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GIANT CELL TUMOR OF THE TENDON SHEATH: A CYTOMORPHOLOGICAL STUDY OF 21 CASES.

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ABSTRACT

Giant cell tumour of the tendon sheath (GCTTS) is a benign growth occuring predominantly in the hand. It can also involve other joints like the foot, ankle and knee. It commonly affects women between 30 and 50 years of age. Radiological investigations like X-rays, USG, and MRI along with FNAC play a very important role in the pre-operative diagnosis of the lesions. FNAC and histopathological examination from the lesions show abundant giant cells and scattered stromal cells. The lesion is known for its recurrence; hence complete excision should be the treatment of choice.

KEYWORDS: GCTTS, benign, giant cells, FNAC, recurrence.

INTRODUCTION

Giant cell tumour of the tendon sheath (GCTTS) is a benign growth occuring predominantly in the hand next only to ganglion cyst. It bears different names as fibrous histocytoma of synovium, pigmented nodular synovitis, tenosynovial giant cell tumour, localised nodular tenosynovitis, benign synovioma, and fibrous xanthoma of the synovium. Each one reflects a particular pathologic feature.[1-4] It can also involve other joints like the foot, ankle and knee and can recur after excision.[5-8] According to World Health Organization, synovial giant cell tumors are of two types: localized and diffuse form.[9] The common localized type (giant cell tumor of synovium) is encapsulated, extra-articular and commonly found in the tendon sheath of the fingers, whereas the rare diffuse type is non-encapsulated, intra-articular and commonly found in the joint, considered as the soft tissue counterpart of diffuse pigmented villonodular synovitis. Pathological nature of this disease is still controversial as neoplastic or non-eoplastic.[10] The common age for the tumor is between 30 and 50 years and is found more in women than in the men.[11]

In the present study, we reviewed 21 cases and studied about the clinical presentations, morphological findings and a detailed cytological and histopathological analysis of the cases was done.

MATERIALS AND METHODS

The medical records of all patients diagnosed to have GCTTS by our histopathology department during the period 2012–2016 were reviewed. Twenty-one patients were included in this study. FNAC correlation was possible in 5 cases. All data were collected from medical records including the age, gender, tumor location, presentation and size, clinical features, FNAC and histopathological findings. The specimen was received in 10% formalin. Routine processing was performed on the tissue to prepare paraffin block. The histopathological slide was prepared and stained with hematoxylin and eosin stain. Sections were further examined under the microscope. FNAC was performed from the swelling using a 21 guage needle and stained with leishman stain and analysed.

RESULTS

Of the total 21 cases that were studied 11(52.3%) were males and 10(47.6%) were females. The age ranged from 19 to 64 yrs, mean being 34.4 yrs (Table 1). The peak incidence was noted between 20-30 yrs and then later between 40-50 yrs. The most common site of involvement was the digits followed by thumb, and great toe. Ankle and anterior cruciate ligament of the knee were also involved in very few cases (Table 2). Most of them presented as painless swellings, though few of patients gave history of trauma and pain. Duration of the

lesion ranged from 1 to 8 yrs. Radiographs were done in all cases and were abnormal in 3 cases. Complete excision was done in all the lesions. Follow-up of the the cases could not be done in our study.

During FNAC the cases presented as painless, firm swellings and were about 1-2 cms. On grossing the lesions were described as well circumscribed, grayish white tissue pieces, with no areas of necrosis or hemorrhage. The size of the lesions ranged between 0.5-2.5 cms.

Microscopy

FNAC findings showed a mixture of oval or polygonal mononuclear cells with fine vacuolation (Fig 1) along with a population of multinucleated giant cells (Fig 2). On histopathological examination, the sections showed round to oval cells with pale nuclei and scanty cytoplasm, abundant giant cells and large cleft like spaces lined by synovial cells. No mitotic activity was noted (Fig 3-5).

Table 1. Age wise distribution of cases

Age(yrs)	No of cases (n=21)
1-10	0
11-20	2
21-30	9
31-40	3
41-50	6
51-60	0
61-70	1

Mean age – 34.4 yrs.

