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Case Report

Misdiagnosis of lung adenocarcinoma mimicking of pulmonary tuberculosis: a case report

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Abstract

Background: Pulmonary abnormalities caused by lung cancer can be clinically and radiologically similar to pulmonary tuberculosis (TB). Pulmonary symptom of TB and lung cancer overlap each other such as chronical dyspnea, coughing, hemoptysis, chronic pain and weight loss. Radiologically such as cavities, infiltrates, nodules and miliary. These similarities make it challenging for clinicians and causes misdiagnosis with incidence between 0,03% and 30,4% worldwide.
Case Presentation: A 65-year-old male with chief complaint of shortness of breath and chronic cough for three months, accompanied by symptoms of atypical chest pain, weight loss and indigestion. Chest physical examination found dullness of percussion and decrease breath sound on left side hemithorax. Chest X-ray showed cavity in the left lung. The bronchoscopy result showed mass in the left bronchial and left upper lobe. Biopsy results were obtained adenocarcinoma.
Discussion: Pulmonary tuberculosis and lung cancer often mimic each other on imaging, sharing features such as irregular consolidations and thick-walled cavities. This similarity frequently leads to diagnostic confusion and potential misclassification, especially in regions with high tuberculosis prevalence. Accurate distinction requires thorough pathological and microbiological confirmation to ensure proper management.
Conclusions: Diagnosing pulmonary tuberculosis and lung adenocarcinoma is challenging especially based on similarity of clinical and radiological findings, resulting in significant misdiagnosis. Further examinations and clinician expertise are essential to differentiate.

Keywords: *Lung Adenocarcinoma, Pulmonary Tuberculosis, Misdiagnosis*

Abstrak

Latar Belakang: Kelainan paru akibat kanker paru dapat menyerupai tuberkulosis (TB) paru baik secara klinis maupun radiologis. Gejala klinis TB dan kanker paru sering tumpang tindih, seperti sesak napas kronis, batuk, hemoptisis, nyeri dada kronis, dan penurunan berat badan. Gambaran radiologis yang mirip meliputi kavitas, infiltrat, nodul, dan pola milier. Kesamaan ini menjadi tantangan bagi klinisi dan sering menyebabkan salah diagnosis, dengan insidensi berkisar antara 0,03% hingga 30,4% di seluruh dunia.
Ilustrasi Kasus: Seorang laki-laki berusia 65 tahun datang dengan keluhan utama sesak napas dan batuk kronis selama tiga bulan, disertai nyeri dada atipikal, penurunan berat badan, dan gangguan pencernaan. Pemeriksaan fisik toraks menunjukkan pekak pada perkusi serta penurunan suara napas pada hemitoraks kiri. Foto toraks menunjukkan kavitas di paru kiri. Hasil bronkoskopi memperlihatkan massa pada bronkus kiri dan lobus atas kiri. Hasil biopsi menegakkan diagnosis adenokarsinoma paru.
Diskusi: Tuberkulosis paru dan kanker paru sering menunjukkan kemiripan pada pencitraan, dengan temuan seperti konsolidasi tidak teratur dan kavitas berdinding tebal. Kesamaan ini sering menimbulkan kebingungan diagnostik dan salah klasifikasi, terutama di wilayah dengan prevalensi TB yang tinggi. Pembedaan yang akurat memerlukan konfirmasi patologis dan mikrobiologis yang menyeluruh untuk memastikan penatalaksanaan yang tepat.
Kesimpulan: Diagnosis tuberkulosis paru dan adenokarsinoma paru merupakan tantangan tersendiri karena kesamaan temuan klinis dan radiologis yang dapat menyebabkan salah diagnosis. Pemeriksaan lanjutan dan keahlian klinisi sangat penting untuk membedakannya.

Kata Kunci: Adenokarsinoma paru, tuberkulosis paru, salah diagnosis

Background

Lung cancer and pulmonary tuberculosis (TB) are global health problems. Lung cancer is the leading cause of cancer deaths in the world. The World Health Organization (WHO) states that lung cancer was ranked 8th as a cause of death in 2004 and will increase to 6th in 2030.[1] Pulmonary tuberculosis is a major global health problem, especially in developing countries, WHO estimates 9.6 million new cases of pulmonary TB in 2014.[2] Indonesia is the country with the 4th largest number of pulmonary TB patients in the world with 5.7% of the total number of pulmonary TB patients in the world.[3] Pulmonary abnormalities causes by lung cancer can be clinically and radiologically similar to pulmonary TB. Pulmonary symptom of TB and lung cancer overlap each other such as chronical dyspnoe, coughing, hemoptysis, chronic pain and weight loss. Radiologically such as cavities, infiltrates, nodules and miliary.[4] The early symptoms of lung cancer are almost the same as pulmonary TB, so for countries with a high prevalence of pulmonary TB such as Indonesia, this needs to be a concern. Delays in the diagnosis of lung cancer can be caused by misdiagnosis in countries where pulmonary TB is endemic.4 These similarities make it challenging for clinicians and causes misdiagnosis with incidence between 0,03% and 30,4% worldwide.[5]

