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Case Report

Pancoast tumor mimicking lung tuberculosis, a case report ☆,☆☆

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ABSTRACT

It is well-recognized that tuberculosis (TB) can mimic several clinical diseases, particularly cancer. On several occasions, lung TB can be misdiagnosed as cancer, particularly in developed countries with a rare case of TB and high incidence of lung cancer, and vice versa—in which Indonesia, with a high incidence of TB, lung cancer may be mistakenly identified as TB, delaying the initiation of definitive therapy and causing unnecessary diagnostic and treatment procedures. We reported a 59-year-old male who complained of right upper chest pain, accompanied by chronic cough and weight loss, with a history of 6-month treatment with a TB regimen without resolution of his symptoms. Core biopsy CT guiding pathology anatomy revealed atypical adenocarcinoma. All patients seeking medical attention must be treated carefully, avoiding diagnostic procedures that can result in a delay in definitive therapy.

Introduction

Diagnostic chameleon is what tuberculosis (TB) is known for due to its similar appearance and clinical manifestation to cancer [1], leading to occasional misdiagnosis [2]; it could be challenging to distinguish its radiological features apart from actual tumors [3]. Pancoast syndrome refers to a series of clinical manifestations caused by a tumor in the upper lobe of the lung, including neoplastic impairment of the brachial plexus, which clinically manifests as shoulder pain and Horner's syndrome that accounts for only 25% of cases [4], manifesting as ptosis (drooping of upper eyelid), miosis (constricted pupil), enophthalmos (posterior displacement of the eye), and ipsilateral anhidrosis.

Case report

A 59-year-old male was referred to our department from the pulmonology outpatient clinic with right upper chest pain and

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Fig. 1 – Initial chest x-ray prior to TB treatment shows fibrosis in the right upper lobe of the lung.

constitutional symptoms of chronic cough and weight loss. No history of TB treatment, diabetes, hypertension, malignancy, or shortness of breath was recalled, and no history of similar complaints among his family.

Upon the first admission, the physical examination was found to be unremarkable, with normal blood pressure, heart rate, and body temperature; however, there was a slight increase in respiratory rate of 26 breaths per minute. The initial chest radiograph (Fig. 1) depicted an appearance of fibrosis in the right upper lobe of the lung, similar to those of TB; nevertheless, GeneXpert mycobacterium tuberculosis/rifampicin (MTB/RIF) examination yielded a negative result. Chest multi slice computer tomography conducted approximately half a year later revealed fibro consolidation, bronchiectasis in the apical segment of the right superior lobe, and right infraclavicular lymphadenopathy (Fig. 2). HIV test was negative.

Considering that the patient lived in Indonesia, where lung TB is prevalent, and his suggestive TB symptoms, the TB regimen was conducted regardless of the negative GeneXpert. After completing the 2-month intensive phase, a sputum AFB smear was done for evaluation and revealed a negative result for TB. In the fifth month of medication, GeneXpert MTB/RIF was re-obtained for assessment, and the result was also negative.

Following treatment completion, the patient underwent chest x-ray evaluation (Fig. 3), entailed by chest multi slice computer tomography (Fig. 4), which demonstrated rather prominent pulmonary TB with thickening of right upper pleura and osteomyelitis TB at the second and third ribs of the right chest. Furthermore, the patient's symptoms of cough and shortness of breath persisted, and he began to experience an unbearable pain in the right shoulder that radiated to the right arm., which was unresolved by regular pain killer; thereby, the neurologist and anesthesiologist assistance were needed to help alleviate the pain.

A scientific meeting was prompted to discuss the case, attended by the pulmonologist, thoracic surgeon, anesthesiologist, radiologist, anatomic pathologist, and microbiologist. A malignancy was suspected due to the persistent disease ensuing completed TB medication and the advancement of the upper lung lesion involving the brachial. Anatomic pathology and microbiology assessment was suggested with the sample obtained from CT guiding core biopsy. Microbiology examination yielded a negative result for Mycobacterium TB, and pathology anatomy revealed an atypic cell adenocarcinoma (Fig. 5).

