RECURRENT GIANT CELL TUMOUR OF THE FLEXOR TENDON SHEATH OF THE DISTAL PALM – A CASE REPORT

Plastic Surgery

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ABSTRACT

Giant cell tumor of the tendon sheath is a common benign lesion of the hand. They are also known as tenosynovial giant cell tumours. Magnetic resonance imaging is the imaging modality of choice and the current treatment is surgical excision of the lesion. This lesion is particularly known for its high recurrence rates. Here, we present a case of a recurrent tenosynovial giant cell tumour of the flexor tendon sheath of the index finger at the distal palmar crease. Diagnosis was confirmed by MRI and the lesion was excised. Histopathology revealed a localized type of tenosynovial giant cell tumour.

KEYWORDS

Benign, Recurrence, Tendon sheath, Surgical Excision

INTRODUCTION

Giant cell tumor of the tendon sheath is the second most common benign tumor of the hand after ganglion cysts.^{1,2} It presents as a slowly growing and painless lesion of soft tissues. The lesion usually affects people between the age of 30 and 50 years old and is more commonly associated with women.^{3,6} In spite of it being a benign lesion, a high local recurrence rate of about 45% has been reported following excision.⁷

Case Report

A 49 year old lady presented to us with a swelling in the palm near the base of the left index finger for the past 6 months. It was occasionally painful. She had a similar complaints 3 years ago for which surgical excision was done, elsewhere with the histopathology showing giant cell tumour of the tendon sheath. On examination, a firm 2 x 1 cm non-tender swelling with distinct margins was present in the plane of the flexor tendon of the left index finger. Finger movements were normal with no distal neurovascular deficit. A probable diagnosis of a recurrent giant cell tumour of the tendon sheath was made. MRI revealed a fairly defined lobulated T1/T2 hypointense Proton Density Spectral Attenuated Inversion Recovery (PD SPAIR) hyperintense lesion measuring 1.5 x 1.2 x 0.8mm in the volar aspect of proximal 2nd digit at the level of second metacarpophalangeal (MCP) joint in the deep subcutaneous plane. The lesion shows diffuse restriction with no GRE blooming. Posteromedially, it abuts the anterolateral aspect of the corresponding flexor tendon sheath with no intrasubstance altered signal intensities. Posteriorly, it also seems to abut the base second proximal phalanx with no definite altered marrow signal densities, suggestive of a recurrent giant cell tumour of the flexor tendon sheath.(Fig. 1) We planned for exploration. Under axillary block, tourniquet control and loupe magnification, exploration was done through the previous scar. A 2 x 2cm encapsulated tumour displacing the radial neurovascular bundle and adherent to the A1 pulley and MCP joint capsule was present.(Fig. 2) The lesion was excised after dissecting the neurovascular bundle, A1 pulley and MCP joint capsule, and sent for histopathological examination.(Fig. 3) Haemostasis was secured after tourniquet removal, the tendon glide and the neurovascular bundle were intact and the wound was closed in layers.(Fig. 4 & 5) Microscopy revealed a well circumscribed lesion exhibiting lobular architecture with intervening fibrous septae. The lesion composed of polymorphous population of cells like small mononuclear stromal cells with round nucleus, scattered osteoclastic type giant cells, foamy histiocytes and

few haemosiderin laden macrophages with intervening sclerotic collagen, with features suggestive of tenosynovial giant cell tumour of the localized type.(Fig. 6 & 7)

Fig.1—MRI showing lobulated T1/T2 hypointense PD SPAIR hyperintense lesion measuring in the volar aspect of proximal 2nd digit at the level of second metacarpophalangeal (MCP) joint abutting the flexor tendon sheath and base second proximal phalanx with no definite altered marrow signal densities.

Fig.2—Lesion with neurovascular bundle separated in a vessel loop

Fig. 3—Lesion after excision

Fig. 4 – After excision, flexor tendon and neurovascular bundle intact

Fig. 5 – Immediate post-operative picture

Fig. 6 - Section shows well circumscribed lobular architecture. 4X (H & E)

Fig. 7-Polymorphous population of cells – Stromal cells (S), Osteoclastic type giant cells (O) and Foamy histiocytes (F). 10X (H & E)

DISCUSSION

Jaffe in 1941, was first to describe giant cell tumour of tendon sheath (GCTTS) as a tenosynovitis, a non-neoplastic reaction.⁸ According to Fotiadis et al (2011) the giant cell tumor of the tendon sheath affects more often women, with a male to female ratio 1:1.47 and the mean age ranged from 30 to 50 years.⁹ The most frequent tumor location is the index finger (29,7%).⁹ Other tumor sites are the thumb (12,9%), the long (24,6%), the ring (16,8%) and little (16%) fingers.^{2,7,10-12} The vast majority of patients presents with a painless swelling (84,3%) and sensory issues in 57% of cases.¹⁰ Tenosynovial giant cell tumours can be subdivided into diffuse-type giant cell tumour, pigmented villonodular synovitis (PVNS), intraarticular giant cell tumor of the tendon sheath and extraarticular giant cell tumor of the tendon sheath. Byers classified GCTTS into localized nodular type (common in hand) and diffuse type (common in joints).^{10,11} A new classification for GCTTS was proposed by Al-Qattan by MRI and intra-operative findings, where he classified Type-I as single tumor which is round or multilobulated, and Type-II, where there are two or more distinct tumors which are not joined.¹⁰ Histologically GCTTS is composed of multinucleated giant cells, histiocytes polyhedral, fibrotic material and hemosiderin deposits.¹²⁻¹⁴ Ultrasonography can detect whether tumor is solid or cystic, the presence of satellite lesions, extent of the lesion and involvement of the tendon and other surrounding structures.¹⁵ Kitagawa in 2004 mentioned that the bone involvement was due to simple erosion caused by the pressure effect of the tumor and not due to a true invasion.¹⁶ The recurrence rate after surgical excision has been reported as high as 15–45%.¹⁻⁷ Specific sites like the interphalangeal joints of the fingers and thumb have been shown to have high recurrence rates.^{1,4,10} Reilly et al. reported that recurrence was higher with tumors localized at DIP joints and thumb IP joint (79%) and with dorsally localized tumors (34%).¹⁷ Tumors with close proximity with bone, joint and neurovascular structures have also been shown to have increased recurrence.^{1,10,17} Al Qattan et al. states that intra-osseous invasion of GCTTS may carry a higher risk for recurrence.¹⁰ Williams et al. showed that recurrence rates reached 32% when the flexor, extensor tendons and joint capsule were involved.¹⁸ Complete surgical excision remains the gold standard treatment for GCTTS. Kotwal et al recommended postoperative radiotherapy of 20 Gy in divided daily doses of 2 Gy in case of possible incomplete excision, presence of mitotic figures and bony involvement.⁷

CONCLUSION

Tenosynovial giant cell tumours of the tendon sheath are insidious and painless and therefore a high index of suspicion should be present on examination. MRI is the diagnostic tool of choice and complete surgical excision remains the gold standard treatment. Recurrence is

the single most important factor and this has to be explained to the patient. Surgical excision is best done under tourniquet control and loupe magnification for best results.

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