

## CASE REPORT

**Subdeltoid Bursa Tuberculosis with Rice Body Formation—A Case Report**

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**Abstract:**

Tuberculous tenosynovitis and bursitis account for approximately 1%. A 56 years old female presented with swelling in left shoulder, gradually increasing in size with slight restriction in movement since last three months. X-ray revealed no abnormality of humerus head. Histopathological examination showed granulomatous tissue with multiple rice bodies. A positive culture of mycobacterium tuberculosis confirmed the diagnosis of tuberculosis. We here report a case of subdeltoid bursitis with rice body formation and without active bone and joint tuberculosis.

**Keywords:** Subdeltoid Bursitis, Tuberculous Tenosynovitis

**Introduction:**

Reise was the first to describe rice bodies occurring in joints affected by tuberculosis in 1895 [1]. Though first described in association with tuberculous arthritis but now have been found to be more commonly associated with rheumatoid arthritis, systemic lupus erythematosus, seronegative arthritides, atypical mycobacterial infections and non specific arthritis [2]. But rice bodies have also been reported without any underlying systemic disorder. Here we report a case of 56 year old female with left shoulder swelling since three months.

**Case Report**

A 56 year old female presented with swelling in left shoulder since last three months. The swelling gradually increased to its present size. There was slight restriction in movement of arm especially when she tried to uplift it but no pain. There was no

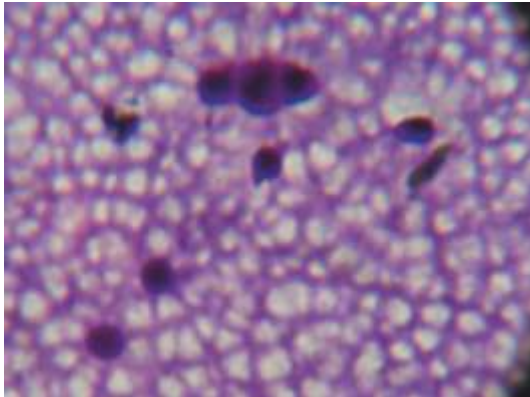
history of fever, loss of weight or appetite, night sweats, malaise or fatigue. No history of trauma, pain in other joints of the body, morning stiffness of the back or hand joints or diabetes mellitus.

On physical examination the swelling was non-tender, firm in consistency, approximately 7x4cm, non-compressible (Fig.1).



**Fig. 1: Patient with Swelling of Left Shoulder Measuring 7x4cm**

There were no signs of inflammation in the glenohumeral joint. Patient was negative for HIV, HBs Ag and rheumatoid factor. X-ray showed no abnormality of the humeral head. Chest X-ray did not show any evidence of healed tuberculosis. Sonography showed spindle shaped bodies in the bursa. On FNAC thick viscous straw coloured fluid was aspirated. Smears prepared revealed histiocytes in a myxoid background, a picture resembling aspiration of ganglion. A differential diagnosis of ganglion/myxoid change in a lesion was reported (Fig. 2) and histopathological examination was advised.



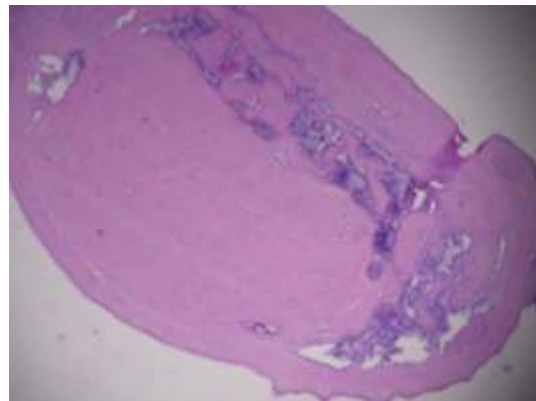
**Fig. 2: FNAC Smear Showing Histiocytes in Myxoid Background (40x, Leishmain Stain)**

The patient was operated and the bursae and its contents were excised totally in one piece. During the procedure, grossly numerous smooth, ovoid shiny loose bodies were found in the inflamed bursa (Fig. 3a and 3b).



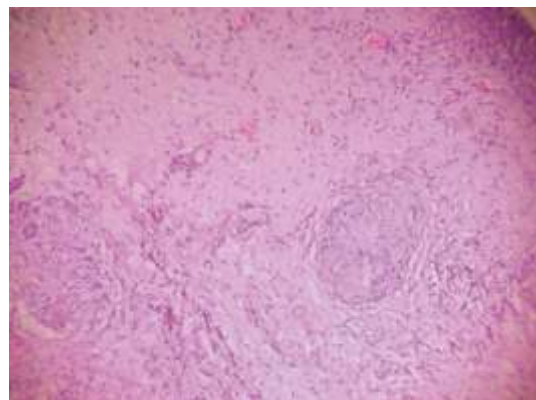
**Fig. 3a & 3b: Gross Picture Showing Multiple Oval Shiny Rice Bodies with Wall of Bursa**

There was no communication between bursa and joint. On histopathological examination rice bodies were comprised of homogenous acidophilic material surrounded by fibrin and collagen (Fig. 4).