Table 2. Location of the lesion

Location	No of cases (n=21)
Hand -thumb	6
-Digits	7
Toes	5
Ankle	2
Knee	1

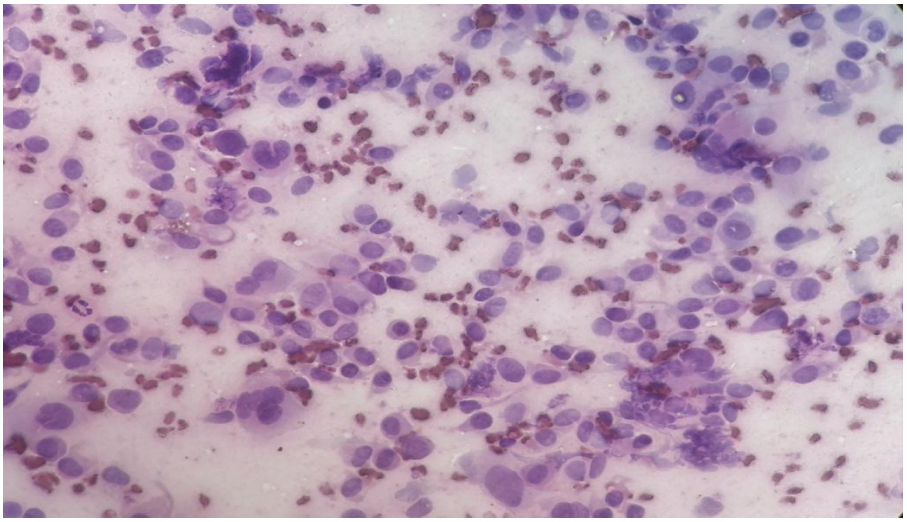

Fig 1. Fnac showing mononuclesr stromal cells. (Leishman stain 40x)

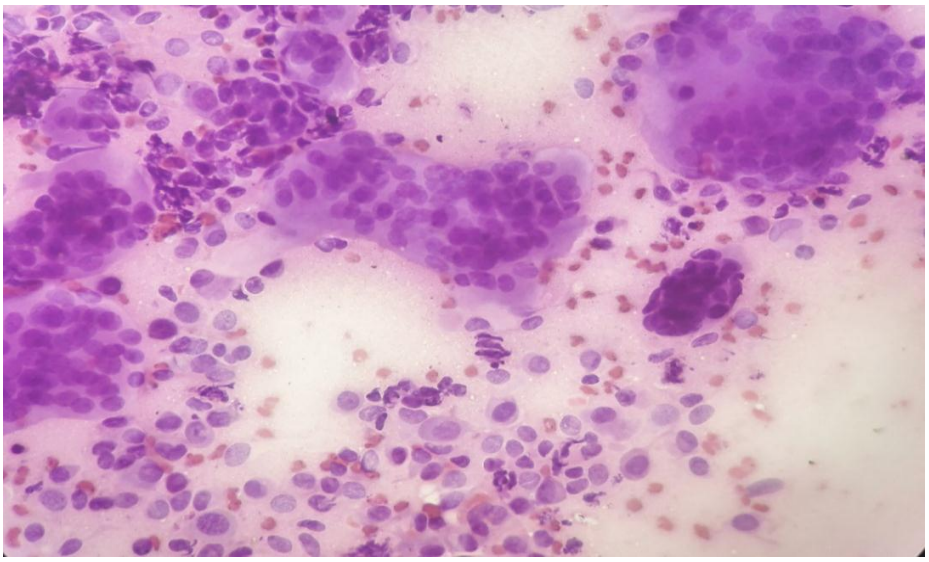

Fig 2. Smears show many giant cells with 15-20 nuclei. (Leishman stain 40x)

