Case report 466

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Fig. 1A-D. Plain films showed soft tissue swelling of the proximal phalanx of the left 3rd finger. A Sagittal SE 500/38 and B Sagittal SE 1500/38 MR images of the left middle finger. The imaging plane is slightly oblique to the long axis of the finger. The flexor tendons (white arrowheads) are seen coursing through a mass (m, Fig. B) within the flexor tendon sheath (black arrow) (Fig. B) of the middle finger (h = head of the third metacarpal bone (Fig. A and B)). C Artist’s rendition of A and B. The shaded area represents the mass within the tendon sheath. D Axial SE 900/38 MR image at the level of the distal end of the 3rd metacarpal demonstrates the mass (m) and tendons (white arrowhead) within the tendon sheath (white arrow).

Clinical information

This 84-year-old white man presented with a 5-week history of painless swelling of the proximal phalanx of his left middle finger. Two weeks prior to presentation a local physician made a 3 mm incision from which a small amount of serous fluid drained. Cultures were negative. The patient described having had a catfish bite 6 months prior to presentation, but no other trauma.

Physical examination revealed an enlarged middle finger, most marked at the site of the proximal phalanx. The finger was non-tender and no pain was elicited with flexion or extension. A small amount of serous drainage was noted at the previous incision site.

The white blood cell count was 5,300 with a normal differential.

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**Diagnosis: Granulomatous tenosynovitis (left 3rd finger)**

The surgical procedure revealed a large, sausage-shaped mass beneath the subcutaneous fat, the wall of which consisted of tendon sheath. The mass was entered and within it was thick, gelatinous material and a small amount of synovial fluid.

Pathological examination of the gelatinous material showed multiple, large, caseating granulomas (Fig. 2). Acid-fast and fungal stains, and cultures were negative.

Magnetic resonance images of the middle finger were obtained with a Technicare superconducting magnet operating at 0.6 T. Sagittal images SE 1500/38,76 (spin echo TR=1500 ms, TE=38 ms and 76 ms), SE 500/38, axial images SE 900/38 and SE 1500/38,76, and coronal images SE 700/38 were acquired, using a 7-in surface coil and 5 mm slice thickness. For purposes of discussion, the SE 500/38 images are termed T1-weighted, the SE 700/38, 900/38, and 1500/38 are termed spin density and the spin echo 1500/76 is termed T2-weighted.

The T1-weighted images demonstrated a zone of intermediate signal intensity, which represented a gelatinous mass with a small amount of synovial fluid, confined to the space of the digital flexor tendon sheath of the middle finger. The low intensity flexor digitorum profundus and sublimis tendons were demonstrated centrally within this mass and the tendon sheath was demonstrated as a slightly-thickened, low intensity, linear structure. The spin density and T2-weighted images showed a mild to moderate heterogeneous increase in intensity of the mass.

**Discussion**

This patient presented with a painless, enlarged digit. Clinically it could not be determined if the swelling was due to soft tissue swelling only, with a normal tendon sheath, or if the tendon sheath was involved. This information is important because the flexor tendon sheath of the middle finger forms a closed space around the tendons, extending from the distal area of the palm to the distal phalanx. A lesion within this space needs to be treated surgically if infection is a possibility, as it was in our case. The affected tendons may become necrotic and slough, and adhesions between the tendon and sheath may result in permanent loss of function [1]. Had only the soft tissues outside of the tendon sheath been involved, this patient could have been treated medically.

MR made a significant contribution to patient management in this case because it localized the abnormality to the space of the digital flexor tendon sheath by direct demonstration of the abnormally thickened tendon sheath with the tendons and mass within it. This mass had a non-specific appearance on the MR images, as has been the case for most soft tissue masses demonstrated with MR [3, 4]. The differential diagnosis of such a mass includes non-neoplastic lesions such as tenosynovial cyst, tenosynovitis, and synovial chondromatosis, as well as neoplastic lesions e.g. fibroma, lipoma, villonodular synovitis, giant cell tumor, synovial sarcoma [2]. The history of a recent catfish bite, followed by the development of a mass, suggest a more limited differential diagnosis. The possibilities of post-traumatic cyst, foreign body reactive granuloma, chemically induced synovitis, and infectious synovitis should be considered. Bacterial infection results in an acute, painful, swollen digit along the course of the tendon sheath. Acid fast bacilli or fungal infection result in a chronic, painless, enlarged digit, and may be responsible for a granulomatous synovitis.

**Pathological study**

Fig. 2. Histological section of material from the tendon sheath space demonstrates multiple granulomas. Close-up (insert) of area designated by arrow shows characteristic epithelioid cells with large, pale staining nuclei and inflammatory cells with smaller, dark nuclei in the wall of the granuloma (w). Necrotic debris (d) (Hematoxylin/eosin ×3, Insert ×250)