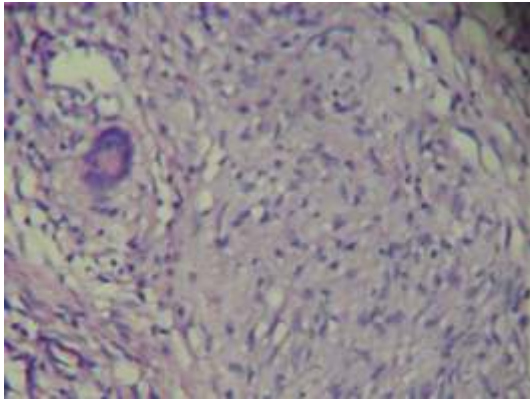


**Fig.4: Histopathological Image of Rice Body Showing Homogenous Acidophilic Material Surrounded by Fibrin and Collagen (H &E stain, 40x)**

The bursal wall revealed epithelioid cell granulomas along with Langhans type of giant cells and focal areas of caseous necrosis (Fig. 5a and 5b).



**Fig. 5a: Histopathological Image of Bursal Wall Showing Epithelioid Cell Granuloma and Langhans Giant Cells (H & E stain, 10x)**



**Fig. 5b: Histopathological Image of Bursal Wall Showing Epithelioid Cell Granuloma and Langhans Giant Cells (H&E stain, 40x)**

#### **Discussion:**

Rice bodies consist of a heterogeneous group of particles that may contain collagen, fibrinogen, fibrin, fibronectin, mononuclear cells, blood cells and amorphous material. Tuberculosis of soft tissue such as tenosynovial sheath and bursa are approximately 1% [3]. Secondary tuberculous involvement by soft tissue and bone is possible but it is important to recognize if there is a communication between bursa and joint. Common bursae involved are of greater trochanter, prepatellar and olecranon as these are areas involved commonly in trauma. But subdeltoid bursa is not a common site for trauma. Hematogenous spread is proposed as the cause of deep seated bursa involvement. In our case patient did not have any signs of active tuberculosis, nor any history or healed focus of past tuberculous infection.

But the possibility of secondary tuberculous infection cannot be still ruled out. People with extra pulmonary tuberculosis often do not have the classical symptoms associated with pulmonary disease, such as fever, cough, weight loss, anorexia and night sweats. Nor do they exhibit physical findings associated with pulmonary problems.

The etiology of rice body formation in tuberculosis and other arthritis are unknown. Rice bodies, named for their macroscopic similarity to polished grains of rice, are made up of central acidophilic material surrounded by collagen and fibrin. One theory suggests that they are due to small synovial infarctions that lead to shedding of synovium and subsequent encasement by fibrin. Another theory posits that rice bodies form independently in synovial fluid and enlarge by aggregation of fibrin.

If rice bodies are seen radiologically or in synovial fluid, various differential diagnosis should be considered like infections including tuberculosis, atypical mycobacteria and other. Secondly, chronic synovitis or bursitis seen in rheumatoid arthritis where it presents as painless mass, in juvenile idiopathic arthritis or in the absence of any is underlying systemic disorder. The third possibility which is difficult to distinguish from rice bodies is synovial chondromatosis. Rice bodies are smaller and more uniform in size than loose bodies in chondromatosis. Rice bodies tend to lower in signal intensity than non mineralized loose bodies in chondromatosis on both T1W1 and T2W1. Thus rice bodies will be difficult to visualize on T1W1 and more easily seen on T2W1 whereas non mineralized loose bodies in chondromatosis may be easier to be seen on T1W1 and harder to be seen on T2W1 [4, 5]. Chen *et al.*, in their case study, discussed the probability of correct preoperative diagnosis and emphasized the importance of T2-weighted MRI. They reported that rice bodies were seen in the hyperintense bursal fluid as numerous hypointense areas. This view is slightly hyperintense compared to skeletal muscle [5].

Rice bodies have been reported previously from various sites like exploration of a large intrapelvic synovial cyst [6], in the flexor tendon sheath of a patient with carpal tunnel syndrome during open



neurolysis [7], with atypical mycobacterial tenosynovitis of the hand and wrist [1], secondary to an orthopedic implant as massive subacromial-subdeltoid bursitis [8] and even with candidal septic arthritis [9].

The exact significance of rice bodies is not known but it has been shown that fibrin can serve as an irritant and a potent stimulus to fibrogenesis when implanted in serous cavities. Therefore any chronic arthritis or bursitis, whether inflammatory or infectious, may cause formation of rice bodies. In rheumatoid arthritis continuous stimulus to antibody formation to other altered bodily constituents, possibly including products of inflammation and persistent fibrin deposits occurs. Management of bursitis with rice bodies

depends on the cause. Removal of rice bodies is must to prevent further damage of the joint combined with systemic treatment. In our case the wall of the bursa revealed epitheloid cell granulomas and langhans type of giant cells and hence a diagnosis of tuberculosis was made and patient was given anti-tubercular treatment with regimen according to DOTS (Directly observed treatment short course) with a long follow up of twelve months.

#### Conclusion:

Rice bodies are one of the complications of chronic joint lesion. Tuberculosis of bursa in absence of a primary focus should always be ruled.

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