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## CLINICAL INFORMATION

# Radicular pain caused by Schmorl's node: a case report



Saeyoung Kim\*, Seungwon Jang

Kyungpook National University, School of Medicine, Department of Anesthesiology and Pain Medicine, Daegu, Republic of Korea

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### KEYWORDS

Epidural analgesia;  
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**Abstract** Schmorl's node a focal herniation of intervertebral disc through the end plate into the vertebral body. Most of the established Schmorl's nodes are quiescent. However, disc herniation into the vertebral marrow can cause low back pain by irritating a nociceptive system. Schmorl's node induced radicular pain is a very rare condition. Some cases of Schmorl's node which generated low back pain or radicular pain were treated by surgical methods. In this article, authors reported a rare case of a patient with radicular pain cause by Schmorl's node located at the inferior surface of the 5th lumbar spine. The radicular pain was alleviated by serial 5th lumbar transforaminal epidural blocks. Transforaminal epidural block is suggested as first conservative option to treat radicular pain due to herniation of intervertebral disc. Therefore, non-surgical treatment such as transforaminal epidural block can be considered a first treatment option for radicular pain caused by Schmorl's node.

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### PALAVRAS-CHAVE

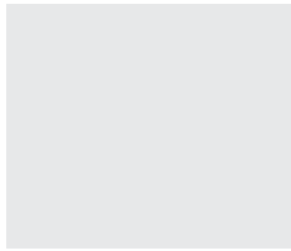
Analgesia epidural;  
Dor lombar;  
Ciática;  
Esteroides

### Dor radicular causada por nódulo de Schmorl: relato de caso

**Resumo** O nódulo de Schmorl (NS) é a herniação focal do disco intervertebral através da placa terminal para dentro do corpo vertebral. A maioria dos nódulos de Schmorl já estabelecidos é quiescente. Porém, a hérnia de disco na medula vertebral pode causar dor lombar quando afeta um sistema nociceptivo. A dor radicular induzida por NS é uma condição muito rara. Alguns casos de NS que causaram dor lombar ou radicular foram tratados com procedimentos cirúrgicos. Neste artigo, relatamos o caso raro de um paciente com dor radicular causada por NS localizado na superfície inferior da quinta vértebra lombar (L5). A dor radicular foi atenuada mediante uma série de bloqueios peridurais transforaminais no nível L5. O bloqueio epidural

\* Corresponding author.

E-mail: [saeyoung@knu.ac.kr](mailto:saeyoung@knu.ac.kr) (S. Kim).



transforaminal (BET) foi sugerido como primeira opção conservadora para tratar a dor radicular devido à herniação do disco intervertebral. Portanto, um tratamento não-cirúrgico como o BET pode ser considerado como uma primeira opção de tratamento da dor radicular causada por NS.

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## Introduction

Schmorl's node (SN) is defined histologically as focal herniation of intervertebral disc through the end plate into the vertebral body. SNs were first described by the pathologist Christian Georg Schmorl in 1927. Most of them are asymptomatic. And, they can be detected with an incidental finding of imaging study including X-ray, Computed Tomography (CT), and Magnetic Resonance Imaging (MRI). However, disc herniation into the vertebral marrow can cause low back pain by irritating a nociceptive system. Therefore, some cases of SN generated low back pain.<sup>1,2</sup> But, SN induced radicular pain is very rare condition.

We experienced a patient with left 5th lumbar (L5) radicular pain caused by SN of inferior endplate from L5 intervertebral disc. The left L5 radicular pain was successfully reduced by serial L5 transforaminal epidural blocks. Consent for publication of this report was obtained from the patient.

## Case report

A 64 year-old man visited our department, who had been suffering from pain in the left leg for 5 days without any causative episode. His past medical history was unremarkable.

The patient complained of a dull constant pain which runs over the left L5 dermatome. The pain level was 9/10 on Numeric Rating Scale (NRS) from 0 (no pain) to 10 (worst pain imaginable). The pain was worse while standing and walking and was alleviated with lying down. On the physical examination, the left leg pain was reproduced between 40 and 50 degrees in the straight leg raise test. The knee jerk and ankle jerk were normal in Deep Tendon Reflex (DTR). Motor and sensory functions of his lower extremity were normal.

The X-ray of the lumbar spine showed a lumbarized 1st sacrum (S1) vertebra and narrowed L5-S1 intervertebral disc space.

The MRI of the lumbar spine showed a Schmorl's node compressing the left L5 nerve root in the L5 left posterior lower body (Fig. 1). The node was considered a source of pain. Therefore, left L5 transforaminal epidural block (TEB) was performed using 20 mg triamcinolone and 2 mL of 0.3% mepivacaine under fluoroscopic guidance. In addition, pregabalin 150 mg and tramadol 100 mg were administered daily. Two week after TEB, his left leg pain was at a NRS of 6. We repeated left L5 TEB using 40 mg triamcinolone and 2 mL

of 0.3% mepivacaine under fluoroscopic guidance. His left leg pain disappeared 14 days after the 2nd TEB. In addition, 2 years after the second TEB, his left leg pain was still at a NRS of 0.

