

Osteoid osteoma of phalanx of small toe

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Abstract

Painful swollen toe is common, usually resulting from trauma and infection. Neoplasms of the phalanges are rare. Osteoid osteoma is a relatively common osteoblastic lesion of benign skeletal neoplasms comprising 12% of all benign tumours and occurs most commonly in the cortex of long bones, especially the femur and the tibia.⁽¹⁻⁴⁾ The phalanx of the toe is an uncommon location for osteoid osteoma and its preoperative diagnosis is difficult due to the unique clinical and radiological features. The features in the phalanx of the toe are soft tissue swelling and a nidus, frequently located in the cancellous bone without osteosclerosis. We present a case of a 59-year-old male with localized swelling and tenderness of 5th toe of foot but, there were no hyperaemia & local rise of temperature. There was a 2-month history of antibiotic & NSAID treatment with suspicion of soft tissue infection elsewhere. The osteoid osteoma was completely excised with open surgical technique.

Keywords: Osteoid Osteoma, Neoplasm, Toe, Phalanx, Excision

Introduction

Osteoid osteoma was first described by Jaffe in 1932. It is a benign bone neoplasm of unknown etiology that is composed of osteoid and atypical woven bone. Osteoid osteoma is a common bone lesion that accounts for approximately 12% of benign skeletal neoplasms.^(1, 2) It is an osteoblastic tumor composed of osteoid and atypical bone, with a predilection for the diaphyseal and metaphyseal regions of long tubular bones, especially the femur and the tibia. Clinically, the lesion presents with progressively increasing pain. When the symptoms progress, pain is usually intense and is often worse at night. The pain is typically relieved by Aspirin. Radiological features of osteoid osteoma are cortical, comprising a small radiolucency, often referred to as the nidus, and associated with dense adjacent bone sclerosis.

Case Report

59 year old male, farmer by occupation came to our OPD with complaints of progressive swelling & localized pain in right 5th toe since 4 months. Physical examination revealed 2×1 cm swelling with localized tenderness over medial aspect of inter-phalangeal joint of 5th toe. Swelling was immobile and hard in consistency. The toe appeared larger with no other foot abnormalities. There was no hyperaemia or local rise of temperature. There was also no history of trauma. Osteoid osteomas usually cause clubbing deformity when diagnosed at the finger.⁽⁵⁾ But our patient did not have a clubbed toe. Radiograph of left foot in AP & Oblique view was taken which showed an abnormal bony growth at head of proximal phalanx of 5th toe with subluxation of inter-phalangeal joint. (Fig. 1)

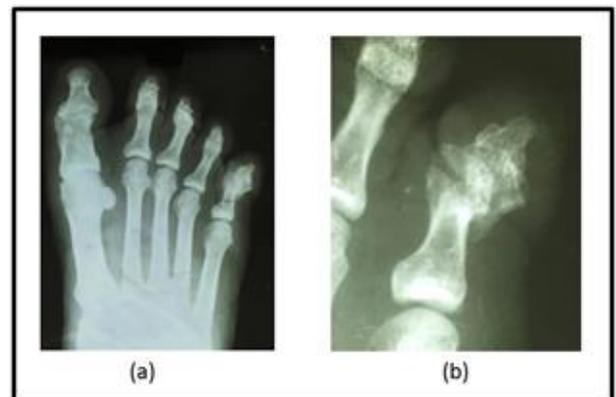


Fig. 1: Pre-Operative Radiograph images
(a) AP view of right foot (b) Magnified image of 5th toe

After all routine investigations and anaesthetic check-up patient was taken for surgical intervention. A longitudinal incision at the medial side of the inter-phalangeal joint of 5th toe was preferred for surgical exposure of the tumour. The mass was completely excised and was sent for histopathological examination.

Percutaneous pinning was done from the tip of the distal phalanx to base of proximal phalanx through the inter-phalangeal joint as it was found unstable after excision of the tumour. Pins were continued for 6 weeks post operatively. (Fig. 2) The patient's pain resolved immediately after the surgical excision.



Fig. 2: Immediate Post-op AP view showing percutaneous pins

Histopathology of the specimen revealed an osteoid osteoma with typical morphological features which showed a well circumscribed bony tumour composed of fragments of mature bone, amidst which was seen marrow tissue. (Fig. 3)

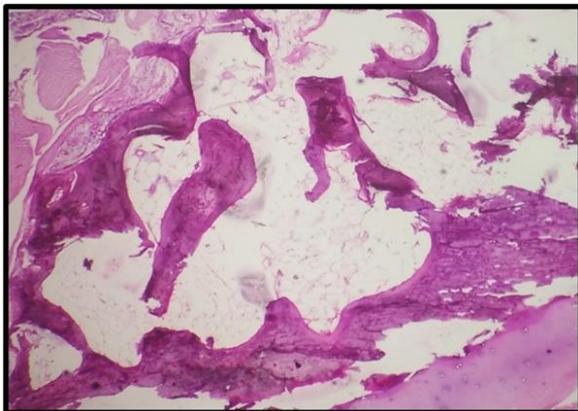


Fig. 3: Microscopy reveals mature bony trabeculae with entrapped marrow tissue. (400X H&E)

The patient was followed up after 1 year with clinical & radiographic evaluations. There were no signs of the residual or recurrent disease.