Case Illustration

A 65-year-old man with a chief complaint of shortness of breath for three months, shortness of breath that worsens especially when the patient coughs. The patient also complained of a cough with phlegm for three months, but the phlegm was difficult to remove. The patient's complaint was also accompanied by intermittent left chest pain that did not spread. The patient experienced a decrease in appetite followed by a weight loss of five kg in three months. The patient's occupation is a farmer who is often exposed to smoke from burning. History of smoking six cigarettes for 50 years with a moderate Brinkman Index. Physical examination of the chest found asymmetric inspection, palpation of stem fremitus decreased in the medial left lung, dull percussion in the medial left lung and decreased vesicular auscultation in the medial left lung.

Chest X-ray showed a cavity in the medial left lung. The results of the contrast chest CT scan showed a cavity mass with pneumonic reaction, clear boundaries, regular edges, non-calcification measuring 6.1cm x 6.1cm x 5.9cm in the superior segment of the inferior lobe of the left lung. There was enlargement of the left para-tracheal, sub carina and left peribronchial lymph nodes. The results of the Epidermal Growth Factor Receptor (EGFR) mutation status examination were wild type

Figure 1. Chest X-ray: A cavity in the medial left lung

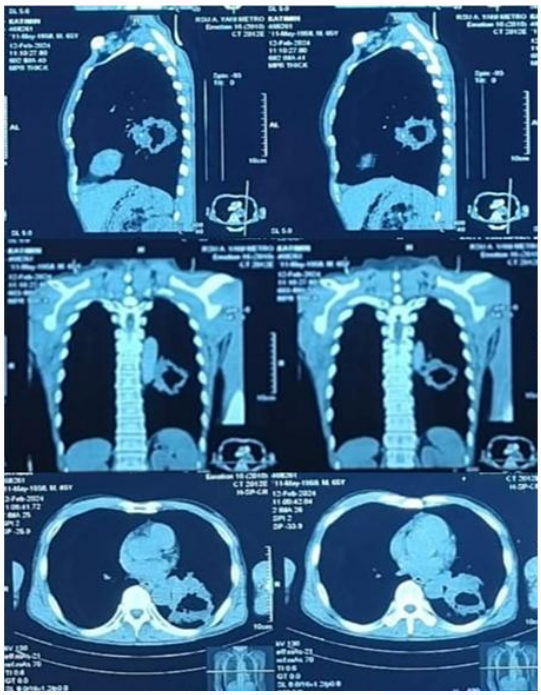

Figure 2. Contrast chest CT scan: A Cavity in the inferior lobe of the left lung

The patient underwent bronchoscopy and showed stenosing infiltration, hyperemia and easy bleeding in the left main bronchus and left upper lobe. The conclusion of the patient's bronchoscopy was suggestive of malignancy. The histopathology results of the bronchial brushing were malignant epithelial tumor with a non-small cell tumor favor adenocarcinoma.

