Tuberculosis, a Rare Cause of Hands Tenosynovitis: Two Case Reports

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Abstract

Introduction: A tenosynovitis is a rare form of tuberculosis. It may be overlooked or misdiagnosed due to non-specific findings. These delays in diagnosis and treatment can cause serious complications.

Case Presentation: In these case reports, two patients with complaints of pain and swelling in the wrist flexor tendons received various diagnoses such as inflammatory arthritis and carpal tunnel syndrome. These patients who did not respond to the treatment were diagnosed with tuberculosis tenosynovitis as a result of the microbiological and histopathological evaluation. The patients showed significant improvement with antituberculosis treatment and surgical treatment was not needed.

Conclusion: It is important for early diagnosis and prevention of appropriate complications in tuberculosis tenosynovitis.

1. Introduction

Tenosynovitis is a rare form of extrapulmonary tuberculosis. Although immunosuppression is the most important risk factor, it can also be seen in patients with diabetes mellitus, trauma, and inflammatory joint disease [1, 2]. Hand involvement is seen in 10% of these patients [3] and most commonly affects the flexor tendon sheath and radioulnar bursa. These patients are misdiagnosed due to non-specific clinical findings, slow course of the disease, and imaging features. Diagnosis is made by demonstrating the bacillus in the tendon sheath or by histopathological examination [4]. Antituberculosis drugs and surgical debridement are used in the treatment [5]. We will talk about 2 cases of tuberculous tenosynovitis in which hand-wrist flexor tendons were affected. Written/oral consent for the use of the patients' data was obtained from the patients.

2. Case Presentation

Case 1

A 62-year-old female patient with complaints of pain, swelling, and numbness in the hand was referred to our Physical Medicine and Rehabilitation clinic with the diagnosis of monoarticular noninflammatory arthritis and carpal tunnel syndrome (CTS). The patient's symptoms started 6 months ago after the stinging trauma and gradually increased. Physical therapy and steroid injection were applied with the diagnosis of CTS. There was some reduction in pain. No disease other than diabetes was found in her history. Physical examination, swelling in the wrist and index finger, limited wrist flexion, positive Tinel and Phalen test. Laboratory findings: CRP: 2,4 mg/L, sedimentation 16 mm/h, leukocytes: 8.49 10^3/uL, uric acid 3.2 mg/dl, TSH 1.88 ulU/ml, Brucella tube agglutination(-), RF 8.6 IU/ml(0–14), Anti CCP (-), ASO: 126.8 IU/ml(0-200), HLA-B27(-), anti HBS(-), anti HCV(-), HIV(-), HBsAg(-). EMG: Sensory and motor latencies of the median nerve were long, and their speeds were slowed. Ultrasonography; fluid increase in the flexor tendon sheath, peritendinous edema and synovial hypertrophy, and effusion in the radioulnar joint. No signal increase was observed in Power Dops (Fig. 1). No pathology was detected in the hand x-

ray. Magnetic Resonance Imaging(MRI); diffuse pathological fluid with heterogeneous content secondary to synovitis was detected in the flexor tendons at the carpal tunnel level and the distal radioulnar joint.

The patient was referred to the Plastic Surgery clinic for biopsy with a preliminary diagnosis of infectious tenosynovitis. Mycobacterium Tuberculosis Real-Time PCR was positive in the biopsy material, and culture and acid-fast bacteria (AFB) tests were negative. The patient's tuberculin skin test (TST) was anergic, Quantiferon test was positive. No pathology was detected in chest X-ray and thorax tomography. In the histopathological examination, granulomatous inflammation and necrosis were detected. With these findings, the patient received tuberculous tenosynovitis. Surgical debridement was not considered. The patient was referred to Infectious Diseases for anti-tuberculosis treatment. Quadruple anti-tuberculosis (rifampicin, isoniazid, pyrazinamide, and ethambutol) therapy was started. There was a significant improvement in pain complaints in the treatment 9th month, but the swelling was continued. It was planned to complete the anti-tuberculosis treatment of the patient in 12 months.

