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CASE REPORT

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Extensive giant cell tumor on the foot completely wrapping the extensor hallucis longus: case report

Tumor de células gigantes extenso no pé envolvendo completamente o extensor longo do hálux: relato de caso

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ABSTRACT

In this study, we report the case of a patient with a lobulated expansile lesion of 16.6 cm in its largest diameter, who was referred as having a simple "synovial cyst" in the foot that actually was a giant cell tumor of the tendon sheath along the extensor hallucis longus. Conducting a differential diagnosis of a "synovial cyst" in the foot and ankle, performing adequate surgical planning and using imaging tests, such as nuclear magnetic resonance, increases the probability of treatment success.

Level of Evidence V; Therapeutic Studies; Expert Opinion.

Keywords: Giant cells; Hallux; Tenosynovitis; Tumor; Nuclear magnetic resonance.

RESUMO

Relatamos neste trabalho o caso de um paciente com uma lesão expansiva lobulada de 16,6cm, em seu maior diâmetro, encaminhado como portador de um simples "cisto sinovial" no pé mas, que na verdade, apresentava um tumor de células gigantes de bainha tendinosa ao longo do extensor longo do hálux. Entendemos que, conhecer os diagnósticos diferenciais de "cisto sinovial" no pé e tornozelo, realizando um adequado planejamento cirúrgico e utilização de exames de imagens, como a ressonância nuclear magnética, aumenta a probabilidade de sucesso no tratamento.

Nível de Evidência V; Estudos Terapêuticos; Opinião de Especialista.

Descritores: Células gigantes; Hálux; Tenossinovite; Tumor; Ressonância nuclear magnética.

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INTRODUCTION

Giant cell tumors of the tendon sheath (GCT-TS) comprise 1.6% of all soft tissue tumors; they occur predominantly in females (F:M 2:1), affect patients 30 to 50 years old[1], are characteristically benign, are clearly identified as a mass, are more commonly located in the hand and are less commonly located in the foot and ankle, with an occurrence rate of 3.4% to 17% in the latter two[1,2]. The lite-

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rature reports the involvement of the fibularis brevis, flexor hallucis longus, extensor hallucis brevis, extensor hallucis longus (EHL), Achilles tendon and posterior tibia.

Foot radiographs are usually negative; ultrasonography is not frequently performed, and nuclear magnetic resonance imaging (MRI), the gold standard examination, demonstrates a high diagnostic suggestion[3,4]. Open surgical treatment is the most widely used and recommended treatment, although endoscopic resection for minor and well-located foot injuries has been described[1].

The objective of this study was to report a rare case of a patient with an extensive lesion on the dorsum of the foot, demonstrated by MRI, with characteristics of a GCT-TS, affecting the entire length of the EHL, and the challenge of resecting it without causing neurovascular and functional deficits in the patient.

CASE REPORT

This study was approved by the Research Ethics Committee with registration in the Brazil Platform under CAAE number: 01969518.7.0000.5127.

A 35-year-old male patient was bothered when wearing closed shoes due to a dorsal mass in the right foot with onset one year previously and rapid growth in the prior 3 months. No functional limitation, pain or neurovascular deficit were present in the affected foot (Figure 1). MRI (Figure 2) showed a lobulated expansile lesion for which the largest diameters were 16.6cm x 4.3cm, resulting in the suspicion of a GCT-TS throughout the EHL. In the present case, an S-shaped curvilinear incision of approximately 22cm was performed from the proximal anterolateral ankle region to the metatarsal phalangeal joint of the right hallux. Dissection of the medial and intermediate dorsal cutaneous branches of the deep peroneal nerve and the dorsalis pedis artery was performed. A volume increase involving the entire EHL sheath (Figure 3) and the presence of multilobulated, soft, yellowish brown tumor tissue with GCT-TS characteristics, which were previously described (Figure 4), was found. Complete excision of the lesion was performed under the extensor retinaculum at the ankle, without the need for opening the extensor retinaculum and without damaging neurovascular structures or the EHL (Figure 5). Material sent for histopathological examination resulted in a diagnosis of a diffuse tenosynovial giant cell tumor (pigmented villonodular tenosynovitis).

A post-surgery evaluation by an oncologist did not reveal pulmonary metastasis. Due to the high rates of recurrence, follow-up was performed at the outpatient clinic nine months postoperatively, and no relapse occurred.

The patient presented good wound healing (Figure 6) and had no neurofunctional deficit in the foot.

