

GIANT CELL TUMOR OF TENDON SHEATH AT THE HAND: A CASE REPORT



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ABSTRACT

The study investigates the Giant Cell Tumor of Tendon Sheath (GCTTS), which is the second most prevalent soft tissue tumor after ganglion cysts. It is a benign nodular tumor found on the tendon sheath of the hands and feet. An atypical case of GCTTS with an abnormal location away from the tendon sheath has been reported. A 23-year-old Libyan man visited the Zliten Teaching Hospital with a history of first web space left-hand swelling since 6 months, increased in size, not tender on examination, hard mobile swelling not attached to underlying tissue, with the full range of motion in adjacent joints, and neurological deficit in the ulnar side of the thumb. The diagnosis was made clinically with a firm, nodular mass that does not transilluminate and had decreased signal intensity on both T1-and-T2-weighted MR imaging. Radiographic and histopathological examinations confirmed the benign nodular mass and the treatment modality. Marginal excision was performed and the tumor was completely removed to prevent a recurrence.

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INTRODUCTION

Giant Cell Tumor of Tendon Sheath (GCTTS), also known as “giant cell tumor” or “pigmented villonodular tenosynovitis”, is the 2nd most prevalent soft tissue tumor after ganglion cysts (Lv & Liu, 2020). It is a benign nodular tumor that is predominantly found on tendon sheath of the ankle-foot and hands (Zheng et al., 2019). GCTTS is a tumor which has no specific origin, and shows variability in the ability of their growth. Although naturewise benign, but regionally aggressive, this tumor has the ability of local recurrence with metastasis to the lungs (Murphey et al., 2001). Furthermore, it has been hypothesized that this tenosynovial GCT is reactive or regenerative hyperplasia linked with the process of inflammation (Jaffe, 1941).

There are two main types of GCT, namely: intra-articular and extra-articular. However, it can be categorized into ‘localized’ and ‘diffuse’ forms based on their biological and clinical manifestations (Lv & Liu, 2020). The hands and fingers are involved in the localized form which is benign in nature, while the large joints of human body occurs aggressively in the diffuse form (Al Farii et al., 2019). GCTTS typically occurs near the distal interphalangeal joint of the index or long finger of the hand (Hwang et al., 2016). An atypical case of painless GCTTS with abnormal location away from the tendon sheath has been reported.

CASE PRESENTATION

A 23-year-old Libyan medical student with no past illnesses or medical history visited the Zliten Teaching Hospital with a history of first web space left hand swelling since past 6-months which increased in size but was not tender on examination. A hard mobile swelling was observed which was not attached to the underlying tissue. No prominent redness or hotness

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around the area was noted on physical examination. Full range of motion in the adjacent joints was present. Neurological deficit in the ulnar side of thumb (sensory type) was well noted.

The patient did not have any other swelling on the same hand. He did not present any manifesting symptoms, for example: fever, night sweats, or loss of weight; nor had any other notable complaints. Furthermore, he did not have any history of smoking and alcohol consumption, nor have had any family member with a similar history of related diseases. Patient's blood reports were all normal while the anti-CCP, HIV, HbsAg, and the status of Rh factor was found to be non-reactive. A plain radiograph was also recommended for investigation (Figure 1), and a soft-tissue mass shadow with no bone erosion was revealed.



Figure 1. X-ray of the left hand (AP and oblique view) showed soft-tissue shadow of mass

The size and extent of the mass was revealed on magnetic resonance imaging (MRI). Diagnosis was made clinically with a firm, nodular mass that does not transilluminate, and had decreased signal intensity on both T1-and-T2-weighted MRI. Surgical removal was carried out after excision biopsy (Figure 2), and a nodular mass measuring 1×0.5×1cm size was removed.



Figure 2. Nodular mass (1×0.5×1cm) excised and sent for biopsy

The mass was sent for microscopic examination (Figure 3a and 3b). Histopathological examination revealed circumscribed lobulated lobules, with numerous osteoclast-like multinucleated giant cells as well as several macrophages in collagenized stroma. No clear evidence of mitotic activity, and/or cell necrosis was visible on histopathological examination. The surgical margin was found to be partially tumor positive but without malignancy.

