



A Giant Extraskkeletal Chondroma of the Foot: A Case Report

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Chondromas and osteochondromas are common benign bone tumors frequently located in the small bones of hands and feet. Extraskkeletal chondromas are much rarer and are exceptional if their size exceeds 3 cm.

We report an exceptional case of a giant extraskkeletal chondroma of the foot in a 71-year-old man who presented to our outpatient department with a huge mass of the dorsal side of the right foot.

The clinical aspect and the magnetic resonance imaging were suggestive of giant cell tumor of tendon sheath. After a wide surgical excision was performed, the pre-operative findings and histological study suggested otherwise.

Through this case report we discuss the diagnosis issues and the treatment options of extraskkeletal chondromas.

Keywords: *Extraskkeletal; chondroma; benign; tumor; foot; giant cell tumor; surgery.*

1. INTRODUCTION

Chondromas are common benign hyaline cartilaginous tumors that usually arise in the medullary canal, where they are referred to as enchondroma. They rarely arise in other places such as the periosteal surface of the bones and soft tissues [1,2].

Extraskeletal chondroma or soft-tissue chondroma is composed of cartilaginous nodules, which is well-defined and developed in the soft tissues without adhesion to bone or periosteum [3]. It is a rare slow-growing lesion that predominantly occurs in the hands and feet, exceptionally at other locations. Only a few cases have been reported in the literature.

Through this case report, we discuss the diagnosis issues and the treatment options of extraskeletal chondromas.

2. CASE REPORT

We report the case of a 71-year-old man, without any relevant medical history, who presented to our outpatient department with a huge mass of the dorsal aspect of his right Hallux.

The patient described a progressive onset of the mass over 8 years, initially associated with

a history of trauma to the foot with the appearance of a subcutaneous swelling which gradually increased in volume with extension to the first commissure and to the first metatarsal.

Physical examination of the right foot revealed a painless giant mass of ovoid shape of the dorsal aspect of the Hallux with a large pedicelled base measuring 55 mm (Fig. 1).

The mass was hard but not tender upon palpation or upon active or passive motion of the Hallux.

The plain radiograph shows shadow of the tumor that may be suggestive of soft tissue mass around the dorsal aspect of the Hallux with diffuse calcifications. There was no evidence of periosteal reaction or cortical erosion (Fig. 2).

Magnetic Resonance Imaging (MRI) revealed a Well-demarcated encapsulated soft-tissue mass on the dorsal side of the hallux and second toe measuring 55 X 34 mm with moderately enhanced signal after gadolinium injection. It presents extensive contact with the extensor hallucis longus tendon suggestive of a giant cell tumor of tendon sheath (Fig. 3).



Fig. 1. Clinical aspect of the right foot showing a giant mass of ovoid shape of the dorsal aspect of the hallux with a large pedicelled base measuring 55 mm



Fig. 2. Plain radiograph showing shadow of the tumor that may be suggestive of soft tissue mass around the dorsal aspect of the Hallux with diffuse calcifications

