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Case Report

Osteoid Osteoma of the Lower Extremity of the Ulna: A Case Report, Rare Location and Review of the Literature

Ghannam Abdelaziz, EL Maqrout Amine*, Mekkaoui Jalal, Moncef Boufettal, Bassir Reda Allah, Kharmaz Mohammed, Lamrani Moulay Omar and Berrada Mohammed Saleh

Department of Orthopedic Surgery, Ibn Sina Hospital, University Mohamed V, Rabat, Morocco

***Corresponding Author:** EL Maqrout Amine, Department of Orthopedic Surgery, Ibn Sina Hospital, University Mohamed V, Rabat, Morocco.

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Abstract

Osteoid osteoma is a benign primary bone tumor. This tumor is relatively common, represents 12% of all benign bone tumors and about 2 to 3% of all bone tumors. In this work, we report the case of a young patient presenting with histologically confirmed osteoid osteoma. This was a 29-year-old patient referred for chronic pain in the forearm. The radiographs of the forearm, face and profile show a heterogeneous area opposite the lower third of the ulna without abnormalities of the soft parts. The CT scan of the forearm showed the presence of a hypodense nodular lesion at the level of the lower third of the ulna with a reaction a minor osteosclerosis, the treatment of which consists of a total surgical excision.

Keywords: *Osteoid Osteoma; CT; Bone Tumor*

Introduction

Osteoid osteoma is a painful benign bone tumor that can be complicated by joint damage. It preferentially affects adolescents and young adults with male predominance. The distribution on the skeleton shows a predominance for long bones, especially femur and tibia (75% of locations). Anatomopathological analysis shows a central hyper vascularized nidus, always less than 2 cm, with peripheral sclerosis. The curative treatment is essentially surgical; the complete excision of the tumor allows healing with an exceptional risk of recurrence [1]. We report, in this work, the case of a young patient presenting an osteoid osteoma of the lower extremity of the ulna whose scannographic appearance is unusual in order to illustrate the importance of the functional impact of such a localization and the diagnostic difficulties resulting from this with a review of the literature.

Patient and Observation

A young patient (20 years) with no medical history (no concept of trauma), complaining of pains chronic sitting just above his right wrist resulting in her lameness partial view total not allowing him inactive for eight months (Figure 1). On clinical examination, pain on palpation over the lower third of the ulna. The pain persisted despite the various drug and physical treatments followed. This pain reported by the patient has no particular schedule. The standard x-ray of the forearm showed a doubtful image (osteocondensation) at

the level of the lower third of the right ulna compared to the opposite side (Figure 2). CT wrist objectified at the end lower of the ulna consistent appearance of a lesion osteoma osteoid (Figure 3). Surgery identified the lesion suggestive of osteoid osteoma and it was removed (Figure 4). Pathological examination confirmed the diagnosis of osteoid osteoma. The postoperative evolution of the patient was entirely satisfactory; we are witnessing the total disappearance of all painful phenomena as well as a total resumption of all activity after three months.