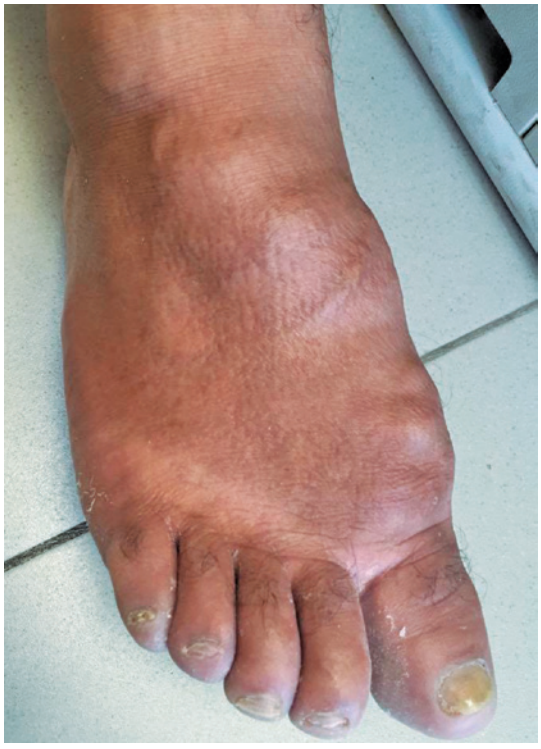

Figure 1. Preoperative image of the right foot showing the tumor mass in the dorsal region.
Source: Author's personal archive.

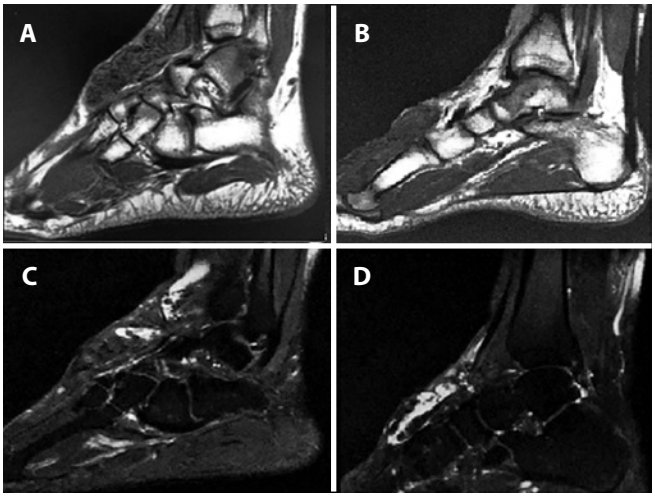

Figure 2. MRI results of the right foot and T1- (A and B) and T2-weighted sagittal sections (C and D) showing an extensive lesion on the back of the foot measuring 16.6 cm along its greatest length.
Source: Author's personal archive.

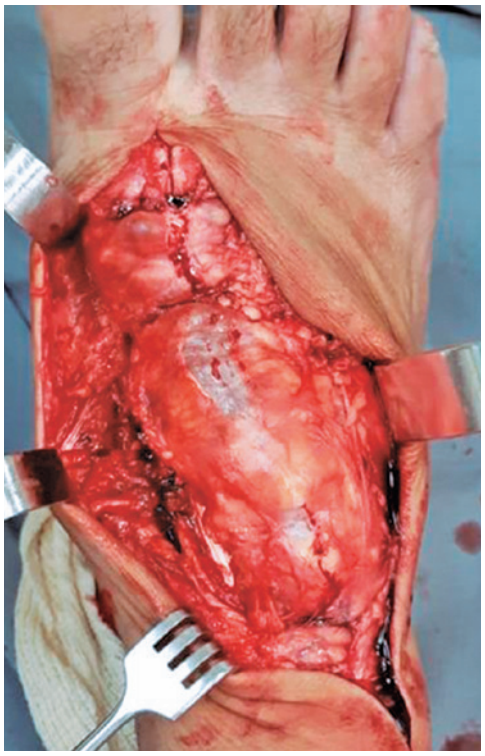

Figure 3. Intraoperative image demonstrating the entire EHL sheath affected by the tumor mass. The lesion is distal to the extensor retinaculum and extends to the proximal phalanx of the hallux.
Source: Author's personal archive.

