

# Dorso-Lumbar Pain Caused by a Schmorl Hernia

Pedro Luis Esteban Navarro, Óscar García Casas, and Francesc Girvent Montllor

Unidad de Raquis, Servicio de Cirugía Ortopédica y Traumatología, Hospital de Sabadell, Corporació Sanitària Parc Taulí, Sabadell, Barcelona, Spain

Thoracic and lumbar spine conditions cause primarily mechanical back pain, although the clinician has to ensure that the symptoms are not from another etiology. We present the case of a patient with thoracic and lumbar non mechanical pain, resistant to treatment, diagnosed with a herniation of the intervertebral disc through the vertebral end-plate. We also performed a literature review.

**Key words:** Thoracic vertebrae. Intervertebral disk displacement. Scintigraphy. MRI scan.

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### Dolor en raquis toracolumbar causado por hernia de Schmorl

La principal causa de dolor en el raquis torácico y lumbar es mecánica, aunque no pueden olvidarse otras etiologías. Se presenta el caso de una paciente con dolor en dicha localización, de características inflamatorias, rebelde al tratamiento, cuya etiología fue una hernia intraesponjosa, y se hace una revisión de la bibliografía.

**Palabras clave:** Vértebra torácica. Desplazamiento del disco intervertebral. Gammagrafía. Resonancia magnética.

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### Clinical Case

A 54-year-old woman, without any history of interest, came to the hospital due to dorsolumbar pain. Pain had started abruptly, without any history of trauma 2 months before. It was predominantly nocturnal and during rest, improving with movement and during the day. It was localized in the thoracolumbar area, without any irradiation

*Figure. Magnetic resonance imaging in T1 on which a cortical fracture of the vertebral plate of T12 can be appreciated and an image in the form of a hypointense dome can be seen in vertebral bodies of T11 and T12, compatible with a Schmorl hernia.*

and both palpation and movement caused barely perceptible pain. The following complementary tests had been performed: x-rays, radioisotope scan, and magnetic resonance (MR). X-rays in 2 projections did not show any abnormalities. The radioisotope scan showed increased, intense uptake on the inferior platform of T11 and on the superior one of T12. These findings indicated an increase in bone metabolism and radiological examination directed to determine the cause of the lesion were suggested. A MR was performed (Figure), which evidenced a cortical fracture of the vertebral plate of the body of T12, as well as a hypointense (T1) and hyperintense (T2) image in the form of a dome on the bodies of T11 and T12, compatible with a Schmorl hernia. The signal from T2 of the intervertebral disk eliminated the possibility of infection. Hypersignal STIR sequence eliminated the possibility of fatty tissue being present. Laboratory studies (complete blood count, blood biochemistry, erythrocyte sedimentation rate, C-reactive protein) were normal. With the diagnosis of a Schmorl hernia, symptomatic treatment

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Correspondence: Dr. P.L. Esteban Navarro.  
Unidad de Raquis. Servicio de Cirugía Ortopédica y Traumatología. Hospital de Sabadell. Corporació Sanitària Parc Taulí.  
Parc Taulí, s/n. 08208 Sabadell. Barcelona. España.  
E-mail: pesteban@tauli.cat

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was indicated: analgesics and physical therapy as well as rehabilitation. After a first few weeks of intense and refractory pain, the symptoms diminished gradually and after 1 year of follow-up, the patient was asymptomatic.

## Discussion

The main causes of dorsal and lumbar pain in the adult are mechanical in origin. Schmorl hernia, described in the context of Scheuermann kyphosis, can also be a cause of lumbar pain. Although the etiology is still unclear, Schmorl believed that there was an inherent weakness to vertebral plate cartilage, which would allow the hernia of the disc inside the vertebral body, during the process of endochondral ossification, leading to the resulting kyphosis. This theory was weakened when Schmorl's nodules were identified on vertebrae that were outside the kyphotic area, in patients with no spinal deformity and adults. Some authors have shown an abnormal cartilaginous matrix and a reduction in the expression of several glucoproteins in the affected vertebral plates.<sup>1</sup> Other authors have explained that this would be secondary to an osteonecrosis under the vertebral plate.<sup>2</sup> The mechanical theories do not establish clearly if the changes on the plates are the cause or the consequence of kyphosis.<sup>3</sup> Differences between the mature and immature intervertebral disk would explain the different lesion patterns in different age groups: the immature nucleus pulposus is more hydrophilic than the mature one, something that allows a better absorption of hydraulic loads. If a fracture is produced, it is usually central and produces cartilage lesions on the vertebral plate and Schmorl's nodules. With aging, water is substituted for collagen and the disc turns less elastic, with loads being directed to the periphery. This fact would allow for a larger number of fractures in adolescents and adults, as well as a larger number of Schmorl's nodules in children.<sup>4-6</sup> With relation to the clinical manifestations of this imaging abnormality, there is no association consistent with the production of pain.<sup>7</sup> A few possible explanations would be the production of an interspongy fracture or biologic reactions to the herniated disc material in the spongy bone.<sup>8</sup> With respect to our case, the clinical

characteristics of pain and the radioisotope scan would oblige us to perform a differential diagnosis with a bacterial diskitis<sup>9</sup>: the onset was insidious, with inflammatory pain, without fever or accompanying toxic syndrome and the radioisotope scan showed uptake of the marker. MR is the most sensitive and specific complementary examination for the diagnosis of a spinal infection<sup>10</sup> and its findings were not compatible with this. If conservative treatment after a prudent time was not less than 6 months, there would have been no satisfactory result and surgical treatment would have been contemplated, with the option of performing an arthrodesis or a vertebroplasty,<sup>11</sup> because one of the contraindications for the performance is the presence of a Schmorl's nodule.<sup>12</sup>

In conclusion, this case must be a reminder to include, among the etiologic and differential diagnosis of the patient with thoracolumbar pain, Schmorl hernia.

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