DOI: https://doi.org/10.30795/jfootankle.2023.v17.1662

Case Report

Chondroblastoma of the talus: a case report

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Abstract

Chondroblastoma is a rare benign cartilaginous tumor comprising approximately 1% of all bone tumors. It usually occurs in patients from 10 to 25 years, being more frequent in men (2:1). It is usually located in the epiphysis of long bones, mainly in the distal femur, tibia, and proximal humerus, in individuals with open physis. This paper presents an atypical presentation of chondroblastoma of the talus, with few similar publications in the literature. A 33-year-old male patient was treated in a hospital with pain in his left ankle for about three years. After imaging and histopathological examinations, the hypothesis of chondroblastoma was confirmed, and resection with intralesional margin was performed.

Level of Evidence V; Case Report; Expert Opinion.

Keywords: Chondroblastoma; Bone neoplasms; Talus.

Introduction

Chondroblastoma is a rare benign cartilaginous tumor comprising approximately 1% of all bone tumors. It usually occurs in patients from 10 to 25 years, being more frequent in men (2:1). It is usually located in the epiphysis of long bones, mainly in the distal femur, proximal tibia, and humerus, in individuals with open physis[1,2]. The differential diagnoses are giant cell tumor (GTC), aneurysmal bone cyst, and chondromyxoid fibroma[3]. Symptoms include progressive pain, which, due to the topography of the lesion, can simulate intraarticular diseases, with joint effusion and limitation of the range of motion[1,2]. It is classified, according to Enneking, into type 2 (active) or 3 (aggressive)[2].

This paper presents an atypical presentation of chondroblastoma of the talus, with few similar publications in the literature. First, it will present imaging and the clinical and histopathological aspects, followed by the surgical approach adopted and the postoperative result.

Case description

This study was approved by the Institution Ethics Committee.

A 33-year-old male patient with no pathological history was referred to a hospital to treat a suspected tumor in the foot. The patient complained of pain and functional limitation in the left ankle, especially in the medial region, lasting three years. The patient attended several emergency rooms without diagnosis or improvement with conventional analgesics and anti-inflammatory drugs.

After consultation in one of the services, imaging tests were requested and brought by the patient during the first consultation at our service. Radiographs of the left ankle were performed on 01/06/2016 (Figure 1) and identified a lytic lesion in the talus. Magnetic resonance imaging was also performed on 01/06/2016 (Figure 2) and detected a cystic formation of thick/hematic content and multiseptate in the anterior region of the talus (2.4x2.2x1.5cm). The patient underwent a trephine biopsy on 09/12/2016; however, it was inconclusive. A new biopsy was performed on 05/23/2017

Study performed at the Hospital Otávio de Freitas, Recife, PE, Brazil.

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How to cite this article: Barbosa TMS, Souza AMG, Alves JVLB, Moreth MSA, Vieira KCM, Freire VBF. Chondroblastoma of the talus: a case report. J Foot Ankle. 2023;17(1):39-42.

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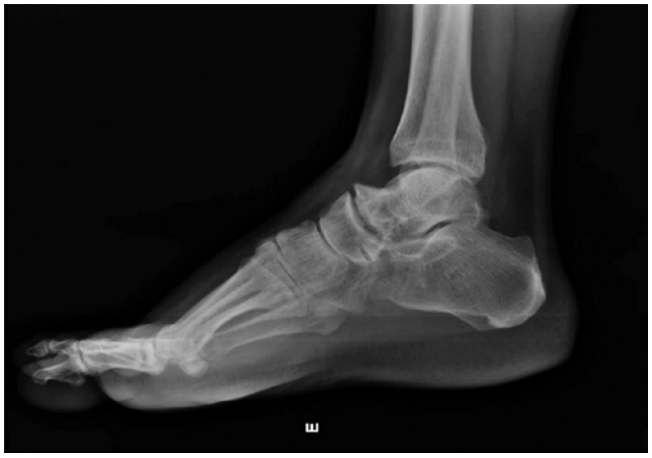

Figure 1. Initial profile radiograph of the left foot, demonstrating a solution of continuity in the distal topography of the talus, of predominantly lytic aspect and discrete sclerosis halo.

