



Osteoid osteoma with an atypical nidus: A case report

Khodamorad Jamshidi^a, Reza Shafipour^{b,*}, Iman Qomashi^b

^a Associate Professor of Orthopaedic Surgery, Tehran University of Medical Sciences, Shafa Yahyaian Hospital, Baharestan Sq., Tehran, Iran

^b Orthopaedic Surgery Resident, Tehran University of Medical Sciences, Shafa Yahyaian Hospital, Baharestan Sq., Tehran, Iran

ARTICLE INFO

Article history:

Received 6 February 2011

Received in revised form 4 September 2011

Accepted 7 September 2011

Keywords:

Osteoid osteoma

Atypical nidus

Radiography

Calcified nidus

ABSTRACT

Osteoid osteoma is a benign tumor that can be seen in both cortical or cancellous bone. Radiographic appearance is usually diagnostic. It consists of a small nidus usually less than 1.5 cm and a surrounding bony sclerosis. We present one case of osteoid osteoma with an unusual (nearly completely calcified) nidus.

© 2011 Published by Elsevier Ltd on behalf of European Foot and Ankle Society.

1. Introduction

Osteoid osteoma is a common, benign osteoblastic neoplasm [2]. Most of them are found in the second or third decades but this tumor may be seen in the older patients [2]. The most common sites of involvement are the femur and the tibia [1].

Depending upon the location, there are three types of osteoid osteoma: cortical, cancellous and subperiosteal. The cortical type has a central nidus surrounded by bone sclerosis and is the most common. The cancellous has an early presentation of a nidus with little or no sclerotic changes but later may develop reactive bone at some distance from the nidus. Lastly, the subperiosteal is the least common and may have erosion of the bone beneath the nidus. Moreover, the subperiosteal type may affect neighboring joints and cause synovitis [9].

The foot is a relatively common site for osteoid osteoma and at this particular area the cancellous and subperiosteal involvements are more common than the cortical. The radiologic findings are usually indicative of partial calcified nidus [10]. In this paper we present a case of osteoid osteoma of distal tibia in cancellous bone with fully calcified nidus that can be confusing.

2. Case report

A written consent was obtained from the patient. A 25 years old man presented with a painful ankle relieved by Aspirin since 1 year ago and an ankle swelling since 5 months ago. There was not any

history of weight loss or constitutional symptoms. General physical exam was normal and there was only mild swelling and tenderness around the anteromedial aspect of the left ankle (Fig. 7). Laboratory tests were normal.

On the plain radiograph a calcified lesion could be seen in the distal tibia (Fig. 1A and B). There was also nearly completely calcified lesion on the CT scan imaging (Fig. 2).

There was increased uptake of the distal tibia on the technetium bone scan (Fig. 3). T2 images of the MRI showed bone marrow edema around a nidus (Fig. 4A and B).

As the treatment through an anteromedial approach the lesion was removed by intracapsular curettage. The lesion included



Fig. 1. Anteroposterior (A) and lateral (B) ankle x-rays showing a calcified lesion on distal tibia (yellow arrows).

* Corresponding author. Tel.: +98 9124585049.

E-mail address: reza_shafipour@yahoo.com (R. Shafipour).



Fig. 2. Axial CT scan showing near complete calcification of the lesion on the anteromedial aspect of left distal tibia (yellow arrows).

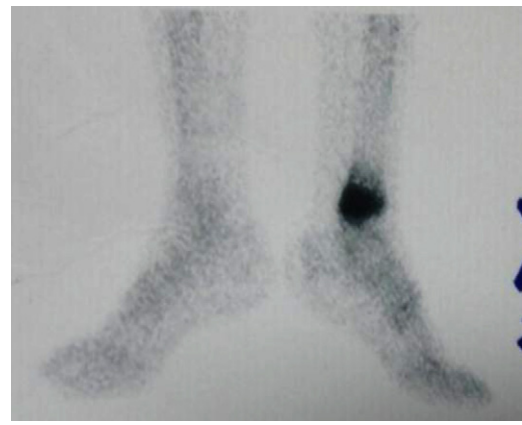


Fig. 3. Technetium bone scan revealing increased uptake of the left distal tibia.

creamy, rubbery tissues associated with fragments of bone (Fig. 5).

