Cutaneous Infection With *Mycobacterium haemophilum* in an Immunocompromised Patient

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Mycobacterium haemophilum is a fastidious nontuberculosis *Mycobacterium* that must be considered in the differential diagnosis of infections in immunocompromised patients. *Mycobacterium haemophilum* typically is a pathogen of the cutaneous or subcutaneous tissue and also presents as septic arthritis, osteomyelitis, pulmonary disease, and lymphadenitis. We report a 32-year-old man with past medical history of kidney transplantation, endocarditis, gastrointestinal bleeding, and hypertension, complaining of multiple painful nodular lesions since 3 months earlier. A tissue biopsy and polymerase chain reaction detected *Mycobacterium haemophilum*. Atypical mycobacterial species like *Mycobacterium haemophilum* should be assessed in immunocompromised patients positive for acid fast staining and negative for *Mycobacterium tuberculosis*.

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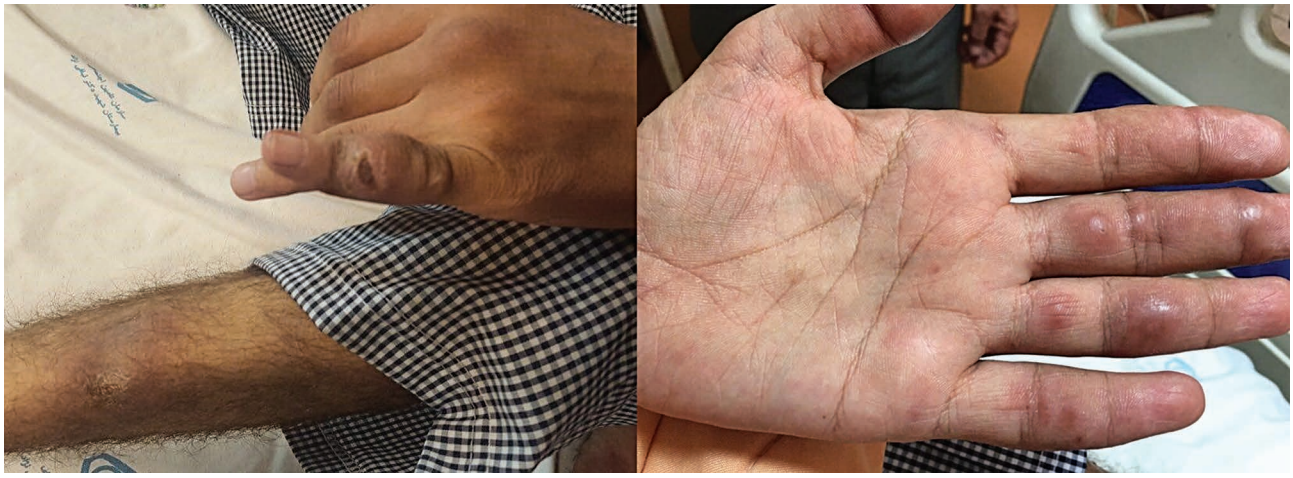
Case Report

INTRODUCTION

Immunosuppressive agents after transplantation, which can increase the risk of the opportunistic infections and malignancies, have also the potential to affect the skin.[1] *Mycobacterium haemophilum* is a slow-growing nontuberculous mycobacterium that can cause ulcerating cutaneous or subcutaneous nodular skin lesion in immunocompromised patients.[2] Some nontuberculosis *Mycobacteria* have been cultured from environmental sources such as ground waters, dust, and soil, but source of many others remain unrecognized.[3] *Mycobacterium haemophilum* appears to be acquired from environmental exposure, although its natural habitat and mode of acquisition are unknown.[4] Cutaneous lesions are found most frequently on the extremities, particularly over joint, and less commonly on the trunk and face.[5]

CASE REPORT

A 32-years-old man, with a successful kidney transplantation from her mother 17 years ago, was admitted with fever from 2 days earlier and a 3-month history of multiple painful ulcerating nodular skin lesions on his left hand and leg, some of which became reddish and swollen from 3 days before presentation, and also complained of hoarseness from 1 month earlier. He was a worker of making milling machine component. He was not aware of any contact to any sick patients or tuberculous individuals and had no history of exposure to livestock, plants, birds, pets, or fish tanks. He had a history of culture-negative bacterial endocarditis 4 months earlier, gastrointestinal bleeding 12 months earlier, and hypertension for 3 years. His drug regimen consisted of cyclosporine, mycophenolate mofetil, prednisolone, erythropoietin, losartan, hydrochlorothiazide, and pantoprazole. He was febrile and physical examination revealed tender nodular and erythematous lesions on the left hand and leg (1 cm to 3 cm in diameter), some of which were ulcerative with fluctuation (Figure). Vancomycin had been initiated because of several subcutaneous abscesses and further evaluation has been started.



