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Case Report

Mycobacterium celatum pulmonary infection

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INTRODUCTION

Mycobacterium celatum is a nonphotochromogenic mycobacterial species, phenotypically similar to *M. avium* and *M. xenopi*, described for the first time less than a decade ago.[1] Several reports exist in the literature establishing this organism as a convincing pathogen among Human Immunodeficiency Virus (HIV) seropositive patients.[2-9] However, there is little evidence of its pathogenicity among individuals whose immune function is not profoundly impaired. We describe an episode of pulmonary infection with *M. celatum* in a patient whose clinical syndrome was compatible with a diagnosis of mycobacterial disease in whom there was no evidence of severe immune deficiency.

CASE REPORT

A 79-year-old man presented to hospital complaining of increasing dyspnoea over the preceding two weeks accompanied by drenching night sweats, general malaise and approximately 10kg weight loss during the preceding twelve weeks. He reported a prior history of tuberculosis affecting a cervical lymph node which had been resected 30 years previously. He also suffered from chronic obstructive pulmonary disease (COPD) having smoked 40 cigarettes per day for 60 years. His medications were oral salbutamol, inhaled salbutamol and inhaled beclomethasone.

He was found to be pyrexial on admission and continued to have fevers for seven days. Oropharyngeal mucocutaneous candidiasis was present. There were no abnormal findings on examination of the respiratory, nor any other, system. Analysis of peripheral blood revealed a leucocytosis with predominant neutrophilia. On the chest radiograph there was evidence of acute patchy consolidation with pleural thickening in the upper lobe of the right lung; there was also minor patchy consolidation affecting the upper lobe of the left lung. (Figure)

Initial empiric therapy was with intravenous coamoxiclav and clarithromycin for six days. Sputum direct microscopy findings of acid-fast

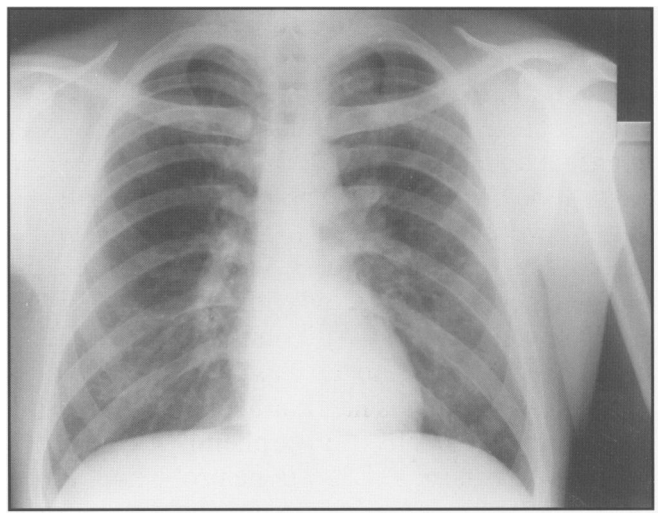

Fig. Chest Radiograph

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bacilli (AFB) resulted in a change to the patient's empiric therapy; isoniazid, rifampicin, pyrazinamide and ethambutol were introduced. The fever settled after 48-hours with later resolution of the leucocytosis following ten days of this regimen. When the identity of the isolate and its antimicrobial sensitivities became available therapy was changed to rifampicin, ethambutol and clarithromycin. This patient's symptoms of sweats and malaise have improved since this therapy was introduced; however he remains dyspnoeic as a result of continuing COPD.

MICROBIOLOGICAL INVESTIGATIONS

Three sets of blood cultures, processed using the BacT/Alert (Organon Teknica Corporation, Durham, NC, USA) system, were negative with the exception of a nonsignificant isolate of *Propionibacterium sp.* Five specimens of sputum were processed routinely for typical bacterial pathogens yielding only *Candida sp.* on two occasions in keeping with the clinical finding of mucocutaneous candidiasis. Atypical bacterial and viral respiratory pathogen serology was negative and urine culture failed to produce any pathogen. Eight specimens of sputum from the patient were handled by the mycobacteriology laboratory; although AFB were visualised on direct microscopy of only three of these, *M. celatum* was cultured in all instances. The search for an alternative pathogen was conducted without success. The isolates had not been identifiable to species level either by routine phenotypic methods or using commercial DNA gene probe kits for *M. tuberculosis* and M. *avium intracellulare.* Molecular identification was performed by PCR amplification and sequencing of a region of the 16S rRNA gene, using a previously described method,[10] with modification of the forward primer to PSL, as described by Campbell *et al.*[11] Upon anaylsis using BLAST alignment software (http://www.blast.genome.ad.jp/), the isolates were identified as *M. celatum* with 557/557 bases called (100% homology). This sequence has subsequently been deposited in GenBank with the Accession number AF433135.

DISCUSSION

M. celatum, first described in 1993,[1] is an established pathogen among seriously immunocompromised HIV-seropositive individuals [2-9] and belongs to the group of mycobacteria other than Tuberculosis (MOTT). Interestingly, its role in disease among other populations is less well described. The case we outline represents the first isolation of this organism in Northern Ireland and, of note, this patient had no markers of severe immune deficiency. Although HIV serology was not sought seropositivity, in the context of this man's risk profile, seems extremely unlikely.

It is accepted that the identification of *M. celatum* in routine practice is difficult since it is phenotypically similar to *M. avium* and *M. xenopi* [1-5] and, in addition, has been reported to cause false positive results with *M. tuberculosis* DNA-probe kits.[7, 12, 13] Correct identification is of importance since *M. celatum* is known to have low in-*vitro* susceptibilities to many antituberculous drugs [2, 3, 14] although the correlation between these and clinical outcome remains unclear. Furthermore, as evidence develops and therapeutic options increase, therapy for *M. celatum* infection may come to differ from therapy for other MOTT.

This report may serve to highlight that *M. celatum* can cause pulmonary infection in populations other than profoundly immunocompromised HIV-seropositive patients.

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