(Figure 3), and the anatomopathological was compatible with chondroblastoma, due to the microscopic characteristics of chondroblast layers, with a rounded shape, on a chondroid matrix background. Differential diagnosis with GTC is important because multinucleated giant cells are present in about 20% of cases. The typical "chicken wire" appearance, described in the literature on chondroblastomas, was not observed in this histopathological[1].

The initial score of the American Orthopaedic Foot and Ankle Society (AOFAS) was 31 points[4], which demonstrated the morbidity of the condition. Due to its symptomatology and limited bone destruction, the tumor was classified as Enneking type 2 (benign active)[1].

Due to the lesion characteristics, an intralesional approach was performed on 12/28/2017. The anterior access to the ankle was used at a half distance between the malleolus, about 15 cm, and longitudinal. It is an intermuscular plane between the extensor hallux longus and the extensor digitorum

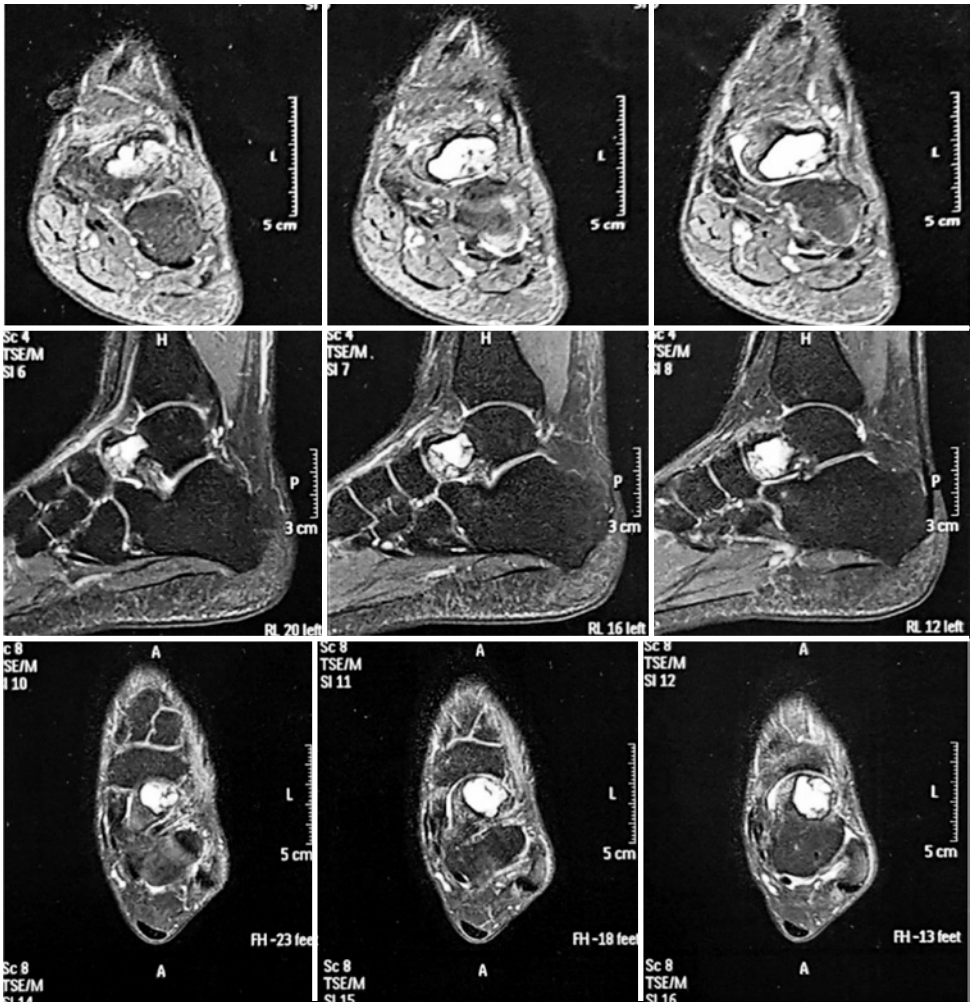

Figure 2. Magnetic resonance imaging in three sections: coronal, sagittal, and axial, and the tumor can be observed in the anterior region of the talus, especially affecting the neck and head.

longus. The structures at risk are the cutaneous branches of the superficial and deep fibular nerve and the anterior tibial artery[5]. After anterior access to the talus, an osteotomy was performed to access the tumor. Then, the tumor resection was performed from curettage, drilling, and subsequent electrocauterization of the lesion walls. Although close to the talonavicular region, the tumor was restricted to the talus. Calcified, whitish, and sclerotic macroscopic material was observed. The cavity (Figure 4) was filled with an iliac crest cancellous graft. The specimen's anatomopathological examination confirmed once again the chondroblastoma.