Discussion

Osteoid osteoma was first described by Jaffe⁽⁶⁾ as a distinctive benign osteoblastic tumour composed of osteoid and atypical bone. The essential pathologic feature of the tumour is a vascular nidus, typically

surrounded by sclerotic bone.^(1,2) It occurs most frequently in the lower extremity at the meta-diaphyseal region of the long bones in younger individuals. An osteoid osteoma of the toe is very rare. Therefore, osteoid osteoma arising in a pedal phalanx may be difficult to diagnose.⁽⁷⁾

In a series by the Mayo Clinic, the talus was the most commonly affected bone in the foot, whereas the phalanx of the toe localization was rare.⁽⁸⁾ In the other series by the Armed Forces Institute of Pathology, the phalanges of the toe were relatively commonly involved.⁽⁹⁾ Meanwhile, Shukla et al⁽¹⁰⁾ evaluated 9 cases in which osteoid osteoma occurred in the foot and suggested that the calcaneus was the most common site.

Classically, osteoid osteoma presents with progressive night pain that is temporarily relieved by aspirin or NSAID.⁽¹¹⁾ Phalangeal lesions are typically small in size and cause local tenderness. The clinical and radiological evaluations are very important in diagnosis for osteoid osteoma. Histopathologic evaluation is very important in establishing the definitive diagnosis.

Typically, radiography will show a small lytic lesion with surrounding sclerotic change and nidus formation that is usually less than 1–1.5 cm in diameter.⁽¹²⁾ Traditionally, the treatment for osteoid osteoma, including that of the hands and feet, is to remove all of the nidus by en bloc resection or curettage.⁽¹³⁾

Sluga et al reported a long follow-up study of peripheral osteoid osteoma with traditional surgical treatment in 2002.⁽¹⁴⁾ A total of 106 cases (12 were in the hand, 6 were in the foot) received curettage or en bloc resection with a mean follow up of 13 years. Their results showed that 85% of patients after curettage and 86.5% of patients after en bloc resection were free from complications.⁽¹⁴⁾

Conclusion

Surgical excision of the bony tumour is the most appropriate treatment in such an unusual localization with a suspicion of osteoid osteoma as patients have dramatic relief of symptoms and the diagnosis is confirmed by histopathological examination post-operatively.

References

1. Dahlin DC, *Bone Tumours*. 2nd ed. Spring-field, III: Charles C. Thomas; 1967.
2. Kransdorf MJ, Stull MA, Gilkey FW, Moser RP Jr. Osteoid osteoma. *Radiographics*. 1991;11:671-696.
3. Shader AF, Schwarkenfeld SA. Osteoid Osteoma: report of a case. *J Foot Surg*. 1989;28:438-441.
4. Teeny SM, Bernsteini SM. Osteoid osteoma: elements of diagnosis and treatment. *Contemporary Orthopaedics*. 1989;18:461-467.
5. Q. Meng and I. Watt, "Phalangeal osteoid osteoma" *British Journal of Radiology*, vol. 62, no. 736, pp. 321–325, 1989.
6. Jaffe HL. Osteoid osteoma of the foot. *J Foot ankle Surg*. 1991;31:709-728
7. J. A. Sproule, F. Khan, and E. E. Fogarty, "Osteoid osteoma: painful enlargement of the second toe," *Archives*

- of Orthopaedic and Trauma Surgery, vol. 124, no. 5, pp. 354–356, 2004.
8. Unni KK. Osteoid osteoma. In: Dahlin's Bone Tumors: General Aspects and Data on 11,087 Cases. 5th ed. New York, NY: Lippincott-Raven; 1996:121-130.
 9. Kransdorf MJ, Stull MA, Gilkey FW, Moser RP Jr. Osteoid osteoma. Radiographics. 1991;11(4):671-696.
 10. Shukla S, Clarke AW, Saifuddin A. Imaging features of foot osteoid osteoma [published online ahead of print July 15, 2009]. Skeletal Radiol. 2010;39(7):683-689.
 11. C. Wierks, L. M. Lomasney, and T. C. Demos, "Diagnosis: osteoid osteoma," Orthopedics, vol. 27, pp. 1205–1208, 2004.
 12. Ramos L, Santos JA, Santos G, et al. Radiofrequency ablation in osteoid osteoma of the finger. J Hand Surg 2005;30A:798–802.
 13. Barca F, Acciaro AL, Recchioni MD. Osteoid osteoma of the phalanx: enlargement of the toe: two case reports. Foot Ankle Int 1998;19:388–93.
 14. Sluga M, Windhager R, Pfeiffer M, et al. Peripheral osteoid osteoma: is there still a place for traditional surgery? J Bone Joint Surg 2002;84B:249–51.