

Rice bodies: a rare presentation of tubercular arthritis of the knee joint

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ABSTRACT

Rice bodies are most of the times encountered in rheumatological disorders. They have also been seen in tuberculosis, though rarely. With tuberculosis, rice bodies are usually associated with bursae and tenosynovium and very rarely with large joints. We report a rare case of intra articular rice bodies associated with tuberculosis of the knee joint that mimicked monoarticular rheumatoid arthritis and pigmented villonodular synovitis clinically, with absent constitutional and laboratory features suggestive of tuberculosis.

KEY WORDS: Rice bodies; Tuberculosis; Rheumatoid arthritis; Synovium.

INTRODUCTION

Skeletal tuberculosis accounts for 1 to 3 % cases of extra-pulmonary tuberculosis with spine the most common site followed by hip and knee joint [1, 2, 3]. Although formation of intra articular rice bodies was first described by Riese in 1896 in case of tubercular arthritis, the entity is more commonly encountered in rheumatological disorders of the joints [3, 4]. In tuberculosis, rice bodies have more common association with bursae and tenosynovial sheaths rather than joints. There are very few cases of rice bodies in tubercular arthritis of large joints in the orthopaedic literature [5]. We report a rare case of tuberculosis of the knee joint with intra articular rice bodies.

CASE REPORT

Thirty two year old male patient presented to our hospital with progressively increasing pain and swelling in the right knee for the last six months. There was no history of any trauma and similar type of involvement of any other joint. There was no history of any evening rise of temperature and loss of appetite. On examination there was diffuse swelling of the knee with obliteration of the parapatellar gutters. Local temperature was not raised. Joint line tenderness was present. Cross fluctuation was present but patellar tap absent. Terminal 30 degrees of flexion at knee joint was painful. Haemogram, total leukocyte count, differential leukocyte count and erythrocyte sedimentation rate were within normal range. Serum for C reactive protein was negative. Serology for rheumatoid arthritis was negative. Radiograph of the knee joint demonstrated a well maintained joint space without any articular erosion or juxta-articular osteopenia. Metaphysis of distal femur and proximal tibia did not have any lesion. MRI of the knee joint was advised and patient refused due

to financial constraints. Aspiration of the joint from the suprapatellar pouch was negative. A differential diagnosis of pigmented villonodular synovitis or monoarticular rheumatoid arthritis was made. Diagnostic arthotomy and synovial biopsy was planned. Knee joint was explored through a lateral parapatellar approach. On opening the joint there was egress of synovial fluid along with hundreds of white coloured shiny round to oval bodies with size ranging from 3 to 6 millimetres (Figure 1). Synovium of the joint was hypertrophied with brick red discoloration. There was erosion of the lateral femoral condyle with exposure of the subchondral bone. The joint was thoroughly lavaged with normal saline and partial synovectomy was performed (Figure 2). The shiny bodies and the synovium were sent for histopathological examination. On histopathology, rice bodies consisted of an amorphous core surrounded by a layer of fibrin and interspersed chronic inflammatory cells (Figure 3). Histopathology of the synovium showed multiple caseating epithelioid cell granulomas surrounded by mononuclear infiltrate and scattered langhan and multi nucleate giant cells suggestive of granulomatous synovitis (Figure 4). Ziehl Neelsen staining for acid fast bacilli was negative. Based on histopathology, a diagnosis of tubercular arthritis of knee joint with intraarticular rice body formation was made. The leg was immobilized in a back slab and antitubercular drug therapy started. At two weeks intermittent active and passive range of motion of the knee joint was started. Weight bearing with ambulatory support was started after three months. Antitubercular chemotherapy was administered for a total duration of nine months (Isoniazid, rifampin, pyrazinamide and ethambutol for two months followed by isoniazid and rifampin for seven months). At the final follow up of two years patient's knee joint was pain free with full range of motion at the joint.

