

Case Report

Osteoid Osteoma of Thoracic Vertebra - A Case Report

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ABSTRACT

Osteoid osteoma is a rare neoplasm with a very characteristic symptom predominantly in the second decade of life, with a pronounced male preference. Most common site of osteoid osteoma is shaft of long bones of lower limbs in 90% of cases. Approximately 7-20% of osteoid osteomas involve spine, most commonly in lumbar spine. Here we discuss a case of a 32 year male who came with a complaint of severe back pain since past one year. The pain was specifically worst at night and was relieved by aspirin intake. Radiographically near the pedicle of tenth thoracic vertebra there was a small osteolytic nidus surrounded by dense bone. The diagnosis of osteoid osteoma was made on histopathology.

Key words: Osteoid, Thoracic vertebra, Nidus, Aspirin.

INTRODUCTION

Osteoid osteomas are usually smaller than 1.5-2 cm and characterized by an osteoid-rich nidus in a highly loose, vascular connective tissue. ⁽¹⁾ The nidus is well demarcated and may contain a variable amount of calcification. ⁽²⁾ Surrounding the nidus is a zone of sclerotic but otherwise normal bone. ⁽³⁻⁶⁾ The lower extremities are the most common site of osteoid osteomas. The femur, particularly the intertrochanteric or intracapsular regions of the hip, is affected in two thirds of cases. ^(7,8) The diaphyseal part of tibia and humerus are the other common sites. Barei et al reported that in 50-60% of cases, osteoid osteoma occurs in the femur and tibia. ^(9,10) Approximately 7-20% of osteoid osteomas involve the spine. Involvement here most commonly manifests as painful scoliosis. ⁽¹¹⁾ Pettine et al noted that 50 % of the lesions occur in cervical spine and up to 78% in lumbar

spine. ⁽¹¹⁻¹⁴⁾ The tumor has a predilection for posterior elements, most commonly affecting the cancellous lamina, spinous process but sparing the vertebral bodies. Wells et al observed this predilection in 75% cases, with 33% involving the lamina, 20 % articular facets & 15% involving the pedicles. ⁽¹⁵⁾ Only 12% of osteoid osteoma affect thoracic spine. Our patient had a lesion on 10th thoracic vertebra. Osteoid osteoma occurs predominantly in the second decade of life, and a pronounced male preference is noted with a male to female ratio being 3:1. ⁽¹⁶⁾ In our case the age is 32 years that is 4th decade which is rare. The lesion involves the metaphysis or shaft of long bones, and the cortex tends to be affected. The roentgenographic appearance is typical, consisting of a radiolucent nidus that is usually surrounded by an extensive sclerotic zone ⁽¹⁶⁾ (Figure 1). These sclerosis may be so extensive that the nidus is

difficult to localize. ⁽¹⁷⁾ This difficulty may lead to multiple surgical procedures to remove the osteoid osteoma. ⁽¹⁸⁾ The best imaging study to demonstrate osteoid osteoma is CT, preferably with the use of bone windows. Osteoid osteoma accounts for approximately 11% of benign bone tumors. The gross appearance of osteoid osteoma is typical. It is important that the surgical pathologist examine the gross specimen for a nidus and not submit the entire tissue mass removed by the surgeon for decalcification. The nidus is small, red, and granular. ⁽¹⁸⁾ It is softer than the surrounding sclerotic tissue and usually stands out from the surrounding sclerotic bone (Figure 2). If several fragments of sclerotic bone are received, it may be necessary to obtain a roentgenogram of the specimen help identify the nidus. The surgeon usually requests a roentgenogram of the involved bone to ensure that the area of involvement has been removed. ^(18,19) The histologic appearance of osteoid osteoma is also typical. One sees an extremely well-circumscribed lesion composed of anastomosing bony trabeculae (Figure 3, 4). Mineralization of the bone is variable. ⁽¹⁹⁾ The bony trabeculae are rimmed by osteoblasts. The spaces between the trabeculae show capillary proliferation and few cells. The spaces between the trabeculae show capillary proliferation and few cells. Benign giant cells are almost always found. The treatment of osteoid osteoma is either surgical removal or CT-guided radiofrequency ablation. ^(19,20)

