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Tuberculosis of the wrist causing carpal tunnel syndrome in a patient with rheumatoid arthritis: A case report

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Abstract

Among extrapulmonary tuberculosis, osteoarticular tuberculosis is a rare manifestation, and cases related to osteoarticular tuberculosis of large joints have been reported previously. However, tuberculous tenosynovitis causing carpal tunnel syndrome is a rare manifestation, especially in the background of rheumatoid arthritis. A 67-year-old Sri Lankan male with a background of rheumatoid arthritis presented with progressively enlarging left wrist swelling associated with pain and numbness for 2 months. He was on Methotrexate and Hydroxychloroquine as disease-modifying agents, and his symptoms related to arthritis were well controlled. On examination, lobulated subcutaneous swelling was noted in distal forearm extending to the palmar region with evidence of carpal tunnel syndrome which was confirmed by nerve conduction studies. There was no pre-operative evidence to suggest tuberculosis both clinically and biochemically. Synovial thickening due to rheumatoid arthritis was considered as the probable diagnosis and surgical decompression of the carpal tunnel was performed. Intraoperatively, synovial thickening was noted around the flexor tendons with evidence of median nerve compression in the carpal tunnel. Thickened synovial mass was completely excised. Histology and culture were positive for tuberculosis. Following excision and 9 months of anti-tuberculosis treatment, he was asymptomatic with good range of motion of fingers. In conclusion, a combination of surgical excision and anti-tuberculosis treatment was successful to achieve good functional outcomes. In a country like Sri Lanka, where tuberculosis is still prevalent, uncommon musculoskeletal manifestations may not be infrequent. Therefore, clinicians should have a high degree of suspicion when treating such patients.

Keywords

Tuberculosis, TB, carpal tunnel syndrome, synovial mass, rheumatoid arthritis, case report

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Introduction

Tuberculosis (TB) remains a global health problem, especially among the developing nations.[1] Although pulmonary TB is the commonest manifestation, extrapulmonary TB accounts for approximately 15%–20% of patients.[2] Among extra pulmonary TB, osteoarticular TB is a rare manifestation. Cases related to osteoarticular TB of large joints such as wrist, knee, or ankle have been reported previously.[3,4] However, tuberculous tenosynovitis causing carpal tunnel syndrome is a rare manifestation, especially in the background of rheumatoid arthritis.[5] Tuberculous tenosynovitis may present as a volar wrist swelling which causes median nerve compression in the carpal tunnel. However, in patients with rheumatoid arthritis, tenosynovitis is common, and swelling in relation to flexor tendons can cause reduction in range of motion, trigger finger, carpal tunnel syndrome, and De Quervain's tenosynovitis.[6] We present a rare condition of TB of the wrist and palm causing carpal tunnel syndrome in a patient with rheumatoid arthritis. The work has been reported based on the SCARE 2020 criteria.[7]

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Figure 1. Pre-operative image of left wrist showing swelling over the anterior aspect of the wrist (yellow arrow).

Presentation of case

A 67-year-old Sri Lankan male patient with a background of seropositive rheumatoid arthritis of 5 years presented with progressively enlarging left wrist swelling with pain and numbness of the left hand for 2 months duration (Figure 1). He did not complain of any cough, recent weight loss or other constitutional symptoms. The patient was a non-smoker and had no family history of relevance. His allergic and psychosocial history was unremarkable. On examination, lobulated subcutaneous swelling was noted in distal forearm extending to the palmar region. Evidence of thenar wasting was not evident, and some reduction of finger flexion was noted. Tinel's[8] and Phalen's signs[8] were positive. Rest of the upper limb examination was normal. His basic hematological and biochemical parameters were within normal limits and erythrocyte sedimentation rate was 30 mm per hour.

His nerve conduction study showed evidence of median nerve compression in the carpal tunnel, indicating moderately severe carpal tunnel syndrome. Ultrasound scan of the wrist and distal forearm showed lobulated synovial thickening in relation to flexor tendons. His x-ray of the wrist did not show any features to suggest bony lesions. Magnetic resonance imaging scan of hand and distal forearm showed enhancing synovial thickening with cystic areas over the palmar aspect of the hand extending through carpal tunnel into the forearm without any bony involvement in the region (Figure 2). He was on Methotrexate and Hydroxychloroquine as disease-modifying agents, and his symptoms related to arthritis were well controlled. He underwent high-resolution computed tomography scan of the chest to investigate for recent onset shortness of breath and was found to have basal lung fibrosis with mid-pleural thickening suggestive of