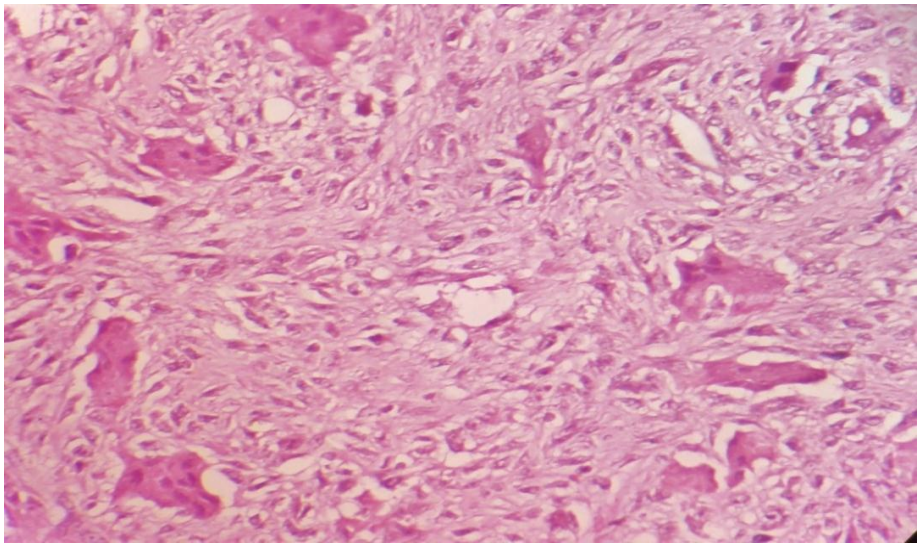

Fig 3. Many oval shaped stromal cells noted surrounded by giant cells (H&E, 40X0

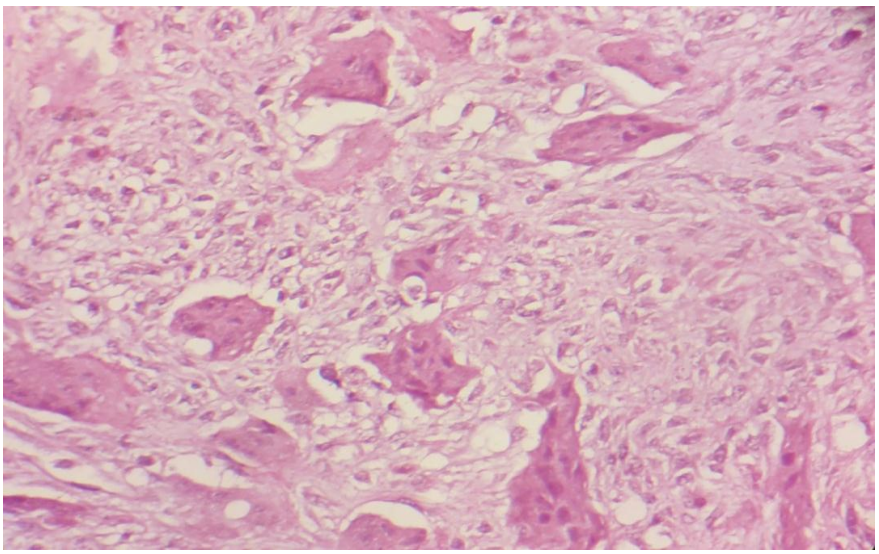

Fig 4. High power view of giant cells, some of them showing pigment deposition. (H&E, 40X)

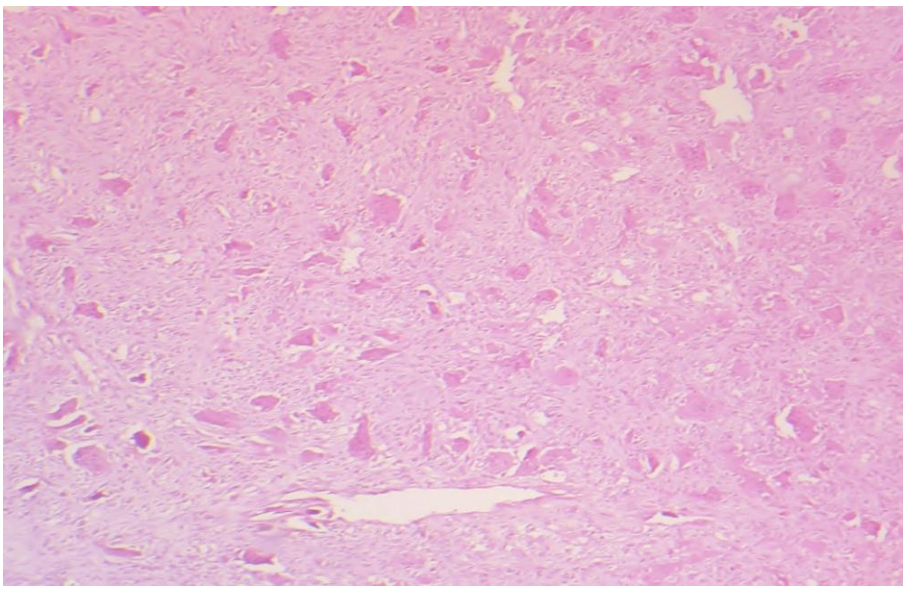

Fig 5. Low power showing large cleft like spaces lined by synovial cells.(H&E,10X)

DISCUSSION

During our study we found that most of the epidemiological parameters, such as the mean age, gender, site and the presenting symptoms with their duration, were keeping with other statistics.