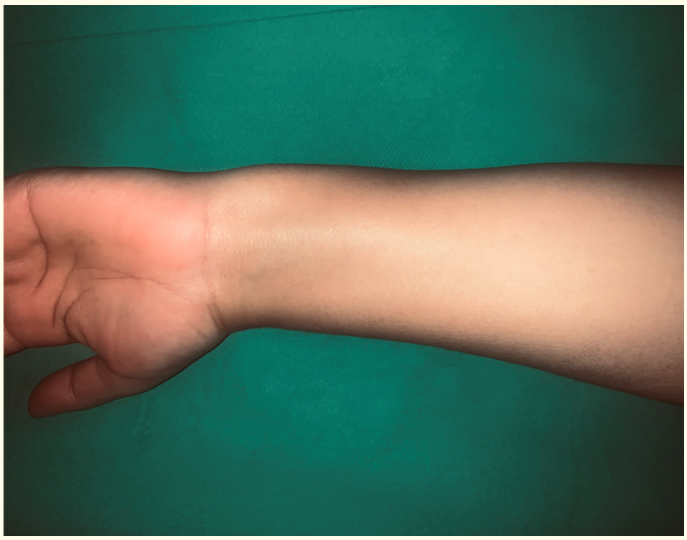

Figure 1: *Clinical aspect.*

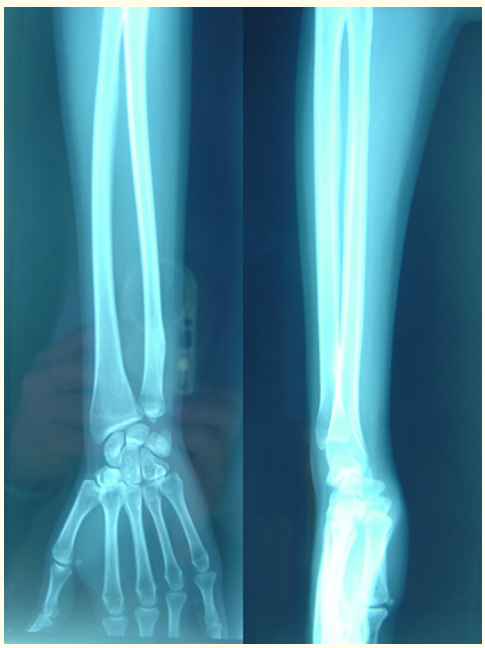

Figure 2: *Standard radiograph of the forearm on initial examination (a) face (b) side. Signs of periostitis and "onion leaf" image with bone sclerosis at the lower end of the ulna.*

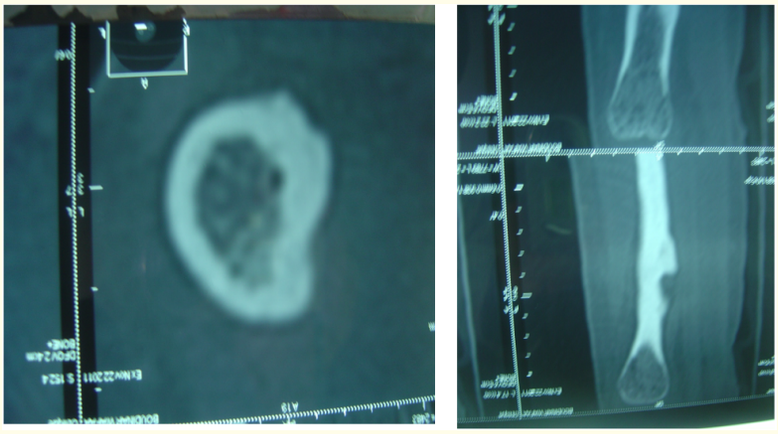

Figure 3: *CT scan of the forearm: presence of a hypodense nodular lesion at the level of the inferior third of the ulna with a small osteo-sclerotic reaction.*

