Tuberculous Tenosynovitis With “Rice Bodies” in the Forearm and Wrist

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Abstract

Rice body formation is a rare disorder which may be seen in various systemic disorders including tuberculosis (TB). Musculoskeletal TB compromises 1-3% of TB patients and only 2% of them is seen on the wrist which can include either tenosynovium (most commonly), carpal synovium or bone. In this report, we describe rice body formation due to tuberculous infection in a 28-year-old patient presented with an enlarging mass on right forearm with the signs and symptoms of carpal tunnel syndrome. Tenosynovectomy and removal of all rice bodies were performed. Patient diagnosed as extrapulmonary TB. Although general frequency of TB declines around world, it should be kept in the mind in the differential diagnosis of patients presenting with an enlarging mass in the forearm. Moreover, if there is neurological deficits prompt surgical approach must be performed for the definite diagnosis and treatment.

Keywords: Extrapulmonary tuberculosis; Carpal tunnel syndrome; Rice body; Tenosynovium

Introduction

Rice body formation is an uncommon inflammatory disorder which may be seen in various systemic disorders, including rheumatoid arthritis, juvenile arthritis, seronegative inflammatory arthritis, osteoarthritis, chronic bursitis and tuberculosis (TB) infection \cite{1}. Musculoskeletal TB compromises 1-3% of TB patients and only 2% of them are seen on the wrist which can include either tenosynovium (most commonly), carpal synovium or bone \cite{2}. Some predisposing risk factors were suspected in the formation of tuberculous tenosynovitis, including advanced age (> 60 years), malnutrition, low socioeconomic status, ethanol abuse, diabetes mellitus, immunosuppression, personal history of or exposure to TB and previous local steroid injection \cite{2, 3}.

In this report, we describe rice body formation due to tuberculous infection in a 28-year-old patient.

Case Report

A 28-year-old right-handed male presented with a 6-months history of progressively enlarging mass which was about 4 × 5.5 cm in sizes proximal to his right wrist. The mass was associated with erythema, numbness, motion restriction, and pain in his first three fingers, hand and forearm. The patient had no other complaint except for this enlarging mass. There was no history of systemic fever, weight loss, loss of appetite, trauma, septic inoculation and immunodeficiency. The patient had no prior history of joint trauma or rheumatic disease. The patient took no medications and his past medical history was unremarkable.

Neurological examination revealed loss of muscle strength (muscle strength 3-4 / 5) and hypoesthesia in first three fingers. White blood cells, erythrocyte sedimentation rate and C-reactive protein levels were in normal limits (5.2, 8 and 2, respectively). Direct X-ray of the patient showed soft tissue swelling (Fig. 1). The soft tissue ultrasonography of the patient showed a mass lesion containing ovoid shaped soft tissue echogenites surrounding the flexor tendinous structures in the right wrist of about 4 × 3 cm in size. Magnetic resonance imaging (MRI) reported the presence of multilocular partially intense cystic lesion areas extending to the wrist ventrally around the ventral flexor tendon in the right hand wrist. The presence of peritendinous, contrast-enhanced cystic lesions containing calcification-inclusion bodies was reported (Figs. 2 and 3). Surgical approach was planned for the prediagnosis of granulomatous pathology. Surgery was planned for the patient who initially...
thought of granulomatous pathology.

A linear incision was made starting approximately 7 cm above the right wrist extending to the palm of patient. The lesion surrounding the median nerve and adjacent flexor tendons was reached with the sharp dissection. The lesion had a capsule. When the capsule opened, a large number of “rice bodies” were seen and all of them were removed (Fig. 4) (Supplementary video 1, www.ciijournal.org). Received samples were sent to the pathology laboratory.

Pathological examination revealed acid resistant bacilli in eosin staining. Bacillus Calmette-Guerin (BCG) scar of the patient was measured as 18 mm. Antituberculous chemotherapy comprising of rifampicin, isoniazid, ethambutol and pyrazinamide was commenced and patient was referred to the TB prevention dispensary.

Discussion

Rice body formation is an uncommon disorder which may be seen in various systemic disorders including rheumatoid arthritis, juvenile arthritis, seronegative inflammatory arthritis, systemic lupus erythematosus, seronegative arthritis, osteoarthritis, chronic bursitis, non-specific arthritis and infectious arthritis (TB, atypical mycobacterial infection) [1, 3]. However, it may be encountered without underlying systemic disorders [3]. Rice bodies mainly consist of fibrin and are generally located within the joints or bursae; however, they are rarely seen in tendon sheaths [3, 4]. Although some different theories have been proposed, their pathogenesis is still unclear [5].

TB infection primarily affects the respiratory system, but it may infect other organs. Extrapulmonary involvement occurs at rate of around 14%. Tendon sheath involvement is rare and it is generally due to hematogenous spread [6]. Rice bodies are seen in about 50% of tuberculous tenosynovitis and risk factors for it include a history of TB exposure, residing in an endemic region, advanced age, malnutrition, low socioeconomic status, ethanol abuse, diabetes mellitus, previous local steroid injection and immune deficiency [2, 3]. However, our case did not have these predisposing risk factors. The tuberculin skin test is usually positive as in our case [3]. Although the roentgenograms are abnormal in 50% of the cases, it was normal in our case.

In patients with tendon sheath involvement, symptoms are generally non-specific such as pain and swelling; therefore, it can be diagnosed late due to the lack of systemic symptoms. Some patients may present with carpal tunnel syndrome [7]. Our patient was complaining of pain, swelling, erythema, numbness, lack of mobility in three fingers and loss of strength. The diagnosis of musculoskeletal TB may be delayed, an average 16 - 19 months from symptom onset to diagnosis [6]. Bayram et al reported that diagnosis was made 45 months later [6]. However, in our patient, the diagnosis was made 6 months later.

In the diagnosis of TB, histological and microbiological examinations are important. Blood tests and imaging before biopsy may be useful in diagnosis. Soft tissue swelling and osteoporotic changes may be seen direct X-ray. In MRI on T2-weighted sequences, hypointense focus, hypointense synovia together with central erosion, and abscesses with surrounding contrast are significant in the differential diagnosis [6]. Tendon sheath TB consisted of three stages. In the first stage, serous exudation due to sheath thickening occurs. The second stage is the proliferative phase of granulomatous tissues forming rice
bodies, and the third stage is necrosis [8]. Our patient was in the second stage.

Primary treatment of hand and wrist TB is the medical treatment consisting of different combinations of isoniazid, rifampicin, ethambutol and pyrazinamide in short- and long-term protocols [6, 9]. Surgery may be performed for the aim of symptomatic relief [6]. Other surgical indications include the resistance to chemotherapy and being stage in 2 or 3. Presence of rice bodies requires wide debridement because of risk of recurrence [6]. In our patient, we performed surgery for the aim of establishing the definite diagnosis and presence of rice bodies and neurological deficit. We established definite diagnosis after surgery and antituberculous drug treatment was started.

Conclusions

Although general frequency of TB decline around world, it should be kept in the mind in the differential diagnosis of patients presenting with an enlarging mass in the forearm. Moreover, if there is neurological deficits, prompt surgical approach must be performed for the definite diagnosis and treatment.

Conflicts of Interest

None.

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References