Discussion

TB, the so-called diagnostic chameleon, is well known for its characteristics mimicking cancer [1], resulting in occasional misdiagnosis [2]. Clinical information and radiology findings of TB can be otherwise unspecific and equivalent to other illnesses, particularly tumors. These growths are referred to as pseudo-tumors. To acquire a definitive diagnosis, one must have a higher level of clinical suspicion due to the vague clinical presentation of TB pseudotumor. It could be challenging to tell radiological features apart from real tumors [3].

Pulmonary TB manifests as chronic cough with high sputum production, sometimes with hemoptysis, shortness of breath, pleuritic chest pain from the affected parenchyma, weight loss, fever, and night sweats [5]. The clinical picture is indistinct, and the patient could be diagnosed with sarcoidosis, lung cancer, or pneumonia, which would postpone an appropriate diagnosis. Usually, in endemic areas of TB, suspicion from clinical manifestation is enough for TB diagnosis, especially with impaired immune status such as HIV. Definitive diagnosis of TB is provided by the respiratory secretion culture of Mycobacterium, an acid-fast microbe, which is affordable with excellent specificity; nonetheless, it is not time-effective as it takes up to 6 weeks to show any recognizable growth. A brand-new molecular diagnostic test with greater sensitivity than smear microscopy, the Gene Xpert MTB/RIF assay, can identify the Mycobacterium TB complex in under 2 hours [6]. Gene Xpert MTB/RIF assay has high sensitivity and specificity of 92.7% sensitivity, implying a 7.3% chance of a false negative according to data from the multidrug resistance-TB Clinic at Dr Soetomo Academic Hospital tertiary referral hospital in Indonesia [7]. Diagnosis of TB should refer to patient complaints, clinical findings, and radiology and be confirmed with laboratory results [8].

Tumor in the superior sulcus, first described in 1932 by Pancoast [9], entails a body of signs and symptoms known as Pancoast syndrome. Clinical signs include shoulder pain, weakness, and muscular hypotrophy in the affected ipsilateral arm. The spectrum of Pancoast syndrome symptoms can include Horner's syndrome, which involves stellate ganglion dysfunction and clinically manifests as ptosis, miosis, enophthalmos, and ipsilateral anhidrosis. Pancoast tumors usually consist of squamous cell carcinoma and adenocarcinoma [10,11]. Considering Pancoast tumors frequently appear with persistent

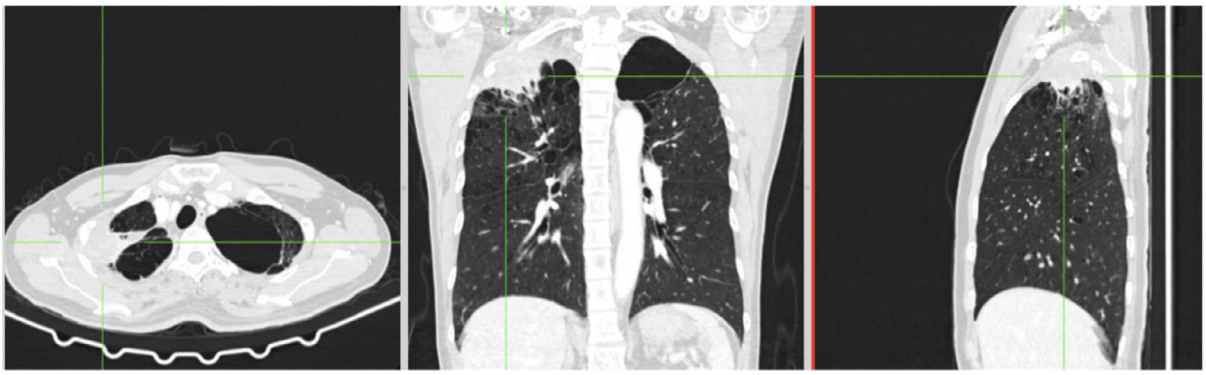

Fig. 2 – Contrast-enhanced CT-scan images of the chest region prior to tuberculosis medication depict a mass with heterogeneous contrast enhancement and fibro consolidation and cylindrical branch dilatation of the bronchial in the apical segment of the superior lobe of the right lung. Paraseptal and centrilobular emphysema in the superior lobe of the right and left lung are also noted.