Case 2

A 50-year-old male patient presented with complaints of pain, swelling, and numbness in his left hand that lasted for 4 months. There was no history of trauma and disease. Physical examination, swelling more prominent on the volar side of the wrist extending to the middle finger (Fig. 2), limited wrist flexion, and positive Tinel and Phalen tests. Laboratory findings: CRP: 3.3 mg/L, sedimentation 5 mm/h, leukocytes: 10.32 10^3/uL, uric acid 4.2 mg/dl, TSH 2.18 ulU/ml, Brucella tube agglutination(-), RF 4 IU/ml(0–14), Anti CCP (-), ANA (-), HLA-B27(-), anti HBS(-), anti HCV(-), HIV(-), HBsAg(-) was in the form. The hand radiograph was normal. Ultrasonography, significant fluid in the wrist dorsal face extensor tendon sheaths, increased fluid in the volar face flexion tendon sheaths extending to the metacarpal joints, and the level of the third finger distal phalanx, peritendinous edema, and synovial hypertrophy was detected. No signal increase was observed in Power Dops. In the hand-wrist MRI; Synovial hypertrophy, which extends along with the metacarpal levels in the flexor tendon sheaths but continues up to the distal phalanx level at the level of the 3rd finger, and an increase in the tendon sheath, which is more prominent in the extensor tendon sheaths of the wrist, and increased fluid in the tendon sheath was detected (Fig. 2). EMG: The sensory and motor latencies of the median nerve were long, their speeds were slowed down, and this result was accepted as compatible with moderate CTS.

The patient was referred to the Plastic Surgery clinic for biopsy with the preliminary diagnosis of infectious tenosynovitis. Mycobacterium Tuberculosis Real-Time PCR was found positive, culture and AFB test were negative in biopsy material. Lymphocytes were detected in Gram staining. The patient's TST was evaluated as anergic. There was no pathology in PA chest X-ray and thorax tomography. In the histopathological examination, hyalinized fibrinous material containing central tissue areas and surrounding inflammatory cells was found to be compatible with the rice body. The patient was diagnosed with tuberculosis tenosynovitis with the present findings. Surgical debridement was not considered, and the patient was referred to Infectious Diseases for anti-tuberculosis treatment. Quadruple antituberculosis therapy (rifampicin, isoniazid, pyrazinamide, and ethambutol) was initiated for the

patient. After 2 months, it was changed to dual therapy (isoniazid, rifampicin). In the control examination performed in the 9th month of the patient, an improvement was observed in the complaints of pain and swelling. The treatment of the patient who had no complaint was terminated.

3. Discussion

Tuberculosis infection is among the top 10 causes of death worldwide. Extrapulmonary involvement is observed in approximately 15–30%, and 10–15% of these involvements are musculoskeletal [6]. Musculoskeletal tuberculosis occurs by several different mechanisms such as simultaneously with the primary infection, the distribution of bacilli after the infection, and direct inoculation [7]. We searched the PubMed database with the terms "Mycobacterium tuberculosis tenosynovitis" and "tuberculosis tenosynovitis" until 17/12/2021. We identified 26 case studies with wrist tuberculosis.

Hand tenosynovitis is a rare form of musculoskeletal tuberculosis. Patients may present with symptoms such as pain, swelling, joint effusion, and numbness. It may be overlooked due to non-specific findings and slow development. There are many diseases in the differential diagnosis; infections, foreign body tenosynovitis, sarcoidosis, rheumatoid arthritis, gouty arthritis, carpal tunnel syndrome, pigmented villonodular synovitis, De Quervain's disease, and ganglion cyst. Delays in diagnosis and treatment may cause tendon rupture [8]. Inflammatory diseases and carpal tunnel syndrome were primarily considered in our cases, and tests/treatments were performed for these diagnoses. Tendon rupture was not observed in any of our cases.

Tuberculosis may cause thickening of the tendon and/or synovium. Tubercle formation may result in caseous necrosis and secondary effusion within the tendon sheath. Ultrasound can be used as a first-stage imaging method in cases with suspected tenosynovitis, as tendon sheath thickening, synovial thickening, and peritendinous hypoechoic fluid increase can be evaluated. MRI is a more specific and sensitive imaging method in terms of differential diagnosis. In our cases, USG was performed in the first step, and effusion/synovial thickening was detected. Similar to the literature, significant synovial thickening and edema, especially at the level of the carpal tunnel, were demonstrated on MRI [9].

Microbiology studies are insufficient at the diagnosis stage, ARB positivity is around 10% in synovial fluid and around 20% in synovial tissue. Cultures in Lowenstein/BACTEC medium are usually negative. PCR test is a very sensitive method for detecting the tuberculosis agent. The gold standard method in the definitive diagnosis of tuberculous tenosynovitis is the histopathological examination of the synovectomy material. Microscopic examination reveals caseous granuloma, epithelioid histiocytes, and giant cells [10]. In our cases, there was no growth in cultures and AFB (-). Mycobacterium Real-Time PCR test was positive in both cases and the definitive diagnosis was made by the presence of granulomatous tissues in the histopathological evaluation.

