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## Is *Mycobacterium shimoidei* an under-recognized cause of tuberculosis-like disease?

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### Article history

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Sir,

*Mycobacterium shimoidei* is a non-tuberculous mycobacterium (NTM) that was first described in 1975 by Tsukamura *et al.* [1], when it was isolated in a respiratory infection of a Japanese patient. However, it did not gain species status until 1982. As most NTM, it is an opportunistic pathogen that can be found ubiquitously in the environment [2]. Its epidemiology and current burden disease are difficult to determine since NTM reporting is not mandatory in most countries.

A 45-year-old Spanish male suffering thrombocytosis ( $568 \times 10^3/\mu\text{L}$ ) and lymphocytosis ( $5,03 \times 10^3/\mu\text{L}$ ) was admitted to the hospital. The patient has been suffering from a persistent cough with expectoration for the last year, accompanied by nocturnal sweating and a 10-kg weight loss in the last 3 months. He did not suffer from dyspnea.

After an haematologic disease was ruled out, further tests were performed. He tested negative for HIV, HAV, HBV, HCV, HDV, toxoplasmosis and Herpesvirus; IgG was positive for CMV, Rubella and VEB. The TC-Body showed cavitated lesions in both apical regions of the lungs, linked to bilateral pulmonary nodules that suggested endobronchial dissemination. On the apical-posterior segment of the upper left lobe, the lesion had thickened walls creating a hydro-aerial level.

As clinical background, he suffered a spontaneous pneumothorax as a child and was a smoker of 28 packets of cigarettes per year. He denied having any contact with a suspected or confirmed case of tuberculosis and he had not received the bacilli Calmette-Guérin vaccine. The tuberculin test returned negative.

Four sputum samples obtained in consecutive days were cultivated in Lowenstein-Jensen (BBL™ Lowenstein-Jensen Me-

dium Slant) and MGIT (BBL™ MGIT™ 7mL) mediums. Although the four auramine-based stained bacilloscopies were negative, MGIT was positive for the four samples respectively in their 18<sup>th</sup>, 20<sup>th</sup>, 32<sup>nd</sup> and 38<sup>th</sup> day of incubation.

An immunochromatography for detection of *Mycobacterium tuberculosis* complex (BD MGIT™ TBc Identification Test) and a PCR for *Mycobacterium tuberculosis* (Xpert® MTB/RIF - Cepheid®) were performed in two of the sputums - both returned negative.

Therefore, suspicion fell on an atypical mycobacterium. *Mycobacterium shimoidei* was identified in the four samples with GenoType Mycobacterium AS (HAIN LifeScience GmbH, Nehren, Germany). This identification was confirmed by matrix-assisted laser desorption ionization-time of flight mass spectrometry (Bruker® Biotyper) with a score of 1.89. Susceptibility was performed at the Spanish National Microbiology Centre: the isolate was susceptible to capreomycin, ethambutol, ethionamide and kanamycin, and resistant to rifampicin, isoniazid, pyrazinamide and streptomycin.

The patient received ribabutin 150mg 2 tablets/24 h, ethambutol 400 mg 4 tablets/24 h and clarithromycin 500mg/12h and was discharged. Considering he was in danger of social exclusion due to the lack of financial resources, it was decided to apply the Directed Observed Treatment (DOT) of the Red Cross.

One month later, he had gained weight (7 kg) and the radiological images were remarkably better. He did not mention any significant secondary effects due to the medication. However, in all the three control sputum samples collected, *M. shimoidei* grew again.

In the day 60 of treatment, for the first time he did not show any symptoms and the blood test was normal. Another three sputum samples were collected and, 40 days later, they returned sterile. Treatment continued with DOT.

Clinical improvement continued throughout the following check-ups. Treatment was finally suspended after 17 months, one year since the first negative cultures for *M. shimoidei*.

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The lung images kept becoming better and the blood test results were in normal range. The patient went in his +30-day post-treatment to a final check-up. Despite the thorax x-ray still showed lingering lesions on the upper left lobe and the lingula, likely associated to the pneumothorax and the mycobacteriosis, the image had improved. Clinically, he showed no symptoms at all.

Although rarely reported, *M. shimoidei* has been described worldwide. It is known to produce tuberculosis-like symptoms, including fever, productive cough and weight loss [3]. Reports also declare lung cavitations as the most common radiographic finding [4]. It does not require an immunocompromised status, but it usually affects people with pre-existing lung diseases [5]. Treatment usually relies in *in vitro* susceptibilities and in previous experience: a 6-month regimen with ethambutol, rifabutin and clarithromycin has been proven effective [3].

Here we describe a successfully treated case of an immunocompetent patient that suffered with a tuberculosis-like disease. To our knowledge, this is the first report of *M. shimoidei* in Spain. NTM as causative agents of infections may be underrecognized and sometimes misidentified, but modern improvements in diagnostic techniques is leading to an increase in detections. In this line, performing molecular methods is fundamental for its correct identification. In cases with these clinical features and in absence of tuberculosis, we should always consider rare NTM in the differential diagnosis, especially due to their resistance to antimycobacterial treatment. Nevertheless, further studies should be performed to strengthen our knowledge of *M. shimoidei* and its repercussion in infection.

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## CONFLICT OF INTEREST

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