

Case Report

Chronic osteomyelitis of the hand by *Mycobacterium kansasii* in an immunocompromised patient

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ABSTRACT

Atypical mycobacteria are pathogens that uncommonly infect the hand. These organisms are capable of causing extensive bone damage in the hand. *Mycobacterium kansasii* is a slow growing non-tuberculous *Mycobacterium*. It is the second most common non-tuberculous *Mycobacterium* that mainly affects the hand and joints. Immunosuppressed patients are more likely to develop infection. Because extrapulmonary involvement of *M. kansasii* is rare, skin and soft tissue infections are infrequent; osteomyelitis is even rarer. Immunosuppressed patients are more likely to develop infection. A history of trauma is frequent. There is a delay in diagnosis antibiotics have been given with no response. Imaging studies are recommended in the diagnostic approach, with magnetic resonance imaging being the best option to show bone and soft tissue involvement. Infected tissue culture has greater sensitivity for diagnosis. Treatment for musculoskeletal involvement consists of multiple susceptibility-based antibiotics and antiretroviral therapy in HIV coinfection, combined with surgical management with incision and drainage.

Keywords: Hand osteomyelitis, Non-tuberculous *Mycobacterium*, Immunocompromised

INTRODUCTION

Atypical mycobacteria are rare pathogens in hand infections. These organisms are capable of causing extensive hand bone damage.¹ Reports of atypical mycobacteria in hand infections have increased compared with *M. tuberculosis*.² *M. kansasii* is a slow-growing, non-tuberculous *Mycobacterium* described in 1953 as a cause of human infections. It is the second most common non-tuberculous *Mycobacterium* that mainly affects the hand and joints. Because extrapulmonary involvement of *M. kansasii* is rare, skin and soft tissue infections are infrequent; osteomyelitis is even rarer.^{3,4} Immunosuppressed patients are more likely to develop infection.⁵ An incidence of 0.44% of *M. kansasii* infections has been reported in patients with HIV.⁶ We

report the case of an HIV-positive patient with a long-standing hand infection with the evidence of the *M. kansasii*.

CASE REPORT

The patient is a 45-year-old HIV-positive man who came to the emergency room with edema of the left hand accompanied by pain, suppuration, hyperthermia, discoloration, and worsening symptoms in the past week. He had a history of trauma of his left hand three months before when he suffered a fall from his height without presenting an injury or deformity at that time. He refused medical attention. His HIV-positive diagnosis was made four months before. He is receiving retroviral treatment

with poor results with a viral load of 627,000 copies and 36 CD4.

On examination in the emergency room, he had a metacarpal bone deformity of his left hand with edema, hyperthermia, and pain on palpation. There was a chronic wound located on the hypothenar eminence and another in the palmar region of the wrist, both with a purulent secretion (Figure 1) and an abscess in the proximal region of the left forearm (Figure 2).



Figure 1: Lesion of the left hand with edema, suppuration, hyperthermia, and discoloration.



Figure 2: Abscess in the proximal left forearm.

A hand x-ray showed fractures of the 4th and 5th metacarpals with osteomyelitis of the carpal bones and the joint with the 4th and 5th metacarpal (Figure 3).



Figure 3: Fractures of the 4th and 5th metacarpals with osteomyelitis of the carpal bones and the 4th and 5th metacarpal joints.

The abscesses of the left hand and forearm were drained and debrided, followed by secondary wound closure. A qualitative PCR of the tissue produced a non-tuberculous *Mycobacterium*. A culture of the purulent secretion revealed *M. kansasii*.

The antibiotic therapy scheme was adjusted according to susceptibility. Trimethoprim-sulfamethoxazole combined with rifampicin, isoniazid, ethambutol, and pyrazinamide was started.

The patient improved clinically, and his infection was successfully treated. He was discharged with outpatient antibiotics and antiretroviral treatment.

DISCUSSION

Infection with *M. kansasii*, like other nontuberculous mycobacterial infections, is associated with HIV coinfection in patients with advanced immunosuppression. Musculoskeletal involvement is rare. The tendon sheath and septic arthritis are the most common sites of infection.⁷

Nontuberculous mycobacteria grow slowly. They are environmental pathogens that are found in natural sources, specifically tap water and soil. Symptoms generally involve the synovium of the hand and wrist with stiffness, edema, and finger paresthesia.⁸ A history of trauma is frequent. There is a delay in diagnosis in most cases because multiple antibiotics have been given with no response.⁹

Imaging studies are recommended in the diagnostic approach, with magnetic resonance imaging being the best option to show bone and soft tissue involvement.

PCR can identify the infectious causal agent; however, there can be false negatives. Infected tissue culture has greater sensitivity for diagnosis.¹⁰

Treatment for musculoskeletal involvement consists of multiple susceptibility-based antibiotics and antiretroviral therapy in HIV coinfection, combined with surgical management with incision and drainage in case of an abscess, the incision must be parallel to the lines of tension to favor adequate healing.^{11,12} The duration of antibiotic therapy is up to 12 months after a negative culture.^{13,14}

CONCLUSION

This case represents a rare infection of bone and muscle in the hand and wrist by *M. kansasii* and HIV coinfection. Identification of the causal agent is a diagnostic challenge. A diagnosis and subsequent targeted antibiotic therapy are achieved with surgical debridement and culture of the infected tissue.

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