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EXCISION OF GIANT CELL TUMOUR INVOLVING EXTENSOR TENDON SHEATH OF THE THIRD TOE: A RARE CASE REPORT

Orthopaedics

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ABSTRACT

Giant cell tumors of the tendon sheath are more common in the hand and involvement of the foot is reported as rare. In the foot it most commonly arises from the great toe. We report a case of 34 year old male with GCT of extensor tendon sheath arising from third toe of left foot treated with local excision. Histopathology confirmed the diagnosis and patient was asymptomatic at 18 months follow up. This region of involvement is rarely described in the literature and makes for an interesting case study.

KEYWORDS

excisional biopsy, giant cell tumour, tendon sheath, third toe

INTRODUCTION:

Giant-cell tumor of the tendon sheath (GCT-TS) is a solitary benign soft-tissue tumor which arises commonly from the small joints of the hand and less commonly from the feet. It is the second most common tumor of the hand after simple ganglion cyst. Mean age of presentation is 32 years with an age range of 6-65 years with a female to male ratio of 3:2.[1] In a study of 118 cases, 77% of GCT-TS were found in the hand and only 3% in the foot [2] and a study of 207 cases showed that only 5% arose in the ankle and foot [3].It usually presents as a painless, slow growing, well circumscribed mass. It is unusual for giant cell tumors to involve larger joints but it can be found around the ankle, knee joints, elbow or hip.[4,5] Although giant cell tumors (GCT) are considered benign and have a good prognosis after local excision, they have a high risk of recurrence . The reported rate of local recurrence after excision in hand is 9%-45% [5,6] whereas in foot recurrence is seen in 20% cases.[7] MRI is the best noninvasive preoperative test to diagnose & to assess the soft tissue extension of the tumor.[8]

Case report:

A 34 year old male presented to our outpatient department with painless swelling over the dorsum of the third toe of left foot for the last 2 years .The patient noticed a mild discomfort on walking and during the later stages of enlargement showed difficulty in wearing the shoe. On examination, there was a 2×1.5 cm non tender , firm swelling over the dorsal aspect of the third toe. The skin over the swelling was not pinch able. There was free mobility of the swelling over the underlying bone. The X-ray [Fig 1] showed a soft tissue lesion over the dorsal aspect of the third toe without any joint erosion. The patient possessed a report of fine-needle aspiration cytology of the swelling. It showed a moderately cellular smear consisting of mainly dispersed plump fibrohistiocytic cells with oval pale nuclei and bland chromatin. Also seen are many scattered osteoclast like multinucleated giant cells-the findings suggestive of giant cell tumor of tendon sheath. The patient was posted for excision. Intra operatively, a soft tissue mass was seen arising from the extensor tendon sheath of third toe and the underlying capsule of the third proximal inter phalangeal joint [Fig 2,3]. Following its excision, the continuity of the tendon sheath was maintained and the adjoining areas were treated with hydrogen peroxide, followed by a thorough wash with normal saline and povidone iodine solution. The postoperative period was uneventful. The excisional biopsy showed a well-encapsulated tumor composed of mononuclear cells and multinucleated osteoclast type of giant cells along with thick fibrous septa running through the tumor. Foamy cells are also seen and all the findings are consistent with the diagnosis of giant cell tumor of tendon sheath [Fig 5]. There were no signs of recurrence at 18 months follow up.

Figure 1: X-ray showing a soft tissue shadow around the middle and distal phalanx of 3rd toe

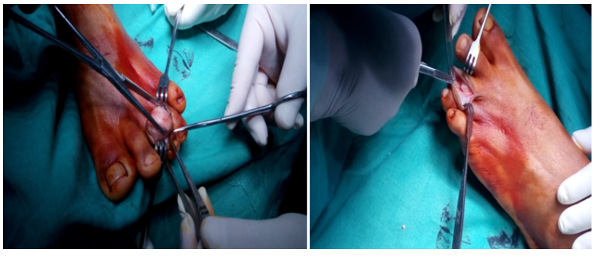

Figure 2,3: intraoperative picture of the third toe before & after the excision of the GCT of tendon sheath