Figure 3. Bronchoscopy: Mass in the left main bronchus and left upper lobe

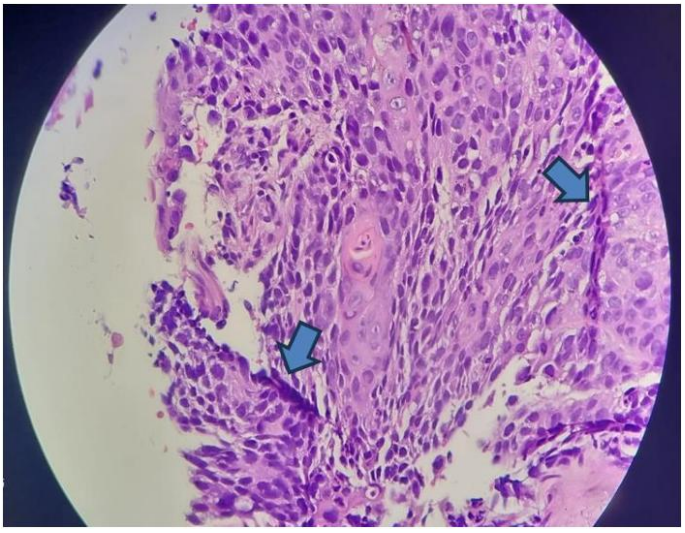

Figure 4. Histopathology of bronchial brushing from bronchoscopy: acinar pattern

Discussion

Tuberculosis and lung cancer have been confused and misdiagnosed for centuries. There is especially in countries with low TB incidence diagnostic challenges with risk of diagnosis getting missed. Radiological features suggestive of lung cancer, like consolidations with irregular margins and thick-walled cavities, showing high metabolic activity on the 18-FDG-PET and CT-imaging are also typical for lung tuberculosis. Differentiation according to the radiological findings cannot be provided. The diagnosis must be confirmed by pathological and microbiological tests. Prytz et al. reported about 91 patients with presumptive diagnosis of lung cancer, who underwent thoracotomy, but proved to have pulmonary TB.[6]

At chest X-ray, tuberculosis may manifest as five main entities: Parenchymal disease, lymphadenopathy, miliary disease (evenly distributed diffuse small 2–3-mm nodules, with slight lower lobe predominance), pleural effusion and cavitation. Parenchymal lesions are characterized by dense, homogeneous, or non-homogenous parenchymal consolidation in any lobe (mostly upper lobe predilection) and fibrotic changes. Mass with or without collapse is the commonest radiological finding in lung cancer.[7] Malignant lesions have irregular margins with radiating strands. Lung cancer may also reveal as hilar prominence (in case of central tumors), pulmonary nodule (in case of peripheral tumors), widening of the mediastinum (suggestive of spread to lymph nodes), total or partial

atelectasis of a segment, lobe or lung (mechanical effect causing obstructive collapse), unresolving consolidation (pneumonia), cavitation (eccentric, irregular margin with nodularity), elevated diaphragm (caused by phrenic nerve palsy) or pleural effusion (25.1%). A normal chest x-ray is found in 0.4% of cases of lung cancer.[7]

A chest CT scan is frequently the second step either to follow up on an abnormal chest X ray finding or to evaluate troublesome symptoms in those with a normal chest x-ray. Centrilobular densities in and around the small airways and "tree-in-bud" appearances were the most characteristic CT features of pulmonary tuberculosis. It is best non-invasive method for lung cancer. Lung mass is not visible on conventional X-rays unless they are larger than 5-6 mm in diameter. In the CT images, however, modern CT machines can detect lesions up to 1-2 mm in diameter, hence CT is more sensitive than chest radiography and it can accurately tell tumor site, size and invasion to adjoining structures such as mediastinum, chest wall etc.[7]

Cavities are gas-filled lesions that appear in the mass zone in the lung and occur in approximately one of six cases of bronchial carcinoma. These lesions form due to damage of the alveolar wall caused by the expulsion of necrotic tissue through the bronchial tree[8,9] and tumor infiltration containing proteases and mucins.[10] The appearance of mass like cavities like pulmonary TB can lead to misdiagnosis based on radiological findings. Misdiagnosis cases in U.S. in the last 10 years reached 26 (0.03%), while a three-year study found 37 patients (1.3%) were misdiagnosed. Similar case in India reached 14 out of 70 (20%) and Indonesia 30,4% misdiagnosed.[6,11] This indicates that the presence of cavities can lead to misdiagnosis, but with the further examination and clinician expertise, an accurate diagnosis can be established.

Conclusion

Diagnosing pulmonary tuberculosis and lung adenocarcinoma is challenging especially based on similarity of clinical and radiological findings, resulting in significant misdiagnosis. Further examinations and clinician expertise are essential to differentiate. The high cost and inaccessibility of diagnostic investigations such as chest CT scan and bronchoscopy may contribute to their inadequate utilization early enough. In tertiary centers, waiting period for these investigations is often unacceptably long, further adding to the delay. Attempts are needed to minimize this lag period by maintaining a high index of suspicion, low threshold for referral and aggressive as well as appropriate investigative work up and prompt initiation of treatment. This is of major concern as early diagnosis of lung cancer can increase the chance of tumor resectable and timely chemo-radiotherapy may provide better quality of life.

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Conflict of Interests

This part should declare authors' conflicts of interest, including sources of support for the work and authors' authority to access the study data.

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