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Cytology of Giant Cell Tumour of the Tendon Sheath - ADiagnostic Dilemma

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Abstract: *Giant cell tumour of tendon sheath (GCTTS), better known as localized nodular tenosynovitis, is a benign slow growing lesion most commonly presenting as a soft tissue nodule with a peak incidence in the third to fourth decade of life. It arises from the synovium of tendon sheath, bursa or joint. GCTTS is thought to arise from synovial lining cells, while the giant cells in GCTSS are structurally and functionally osteoclasts.Although, the histomorphological appearances are well established, only few studies describe the cytomorphology of the lesion.The present study describes the cytomorphological features with clinical and histopathological correlation of a 33 year old male patient who presented with a swelling over the plantar aspect of left 2nd toe.*
Keywords*:giant cell tumour, tendon sheath, cytomorphology*

I. Introduction

GCTTS, also known as localized nodular tenosynovitis, usually presents as a soft tissue nodule in relation to the tendon sheaths of the hand and feet. They can occur at any age but are most often seen in the third to fifth decade of life with slight female predominance.[1] The most common sites of involvement are interphalangeal joints in the hand but can also present in the ankle, knee, shoulder, elbow and feet.[2] This case report shows the involvement of second toe which is a rare presentation. Description of cytological features of GCTTS is still in its infancy, only few studies in the form of series and case reports are available.An accurate cytological diagnosis will provide an easy, effective and affordable answer to the diagnostic dilemma of the clinicians caused by the non-specific symptoms of this lesion, especially when found in rare sites like knee and feet.

II. Case Report

A 33 year old male patient presented with a swelling on the plantar aspect of the second right toe since 8 years. The swelling was gradual in onset and progressive in nature. There was no history of associated pain or discharge from the site.There was no history of trauma, fever, loss of appetite, loss of weight, diabetes and hypertension. The swelling measured 3x3cms, was firm in consistency and was non-tender. Skin over the swelling was normal. The routine blood investigations done were normal, except for eosinophilia (11%).The ultrasound abdomen showed fatty liver.

Fine needle aspiration and cytology was advised for the swelling. Smears studied showed round to plump spindle shaped cells with abundant foamy vacuolated cytoplasm, oval nuclei and bland chromatin. Numerous osteoclast like multinucleated giant cells and hemosiderin laden macrophages were also seen. Hence the cytological diagnosis of Giant Cell Tumour of the Tendon Sheath was made. Confirmation by excision biopsy and histopathological correlation was advised.

Excision biopsy revealed a nodular, glistening mass, measuring 3x3x1.5cms. Cut surface was pearly white with areas of hemorrhage. Histopathological sections revealed medium sized polyhedral cells, admixed with multinucleated giant cells, adipocytes and hemosiderin laden macrophages. Few scattered lymphocytes and histiocytes were seen. Few typical mitotic figures were also seen. Background showed fibrohyalinized areas. Hence, the histopathological diagnosis confirmed the cytological diagnosis of Giant Cell Tumour of Tendon Sheath.

The patient was discharged without any remarkable complaints.

III. Discussion

Giant cell tumour of tendon sheath is clinically a slow growing soft tissue mass that develops over a period of months to years.[3]It is a benign lesion of uncertain etiology that involves inflammation, trauma, toxin, allergy, clonal chromosomal abnormalities and aneuploidy.[4] Approximately 85% of GCTTS may occur in fingers, while 12% of tumours are located in the knee, elbow, hip, ankle and feet. GCTTS may occur at any age but most typically occurs between the ages of 30 and 50, with a 2:1 female preponderance.[5]One of the most important diagnostic dilemmas is that the symptoms of GCTTS are nonspecific. The local recurrence after excision is very high and it has been reported in upto 10-20% of cases.[6]Many factors are considered in causing

recurrence, including proximity to distal interphalangeal joints, presence of degenerating diseases, pressure erosions in the radiographs and increased mitotic activity.[7]The diagnosis of GCTTS may be difficult. Patients typically present with a painless mass .The lesions are usually well circumscribed and localized, and infrequently erode or infiltrate the bone.[8] Plain radiography is usually not helpful in the diagnosis of the disease. Magnetic Resonance imaging is an effective and highly sensitive tool for diagnosis.[9]

Cytomorphological features observed by most authors include highly cellular lesions consisting predominantly of polygonal cells and numerous multinuclear giant cells without nuclear atypia. Most authors suggest the presence of osteoclast like giant cell with the combination of typical stromal and hemosiderin laden macrophages in aspirates of soft tissue tumours as virtually diagnostic of GCTTS.[1]

When a combination of stromal cells and giant cells are present, the differential diagnoses considered are synovial sarcoma, benign fibrous histiocytoma, clear cell sarcoma of the soft part, giant cell tumour of bone and solid aneurysmal bone cyst, before giving a cytological diagnosis of GCTTS. In case of synovial sarcoma and benign fibrous histiocytoma, osteoclastic type giant cells are not present whereas in clear cell sarcoma they are sometimes present in addition to monomorphic polygonal cells. Giant cell tumour (GCT) of bone with a soft tissue component may mimic GCTTS, including the presence of osteoclastic giant cells, however the peripheral adherence of giant cells to the spindle cell is a feature of diagnostic significance in GCT of bone. Closely associated mononuclear cells with dense, homogenous, extracellular matrix material is common in solid aneurysmal bone cyst. Hence cytology should be interpreted in conjunction with radiological findings.[10]

In conclusion, the diagnosis of GCTTS can be made or at least strongly suggested in the light of clinico-radiological co-relation and unique cytological findings such as presence of stromal cells, giant cells and hemosiderin – laden macrophages. Finally the purpose for which we report this case is to emphasize the possibility of GCTTS in cases where painless or painful mass are found accompanied with non – specific symptoms in a young patient, and an inexpensive day care procedure like Fine Needle Aspiration and Cytology can clinch the diagnosis.

