

Atypical Mycobacterium Infection with Sporotrichoid Spread in a Patient with Human Immunodeficiency Virus

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Abstract

A case of Mycobacterium marinum infection presenting with a sporotrichoid spread in a HIV positive Chinese male is presented. The patient responded to oral cotrimoxazole treatment. A brief review of the literature concerning atypical mycobacterial infection presenting in such a fashion is discussed.

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Key words: Atypical mycobacterium, Cotrimoxazole, MOTT, Sporotrichoid

Introduction

Mycobacteria other than tubercle bacilli (MOTT) were shown to be agents of human disease in the 1950s. They are also known as atypical, environmental or opportunistic mycobacteria. Not usually transmitted by person-to-person contact, they are acquired from environmental sources such as water, soil and vegetation, and their occurrence reflects their natural distribution.'

There are several differential diagnoses to consider when one encounters an infective granuloma with a sporotrichoid pattern of spread. In our patient, *Mycobacterium marinum* (*M. marinum*), formerly known as *M. balnei*,² was the cause. Besides sporotrichosis, a variety of other infective agents can present similarly.

Case Report

A 37-year-old Chinese male was referred to us for the appearance of numerous nodules on his right hand and forearm for two months. The lesions started initially on the right middle finger and were gradually extending proximally in a linear fashion. The patient has been working as a seafood chef in a local restaurant for the past fourteen years; besides cooking, his other duties also included slaughtering fish and changing of water in the fish tanks where some of the live seafood was kept. He remembered a history of trauma to his right middle finger three weeks prior to the onset of the lesions when he was pricked by a lobster.

The patient has a significant medical history of being recently diagnosed to be HIV positive when he presented to a gastroenterologist for the prob-

lem of chronic weight loss and diarrhoea. Oesophago-gastroduodenoscopy and colonoscopy with biopsies taken from the gastric mucosa, duodenum, terminal ileum, colonic and rectal mucosa revealed chronic inflammatory changes without any presence of granulomata. Stool cultures were negative.

On examination, the patient had an ulcerated, erythematous, granulomatous plaque on the dorsum of the right hand. He had seven other discrete nodules on the right forearm and upper arm ranging in size from 2 to 6 cm in diameter. The lesions were soft to firm, with a sporotrichoid distribution (Fig. 1). He had localised epitrochlear lymph node enlargement, but the axillary nodes were not enlarged.

A clinical diagnosis of atypical mycobacterium infec-



Fig. 1. Granulomatous plaques and nodules on the patient's arm showing a sporotrichoid distribution.

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tion with a sporotrichoid spread was made and the patient was started on cotrimoxazole 2 tablets twice a day, together with his antiretroviral therapy. Full blood counts were normal, and his CD4 count was 120 cells/ μ l. The patient's viral load was 60,980 HIV 1 RNA copies/ml plasma. Chest X-ray was normal. A biopsy of one of the nodules showed a diffuse infiltrate of histiocytes, giant cells, plasma cells, lymphocytes and eosinophils and neutrophils throughout an oedematous dermis. There was an area of necrosis in the lower dermis which contained a few acid-fast bacilli. The histology was consistent with atypical mycobacterial infection. Cultures from biopsy specimens grew *M. marinum*, sensitive to rifampicin, kanamycin, ethionamide and ethambutol and resistant to isoniazid and streptomycin.

The patient was reviewed two weeks after the biopsy and was noted to be well, and tolerating antibiotic treatment. When the culture results were known, it was decided to continue his antibiotic treatment as he was clinically responding after 4 weeks of treatment; there were no new lesions, and most of the nodules were subsiding. After 12 weeks of treatment, the patient recovered fully and antibiotic treatment was stopped. The patient remains on follow up.

Discussion

M. marinum infections usually present as a solitary lesion but a centripetal spread reminiscent of sporotrichosis can occur.³ Lesions can heal spontaneously in 1 to 3 years with residual scarring.⁴ It can also present as ulcerated plaques, or psoriasiform or verrucous lesions.⁵ The commonest cause is probably from infections acquired while cleaning tropical fish tanks, which has been on the rise since the 1970s.⁶ The organism usually gains entry via skin trauma. Infections of deep tissues have been reported, particularly after trauma.⁷⁻⁹ Treatment of *M. marinum* infections with antibiotic therapies fall into three main classes: (1) rifampicin 600 mg/day with ethambutol at 15 mg/kg/day,⁵ (2) cotrimoxazole 2 tablets twice a day,¹⁰ and (3) minocycline 200 mg/day.¹¹ The average duration of treatment is 6 weeks.¹²

In HIV infection, there is a change in cytokine profile from a Th1 profile, which enhances cell-mediated immunity and thus protects against infections such as leishmaniasis and mycobacterial infections, to a Th2 profile as disease progresses. This could partly be the reason why antibiotic treatment had to be extended beyond the average duration of 6 weeks to achieve cure in our patient.

Other differential diagnoses to consider in such a presentation include sporotrichosis, leishmaniasis, histoplasmosis, blastomycosis, coccidioidomycosis, nocardiosis and cat scratch fever. MOTT known to cause such a pattern of disease include *M. kansasii*, which is more often isolated from sputum specimens and associated

with pulmonary disease;¹³ *M. gordonae*, which is a frequent contaminant of water supplies and can be transmitted via rat bites;¹⁴ *M. chelonae*, which causes post-traumatic and nosocomial skin and soft-tissue infections and has a predilection for renal transplant patients,¹⁵ and *M. avium* complex, which usually causes chronic pulmonary infection.¹⁶ A patient with the acquired immunodeficiency syndrome (AIDS) with *M. marinum* infection presenting with a sporotrichoid fashion has been reported.¹⁷ This patient responded completely to isoniazid, ethambutol, rifampicin and amikacin initially, but six months after treatment was stopped, he experienced a relapse of his illness. The authors related this to the persistence of the organism, in view of the patient's immunocompromised state.

Diagnosis of atypical mycobacterial infections often requires a high index of suspicion. An appropriate history and the presence of a tuberculoid granuloma on histology are suggestive; proof is obtained from cultures and subsequent treatment should be guided by *in vitro* sensitivity tests as far as possible. No specific recommendations are available on the length of treatment of immunocompromised patients. Patients with HIV infection and AIDS require close follow up to ensure that the organism is truly eradicated, and may require prolonged treatment or suppressive therapy.

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