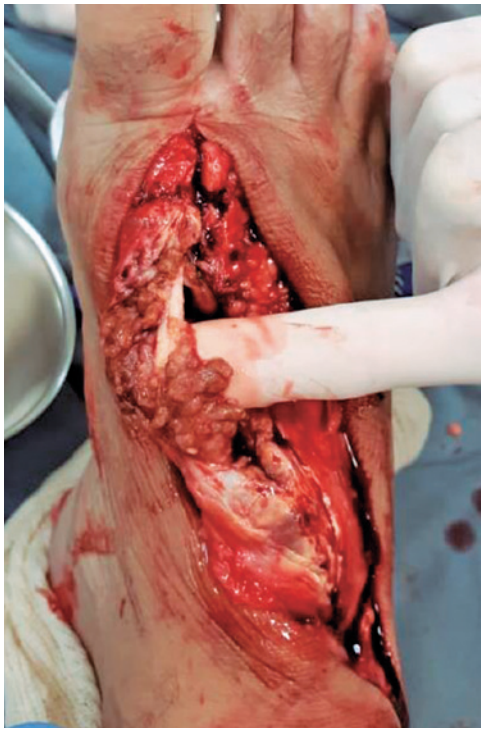

Figure 4. Intraoperative image showing pigmented lobulated lesions involving the EHL, with characteristics of a giant cell tumor of the tendon sheath.
Source: Author's personal archive.

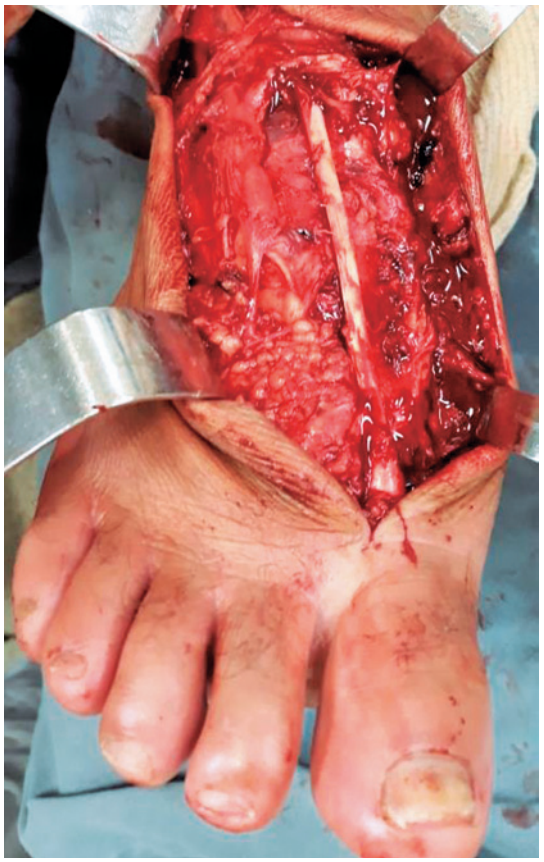

Figure 5. Intraoperative image of post-tumor resection, showing the preservation of the extensor retinaculum and EHL.
Source: Author's personal archive.

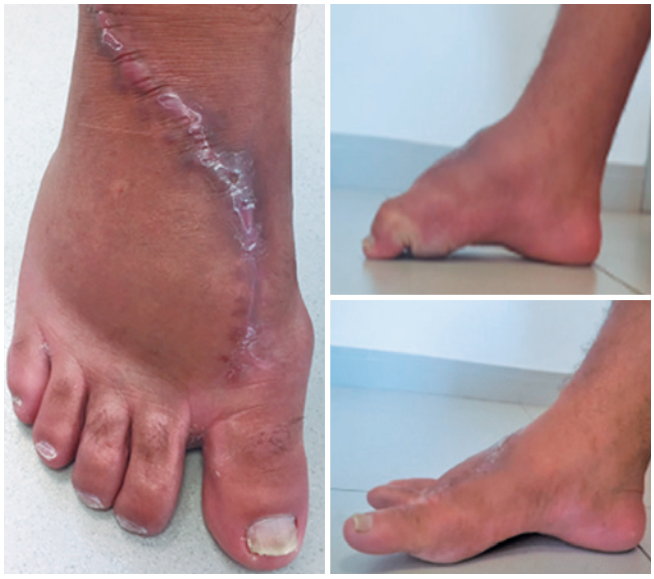

Figure 6. Postoperative images showing the aspect of the foot at 3 months after surgery, with preserved function of the EHL and the flexors of the toes.
Source: Author's personal archive.

DISCUSSION

GCT-TS is a benign tumor of the extremities that is more common in the upper limbs and rare in the foot and ankle region[2], although the latter site is the second most common site[5].

It is believed to occur in two distinct forms: diffuse and localized[6,7], the latter corresponding to 88% of the cases presented in the hands and feet[6].

GCT-TS is the sixth most common benign tumor of the foot, after ganglion cyst, plantar fibroma, epidermal inclusion cyst, lipoma and rheumatoid nodules[8]. Ushijima et al reported a rate of 5% of GCT-TS in the foot and ankle in 207 cases[9] .