Nodular and erythematous lesions on the left hand and leg (1 cm to 3 cm in diameter).

Chest, hand, and leg radiography were normal. Latent tuberculosis test was negative. Laboratory findings were normal except for high erythrocyte sedimentation rate (44 mm/h) and serum creatinine (3.2 mg/dL). Otolaryngology consult was performed. Laryngoscopy showed several nodules on true vocal cord, but he did not allow to do biopsy. Due to deterioration in general condition, antibiotic regimen was changed to linezolid. Three days after initiation of linezolid, significant improvement in patient general condition occurred and he became afebrile. Smear of aspiration of the left 5th finger abscess showed some acid fast-positive bacillus. The skin biopsy from left palmar subcutaneous nodule was performed and pathology result was reported dermatofibroma. According to the patient risk factors and clinical features, we sent tissue block to another department of pathology for consulting. Second block review revealed heavy dermal histiocytic infiltration. Ziehl neelsen stain was positive. Polymerase chain reaction result was negative for *Mycobacterium tuberculosis* complex but positive for *Mycobacterium haemophilum*. Polymerase chain reaction of the left 5th finger abscess also revealed same results. Clarithromycin and rifabutin were added to linezolid. Seven days later, the patient was discharged while drug regimen with dosage adjustment included clarithromycin, 500 mg/d, ciprofloxacin, 250 mg twice daily, and rifabutin, 300 mg once daily.

After more than 1 year of follow-up, the patient's skin lesions and hoarseness had completely resolved with no drug side effect.

DISCUSSION

Immunosuppression in kidney recipients impairs the cell-mediated immunity, making these patients prone to a variety of cutaneous infections. In the past decades, the reports of infections with the atypical *Mycobacteria*, such as *Mycobacterium marinum*, *Mycobacterium fortuitum*, *Mycobacterium abscessus*, *Mycobacterium haemophilum*, and *Mycobacterium avium*, are increasing.[1]

Mycobacterium haemophilum is a slow growing fastidious nontuberculous mycobacterial species.[6] The incidence of all nontuberculous mycobacterial infections in kidney transplant patients estimated to be between 0.16% and 0.38% and *Mycobacterium haemophilum* is the most common cause of nontuberculous mycobacterial cutaneous infections in this group.[7] Based on the available literature, 2 groups appear to be at risk for *Mycobacterium haemophilum*.[8] The main group consists of severely immunocompromised patients, in whom *Mycobacterium haemophilum* occurs as an opportunistic infection.[9,10] The second at-risk group is otherwise healthy children, who typically developed cervical and perhilar lymphadenitis.[11] The microorganism is now also known to cause cutaneous and subcutaneous infections, septic arthritis, osteomyelitis, and pneumonia in immunocompromised patients.[5] Two other cases of kidney transplants with *Mycobacterium haemophilum* infections were reported. In 1 case, a Canadian patient after kidney transplant was infected by *Mycobacterium haemophilum* in 2008 and the patient was treated with clarithromycin, rifabutin, and ethambutol, with all symptoms resolving over 5

months of follow-up.[12] The other case was 59-year-old Japanese man with end-stage renal disease secondary to diabetic nephropathy who received a kidney transplant from a deceased donor in January 2004. Following the establishment of the diagnosis of disseminated cutaneous *Mycobacterium haemophilum* infection, a 2-drug regimen with oral clarithromycin and ciprofloxacin was initiated. The initial 2-drug regimen was maintained for 4 months, and ciprofloxacin monotherapy was maintained for an additional 8 months to complete a total of 12 months of treatment.[13]

No standard guideline is available for treatment of *Mycobacterium haemophilum* infection. Although no optimal therapeutic regimen and treatment duration for *Mycobacterium haemophilum* have been established, experts generally agree that patients should be placed on multiple antibiotics that include some combination of clarithromycin, ciprofloxacin, and one of rifamycins for a duration 12 to 24 month.[8,14]

Cutaneous lesions in immunocompromised patient with positive results in acid fast staining and negative result for mycobacterium tuberculosis should be further assessed using skin culture and molecular techniques to identifying rare, atypical mycobacterial species like *Mycobacterium haemophilum*. Successful outcomes usually require months or even years of medical therapy.

CONFLICT OF INTEREST

None declared.

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