Case Report

Isoniazid-induced Tenosynovitis: A Rare Case Report

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Abstract

The presentation of pain and numbness in flexor tendons of wrist in a patient on anti-tuberculosis treatment (ATT) with isoniazid should raise a suspicion for possible tenosynovitis. Commonly, tenosynovitis affects the wrist, hand, and fingers, although it can occur in any tendon sheath in the body. This is a case report illustrates the occurrence of tenosynovitis in a 60-year-old female subsequent to the initiation of anti-tubercular therapy (ATT) containing isoniazid (INH). The patient presented 2 weeks, without a history of trauma. Clinical examination and diagnostic work-up confirmed tenosynovitis, ruling out other causes of musculoskeletal symptoms. Although rare, INH-induced tenosynovitis should be considered, especially in patients with normal uric acid and rheumatoid arthritis factor levels. Regular monitoring for musculoskeletal side effects during ATT is crucial for timely detection and management. The objective of this case report is to highlight the rare occurrence of INH-induced tenosynovitis and emphasize the importance of its early detection and treatment.

Keywords: Adverse drug reaction, tenosynovitis, tuberculosis

Introduction

In 2022, TB resulted in 1.3 million fatalities worldwide, making it the second leading cause of death due to infectious diseases, following COVID-19.[1] Timely diagnosis and treatment of TB are critical for halting disease transmission and preventing severe complications. Efficient screening methods and targeted testing initiatives facilitate early identification, supporting effective control efforts. Prioritizing prompt interventions enhances patient outcomes and contributes to global TB elimination goals.[2] Its persistent prevalence underscores its status as a global health priority, necessitating treatment involving a mix of antimicrobial agents (e.g., rifampicin [RIF], isoniazid [INH], pyrazinamide (PZA), and ethambutol [EMB]). INH is widely used in tuberculosis (TB) treatment, known for its therapeutic benefits.[3] INH is a cornerstone of TB treatment, primarily inhibiting mycolic acid synthesis in *Mycobacterium tuberculosis*, thereby disrupting its cell wall formation. This bactericidal property renders INH highly effective in combating TB, particularly when used in combination therapy to eradicate the bacteria and mitigate drug resistance, underscoring its importance in TB treatment.[2,4] However, INH may lead to various side effects,[5] including the rare occurrence of tenosynovitis, as observed in a 60-year-old female after initiating anti-tuberculosis treatment (ATT), which included INH administration. The objective of presenting this case report is to raise the awareness about the potential rare side effect of INH-induced tenosynovitis and emphasize the importance of early recognition and management.

Case Discussion

A 60-year-old female sought medical attention with a primary complaint of pain and numbness in her wrists and progressive inability to clinch fist. The pain was sharp and localized, predominantly affecting the flexor tendons of both wrists. She noted that the pain intensified with wrist movements, especially during activities requiring flexion and extension. Over a period of 2 weeks, her symptoms had progressively worsened, impacting her daily activities.

Notably, she denied any recent history of trauma, injury, or strenuous physical activities that could explain the onset of her symptoms. The pain and numbness significantly affected

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her quality of life. She had a medical history of hypertension, a condition she managed with antihypertensive medications, with well-controlled blood pressure. She reported no known drug allergies or sensitivities and had no prior musculoskeletal issues or history of tenosynovitis.

One and a half months before her presentation, she received a diagnosis of abdominal TB on CT scan. Simultaneously, pulmonary TB was also confirmed microbiologically. She was put on anti-tubercular treatment (ATT) under DOTS, which included INH, RIF, EMB, and PZA. She strictly adhered to her prescribed medication regimen, ensuring timely intake. On clinical examination, her wrist joint demonstrated marked limitation of movements. On gentle palpation, these areas were found to be tender and painful. The pain was notably limiting the range of motion in her wrists, especially during flexion and extension. These clinical findings raised a suspicion of tenosynovitis, warranting further investigation [Figure 1].

To confirm the suspected tenosynovitis and explore its underlying cause, several diagnostic tests were conducted:-

Ultrasound examination

An ultrasound assessment of both wrists was carried out to evaluate the soft tissues, focusing on the tendons and adjacent structures. This imaging method revealed signs of inflammation and fluid accumulation within the tenosynovial sheaths.

Magnetic resonance imaging

Magnetic resonance imaging scans of the wrists provided detailed information about the extent of the tenosynovitis. The findings were consistent with tenosynovitis, supporting the clinical diagnosis [Figure 2].

Laboratory investigations

Blood tests were performed to exclude other potential causes of wrist pain and swelling. These tests included a complete blood count and inflammatory markers. Rheumatoid arthritis factor and serum uric acid were also within the normal limits and her serum profile was also negative for ANA. Importantly, results indicated no signs of infection or elevated inflammatory markers, suggesting that the symptoms were likely linked to medication.

After confirmation of tenosynovitis on various diagnostic tests, she was started on low-dose oral corticosteroids and physiotherapy. The follow-up was given to the patient for 6 months after the completion of anti-tubercular therapy and her wrist movements were significantly improved within 2 months of therapy. Written informed consent was also taken from the patient.