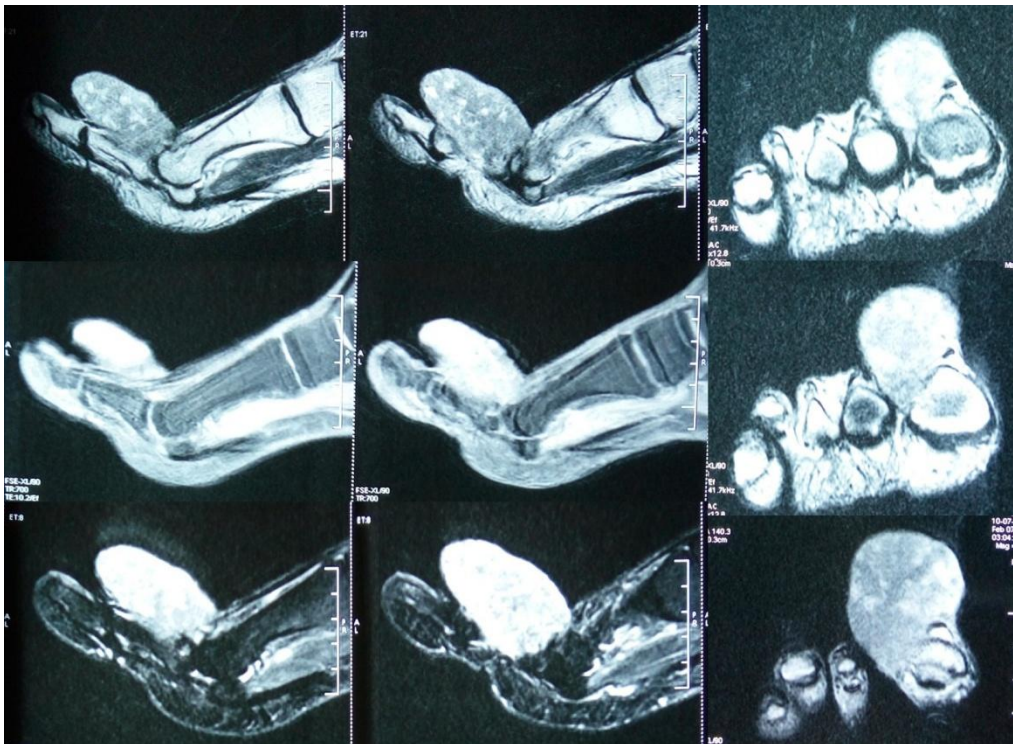


Fig. 3. MRI of the right foot revealing a Well-demarcated encapsulated soft-tissue mass on the dorsal side of the hallux and second toe measuring 55 X 34 mm with moderately enhanced signal after gadolinium injection. it presents extensive contact with the extensor hallucis longus tendon suggestive of a giant cell tumor of tendon sheath

The patient was operated under general anesthesia. The periphery of the mass was very carefully dissected until the origins of its connections. There was no visible relation with the extensor hallucis longus tendon, but there was a connection to the sheath of the extensor

hallucis brevis tendon and the first metacarpal-phalangeal joint capsule (Fig. 4).

A wide complete excision of the mass was performed and an aesthetic closure of the skin was achieved (Fig. 5).

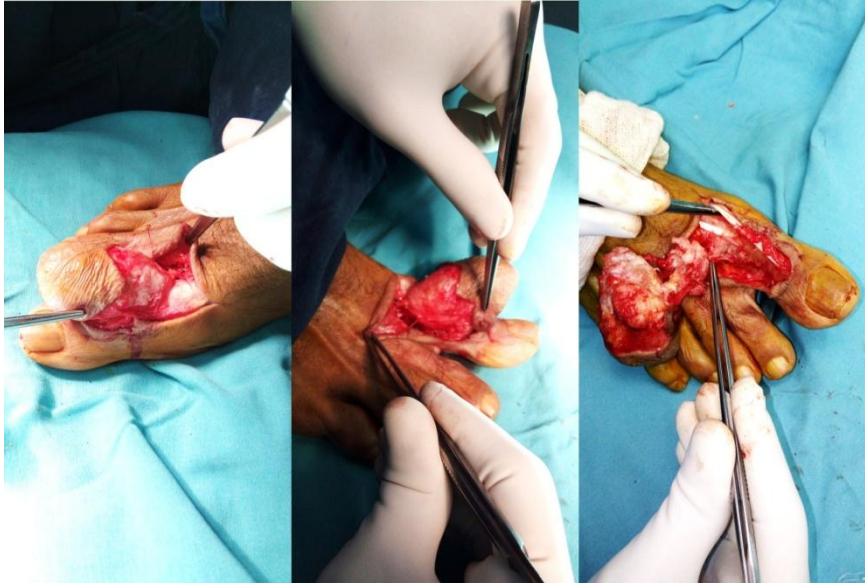


Fig. 4. Peri-operative images showing the very careful dissection of the mass until the origins of its connections. There was not visible relation with the extensor hallucis longus tendon, but there was a connection to the sheath of the extensor hallucis brevis tendon and the first metacarpal-phalangeal joint capsule



Fig. 5. Post-operative images of the right foot showing the aesthetic closure of the skin (left) and the resected mass (right)

The histological study revealed the presence of a well-defined nodule including hyaline cartilage lobules, whose chondrocytes are regular without atypia and without binucleation. Between the lobules there was a fibrous or edematous tissue and some congestive vessels, but there was no signs of malignancy consisting with a giant chondroma.

