

## Scoliosis secondary to osteoid osteoma: A case report of delayed diagnosis and 5-year follow-up

Scoliosis secondary to osteoid osteoma

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### Abstract

Our case of study is a 17 years old female patient who presented with painful scoliosis secondary to osteoid osteoma. The patient remained undiagnosed for years complaining of non-subsiding lumbar pain. Three years later, a thorough physical assesment and advanced radiological examination revealed that the patient's complaint was related to an osteoid osteoma accompanying scoliosis. Surgical resection, fusion and instrumentation were applied.

### Keywords

Painful scoliosis; Osteoid osteoma; Spine deformity; Delayed diagnosis

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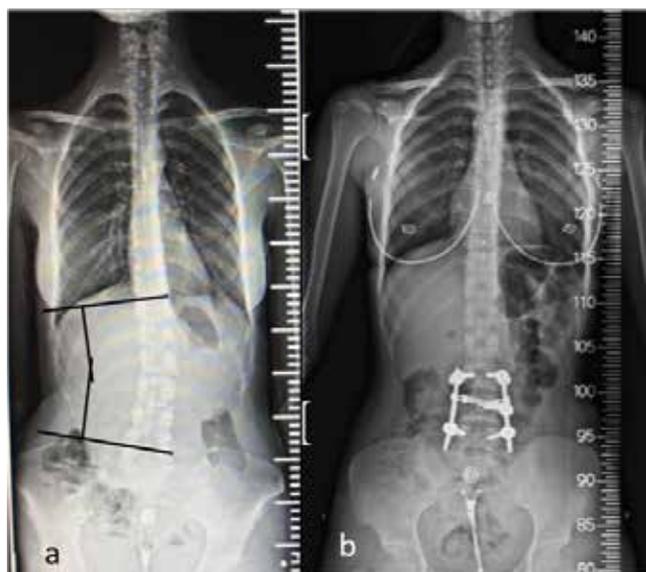
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## Introduction

Osteoid osteoma is relatively uncommon in the spine but this is the first pathology to be considered in painful scoliosis etiology [1]. In the literature, there are several reported cases of osteoid osteoma in the spine that have been diagnosed recently [1,2]. Although osteoid osteoma is conservatively treated with NSAID, it is not a sustainable treatment because of the long treatment duration and drug-related complications [3]. The spinal Osteoid osteoma is traditionally treated with open surgical resection and fusion. In this study, we reported a female with osteoid osteoma located in L4 vertebral peduncle, who was diagnosed late and treated surgically.

## Case Report

Our patient, who had undergone right nephrectomy due to renal pathology, was admitted with the complaint of back pain started about 3 years ago before osteoid osteoma diagnosis. The patient had an aggravating nocturnal pain with good response to NSAID medications. She mentioned that she used to take painkillers every day because of severe back pain. The patient consulted 3 hospitals and only three plain x-rays were taken due to a complaint of lower back pain, after which she was informed that current scoliosis does not require surgery. When the patient applied to our out patient clinic, physical examination revealed no pathology other than tenderness in the lumbar area with palpation. Plain radiography (Figure 1a), CT (Figure 2a) and MRI (Figure 2b) examinations showed that there is lumbar scoliosis with a 16-degree opening to the right and a mass lesion measuring 12x12 mm that resembles a smooth osteoid osteoma at the level of the right peduncle of the L4 vertebrae. Informed consent was taken from the patient and an En bloc resection and stabilization with posterior approach was performed. Pathological diagnosis was in accordance with radiological diagnosis. The patient's lumbar pain was relieved in the postoperative period. During the 5-year follow up, there was no progression in the scoliosis deformity, on the contrary, the deformity angle decreased (Figure 1b).



**Figure 1.** a) preoperative AP view of the spine showing a 16-degree scoliosis at the lumbar area. b) AP view of 5-year follow up.



**Figure 2.** a) axial and sagittal CT sections and b) MRI sagittal view of the lumbar spine showing a mass lesion in the right peduncle of L4 vertebrae

## Discussion

Osteoid osteoma is a benign bone tumor that is common in the adolescent age group and localized on the vertebrae at approximately 10-25% of all affected cases [4,5]. It is particularly localized on lamina and peduncle [2]. Although it has been found that the lesion of osteoid osteoma accompanying the scoliosis is always located on the concave side of the deformity, the exact mechanism is not clear. It is thought that the chronic muscle spasm resulting from the pain affects the vertebral growth zone so that the growth of the affected side slows down and this causes the deformity [6,7]. In our case, the lesion was on the concave side at the L4 peduncle. Osteoid osteoma should be always kept in mind when scoliosis is associated with back pain during adolescence [8]. In a conducted study, approximately half of the patients' diagnosis was delayed [9]. Another study showed that 42% of patients had at least 15 months between the onset of symptoms and diagnosis [10]. In our case, there were 3 years between the initiation of the complaints and the onset of diagnosis. As long as prolonged use of NSAID is an option in the management [11], long-term consumption is not preferred due to unwanted side-effects [3]. Conservative treatment was not preferred in our case because of the long duration of symptoms and the past surgical history of nephrectomy. Thermal ablation is another method used for the treatment [6-12,13]. Surgically, curettage and en bloc resection [14,15] are commonly used methods. Fusion and instrumentation can be performed to avoid instability after surgical excision [16]. It has also been shown that the scoliosis deformity is corrected with only en bloc resection [15]. Instrumentation and fusion were performed after en bloc resection in our case.

## Conclusion

It should be kept in mind that when scoliosis is accompanied with pain an underlying pathology such as osteoid osteoma should always be suspected. Therefore advanced radiological examination such as MRI and CT scan in addition to x-ray may be considered.

**Scientific Responsibility Statement**

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

**Animal and human rights statement**

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

**Conflict of interest**

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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