Sir,

The diagnosis of pulmonary tuberculosis (PTB) is based on the microscopic detection of acid-fast bacilli (AFB) which cannot distinguish between nontuberculosis mycobacteria (NTM) and *Mycobacterium tuberculosis* (MTB). However, to initiate antimicrobial therapy, it is imperative that the causative agent is identified. In a high disease burden country like India also, clinicians rely on tuberculin skin testing, sputum microscopy, and chest radiography for confirmation of PTB, a practice that cannot distinguish tuberculosis (TB) from NTM lung disease.

We had two patients with a history of PTB and suspicion of multidrug-resistant (MDR)-TB with the simultaneous isolation of MDR-TB and NTM on real-time polymerase chain reaction (PCR). The first patient, a 47-year-old farmer came with a severe cough, dyspnea, fever with chills, and increasing weight loss. The patient was known the case of treatment failure smear positive PTB with chest X-ray (CXR) features of upper lobe infiltrates in both lungs. He was negative for HIV, and two sputum smears were positive for AFB. The line probe assay revealed an MTB isolate resistant to rifampin (RIF) and isoniazid (INH). A real-time PCR for TB/NTM revealed dual infection with MTB and NTM [Figure 1]. Mycobacteria Growth Indicator Tube (MGIT) culture was positive. The patient was started on RIF and INH plus macrolide and quinolone therapy with resolution of symptoms and clearing of lesions on CXR after 1 year. Patient, currently on treatment and periodic follow-up show no signs of relapse.

A 68-year-old male patient with progressive dyspnea and cough with expectoration of brown colored sputum for the past 1 year. Antibiotics were prescribed with no signs of improvement. A CXR showed a cavity in right middle lung field. The patient, a chronic smoker and a gardener were nonimmunocompromised. Laboratory parameters were normal except for a raised erythrocyte sedimentation rate and C-reactive protein levels. His sputum yielded a positive smear microscopy and a positive MGIT culture. Anti-TB therapy was started...

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*Mycobacterium tuberculosis* and nontuberculosis mycobacteria co-infection: Two cases from the sub-Himalayan region of North India in a year
NTM, once considered environmental pathogens, are increasingly being reported from cases of bronchiectasis, cystic fibrosis, PTB with cavitary disease and persons with deficient immunity with lung disease. Our patients had no overt immune compromising condition. These new smear-positive cases of PTB were diagnosed as nonresponders to standard anti-TB treatment. Both, permanent residents of Garhwal region involved in agriculture with no history of travel outside their areas of residence suggesting that the exposure to the organism might have been environmental most probably through long-term contact with soil or contaminated water supplies. These soil and natural open water sources are considered an important niche for human infections. The agricultural setting, in particular, have shown a high concentration of NTM in the environment as well in domesticated animals.

The diagnosis was made by carrying out PCR on bronchoalveolar lavage samples as per the American Thoracic Society (ATS) and Infectious Diseases Society of America (IDSA) criteria to differentiate casual NTM isolation from true pulmonary NTM disease. Cultures could not be carried out due to limitations of resources. As there are no confirmed guidelines on the drug combinations and duration of therapy in NTM and MDR-TB co-infections, we followed a combination of ATS and the IDSA for NTM and the WHO guidelines for MDR-TB treatment. Our patients responded well to the drug therapy with the clearing of lesions on chest CT scan and resolution of symptoms. Duration of therapy is also

![Amplification and melting curve analysis of real-time Multiplex PCR for Mycobacterium tuberculosis and nontuberculosis mycobacteria](image.png)

**Figure 1:** Amplification and melting curve analysis of real-time Multiplex PCR for *Mycobacterium tuberculosis* and nontuberculosis mycobacteria
poorly defined in literature for such cases. We treated the patients for 1 year with a periodic monthly follow-up.

Pulmonary disease attributable to NTM is on the rise. As NTM are ubiquitous organisms their mere isolation from pulmonary samples is insufficient evidence for the presence of NTM lung disease. Therefore, the diagnosis should rely on clinical, radiographic, and microbiological criteria. In conclusion, what needs to be focused is that PTB patients who are nonresponders to standard ATT regimen should be evaluated for NTM co-infection and standard therapy for NTM initiated at the earliest.

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Conflicts of interest
There are no conflicts of interest.

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