After more than four years of surgery, there was no tumor recurrence. The radiographs showed the talus remodeling, with adequate bone graft osteointegration. The AOFAS was reapplied, and the patient scored 84 points, demonstrating a significant improvement in functional clinical (Figure 5).

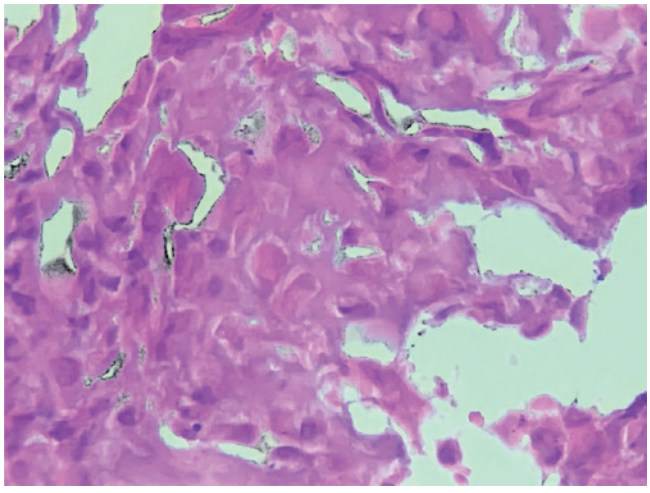

Figure 3. Anatomopathological analysis. Giant cells, amid the proliferation of plasmacytoid cells (pink cytoplasm with rejected nuclei), sketching chicken wire appearance.

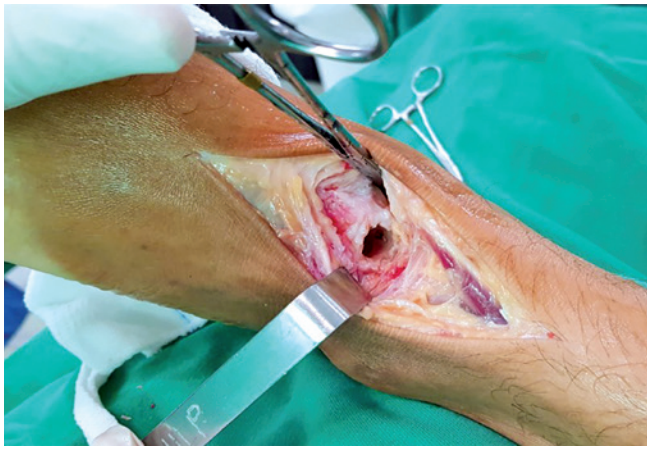

Figure 4. Intraoperative image demonstrating excision of the tumor in the talar region.

Discussion

Chondroblastoma is a benign bone tumor usually located in the epiphysis of skeletally immature individuals. It accounts for only about 1% of all bone tumors[3]; of this total, only 4% approximately develop in the talus[6]. When it affects the foot, the most affected sites are the talus and the calcaneus[7,8]. In the literature, chondroblastoma is the most common benign bone tumor found in the talus[9]. In unusual presentation sites, these tumors can be diagnosed delayed by months or even years[10]. Malignancy is rare (less than 2%) and may affect the lungs, bones, or soft tissues[3]. Clinical aspects are nonspecific and may include insidious pain (more common), edema, and joint stiffness[11], which can delay diagnosis. These characteristics were observed in the patient in this study, who resorted to multiple outpatient visits before being correctly conducted.

