

## **Tubercular flexor tendon tenosynovitis with rice body formation**

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**Section:** Musculoskeletal system

**Area of Interest:** Musculoskeletal soft tissue

**Procedure:** Diagnostic procedure

**Imaging Technique:** Digital radiography

**Imaging Technique:** MR

**Special Focus:** Infection Case Type: Clinical Cases

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**Patient:** 43 years, male

### **Clinical History:**

A 43-year-old male patient with a history of pulmonary tuberculosis presented to orthopaedics department with a painless swelling of the right middle finger for one year with progressive increase in size in the past two months. The patient was unable to bend his finger. Radiograph and MRI of the right hand were requested.

### **Imaging Findings:**

Radiograph of the right hand revealed a soft tissue swelling involving the right middle finger. However, the underlying bones were normal.

MRI of the right middle finger revealed a T2 hyperintense, T1 hypointense well-encapsulated lesion on the volar aspect, centred around the flexor tendons (flexor digitorum profundus and flexor digitorum superficialis) at the level of the proximal phalanx, measuring about 3.3 (length) x 1 (transverse) x 0.7 cm (AP) in dimension. Multiple hypointense rice bodies were seen within the lesion. There was narrow continuation/extension to another similar appearing lesion centred around the flexor tendons at the level of the third metacarpal.

Mild marrow oedema was seen in the proximal and middle phalanx of the ring finger.

Mild synovial thickening & subcutaneous soft tissue oedema was seen around the proximal phalanx and proximal interphalangeal joint along with small periarticular erosions. There was no evidence of any cortical break/ joint effusion.

### **Discussion:**

Rice bodies are small loose bodies seen in the synovial fluid, bursae and/or tendon sheaths. They can be seen in patients with mycobacterial infection, rheumatoid arthritis, juvenile idiopathic arthritis, subacromial bursitis and osteoarthritis [1]. They are thought to be formed due to shedding of infarcted synovium formed by fibrin deposition on inflamed synovium into the joint [1].

Tuberculous tenosynovitis is rare and occurs in approximately 1% to 3% of patients with tuberculosis in endemic areas due to haematogeneous/lymphogeneous spread or direct inoculation [2]. Kanavel described three stages of tendon sheath involvement. The first stage includes sheath thickening, serous exudation and granulation. This is followed by rice body formation due to proliferation of granulomatous tissues. The last stage is characterised by necrosis [3]. Diagnosis is usually delayed due to nonspecific symptoms like pain and swelling.

Tuberculous tenosynovitis usually involves small joints. X-ray may show soft tissue swelling with osteoporotic

changes around the involved joint. On Magnetic Resonance Imaging, rice bodies appear as iso-hypointense on T1 and T2W images. There is synovial proliferation appearing hypointense on T2W images with central erosions and/or abscesses [4]. There is no tendon thickness/rupture. In contrast, rheumatic tenosynovitis usually involves the knee joint with tendon thickness, signal changes and rupture along with bone and joint deformities [1]. The final diagnosis of tuberculosis is made by blood tests, diagnostic fluid aspiration and microbial examination and/or biopsy [5]. In our case, fluid was aspirated from the lesion and sent for gene expert (culture as well as for AFB staining). Culture revealed growth of mycobacterium.

Treatment includes antitubercular therapy and/or surgery in patients with resistance to chemotherapy or stage 2/3 disease [6]. Rice bodies usually require wide excision to prevent recurrence.

