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Diagnostic Difficulty in Pseudotumoral Form of Pulmonary Tuberculosis: A New Case

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Abstract **Case Report**

The pseudotumoral form of tuberculosis is rare in healthy immunocompetent patients. This form can mimic benign and malignant tumors. The diagnosis is confirmed by bacteriological and/or different histological samples. In this specific case, the patient presented with cough, left chest pain, fatigue and fever. The chest computerized tomography (CT) scan revealed an inhomogeneous mass that initially appeared to be a primary tumor. However, further investigation was required to establish an accurate diagnosis. Histopathological examination of the biopsy samples obtained through bronchoscopy did not indicate any evidence of neoplasia. Bronchoalveolar lavage (BAL) was positive for Mycobacterium tuberculosis, and real-time PCR for detecting M. tuberculosis was positive. Two transparietal punctures were performed and histological analysis revealed nonspecific inflammation. Pulmonary TB was diagnosed and a therapeutic regimen was prescribed with good clinical, biological and radiological improvement. This case emphasizes the diagnostic challenges associated with the pseudotumoral form of tuberculosis. It highlights the importance of considering tuberculosis in the differential diagnosis, even when the radiographic images and clinical history suggest an alternative diagnosis, particularly in areas where tuberculosis is endemic.

Keywords: Tuberculosis, Pseudotumoral, Pulmonary tuberculosis, Lung carcinoma.

INTRODUCTION

Pulmonary tuberculosis encompasses various radiological and clinical manifestations, and one of its distinct presentations is known as mycobacterial pseudotumor. It predominantly affects immunosuppressed patients, including those with or without AIDS, and is exceptionally rare in immunocompetent individuals [1]. The pseudotumoral form of tuberculosis can mimic lung carcinoma in imaging studies or bronchoscopic examination, posing challenges in accurate diagnosis and potentially leading to unnecessary surgical resection [2, 3]. In this case, we present a unique occurrence of pulmonary tuberculosis in its pseudotumoral form in an immunocompetent male patient.

CASE PRESENTATION

The case is a 62-year-old male presented with fever, fatigue, weight loss, and respiratory symptoms including hemoptysis, cough, left chest pain, and shortness of breath. He has had the above symptoms for four months. He was a non-smoker and had never been treated for tuberculosis without suspicion of infectious tuberculosis.

Clinical examination found a patient eupneique, febrile (39°C). Examination for pleuropulmonary syndrome revealed compaction, which remained painless on palpation of the delicate coast. The rest of the physical examination was normal, and the lymphnodes were normal. A chest x-ray revealed heterogeneous, dense opacities with irregular contours in the left axilla (Fig. 1).

