

Hand involvement of *Mycobacterium tuberculosis* infection mimicking rheumatoid arthritis

Sirs,

The diagnosis of *Mycobacterium tuberculosis* infection in extrapulmonary locations remains a challenge to clinicians and requires a high index of suspicion because of its rarity and insidious symptoms with wide variance (1, 2). Thus, the diagnosis of tuberculous infection can often be delayed or unsuspected, particularly if clinical presentation is unusual.

A 54-year-old male was admitted because of arthralgia in both hand joints for one year and discharge of pus from the dorsum of the left hand for one month. Thirty years ago, the patient was diagnosed with pulmonary tuberculosis and was treated with anti-tuberculosis medication. On admission, he complained of morning stiffness lasting for two hours, and physical examination revealed swelling and tenderness of the left third to fifth proximal interphalangeal (PIP) joints, second to fifth metacarpophalangeal (MCP) joints, elbow joint, and both wrist joints (Fig. 1). Laboratory tests showed an ESR of 55 mm/hour, a CRP of 1.91 mg/dl, and negative RF. The Gram stains, bacterial cultures, AFB smears, and AFB cultures of pus drained from the left hand were all negative. Both hand plain radiography showed joint space narrowing, marginal bony erosions of the left wrist joint, PIP and MCP joints and a 0.5 x 0.5 cm-sized foreign body at the left thumb MCP joint area. MRI showed synovial thickening and marginal erosion of the left carpal bone, second to fifth MCP joints, and osteomyelitis of the left distal radius and ulnar. The patient satisfied the ACR criteria for RA. After treatment with oral prednisolone (10 mg/day), NSAIDs, and methotrexate (7.5 mg/week), the arthritis improved, and ESR and CRP levels decreased to 21 mm/hour and 0.70 mg/dl, respectively. Subsequently, the removal of the foreign body in his left thumb and biopsies of synovial tissue from the left third PIP and fifth MCP joints were performed. All of the synovium showed a positive AFB smear, as well as chronic granulomatous inflammation with caseous necrosis, which was compatible with *Mycobacterium tuberculosis* infection. Through these findings, we diagnosed this case as tuberculous arthritis involving multiple hand joints and prescribed isoniazid (400 mg/day), rifampicin (600 mg/day), ethambutol (800 mg/day), and pyrazinamide (1500 mg/day), with discontinuation of prednisolone and methotrexate, maintaining the NSAIDs. Currently, the arthritis is improving.



Fig. 1. The photograph shows the swelling of the left third to fifth PIP joints, second to fifth MCP joints, and both wrist joints.

Arthritis due to *Mycobacterium tuberculosis* infection usually presents as a chronic, slowly progressive and monoarticular infection at the weight-bearing joints (1-3). The involvement of polyarticular areas is extremely rare (4, 5), and tuberculous polyarthritis involving multiple hand joints has not been reported. In these unusual presentations, the prior history of pulmonary tuberculosis and compatible radiographic findings could provide important clues for the diagnosis. However, the plain radiographic features of tuberculous arthritis can also be seen in RA (5). In MRI findings, marginal bony erosion showing a hypo-intense signal on T1-weighted and a hyper-intense signal on T2-weighted images is present in RA. On the other hand, in tuberculous arthritis, central and marginal bony erosions showing hypo-intense signals in both the T1-weighted and T2-weighted images, bone chips, rim enhancing abscesses, and osteomyelitis were reported as characteristic features (6-8). In this case, marginal erosion that showed a hypo-intense signal on T1-weighted and a hyper-intense signal on T2-weighted images and osteomyelitis was observed, but central bony erosion, bone chips, and a rim enhancing abscess were absent. Therefore, confirmatory diagnosis could only be made through the pathology. Polyarticular involvement of tuberculosis in this patient has relevance to blood-borne infection, originated by reactivation of previous *Mycobacterium tuberculosis* infection (9). In chronic arthritis of unknown etiology with a previous history of *Mycobacterium tuberculosis* infection, suspecting tuberculous arthritis may be important in differential diagnosis of a polyarthritis and not just a monoarthritis.

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