

---

## Tuberculosis of wrist joint with rice body formation: A case report

---

**Kadiri Venkata Ranganath\***, Nagakumar J.S and Arun H.S

*Department of Orthopaedics, Sri Devaraj Urs Medical College & Research Centre, Karnataka, India*

### **\*Correspondence Info:**

Dr. Kadiri Venkata Ranganath  
Junior Resident,  
Department of Orthopaedics,  
(SNR Government Hospital),  
Sri Devaraj Urs Medical College & Research Centre, Karnataka, India  
E-mail: [drkvranganath@gmail.com](mailto:drkvranganath@gmail.com)

### **Abstract**

Tuberculosis of the wrist and hand is a rare infectious disease, Because of the rarity of these cases, early diagnosis is often difficult. We report a case of 55-year-old male agriculture worker came to our OPD due to a palpable tumor mass over his right wrist which had progressively enlarged since 2 years ago. He had mild pain and swelling on the volar aspect of the wrist and radial side of hand, he also complains of pain and inability to do movements in the right thumb. The patient had no history of systemic disease, or tuberculosis.

Radiography showed a soft-tissue mass shadow, with destruction of wrist joint and osteoporosis, and magnetic resonance imaging was not done because of patient non-affordability with financial constraints. Laboratory test results were normal, except for an elevated erythrocyte sedimentation rate.

The patient had an ambiguous Mantoux test result but no history of mycobacterial exposure. Investigations for rheumatic disease were negative. Surgical exploration of the lesion revealed rice bodies in the common flexor tendon synovial sheath, extending up to meta-carpo phalangeal joint of thumb. Removal of the rice bodies and thorough excision of the sheath was performed and Joshis external stabilization system (JESS) was applied. The patient regained a painless restricted range of motion in about 6 months. One-year follow-up revealed no underlying disorder.

**Keywords:** Rice-Bodies, Tenosynovitis, Tuberculous Wrist.

### **1. Introduction**

Tuberculosis is still endemic in many developed countries, Involvement of the wrist and hand at presentation is extremely rare, and the diagnosis is often missed. Although frequently reported by rheumatologists, rice bodies are an uncommon finding for most hand surgeons. We report a case of 55-year-old male agriculture worker with rice bodies and tenosynovitis of the wrist.

### **2. Case Report**

In march 20014, 55-year-old male agriculture worker presented to SNR Government Hospital attached to Sri Devaraj Urs Medical College, Kolar, India with a palpable tumor mass (figure 1) over his right wrist which had progressively enlarged since 2 years. He had mild pain and swelling on the volar aspect of the wrist and radial side of hand, he also complains of pain and inability to do movements in the right thumb.

The patient had no history of any systemic disease, major operations, or tuberculosis. Physical examination revealed an elastic mass measuring 4\*2 cm with mild tenderness over the volar side of the right wrist. Chest X-ray was Normal and X-ray of the right wrist (figure 2) showed

soft-tissue mass shadow, with destruction of wrist joint and osteoporosis. An ultra-sonogram of the right wrist was done and revealed synovial effusion surrounding the flexor tendons with multiple hyper echoic internal echoes. Laboratory test results were normal, except for an elevated erythrocyte sedimentation rate. The patient had an ambiguous Mantoux test result but no history of mycobacterial exposure. Investigations for rheumatic disease were negative.

After complete study, the tumor mass was surgically removed. Numerous shiny soft corpuscles consistent with rice bodies were found in the common flexor tendon synovial sheath, extending distally through the sheath to the base of thumb. The sheath was notably thickened. Removal of the rice bodies and thorough excision of the sheath down to the wrist joint with respect to neighboring neurovascular structures were performed and Joshis external stabilization system (JESS) was applied to stabilise wrist joint.

Microscopically, revealed scattered chronic granulomatous inflammation with massive necrosis and Langerhans giant cell infiltration with focal calcification. Tissue culture demonstrated that acid-fast staining was positive.



After the operation, the patient was treated with anti tubercular medication therapy for 9 months without local recurrence. JESS had been removed at the end of 3 months after operation and started on physiotherapy, patient had 40 degrees of dorsiflexion and 60 degrees of palmar flexion at 1 year follow up, patient was not willing for secondary surgeries as he had painless range of movements.



**Fig 1:** Clinical appearance of the right wrist showing swelling of the volar aspect of the wrist, hand,



**Fig 2:** X-ray of the right wrist showed soft-tissue mass shadow, with destruction of wrist joint and osteoporosis



**Fig 3:** Intra-operative photograph showing multiple rice bodies contained within the synovial sheath



**Fig 4:** multiple small pieces rice-like material and fluid content were found



**Fig 5:** after surgical removal of tumour, wrist was stabilized with JESS external fixator



**Fig 6:** At follow up of 6 months.

### 3. Discussion

Tuberculosis tenosynovitis is a rare disease, and it is diagnosed with difficulty until late in its course due to its slow progression and silent symptoms. It is usually misdiagnosed as a tumor or noninfectious tenosynovitis[1].

