



## CASE REPORT

# Osteoid osteoma: A pathology that is confused with ankylosing spondylitis

## Ankilozan spondilit ile karışan nadir bir patoloji: Osteoid osteoma

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### Summary

Osteoid osteoma is a small and benign osteoblastic tumor seen typically in males aged below 25 years. Although it is rarely seen in the vertebrae, it should be considered in the differential diagnosis of spondyloarthropathies, especially for those which occur in young people, along with back and lumbar pain, which increases during the night. Early diagnosis is essential to alleviate symptoms and prevent the risk of structural spinal deformities, such as scoliosis. Here, we describe the case of a 28-year-old man with vertebral osteoid osteoma that was misdiagnosed as ankylosing spondylitis and provide a detailed account of the radiological investigations.

Keywords: Ankylosing spondylitis; night pain; osteoid osteoma.

### Özet

Osteoid osteoma, tipik olarak 25 yaşından genç erkeklerde görülen küçük ve benign karakterli osteoblastik bir tümördür. Vertebrada nadiren görülmesine karşın gece ağrısının eşlik ettiği bel ağrısı olan gençlerde spondiloartropatilerin ayırıcı tanısında düşünülmelidir. Semptomların azaltılması ve skolyoz gibi yapısal deformitelerin gelişiminin engellenmesi açısından erken tanı önemlidir. Burada, ankilozan spondilit ön tanısıyla takip edilen ancak ileri tanısal görüntüleme yöntemleriyle osteoid osteoma tanısı konulan 28 yaşında bir olgu sunulmaktadır.

Anahtar sözcükler: Ankilozan spondilit; gece ağrısı; osteoid osteoma.

### Introduction

Osteoid osteoma is a small and benign osteoblastic tumor consisting of a highly vascularized nidus of connective tissue surrounded by sclerotic bone.<sup>[1]</sup> Notably, only 7–12% of osteoid osteomas occur in the vertebral column,<sup>[1,2]</sup> and almost 90% of the patients affected are aged below 25 years, with a slightly more frequent occurrence in males. Although it is rarely seen in the vertebrae, it should be considered in the differential diagnosis of spondyloarthropathies, especially in young people with back and lumbar pain, which increase during the night.

In this study, we discuss the case and radiological investigation findings in a 28-year-old man with vertebral osteoid osteoma that was misdiagnosed as ankylosing spondylitis.

### Case Report

A 28-year-old man presented to our clinic with back pain and frequent episodes of night pain that lasted for 2 years. A diagnosis of lumbar disc hernia was made during various clinic visits and conservative treatment, including non-steroidal anti-inflammatory drugs, was initiated. However, the patient showed no improvement. Notably, physical examination and laboratory investigation findings were normal. A magnetic resonance image (MRI) of the sacroiliac joints was performed, with a preliminary diagnosis of ankylosing spondylitis, and suspicious findings of bilateral sacroiliitis and arthropathic changes in the left side of the L5 vertebra were detected on T2 short tau inversion recovery images (Fig. 1). A bone scan with Technetium-99 m (<sup>99m</sup>Tc) was performed because of persistent symptoms, and an intense fo-

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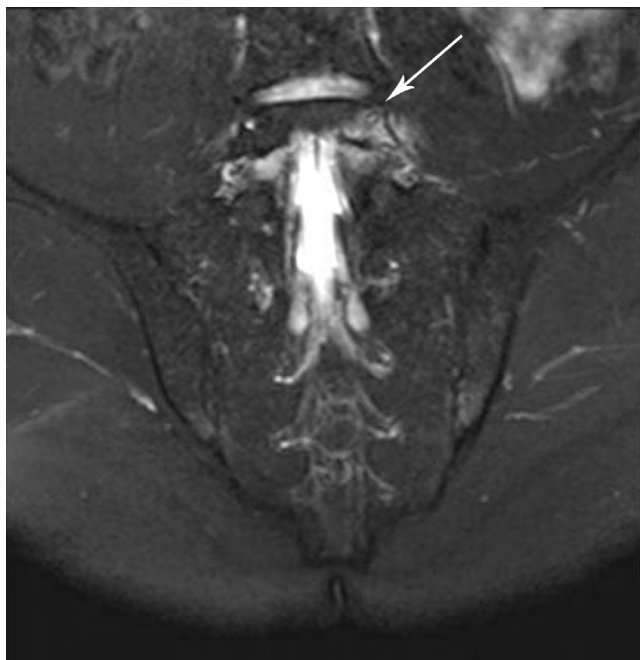
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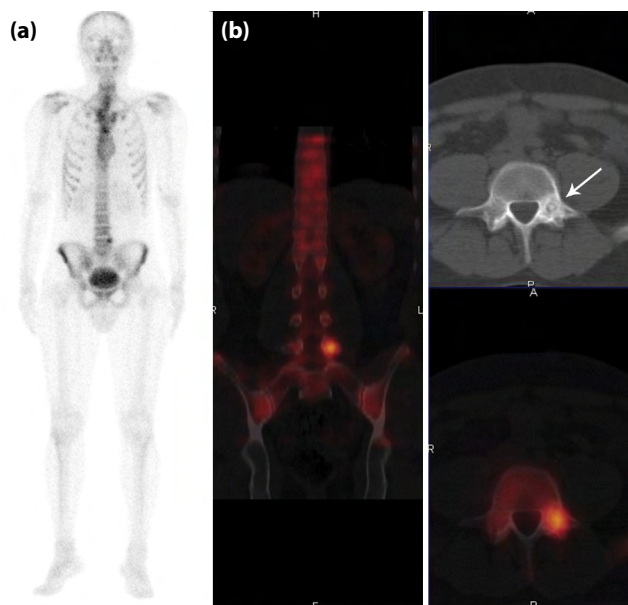
**Figure 1.** T2 short tau inversion recovery magnetic resonance imaging reveals a hypointense nodular lesion with a central high-signal nidus and adjacent bone marrow edema (arrow).