The microscopic appearance consists of fibrovascular tissue with immature bony trabeculae surrounded by osteoblasts (Fig. 6). Finally the diagnosis was Osteoid osteoma. The patient's symptoms disappeared immediately after surgery. Two years later, the patient is pain-free and has a good range of motion, and there is no local recurrence of the tumor.

3. Discussion

In osteoid osteoma, the most common symptom is pain (typically night pain) relieved by Aspirin [1]. Soft tissue swelling may be prominent in the bone superficial to the skin [12]. This patient presented with swelling over the involved area and pain. The latter was relieved by aspirin.

Imaging studies are diagnostic because of typical radiographic appearance of a central nidus with surrounding bony sclerosis [8]. Morresan et al. analyzed the nidus of 55 osteoid osteoma and found

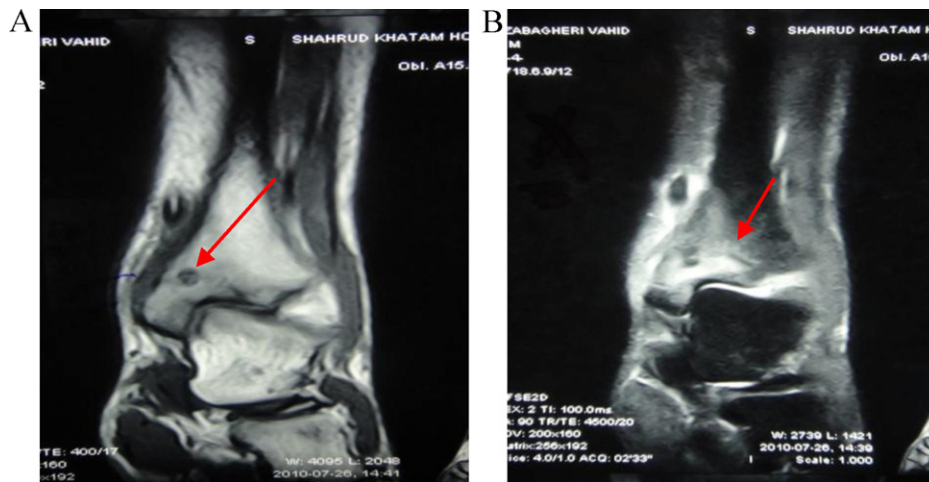


Fig. 4. (A) Coronal T1 weighted MRI showing hypointense nidus (Red arrow). (B) Coronal T2 weighed MRI showing bone marrow edema around a nidus (Red arrow).

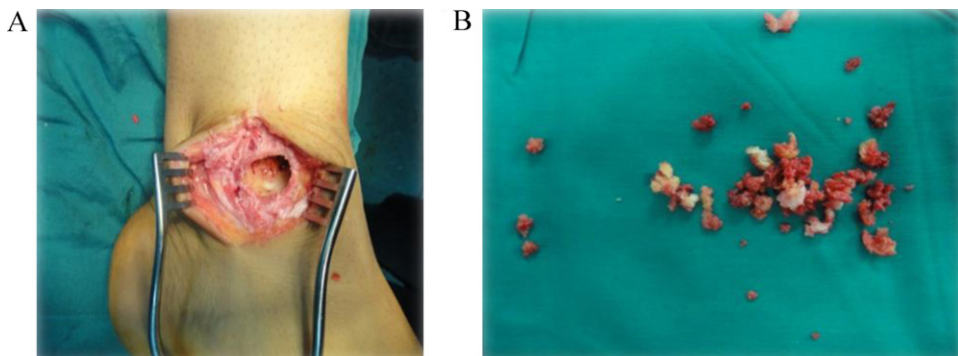


Fig. 5. There was a localized lesion on the medial aspect of distal Tibia (A and B) that was removed using curettes.

