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Giant cell tumor of tendon sheath: An institutional experience

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Abstract
Giant Cell Tumor of Tendon Sheath (GCTTS) is the second most common benign tumour affecting hand after ganglion. It more commonly affects middle aged women with index finger being the most commonly affected site. There is high propensity of recurrence following surgical excision. The objective of this study was to review all cases of GCTTS received in our department and to study the age and gender distribution, location and histological features of the same.

Keywords: Giant cell, tendon, tenosynovitis, recurrence

1. Introduction
Giant cell tumor of tendon sheath also known as localised nodular tenosynovitis is a rare, slow growing, benign soft tissue tumor arising from synovial cells of tendon sheath. It was first described by Chasaignacc in 18th century [1]. It is the second most common benign tumor affecting hand, first being ganglion cyst [2, 3]. Ocassionally, it may also involve other parts of body such as spine, ankle, knee and feet. The incidence of GCTTSs is around 1 in 50,000 in general population [4]. These are more commonly seen in women in 3rd to 5th decade. Etiology is ambiguous, however, theories proposed for this disease are trauma, infection, disturbed lipid metabolism, vascular disturbance and inflammation. However, the most widely accepted theory is regenerative hyperplasia associated with inflammatory process [5].

2. Materials and Methods
This was a 4 year retrospective study conducted in the Department of Pathology, Srinivas Institute of Medical Sciences and Research Centre, Mukka, Mangalore. We searched the departmental surgical files between the years 2015 - 2018 for cases reported as GCTTS or localised nodular tenosynovitis. The clinical data were obtained from request forms and patient notes and evaluated together with the gross and microscopic appearances of the lesions. Haematoxylin and eosin stained sections were retrieved and examined for the following features: growth patterns, presence or absence of capsule, and its status and cellular constituents. The mitotic counts were assessed by randomly counting 10 high power microscopic fields (×400 magnification) and were recorded as the number of mitotic figures/10 high power fields (HPF).

3. Results
A total number of 16 cases of Giant cell tumor of tendon sheath were seen in four years from January 2015 to December 2018. Age of the patients ranged from 11 to 63 years, with mean age of presentation being 46.5 years. Out of 16 patients, 9 (56%) were females and 7 (44%) were males (Fig 1). The most frequent location of tumor was index finger (50%) followed by thumb (31.25%). Other sites included dorsal aspect of hand, ring finger and leg (Fig 2). Macroscopically, the tumor ranged from 1 to 3.5 cm in largest diameter, mean size being 1.8 cm. Tumors were well circumscribed with most showing a fibrous capsule. Microscopically, all the cases showed the presence of spindled to polyhedral macrophage like cells, multinucleated giant cells and hemosiderin deposit (Fig 3, 4). Varied degree of hyalinisation (Fig 3) and inflammation was seen. Three cases (18%) showed xanthoma cells. Mitotic rate varied from predominant cases (93% n=15) showing 1-2 mitoses/10 hpf whereas one case (7%) showing 5 mitosis/10 hpf.