Discussion

The occurrence of musculoskeletal side effects during anti-tuberculosis treatment (ATT) is not uncommon and can pose challenges in patient management. PZA and fluoroquinolones, commonly used drugs in ATT regimens, are known to be associated with musculoskeletal adverse effects. PZA, for instance, can cause arthralgia, myalgia, and less

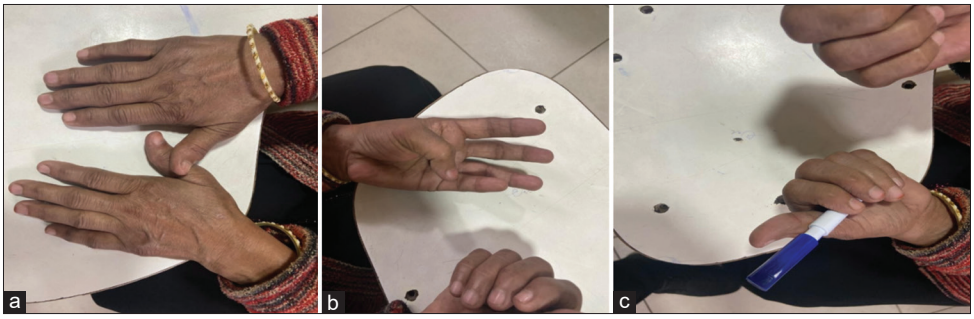

Figure 1: Demonstrates marked limitation of wrist movements, as indicated by the Finkelstein test. (a) Displays bilateral hands before performing the test, (b) Illustrates limited wrist extension, (c) Shows limited wrist flexion

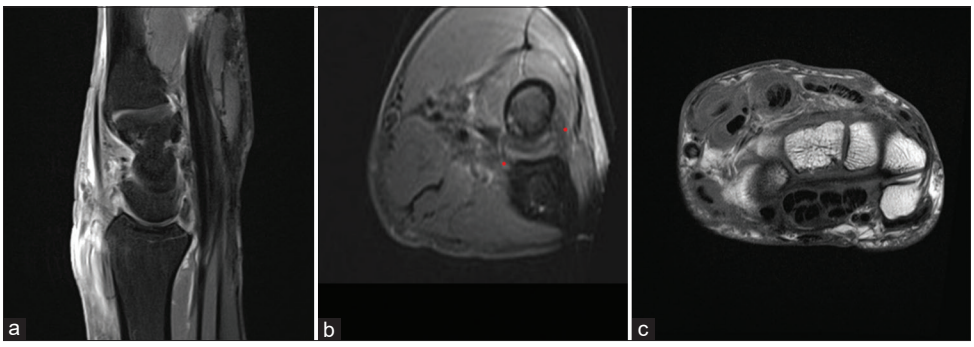

Figure 2: Depicts fluid signal intensity along the tendon sheaths of all flexor tendons in both hands on MRI. (a) T2-weighted sagittal MRI image showing hyperintensities in the subcutaneous plane of the hand, (b) Axial MRI image demonstrating a minimal amount of free fluid involving the carpo-metacarpal and metacarpo-phalangeal joints, (c) Axial T1 MRI image showing fluid signal intensity along the tendon sheaths of all flexor tendons

frequently, severe joint manifestations such as gouty arthritis.[6] Fluoroquinolones, on the other hand, can lead to tendonitis and tendon rupture, particularly in weight-bearing tendons such as the Achilles tendon.[7]

However, INH-induced tenosynovitis is relatively rare but should be considered in patients presenting with musculoskeletal symptoms, especially if they have normal uric acid and rheumatoid factor levels. Tenosynovitis refers to inflammation of the tendon sheath, which can cause pain, swelling, and limited joint mobility. This case report emphasizes the importance of recognizing rare adverse effects of anti-TB medications, especially when patients experience musculoskeletal symptoms soon after beginning treatment. Yamamoto *et al*.[8] also reported the case of a 49-year-old male with untreated diabetes who developed hypoesthesia and difficulty in gripping with his right hand after 1 month of starting treatment for TB of lung. They also highlighted another potential complication of ATT, particularly in patients with comorbidities such as diabetes. Peripheral neuropathy is a known adverse effect of INH, which can manifest as hypoesthesia (reduced sensation) and motor impairment. Patients with diabetes are particularly vulnerable to neuropathic complications due to underlying nerve damage and impaired glucose control. Prompt recognition and management of such complications are essential to prevent further disability and improve treatment outcomes.

Conclusion

While INH is typically regarded as safe and effective in TB treatment, healthcare providers must be aware of potential rare side effects, such as tenosynovitis. Early identification and appropriate management are essential to ensure the patient's well-being and the successful completion of TB treatment.

Recommendations

Healthcare providers must consistently monitor patients throughout anti-tuberculosis treatment (ATT) for potential musculoskeletal side effects. Regular assessments, laboratory tests, and imaging help detect issues early. This ongoing diligence is crucial for timely intervention, ensuring the early detection and management of any emerging complications, thereby optimizing patient safety and treatment outcomes.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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