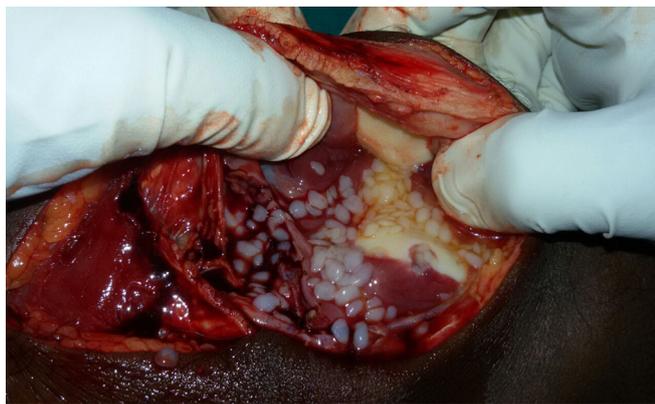


Figure 1. Arthrotomy of the knee joint: multiple rice bodies with hypertrophy and brick red discoloration of synovium.

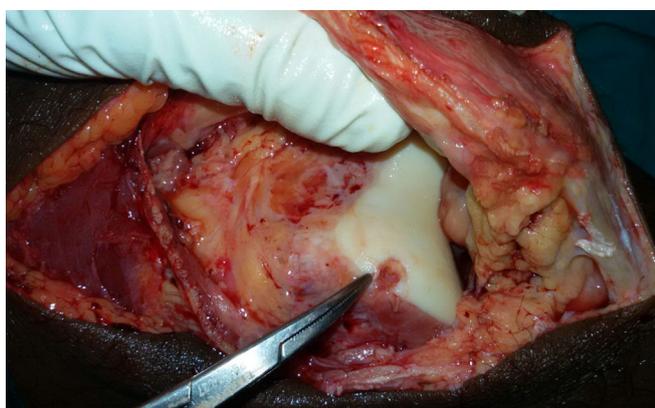


Figure 2. Knee joint after lavage and partial synovectomy: joint erosion involving lateral femoral condyle.

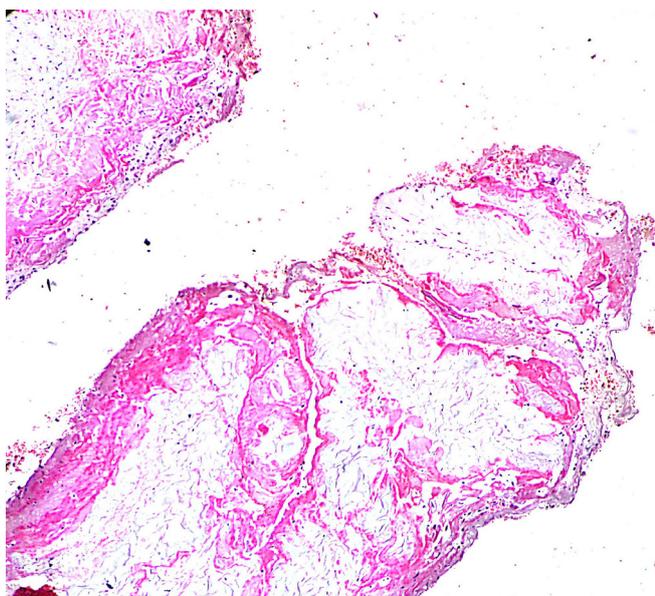


Figure 3. Microscopic appearance of rice body: amorphous core surrounded by a layer of fibrin and scarcely interspersed inflammatory cells.