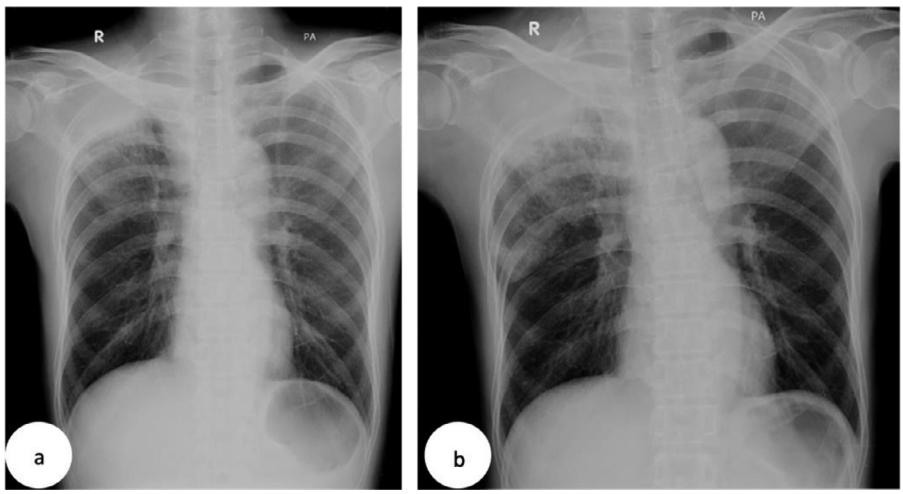

Fig. 3 – Chest x-ray images after TB medication show indeterminate border opacity in the upper lobe of the left lung, with the destruction of the second and third right ribs.

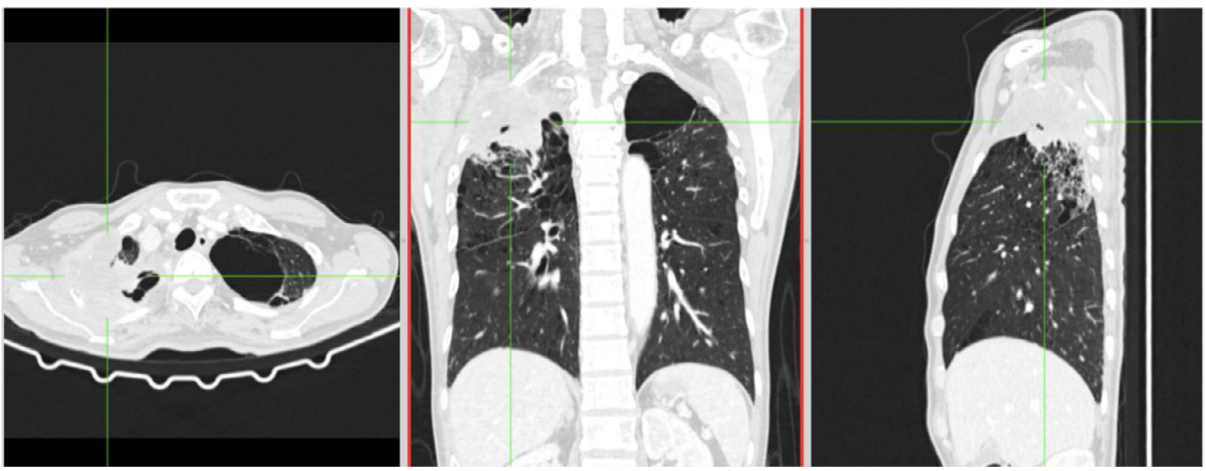

Fig. 4 – Contrast-enhanced CT-scan images of the chest region after tuberculosis medication shows a heterogeneously enhanced mass with a notable enlargement.

