy. Because of the lack of neurological deficit and the small size of the schwannomas, surgical treatment was not indicated.

#### 2.1.3. Facet syndrome and lumbar disk herniation (Patient 3)

A 63-year-old woman was admitted with a history of LBP, left leg pain and numbness. The SLR test was nega-

tive. The patient had pain with extension of the trunk. There was no neurological deficit. A lumbosacral anteroposterior (AP) radiograph showed sclerotic and degenerative changes in the L5–S1 facet joint on the left side. A lumbar MRI showed a L4–L5 and L5–S1 central disc protrusion. After physical therapy and flexion exercises, the symptoms resolved partially.

#### 2.1.4. Lumbar instability (Patient 4)

A 31-year-old male was admitted with a 12-year history of LBP and a 1-month history of left leg pain. Physical examination showed a positive SLR test at 60°. The patient was mistakenly diagnosed as having a lumbar disc hernia (LDH) at another center and was treated with physiotherapy, which was not beneficial. Sagittal lumbar MRI showed no disc herniation, and axial MRI showed pars defects of L5. Oblique radiographs showed bilateral pars interarticularis defects. The LBP was attributed to the lumbar instability related to the isthmic defects.

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