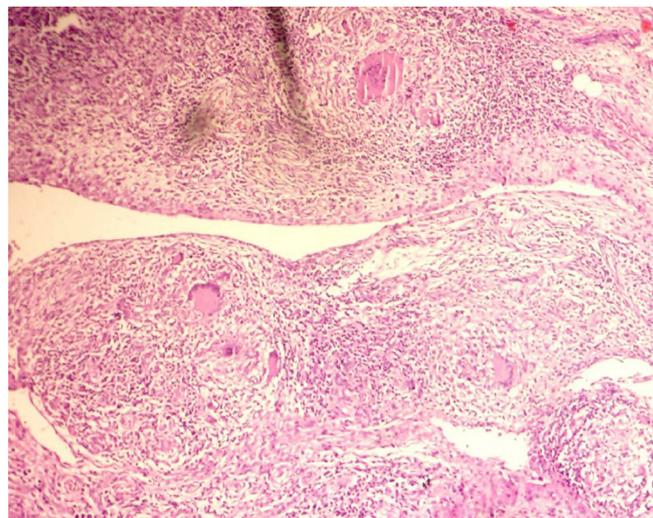


Figure 4. Microscopic examination of synovium having multiple caseating epithelioid cell granulomas with scattered Langhans and multinucleate giant cells.

DISCUSSION

Rice bodies have been seen in different pathological conditions of the synovium lined structure like joints, bursae and tendon sheaths [6]. Though originally they were first seen in tubercular arthritis and named so by Reize in 1895, they are more commonly encountered by rheumatologists in rheumatological disorders [3, 4]. Rheumatoid arthritis is the most common rheumatological disorder associated with rice bodies [3]. Sero negative rheumatoid arthritis, Juvenile arthritis, hypergammaglobulinemic arthritis are other rare entities [7, 8]. Rice bodies have also been seen in patients with non specific arthritis without any underlying rheumatological disorder and it has been seen these patients respond well to surgical debridement and joint lavage without any future recurrence [6, 9]. Among infectious entities rice bodies are associated with mycobacterium tuberculosis as well as non-tubercular mycobacteria [7]. Rice bodies have also been reported in a case of fungal arthritis due to *Candida parapsilosis* [7]. Osteoarthritis is a very rare entity associated with rice bodies [10]. Rice bodies have also been reported, though very rarely, in association with foreign bodies like orthopaedic implants and prosthesis [11, 12]. There are not many reports of rice bodies associated with tubercular arthritis in the orthopaedic literature. Rice bodies are more common in tuberculous of bursae and tenosynovium than of the joints [5].

Rice bodies are shiny white structures with varying size and shapes. The shape may vary from nodules and teardrops to angular and flake like [6]. Cheung et al. proposed a theory of synovial origin of the rice bodies in which the synovium undergoes inflammation followed by subsequent microinfarction and sloughing of the infarcted tissue [13]. While as Popert et al. proposed de novo formation theory in the synovial fluid independent of the synovial elements [14]. Microscopically rice bodies have a collagenous amorphous acidophilic core surrounded by a layer of fibrinous material

[9]. Fibrin is a known irritant of synovium that stimulates further synovial inflammation and a vicious cycle sets in. It is because of this property, rice bodies need to be removed from synovial structures to prevent further damage and also explains the recovery without any recurrence in non specific arthritis with rice bodies after surgical debridement and lavage of the joint [15].

Musculoskeletal tuberculosis may present with absence of constitutional symptoms. Pulmonary involvement is seen in only one third cases of skeletal tuberculosis which leads to further diagnostic delay [16]. Laboratory parameters like ESR are not of much value [17]. In our case as well constitutional symptoms were absent with no evidence of tuberculosis of any other organ system and a normal value of laboratory parameters. All this lead to a differential diagnosis of pigmented villonodular synovitis and monoarticular rheumatoid arthritis which closely resemble tubercular synovitis clinically [18, 19, 20].

Tubercular arthritis of the synovial joints can thus present with formation of intra articular rice bodies. Moreover, the constitutional signs and symptoms and tuberculosis of any other organ system may be absent. Even suggestive laboratory parameters may be within normal range. Pigmented villonodular synovitis and monoarticular rheumatoid arthritis are important clinical mimickers of tubercular synovitis and histopathology of the synovium differentiates these entities.

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