**Differential Diagnosis List:** Tubercular flexor tendon tenosynovitis with rice body formation, Rheumatoid arthritis-associated tenosynovitis, Non-tubercular infective tenosynovitis

**Final Diagnosis:** Tubercular flexor tendon tenosynovitis with rice body formation

#### References:

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**Figure 1**

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**Description:** Radiograph (AP VIEW) of right hand reveals soft tissue swelling involving the right middle finger. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

## Figure 2

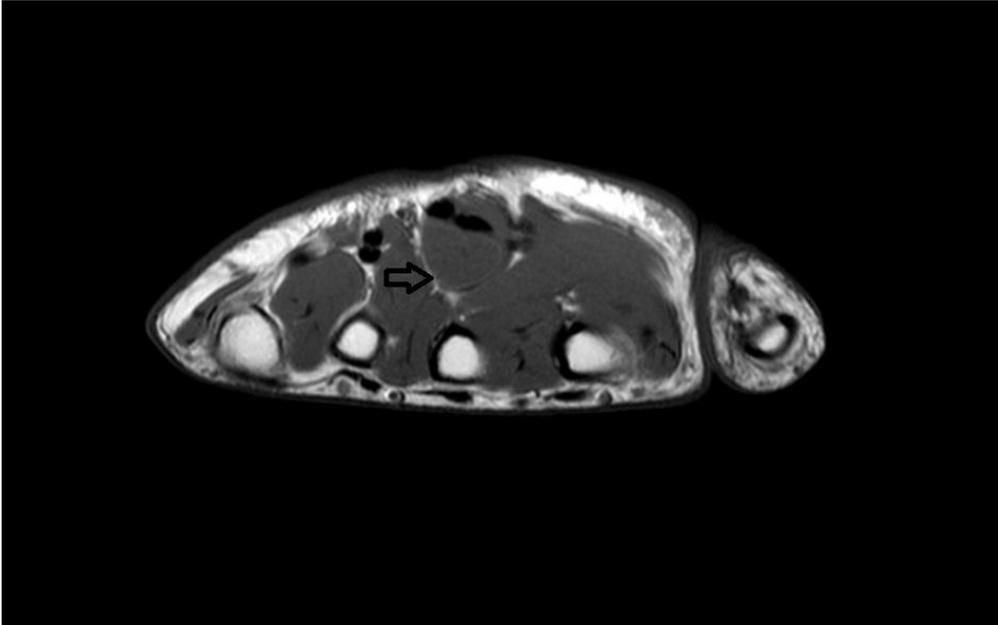
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**Description:** Radiograph (LAT VIEW) of right middle finger reveals soft tissue swelling involving the right middle finger. However underlying bones appear normal. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

## Figure 3

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**Description:** MRI T1W axial image of the right hand revealed a hypointense well-encapsulated lesion on the volar aspect, centred around the flexor tendons (flexor digitorum profundus and flexor digitorum superficialis) of the middle finger. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

**Figure 4**

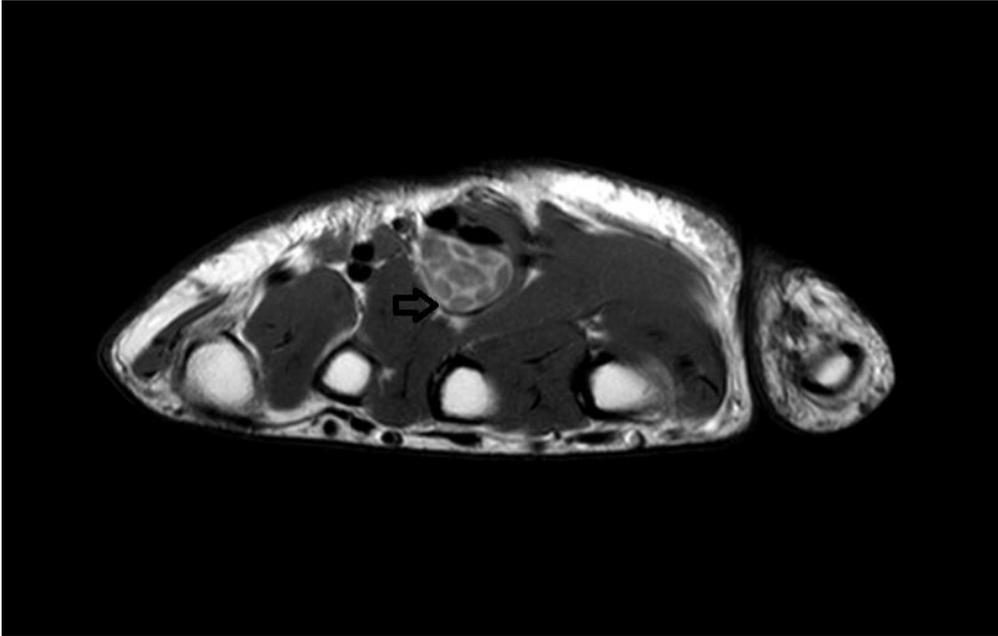
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**Description:** MRI T1W axial image of the right hand revealed a hypointense well-encapsulated lesion on the volar aspect, centred around the flexor tendons at the level of the third metacarpal. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

