



A PULMONARY INFECTION CAUSED BY *MYCOBACTERIUM PEREGRINUM* – A CASE REPORT

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ABSTRACT

Mycobacterium peregrinum is a member of the group of rapidly growing Nontuberculous Mycobacteria (NTM). It can be found in high frequency in natural and laboratory environments and is considered to be uncommon rare pathogen for both immunocompetent and immunosuppressed individuals. Currently, pulmonary infections caused by *Mycobacterium peregrinum* are unusual and diagnosed only in limited number of cases.

Here, we present a clinical case of elderly man (72 years) with 1 month history of non-specific respiratory symptomatic. The patient was without underlying immunosuppressive condition or lung disease. Chest X-ray demonstrated persistent pleural effusion, opacities and cavitations in the right lobe. One of the sputum cultures grew a rapidly growing mycobacterium and the isolated strain was found to be *Mycobacterium peregrinum* as identified by molecular genetic detection (PCR and DNA strip technology).

To our knowledge, this is the third case in the world to report *Mycobacterium peregrinum* as a possible causative agent of pulmonary infection.

Keywords: *Mycobacterium peregrinum*, Nontuberculous mycobacteria (NTM), Pulmonary infection

INTRODUCTION

Mycobacterium peregrinum is a species in Family *Mycobacteriaceae*, part of a group of more than 125 mycobacteria known as Nontuberculous Mycobacteria (NTM) [1]. It taxonomically belongs to the nonpigmented, rapidly growing *Mycobacterium fortuitum* clade [2]. *M. peregrinum* is a wide-spread environmental microorganism, common isolate from a broad spectrum of natural habitats, such as water [3-5] and animal products [6, 7]. Numerous clinically non-significant identifications in mycobacterial laboratories assign it as frequent contaminant of clinical devices and specimens [8].

During the last two decades, with the continuous expansion of the number of individuals with underlying immunodeficiency, clinically significant isolates have started to appear and *M. peregrinum* turned to be more and more relevant in severe infections in immunocompromised patients. Concomitantly with its increasing role as opportunistic patho-

gen, sporadic isolations in immunocompetent persons have also been reported. The diseases caused by this species range from skin and soft tissue infections to pulmonary infections, artificial material- and surgical site-related infections and disseminated disease.

Unfortunately, systematic reviews for clinical role of *M. peregrinum* in different types of infections are not available. To date, only a few clinical cases and several retrospective reports presenting isolation frequency of *M. peregrinum* among other NTM in mycobacterial laboratories and which do not distinguish between clinically significant and contaminant/normal strains can be found in literature. It is impossible to determine the current prevalence as well the risk which *M. peregrinum* poses in clinical practice.

Here, we present a rare clinical case of pulmonary infection in immunocompetent elderly person, whose causative agent was found to be *Mycobacterium peregrinum*.

Clinical case

A 72-year-old man visited a general practitioner in May 2012 complaining of discomfort and occasional shooting pain in the right lower chest with one month history. His appetite as well as his weight was preserved; night sweats, fever or productive cough were not reported. The patient denied any contact with TB infected people or contributory family history. He declared past coronary artery disease, hypertension and thromboangiitis obliterans.

Laboratory findings were as follows: erythrocyte sedimentation rate 18 mm/h; haemoglobin 152 g/L; white blood cell count $7,7 \times 10^9/L$; hematocrit 45%; blood glucose level 4,53 mmol/L; urea 5,4 mg/dL; cholesterol 3,60 mmol/L; bilirubine 12,9 $\mu\text{mol/L}$; ASAT 25,9 IU/L; ALAT 17,6 IU/L, total serum protein 72,4 g/L and creatine 82,3 $\mu\text{mol/L}$.

The patient's chest radiograph revealed persistent pleural effusion in lower right lobe, extended to 3 - 4 rib's area and poorly defined linear and patchy opacities in the upper right lobe. The additional computed tomography scanning displayed two irregular cavitations with diameter of 10 - 12 mm in the upper right lobe. The imaging of the left lobe was normal.