Currently, the gold standard treatment for tuberculous tenosynovitis is 2 months of quadruple antituberculosis therapy (isoniazid, rifampicin, pyrazinamide, and ethambutol), followed by 4 months of isoniazid and rifampicin. Some studies have found a 75% success rate with anti-tuberculosis drugs

without surgery. Debridement should be performed when surgical treatment is required or antituberculosis drugs fail [7]. In our cases, recovery was achieved with antituberculosis treatment without the need for surgical intervention.

4. Conclucion

Synovitis is a rare manifestation of tuberculosis. Delays in diagnosis and treatment due to non-specific and insidious onset can lead to serious complications. Therefore, tuberculous tenosynovitis is a diagnosis that should be kept in mind in chronic synovitis. Early PCR and histopathological evaluation and appropriate medical or surgical treatments are important in suspected cases.

Declarations

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Figures

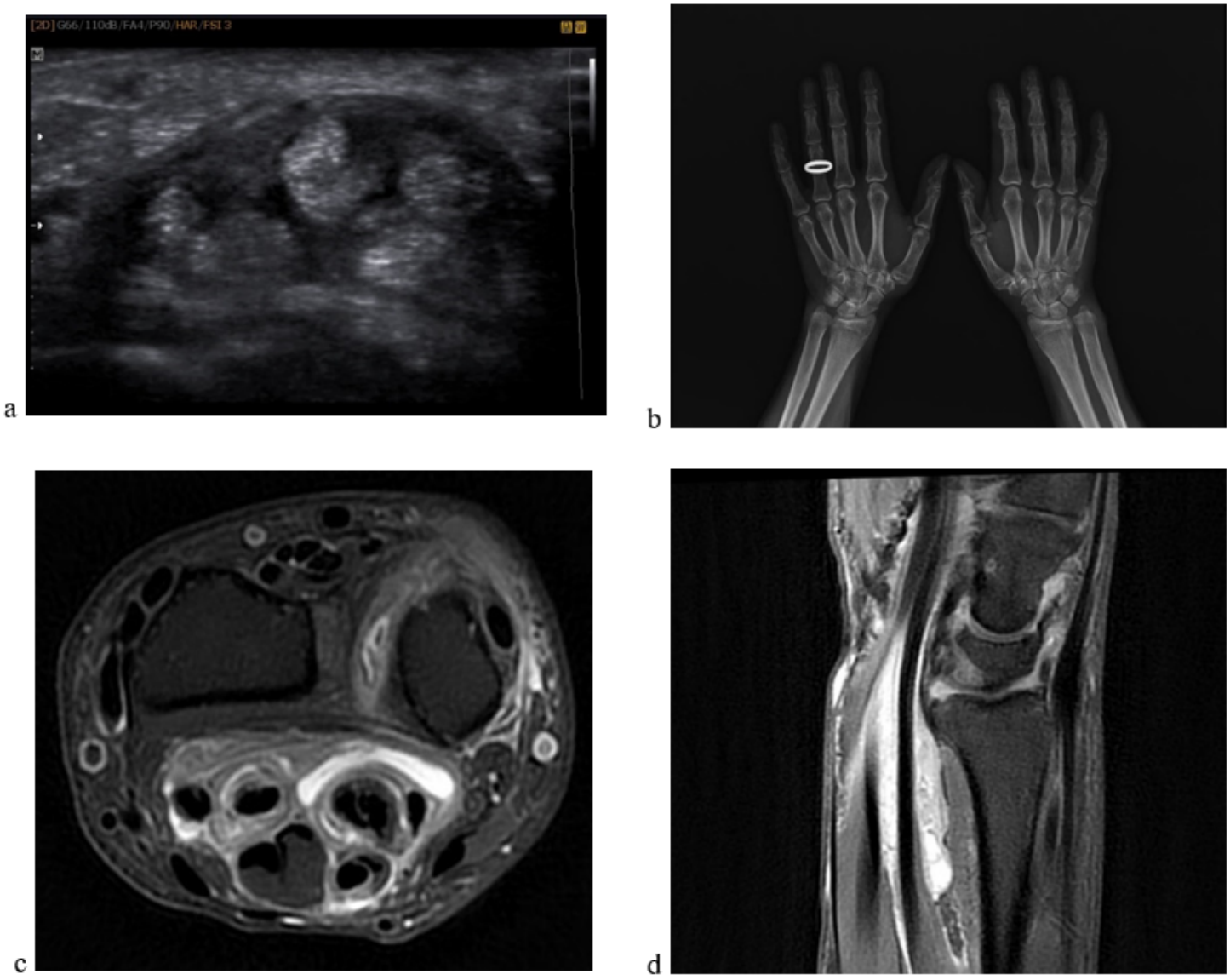

Figure 1

(case1/2): Horizontal ultrasonographic imaging of the wrist, significant edema and fluid increase around the flexor tendons, synovial hypertrophy (a), Hand X-ray; narrowing of the right DIF, PIF and 1st CMC joint spaces (b), Wrist MR-axial/sagittal section ;Synovial thickening around flexor tendons, prominent edema-synovitis around extensor tendons (c,d).

