Review Article

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Surgical Research

Tuberculosis Infection of the Deep Hand Spaces in an SLE Patient : Case Report

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ABSTRACT

Musculoskeletal Tuberculosis (TB) is an uncommon extrapulmonary manifestation of TB which accounts for 1-3% of TB cases. Here, we report a case of TB of the hand in a patient with systemic lupus erythematosus. The patient was referred to the plastic surgery clinic with a chief complaint of progressive left hand swelling and pain of eleven months' duration. The MRI was inconclusive, showing synovial inflammation of the mid-palmar space and parona's space in the wrist. Surgical drainage with acid-fast bacilli staining and histopathology confirmed the diagnosis of TB tenosynovitis of the hand. The patient was started on anti-TB medications and their symptoms improved. After one month, her symptoms returned and she was taken for drainage with tenosynovectomy. Two months post-procedure; she reported improved symptoms with good range of motion. TB of the hand should be suspected in patients with a long history of hand pain and swelling, especially in immunocompromised and autoimmune disease patients. TB medications and surgical intervention are cornerstones in the management of TB tenosynovitis.

Keywords

Tuberculosis, Hand, Deep space, SLE, Case report.

Introduction

Tuberculosis (TB) is a global burden with around 10,000,000 newly diagnosed cases in 2017. TB causes around 1.3 million deaths per year, making it one the most common causes of death worldwide [1]. Musculoskeletal (TB) is an uncommon extrapulmonary manifestation of TB, which accounts for 1-3% of all cases [2]. Tuberculosis of the hand is a rare form of Musculoskeletal TB [3]. There are different types of hand TB including TB tenosynovitis, cutaneous TB, TB arthritis, TB bursitis and TB osteomyelitis with TB tenosynovitis being the most common form of hand TB [4]. It is difficult to diagnose hand TB as it is sometimes confused with other diagnoses such as De Quervian tenosynovitis and rheumatoid arthritis (RA) [5,6]. This confusion may lead to a delay in diagnosis [7].

Multiple modalities can be used to help diagnose hand TB including laboratory (ESR, AFB), radiological (hand x-ray and MRI) and histopathological tests. In one of the largest series that included 23 hand TB patients, histopathology was positive in most of the patients and ESR was mildly elevated in almost all the patients while AFB was positive in few cases [8]. Management of TB tenosynovitis is challenging. All recent data stress on starting the patient on anti-TB medications once the diagnosis is established or when there is a high index of suspicion [4,7-9]. Surgical tenosynovectomy is advocated especially in patients with extensive disease and shows faster resolution of symptoms with a similar end outcome to that of the non-surgical approach [8].

The diagnosis of TB of the hand can still missed by many physicians, especially in patients with a known autoimmune disease like (SLE) or RA. Although and tenosynovitis is a chronic and slowly progressive infection, it can be a great source of pain and morbidity to the patient and can, extensively, involve multiple hand spaces. The following report is a case of tuberculous hand tenosynovitis with involvement of multiple hand spaces.

Patient Data

Our patient is a 33-year-old female who is a known case of SLE, antiphospholipid antibody syndrome for which she was placed on Imuran, Hydroxychloroquine sulfate, Prednisolone and therapeutic enoxaparin. Initially she started to have left (non-dominant) hand swelling and mild pain around 11 months before presenting to the plastic and hand surgery clinic. During that period, she was admitted

four times under the care of the rheumatology team as a case of SLE flare ups. This was managed by increasing the prednisolone dose up to 80 mg. Despite optimizing her SLE medications, the patient continued to have pain and swelling which worsened in the last three months and was associated with decreased range of motion (ROM). At that point, she was diagnosed with chronic regional pain syndrome (CRPS) by rheumatology. Soon after that, she presented to the ER with throbbing pain in her left hand for the last two days. She didn't report any episodes of fever, previous trauma or any previous personal history of TB, and no family history of TB.

Clinical Findings

On clinical examination, the patient was vitally stable and afebrile. Local inspection of her left hand showed swelling and mild erythema. The swelling was noted at the wrist over the ulnar and radial sides, along with obvious mid-palmar swelling (Figure 1). On palpation, the left hand was warmer than the right hand with tenderness over the ulnar and radial sides of the wrist, across the mid-palm and over the left flexor tendon sheaths. She had limited and painful range of motion (ROM). Her neurovascular exam was normal.

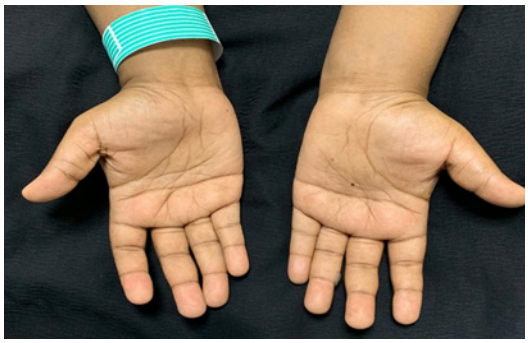

Figure 1: Left hand swelling, with characteristic ulnar, radial bursa and mid-palmar space involvement.

Diagnostic Assessment

ESR and CRP were both elevated (62, 10.4). An x ray showed no underlying bone abnormality, lesions or soft tissue masses. A follow-up MRI revealed severe inflammation and tenosynovial thickening in the hand involving multiple spaces (Figure 2).