Radiographically, the lesion is predominantly lytic, rounded, delimited by sclerosis halo, and may present calcifications inside. Computed tomography can be useful in delimitation and more accurate tumor visualization. Magnetic resonance imaging, in addition to this information, allows the evaluation

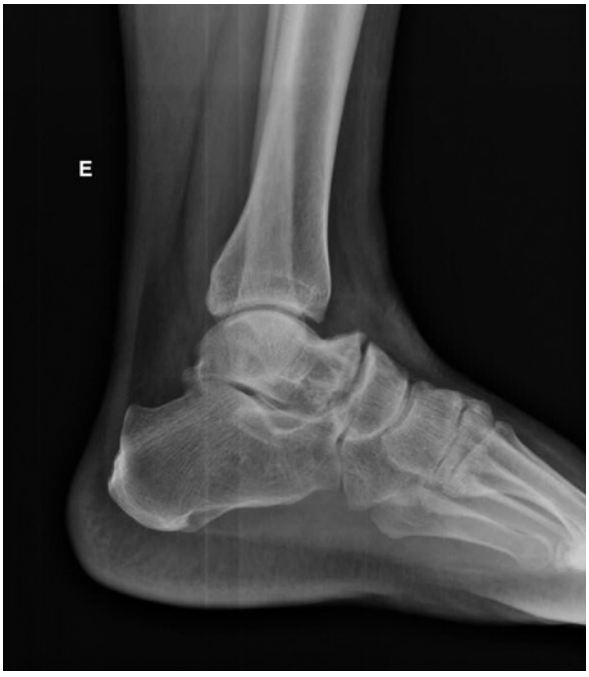

Figure 5. A more recent profile radiograph of the left foot, five years after tumor resection demonstrating the talus remodeling. It is still possible to observe changes compatible with talonavicular osteoarthritis (slight decrease in joint space and small osteophytes, for example).

of the involvement of adjacent soft tissues, demonstrating, for example, important adjacent edema, and was, therefore, the complementary examination of choice for the present case[1,2].

Anatomopathology is characterized by relatively undifferentiated cell tissue, with cells similar to chondroblasts (round or polygonal) and osteoclasts (multinucleated giants). There is also a small amount of intercellular cartilaginous matrix with calcification areas. This set confers the aspect called "chicken wire"[2]. In addition, secondary areas of aneurysmal bone cysts can be found, especially when the tumor affects the hands and feet[3]. These last two findings, however, were not found in the reported patient.

The treatment choice is surgical, with resection of the lesion from curettage and some adjuvant method (electrocauterization with a scalpel or phenol, for example). Preferably, it is recommended to fill the cavity from excision with an autologous bone graft[2,8,12].

The AOFAS score includes subjective (patient-informed) and objective (physician-assessed) criteria for pain assessment and ankle and hindfoot functionality. It varies from 0-100, so the closer to 100 points, the better the clinical and functional condition. The change in the reported patient's score (31 initially to 84 points after surgery) evidences the significant improvement obtained by the therapy used in this case. The points lost were probably due to the developing subtalar and talonavicular arthrosis due to the delayed tumor diagnosis. It is worth mentioning that it could be useful to evaluate with hindfoot computed tomography to investigate these factors. Although the prognosis is good after treatment, recurrence rates are relatively high, ranging from 10-20%[1]. However, there are no data specifically related to the talus. Local recurrence is believed to be mainly associated with a poor surgical approach, especially ineffective curettage[13]. The approach should be aggressive, avoiding remaining cells and preserving physis in younger individuals. The use of intraoperative adjuvants, such as electrocauterization, is described in the literature[1]. The patient did not present recurrence in the five years following surgery.

A case of chondroblastoma of the talus, a rare manifestation of the tumor, was presented. After confirmed diagnosis by histopathology, surgical intervention was performed, with resection and lesion filling with a bone graft. After five years of follow-up, a good clinical evolution was observed without local recurrence.

Authors' contributions: Each author contributed individually and significantly to the development of this article: TMSB *(https://orcid.org/0000-0002-7166-3800) Conceived and planned the activities that led to the study, performed the surgeries and bibliographic review; AMGS *(https://orcid.org/0000-0003-3771-9628) Statistical analysis, interpreted the results of the studies and data collection; JVLBA *(https://orcid.org/0000-0002-1223-2774) Performed the surgeries, participated in the review process and formatting of the article; MSAM *(https://orcid.org/0000-0002-9759-7952) Clinical examination, interpreted the results of the study and approved the final version; KCMV *(https://orcid.org/0000-0003-1579-1020) Performed the surgeries, clinical examination, and formatting of the article. All authors read and approved the final manuscript. *ORCID (Open Researcher and Contributor ID).

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