Boutonniere Deformity in a Young Male

A 27-year-old Malay male sought treatment for progressive pain and deformity at the proximal interphalangeal joint of the left middle finger and a painful mass like swelling along the ventral aspect of the wrist. He was known to have episodes of joint pain in the past. On examination, there was a flexion deformity at the proximal interphalangeal joint with extension of the distal interphalangeal joint noted at the third digit of the left hand. A tender swelling was also noted along the palmar side of the wrist and midhand. Radiograph of the left hand and post contrast magnetic resonance imaging (MRI) of the left wrist have been provided. The radiograph shows the presence of Boutonniere deformity (Fig. 1.). The MRI shows the presence of enhancing mass in the carpal tunnel (Fig. 2.).

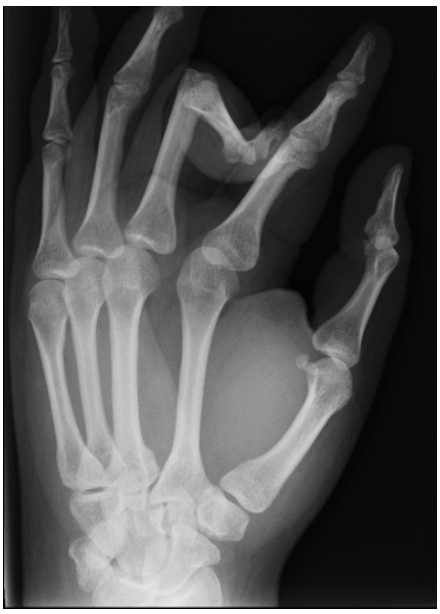

Fig. 1. Radiograph of the hand shows Boutonniere deformity at the third finger. Also, note the lack of erosions.

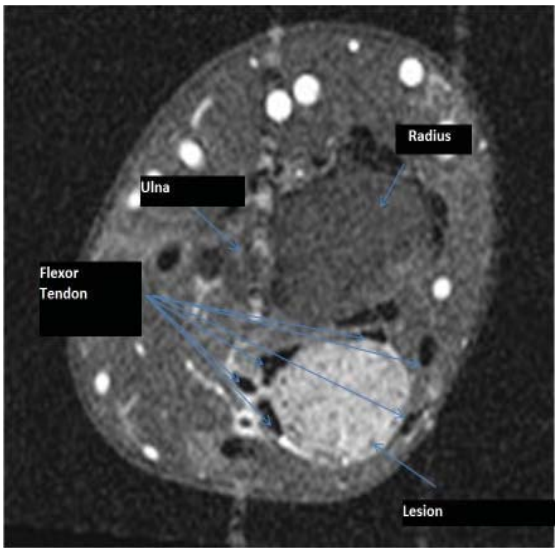

Fig. 2. Post contrast fat saturated T1 images shows heterogeneously enhancing lesion along the flexor tendons of the wrist. The median nerve cannot be seen separately from the lesion on this image.

What is the diagnosis?

A. Neurofibroma
B. Rheumatoid arthritis
C. Gout
D. Sarcoidosis
E. Ganglion Cyst

Discussion

Gout in the hand presents as arthritis, skin ulceration, sinus formation, infection and tenosynovitis. Flexor tenosynovitis is a rare manifestation of gout in the hand. The deposits of gout can occur in various structures including flexor tendons, tendon sheaths, carpal tunnel floor, and the transverse carpal ligament and also along the median nerve. The median nerve may be directly involved or compressed by the tophaceous deposits resulting in Boutonniere deformity and carpal tunnel syndrome.[1]

Answer: C

Boutonniere deformity is characterised by flexion at the proximal interphalangeal joints and extension at the distal interphalangeal joints and is commonly seen in conditions like rheumatoid arthritis and trauma and is very rare in gout.

Most cases of carpal tunnel syndrome are idiopathic. Gout is a rare cause of carpal tunnel syndrome. The most common pathomechanics is increased volume in the carpal tunnel resulting from gouty tenosynovitis, nodular tophi and gouty deposits on the median nerve as well as direct infiltration of the intrinsic muscles. The carpal tunnel syndrome can also be caused by reduced volume resulting from infiltration of the transverse carpal ligament.[2] In our patient, there was a focal mass in the carpal tunnel, which involved the ring finger flexor digitorum superficialis and little finger flexor digitorum profundus muscle as confirmed on surgery. Histopathology of the excised mass revealed nodular tophaceous deposits of crystalline eosinophillic material surrounded by multinucleate giant cells histiocytes and inflammatory cells. Although polarised light microscopy was not done to show negatively birefringent urate crystals, the tophaceous material suggests gout was the cause of the finger deformity. Biochemical investigations revealed elevated serum uric acid levels. Radiographs in our patient did not show the characteristic tophaceous punched out lesions in the carpal bones. No joint effusion or synovial thickening was noted.

Tophaceous deposits can be identified on MRI. The lesions are isointense to muscle on T1 weighted images. They are heterogeneously hyperintense on T2 weighted images. They may have hypointense foci within them on the T2 weighted images. The hyperintense foci may be due to proteinaceous contents. The hypointense foci are due to calcification, fibrous tissue, crystals and hemosiderin deposition or proton immobility. Heterogeneous enhancement is generally observed on the post contrast images. The diagnosis of carpal tunnel syndrome was radiologically confirmed by the compression and flattening of the median nerve, edema within the nerve and outward bowing of the flexor retinaculum. The differential diagnosis based on clinical and radiological findings include neurofibroma, other arthropathies (such as rheumatoid arthritis, haemophilic arthropathy and dialysis related arthropathy), sarcoidosis and pigmented villonodular synovitis.[3]

REFERENCES

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