

## Case Report

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# Nontuberculous mycobacteria: Trick or treat – A case of *Mycobacterium lentiflavum*

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### Abstract

*Mycobacterium lentiflavum* is a relatively rare cause of infection. Cases of human diseases have been reported. Most of the patients are immunocompromised. Here, we present an immunocompetent patient with pulmonary disease. The patient has come with chronic cough and hemoptysis. On computed thoracic tomography, there were bilateral cavitating centriacinar nodules, bronchiectasis, and tree-in-bud pattern. Microbiological analysis of bronchoalveolar lavage fluid grew *M. lentiflavum*. Her symptoms are relieved with ethambutol, clarithromycin, and rifabutin. Nontuberculous mycobacteria are an emerging problem worldwide. Necessity of treatment depends on the patient.

### Keywords:

Immunocompetent, *Mycobacterium lentiflavum*, nontuberculous mycobacteria, multiple sclerosis

## Introduction

*Mycobacterium lentiflavum* is a recently described slow-growing nontuberculous mycobacterial species. It was first identified as a distinct strain in 1996 by Springer *et al.*<sup>[1]</sup> *M. lentiflavum* is a Gram-positive bacterium, slowly growing yellow tiny colonies at 22°C–37°C in 3–4 weeks. Because of similarity to *Mycobacterium simiae* on mycolic acid and fatty acid chromatography patterns and to *Mycobacterium avium complex* (MAC) on biochemical characteristics, genetic analysis is essential for proper identification.<sup>[1]</sup>

Several cases of *M. lentiflavum* infections have been seen in immunocompromised hosts, but some in immunocompetent, as well. Neck lymphadenitis in children is the most frequent

pathology due to this organism in literature, but there are disseminated infections, pleural effusions, and ascites as well.<sup>[2-4]</sup>

Talking about nontuberculous mycobacteria (NTM), it is hard to say if it is an infectious agent or not. These bacteria have been known since the 1950s.<sup>[5]</sup> There is still ongoing discussion about their infectious potentials and necessity of treatment. We present a case with *M. lentiflavum* who needed treatment.

## Case Report

A 59-year-old female patient was admitted to the pulmonary clinic with fatigue, cough, and hemoptysis for 2 months. In her medical history, she underwent a total abdominal hysterectomy with bilateral salpingo-oophorectomy operation for benign causes. She has been diagnosed with

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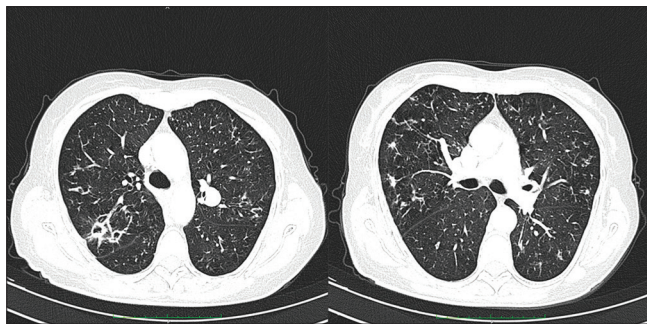