## Figure 5

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**Description:** MRI T2W axial image of the right hand revealed a hyperintense well-encapsulated lesion on the volar aspect, centred around the flexor tendons with multiple hypointense rice bodies within.

**Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

## Figure 6

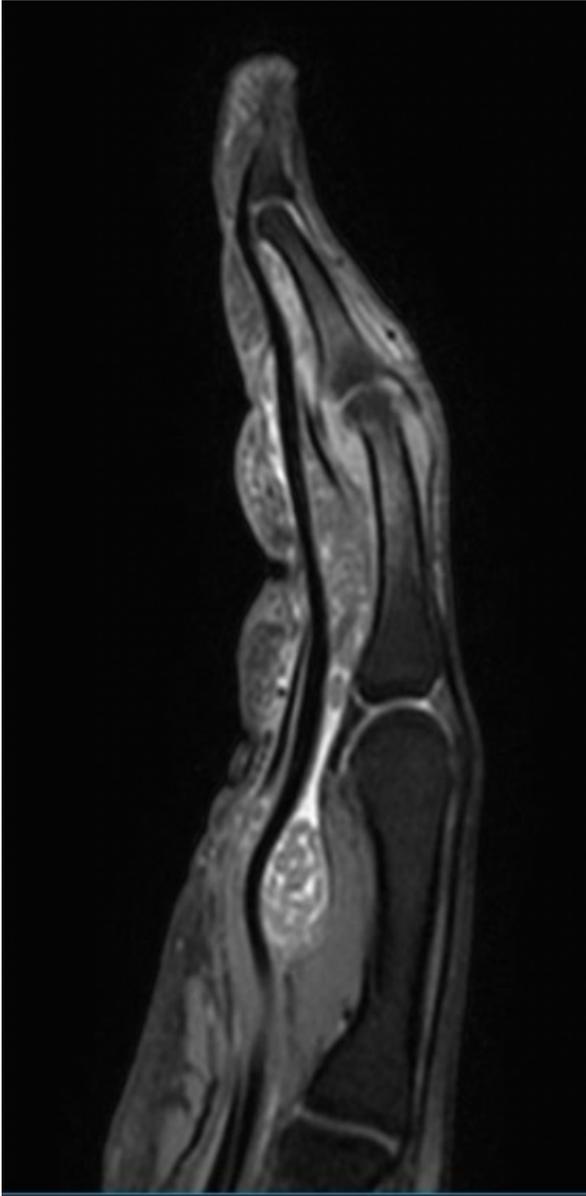
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**Description:** MRI T2W axial image of the right hand revealed a hyperintense well-encapsulated lesion centred around the flexor tendons at the level of the third metacarpal with multiple hypointense rice bodies within. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

**Figure 7**

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**Description:** MRI PD sagittal image of the right hand revealed two hyperintense lesions with hypointense rice bodies within centred around the flexor tendons at the level of proximal phalanx and at the level of third metacarpal. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India

## Figure 8

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**Description:** MRI T2W coronal image of the right hand revealed a hyperintense, well encapsulated lesion centred around the flexor tendons at the level of the third metacarpal. Multiple hypointense rice bodies are seen within. **Origin:** Department of Radiology, W Pratiksha Hospital, Gurgaon, India