At the last follow up of 12 months post-operatively, the patient was satisfied with a good functional and aesthetic outcome without recurrence.

3. DISCUSSION

Chondromas and osteochondromas are benign bone tumors and represents 20-50% of all the benign bone tumors. Extraskelatal chondromas accounts for only 1.5% of all benign tumors of the soft tissues [4].

It is a relatively rare tumor, usually located in contact with periarticular tissues or tendon sheaths like in our case. The fingers are the localization of choice in more than 80% of the cases, followed by the foot [5,6]. Other locations like the intraoral region are exceptional and referred to as cartilaginous choriostomas [7].

The tumor tissue forms a well-defined nodule, whose diameter is rarely greater than 2 cm. in our case it was a giant nodule of 5,5 cm. an Extraskelatal chondroma of this size was never reported in the literature.

The etiology of these tumors is still unknown. Some authors believe that they arise from pluripotent cells derived from synovial joint tissue, synovial sheaths of tendons or connective tissue [8].

The usual clinical presentation consists of a painless swelling of the soft parts, which increases slowly in volume, so that the patient usually consults only after a long delay like in our case. The swelling could be painful when it's located on the plantar side especially when walking, on the dorsal aspect of the foot it rather bothers when wearing shoes [4].

The radiological appearance of an extraskelatal chondroma varies according to the extent of calcifications and the reaction of adjacent tissues. Focal or diffuse calcifications could be observed in old lesions. A ring-like or curvilinear calcifications are common and suggests the

presence of hyaline cartilage. Bone lesions are rare, although the mass may be responsible for cortical erosions and remodeling [9]. Even if the extraskelatal chondroma is not attached to the bone, it can cause reshaping of the adjacent cortex [6,10].

On MRI, peripheral contrast enhancement is typically observed in the extraskelatal chondroma, but the adjacent soft tissues are normal. A homogeneous predominantly hyperintense signal on T2-weighted images is observed in most tumors. It is therefore a non-specific sign that is not particularly in favor of a benign cartilage mass [5,10].

The main differential diagnoses are represented by classical osteochondroma, myositis ossificans, synovial chondromatosis, synovial sarcoma, and soft tissue chondrosarcoma [11].

Chondrosarcoma must be suspected in case of an increase in volume of the mass, a change of the intensity of pain or the thickness of the hyaline cartilage becoming greater than 1.5 cm [12]. The malignant transformation of extraskelatal chondroma has not been reported so far in the literature, but only the histological study will judge the exact nature of the mass.

Marginal excision is the treatment of choice. Local recurrence is not uncommon, with a rate of up to 18% [8].

Histological examination should be performed on the entire excision specimen, so as to differentiate an extraskelatal chondroma from a well-differentiated soft-tissue chondrosarcoma.

Macroscopic examination usually shows a well-encapsulated lobulated tumor. Histology is essential to confirm the diagnosis. It shows the presence of chondrocytes labelled with the anti-protein S100 antibody. Well-defined lobules composed of mature hyaline cartilage with variable cellularity are usually observed. Rarely, there are myxoid changes, areas of increased cellularity, and large chondrocytes suggestive of malignancy [5,10].

4. CONCLUSION

Extraskelatal chondroma of the foot is a rare benign tumor that could be easily misdiagnosed because of its nonspecific clinical symptoms. MRI is fundamental in the diagnosis and surgical

planning even if it's findings may be misleading like in our case.

The treatment of choice is simple, consisting of a wide excision of the lesion. Recurrences are not uncommon and require a new surgical excision.

CONSENT

As per international standard or university standard, the patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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