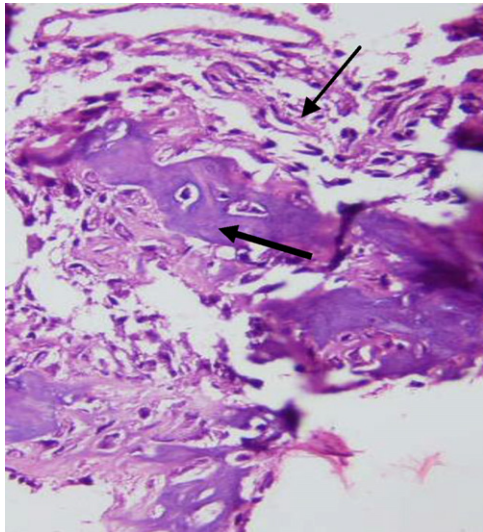


Fig. 6. Histological features showing fibroblastic stroma (thin arrow) and woven bone (thick arrow) with the plump osteoblasts (Hematoxylin and eosin stain; magnification: 200×).

only 3 were partially radiopaque with no reaction [13]. In this case, the nidus was fully calcified.

There are a few reports of juxta-articular osteoid osteoma that the lesion is seen as a lucent nidus without any sclerosis on plain radiograph or CT [2,5]. Because of absence of the typical sclerosis on the plain radiographs diagnosis may be delayed in these cases [3]. Robert et al. reported a case of atypical nidus in distal humerus with elbow joint involvement in which there were joint effusion, limitation of motion and increased uptake of technetium in the elbow joint [14]. In this case there was not involvement of the ankle joint. There was not any case report of completely ossified nidus in the literature so in this paper we presented a case of osteoid osteoma of distal tibia with an atypical nidus. We present this case because of its atypical radiographic appearance of no lucency or surrounding sclerosis. There was only a bizarre ossified lesion in the distal tibia with the diagnosis of Osteoid osteoma. Although “bone island” was the first diagnosis for it but swelling and tenderness were against that diagnosis. Radiofrequency methods for ablation of the lesion was not applied as the proximity of the nidus to the joint. In order to achieve a definite diagnosis we need more tissue rather than needle biopsy.

As indicated in this case, MRI shows a nonspecific edema around nidus in osteoid osteoma. This has been shown in other



Fig. 7. Patient's photograph of the left ankle showing mild swelling anteromedially.

reports as well and can lead to delays in diagnosis and treatment of osteoid osteoma [7,9].

The bone scan of this case shows diffused uptake of technetium 99 in distal tibia. The same result has been reported in previous studies as well [4]. Finally, our case was interesting because of having a completely calcified lesion on the plain radiograph and CT scan.

References

- [1] Li GX, Guo W, Tang S, Li X, Qi DW. Diagnosis and treatment of osteoid osteoma. *Zhongguo Gu Shang* 2010;23(8):629–31.
- [2] Mommert I, Heuschmidt M, Suckel A. Intraarticular osteoid osteoma as a cause of chronic ankle pain. *Orthopade* 2009;38(3):269–73.
- [3] Klingenberg L, Konradsen L. Osteoid osteoma in the hip of 12-year-old girl. *Ugeskr Laeger* 2008;170(50):41–2.
- [4] Julie SM, Philip B, Nancy BG. Osteoid osteoma of the hip: unusual isotopic appearance. *AJR* 1979;133:322.
- [5] Alan ES, Ramiro JH. Intra capsular osteoid osteoma of the proximal femur: findings on plain film and CT. *AJR* 1990;154:1241–4.
- [7] Rubin G, Wolovelsky A, Rinott M, Rozen N. Osteoid osteoma of the hamate: an unusual cause of ulnar-sided wrist pain. *Orthopedics* 2010;33(7):513. doi: 10.3928/01477447-20100526-17.
- [8] Canale ST, Beaty JH. *Campbell's operative orthopaedics*. 11th ed. 2008.
- [9] Jackson WJ, Markiewicz AD. Osteoid osteoma of the hamate. *Orthopedics* 2008;31(5):496.
- [10] Jack E, Anthony FD, Philip JH. Osteoid osteoma (roentgenographic emphasis). *Clin Orthop Relat Res* 1996.
- [12] Chandler FA, Kael H. Osteoid osteoma. *Arch Surg* 1960;60:294.
- [13] Morresan GM, Hawes LE, Sacco JJ. Incomplete removal of osteoid osteoma. *Am J Surg* 1950;80:476.
- [14] Roberts P, Davies M, Starkie CM, Grimer RJ. The nidus of an osteoid osteoma mimicking an os supratrochleare dorsal. Northfield, Birmingham: Bone Tumour Treatment Service, Department of Radiology, Royal Orthopaedic Hospital; 1990.