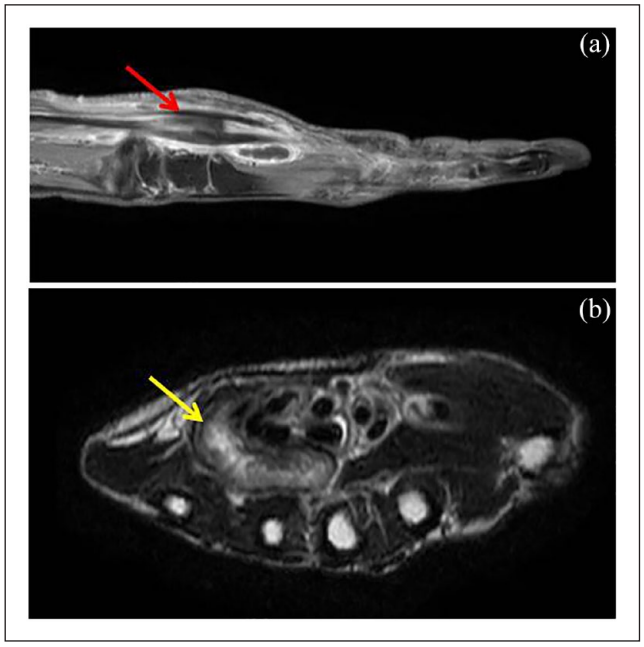

Figure 2. T2 weighted magnetic resonance imaging scan of hand and distal forearm showing synovial thickening with cystic areas over the palmar aspect of hand extending through carpal tunnel into the forearm (a) sagittal section- red arrow, (b) axial section- yellow arrow.

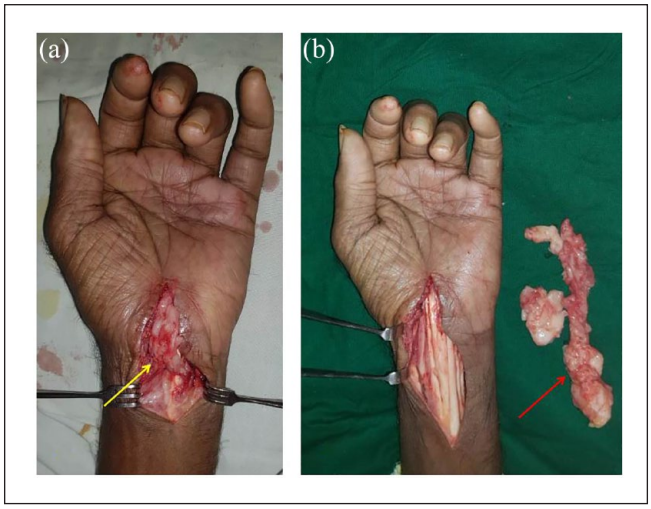

Figure 3. Intraoperative images showing a mass related to flexor tendons (a, yellow arrow) and completely excised synovial mass (b, red arrow).

nonspecific interstitial lung diseases. There was no evidence of apical fibrosis or changes to suggest active or past infection of TB.

Synovial thickening due to rheumatoid arthritis was considered the probable diagnosis, and surgical exploration for the decompression of carpal tunnel was planned. Intraoperatively, synovial thickening was noted around the flexor digitorum superficialis and profundus tendons with evidence of median

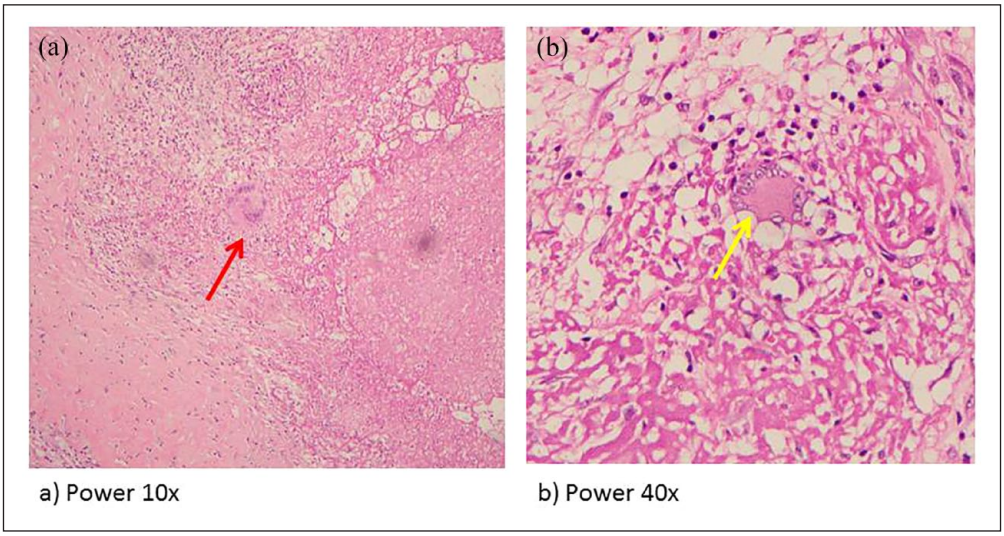

Figure 4. Histology showing Langhan-type giant cell in the background of granulomatous inflammation (a) power of 10-red arrow, (b) power of 40-yellow arrow.