Rice bodies are a common finding in many rheumatic diseases such as rheumatoid arthritis [2,3], systemic lupus erythematosus, and seronegative arthritides, as well as infectious diseases such as nonspecific arthritis, tuberculosis[4;5], and atypical mycobacterial infections.[6–8] They may also be found in osteoarthritic joints.[9,10]



The cause of rice body formation remains obscure, but is most likely an unusual complication of chronic bursitis.[11] Some investigators have suggested micro infarctions after intra-articular synovial inflammation and ischemia, with subsequent synovial shedding and encasement by fibrin derived from synovial fluid as a possible cause.[4,12] Nonetheless, de novo formation and progressive enlargement by fibrin is also a possible mechanism[3], and an alteration in fluid viscosity and fibrinogen content of the synovial fluid has been implicated.[13]

The sheath of the tendons of the wrist and hand has been reported as a site for rice body formation.[6–8] in our case differentials included as synovial chondromatosis or pigmented villonodular synovitis, connective tissue diseases like rheumatoid arthritis, sarcoidosis, amyloidosis, foreign body reaction, and other non-specific tenosynovitis.

Although rice body formation can be seen in other types of chronic inflammatory arthritis, we feel that MRI may aid in the diagnosis of tuberculous tenosynovitis in the appropriate clinical context. Final diagnosis is proven by histopathology and bacterial culture. Concerning treatments for tuberculous tenosynovitis, most authors recommend initiation of antituberculous therapy when granuloma or acid-fast bacilli are found in tissue or aspirate material; subsequent therapy is based on results of the culture.

Surgery beyond that necessary for diagnosis is reserved for debridement when extensive amounts of tissue are involved or release of an entrapped nerve is necessary. The American Thoracic Society and the Centers for Disease Control recommend a 6-month regimen of isoniazid and rifampin, with pyrazinamide included for the first 2 months, for both pulmonary and extrapulmonary tuberculosis. A 9-month regimen of isoniazid and rifampin is equally effective. However, musculoskeletal tuberculosis may require longer periods of Treatment [14].

## References

[1] Cramer K, Seiler JG 3<sup>rd</sup>, Milek MA. Tuberculous tenosynovitis of the wrist. Two case reports. *Clin Orthop* 1991; 262:137-140.  
[2] Amrami KK, Ruggieri AP, Sundaram M. Radiologic case study. Rheumatoid arthritis with rice bodies. *Orthopedics* 2004; 27:350, 426–7.

[3] Popert AJ, Scott DL, Wainwright AC, Walton KW, Williamson N, Chapman JH. Frequency of occurrence, mode of development, and significance of rice bodies in rheumatoid joints. *Ann Rheum Dis* 1982; 41:109–17.  
[4] Cheung HS, Ryan LM, Kozin F, McCarty DJ. Synovial origins of rice bodies in joint fluid. *Arthritis Rheum* 1980; 23:72–6.  
[5] Pimm LH, Waugh W. Tuberculous tenosynovitis. *J Bone Joint Surg Br* 1957; 39:91–101.  
[6] Chau CL, Griffith JF, Chan PT, Lui TH, Yu KS, Ngai WK. Rice-body formation in atypical mycobacterial tenosynovitis and bursitis: findings on sonography and MR imaging. *Am J Roentgenol* 2003; 180:1455–9.  
[7] Lee EY, Rubin DA, Brown DM. Recurrent *Mycobacterium marinum* tenosynovitis of the wrist mimicking extraarticular synovial chondromatosis on MR images. *Skeletal Radiol* 2004; 33:405–8.  
[8] Sanger JR, Stampfl DA, Franson TR. Recurrent granulomatous synovitis due to *Mycobacterium kansasii* in a renal transplant recipient. *J Hand Surg Am* 1987; 12:436–41.  
[9] Bucki B, Lansaman J, Janson X, Billon-Galland MA, Marty C, Ruel M, et al. Osteoarthritis with rice bodies rich in calcium microcrystals. 4 cases with ultrastructural study [in French]. *Rev Rhum Ed Fr* 1994; 61:415–20.  
[10] Li-Yu J, Clayburne GM, Sieck MS, Walker SE, Athreya BH, DeHoratius RJ, et al. Calcium apatite crystals in synovial fluid ricebodies. *Ann Rheum Dis* 2002; 61:387–90.  
[11] Chen A, Wong LY, Sheu CY, Chen BF. Distinguishing multiple rice body formation in chronic subacromial-subdeltoid bursitis from synovial chondromatosis. *Skeletal Radiol* 2002; 31:119–21.  
[12] Geiler G, Mehlhorn U. Vasculitis with anemia infarcts of the villi of the synovial membrane in rheumatoid arthritis [in German]. *Z Rheumatol* 1989; 48:63–7.  
[13] Altmann S, Regul M, Zeidler H, Hartmann F. Time-dependent flow behavior and fibrinogen content of synovial fluid [in German]. *Z Rheumatol* 1985; 44:64–71.  
[14] Jackson RH, King JW. Tenosynovitis of the hand: a forgotten manifestation of tuberculosis. *Rev Infect Dis* 1989; 11:616–618.