

Drug-Resistant Pulmonary Tuberculosis Mimicking Lung Malignancy

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Abstract

Pulmonary tuberculosis (TB) and lung malignancy can mimic each other in clinical presentation and sometimes in radiological imaging. Delayed or overdiagnosed of TB may cause a delay in treatment, unwanted adverse drug reactions, and increased morbidity. Here, we report an interesting case of conflict clinicoradiological presentation. In this case, the clinical features were consistent with infective etiology, while the radiological imaging favored lung malignancy. The final diagnosis of primary drug-resistant pulmonary TB was established based on GeneXpert in bronchial washing. The patient was put on treatment and follow-up under the national program. On follow-up, the patient showed clinical improvement in terms of symptoms resolution and weight gain. This case depicts the atypical presentation of drug-resistant TB and highlights the role of invasive procedures in clinicoradiological discordant cases of TB and malignancy.

Keywords: Bronchial washings, drug-resistant tuberculosis, lung mass

INTRODUCTION

Traditionally, pulmonary tuberculosis (TB) diagnosis is based on sputum microscopy and mycobacterial culture. Molecular methods are newer, quicker, and more accurate tests for diagnosis of TB with an additional advantage of drug sensitivity for the most potent antimycobacterial drugs, for example, rifampicin and isoniazid. Radiology may be helpful in the diagnosis of TB, but it should not be a stand-alone diagnostic test. Lower sensitivity and specificity (70%–80% and 50%–65%, respectively) and interobserver variation are the limiting factors of the chest radiograph in becoming a diagnostic tool for pulmonary TB. Chest radiography frequently leads to overdiagnosis of pulmonary TB.^[1-3] Here, we report an interesting case of primary drug-resistant pulmonary TB whose clinical presentation was consistent with pulmonary TB, but the radiological imaging favored malignancy. This case represents the importance of invasive procedures in case of conflict clinicoradiological presentation.

CASE REPORT

A 68-year-old male presented to us with chief complaints of anorexia and weight loss for 2 months. He had a dry cough and intermittent low-grade fever for 10 days. He also had a

history of two episodes of blood-tinged sputum in the last month. He had a smoking history of around 15 pack-years. He did not have comorbidities such as diabetes, hypertension, and old TB sequelae. His physical examination did not reveal any abnormality. His routine laboratory investigations were within normal limits except raised erythrocyte sedimentation rate and C-reactive protein (40 mm/h and 31.9 mg/dl, respectively). His severe acute respiratory syndrome-coronavirus-2 Reverse transcription polymerase chain reaction (RT-PCR) and HIV tests were negative.

He was subjected to chest radiograph, induced sputum analysis, computed tomography (CT), and positron emission tomography (PET). Chest radiograph showed signs of hyperinflation without any obvious parenchymal lesion [Figure 1]. Moreover, induced sputum was negative

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for Ziehl–Neelsen (ZN) stain, cartridge-based nucleic acid amplification test (CBNAAT), and cytopathology. The chest CT showed soft-tissue nodules with speculated margins in the right upper lobe. The size of the largest nodule was 32 mm × 16 mm [Figure 2]. These nodules showed hypermetabolism in the PET scan. The PET also revealed enlarged mediastinal, right supraclavicular, right and left lower paratracheal, paraaortic, subcarinal, and bilateral hilar lymph nodes. The largest (16.4 mm × 15.5 mm) lymph nodes were in the hilar region [Figure 3].

A provisional diagnosis of lung malignancy was made based on these imaging appearances. The histopathological examination from a nodule biopsy showed chronic inflammation with congestion. We performed bronchoscopy to obtain bronchoalveolar lavage (BAL) and endobronchial biopsy in case of any suspicious lesion. The bronchoscopic examination was unremarkable. The bronchial aspirate was negative for malignant cells and ZN stain. The CBNAAT of the bronchial aspirate confirmed the presence of mycobacterium with *rpoB* gene mutation. The final diagnosis of primary drug-resistant pulmonary TB was established. The patient was put on anti-TB treatment (ATT) under a national program. On follow-up, the patient shows a good clinical response in the resolution of symptoms, improved appetite, and weight gain.

DISCUSSION

Fever, productive cough, anorexia, weight loss, and sometimes hemoptysis are the typical clinical features of pulmonary TB, but dry cough or cough with minimal sputum is also common, especially in infiltrative and noncavitary lesions. Even 27% of pulmonary TB patients were asymptomatic in one study.^[4]

The typical TB lesions in the chest radiograph are parenchymal consolidation, cavitations, and acinonodular shadows. Although not specific, thick-walled multiple cavities (>3), cavities in more than two zones, and larger cavities (diameter >30 mm) indicate drug-resistant TB.^[5] Nodules in chest radiograph have a long list of differentials depending on the size and distribution of nodules. Larger nodules (more than 10 mm), spiculated margins, micro lobulations, and thick-walled cavitations with irregular margins usually favor malignant etiology.^[6-8] Radiological findings of TB and malignancy may overlap, especially if the lesions are nodular or cavitary. In a retrospective analysis, Rolston *et al.* studied the frequency and nature of infections mimicking lung cancer. The author found 1.3% incident infections among suspected lung malignancies in this study. Twenty-seven percent of these incident cases were found to have tubercular etiology. Their data indicate that pulmonary TB mimicking neoplasm is not a common scenario.^[4]