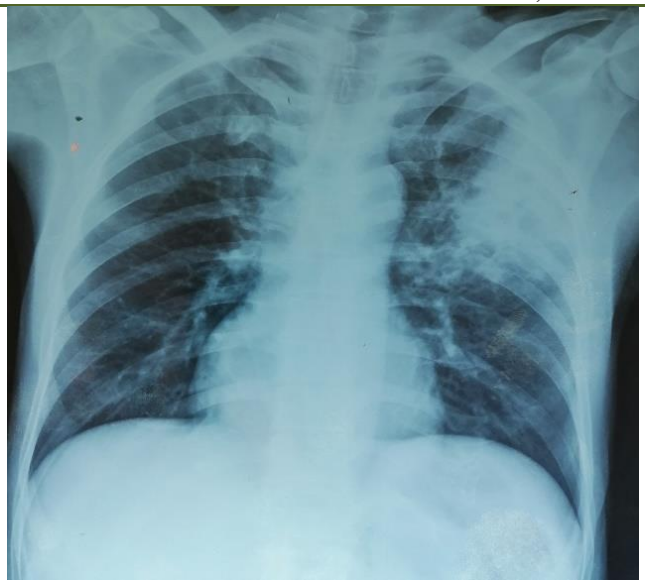

Fig. 1: Chest X-ray showed heterogeneous opacity

CT scan of the chest performed on the present patient revealed a single largest mass in the left upper lobe, with a maximum extent of 96 mm, presumed in contour, spontaneous isodense and heterogeneous enhancement after contrast injection, delineating areas of necrosis and cavitation, with pleuralin filtration. Antero lateral chestwall without ribrelease, surrounding the distal left upper lobe bronchus, left upper lobeposteriorapical atelectasis. The process was associated with bilateral micronodular lesions and mediastinal lymphadenopathy in the aortopulmonary window, which was 16 mm in its greatest dimension (Fig. 2).

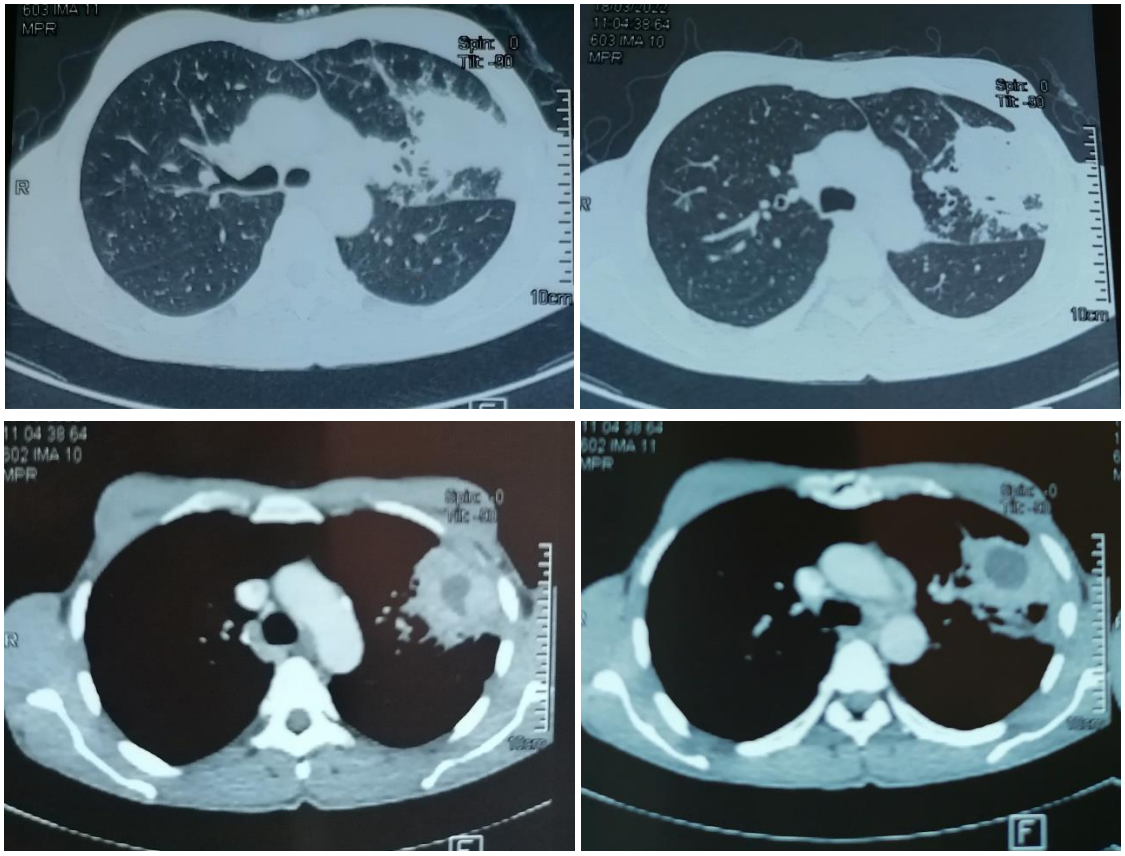

Fig. 2: Enhanced computed tomography scan before treatment with lung and mediastinal windowing showing the in homogeneousmass

Laboratory tests showed an elevated white blood cell count of 11.6 giga/L (normal range 4-10 giga/L) and lymphopenia of 3880/mm3 (normal range 1500-4000/mm3). C-reactive protein was 216mg/L. Sputum microscopy was negative for acid-fast bacteria (AFB) and RT-PCR for Mycobacterium tuberculosis.