After these findings, the patient was referred and admitted to the Specialized Hospital for Active Treatment of Pneumo-phthizilogic Diseases on 11. 06. 2012. On admis-

sion, he was in good general condition – normal blood test results and vital signs (heart rate – 80 bpm and arterial pressure – 160/100 mmHg). On physical examination, the patient showed no respiratory movements in the right chest and weak to missing vesicular breathing. Tuberculin skin test was measured to be 11 mm. Sputum smears (4 in total) were all negative for acid-fast bacteria and cultures were positive only once. The positive culture was sent to the National Referent Laboratory of Tuberculosis for further evaluation, where *Mycobacterium peregrinum* was finally identified by Geno Type Mycobacterium CM/AS test system (Hain Lifescience). Immediately after the admission, an empirical treatment with rifampicin (300 mg/day), isoniazid (100 mg/day), pyrazinamide (500 mg/day) and ethambutol (250 mg/day) was started. The lab identification found monoresistance of the isolated strain to isoniazid and this medication was omitted from further treatment protocol. After three months of hospital treatment the symptoms of the patient improved. The control radiograph showed partial aspiration of the effusion in the right lobe, formation of pleural thickening and compensating emphysema in the left lobe. Sputum cultures were negative for mycobacteria and he was discharged from the hospital and referred for additional home treatment.

DISCUSSION

During the last decades, the number of non-tuberculous mycobacterioses increasing all around the world and rapidly-growing NTM are gaining more and more clinical importance especially in elderly and immunocompromised patients. Among them, *M. peregrinum* is rarely reported to be implicated in human pathology. In the current work, we described an unusual pulmonary infection in healthy, elderly person. The radiographic imaging revealed cavitary opacities in the right lung and the laboratory isolation protocols showed presence of rapidly-growing non-tuberculous mycobacterial strain. This one was found to belong to *M. peregrinum* species.

To our knowledge, there are only 15 case reports of *M. peregrinum* infection described in the literature – 5 in immunocompromised and 10 in immunocompetent patients. As most of the other NTM, this species mainly causes skin and soft tissue infections [9 - 13] or surgical and artificial device-related infections [14 - 18]; bacteremia and abscesses could be detected mostly in patients with underlying immunodeficiency [19 - 21].

In addition to the case described in this work, only two other pulmonary infection reports have been previously published [22, 23] – one in patient with significant immunosuppression due to polymyositis treated with infliximab and the second one - in young, healthy individual. Our patient was 72-year-old, but healthy man without any underlying disease. This diversity in the profiles of patients may indicate different pathogenicity of related strains. Unfortunately, the limited number of cases does not allow any definitive conclusion on clinical significance of *M. peregrinum*.

It is also difficult to estimate the actual prevalence of *M. peregrinum* infections among patients suspicious for lung tuberculosis or mycobacteriosis. Brown-Elliott & Wallace consider all type of *M. peregrinum* infections to account for only 1 to 2% of sporadic community-acquired or health care-associated infections due to rapidly-growing NTM, but do not estimate the incidence of pulmonary infections [2]. In children investigated for pulmonary tuberculosis from a rural Ugandan community the incidence of *M. peregrinum* was found to be 1.6% [24], in a regional tuberculosis laboratory in Brazil - 2,1% of all tested sputum samples [25], in respiratory specimens from patients in Seoul National University Hospital - 2,4% [26], in HIV-negative patients with pulmonary disease in Lisbon - 5.2% [27]. Unfortunately, most of these studies do not discuss the clinical significance of their findings, up to date it is unclear whether *M. peregrinum* is really implicated in pulmonary pathology or is only a contaminant present in respiratory specimens or laboratory devices. In this context a limitation of the present study should be clearly stated - only one of the sputum cultures of our patient was positive, while the criteria established by the American Thoracic Society [28] needed at least two positive sputum cultures for diagnosis of non-tuberculous mycobacteriosis. However, this case is not unusual for *M. peregrinum* and other NTM - Kim et al. [26] also reported that in most of their patients (94,1%) NTM were isolated only once. In addition, the undertaken antimycobacterial treatment was efficient against the causative agent and the patient has successfully recovered from the disease.

Because NTM are wide-spread environmental bacteria, identifying the proper pulmonary disease may be challenging. There is not enough data for their frequency in clinical practice, as they are not subject of obligatory registration and reporting. But the increasing number of shared case reports will expand their clinical consideration and importance.

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Please cite this article as: Todorova TT, Kaludova V, Tsankova G, Ermenlieva N. A pulmonary infection caused by *Mycobacterium peregrinum* – a case report. *J of IMAB*. 2015 Oct-Dec;21(4):1000-1002. DOI: <http://dx.doi.org/10.5272/jimab.2015214.1000>

Received: 07/10/2015; Published online: 18/12/2015

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