



# **Rice Grain Bursitis: Rare Manifestation of TB in Wrist Joint**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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**Case Study**

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## **ABSTRACT**

This case report highlights about rice grain bursitis- rare manifestation of TB in wrist joint. Subacromial-subdeltoid bursitis of a shoulder with rice bodies is relatively uncommon. The understanding of the pathogenesis of rice body formation is yet approximate only but some clinical conditions like rheumatoid arthritis, tuberculous arthritis, seronegative inflammatory arthritis, juvenile rheumatoid arthritis and osteoarthritis are related to it. A 30yr Male patient presented with complaints of pain and swelling in the wrist joint, which was insidious in onset. It was associated with evening rise in temperature. Frequently erosion of the underlying bone, secondary osteomyelitis and median nerve encasement are present.

**Keywords:** Tuberculosis; rice grain bursitis; wrist joint; MRI; TB.

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## 1. INTRODUCTION

The hand and wrist are very rare sites for tuberculosis (TB) and account for < 1 percentage of all skeletal TB. Though rare, TB of the wrist is a cause of major morbidity [1].

It has a prolonged onset and is rarely diagnosed before developing into severe arthritis. This delay in diagnosis is contributed by a non-directional misleading presentation of patients such as malaise and constitutional symptoms. Hence the delay in initiation of treatment can result in the destruction of the bones and joints. Therefore, tubercular arthritis is to be understood clearly by its manifestation, diagnosis establishment and treatment [2].

## 2. CLINICAL PRESENTATION

A 30 yr Male patient presented to OPD in JNMC Hospital, Aligarh with complaints of pain and swelling in the wrist joint, which was insidious in onset. It was associated with evening rise in temperature.

The swelling extended over palmar aspect of left wrist and hand with local tenderness and warmth.

The patient was a known case of active pulmonary Koch's and was on treatment with anti-tubercular drugs for 2 months. There was no history of trauma or discharging sinus.

The blood markers were TWC 11,000/UL, ESR 70 mm/h, and CRP 48 mg/L. The Mantoux test & serum polymerase chain reaction (PCR) for tuberculosis (TB) was positive.

