

Giant cell tumor of tendon sheath of the first toe: case report

Youssef. Elbir*¹, Imad. Elghordaf¹, Ahmed El Bardouni¹, Mohamed. S. Berrada¹, Faiza. Arab², Mamoun. Faroudy²

¹Orthopedic surgery department of Ibn Sina hospital, University Mohamed V, Rabat, Morocco

²Anesthesia reanimation department of Ibn Sina hospital (RUCH), University Mohamed V, Rabat, Morocco

*Corresponding author

Dr Youssef Elbir

Email: elbir.youssef3@gmail.com

Abstract: Giant cell tumor of the tendon sheath (GCTTS) is a benign tumor most commonly found in the hand and is rare in the foot. A 24-year-old man noticed a left plantar first toe painless mass for 4 years. Magnetic resonance imaging revealed a mass on plantar side of the left first toe, covering the flexor hallucis longus. Histological study confirmed the diagnosis of giant cell tumor. The patient underwent tumor wide excision with tenolysis of the flexor. GCTTS, although rare, should be one of the differential diagnoses of tendon sheath tumor of the foot.

Keywords: Giant cell tumor, tendon, foot, tumor.

INTRODUCTION

Giant cell tumor of the tendon sheath (GCTTS), also termed tendosynovial giant cell tumor, is a benign tumor that arises from the complex of the tendon sheath of small joints in the hands and feet. [5] Microscopically, GCTTS characterized by a proliferation of mononuclear cells admixed with scattered multinucleated giant cells and hemosiderin deposition.

GCTTS is a type of tumor that mainly occurs in the hand. It is, however, less frequently described in the foot 3–10% of GCT-TS being described in the foot, and is reported to make up 0.8% of foot and ankle masses [3, 2, 6].

Symptoms of GCTTS are nonspecific and include pain, joint swelling. It has a high recurrence rate (up to 44%) after excision and occasionally invades adjacent structure [8].

We present a case of large GCT-TS arising from the tendon sheath of the flexor hallucis longus.

CASE REPORT

This is a case report of a male patient, 24 years of age, with a four-year history of an asymptomatic mass on the plantar left halux. The patient reported gradual growth, with a rapid increase in size over the past three months and plantar numbness as well as discomfort on weight bearing. He denied any history of trauma, fever, chills or weight loss.

Physical examination revealed a firm, painful mass, measuring approximately 5 x 3 cm. The mass was free from the overlying skin. The margins were well

defined. The range of the first metatarsophalangeal Joint was limited. (Figure 1)

His general examination was unremarkable and he was in good health. Laboratory tests were normal.

The radiographic examination showed no cortical erosion. (Figure 2)

An MRI scan of the lesion revealed a 7-cm long, well-circumscribed mass on plantar side of the left first toe, covering the flexor tendon. It was heterogeneous and showed a low intensity on the T1 and hyper intensity T2 images. It enhanced on the gadolinium. (Figure 3)

Biopsy was performed and histological examination revealed a lesion predominantly consisting of mononuclear cells and multinucleated giant cells, dispersed in hyalinized collagen fiber bundles. These findings are compatible with giant cell tumors of the tendon sheath of the flexor hallucis longus.

A plantar incision of the first toe centered over the mass was performed. Surgical exploration brought to light. The multilobulated mass reddish-orange associated with the flexor tendon, but without destruction of the tendon. The patient underwent tumor wide excision with tenolysis of the flexor hallucis longus. (Figure 4)

No adjunct radiation therapy or chemotherapy was given. The post-operative period was uneventful and the patient did very well.

Long-term 48 months follow-up revealed no recurrence of the tumor and full resolution of his

preoperative symptoms.



Fig-1: Mass of the first toe

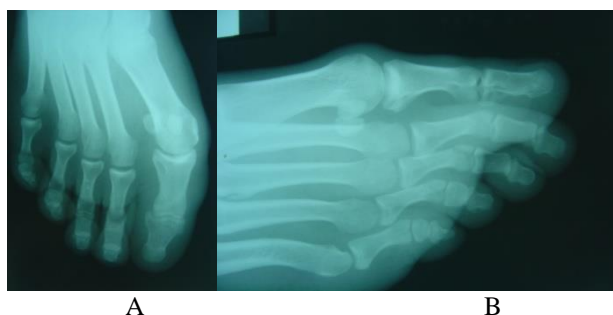


Fig-2: Radiographs of the left forefoot in anteroposterior view (A) and lateral view (B)



Fig-3: Magnetic resonance images: showed a low intensity on the T1, enhanced on the gadolinium



Fig-4: Intraoperative photograph showing the mass

DISCUSSION

The GCTTS is a slow growing, benign soft tissue tumor of the limbs which arises from the complex of the tendon sheath and periarticular soft tissues of small joints. It accounts for 2.4 % of all benign soft tissue tumors. It represents the second most common tumor on the hand, after ganglion cysts. However, this type of lesion is rare on the foot.

Typically, the tumor appears between the third and fifth decades of life, slightly favoring females, at a 2:3 ratio, and there is no racial preponderance [3-7]

The symptoms of GCTTS are nonspecific and can mimic those of any type of soft-tissue mass.

Patients will generally present with a painless mass that gives discomfort on weight-bearing or

difficulty with footwear. The limited range of motion in the joints is suggestive of compression or involvement of structures adjacent to the tumor.

Plain radiology may show a soft tissue mass or swelling, rarely with intralesional calcification. The radiographs can show cortical erosion of bone or intraosseous involvement.

Ultrasonography differentiates a solid mass from a cyst, and sonographically, GCTTS is a typically homogeneous, solid and hypoechoic mass. Under Doppler imaging, 71% of lesions also show substantial flow, while the rest show minimal flow. A finding of hypervascularity is typical of GCT-TS; however, it is not specific [5, 9, 11]

Resonance imaging is the most valuable modality in identifying GCTTS in the foot and ankle.

The characteristic features of GCT-TS are associated with hemosiderin content in the tumor, and tumors typically exhibit iso- or hypointensity on T1 weighted images and hypointensity on T2 weighted images with homogeneous enhancement with contrast administration [9, 11, and 12]

In our case, magnetic resonance imaging localised the mass but did not provide a diagnosis.

Histopathology appears to be the only definitive method of diagnosis.

Microscopically, the tumor cells revealed sheets of histiocytoid cells with abundant eosinophilic cytoplasm and eccentric vesicular nuclei interspersed with multinucleated giant cells in a background of proliferating synovial-like mononuclear cells, foam cells, inflammatory cells, and areas of hyalinization [5, 8, and 1].

The histology in our case was typical of benign GCTTS and did not include any signs of malignancy, such as a high number of mitoses or pleomorphic nuclei.

Complete excision of the mass remains the gold-standard treatment for the disease, although local Recurrence rates range from 9% to 44%. In general, these tumours recur if incompletely excised. Recurrent lesions are often more highly cellular and have increased mitotic activity [3, 6].

Surgery is the corner stone of treatment, radiotherapy has not proven their effectiveness, but can be used after incomplete surgical resection or resection after recurrence.

There was no mention of any malignant transformation in any of the literature for masses appearing in the foot and ankle.

CONCLUSION

In summary, Giant cell tumor of the tendon sheath is a relatively common and often painless benign soft tissue tumor. Clinical features are usually of a slow-growing mass that causes compressive symptoms. GCT-TS should be kept in mind in the differential diagnosis of soft tissue and bone

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