



NONTUBERCULOUS TUBERCULOSIS CAUSED BY *MYCOBACTERIUM GORDONAE* - CLINICAL CASE REPORT

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ABSTRACT:

Background: *Mycobacterium gordonae* is a slow growing mycobacterium usually found in soil, tap water, and as laboratory contaminant. It is occasionally implicated in different infections in immunosuppressed patients. In contrast, there have been few case reports of active infection in immunocompetent individuals.

Case Description: We report a case of a 46-old immunocompetent patient with long-term cough and poor expectoration. A computed tomography of the chest revealed punctiform lesions and fibrosis formation in the upper right lobe. It did not show any infiltrate in lung parenchyma. *Mycobacterium gordonae* was definitively diagnosed by genetic method. After antituberculosis treatment the toxic infectious syndrome was overcome.

Conclusion: *Mycobacterium gordonae* is reported to cause clinically significant nontuberculosis infection in both immunocompetent and immunosuppressed individuals.

Mycobacterium gordonae is hardly diagnosed with traditional laboratory methods, but the latest molecular techniques allow successful isolation and identification of slow growing *Mycobacterium gordonae*.

Keywords: Lung diseases *Mycobacterium gordonae*, Nontuberculous mycobacteria

INTRODUCTION

Nontuberculous mycobacteria (NTM) are microorganisms found worldwide [1] in variety of environmental reservoirs. They are opportunistic pathogens, and several species are associated with human disease [2]. Ingestion with contaminated animal products and natural water sources represents the most common way of infection. Unlike tuberculosis (TB), human-to-human transmission has not been demonstrated in cases of NTM (Penn et al. 2011). The isolation of NTM and diagnosis of clinical diseases increase due to the availability of precise diagnostics and the growing number of persons at risk for NTM including immunocompromised hosts and elderly adults [3]. NTM are an important cause of morbidity and mortality, often in the form of progressive lung disease [2]. Other manifestations include diseases of lymphatic system, skin and soft tissue infection [4]. Pulmonary disease due to NTM typically occurs in patients with impaired cellular immunity or chronic lung disease. Signs and symptoms of NTM

pulmonary disease are variable and nonspecific: nearly all patients have chronic cough, sputum production, fatigue [5], and other symptoms, such as hemoptysis, dyspnea, malaise, fever, chest pain, and weight loss. Radiographic features of NTM lung disease are primarily fibro-cavitary, characterized by nodules and bronchiectasis. However, these are not sufficient to exclude a diagnosis of tuberculosis [6].

More than 100 species of atypical mycobacteria have been described as causing human disease [7] including MAC (*Mycobacterium avium* complex), *M. kansasii*, *M. fortuitum*, *M. chelonae*, *M. abscessus*, *M. gordonae*, *M. terrae*, *M. leprae*, *M. szulgae*, *M. ulcerans*, *M. marinum*, and *M. scrofulaceum*. Classification of atypical mycobacteria usually relies on Runyon criteria. The four groups, distinguished by *in vitro* growth characteristics on agar plates, include photochromogens, scotochromogens, nonchromogens, and rapid growers. (Gentry 1996).

Mycobacterium gordonae (*M. gordonae*) is an acid- and alcohol-fast bacillus belonging to the Runyon group II of scotochromogens mycobacteria [8] [9]. It is ubiquitous and commonly isolated from natural tap water [10], soil and non-pasteurized fresh milk [11] [12]. *M. gordonae* infection occurs in immunocompromised patients, including those with HIV infection [13] [14], those with malignant tumors, and organ transplant recipients [15]. However, *M. gordonae* infection develops occasionally in patients with normal immune function [16]. The preferred infection sites are lower respiratory tract, skin, soft tissues, cornea, synovial tissue, meninges, prosthetic heart valve, liver, peritoneum and rarely kidney [17], (Murata et al. 2014)

CASE REPORT

A 46-year-old male with unknown medical history presented to the hospital with one month history of coughing and poor expectoration. He had a normal and well-preserved appetite. The patient had not reported sweats and fever. A chest X-ray was performed because of persistent cough and the patient was advised for hospital treatment. On admission, he was alert and in good condition. His vital signs were stable – blood pressure was 120/80 mm Hg and pulse rate was 72 BPM. Otherwise the remainder of his examination was unremarkable. Detailed laboratory test results before and after hospitalization are shown in table 1.

Table 1. Patient's blood test before and after hospitalization

Blood-test	Result of Blood-test analysis conducted in primary care	Result of Blood-test analysis conducted in hospital
ESR	4mm	8 mm
Hb	159	146
RBC	5,80	4,73
Hct	0,474	0,436
WBC	6,10	7,0
Segm	0,61	
Eos	0,02	
Ly	0,29	
Mo	0,08	
Gluc	6,81	5,98
Urea	6,76	6,33
Chol	6,56	
Bil	11,4	4,4
AST	47,4	26,9
ALT	78,7	66,3
ALP		63,3
GGT		51,4
Cr	65,8	68,5
Total Pr	72,4	69,4

Computed tomography (CT) scan of the chest and abdomen did not indicate ascites and pleural effusions. It showed lesions of up to 4 mm in the right upper lung field and fibrous strands in the vicinity, without infiltration in lung parenchyma. CT showed presence of adjacent pleural adhesions. There were no enlarged lymph nodules in the mediastinum.

Sputum smears were negative for acid fast bacilli (AFB) and PPD skin test was positive (10 mm) with bullae formation. Anti-HIV antibodies were absent in the patient's serum.

M. gordonae was diagnosed by Geno Type Mycobacterium CM/AS (Hain Lifescience) and the positive diagnosis of pulmonary nontuberculous mycobacterial infection was made. Treatment with tubocin (rifampicin), isonid (isoniazid), pyrazinamide, ethambutol, Vit. A and Vit. B6 was immediately started. During the course of treatment, the symptoms of patient improved and he left hospital after two months. Further urine and sputum cultures were negative for mycobacteria.

DISCUSSION

In the last years, *M. gordonae* infection has often been reported in immunocompromised patients: HIV in-

fect, suffering from cancers or organ recipients. However, *M. gordonae* infection is also occasionally observed in patients with normal immune function [16], [18]. Infection involving the peritoneum, soft tissue, cornea, genitourinary system and disseminated disease has also been described but pulmonary infection is the most common site of symptomatic disease.

To date, there is not effective and definitive treatment for *M. gordonae* infection. According to an American Thoracic Society/Infectious Diseases Society of America statement, ethambutol, rifabutin, clarithromycin, linezolid, and new quinolones are active *in vitro* as antibiotics against *M. gordonae*, but sufficient *in vivo* data still lack. Our patient was successfully treated with standard tuberculosis medication and his clinical manifestation was improved.

CONCLUSION

Non-tuberculous mycobacterial infections are considered to be rare, maybe as a result of frequent misdiagnosis and their difficult and expensive phenotypic determination. The improved diagnostic tools, such as PCR and hybridization molecular techniques (performed for the moment only in reference laboratories) will lead to increased number of registered *Mycobacterium gordonae* infection cases.

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