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A hoarse voice: atypical mycobacterial infection of the larynx

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Abstract

Myobacterium malmoense is a non-tuberculous mycobacterium that most commonly causes pulmonary infection, particularly in patients with underlying pulmonary disease or immunodeficiency. We describe a case of *Mycobacterium malmoense* infection of the larynx in a previously well middle-aged woman, which has previously not been reported. The case highlights the importance of considering atypical mycobacterial infection in the differential diagnosis of laryngeal lesions.

Key words: Larynx; *Mycobacterium*; Atypical Bacterial Forms

Introduction

Mycobacterium malmoense (*M malmoense*) is an environmental mycobacterium that rarely causes disease in humans. It is being reported in greater frequency.[1,2] The organism most commonly causes pulmonary infection, particularly in patients with pre-existing pulmonary disease and immunodeficiency.[3] The clinical picture often mimics pulmonary tuberculosis. The disease may rarely cause cervical lymphadenitis in children.[4,5] We present the first case of *Mycobacterium malmoense* infection of the larynx and provide a review of the literature.

Case report

In August 1998, a previously well 66-year-old retired female teacher presented with a hoarse voice of two months' duration. There was a past history of ulcerative colitis, not requiring medical treatment and asthma, for which she took steroid and bronchodilator inhalers. Clinically, there was no stridor, odynophagia nor cough. On examination, she was systemically well but was noted to be grossly dysphonic.

On inspection of the larynx there was irregularity of the posterior half of the right vocal fold. A microlaryngoscopy was performed and a cystic swelling of the same area biopsied. Post-operatively, her voice was unchanged.

Histology revealed granulomatous inflammation with small areas of caseous necrosis, surrounded by numerous histiocytes together with occasional Langerhans' type giant cells [Figure 1(a)]. Ziehl-Neelsen staining was positive [Figure 1(b)] whilst fungal stains were negative.

A histological diagnosis of tuberculous infection of the larynx was made. Chest X-ray was normal. Full blood count, C-reactive protein, complement and immunoglobulin estimation were within normal limits. A human immunodeficiency virus (HIV) test was not performed. Further investigations for tuberculosis, including induced sputum and early morning urine, were negative. A repeat laryngeal biopsy obtained tissue for mycobacterial culture with Ziehl-Neelsen staining revealing acid- and alcohol-fast bacilli. Anti-mycobacterial therapy with rifampicin, isoniazid, ethambutol and pyridoxine was commenced.

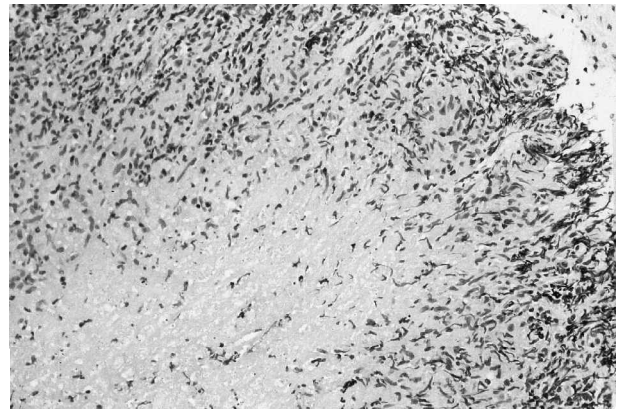

Fig. 1(a)
Histopathological features of right vocal fold lesion showing granulomatous inflammation and caseous necrosis (H & E; ×200).

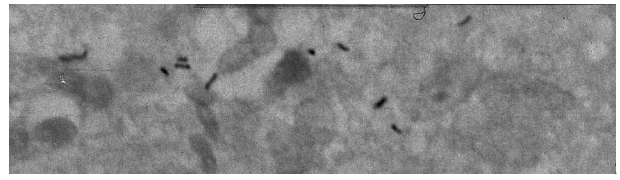

Fig. 1(b)
Ziehl-Neelsen stain demonstrating acid and alcohol-fast bacilli (H & E; ×1200)

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Culture from the laryngeal tissue and sputum were positive for *Mycobacterium malmoense* four months after the repeat biopsy and clarithromycin was added to her antimycobacterial therapy. The patient improved gradually and her voice returned to normal after four months. She received a 12-month course of therapy and 22 months after initial presentation remains well.