## Discussion

The etiology of SN is currently unknown. And, the pathogenesis of SN is still not clear. However, it has been proposed by many theories. Such as, SN is due to direct trauma,<sup>3</sup> degenerative disease, developmental disease, and so on. But, there was no consensus currently.

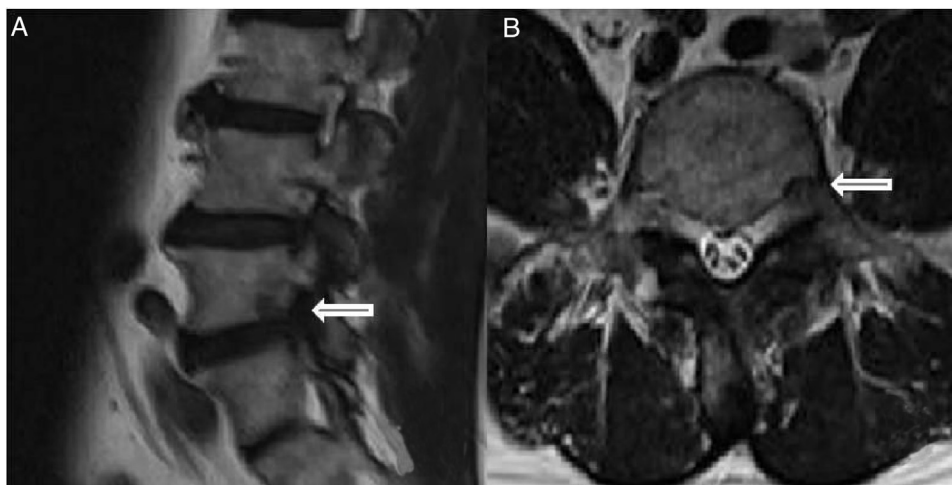
The frequency of a SN is 30% in MRI study,<sup>2</sup> and, 38–79% in cadaver study.<sup>4</sup>

SN was mostly localized in the lower thoracic area, between T7 and L1, and in the middle part (63.7%), posterior part (33.7%) of vertebra. And, in the lumbar spine, SN is located in the central part of the vertebral surface commonly (82%) in cadaver study.<sup>3</sup> These middle-posterior part of the vertebral body surface corresponds to the location of the nucleus pulposus inside the intervertebral disc, the position of the notochord and the thinnest part of the endplate.<sup>3</sup> In the present case, SN was located inferior surface of L5 in left posterior part (Fig. 1), and it is producing left L5 radicular pain. Therefore, symptom of patient is not low back pain, but left leg radiating pain.

SNs can be detected with X-ray, although they can be imaged better by CT or MRI. However, MRI is the most sensitive imaging modality to detection of SN. In the present case, concomitant bone marrow edema surrounding SN with high signal intensity in T2-weighted images and low signal intensity in T1-weighted images were seen. It is typical finding of symptomatic SN.

Because the vertebral body is a common part of metastatic diseases, the lytic lesion adjacent to an endplate of osteolytic spine metastases was misdiagnosed as the SN. The metastatic lesions would not result in a sclerotic margin and not have an osteoblastic reaction. In contrast, the SN generally has a sclerotic margin which is a continuum of the vertebral endplate. The Dual-energy CT imaging is thought to be accurate enough to differentiate osteolytic spine metastases and SNs.

The relationship between a SN and pain is not clear. Coulier and Ghosez<sup>1</sup> reported a case of lumbar spinal radiculopathy caused by a tunneling SN treated by surgical treatment. But, there is no consensus on treatment for Schmorl's node until now. It was known that SN has



**Figure 1** Magnetic Resonance Image (MRI) of lumbar spine. T2-weighted images sagittal (A) and axial (B), showed Schmorl's node (SN) in 5th lumbar (L5) left posterior lower body (arrow).

a regressive or self-limiting nature. In the present case, we performed TEB, which is suggested as first conservative option to treat radicular pain due to herniation of intervertebral disc. Transforaminal approach is target-specific compared with other approaches of epidural blocks. The anti-inflammatory action of the steroid in TEB could decrease neuronal inflammation of the involved nerve, resulting in hastening recovery of the damaged nerves.<sup>5</sup>

In conclusion, SN induced radicular pain is very rare condition. But, we experience a successful treatment of radicular pain caused by SN using TEB. Therefore, non-surgical treatment such as TEB can be considered first treatment option of radicular pain caused by SN.

### Conflicts of interest

The authors declare no conflicts of interest.

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