Though some of the cases complained of pain, they were seen involving the ankle and knee joints.[12] In a study conducted by Hatwal et al, they described that GCTTS affects more often women, with female to male ratio being 2:1 and the mean age ranged from 20 to 40 years[13] which is also noted in other studies as well.[14] In our study the female to male ratio was 1:1.1 and most of the cases were seen in 20-30 yrs and 40-50 yrs age group. Two cases of 13 and 15 years were also noted.

Darwish et al studied that most of the tumours were located in the hand and wrist area, with the thumb being the most affected finger.[15] Our study revealed that hand was the most common location with the digits being involved slightly more than the thumb, which concurred with study done by Hatwal and others.[13,14,16] X-rays exhibit soft tissue shadows with some cases showing mild cortical erosion, which were noted in few of our patients also.[17,18] Ultrasonography has a role in the initial screening and assessment, which may sometimes suggest the diagnosis. Magnetic Resonance Imaging is a valuable tool for preoperative diagnosis, surgical planning and postoperative follow-up of GCTTS. However, final diagnosis requires pathological evaluation.[19, 20]

FNAC plays a very important role in the pre-operative diagnosis of the lesions. However other differential diagnosis like giant cell tumor of the bone, benign fibrous histiocytoma, synovial sarcoma, solid aneurismal bone cyst should be considered. Hence, a diagnosis of GCTTS can be made or at least strongly suggested in light of clinic-radiological correlation and unique cytological findings such as presence of stromal cells, giant cell and hemosiderin laden macrophages.[21]

Histologically, the GCTTS principally consists of an active proliferation of histiocyte- like cells, such as foam and hemosiderin-laden cells, with evidence of phagocytic activities. In cellular lesions in young adults or children, the tumor cells are often arranged in extensive sheets or compact nests, where mitotic figures are frequent and multinucleated giant, foam and hemosiderin-laden cells are relatively few. Such cellular variety is likely to merge histologically with malignant neoplasms, especially with synovial sarcoma and embryonal rhabdomyosarcoma.[22]

GCTTS is found in the subcutaneous plane arising from the tendon sheath, and often has extensions that go around and under several structures including the neurovascular bundle. This makes it difficult for the lesion to be excised and could be the reason for the high recurrence rate.[23] Regarding the treatment of GCTTS, most agree that the best way to avoid recurrence is to perform complete surgical excision.[24,25] Research is going on to find out the nature of GCTTS that weather it is neoplastic or non-neoplastic, it's morphological and ultrastructural features.[26,27]

CONCLUSION

Giant cell tumour of the tendon sheath is a benign but local aggressive lesion which usually originates from the membrane of tendon sheath. A definite pre-operative diagnosis is possible by fine-needle aspiration cytology in collaboration with radiological findings. A complete local excision is probably the only way to prevent recurrence.

REFERENCES

1. Monaghan H, Salter DM, Al-Nafussi A. Giant cell tumour of tendon sheath (localised nodular tenosynovitis): Clinicopathological features of 71 cases. J Clin Pathol, 2001; 54: 404-7.
2. Martin RC 2nd, Osborne DL, Edwards MJ, Wrightson W, McMasters KM. Giant cell tumor of tendon sheath, tenosynovial giant cell tumor, and pigmented villonodular synovitis: defining the presentation, surgical therapy and recurrence. Oncol Rep., 2000; 7: 413-9.
3. Coster AA. Giant cell tumor of tendon sheath (benign synovioma). J Am Podiatry Assoc, 1976; 66: 538-41.
4. Jones FE, Soule EH, Coventry MB. Fibrous xanthoma of synovium (giant cell tumor of tendon sheath, pigmented nodular synovitis). A study of one hundred and eighteen cases. J Bone Joint Surg Am, 1969; 51: 76-86.
5. Ushijima M, Hashimoto H, Tsuneyoshi M, Enjoji M. Giant cell tumor of the tendon sheath (nodular tenosynovitis). A study of 207 cases to compare the large joint group with the common digital group. Cancer, 1986; 57: 875-84.
6. Villani C, Tucci G, Di Mille M, Di Gennaro S, Corsi A. Extraarticular localized nodular synovitis (giant cell tumor of tendon sheath) attached to the subtalar joint. Foot Ankle Int, 1996; 17: 413-6.
7. Sheppard DG, KimEE, Yasko AW, Ayala A. Giant cell tumor of the tendon sheath arising from the posterior cruciate ligament of the knee: a case report and review of the literature. Clin Imaging, 1998; 22: 428-30.
8. Thaxton L, AbuRahma AF, Chang HH, Boland JP. Localized giant cell tumor of tendon sheath of upper back. Surgery, 1995; 118: 901-3.
9. de Saint Aubain Somerhausen N, Dal Cin P. Giant cell tumour of tendon sheath. In: Unni KK, Mertens F, editors. Pathology and Genetics of Tumours of Soft Tissue and Bone. Lyon: IARC Press; 2001; 110-1.
10. Khan LB. Malignant giant cell tumor of the tendon sheath. Ultra structural study and review of literature. Arch Pathol, 1973; 95: 203-8.

