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Case Report

Wrist Extensor Tenosynovitides: A Case Report

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Abstract

Background: Rice bodies can be found in rheumatic diseases, infectious diseases, and osteoarthritic joints. Rice bodies' most common locations include the subacromial bursa of the shoulder and the knee, while rice body synovitis of the wrist extensor tendons is uncommon. We have presented the case of tuberculous tenosynovitis with rice body formation in the extensor tendon sheaths of the hand and wrist.
Case Report: A 51-year-old man presented with swelling and mild pain in the dorsal side of left wrist, hand, and proximal phalanx of the second finger. He stated a history of traumatic injury to the proximal phalanx of the index finger. Radiographs showed a soft-tissue mass shadow, and magnetic resonance imaging (MRI) showed edema and soft tissue swelling around extensor tendons extending into the distal forearm and ulnar side of the second finger in favor of tenosynovitis. Laboratory test results were normal. The patient had a negative Mantoux test result and no history of mycobacterial exposure. Surgical exploration of the lesion revealed rice bodies in the synovial sheath of extensor tendons in the wrist, extending distally to the dorsal aspect of the hand, especially the radial side. Removal of the rice bodies and complete excision of the sheath and tenosynovectomy was performed.
Conclusion: As in our case, even in the absence of past tuberculosis (TB) infection or exposure, Mycobacterium TB (MTB) should be considered in the differential diagnosis of long-standing extensor tenosynovitis in the hand and wrist.

Keywords: Case Reports; Tendinopathy; Wrist

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Background

Rice bodies in joints affected by tuberculosis (TB) were first described in 1895 (1). Rice bodies can be found in rheumatic diseases, infectious diseases, and osteoarthritic joints (2-10). They commonly are formed in the subacromial bursa of the shoulder and the knee (11, 12); in contrast, rice body synovitis of the wrist extensor tendons is not common (11-13). This case study aims to report a rare case of tuberculous tenosynovitis with rice body formation in the extensor tendon sheaths of the hand and wrist.

Case Report

In December 2021, a 51-year-old man presented to the hand clinic with a one-year history of swelling and mild pain in the dorsal side of the left wrist, hand, and proximal phalanx of the second finger (Figure 1).

Figure 1. Photograph showing swelling of the dorsal aspect of the left wrist, hand, and proximal phalanx of the index finger

He stated a history of traumatic injury to the proximal phalanx of the index finger.

Radiographs showed a soft-tissue mass shadow in the dorsal aspect of the wrist, hand, and proximal phalanx of the index finger (Figure 2). Magnetic resonance imaging (MRI) revealed edema and soft tissue swelling around extensor tendons extending into the distal forearm and ulnar side of the second finger in favor of tenosynovitis.

Figure 2. Radiograph showing a soft-tissue mass shadow in the dorsal aspect of the wrist, hand, and proximal phalanx of the index finger

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Laboratory test results were normal. Tests for C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and diabetes mellitus (DM) were negative. The patient had a negative Mantoux test with < 2 mm (negative < 5, borderline = 5-10, and positive > 10 mm in size) and no history of mycobacterial exposure. Exhaustive investigations for the rheumatic disease were negative.

Surgical exploration of the lesion was performed. Notably, thickened tonosynovium and numerous rice bodies were found in the synovial sheath of the wrist extensor tendons, extending distally to the dorsal aspect of the hand, especially the radial side (Figure 3).

Figure 3. Removed rice bodies and tenosynovium

Removal of the rice bodies and complete excision of the sheath down to the wrist joint and tenosynovectomy with respect to the neighboring neurovascular structures was performed (Figure 4).