The role of PET in differentiating pulmonary TB from lung cancer is also limited. Tubercular lymphadenopathy and parenchymal nodules may also show intense 18-fluorodeoxyglucose uptake in PET. Invasive procedures such as bronchoscopy-guided biopsy, needle aspirate, and BAL may help differentiate central lung malignancy from pulmonary TB. CT-guided procedures



Figure 1: Chest radiograph PA view

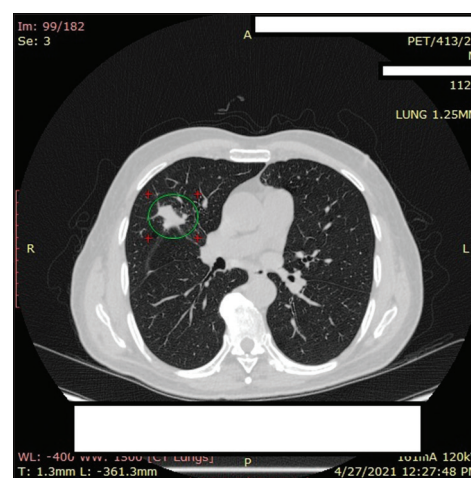


Figure 2: Computed tomography chest showing nodule with irregular margins

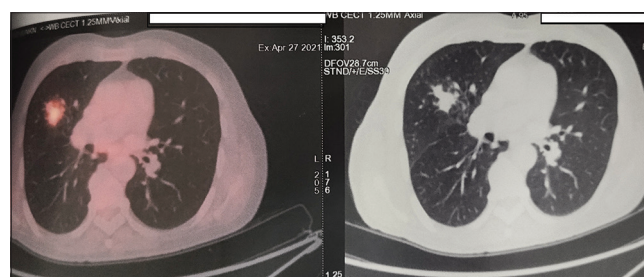


Figure 3: Positron emission tomography-computed tomography showing the hypermetabolic nodule with irregular margins

such as true-cut biopsy and needle aspiration may establish the diagnosis in case of peripheral lung nodule or mass.

A delayed, missed, or wrong diagnosis can cause delay in the treatment and thus create an obstacle in an effective TB control program. In developing countries like India, the reasons for diagnostic delay in TB are patients' ignorance, visiting nonformal health facilities as first health care, coexistence of chronic cough or other lung diseases, antibiotic treatment

before diagnosis, and starting ATT for suspicious opacities on chest radiograph without proper evaluation using appropriate investigation modalities.^[9] According to the national program, all clinicians should make every effort to get a microbiological diagnosis of TB. Still, availability and cost of tests and patient preferences are the limiting factors in the private sector.

The distinctness of this case was an atypical radiological presentation of primary drug-resistant pulmonary TB. Although TB can present with any lesion in a chest radiograph, mass lesions with spiculated margins were never described as suspected active TB lesions. Second, this case highlights the importance of invasive procedures such as lung biopsy and bronchoscopy in diagnosing clinicoradiological discordant cases. Finally, this case also emphasizes the importance of bronchial aspirate or BAL for diagnosing pulmonary TB in patients who are unable to expectorate or whose spontaneous and induced sputum are negative despite high clinical suspicion.

CONCLUSION

Clinicians should make every effort to establish a microbiological diagnosis in suspected TB patients, especially in clinicoradiological discordance.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Kumar N, Bhargava SK, Agrawal CS, George K, Karki P, Baral D. Chest radiographs and their reliability in the diagnosis of tuberculosis. *JNMA J Nepal Med Assoc* 2005;44:138-42.
2. Cohen R, Muzaffar S, Capellan J, Azar H, Chinikamwala M. The validity of classic symptoms and chest radiographic configuration in predicting pulmonary tuberculosis. *Chest* 1996;109:420-3.
3. Kebede W, Abebe G, Gudina EK, Kedir E, Tran TN, Van Rie A. The role of chest radiography in the diagnosis of bacteriologically confirmed pulmonary tuberculosis in hospitalised Xpert MTB/RIF-negative patients. *ERJ Open Res* 2021;7:00708-2020.
4. Rolston KV, Rodriguez S, Dholakia N, Whimbey E, Raad I. Pulmonary infections mimicking cancer: A retrospective, three-year review. *Support Care Cancer* 1997;5:90-3.
5. Chuchottaworn C, Thanachartwet V, Sangsayunh P, Than TZ, Sahassananda D, Surabotsophon M, *et al.* Risk factors for multidrug-resistant tuberculosis among patients with pulmonary tuberculosis at the central chest institute of Thailand. *PLoS One* 2015;10:e0139986.
6. Wang YX, Chung MJ, Skrahin A, Rosenthal A, Gabrielian A, Tartakovsky M. Radiological signs associated with pulmonary multi-drug resistant tuberculosis: An analysis of published evidences. *Quant Imaging Med Surg* 2018;8:161-73.
7. Horeweg N, van Rosmalen J, Heuvelmans MA, van der Aalst CM, Vliegenthart R, Scholten ET, *et al.* Lung cancer probability in patients with CT-detected pulmonary nodules: A prespecified analysis of data from the NELSON trial of low-dose CT screening. *Lancet Oncol* 2014;15:1332-41.
8. Callister ME, Baldwin DR, Akram AR, Barnard S, Cane P, Draffan J, *et al.* British thoracic society guidelines for the investigation and management of pulmonary nodules. *Thorax* 2015;70 Suppl 2:i1-54.
9. Paramasivam S, Thomas B, Chandran P, Thayyil J, George B, Sivakumar CP. Diagnostic delay and associated factors among patients with pulmonary tuberculosis in Kerala. *J Family Med Prim Care* 2017;6:643-8.