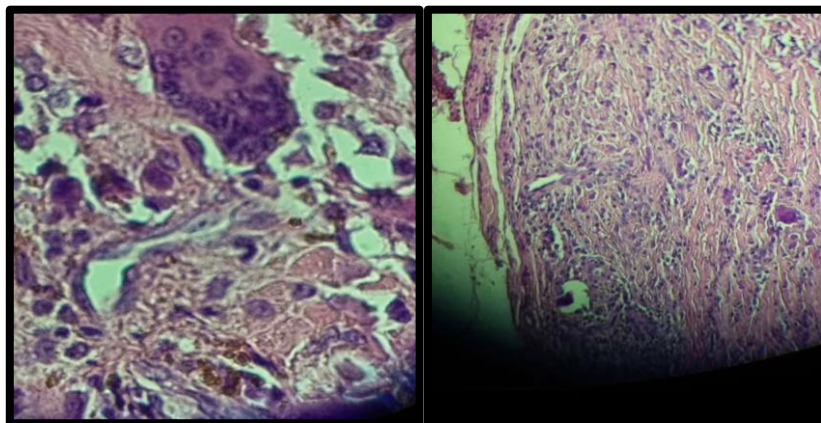


Figure 3a and 3b. Microscopic examination of the tumour showed circumscribed lobulated lobules with multiple multinucleated giant cells

It was necessary to perform the radiographic and histopathological examination to determine the plan of treatment. While MRI confirmed the clinical diagnosis of GCTTS and assisted in the surgical planning. Hence, all these investigations are important diagnostic markers for effective treatment and assists in ruling out the differential diagnoses of of ganglion cyst, neuroma and lipoma. Treatment involved marginal excision of the mass from the patient's hand. Surgical excision was performed by two orthopaedic surgeons at the Zliten Hospital, and the tumor was removed successfully. No surgical intervention or aspiration was done.

After 2-weeks of post-operative care, the sutures were removed and the patient was re-examined. He felt better and lighter, the swelling subsided, and no local tenderness was present on examination. There were no signs of infection post surgery, and the wound was nicely healed (Figure 4).



Figure 4. Hand photo after 2-weeks of postoperative period showed good recovery

Pharmacotherapy included NSAIDs (Voltaren) and a topical analgesic gel (Ibuprofen) was prescribed to reduce the pain and inflammation. After 6-months' follow up, a complete recovery with no significant inflammation or movement restriction was noted in the patient. Furthermore, radiologically or clinically, no visible evidence of tumor recurrence was observed after the surgery, while the ulnar nerve function was also restored.

DISCUSSION

GCTTS is a benign soft-tissue tumor originated in the synovium of the flexor sheath, and is commonly found in the hands. These lesions become suddenly symptomatic or noticeable as they go through typical stages of dormancy and high activity. Although these tumors most frequently occurs in the fingers, they can also appear in the elbows, knees, ankles, feet, and hands. The exact etiology of GCTTS is yet not known (Al Kadi et al., 2012). This tumor occurs more commonly in adults between 30–50 years of age, and it predominantly affects women (Gouin & Noailles, 2017).

As recurrent tumor development and damage of the joints are both major risks associated to GCTTS, it leads to surgical resection (Stiehl & Hackbarth, 1991). The chances of tumor recurrence after surgery is 15% -45% according to (Choughri et al., 2005). It was reported by Williams et al. (2010) that the overall rate of recurrence for GCTTS ranged between 7 to 44% (Williams et al., 2010). Some of the major risk factors that leads to unfavorable surgical outcomes and higher rates of recurrence includes: destruction of cortex, tumor located at the interphalangeal joint of the thumb and distal interphalangeal joints, degenerative joint disease (DJD), tumors with increased mitotic activity, type 2 tumors, neurovascular dissection during removal, and partial or incomplete tumor excision (Ozben & Coskun, 2019). Currently, the most effective strategy to alleviate tumor recurrence rate is achieved through radical surgical management (Lv & Liu, 2020).

CONCLUSION

This article presents a rare, painless case of GCTTS located at the hand within the first web space, away from the tendon sheath. Although, marginal excision was the preferred treatment of choice for this case, it often gets difficult to perform surgery due to the tumor's location and strict adherence to the underlying tendons and/or neurovascular bundles (Di Grazia et al., 2013). Moreover, the tumor was fully removed to mitigate the chances of recurrence. In addition, histopathological and radiographic examinations were carried out on the nodular mass to determine, as well as validate its benign nature, and the treatment modality. Finally, the authors would like to advice the medical practioners to raise their suspicion on GCTTS for any hand swelling cases and analyze it strategically to reach a confirmed clinical diagnosis.

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