Figure 4. Post-surgical exploration: removal of the rice bodies and thorough excision of the sheath down to the wrist joint and tenosynovectomy with respect to the neighboring neurovascular structures

Aerobic and anaerobic cultures and Mycobacterium TB (MTB) and pathology samples were sent. The patient culture was negative. MTB polymerase chain reaction (MTB PCR) was negative. Histopathological examination of the thickened bursa revealed synovial tissue with necrotizing granulomatous inflammation. Tissue section staining for acid-fast stain (Ziehl-Neelsen stain) showed rare suspicion for acid-fast bacilli, and Grocott methenamine silver (GMS) was negative (Table 1).

Table 1. Mycobacterium tuberculosis polymerase chain reaction (MTB/PCR), anaerobic culture and histopathology

Lab	Qualitative MTB/PCR	Negative
Microbiology	Culture	Negative
Pathology	Biopsy	Synovial tissue with necrotizing granulomatous inflammation Acid fast stain shows rare suspicious acid fast positive bacilli GMS: Negative

GMS: Grocott methenamine silver

The postoperative recovery was uneventful, and the patient regained a full and painless range of motion in about six weeks. Consultation with an infectious disease specialist was done, and anti-TB medication was begun.

Discussion

Rice body is a common finding in many rheumatic diseases such as systemic lupus erythematosus and seronegative arthritis, as well as infectious diseases such as nonspecific arthritis, TB (2, 3), rheumatoid arthritis (4, 5), and atypical mycobacterial infections (6-8). They may also be found in osteoarthritic joints (9, 10).

Rice bodies' most common locations include the subacromial bursa of the shoulder and the knee, while rice body synovitis of the wrist extensor tendons is uncommon (11-17). The flexor tendons are the most common site of hand and wrist tuberculous tenosynovitis. Extensor tendon involvement is uncommon (18). Our patient had involvement of the extensor tendons of the wrist and finger. Musculoskeletal or extrapulmonary infections are usually seen in immunosuppressed patients (19).

Granulomatous inflammation is a rare chronic hyperplastic inflammation in the musculoskeletal system. Granulomatous tenosynovitis, also called the fish-tank granuloma, was first described in patients using swimming pools. The most common types of granulomatous inflammation in the musculoskeletal system include foreign body granuloma and infectious granuloma, such as TB bacillus, typhoid bacillus, Treponema pallidum, fungi, etc. At the same time, noninfectious causes include sarcoidosis and chronic tophaceous gout, etc. Tuberculous tenosynovitis is rare, which affects the wrist and hand and accounts for 5% of musculoskeletal TB cases. The mechanism of the infection may be direct inoculation or hematogenous spread from a primary lesion such as lungs, spine, and lymph nodes. Tuberculous tenosynovitis was mostly found in the hand's flexor side and ulnar border. Rice or melon bodies, consisting of fibrous masses and considered to be due to micro-infarction following inflammation and ischemia of the synovial sheath, are present in about 50% of cases. Because of the low sensitivity and specificity of laboratory investigations, such as ESR and CRP for the diagnosis of tuberculous tenosynovitis, the condition cannot be excluded when these results are normal (20).

In our case, histopathology showed necrotizing granulomatous inflammation, and tissue section staining for acid-fast stain (Ziehl-Neelsen stain) showed rare suspicion for acid-fast positive bacilli. Then we can refer to Mycobacterium as a possible cause of the disease and work with the infectious disease group to provide the best

treatment for the patient and ensure that TB is considered in the differential diagnosis in a patient with tenosynovitis.

One of the advantages of this study is that due to the limited number of case reports, by increasing the number of cases and discussing them more, more knowledge can be obtained in this field, and also observing rice body in practice can lead us to the detection of extrapulmonary TB. Disadvantages include being a case report and patient unavailability for long follow-up.

Conclusion

In this article, we have a case of tuberculous tenosynovitis with rice body in the extensor tendons of the hand and wrist. As in our case, even in the absence of past TB infection or exposure, MTB should be considered in the differential diagnosis of long-standing extensor tenosynovitis in the hand and wrist.

Conflict of Interest

The authors declare no conflict of interest in this study.

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