Case Report

Mycobacterium marinum as a cause of skin chronic granulomatous in the hand

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Received: 20 Jul 2010
Revised: 5 Aug 2010
Accepted: 8 Aug 2010

Abstract

Background: *Mycobacterium marinum infection has a worldwide distribution and the organism occupies many aquatic environments. Infections in human consist of nodular cutaneous lesions that can progress to tenosynovitis, arthritis, and osteomyelitis.*

Case presentation: *A 27-year-old man was presented with a history of swelling and exudative erythematous lesions and pustules of the right forearm. He worked as a laborer at an aquarium store. A smear from the walls of the necrotic center when stained for acid-fast bacilli revealed organisms consistent with mycobacteria.*

Conclusion: *Cutaneous nodular lesion on the hand or forearm of the patient working in aquatic environment, M marinum should be considered in the differential diagnosis.*

Key words: *Mycobacterium marinum, atypical mycobacteria, hand infection, granuloma.*

Casp J Intern Med 2011; 2(1):198-200.

Mycobacterium marinum is a natural pathogen of fish that has been responsible for the outbreaks of disease in both fresh and salt water, fish in a wide geographic distribution. Granulomas caused by M. marinum in fish are very similar to granulomas caused by M. tuberculosis in the lungs of human, including the presence of caseous necrosis in the center of some granulomas (1). First isolated in 1926 by Aronson (2) from saltwater, fish that had died in the Philadelphia Aquarium, was not recognized as a cause of human disease until 1951 when Norden and Linnel isolated the organism from granulomatous skin lesions in swimmers (3). Infections in human consist of nodular cutaneous lesions that can progress to tenosynovitis, arthritis, and osteomyelitis (4). Because of the organism's optimal growth at 30 to 32°C, infection is usually limited to the skin in the peripheral, cooler parts of the body, particularly the hands. (5).Disseminated infection is rare and almost always occurs in immunosuppressed individuals (6-8). Diagnosis of M. marinum infection is often delayed because of the lack of clinical suspicion and need for special diagnostic procedures (9). The lesions may ulcerate or frequently heal spontaneously within 1 to 2 years, with residual scarring (7). Human infection follows contact with fishes or contaminated water, being related with occupations and hobbies (5,10-12). In this paper, we described a patient with M. marinum infection working at an aquarium store in northern Iran.

Case report

In March 2009, a 27-year-old man working at an aquarium store was presented with a history of swelling and exudative erythematous lesions and pustules of the right forearm.

This case was treated with amoxycillin and several courses of antibiotics without any result. Histopathology examination of the lesions showed nonspecific inflammation to granuloma formation. Results of gram stain and routine culture from biopsy of skin lesions in both blood agar and McConckey agar were negative. A smear from the walls of the necrotic center when stained for acid-fast bacilli revealed organisms consistent with mycobacteria.

The skin lesion was cultured for mycobacteria on Lowenstein-Jensen at 30 and 37˚C. Growth occurred after 8 days at 30°C and did not grow at the incubation temperature of 37 ˚C. Colonies were cream in colour and turn yellow when exposed to light (photochromogenic). Biochemical testing (13) showed positive reactions for urease, Tween hydrolysis (both 5- and 10-day readings), and pyrazinamidase activity (both 4- and 7-day readings). Negative tests included nitrate reduction (tube test), arylsulfatase (3-day test), and heat-stable catalase (68°C), and the organism did not grow on MacConkey agar without crystal violet (5- and 11-day readings). The results of the biochemical tests were indicative of M. marinum.

Discussion

M. marinum infection has a worldwide distribution and the organism occupies many aquatic environments. The first report of the infection was in salty water fish in Philadelphia in 1926. Human skin infection was first reported in people swimming in an infected swimming pool in 1951 (14). This bacterium is a natural pathogen of ectotherms, including frogs and fish, and its optimal growth temperature range is 25–35 °C. Although infection may be caused by direct injury from the fish fins or bites (15), most are acquired during the handling of the aquariums such as cleaning or changing the water. Indirect infection has also been described due to a child's bath that was used to clean out a fish tank (16,17). The patient described in this report was occupationally exposed to fish.

The disease begins as a violaceous papule or nodule (18,7).It can also be presented as a psoriasiform or verrucous plaque, usually on the hands, feet, elbows or knees, at the site of trauma, about 2 to 3 weeks after inoculation (7,18). In our case, swelling and exudative erythematous lesions, pustules of the right forearm, histopathology report, positive culture in Lowenstein-Jensen medium at 30°C with colonies, photochromogenic when exposed to light and could not grow at 37 ˚C, and biochemical testing favoured the diagnosis of M. marinum infection (18-20,13,8)

M. marinum infection disappears after several months, it can be treated with a variety of antimicrobial drugs, including trimethoprim- sulfamethoxazole, rifampin and ethambutol, or doxycycline (5). Alternatively, local heat therapy was also used with good results. Topical or local injection of steroids, however, is contraindicated because it frequently caused exacerbation of the infection and leads to greater difficulty in treating the patient (21,22).To the best of our knowledge, this is the first conclusive report of M. marinum infection in Iran. In conclusion cutaneous nodular lesion on the hand or forearm of the patient working in aquatic environment, M marinum should be considered in the differential diagnosis.

Acknowledgment

We would like to thank Dr Masoomeh Mirzaee, Mycologist of Babol Sepid Medical laboratory for her cooperation and kindness.

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