A bronchoscopy and biopsy were performed. Bronchoscopy revealed thickening of the lingual and upper lobe bronchial mucosa, while histopathological examination revealed neoplasia and non-specific inflammation. Bronchoalveolar lavage (BAL) was positive for Mycobacterium tuberculosis, RT-PCR was positive for Mycobacterium tuberculosis, and cytological examination showed no malignant cells. In addition, two scan-guided transparietal punctures were performed, and anatomical pathology examination revealed a morphological and immune-histochemical appearance consistent with nonspecific inflammation.

Pulmonary TB was diagnosed from the results of microbiological testing, and a therapeutic regimen was prescribed (isoniazid 5mg/kg, rifampicin 10mg/kg, pyrazinamide 25 mg/kg and ethambutol 15mg/kg for two months, followed by isoniazid 5mg/kg and rifampicin 10mg/kg for four months) with clinical, biological, and radiological surveillance. During follow-up, the patient's general condition gradually improved, respiratory symptoms decreased, and no problems were reported. Subsequent post-treatment CT scans showed resolution of the lesion with cystic and cylindrical bronchiectasis and some micronodular lesions in the left upper lobe (Fig. 3). Based on these findings, the diagnosis of pseudotumor tuberculosis was accepted.

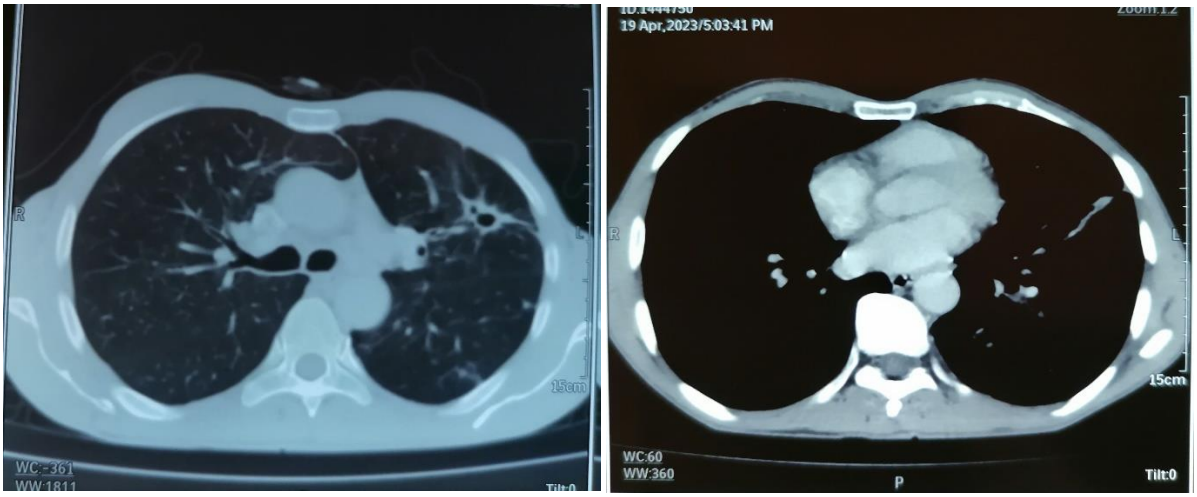

Fig. 3: Computed tomography scan after the beginning of treatment in parenchymal windowing showing improvement of lesions

DISCUSSION

A positive diagnosis of tuberculosis is usually based on clinical and radiological findings and confirmed by a positive bacteriological sample. Sometimes, the radiologic findings are atypical and misleading. This is the case for the pseudotumoral form of tuberculosis presented in the case report. The fact that pseudotumoral tuberculosis is a rare form of tuberculosis raises questions about the differential diagnosis of bronchogenic carcinoma [4]. This form is rare in immunocompetent patients, accounting only for 4.3% as studied by [5] and it is common in patients with VIH infection. The median age of pseudotumor tuberculosis was older than that of ordinary pulmonary tuberculosis. The mean age ranged from 39 to 56.8 years, depending on the series published, and was clearly male-dominated, which often indicates bronchogenic carcinoma [6, 7].