Figure 1: Thoracic computed tomography images at the time of diagnosis

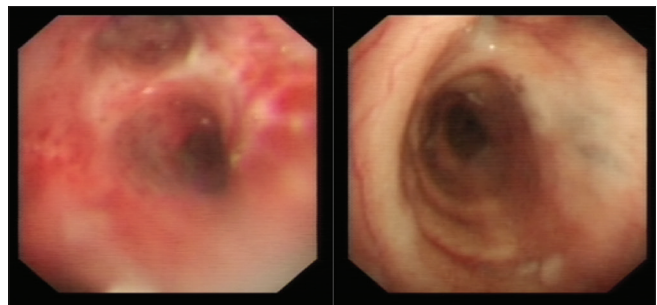


Figure 2: Fiber-optic bronchoscopic images at the time of diagnosis

multiple sclerosis (MS) in remission, and to conserve her muscle strength, she went to a public swimming pool three times a week. On auscultation, medium crackles were found on the left lung. Bilateral increased opacities were shown on chest X-ray. Respiratory function test was normal. On thoracic computed tomography (CT), there were bilateral cavitating centriacinar nodules, bronchiectasis, and tree-in-bud pattern [Figure 1]. As she could not provide sputum, fiber-optic bronchoscopy was performed [Figure 2]. Bronchoalveolar lavage fluid (BALF) sampling, bronchial brushing, and transbronchial biopsy were performed. Cytological and pathological examination of the specimens showed inflammation but no malignancy. BALF specimen was tested for acid-fast bacilli (AFB) and cultured after being processed by NaOH-NALC in National Tuberculosis Reference Laboratory. Ehrlich Ziehl-Neelsen method was used for AFB microscopy, which was positive. The specimen was cultured on both Löwenstein-Jensen solid medium and BACTEC MGIT 960 (Becton Dickinson, Sparks, Maryland, USA) liquid culture system. The strain growing in BACTEC MGIT 960 system was differentiated in terms of *Mycobacterium tuberculosis* complex and NTM by BD MGIT TBc Identification immunochromatographic assay (Becton Dickinson, Sparks, Maryland, USA), which was negative, suggesting that the strain could be NTM. *M. lentiflavum* was identified by GenoType Mycobacterium CM/AS kit (Ver 1.0) (HAIN Lifescience). Drug susceptibility of *M. lentiflavum* was studied by SLOMYCO-SENSITITRE® Broth Microdilution (Trek Diagnostic Systems Limited, UK) used for slowly growing mycobacteria. *M. lentiflavum* strain was susceptible to amikacin, clarithromycin, moxifloxacin, and rifabutin, while it was resistant to ciprofloxacin, ethambutol, linezolid, and rifampin.

As the patient was symptomatic for cough and hemoptysis, along with positive findings on CT, antimicrobial therapy (ethambutol 1000 mg/day, clarithromycin 1000 mg/day, and rifabutin 300 mg/day) was initiated and lasted for 1 year. Her symptoms were alleviated by therapy without any side effects. She has been free of symptoms for 2 years.

## Discussion

Disease caused by NTM is common in immunocompromised patients, the most common of which is MAC in the USA.<sup>[5]</sup> Ford *et al.* showed that while 52.1% isolated NTM are MAC in Washington, only 1.8% are *M. lentiflavum*.<sup>[6]</sup> *M. lentiflavum* infections are seen in especially industrialized countries.<sup>[5]</sup> Cases of human diseases have been reported, including several pulmonary diseases, cervical lymphadenitis, liver abscess, and disseminated infection.<sup>[7]</sup> Disseminated infections were seen in immunocompromised patients, frequently in HIV-positive cases.<sup>[8]</sup> The present patient who had been diagnosed with MS did not use any kind of medication for this disease, which could cause immunosuppression. She did not have any evidence of immunosuppression; however, she developed a symptomatic NTM infection by *M. lentiflavum*. To understand the nature of the *M. lentiflavum* infection in immunocompetent patients, Yagi *et al.* reviewed data of 16 patients.<sup>[9]</sup> Of 16 patients, 11 were female and 15 had bronchiectatic/nodular pattern on CT like our case. In literature, some immunocompetent patients with structural lung diseases such as bronchiectasis (both cystic fibrosis (CF) and non-CF) or risk factors such as smoking and mine working have been reported.<sup>[3,10]</sup> However, our patient had none of these risk factors.

As NTM are frequently found in soil and water, there are high isolation rates for NTM worldwide.<sup>[11]</sup> Humans are probably infected by environmental bacteria. Swimming pools may be a source for NTM as mycobacteria are quite resistant to ammonium compounds. The present patient used to visit a public swimming pool very often. However, as a limitation of this report, we have not taken any sample from the pool water to culture for NTM.

NTM isolation from patients is a matter of debate whether it is a colonization or causative agent for infection. Only one sputum culture positivity for NTM is not adequate for disease diagnosis, but repeated sampling and culture testing are recommended. However, BALF culture is more reliable than sputum culture. In literature, there is a case that is diagnosed with pleural tissue culture.<sup>[12]</sup>

A wide range of therapy has been used in *M lentiflavum* cases, but optimal therapy has not been established, yet. However, it should be kept in mind that generally, the patient will not respond to standard antituberculous therapy.<sup>[5]</sup> Current guidelines recommend a minimum of 12-month combination therapy, which includes macrolide, ethambutol, and rifamycin. Susceptibility testing is recommended.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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