Giant Cell Tumor of Extensor Tendon Sheath in Middle Finger: A Case Report

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Abstract

Giant cell tumor of the tendon sheath is a rare benign soft tissue tumor of hand. Most commonly occur between the third and fifth decades of life at palmar surface. It appears as a painless, perceptible enlargement. It can mimic and make differential diagnoses with several hand tumors. Definitive diagnosis and the treatment of choice are complete resection and histopathological examination. Here we describe a case with clinical presentation like painless, slow growing soft tissue swelling at extensor tendon of middle finger over metacarpophalangeal join.

Keywords: Giant cell tumor, Extensor tendon sheath, Hand, Excisional biopsy

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Introduction:

A giant cell tumor of the tendon sheath (GCTTS) is a rare, benign tumor which can develop in the tendon sheaths around the body.[1] It can developed anywhere in the body where there is a tendon sheath, but is most common in the hand and wrist.[1] It is the second commonest tumor of the hand.[2] Trauma, inflammation, metabolic disease and a neoplastic etiology are considered as etiological factors.[3] A GCTTS can occur at any age, but is most common in adults and is more commonly found in women.[1] It is divided into two types based on clinical and biological manifestations: localized and diffuse forms. These can also be intra-articular and extra-articular. The benign localized type affects the hand and fingers, but the more aggressive diffuse form affects major joints.[4] GCTTS is most commonly found around the index or long finger's distal interphalangeal joint followed by ring and little finger. The following case presents with the features suggesting GCTTS of ring finger.[5]

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Case Report:

A 14-year-young boy came to the orthopedic outpatient department, CMH Bogura with a history of painless swelling over metacarpophalangeal (MCP) joint of right middle finger for four-month. The swelling was spontaneous with no history of trauma. It gradually increased in size, hampering the daily living activities of the boy.

On clinical examination, a 1cm x 1 cm firm swelling was seen on the dorsal surface of the right middle finger near MCP joint. During clinical examination there was no localized temperature or tenderness. The swelling was well defined, smooth, firm and uniform in consistency. The swelling was movable sideways with no attachment to the bone and free from over line skin. It adhered to the underlying soft tissue and hence moved with the movement of the finger. Distal neurovascular status was intact. X-ray anteroposterior (AP) and oblique view of right hand showed no abnormality. Ultrasonography was done which revealed mass attached to the underlying soft tissue on the dorsal surface of right middle finger. FNAC from the swelling showed round to oval cells with foci of osteoclastic giant cells with regular nuclei suggestive of a Giant cell tumor of tendon sheath. Other investigations like complete blood counts, chest X-ray, random blood sugar, liver function tests, and renal function tests were normal. The patient was surgically fit. Excisional biopsy of the underlying swelling was performed under local anesthesia. A longitudinal incision was given over the swelling. Soft tissue dissection was done and the tumor

was seen adhered to the underlying extensor digitorum tendon of middle finger. Excision of tumor was easy and was excised completely. The closure was done in layers. The excised tumor was sent for histopathological examination, which showed polygonal to round histiocytes surrounded by multinucleated giant cells, fibro-fatty tissue suggestive of GCTTS. Postoperative period was uneventful. Hand was mobilized from 2nd postoperative day and stitches were off on 14th post-operative period. The patient was on regular follow up with no functional debility. The patient was on follow up for last six months. The patient was able to perform his activities of daily living with no evidence of recurrence both clinical and radiological examination.

Discussion:

Giant cell tumors of the tendon sheath in the hand are relatively uncommon. Targett first described GCTTS in 1897[6]. The reported age distribution is 8 to 80 years.[6] Most commonly occur between 30 50 years of age[7] with a peak incidence in those aged 40 50 years. These tumors are rarely found in patients younger than 10 years or older than 60 years of age. It is more common in female with female to male ratio is 3:2.[8,9] These tumors may occur anywhere in the hand but more commonly present as firm lobulated masses on the lateral side of index and middle fingers of hand[6] and commonly seen on the flexor aspect.[10]

Tumor classification has an important role to analyzing the recurrence pattern. GCTTS are classified into localized nodular type (common in hand) and diffuse type (common in joints) by Byers.[11,12] Al Qattan has classified GCTTS into two type, Type-I and Type-II, where Type I- as single tumor which is round or multi lobulated, and Type II, where there are two or more distinct tumors which are not joined together.[11]

The cause of GCTTS is unknown; however, it might be linked to an inflammatory response, a local lipid metabolic issue, or osteoclastic growth, infection or trauma.[13] The tumor usually appears as a slowly growing, painless mass on the palmar surface of the fingers.[14]

Diagnostic workup includes patient history and a detailed physical examination. Plain radiographs can be helpful since GCTTS may produce erosions in the cortical bone and may invade medullary space. Magnetic resonance imaging (MRI) is the most useful diagnostic tool and is also required for surgical planning. MRI helps to classify GCTTS into type 1 and type 2 according to Al Qattan classification in which type I describes a single round or multilobulated tumor while type II describes two or more distinct, separated tumors.[14]

Complete local excision is the treatment of choice for giant cell tumor of the tendon sheath.[6] The lesions are benign, but recurrence is noted in up to 40% of patients (10% to 20% more commonly reported) even after meticulous excision of the friable fragments.[6]