Discussion

Laryngeal tuberculosis is historically a well-described condition,[6,7] the clinical features of which may mimic laryngeal carcinoma or chronic laryngitis.[8] Laryngeal infection with *Mycobacterium malmoense* (*M malmoense*) has not been previously reported. The organism is a slowly growing non-chromogen environmental myco-bacterium that rarely causes disease in humans. *M malmoense* was first described by Schroder and Juhlin in 1977 in a report on taxonomic studies.[9] They reported four cases of pulmonary disease in patients from Malmo, Sweden.

M malmoense most commonly causes pulmonary disease which is clinically and radiologically indistinguishable from pulmonary tuberculosis.[10] It is most commonly encountered in the presence of underlying pulmonary disease or depressed immunity.[3,11] Cervical lymphadenitis due to *M malmoense* is rare and occurs almost exclusively in immunocompetent children.[1,4] Cases of disseminated infection and involvement of skin and bursae have been described in immunodeficient patients.[3,4]

The pathogenesis of *M malmoense* infection is not fully elucidated. Our understanding of non-tuberculous mycobacteria (NTM) is largely based on the more frequently-occurring *Mycobacterium avium complex* (MAC) infection. The major clinical settings for MAC disease in HIV negative patients is upper lobe cavitating pulmonary disease in middle-aged men with heavy alcohol and tobacco consumption and elderly non-smokers who have evidence of multiple nodular pulmonary infiltrates.[12] Other less-frequent clinical settings include disseminated disease in patients suffering from advanced acquired immune deficiency syndrome (AIDS) and rarely in non-HIV patients who have previously been treated with steroids.[13] It is known that cytokines, such as interleukin 1 play an important role in the inflammatory and immune responses. Mycobacterial infection is characterized by tissue hypersensitivity and cellular immunity. Corticosteroids suppress the production of cytokines from monocytes[14] so it may be surmised that in the case we present, the use of a steroid inhaler may have had a local immunosuppressive effect on the laryngeal tissues. However, there is no known association of *M malmoense* with a history of steroid therapy or ulcerative colitis.

In the case we present, an initial diagnosis of laryngeal mycobacterium tuberculosis was made on the basis of histological findings of granulomatous inflammation and acid- and alcohol-fast bacilli. However, culture of the laryngeal biopsy confirmed the diagnosis of *M malmoense* infection.

M malmoense is being reported in increasing numbers[1] although it is thought that this may in part be due to the increased use of more sensitive and specific laboratory isolation methods.[2] The finding of the organism in clinical samples may signify infection or simply reflect colonization.[2,11] In one series however, *M malmoense* was isolated in up to 92 per cent of patients who had evidence of pulmonary disease.[15] *M malmoense*, compared to *M tuberculosis*, requires prolonged incubation for up to eight to 12 weeks with modification of the routine mycobacterial culture conditions.[4,16] There is increasing interest in more rapid automated tests, such as the high performance liquid chromatography (HPLC) test which assesses the pattern of long-chain fatty acids that are found in different mycobacterial species.[2,12] The optimum treatment regime has not been definitively established. Clinical response to chemotherapy does not necessarily correlate with *in vitro* sensitivity, unlike *M tuberculosis*.[5] Treatment should include rifampicin and ethambutol[4,10] with the addition of clarithromycin.[17] Treatment for a duration of a minimum of nine to 12 months is recommended in order to prevent relapses.[1,10]

We report a case of *M malmoense* infection of the larynx. Mycobacterial infection should be considered in the differential diagnosis of a patient presenting with evidence of a laryngeal lesion. Culture of laryngeal biopsy material may be helpful in order to identify the species of non-tuberculous mycobacteria and therefore optimize chemotherapeutic intervention.

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