

A solitary anthracotic lower lobe lung mass mimicking lung malignancy: an unusual presentation

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Pneumoconiosis in coal workers is seen as small nodular aggregations of anthracotic macrophages in the collagen network, which are known as coal macules, with larger aggregations known as coal nodules/mass with or without fibrosis. These are usually seen around the initial site of coal dust accumulation that is the upper regions around respiratory bronchioles; however, in our case the anthracotic mass is present in the anterior basal segment of the lower lobe of the left lung. Although coal workers' pneumoconiosis is a form of pneumoconiosis that is a common affliction of coal workers and/or chronic smokers. In our patient, prior exposure to biomass fuel exhaust seems to be the only risk factor. We present the case of an 80-year-old man presenting with fever and cough of 4 months' duration. On evaluation, he was found to have a well-defined mass lesion

Introduction

Anthracosis is a common asymptomatic disease resulting from long exposure to coal dust, seen in coal workers and to some extent in tobacco smokers and urban population, and may progress to coal workers' pneumoconiosis (CWP) [1]. The inhaled coal dust is ingested by macrophages, which release enzymes causing inflammation and fibrosis and rarely necrosis [2].

Case report

History

An 80-year-old nonsmoker, nondiabetic male farmer, presented with fever and cough of 4 months' duration. Fever was low-grade intermittent and cough was associated with small amount of mucoid sputum.

There was no history of haemoptysis, dyspnoea, chest pain, weight loss, loss of appetite and night sweats. The patient had a past history of pulmonary Koch's 4 years ago and gastrojejunostomy 25 years ago for peptic ulcer.

Physical examination

The patient appeared debilitated with anaemia and clubbing.

Pulse was 90 beats/min, and blood pressure was 110/60 mmHg.

On chest auscultation, air entry was reduced in the left infrascapular and the left lower axillary region and wet

crackles were present in the left infrascapular and the left lower axillary region.

No other systematic affection was detected.

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Investigations

- (1) Complete blood count
 - (a) Haemoglobin: 8.9 g/dl.
 - (b) Total white blood cell count: 6500/mm³.
 - (c) Differential white blood cell count: neutrophil, 75%; lymphocyte, 20%; eosinophil, 03%; monocyte, 2%.
 - (d) Erythrocyte sedimentation rate: 88 mm first hour.
- (2) Sputum
 - (a) No microorganism was detected morphologically on Gram's staining.
 - (b) Acid-fast bacilli 1 and 2 were negative for acid-fast bacilli.
 - (c) Culture showed no growth after 48 h of incubation.
 - (d) No malignant cells were seen.
- (3) Radiography of the chest (Fig. 1).
A well-defined nonhomogenous, possibly pleural-based mass lesion was noted in the left lower lobe.
- (4) Contrast-enhanced computed tomography scan of the thorax (Fig. 2).

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- (a) Peripherally heterogeneously enhancing mass lesion in the anterior basal segment of the lower lobe of the left lung was observed.
 - (b) Parenchymal scarring and fibrotic opacities in the apicoposterior segment of the upper lobe of bilateral lungs with adjacent pleural thickening was noted.
- (5) Computed tomography-guided core biopsy from the left lower lobe lung mass (Fig. 3). Pathological examination was consistent with an anthracotic nodule.

Differential diagnosis

- (1) Lung abscess.
- (2) Neoplastic lung mass.

Discussion

A solitary pulmonary nodule is a roughly rounded lesion less than or equal to 3 cm in diameter and is surrounded by lung parenchyma, without other abnormalities, and lesions more than 3 cm are known as pulmonary mass [3]. Pulmonary masses are usually malignant, whereas about 10–70% of solitary pulmonary nodules are neoplastic. Other usual causes include inflammatory (infectious and noninfectious) nodules. Definitive diagnosis can be made with biopsy bronchoscopically or using computed tomography-guided transthoracic needle aspiration [4].

CWP is a condition resulting from lung reaction to progressive accumulation of coal dust ranging from simple CWP to progressive massive fibrosis (PMF) based on the extent of the disease. Simple CWP is usually asymptomatic or may present with shortness of breath and/or chronic cough with no lung dysfunction, whereas PMF usually presents with shortness of breath, chronic cough and black sputum associated with compromised lung function and eventually cor pulmonale [5,6].

Simple CWP is characterized by the presence of nodular aggregations of anthracotic macrophages, which are usually around respiratory bronchioles in the upper region that is the initial site of coal dust accumulation, in the collagen network. Those with few millimetre diameter are known as coal macules, with larger aggregations known as coal nodules. Continued exposure may result in progression to PMF characterized by larger nodules/masses caused by coalesce of small nodules with fibrosis. The centre of the lesion due to local ischaemia may be necrotic [2,7].

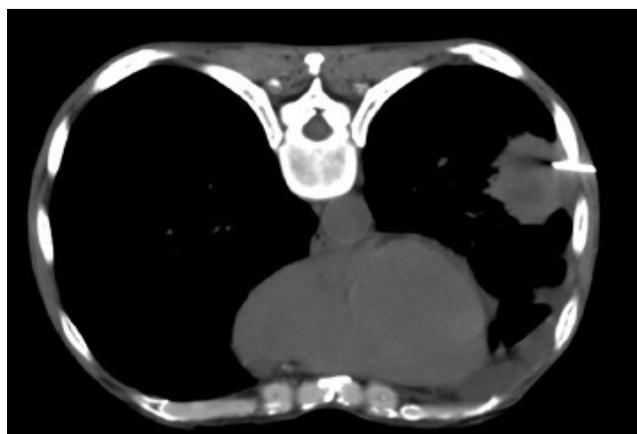
PMF is enlisted among causes of solitary pulmonary nodule or lung mass, whereas its occurrence in a person with no history of exposure to coal dust or any history of smoking is an extremely rare coincidence.

Fig. 1



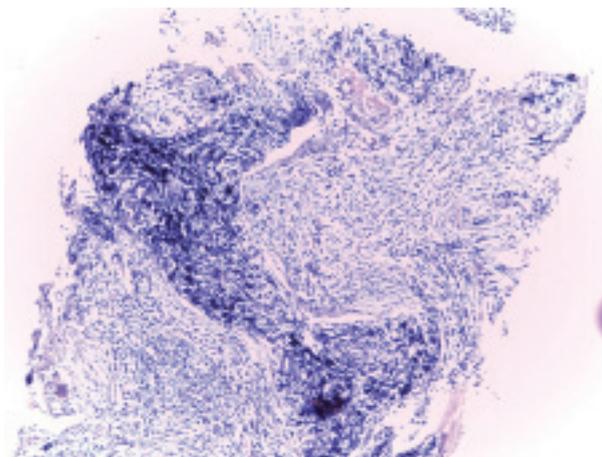
Chest radiograph posteroanterior view showing well-defined nonhomogenous pleural-based mass lesion in the left lower lobe.

Fig. 2



Computed tomographic scan of the thorax shows a well-defined heterogeneously attenuated mass lesion in the anterior segment of the left lower lobe of the lung with core biopsy needle *in situ*.

Fig. 3



A section from needle core biopsy showing linear strip of tissue containing pleura, alveolar spaces and a dense foci carbon surrounded by fibrocollagenous tissue along with nodular aggregates of lymphocytes.

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Conflicts of interest

There are no conflicts of interest.

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