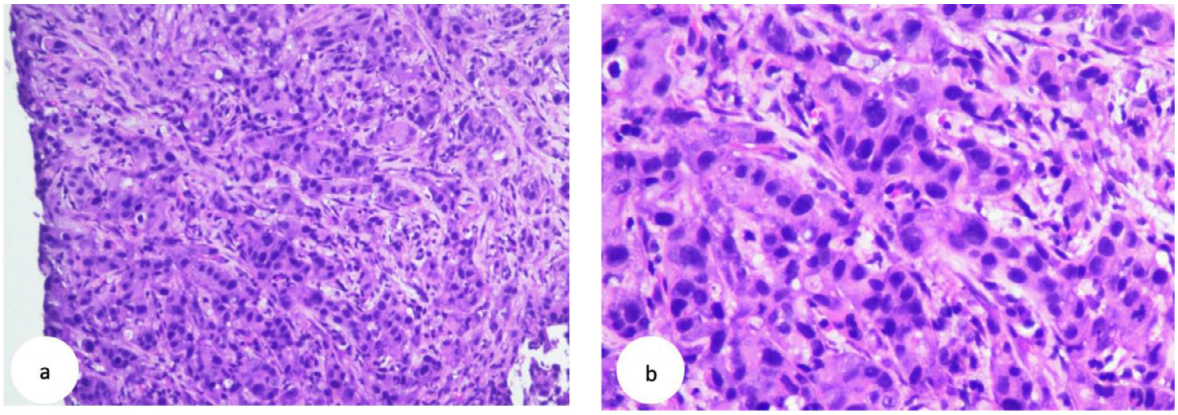

Fig. 5 – HES stain x200 (a), x400 (b) of CT guiding biopsy mass in the upper lobe reveals atypical adenocarcinoma.

shoulder and upper back discomfort, it is always advisable to investigate the condition, especially when the patient has a unique medical history and no recent trauma [12].

Lung cancer, accounting for 14% of all new cancer cases, stands in the second position after breast cancer as the most frequent cancer worldwide [13]. The varied histologic subtypes of peripheral lung adenocarcinomas are reflected in the radiographic feature, ranging from solid lesions to ground glass nodules. Previously, lung cancer was referred to as bronchoalveolar cell carcinoma; however, the name often caused misunderstanding [8].

Our patient was assessed with Pancoast tumor as his final diagnosis, with classical syndromes, mass in the upper lobe of the lung, brachial plexus pain resulting from the expansion of the tumor to the chest wall, destructed second and third ribs in the right chest, and invaded brachial plexus. The pathology anatomy examination concluded adenocarcinoma; nevertheless, the patient was initially assessed with TB and already took a TB regimen for 6 months, delaying the definitive cancer therapy.

Conclusion

All patients seeking medical attention deserve to be treated carefully, avoiding unnecessary diagnostic procedures which can result in a delay in definitive therapy. Although the patient presents with classic symptoms and radiology features, ruling out the differential diagnosis is of paramount importance. Definitive diagnosis of TB can be established in less than 2 hours by using microbiological testing or the Gene Expert MTB/RIF assay, with higher sensitivity compared to sputum AFB smear. Direct examination under a microscope by pathology anatomy is important in diagnosing cancer.

Authors' contribution

M. Ikhsan Nugroho contributed to the writing of the manuscript. Anggraini Dwi Sensusiati contributed to diagnoses, data curation, and data organization. M. Ikhsan Nugroho and Anggraini Dwi Sensusiati contributed to the conceptualization of the manuscript. All authors have reviewed and approved the final manuscript.

Data availability statement

All data generated or analyzed during this study were included in this article. Further inquiries can be directed to the corresponding author.

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We thank the patient we reported here for allowing us to discuss his story to improve our understanding of the Pancoast tumor that mimics lung tuberculosis.

Patient consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. This case report was acknowledged by the Institutional Review Board at the Universitas Airlangga Hospital (111/KEP/2022; acknowledged October 20, 2022).

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