Risk factors for recurrence or persistence include adjacent degenerative joint disease, location at the finger distal interphalangeal and thumb interphalangeal joint, bony invasion, multifocal disease, tendon involvement, and poor surgical technique[6]. Extensile surgical approaches are frequently required, and gentle blunt dissection should be performed to minimize fragmentation of the encapsulated tumor mass. Magnified vision is helpful to discover discolored synovial tumor, which should be removed during the marginal tumor resection.[6]

Differential diagnosis of hand tumors include lipomas, hemangioma, foreign body, myxoid cyst, synovial carcinoma, tophaceous gout, glomus tumor, tuberous osteitis, epidermal cyst, fibroma, and metastasis.[15,16]

Although the condition is routinely benign, malignant degeneration has been reported in exceptional cases[16] The diffuse type can be locally aggressive, with reports of possible multiple recurrence and malignant transformation[17]. These data reinforce the need for early and accurate diagnosis, and proper treatment.[18]

Conclusion:

Our case is an example of GCTTS in a single digit of the hand. The recurrence can be prevented by accurate pre operative diagnosis with FNAC and use of magnification for complete excision with microsurgical skills. Finally, if required, the hand's function should be recreated to minimize the loss.

References:

1. Oxford University of Hospital NHS Foundation Trust (2015) Giant Cell Tumor of the Tendon Sheath, Information for patients.
2. Shirol SS, Jain A, Nimbaragi G. Giant cell tumor of extensor tendon sheath: Preventing recurrence. Journal of the Scientific Society. 2012 Sep 1;39(3):155.
3. Suresh SS, Zaki H. Giant cell tumor of tendon sheath: case series and review of literature. Journal of hand and microsurgery. 2010 Dec;2(02):67-71.
4. Jadhav S, Awasthi A, Deshpande S, Jadawala V, Salwan A, Awasthi AA, Deshpande SV, Jadawala VH. Giant cell tumor of extensor tendon sheath in ring finger: a case report. Cureus. 2022 Sep 26;14(9).
5. Lautenbach M, Kim S, Millrose M, Eisenschenk A. Nodular giant cell tumour of the tendon sheath of the hand: analysis of eighty-four cases—diagnostic decisions and outcome. International orthopaedics. 2013 Nov;37:2211-5.

6. Tumours and Tumorous conditions of the Hand.Campbell's Operative Orthopaedics. In: James H. Calandruccio, Mark T. Jobe, editors. 13th edn, Vol. 4. Philadelphia: Elsevier Health Sciences; 2008. p. 3779.

7. The Wrist and Hand. Turek's Orthopaedics: Principles and Their Application. 6th edn. Weinstein SL, Buckwalter JA, editors. Philadelphia: Lippincott Williams and Wilkins; 2005. p. 437 8.

8. Rodrigues C, Desai S, Chinoy R. Giant cell tumor of the tendon sheath: a retrospective study of 28 cases. Journal of surgical oncology. 1998 Jun;68(2):100-3.

9. Jaffe HL, Lichtenstein HL, Elsutro CJ. Pigmented villonodular synovitis, bursitis, and tenosynovitis. Arch Pathol 1941;31:731 65.

10. Kant KS, Manav AK, Kumar R, Sinha VK, Sharma A. Giant cell tumour of tendon sheath and synovial membrane: A review of 26 cases. Journal of Clinical Orthopaedics and Trauma. 2017 Nov 1;8:S96-9.

11. Al-Qattan MM. Giant cell tumours of tendon sheath: classification and recurrence rate. Journal of Hand Surgery. 2001 Feb;26(1):72-5.

12. Ikeda K, Osamura N, Tomita K. Giant cell tumour in the tendon sheath of the hand: importance of the type of lesion. Scandinavian Journal of Plastic and Reconstructive Surgery and Hand Surgery. 2007 Jan 1;41(3):138-42.

13. Kerfant N, Bardin T, Roulot E. Multiple giant cell tumors of the tendon sheath: separate volar and dorsal lesions involving three digits of the same hand following repetitive trauma. Journal of Hand and Microsurgery. 2015 Jun;7:233-5.

14. R; Ozben H, Coskun T. Giant cell tumor of tendon sheath in the hand: analysis of risk factors for recurrence in 50 cases. BMC Musculoskeletal Disorders. 2019 Dec;20:1-8.

15. Zeinstra JS, Kwee RM, Kavanagh EC, van Hemert WL, Adriaensen ME. Multifocal giant cell tumor of the tendon sheath: case report and literature review. Skeletal radiology. 2013 Mar;42:447-50.

16. Richert B, André J. Laterosubungual giant cell tumor of the tendon sheath: an unusual location. Journal of the American Academy of Dermatology. 1999 Aug 1;41(2):347-8.

17. Singh T, Noor S, Simons AW. Multiple localized giant cell tumor of the tendon sheath (GCTTS) affecting a single tendon: a very rare case report and review of recent cases. Hand Surgery. 2011;16(03):367-9.

18. Minotto R, Rodrigues CB, Grill AB, Furian R. Giant cell tumor of the tendon sheath: a rare periungual location simulating myxoid cyst. Anais Brasileiros de Dermatologia. 2017 Jan;92:121-3.