Although the etiology of this condition is still not well established, it is known to be associated with an inflammatory or neoplastic process, with the presence of clonal abnormalities under microscopy[5,9]. A previous history of trauma as a causal factor of the lesion is debatable[8,9].

The histological findings indicate a well-differentiated lesion with multinucleated giant cells and destructive proliferation of synovial-like mononuclear cells that can present villonodular architecture, collagenized stroma, hemosiderin pigments and inflammatory cells[9].

The tumor usually presents as a painless, palpable, solid, well-defined mass, with or without mobility, and may cause discomfort when walking or may limit movements of the foot and ankle depending on the location or proximity to the joints[8,10]. Only 15% of the patients do not present a palpable tumor[8].

MRI shows iso- or hypointense images with irregular contours on T1 images and hypointense foci on T2 images. These characteristics are attributed to the paramagnetic effect of hemosiderin and the abundant collagen stroma[7].

Differential diagnoses include a desmoid tumor, fibroma, cavernous hemangioma, ganglion cyst, fibrosarcoma, chondroma or gouty tophus. However, none of these entities contain hemosiderin[2].

The recurrence rate of GCT-TS varies between 0 and 33%[6,9], with some studies describing values greater than 44%[7,8]. Incomplete excision, cellularity and mitotic activity of the tumor as well as the presence of bone erosion are associated with high recurrence[6].

Treatment involves complete removal of the tumor by the open route[4-7], with direct visualization of the lesion and adjacent structures. The endoscopic approach[1,9] is best performed when the lesion is well localized and small, which requires an experienced arthroscopist to avoid damage to adjacent structures or insufficient removal of the tumor.

Some authors use adjuvant local therapy, including hydrogen peroxide[7,10] or radiotherapy[10], to prevent recurrence.

CONCLUSION

We conclude that knowledge of the anatomy of the foot as well as a thorough resection of extensive lesions with high rates of relapse, such as GCT-TS, are critical for successful treatment.

Authors' contributions: Each author contributed individually and significantly to the development of this article: AHG *(https://orcid.org/0000-0002-3644-4928 conceived and planned the activities that led to the study, wrote the article, participated in the review process and approved the final version; BJP*(https://orcid.org/0000-0001-5470-8766) wrote the article and participated in the review process; LEMT *(https://orcid.org/0000-0003-1276-5679) conceived and planned the activities that led to the study, participated in the review process and approved the final version; CBGS *(https://orcid.org/0000-0002-0772-0700) conceived and planned the activities that led to the study, participated in the review process and approved the final version. *ORCID (Open Researcher and Contributor ID).

REFERENCES

1. Lui TH. Endoscopic resection of giant cell tumor of the extensor tendon of the foot. Arthrosc Tech. 2017;6(2):e303-e309.
2. Ch L, TH L. Giant cell tumor of the peroneus brevis tendon sheath. J Orthop Case Rep. 2015;5(4):68-70.
3. Alves MPT. Excisão de tumor de células gigantes de bainha de tendão com envolvimento ósseo por dupla via de acesso: relato de caso. Rev Bras Ortop. 2011;46(1):1000-3.
4. Hochman MG, Wu JS. MR Imaging of Common Soft Tissue Masses in the Foot and Ankle. Magn Reson Imaging Clin N Am. 2017; 25(1):159-181.
5. Vargaonkar G, Singh V, Arora S, Kashyap A, Gupta V, Khanna G, Kumar R. Giant cell tumor of the tendon sheath around the foot and ankle: a report of three cases and a literature review. J Am Podiatr Med Assoc. 2015;105(3):249-54.
6. Fraser EJ, Sullivan M, Maclean F, Nesbitt A. Tenosynovial Giant-Cell Tumors of the Foot and Ankle: A Critical Analysis Review. JBJS Rev. 2017;5(1).
7. Goni V, Gopinathan NR, Radotra BD, Viswanathan VK, Logithasan RK, S B. Giant cell tumour of peroneus brevis tendon sheath - a case report and review of literature. BMJ Case Rep. 2012 Jul 13;2012.
8. Levi M, Crafton J. Rare giant cell tumor of the distal flexor digitorum longus tendon sheath and early diagnosis with use of magnetic resonance imaging. J Am Podiatr Med Assoc. 2017;107(4):333-6.
9. Magnus MK, Fuerbringer BA, Roukis TS. Endoscopic approach for the excision of giant cell tumor of tendon sheath involving the hindfoot: a case report. J Foot Ankle Surg. 2018;57(6):1278-82.
10. Chen Y, Yu X-C, Xu S-F, Wang B. Giant cell tumor of the tendon sheath originating from the ankle capsule: A case report and literature review. Oncol Lett. 2016;11(5):3461-4.