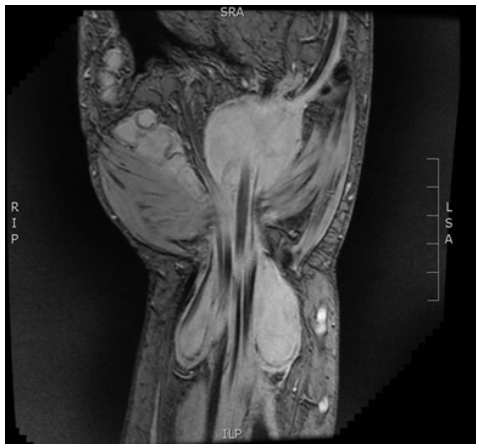

Figure 2: Hand MRI.

Therapeutic Intervention

Due to the semi-acute presentation at this time, a decision was made to take the patient to the OR for formal drainage. During the operation, most of the hand spaces were opened (ulnar and radial bursa, thenar, hypothenar, mid-palmar and flexor tendon sheaths) (Figure 3). Turbid fluid was observed intra-operatively in all spaces. A millet seed appearance was noted in the ulnar bursa (Figure 4). AFB along with tissue samples for histopathology and cultures were taken as well. Post operatively, the patient's pain and swelling improved significantly and she started to regain her ROM. Later, only the AFB was reported positive and tissue histopathology showed non-necrotizing granulomatous inflammation. Based on these results, a diagnosis of tuberculous hand tenosynovitis was made, and the patient was started on four anti-TB medications (Ethambutol, Isoniazid, Pyrazinamide, and Rifampicin) on the 10th post-operative day. Following that, on the 5th post-operative week the patient stopped two of the anti-TB medications and started to have left hand swelling and pain, but it was limited to the ulnar side of the wrist and mid-palm; ESR was elevated. With these indications, the patient was once again started on all four anti-TB medications and taken to the OR for drainage and tenosynovectomy.

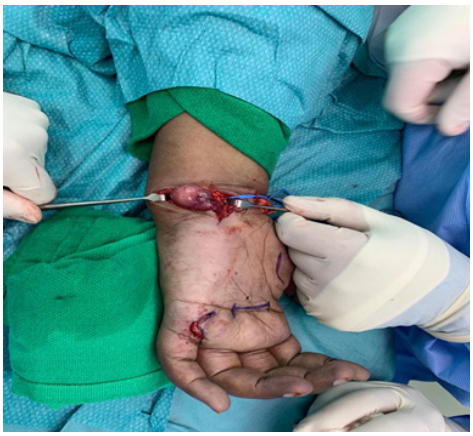

Figure 3: All hand spaces were drained.

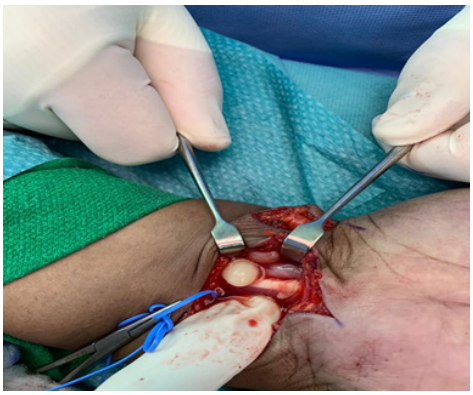

Figure 4: Post tenosynovectomy with a millet seed pattern shown.

Follow up and Outcomes

Post operatively the patient's pain and swelling improved. In addition, she regained good and active ROM. One month post-operation, the patient didn't have any pain; the swelling had

subsided dramatically with a full active and passive as well as pain-free range of motion.

Discussion

Low socioeconomic status, immunosuppression, malnutrition and alcoholism are risk factors for developing hand TB [7,8]. Our patient who is of African-Arabian descent and lives in the southern region of Saudi Arabia with low socioeconomic status suffered from SLE with lupus nephritis, and was on long-standing immunosuppressants. In addition, she had a delayed presentation of about one year. During that time, the patient only complained of tolerable hand pain and hand swelling but didn't show any signs of an acute aggressive infection (which could be explained by the long-standing immunosuppressants).

Multiple reports showed a delay in presentation with hand pain and swelling the most common presenting symptoms [7-9]. A mid-palmar space abscess is a rare manifestation of TB of the hand with the ulnar and radial bursa being the most commonly involved spaces [4]. Our patient had an atypical presentation involving most of her left-hand spaces including the radial and ulnar bursas, the mid-palmar, thenar and hypothenar spaces. A histopathological exam of our patient's hand lesions showed granulomatous inflammation, a positive finding in most TB of the hand cases [7,8].

Anti-TB medications are the mainstay in the management of TB of the hand [4]. Surgical tenosynovectomy is advocated especially in patients presenting with extensive signs of suppurative tenosynovitis and deep space infection. It results in faster resolution of symptoms with a similar end outcome to those of the non-surgical group [8]. On the other hand, one prospective study successfully managed 31 out of 44 pediatric patients conservatively without any surgical intervention [10]. Recurrences in TB of the hand are not uncommon [8]. Post operatively and after starting the patient on proper management, it's important to follow them closely as they might develop an exacerbation of the infection.

Summary

TB of the hand is a rare form of TB. Physicians should have a high index of suspicion, especially in immunocompromised patients with a long history of persistent hand pain and swelling. In the presence of severe pain and positive signs of deep hand space infection, surgical management is unavoidable. Once it is confirmed, anti-TB medications should be started as early as possible.

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