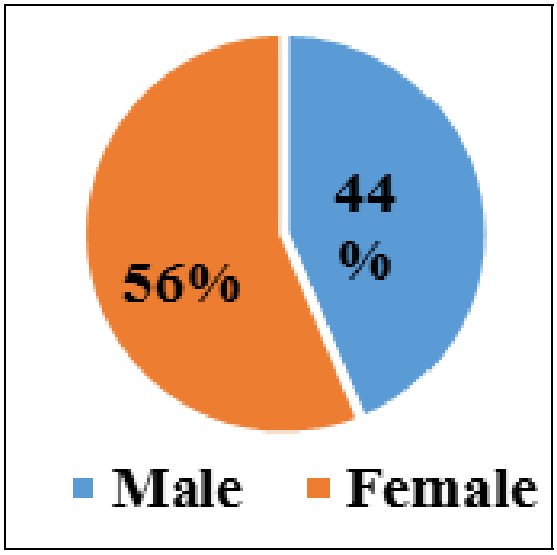

Fig 1: A pie chart depicting gender distribution

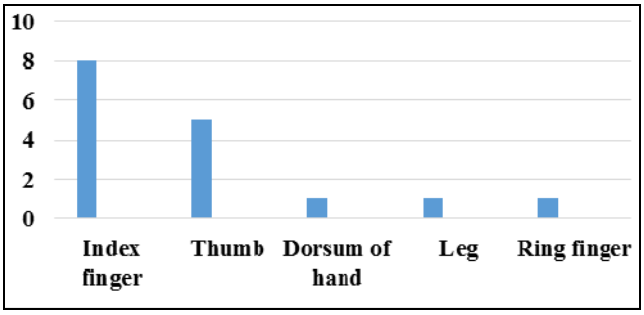

Fig 2: Bar graph showing anatomical location of tumors

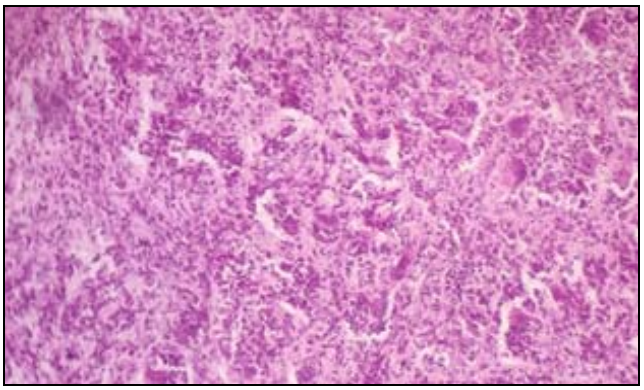

Fig 3: Low power view showing tumor cells and giant cells (H&E stain, 100x)

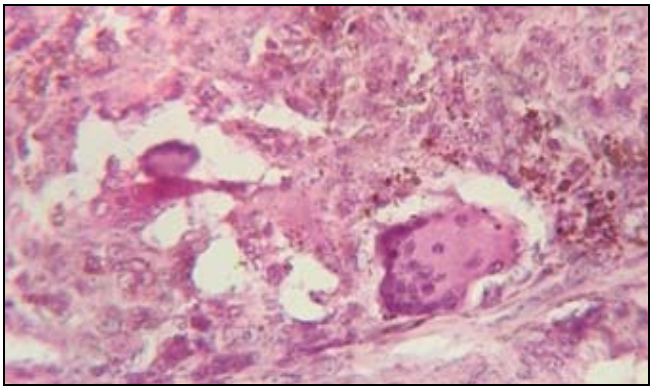

Fig 4: Giant cells with hemosiderin pigment deposition (H&E, 400x)

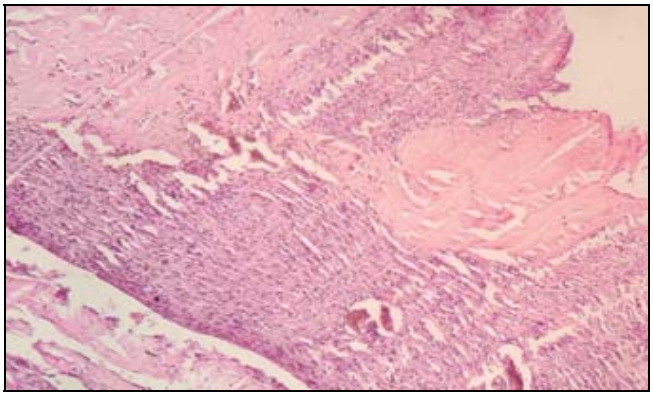

Fig 5: Low power view showing areas of hyalinization (H&E, 100x)

4. Discussion

Giant cell tumor of tendon sheath is an extra articular, painless, and localised soft tissue lesion. In our study we found the mean age of patients as 46.5 years which was comparable to Monaghan *et al.* [6] where in a series of 71 cases of GCTTS the mean age noted was 46.3 years with a peak incidence in 4th decade. Most of the lesions in the hand are seen involving right hand affecting index, middle and ring fingers, suggesting that trauma may be the predisposing factor. In our study, we found index finger as commonest site involved followed by thumb. Similar results were seen by Kotwal *et al.* [7] and Reilly *et al.* [8]. We also found one case each involving dorsal aspect of hand and leg. Byers classified GCTTS into two types i.e localized nodular which commonly occurs in hands and diffuse type which is more common in joints. Diffuse variety is commonly associated with recurrence [9]. Differential diagnosis include Ganglion cyst, pigmented villonodular synovitis, desmoids tumor, fibroma, fibrosarcoma, glomangioma, knuckle pads and synovial sarcoma. The initial diagnostic modalities can be sonography which helps in detecting whether the lesion is solid or cystic and its relation with surrounding structures. X-ray helps in detecting underlying bone or joint involvement. FNA can help in pre-operative diagnosis and help in planning further management. Complete surgical excision remains the mainstay of treatment, however recurrence rates after excision ranges from 7 to 45%.

5. Conclusion

Giant cell tumors of tendon sheath are benign, painless, slow growing lesions. Complete surgical excision should be achieved as rate of recurrence is considerably high. Hence, sincere attempts should be made in establishing an accurate pre-operative diagnosis.

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