### Imaging: MRI LEFT WRIST JOINT

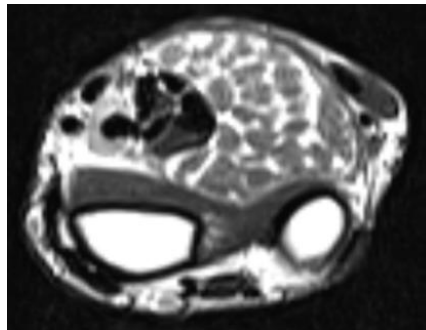


Image 1. T2WI transverse

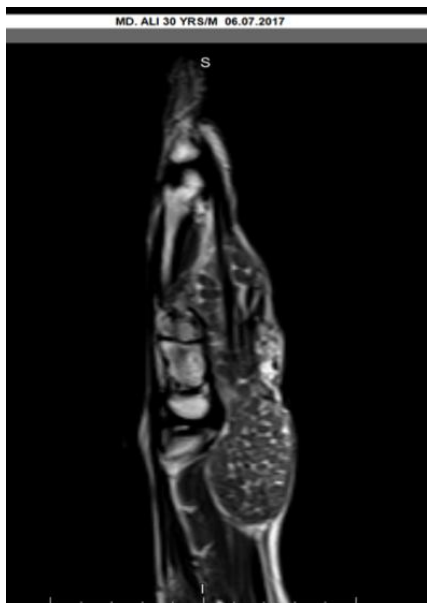


Image 2. T2WISAG

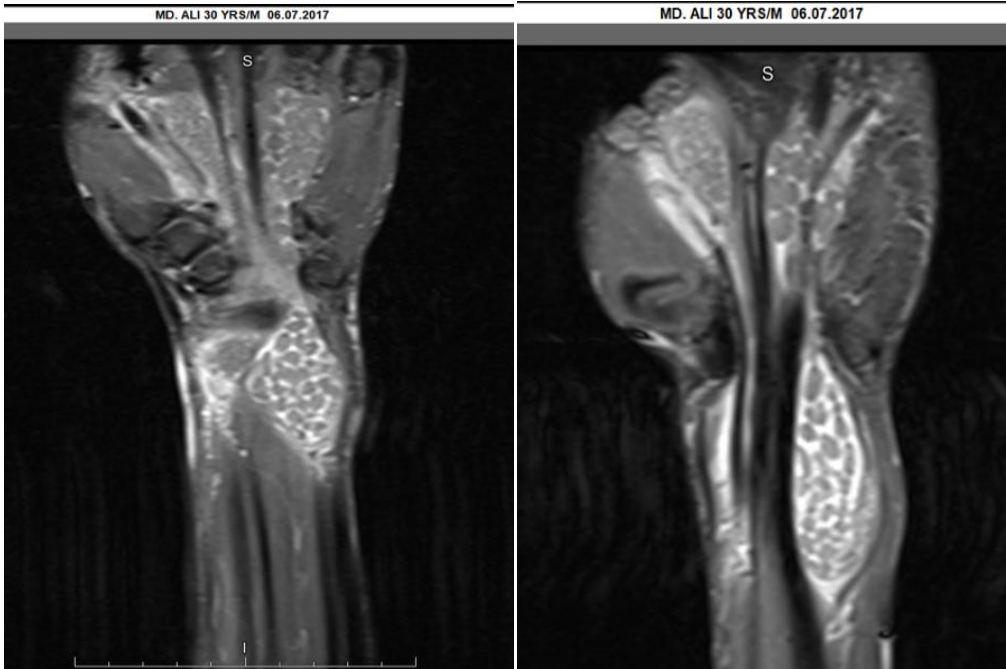


Image 3a. T1 tirm CORONAL

Image 3b. T1 tirm COR

Image 3. T1 tirm COR

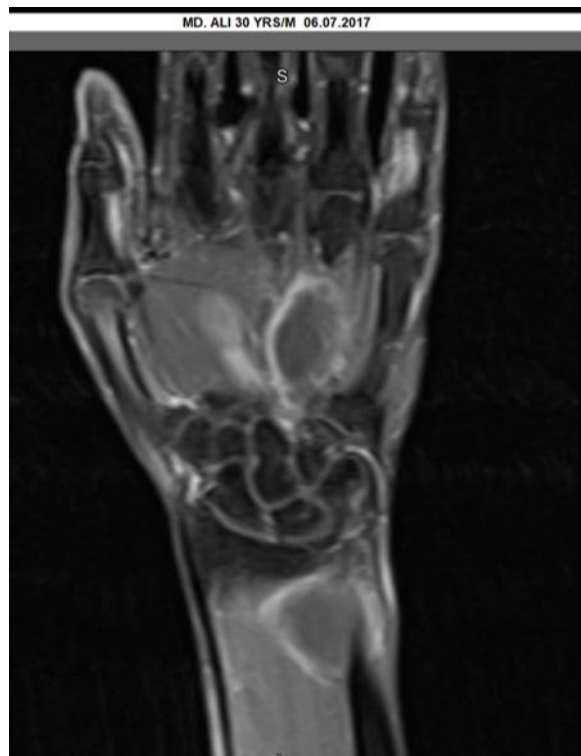
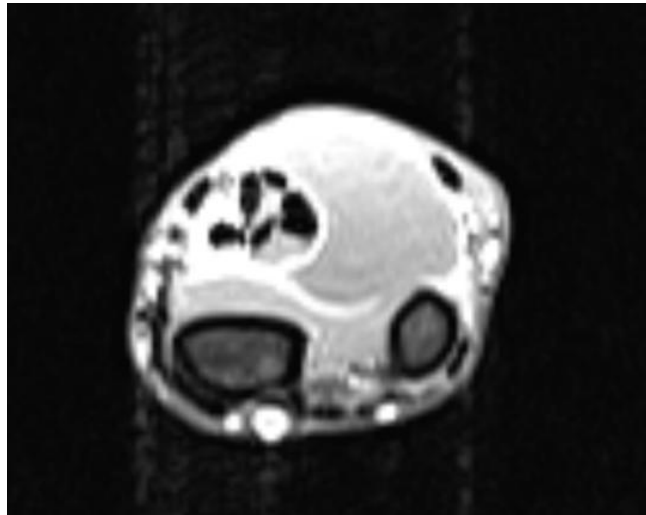


