

Mycobacterium marinum infection of the hand presenting as a nodular skin lesion

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ARTICLE INFO

Keywords:

Hand
Nodular lesion
Mycobacterium marinum
Sequencing

ABSTRACT

Nontuberculous mycobacteria have emerged as an important group of pathogens worldwide; however, infections of the hand are rare. Infections caused by nontuberculous mycobacteria are often opportunistic in humans, and notoriously difficult to treat due to intrinsic resistance to many antibiotics. Here we reported a case of *Mycobacterium marinum* infection of the hand in a patient who presented with a nodular skin lesion.

1. Introduction

Nontuberculous mycobacteria (NTM) are ubiquitous in the environment, especially in soil and water systems [1,2]. They are important pathogens in humans; however, they are not typically transmitted from human to human. Pulmonary diseases caused by NTM are the most common infections, which have been reported with increasing incidence [3,4]. Extrapulmonary NTM diseases are uncommon, including skin & soft-tissue infections, musculoskeletal infections, lymphadenitis, and endophthalmitis [5–7]. Disseminated NTM infections are reported mostly in immuno-compromised patients [8]. Here we reported a case of *Mycobacterium marinum* infection of the right hand in a patient who presented with a nodular skin lesion.

2. Case report

A 33-year-old male with no significant past medical history presented to an Urgent Care with swelling in the right index finger for several days. The patient complained of a small raised nodule on the right index finger (Fig. 1). The lesion was red, swollen, and painless. The range of motion of the index finger was intact. He denied any recent marine encounters, insect & animal bites, and trauma. The patient recalled that he did landscaping back in the summer (about 6 months ago), but had no issues with his index finger back then. He did not have any fevers, chills, or night sweats. The physical examination revealed no other abnormal findings. The patient's vital signs and laboratory results were within normal limits. The patient was given a seven-day course of TMP-SMX 800–60 mg (one tablet by mouth, two times a day) given concerns for an infectious etiology. However, this did not help

with his nodular lesion, and he was subsequently referred to a hand surgeon. The patient underwent incision and drainage of the nodule with excision of a deep mass. The patient was advised to follow-up outpatient for further care.

Tissue specimens were sent for surgical pathology and culture. Histopathologically, the lesion showed epithelioid granuloma associated with chronic inflammation. The culture was incubated at 25 °C, 30 °C and 37 °C. *Mycobacterium* grew in a mycobacterial growth indicator tube (MGIT) and Lowenstein-Jensen (LJ) slant at 25 °C and 30 °C. On Ziehl-Neelsen stain, long acid-fast bacilli were seen (Fig. 2a).



Fig. 1. A nodular lesion in the index finger.

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<https://doi.org/10.1016/j.jctube.2020.100166>

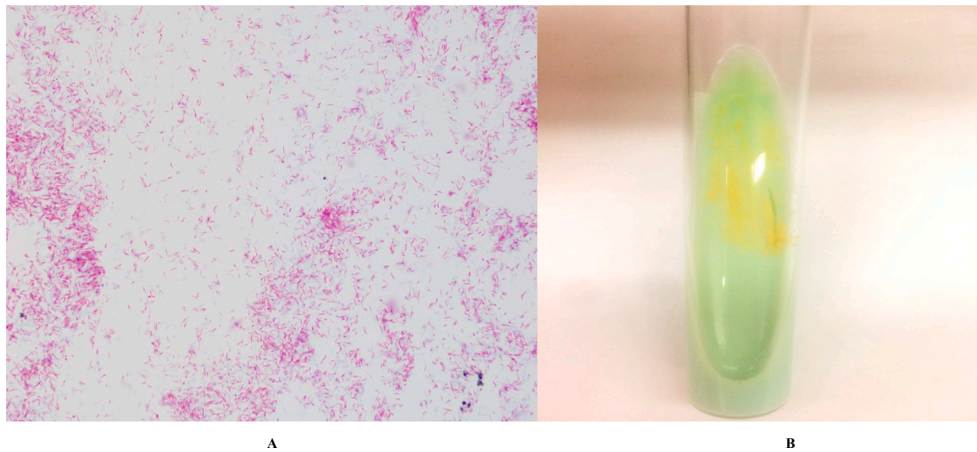


Fig. 2. A) Ziehl-Neelsen stain showing abundant acid-fast bacilli and B) Bright yellow colonies after light exposure on Lowenstein-Jensen slant. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Given that the organism grew after 21 days, a slow growing *Mycobacterium* sp. was suspected. The colonies appear rough and unpigmented when isolated in the dark. Upon exposure to light, the colonies turned bright yellow, which made this *Mycobacterium* sp. a photochromogen (Fig. 2b). At this time, the colonies were probed for *Mycobacterium tuberculosis* complex, *Mycobacterium avium* complex and *Mycobacterium gordonae*, all of which were negative. The final identification of *Mycobacterium marinum* was determined by 16S rRNA gene sequencing.

3. Discussion

Mycobacterium marinum is a free-living NTM. The natural habitat of this bacterium is aquatic, and it can be found in both salt and fresh water [5,9]. Skin trauma is a risk factor for cutaneous NTM infections. *Mycobacterium marinum* is associated with various fish species, and human infections were resulted from contact with infected fish or contaminated water [10]. The incubation period is usually less four weeks, but can be prolonged up to nine months long before the onset of symptoms [11]. The patient admitted having a fish tank without fish. In addition, the patient did some landscape work, in which he might have a skin injury without notice.

In the study, we presented a rare case of *Mycobacterium marinum* infection of the hand presenting as a nodular skin lesion in a patient without clear risk factors. Skin lesions can progress to more invasive diseases if there is a delayed diagnosis. Accurate diagnosis of the infectious etiology is important, which leads to better patient outcomes.

4. Ethics statement

Approval from the ethical committee was not required due to the nature of this case report. Abiding by the Declaration of Helsinki, patient anonymity was guaranteed.

CRediT authorship contribution statement

Rahul Bollam: Conceptualization, Writing - original draft. **Tung**

Phan: Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

We thank the staff of the UPMC clinical microbiology laboratory for help with initial isolation and characterization of the isolate.

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