CASE REPORT

Tenosynovial giant cell tumor of digit diagnosed on cytology: A case report

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Abstract

Tenosynovial Giant Cell Tumor (TSGCT) is a solitary, firm, and extra-articular localized benign soft tissue tumor that may present with painless swelling for many years. It usually involves the tiny joints of the extremities in the hands and feet. Here, we present the case of a male in his 20s who presented with a painful, stiff, slow-growing mass over the distal interphalangeal joint of the right-hand ring finger. Fine Needle Aspiration Cytology (FNAC) was performed and based on the microscopic features, it was reported as a case of Tenosynovial Giant Cell Tumor. Surgical excision of the swelling was performed and histopathological examination confirmed the diagnosis. The rarity of this case arises from the fact that the diagnosis of TSGCT was established on cytology, as TSGCT is very rarely reported on cytology.

Keywords: Tenosynovial Giant Cell Tumor, Digit, Fine Needle Aspiration Cytology

Introduction

Tenosynovial Giant Cell Tumors (TSGCT) are a group of rare, generally benign, solitary, firm and nodular extra-articular soft tissue tumors arising from the synovial lining of a tendon.[1]. It is the second most common soft tissue tumor of the hand, second only to ganglion. The other sites are palm, wrist, foot, knee, ankle, elbow, and hip. Fine Needle Aspiration Cytology (FNAC) helps in making an early, accurate preoperative pathological diagnosis [2]. The global incidence of TSGCT is about 1.8 cases per 1 million population. Its peak incidence is in the third and fifth decades with slight female predominance [3].

The tumor has various names in the literature, including benign synovioma, sclerosing hemangioma, myeloid epithelioma, giant-cell fibrohemangioma, and fibrous xanthoma. It has also been referred to as fibrous histiocytoma of synovium, pigmented nodular synovitis, giant cell tumor of the tendon sheath, and localized nodular tenosynovitis [4].

FNAC has the advantage of providing quick results and is usually performed to evaluate such superficially located lesions. Based on the cytological diagnosis, complete surgical excision of the lesion can be planned [5]. The differential diagnosis that can be considered include giant cell tumors of soft tissues, giant cell tumors of bone, fibroma of tendon sheath and benign fibrous histiocytoma [5-7]. It may manifest as an extra- or intraarticular lesion and is categorized as localized or diffuse by biological behavior. While the diffuse kind is more aggressive and occasionally has a malignant component, the localized type is thought to be mostly benign [8]. Here, we present a case of TSGCT of the right-hand ring finger of an adult. The diagnosis was made on FNAC, which makes it a rare scenario.

Case Report

A male in his 20s presented with a painful, stiff, slow-growing mass over the distal interphalangeal

joint of the right-hand ring finger for 1 month. The swelling developed spontaneously without any previous trauma or thorn prick. It increased gradually in size and caused little discomfort in day-to-day and household activities. On physical examination, the mass measured 1.5 cm × 1 cm, was well-circumscribed, firm in consistency, and could be moved sideways easily (Figure 1). However, the mobility of the mass was restricted along the proximal-distal axis. There was no local rise in temperature or involvement of the skin. Clinically, there was no evidence of involvement of the underlying bony tissue. FNAC was performed and the smears were moderately cellular comprised of singly scattered, plump, spindle to polygonal cells with round, regular nuclei, bland nuclear chromatin, and moderate eosinophilic cytoplasm. Few multinucleated osteoclast-like giant cells with occasional binucleated cells were also noted and the background was hemorrhagic (Figure 2). Based on these cytological features, a diagnosis of TSGCT was made. Surgical excision of the mass was done and histopathological examination showed a well encapsulated tumor tissue comprised of mononuclear polygonal cells, few scattered giant cells along with few hemosiderin laden macrophages and fibrous tissue confirming the diagnosis as TSGCT (Figures 3 and 4).

Figure 1: Swelling in the distal interphalangeal joint of ring finger

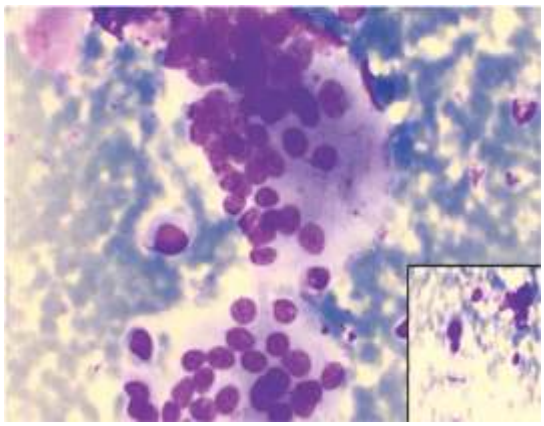

Figure 2: Photomicrograph of FNAC smears showing multinucleated osteoclast like giant cells within set showing binucleate cell and singly scattered polyhedral stromal cell (Giemsa stain; 40×)

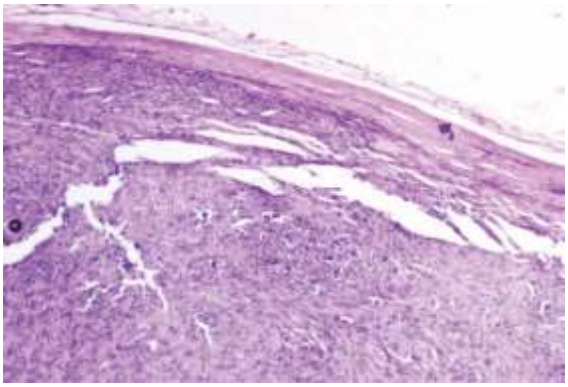

Figure 3: Photomicrograph of histopathology of the excised swelling showing encapsulated tumor tissue (H&E Stain, 10×).