nerve compression in the carpal tunnel. Thickened synovial mass extended from mid palm to distal forearm, and complete excision was performed (Figure 3). The histology revealed a gelatinous mass with septated myxoid material, and surrounding wall contained granulomas with caseating type necrosis and Langhan-type giant cells suggestive of TB (Figure 4). The culture of the sample in Lowenstein Jensen culture medium with colony morphology and immunochromatographic identification test (MPT 64) was positive for *Mycobacterium tuberculosis.* He underwent screening with basic investigations and review of computed tomography images to look for any evidence of lung involvement, and all investigations were negative. He subsequently received 9 months of anti-TB treatment. The intensive phase of 3 months was treated with Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol. The next 6 months were treated with Isoniazid and Rifampicin. At the end of 1 year of follow-up, he was asymptomatic with good range of motion of fingers and improved sensory impairment (Figure 5).

Figure 5. Post-operative images showing good range of motion at the end of 9 months.

Discussion

Among the extrapulmonary TB, osteoarticular TB is rare. Cases related to osteoarticular TB of the large joints such as wrist, knee, or ankle have shown atypical presentations.[3,4] In this case report, we described a patient with TB of the wrist and palm with evidence of synovial thickening and carpal tunnel syndrome, in the background of rheumatoid arthritis.

Apart from the disease-modifying treatment, surgical excision of the synovial masses improves patients' hand function. Some of the studies have concluded that anti-TB medical therapy would be sufficient in selected cases.[8] However, a case series of TB causing carpal tunnel syndrome showed excellent long term outcome with combination of medical and surgical management.[9] In our patient, surgical excision was considered because there was no evidence of TB based on pre-operative investigations, and synovial thickened due to rheumatoid arthritis was presumed to be the diagnosis. Furthermore, the patient had significant disability due to carpal tunnel syndrome.

Even though TB may mimic rheumatoid arthritis-associated tenosynovitis,[10,11] only two cases of TB tenosynovial mass in patients with rheumatoid arthritis have been reported.[12,13] Both patients were on long-term immunosuppressants similar to the reported patient. Interestingly, one presented with wrist swelling, which was managed non-operatively, and the other with a fistulating lesion and none of them had symptoms or signs suggestive of carpal tunnel syndrome.[12,13]

In the reported case, there were some unusual features that were against the diagnosis of carpal tunnel syndrome due to rheumatoid tenosynovial mass. Notably, patient was

asymptomatic in terms of joint pain for the past few years with normal erythrocyte sedimentation rate. On examination, patient did not have any deformities related to rheumatoid arthritis, and synovial swellings or masses were not evident in other areas of the hand. Short duration of onset of the symptoms and swelling in the absence of other clinical features were also unusual.

The number of extrapulmonary TB is increasing at a considerable rate in Sri Lanka. Based on the data published by the National Programme for TB Control and Chest Diseases, 1966 cases of extrapulmonary TB were reported in 2007. Moreover in 2019, 2431 cases of extrapulmonary TB (8900 TB cases in total) were reported.[2] The reason for the increase may be due to improvement in documentation and reporting. However, increased prevalence of diabetes, non-communicable diseases and cancer may also be a likely cause. In a country like Sri Lanka where TB is still prevalent, uncommon musculoskeletal manifestations may not be infrequent. Therefore, clinicians should have a high degree of suspicion when treating such patients. Apart from the prevalence in the country, immune suppression with long-term disease-modifying agents for rheumatoid arthritis may have predisposed this patient to extrapulmonary TB.

Conclusion

We described a patient with TB of the wrist and palm with evidence of synovial thickening and carpal tunnel syndrome in the background of rheumatoid arthritis. A combination of surgical excision and anti-TB treatment was successful in our patient with good functional outcomes. In a country like Sri Lanka, where TB is still prevalent, uncommon musculoskeletal manifestations may not be infrequent. Therefore, clinicians should have a high degree of suspicion when treating such patients.

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None.

Authors contributions

Authors O.B., U.J., and T.B. contributed to collection of information and writing of the manuscript. Author TB contributed to writing and final approval of the manuscript. All authors read and approved the final version of the manuscript.

Availability of data and material

All data generated or analyzed during this study are included in this published article.

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Ethics approval

Our institution does not require ethical approval for reporting individual cases or case series.

Consent

Written informed consent was obtained from the patient for anonymized information and accompanying images to be published in this article. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Research registration

Not applicable.

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