

# Atelectasis as a Complication of Tuberculosis

## CASE REPORT

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## Abstract

**Background:** Tuberculosis is an infectious disease caused by a bacillus called *Mycobacterium tuberculosis* or Koch's Bacillus (BK). It is associated with various long-term lung complications, including: lung scarring (fibrosis), bronchiectasis, Chronic Pulmonary Aspergillosis, and more rarely, atelectasis. There is however very limited data in literature on the full spectrum of these complications, and relies mostly on case reports and small case series.

**Case:** The authors report a case of atelectasis in a patient with previous diagnosis of Tuberculosis. Normal laboratory tests and imaging test presenting right lung atelectasis. Went under respiratory therapy, presented improve and is under clinical control.

**Conclusion:** There is a huge importance of knowing the various methods to diagnose this disease and treat it well. Thus, it enables an improvement in the patient and a reduction in the spread of bacteria.

### Keywords

Tuberculosis; Pulmonary  
Atelectasis.

## Introduction

Tuberculosis (TB) is an infectious disease caused by a bacillus called *Mycobacterium tuberculosis* or Koch's Bacillus (BK). This pathology mainly affects the lungs and may reach other zones such as bones, skin and meninges [1].

Despite government programs for its treatment and control, there are still many cases of the disease. Data from Brazilian's Health Department pointed, in 2012, more than 70,000 new cases, what means an incidence of 36.1/100 thousand inhabitants [2].

In most cases, the symptoms are tiredness, coughing and low fever. Tuberculosis is transmitted directly from person to person through droplets released during speech or cough [1].

The diagnosis is reached through patient clinical evaluation, with help of sputum smear microscopy and chest X-ray. The treatment is essentially antibiotics [2].

Pulmonary TB is associated with various long-term lung complications including lung scarring (fibrosis), bronchiectasis, Chronic Pulmonary Aspergillosis, air way stenosis and Chronic Obstructive Pulmonary Disease, atelectasis, and it may even be a risk factor for lung cancer. There is however very limited data on the full spectrum of these complications in cohorts of patients treated for Pulmonar Tuberculosis. For many of these complications the published literature relies mostly on case reports and small case series [3].

Thus, the objective of this study was to report a patient case of recurrent tuberculosis with atelectasis.

## Case report

Patient is male, 73 years old, agronomist, resident of Belém, Pará, Brazil. He was evaluated at Lobo Pneumology Clinic (Private Service of the City) in June 2017, with a history of ventilatory-dependent chest pain, persistent cough, foul smell bronchial secretion with chocolatey appearance, dyspnea, weight loss and malaise. His left lung was vicariant. There was absence of AFB in sputum and culture. He denies tobacco use and does not have Systemic Hypertension or Diabetes.

But he reported a past of pulmonary tuberculosis in 1958, with irregular treatment and aban-

donment. In 1960, he presented worsening with sputum of blood, being treated at the Hospital João de Barros Barreto (HJUBB) for 12 months, and had ambulatorial control for 2 years. He evolved to cure, but radical pulmonary surgery was indicated, which, however, wasn't performed.

At Lobo Clinic, the patient underwent chest x-ray, which showed atelectasis of the right lung, causing mediastinal retraction. There was homogeneous veining of the right lung, but soft tissue and costal bone region without abnormality and free costophrenic sinuses without pleural lesion evidence. Also, there were increased cardiac area, preserved aspect thoracic aorta and anatomical mediastinum configuration.

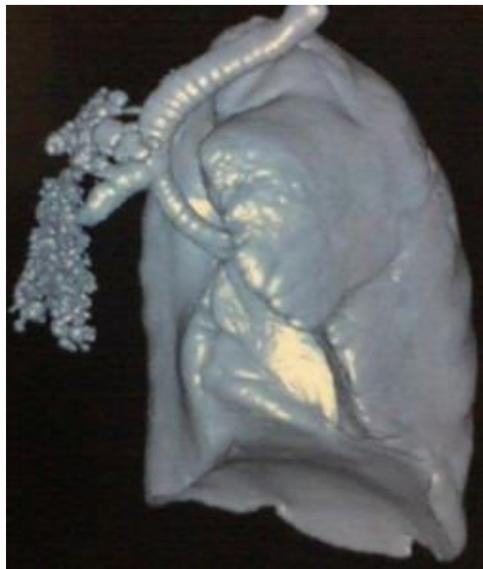
Later, the patient underwent multislice computed tomography of the thorax, helical scan technique, without intravenous iodo contrast. **(Figure 1)**

Additional cuts were made with high resolution technique, evidencing atelectasis of the right lung and also cylindrical and cystic bronchiectasis associated with thickening of the bronchial wall. **(Figure 2)**