11. Adams EL, Yoder EM, Kasdan ML. Giant cell tumor of the tendon sheath: Experience with 65 cases. Eplasty, 2012; 12: e50.
12. Rao AS, Vigorita VJ. Pigmented villonodular synovitis (giant cell tumor of the tendon sheath of the synovial membrane). A review of eighty one cases. J Bone Joint Surg Am, 1984; 66: 76-94.
13. Hatwal D, Bhatt P, Chaudhari S, Batra N, Bhatt S. Giant Cell Tumor of Tendon Sheath: Clinicopathological Correlation. Int J Sci Stud 2015; 3(9): 107-110.
14. Fotiadis E, Papadopoulos A, Svarnas T, Akritopoulos P, Sachinis NP, Chalidis BE. Giant cell tumour of tendon sheath of the digits. A systematic review. Hand (N Y), 2011; 6: 244-9.
15. Darwish F M, Haddad W H. Giant cell tumour of tendon sheath: experience with 52 cases. Singapore Med J, 2008; 49(11): 879-88.
16. Di Grazia S, Succi G, Fraggetta F, Perrotta RE. Giant cell tumor of tendon sheath: Study of 64 cases and review of literature. G Chir, 2013; 34: 149-52.
17. Uriburu IJ, Levy VD. Intraosseous growth of giant cell tumors of the tendon sheath (localized nodular tenosynovitis) of the digits: report of 15 cases. J Hand Surg [Am], 1998; 23: 732-6.
18. Karasick D, Karasick P. Giant cell tumor of the tendon sheath: spectrum of radiological findings. Skeletal Radiol, 1992; 21: 219-24.
19. Bassetti E, Candreva R, and Santucci E. Giant cell tumor of the flexor tendon of the wrist: US and MRI evaluation. Case report. J Ultrasound. 2011 Mar; 14(1): 37–39.
20. Middleton W.D., Teefey S.A., Boyer M.I. Hand and wrist sonography. Ultrasound Q. 2001; 17: 21–36.
21. Bhadani P P, Joshi U, Thapliyal N C, Bhadani U K. Giant cell tumor of the tendon sheath-Cytomorphological spectrum. International journal of Institutional Pharmacy and Life Sciences, 2012; 2(1): 259-67.
22. Chung EB, Enzinger FM. Fibroma oftendon sheath. *Cancer* 1979, 44: 1945-1 954.
23. Wakely PE Jr, Frable WJ. Fine-needle aspiration biopsy cytology of giant-cell tumor of tendon sheath. Am J Clin Pathol, 1994; 102: 87-90.
24. Cavaliere A, Sidoni A, Bucciarelli E. Giant cell tumor of tendon sheath: immunohistochemical study of 20 cases. Tumori, 1997; 83: 841-6.
25. Rodrigues C, Desai S, Chinoy R. Giant cell tumor of the tendon sheath: a retrospective study of 28 cases. J Surg Oncol, 1998; 68: 100-3.
26. Coster AA. Giant cell tumor of tendon sheath (benign synovioma). J Am Podiatry Assoc, 1976; 66: 538-41.
27. Kuhnen C, Müller KM, Rabstein S, Kasprzynski A, Herter P. Tenosynovial giant cell tumor. Pathologe, 2005; 26: 96-110.