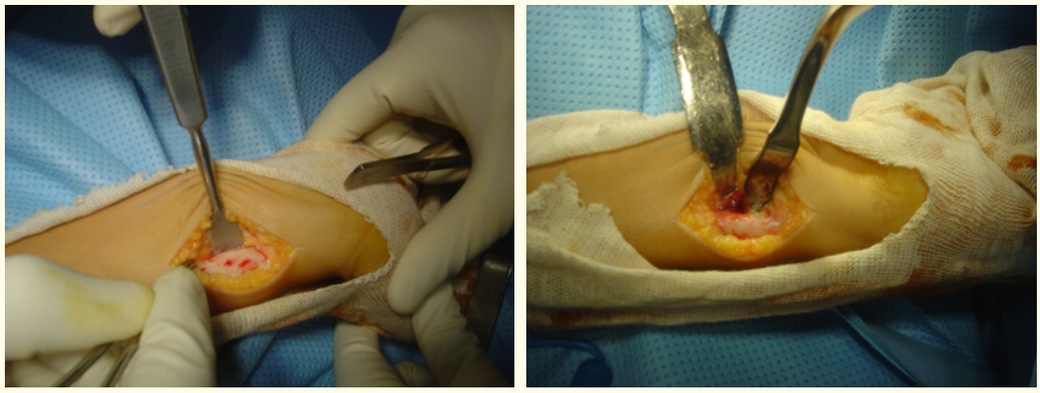

Figure 4: *Surgical resection of the lesion.*

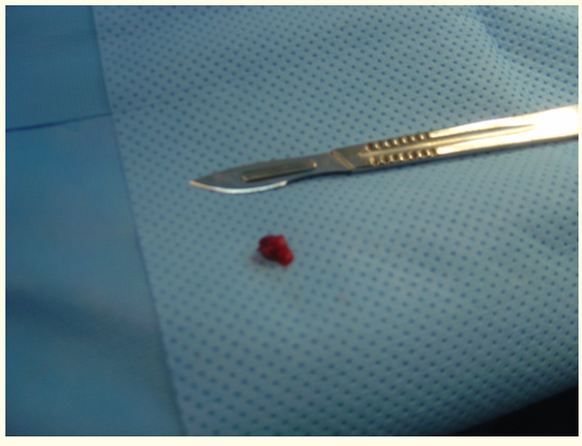

Figure 5: *Macroscopic aspect of the lesion.*

Discussion

Osteoid osteoma is characterized by a specific structure, the nidus, surrounded by a reactive osteocondensation and represents 2 to 3% of all bone tumors and 10 to 20% of all benign bone tumors [2, 3]. Localization at the ulna is rare, which can lead to diagnostic delay. It is preferentially located in the long bones [4] with a predilection for the lower limbs [5], in particular the tibia and the femur. Few of the articles in the literature report such a localization in 1% of cases [1]. The clinical manifestations of osteoid osteoma are most often made up of nocturnal pain, insomnia, calmed by taking salicylates [5]. Therefore, osteoid osteoma of the lower extremity of the radius, despite its rarity, should always be considered as a differential diagnosis in young patients presenting with a history of pain without any history of trauma [1]. The clinical diagnosis, the conventional imaging (radiographs and computed tomography [CT]) evoked a traumatic process or reaction to trauma just one tumor pathology. Bone scintigraphy did not, wrongly, by its elective non-fixing nature, retain the diagnosis of osteoid osteoma [3]. The diagnosis of osteoid osteoma with negative scintigraphy is exceptional. The main hypotheses used are a technical defect or a weak osteoblastic activity of the tumor [6]. Indeed, the nidus appears as a small well-circumscribed hyperfixation focus. MRI was found to be the most sensitive examination. The negativity of CT is probably due to a technical defect due to insufficiently contiguous cuts. CT is, according to the data in the literature, the most efficient examination [7]. MRI is the most sensitive examination for the diagnosis of osteoid osteoma [3, 8] because it shows changes in the intramedullary cancellous bone (intraosseous edema) and perilesional soft tissue related to the synovitis. These lesions appear hyperintense in the T2-weighted and fat saturation sequences [2,3]. Assoun., *et al*. [9] showed a significant correlation between the presence or absence of remodeling of the cancellous bone and perilesional soft tissue visible on MRI with the taking of an anti-inflammatory treatment. Edematous reaction involving cancellous bone or extra-bony soft tissue, often more extensive than reactive osteosclerosis. The nidus is enhanced after intravenous injection of gadolinium demonstrating the hypervascularization of the lesion [9-11] while the perilesional sclerosis and the calcified central part of the nidus appear hypointense in all the sequences [8,9]. The non-enhancement of the central zone of the nidus with the absence of visible abscess formation makes it possible to differentiate it from an infectious pathology [12]. Faced with a suspicion of osteoid osteoma, the imaging workup must therefore combine an MRI and a CT in thin sections centered on the lesion. Each of these two examinations providing useful information for the final positive diagnosis [13]. It will also specify the location, size and relationships of the lesion with other structures, including joint surfaces. It makes it possible to plan the surgical treatment, which consists of excision of the entire nidus to prevent recurrence [9,11].

Bone scintigraphy [6,14], CT scan and in some cases, MRI make the diagnosis almost certain before histological confirmation [6,15]. Nevertheless, this diagnosis can encounter multiple difficulties, in particular in front of unusual locations in particular at the level of the lower end of the ulna. In the presence of any atypia, a biopsy should be performed [5,14]. In the literature, for the treatment of this benign tumor, although it can evolve spontaneously after years, several techniques are used: surgical approach with bone excision in block [14] as in our case; scano-guided percutaneous resection [16]; percutaneous alcoholization: biopsy - percutaneous resection by small trephines and sclerosis by alcoholization and complete destruction of the lesion [17].

Conclusion

The localization of the osteoid osteoma in the lower third of the ulna is rare. In case of doubt of the diagnosis and in front of normal radiographs, the tomodensitometry in thin sections represents the most specific examination allowing a positive diagnosis, the sensitivity of which can be improved by the association with an MRI. Complete surgical excision of the lesion usually allows total healing and prevents recurrence. It can be obtained by classical open surgery or by more modern minimally invasive techniques: percutaneous scano-guided resection [16].

Conflicts of Interest

The authors declare no conflict of interest.

Contributions from the Authors

All the authors contributed to the conduct of this work. All authors also declare that they have read and approved the final version of the manuscript.

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