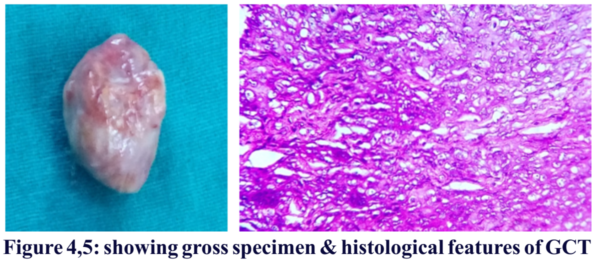

Figure 4,5: showing gross specimen & histological features of GCT of tendon sheath

DISCUSSION:

Gibbons CL et al.[9] in their retrospective study found only 17 cases of GCT-TS of foot and ankle from Oxford Tumor Registry between 1982-99 and out of which 13 involved the foot and only 4 involved the ankle. In the foot great toe was most commonly involved and there was only one case in which the third toe was involved Zhang Y et al.[7] in their study of 20 cases of GCT-TS of foot and ankle 12 involved the foot, 7 the ankle and 1, both the foot and ankle. Of the 12 cases arising in the foot, 5 involved the second toe and 2 the great toe and only in one case the third toe was involved.

The exact etiology of the disease is unknown so the tumor is generally considered idiopathic. There are some risk factors that are mentioned in the literature such as infection, disorder in the immune system, osteoclastic proliferation, vascular abnormality, localized lipid metabolism disorder etc.[3,4,10,11] Probably the most widely accepted theory, as Jaffe et al.[12] proposed, is that of a reactive or regenerative hyperplasia associated with an inflammatory process. Even though GCT-TS was initially considered mostly as an inflammatory disease, the finding of aneuploidy in some cases and the demonstration of clonal chromosomal abnormalities support a neoplastic origin.[13] GCT-TS is characterized by proliferation of synovial-like cells accompanied by giant cells, inflammatory cells, siderophages, and xanthoma cells with polyhedral, fibrotic material and hemosiderin deposits. It is grey to yellow – orange in color with brownish areas, depending on the amount of hemosiderin, collagen and present histiocytes. GCT-TS is an extra-articular tumor usually presents with painless swelling for several years. The intra-articular form of such tumor is commonly described as pigmented villonodular synovitis and they share similar histological characteristics.[14]

They are usually well-circumscribed, mostly small in size and typically lobulated. Tumour has been reported as both hypoechoic and hyperechoic by ultrasonography. In most cases, they are hyper vascular lesions. Close contact with the tendon sheath or joint does make this tumor a primary consideration when diagnosing a soft tissue mass near a tendon sheath or a joint.[1] Radiographs are not so important in making this diagnosis but it will tell us whether there is cortical compression, interosseous involvement or soft tissue swelling. Magnetic resonance is of course the most precise procedure where GCTTS is seen as low signal intensity on both T1- and T2- weighted images and it can accurately assess the tumor size and degree of tumor extent which can affect the type of surgical approach.[8] To reach a diagnosis preoperatively, fine needle aspiration biopsy shall be performed. The clinical differential diagnosis may include fibroma of the tendon sheath, infection, ganglion cyst, rheumatoid nodule, epidermoid cyst, lipoma, foreign body granuloma, necrobiotic granuloma, tendinous xanthoma, [15]. Many of these entities can often be excluded with careful history taking and physical examination. There is no certain treatment protocol but complete excision seems to be the best way to reduce the recurrence rate [14,16] some have suggested that postoperative radiation therapy could be effective in preventing recurrence when risk factors are present or excision is incomplete.[6,12]

The tumor should be dissected gently without allowing any seedling. In order to achieve that, removing of a cuff of the tendon sheath, part of a capsule, periosteum or even part of a tendon can be done. The two parameters that are significantly related to recurrence are extension of the lesion in the intra-articular space and rupture of the tendon by the tumor[17]

CONCLUSION

GCT-TS of foot is not very common and involvement of the third toe is a very rare occurrence. Being a benign tumor it grows very slowly and asymptomatic in the early stage. The most helpful diagnostic procedure is MRI, FNAC helps to make a definite diagnosis and to rule out the differential diagnosis. Complete excision is the treatment of choice with a very good prognosis but the patient needs to be counseled regarding the high recurrence rate.

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