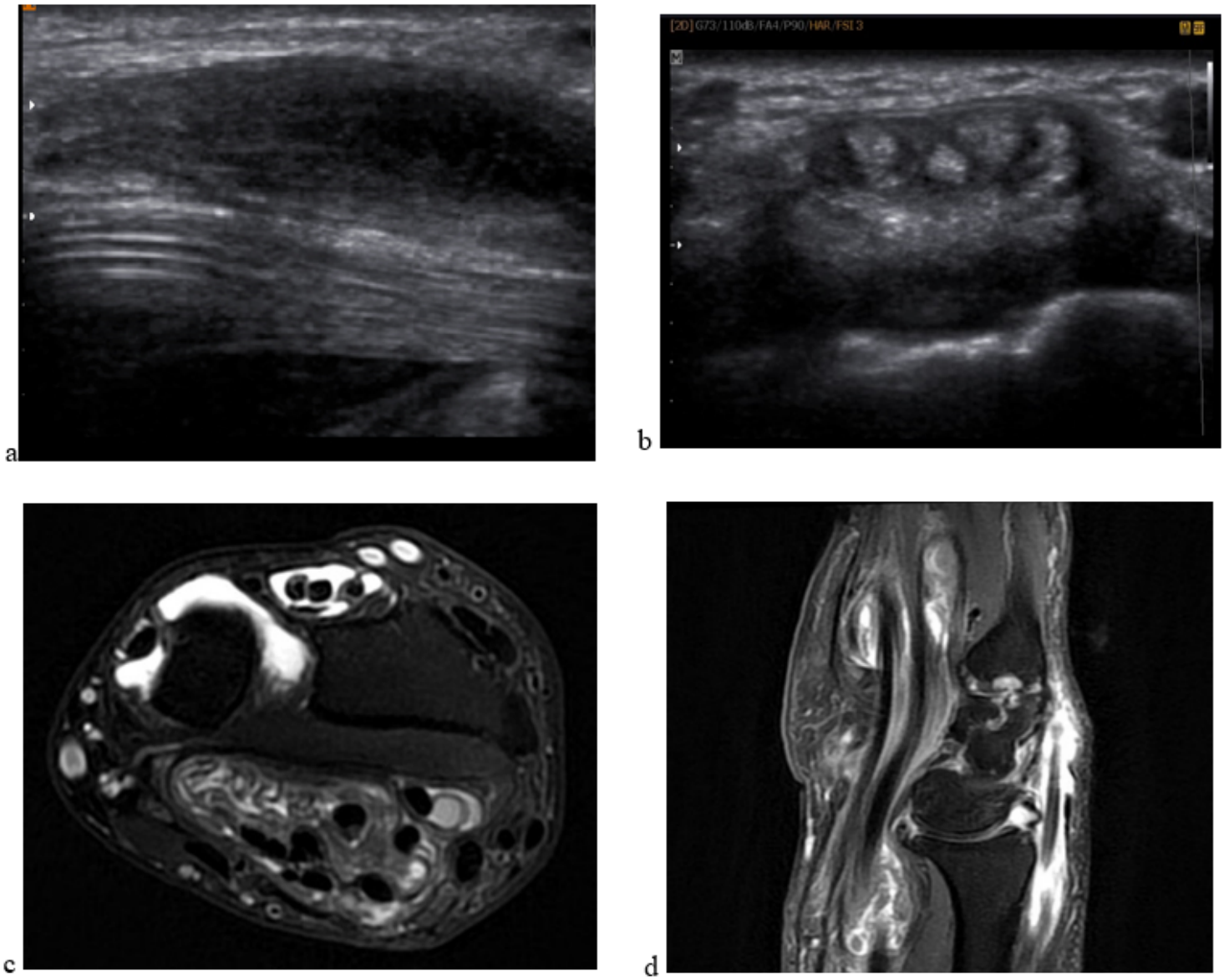

Figure 2

(case2/2): Axial ultrasonographic imaging of the wrist, significant edema and fluid increase under the flexor tendons, (a), Horizontal ultrasonographic imaging of the wrist, significant edema and fluid increase under the flexor tendons, synovial hypertrophy (b), Wrist MR-axial/sagittal section ;Synovial thickening around flexor tendons, prominent edema-synovitis around extensor tendons (c,d)

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