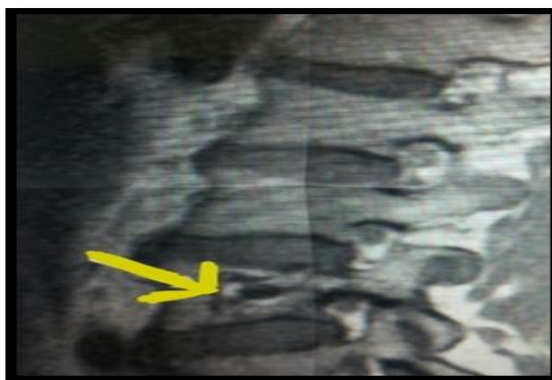


FIGURE 1:Pre-operative radiograph, yellow arrow showing the nidus.

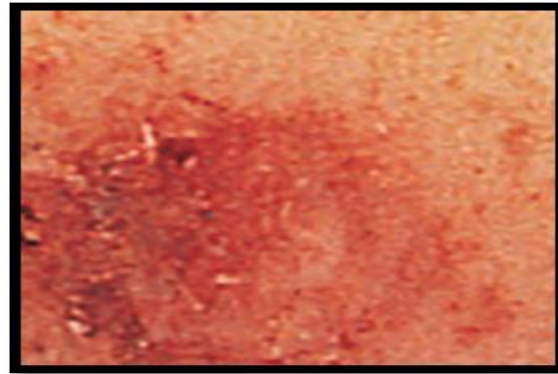


FIGURE 2: Gross image- Nidus appearing granular & reddish in color.

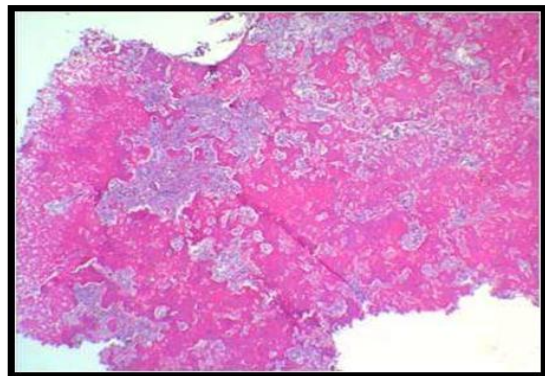


FIGURE- 3: 4x view-Anastomosing trabeculae of woven bone

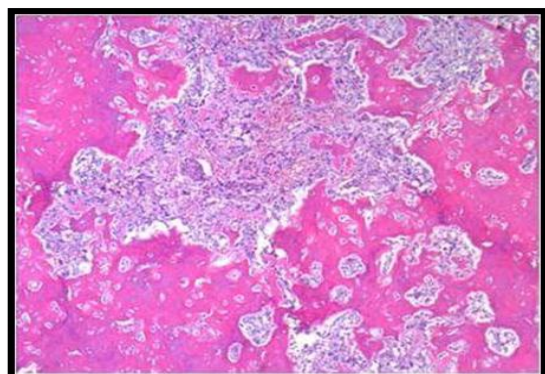


FIGURE- 4: 10x view-Anastomosing trabeculae of woven bone. The intervening loose connective tissue is vascular.

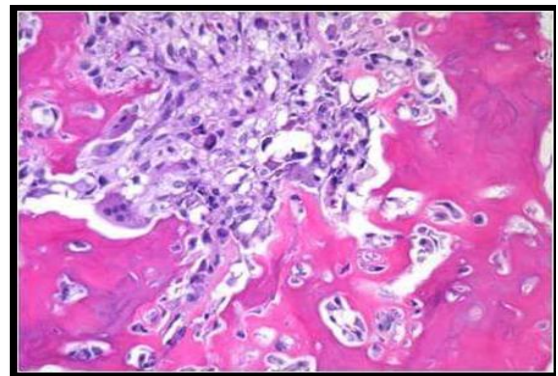


FIGURE-5: 40x view- Osteoid osteoma composed of haphazardly interconnecting trabeculae of woven bone that are lined prominently by osteoblasts.

CASE REPORT

A 32 year man presented to our institution complaining severe back pain since past one year. He had associated weakness in both the forearms. The pain was specifically worst at night dorsally and was relieved by aspirin intake. Radiographically near the pedicle of 10th thoracic vertebra there was a small osteolytic nidus surrounded by dense bone. Radiologically three possibilities were given osteoblastoma, osteosarcoma or osteoid osteoma. Patient was operated and en bloc excision of the lesion was carried out. The diagnosis of osteoid osteoma was made on histopathology H& E stain.