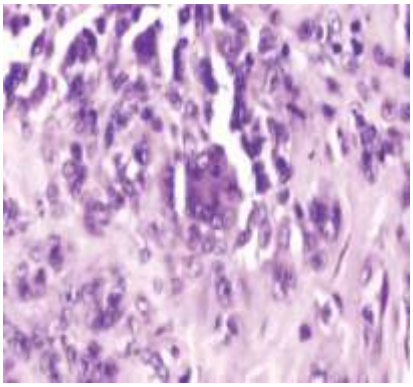

Figure 4: Photomicrograph of histopathology of the excised swelling showing polyhedral stromal cells and multi-nucleated osteoclast type of giant cells (H&E Stain; 40×).

Discussion

TSGCT mostly begins spontaneously, while some patients may experience its commencement after a small trauma. Although there are no structures above it, if it is big and has been there for a while, it could leave a mark on the bone. Since it typically does not result in a functional disability, the patient arrives later than expected. Despite being characterized in the ankle and foot as well, it frequently occurs in the hand. Three to five percent of all TSGCT in the body is found in the foot and ankle, with the majority concentrated in the hand. TSGCT is typically associated with extensor tendons and appears on the lateral portion of the ankle and dorsum of the foot, making misinterpretation likely. It frequently appears on the flexor aspect of the hand. With a minimum follow-up of two years, Kant *et al.,* (2017) reviewed 26 cases of TSGCT and found most cases to be in the age range of 21-40 years old. In 7 of these 26 cases, he observed bone indentation [9]. Two clinical manifestations of TSGCT are possible i.e. localized and diffuse. Localized or nodular types are the most typical. The hands frequently exhibit the confined nodular type, whereas joints frequently exhibit the diffuse kind. There have also been a few reports of malignant TSGCT. The diffuse kind is a second, less frequent variety that recurs frequently and may need numerous more morbidity-causing treatments to treat [10]. Radiological examination is important in such cases as it helps in excluding bony lesions. X-ray demonstrates eccentrically placed lytic lesions with well defined, nonsclerotic margins.

Radiologic examination was not performed in the present case as clinically it was diagnosed as soft tissue lesion. FNAC is often the preferred preliminary investigation for such lesions due to the easily accessible sites and rapid results. It is a widely accepted, a cost-effective tool, and provides rapid and definitive diagnosis of these lesions preoperatively. Familiarity with the characteristic findings on cytology smears can provide initial important clues to the diagnosis and warrant subsequent histopathologic confirmation [5]. The reported patient had a typically benign tumor

presentation. The diagnosis was made by FNAC, and the surgical specimen's histopathology resulted in confirmation. At six months, neither clinical nor ultrasound evidence of a recurrence was present in the patient. In addition, a follow-up period of at least two years was planned to track any recurrence. FNAC can thus be used as a diagnostic tool for early and accurate detection of TSGCT since the cytologic features are sufficiently diagnostic when evaluated together with the clinical and radiological findings.

Conclusion

In adults with soft tissue tumors of the hand, TSGCT should be retained as a possible differential diagnosis. FNAC followed by an excisional biopsy is diagnostic and curative, although the patient should be monitored to identify and treat recurrences. Additionally, TSGCT is infrequently reported on FNAC, highlighting the significance of this procedure in the identification of this illness.

References

1. Awad P. Atypical tenosynovial giant cell tumor of the foot and ankle: A case report. *J Am Podiatr Med Assoc* 2021; 111(3): Article_19.
2. Dhaniwala MN, Dhaniwala NS, Ahmed A. A Case Report of Giant Cell Tumor of the Flexor Tendon Sheath in Index Finger. *J Orthop Case Rep* 2020; 9(6):78-81.
3. Lucas DR. Tenosynovial giant cell tumor: case report and review. *Arch Pathol Lab Med* 2012; 136(8):901-906.
4. Anderson WJ, Doyle LA. Updates from the 2020 World Health Organization Classification of soft tissue and bone tumours. *Histopathology* 2021; 78(5): 644-657.
5. Jain S, Nanda S, Shastri M, Nanda A, Garg V. Fine needle aspiration cytology of giant cell tumour of tendon sheath. *J Clin Diagn Res* 2022;16(3): EC05-EC07.
6. Wakely PE Jr. Giant cell tumor of soft tissue: FNA cytopathology of 4 cases, review of the literature, and comparison with giant cell tumor of bone. *Cancer Cytopathol* 2022; 130(2):120-127.
7. FarisIP, Bajuri MY, N. Rosl. A rare case of painful fibroma arising from tendon sheath of flexor hallucis longus. *J Krishna Inst Med Sci Univ* 2022;11(1):97-101.
8. Mondal K, Mandal R, Khan K, Chakraborty J. Pitfalls in the cytological diagnosis of tenosynovial giant cell tumor: An illustration of eight discordant cases. *Diagn Cytopathol* 2018(3):250-257.
9. Kant KS, Manav AK, Kumar R, Abhinav, Sinha VK, Sharma A. Giant cell tumour of tendon sheath and synovial membrane: A review of 26 cases. *J Clin Orthop Trauma* 2017;8 (Suppl 2):96-99.
10. Monaghan H, Salter DM, Al-Nafussi A. Giant cell tumour of tendon sheath (localized nodular tenosynovitis) clinicopathological features of 71 cases. *J Clin Pathol* 2001; 54(5): 404-407.

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