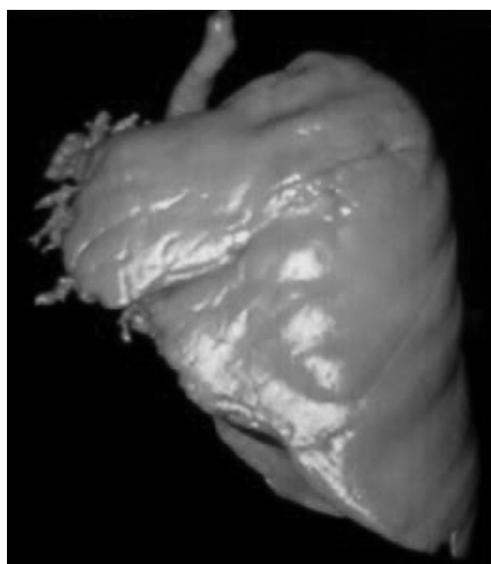
**Figure 1:** Thorax CT demonstrating atelectasis of the right lung.



**Figure 2:** 3D Thorax CT showing atelectasis of the right lung and bronchiectasis.



**Figure 3:** 3D Thorax CT showing hyperinflation of the left lung..



It was also noted an accumulation of secretions forming mucoid impaction, besides a mediastinal structures deviation to the right and left lung hyperinflation. The pulmonary artery and the pulmonary strings had normal morphology, heart had preserved dimensions and there were linear fibroatelectasic densities distributed by the left su-

perior lobe with residual aspect. In addition, there were coronary atheromatosis and elongated aorta, with calcified parietal atheromatous plaques. **(Figure 3)**

The Arterial Gasometry demonstrated pH 7.392; pCO<sub>2</sub>: 43.8mmHg; pO<sub>2</sub> Actual: 81.5 mmHg; Bicarbonate: 26.0 mEq/L; Total CO<sub>2</sub>: 27.4 mEq/L; Base Excess: + 0.9 mEq/L; O<sub>2</sub> Saturation: 95.7%.

The patient went through respiratory physiotherapy for 6 months and empirical treatment. Currently, it is under ambulatory control, with a satisfactory evolution.

## Discussion

Tuberculosis is a notifiable disease in Brazil and the vaccine that target the bacillus is in the Immunization Program. The age group predominantly affected by the disease is between 25 and 44 years old [4].

There are several forms of tuberculosis, which can be pleural, miliary, ganglionic, among others [5]. In the reported case, the patient had the pulmonary form, the most common form of the disease, and presented the most suggestive symptoms: cough, weight loss, release of bronchial secretion and dyspnea. Considering the symptoms and clinical history reported by the patient in relation to previous diagnosis of tuberculosis, a recurrence of the disease was suspected. In this way, some tests were requested to confirm the suspicion.

Sputum smear microscopy was negative. This may have been caused by test failure, which is about 50% to 70% sensible [6] or technical error, since some artifices are recommended to increase the test efficacy, such as: collecting material from the lower airway, preferentially collecting in fasting and examining two sputum samples on successive days [1].

In case of negative bacilloscopy result, the use of sputum culture is recommended if these patients have clinic and epidemiology strongly suggestive of

tuberculosis. Culture can increase diagnostic yield [6], however, it does not guarantee 100% efficacy. Observing negative smear and culture tests, the Brazilian Society of Pulmonology and Tissue (SBPT) recommends, in cases of great tuberculosis suspicion, to perform imaging tests and empirical treatment [1]. These measures were adopted in the case.

Imaging methods are of paramount importance for diagnosis and follow-up of the disease. In the case reported, the patient's X-ray and Computed Tomography were necessary. Tuberculosis can appear in several ways on radiography, from pleural effusion to micronodular infiltrate [7]. In the present case, there was atelectasis of the right lung and retraction of the mediastinum. Given the result, tomography is necessary to analyze changes in small organ structures [8]. The Thorax CT showed bronchiectasis, thickening of the bronchial wall, mucoid impaction, as well as deviation of the mediastinal structures to the right and hyperinflation of the left lung, caused by a raise on inspiratory work on that side of the organ [9].

## Conclusion

Still very important in Brazil, tuberculosis is an infectious disease that has the lung as the main focus. The importance of knowing and disposing of the various diagnostic methods capable of elucidate this pathology is noteworthy in the present study, so that it can be adequately treated, enabling patient cure, transmission reduction and less sequelae emergence.

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## Contribution

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José Antônio Cordero da Silva: Concept and orientation regarding the manuscript, data acquisition and methodological review of the manuscript.

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## Conflict of interest disclosures

The authors declare that there are no conflicts of interest in this case report.

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