DISCUSSION

Osteoid osteoma is a benign osteoblastic tumor that Bergstrand first described in 1930. ⁽¹⁾ Jaffe was the first to recognize it as a unique entity. ⁽²⁾ Osteoid osteomas are usually smaller than 1.5-2 cm and characterized by an osteoid-rich nidus in a highly loose, vascular connective tissue. The nidus is well demarcated and may contain a variable amount of calcification. Surrounding the nidus is a zone of sclerotic but otherwise normal bone. ⁽³⁻⁶⁾ The lower extremities are the most common site of osteoid osteomas. The femur, particularly the intertrochanteric or intracapsular regions of the hip, is affected in two thirds of cases. ^(7,8) The diaphyseal part of tibia and humerus are the other common sites. Barei et al reported that in 50-60% of cases, osteoid osteoma occurs in the femur and tibia. ^(9,10) Approximately 7-20% of osteoid osteomas involve the spine. Involvement here most commonly manifests as painful scoliosis. Pettine et al noted that 50 % of the lesions occur in cervical spine and upto 78% in lumbar spine. ⁽¹¹⁻¹⁴⁾ The tumor has a predilection for posterior elements, most commonly affecting the cancellous lamina, spinous process but sparing the vertebral bodies. Wells et al observed this predilection in 75% cases, with 33% involving the lamina, 20 % articular facets & 15% involving the pedicles. ⁽¹⁵⁾ Only 12%

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The histologic appearance of osteoid osteoma is also typical. One sees an extremely well-circumscribed lesion composed of anastomosing bony trabeculae (Figure 3,4,5). Mineralization of the bone is variable. ⁽¹⁹⁾ The bony trabeculae are rimmed by osteoblasts. The spaces between the trabeculae show capillary proliferation and few cells. Benign giant cells are almost always found. The treatment of osteoid osteoma is either surgical removal or CT-guided radiofrequency ablation. ^(19,20) The relief of symptoms is so dramatic that the

patient usually realizes on recovery from anesthesia that the lesion has been removed. Recurrences are unusual, although they have been reported. ⁽²¹⁾ The differential diagnosis includes osteomyelitis and osteoblastoma. A localized area of osteomyelitis, termed as Brodie's abscess, can simulate osteoid osteoma clinically and roentgenographically. ⁽²²⁾ Histologically, however, a Brodie abscess does not resemble an osteoid osteoma. Osteoblastomas and osteoid osteomas are related conditions, and they may be histologically indistinguishable. ⁽²²⁾ The nidus can also be demonstrated by administering tetracycline preoperatively and examining the lesion under ultraviolet light at operation. ⁽²³⁾ Lesions such as an abscess and Langerhans cell histiocytosis are excluded by virtue of the prominent inflammatory cell infiltrate seen in both, and fracture callus is distinguished by the haphazard arrangement of the bony trabeculae in osteoid osteoma and its sharply demarcated round shape. ⁽²⁴⁾ Arbitrarily, a lesion smaller than 1.5 cm in diameter is considered an osteoid osteoma, and a lesion larger than 1.5 cm is considered Osteoblastoma. ⁽²⁴⁾ A cartilaginous matrix is present in some cases. ⁽²⁴⁾ It is distinguished from the osteoid osteoma by the larger size of the nidus, the absence or inconspicuousness of a surrounding area of reactive bone formation, and the lack of intense pain. ⁽²⁵⁾ The pain associated with osteoid osteoma is characteristically more intense at night, relieved by nonsteroidal anti-inflammatory drugs such as aspirin, and eliminated by excision of the lesion. It has been attributed by some authors to the effect on nerves and vessels of osteoblast-produced prostaglandin E₂, which is typically present in large amounts in these lesions. ⁽²⁶⁾ Others believe that the pain is simply related to the presence of entrapped and proliferating nerves within and particularly around the nidus. Our patient is doing well after surgery and has regained good strength in his forearm. ^(27,28)

CONCLUSION

Osteoid osteoma of thoracic vertebra in a 4th decade is a rare entity. Radiologically though can be diagnosed, histopathological confirmation of the diagnosis is important for better treatment of the patient.

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