Diagnosis of pseudotumoral tuberculosis is often delayed by 10 to 4 weeks, reflecting diagnostic difficulties [7, 8]. Clinical symptoms are nonspecific. As for microbiological confirmation, cultures for Mycobacterium tuberculosis were positive in bronchial aspiration specimens but not in sputum specimens. This is due to the solid and poorly oxygenated nature of caseous lesions of pseudotumoral tuberculosis [9, 10]. Bronchoscopy specimens (bronchial aspiration and/or bronchoalveolar lavage) appear to be the gold standard for diagnosing this form of tuberculosis. This method has high culture sensitivity, which can identify smear-negative patients and shorten the time to diagnosis [11].

Bronchoscopy may show an ulcero-infiltrated and, above all, budding appearance, which reinforces the suspicion of bronchial carcinoma. The bronchial biopsy can confirm cases of bronchial tuberculosis. However, but in forms without endobronchial lesions, the presence of adherent whitish submucosal secretions corresponding to caseum and/or greyish or anthracosic mucosa in young, nonsmoking patients should prompt the search for tuberculosis. Other more invasive diagnostic methods are also essential, such as

transparietal biopsy and surgical biopsy with the examination of surgical specimens [12].

CT scans may show a nodule, mass whose size is variable, or systematised parenchymal condensation. The contours maybe clean and regular, lobulated and irregular or spiculated. Parenchymal condensations are related to a ventilatory disorder during bronchial obstruction [13].

Mediastinal lymphadenopathy is rare in post primary tuberculosis or occurs in only 5% of cases, and peripheral enhancement reflecting central necrosis suggests tuberculosis. Nevertheless, this aspect is not specific and it can be present in metastatic carcinoma or lymphoma. Intralesional calcifications can be diffuse, central, or concentriclamellar, as is typical in tuberculoma, but can also be eccentric. When lesions are excavated, the wall of the excavation can be thick or thin and regular. Peripheral annular enhancement is also suggestive [13].

Like pulmonary tuberculosis, the lesions predominate in the apical and dorsal segments of the upper lobe and the apical segment of the lower lobes, with a predominance on the right side. Masses and nodules are peripheral or proximal. Multi-lobar involvement is consistent with pulmonary tuberculosis while the basal location is not very suggestive [13, 14]. Other non-specific signs of tuberculosis associated with nodules and masses can be found such as centrolobular micronodules and acinar nodules of perilesional or contralateral topography. Acinar nodules in perilesional or contralateral topography. For some authors, the appearance of a "tree-in-bud" is typical of progressive tuberculosis [15, 16].

Treatment of pseudotumor tuberculosis is based on the conventional treatment of tuberculosis infection [8]. Also, follow-up care is generally favorable, but some complications may occur such as bronchial stenosis, bronchiectasis and bronchiolitis, which may require instrumental treatment with cryotherapy, balloon dilatation, or surgical treatment [17]. In our patient, the evolution was favourable after antibacillary treatment with almost complete radiological clearance and sequellar bronchiectasis.

CONCLUSION

Pseudotumor tuberculosis is a rare form of tuberculosis that is difficult to diagnose due to its atypical radio-clinical presentation, high suspicion of bronchial carcinoma, and often-negative bacteriological specimens. This case report highlights that pulmonary tuberculosis can exist as a mass lesion resembling bronchogeniccarcinoma. Although diagnosis is difficult, treatment is usually simple and relies on anti-bacillary treatment of conventional dose and duration. Similarly, the evolution is generally favourable.

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