cal uptake was detected adjacent to the L5 pedicle. Single-photon emission computed tomography/computed tomography (SPECT/CT) images combined with low-dose CT revealed uptake at the site of a nidus considered to be an osteoid osteoma (Fig. 2). The patient was subsequently referred for radio-frequency ablation (RFA).

## Discussion

Osteoid osteoma is a small and benign osteoblastic tumor consisting of a highly vascularized nidus of connective tissue surrounded by sclerotic bone.<sup>[1]</sup> However, a nidus size of more than 15–20 mm should be considered an osteoblastoma. Notably, osteoid osteoma and osteoblastoma differ not just in size but also in the localization in the musculoskeletal system and clinical presentation.

Three-quarters of osteoid osteoma cases occur in the long bones and only 7–12% in the vertebral column. In the vertebral column, osteoid osteoma is seen most frequently in the lumbar area.<sup>[1,2]</sup> Notably, in the present case, osteoid osteoma was detected in the left superior side of the L5 vertebra. Approximately 90% of patients with osteoid osteoma are aged below 25 years, with a more frequent occurrence in males. Notably, the present patient case is a 28-year-old man, which also correlates with the age and gender predilection of patients with ankylosing



**Figure 2.** A bone scan with  $^{99m}\text{Tc}$  MDP reveals an area of intense focal uptake adjacent to the L5 pedicle (a). Single-photon emission computed tomography (CT) images combined with low-dose CT reveals uptake at the site of a nidus with surrounding sclerotic reactive bone (arrow) (b).

spondylitis. Therefore, osteoid osteoma should be considered as the differential diagnosis of the more commonly seen spondyloarthropathies.

Classical clinical findings of spinal osteoid osteoma are painful scoliosis, nerve root irritation, and pain during the night.<sup>[3]</sup> Our patient experienced back pain with frequent night pain crisis that started 2 years previously. Although the resting pain can confound the diagnosis of osteoid osteoma and spondyloarthropathies, a detailed anamnesis can differentiate these two pathologies.

Various diagnostic imaging modalities, including X-ray, MRI, CT, bone scintigraphy, and positron emission tomography (PET)-CT, have been used to diagnose osteoid osteoma.<sup>[4]</sup> The initial CT scans are sometimes not thin-slice scans; in such cases, diagnosis of the lesion can be overlooked. Although MRI is undoubtedly sensitive, it is non-specific and often unable to identify the nidus. The hyperemia and resultant bone marrow edema pattern may lead to the scans being misdiagnosed as a more aggressive pathology. Bone scintigraphy has a limited diagnostic specificity and false-negative bone scans have been reported in the literature.<sup>[5]</sup> CT images are typically used for attenuation correction in SPECT, to improve anatomic localization, and for precise morphologic information. The fusion of SPECT and CT images is

useful to accurately interpret scintigraphic images, thereby reducing the diagnostic processing time.<sup>[6]</sup>

This kind of benign tumor requires conservative treatment comprising salicylates or non-steroidal anti-inflammatory drugs beside exercise and close follow-up.<sup>[7]</sup> However, in cases resistant to conservative treatment, surgery can be an alternative treatment choice. Percutaneous RFA has been increasingly used in the treatment of osteoid osteoma.<sup>[8]</sup> Because the present patient did not respond to conservative treatment, he was referred to the interventional radiology department for percutaneous RFA.

Although osteoid osteoma is rarely seen in the vertebrae, it should be considered in the differential diagnosis of young patients with back and lumbar pain complaints that increase during the night. Early diagnosis is important to alleviate symptoms and prevent the risk of structural spinal deformity, such as scoliosis.

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