IV. Figures:

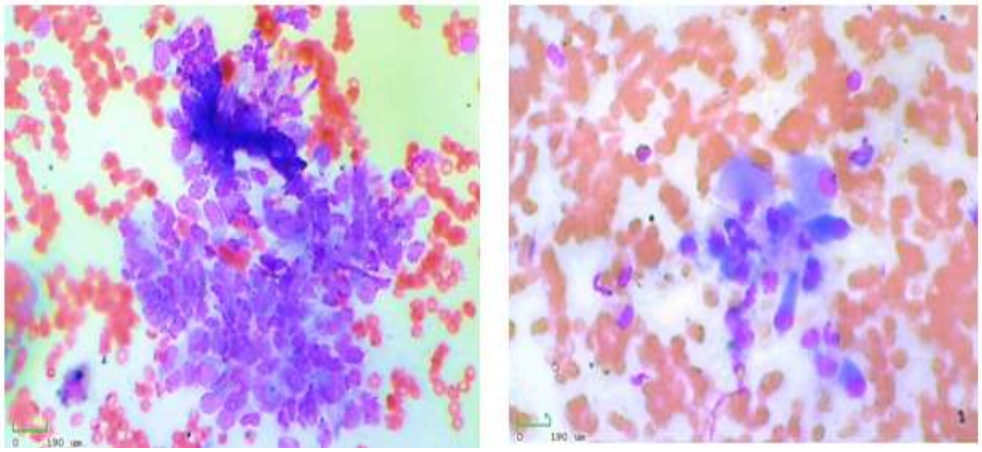

Fig 1a, 1b: Clusters of plump to spindle shaped cells with abundant cytoplasm and bland chromatin

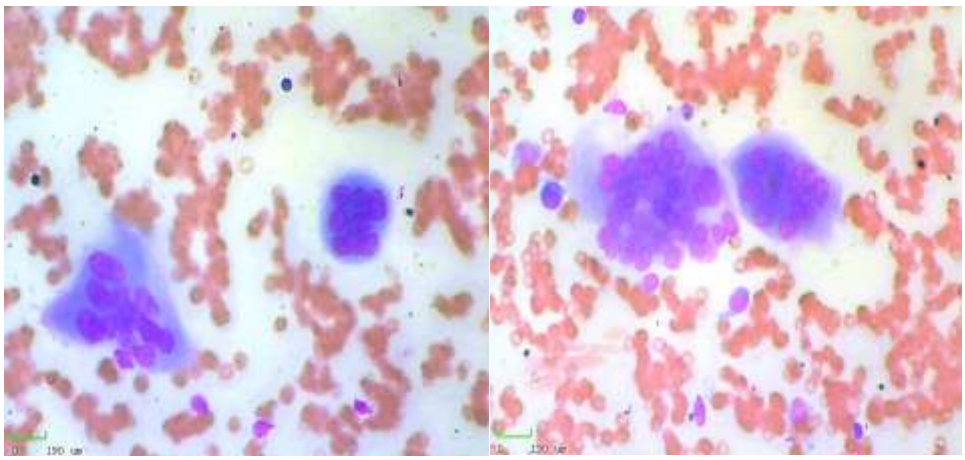

Fig 2a, 2b: Osteoclast like giant cells along with round to oval cell clusters

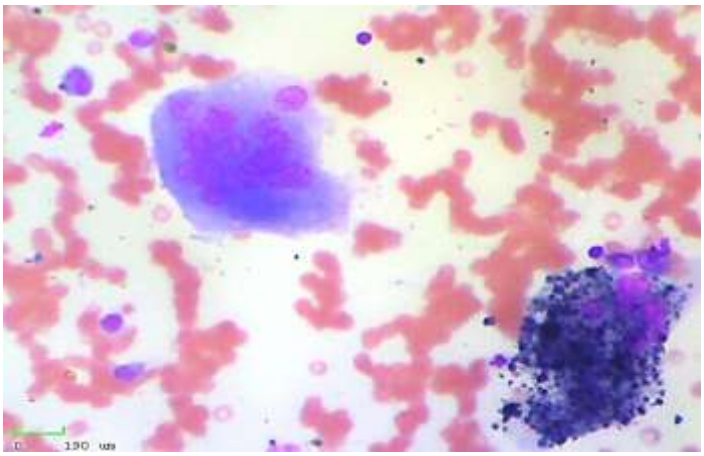

Fig. 3: Hemosiderin laden macrophage with giant cell

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