Mycobacterium Interjectum Isolated from an Immunocompetent Host with Lung Infection

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Abstract

Improved molecular diagnostic techniques have resulted in increased reporting of nontuberculous mycobacterial infections. A 40-year-old male immunocompetent individual presented with cough and fever of 2-week duration. His chest X-ray showed cavities in the left upper zone and fibrosis in the right upper zone. His sputum was positive for AFB on Ziehl–Neelsen staining and showed slow-growing mycobacteria in mycobacteria growth indicator tube. The isolate was identified as Mycobacterium interjectum using GenoType® Mycobacterium CM assay (Hain Lifescience, GmBH, Nehren, Germany). At the end of a year’s treatment, this first case from India has shown good progress.

Keywords: First report from India, immunocompetent individual, Mycobacterium interjectum, pulmonary infection, slow-growing mycobacteria

Introduction

Nontuberculous mycobacterial (NTM) infections are infrequently reported. They usually infect individuals who are immunocompromised and have extrapulmonary manifestation; pulmonary infections are rare and are associated with chronic lung diseases. Availability of molecular diagnostic techniques has improved the diagnosis of NTM in recent times.

Mycobacterium interjectum infection was first reported in a child with cervical lymph node involvement in 1993.[1] Till date, there are 19 cases of M. interjectum reported and none so far from India.

This is the first case of lung infection with M. interjectum being reported in an immunocompetent host from India.

Case Report

A 40-year-old male, nonsmoker, teetotaler, and working as an executive, attended our center with a history of cough and fever for a fortnight. He had successfully completed Category II treatment for pulmonary tuberculosis (TB) from our center in 2013. His sputum culture then, performed by mycobacteria growth indicator tube (MGIT) liquid culture, showed no growth. Before this episode, he had taken anti-TB treatment at various centers in 1996, 2003, 2006, and 2010 at Delhi and Mumbai. Each time, he responded successfully to first-line anti-TB medication.

In the current episode, his blood counts and sugar levels – both fasting and postprandial – were normal, and tests for human immunodeficiency virus (HIV) conducted after pretest counseling were nonreactive to HIV 1 and 2. Chest radiograph posterior-anterior view showed cavities in the left upper and middle zones and fibrosis on the right upper zone. His sputum smears were positive for acid-fast bacilli [Figure 1].

Because of his recurrent infections and the underlying cavitary lesions, there was a strong suspicion of atypical mycobacterial infection.[2] His sputum sent for liquid culture for Mycobacterium tuberculosis by MGIT showed no growth at the end of 6 weeks. At the same time, a sputum sample was also sent for NTM diagnosis using BACTEC MGIT 960 TB system by rapid detection and continuous monitoring using fluorescence method. Slow-growing NTM were identified at 7 weeks of incubation. GenoType® Mycobacterium

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CM – Line Probe Molecular ID NTM identified the isolate as *M. interjectum*. Antimicrobial susceptible testing could not be performed. A regimen consisting of rifampicin, ethambutol, and levofloxacin in weight-adjusted doses was initiated. At the end of 1 year, he has improved symptomatically, has negative smears, and has radiological improvement [Figure 2].

Although currently there is no respiratory disability, his lung perfusion scan performed with 3–5 mCi $^{99m}$Tc-macro aggregated albumin shows reduced lung volumes of around 85% and 15% in the left and right lung, respectively. Correspondingly, there is a marked reduction in the forced vital capacity (41% predicted) and forced expiratory volume (24% predicted).

The patient is proposed to be enlisted in a pulmonary rehabilitation program.

**DISCUSSION**

*M. interjectum* is a very poorly growing species, and its classification is based on unique base sequences in the 16S ribosomal RNA.[3] Infection with *M. interjectum* was first described by Springer *et al*. in 1993 in a child with cervical lymphadenitis.[1] Since then, only 19 cases have been described in world literature (9 in children aged 1–3 years and 10 in adults).

*M. interjectum* usually presents as lymphadenitis.[4,5] Only five adult cases of lung involvement are reported:[1-9] four in nonimmunocompromised individuals including one presenting as a new case[6] and one where the status was not described.[5] Four of these cases had cavitary lesions as in the case under report.

As per the American Thoracic Society guidelines,[10] clinical, radiological, and microbiologic criteria are equally important and have to be met to diagnose NTM lung disease. Microbiologic criteria include examination of three or more specimens for analysis. Although we met the clinical and radiological criteria of the guidelines, due to resource constraints, we could perform the sputum analysis only once as described.

It is known that the organism has variability in susceptibility to different drugs and treatment should be guided by drug-susceptibility testing (DST). Due to limited resources and infrequently available accredited laboratories which carry out DST for NTM in India, we could not do DST but initiated treatment in consultation with the microbiologist. The progress so far has been satisfactory except for the decreased respiratory functions which are known to occur in a majority of cases in India, post treatment completion.[11]

Our case had recurrent episodes of pulmonary TB which were investigated by sputum smears only and responded to first-line anti-TB treatment. Culture for *M. tuberculosis* was negative at a previous episode as also in the current one. In the present episode, the isolate was identified as *M. interjectum* using newer molecular technique.

**CONCLUSION**

This is the first case of cavitary pulmonary infection in an immunocompetent individual from India, where *M. interjectum* was isolated using molecular techniques.

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**Conflicts of interest**

There are no conflicts of interest.

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