Image 4. T1 post contrast FS COR



**Image 5. T1 Post contrast FS transverse**

Description: The images shown above reveal marked thickening of the synovial lining around the tendons of flexor compartment near wrist joint and thenar aspect of hand.

There is an altered signal intensity lesion in flexor aspect insinuating along the flexor tendons and extending to involve radial and ulnar bursa. The lesion is showing peripheral post contrast enhancement with multiple small T2 hypo intense round lesions (RICE GRAIN LOOSE BODIES) within it leading to distension of radial and ulnar bursae (Bursitis).

The underlying bones appear normal.

### 3. DISCUSSION

“The hand and wrist are the most frequent sites of mycobacterial infection. Occurrence in these sites is postulated to be related to both the relative abundance of synovium in the region and the increased risk for pathogen inoculation through minor penetrating injuries” [3].

They can range from asymptomatic to causing joint pain, effusion and occasionally mechanical symptoms such as locking.

“Typically, diagnosis of atypical mycobacterial tenosynovitis is delayed; the length of time between the onset of symptoms and diagnosis may be as long as 1 year” [3,4]. “It is usually diagnosed at an advanced stage of carpal destruction, due to slowly development of the symptoms” [5].

“Notable delay in presentation and obtaining a correct diagnosis may lead to tendon rupture” [6].

In most cases, acute infection does not show any physical symptoms. Blood tests are generally not helpful, though some individuals may have elevated erythrocyte sedimentation rate and C-reactive protein levels.

“The clinical and imaging appearances of tuberculosis tenosynovitis vary, depending on duration of the disease, host resistance, and organism virulence” [7,8].

MRI findings of tuberculous infection of the wrist include thickening of the synovial lining around the flexor and extensor tendons and fluid collection that contains small low-signal and non-enhanced foci (rice grain) within in the tendon sheath.

Frequently erosion of the underlying bone, secondary osteomyelitis and median nerve encasement are present.

“Rice bodies are multiple small loose intra-articular bodies that macroscopically resemble polished grains of white rice. They are located in the synovial fluid, bursae or tendon sheaths” [9].

Potentially harmful steroid therapy can be avoided [10] by accurate and timely diagnosis

“Inflammatory conditions often associated with rice-body formation are rheumatoid arthritis; seronegative inflammatory arthritis; and

tuberculous joints, tenosynovitis, and bursitis” [11].

“Rice bodies are isointense on T1-weighted MR images and slightly hyper-intense relative to muscle on T2-weighted MR images” [12].

Mycobacterial infection is an important disease to recognise, given the increasing incidence of the disease and the associated morbidity and mortality.

Typically, treatment is started based on clinical, radiologic, and histologic findings. Patients typically respond well to antimycobacterial medication and synovectomy.

#### 4. PATIENT COURSE

Since the patient was a known case of pulmonary Koch's, it led to a high index of suspicion for TB of the wrist joint on imaging and a prompt diagnosis was made.

Debridement was done and the wrist tissue stained positive for Acid Fast bacilli. The patient continued ATT medication and the symptoms were relieved over the course of 9 months.

#### 5. CONCLUSION

Articular TB is a chronic and worsening disease that often affects the load-bearing joints. Small joint presentations uncommon and diagnosis is usually delayed due to low suspicion. Since it mimics a wide range of pathologies such as subacute or chronic suppurative arthritis, rheumatoid arthritis, benign bone tumors, osteochondrosis, and Kaposi sarcoma, it is essential to arrive at an accurate diagnosis. The characteristic manifestations on MRI along with clinical profile of the patient are helpful in early identification and prompt management.

#### ETHICAL APPROVAL AND CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. The case was approved by the Institute Ethical Board.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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