Endobronchial actinomycosis mimicking pulmonary neoplasm

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Abstract

A 60 year old man had recurrent pneumonia. Bronchoscopy disclosed a necrotic mass in the left lower lobe bronchus, which histological examination showed to contain sulphur granules. The endobronchial mass had disappeared by the second bronchoscopy one week later. The patient was treated with penicillin for one year and was cured. Actinomycosis must be included in the differential diagnosis of an endobronchial mass.

Actinomycosis has become uncommon since the advent of antibiotics. An unusual case of endobronchial actinomycosis mimicking lung cancer is described.

Case report

A 60 year old man was admitted to hospital because of recurrent pneumonia. Four months earlier he had developed high fever, chills, haemoptysis, and left sided chest pain. A chest radiograph showed an infiltrate in the left lower lobe and he was treated with oral erythromycin for 10 days. Although most of his symptoms subsided he continued to have a dry cough. A chest radiograph two months later showed complete resolution of the pulmonary infiltrate. One month later he was admitted to hospital because of unstable angina. Routine chest radiography showed recurrence of the infiltrate in the left lower lobe. He was treated with erythromycin again and improved clinically and radiographically. He was discharged on day 5, though a non-productive cough persisted.

One month later he was readmitted with a three day history of left sided chest pain, fever, and worsening cough. His temperature was 38.4°C and physical examination showed chronic gingivitis and wheezing in the left lower chest. The haemoglobin concentration was 11.4 g/dl and the white blood cell count was $12.9 \times 10^9/l$ with 84% neutrophils, 12% lymphocytes, and 4% monocytes. Chest radiography again showed an infiltrate in the left lower lung (fig 1).

Fibreoptic bronchoscopy showed a friable, necrotic mass in the left lower lobe bronchus (fig 2A). Microscopic examination of the biopsy specimen showed sulphur granules with

Gram positive filaments highly suggestive of actinomycosis (fig 2B). As the finding was unexpected bronchoscopy was repeated one week later to confirm the diagnosis before antibiotics were started. At this time the endobronchial mass in the left lower lung was no longer present. Instead there was lumpy oedematous mucosa in the basal segments of the left lower lobe bronchus. Biopsy specimens of these mucosal lesions showed chronic inflammation but no malignancy. Anaerobic culture of the biopsy specimens was also negative. The patient was treated with oral penicillin and probenecid for one year. Bronchoscopy was repeated four months after initiation of treatment and showed a completely normal bronchial tree with no mass or mucosal oedema in the left lower lobe bronchus. At a follow up visit one year after completion of the antibiotics the patient was well and his chest radiograph was normal.

Discussion

Actinomycosis is a chronic, suppurative infection caused by anaerobic Gram positive, filamentous bacteria. Human disease may occur in three distinct forms: cervicofacial, abdominal, and thoracic. Actinomycetes are normal inhabitants of the human oropharynx and frequently present in dental caries or gingival plaques. They gain entrance into the lung by aspiration of oral contents. Severe dental disease, chronic obstructive lung disease, and debilitating conditions predispose to thoracic actinomycosis.¹ In our case the gingivitis may be relevant.

In these patients the disease usually pursues an indolent but progressive course with non-specific symptoms, such as fever, cough, chest pain, dyspnoea, and weight loss. The radiographic appearances of pulmonary actinomycosis include alveolar infiltrates, chronic fibrocavitary lesions, and pulmonary fibrosis.² Extension across a fissure into adjacent lobes and pleural and chest wall disease resulting in empyema, fistula, and sinus tract formation are

Figure 1 Posteroanterior chest radiograph showing infiltrate in the left lower lung.

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Figure 2 A—Endobronchial mass in the left lower lobe bronchus. B—"Sulphur granules" surrounded by neutrophils in a bronchial biopsy specimen. (Haematoxylin and eosin.)

characteristic features. Thoracic actinomycosis may occasionally simulate lung cancer, when it appears as a mass on the chest radiograph. Endobronchial lesions, however, are extremely rare with few reports so far.³⁻⁶ *Actinomyces* has a predilection for the periphery of the lung⁷ and spreads centrifugally as the disease evolves.

Our patient presented with recurrent pneumonia in the same location due to an obstructive mass lesion. A pulmonary neoplasm was suspected. The finding of sulphur granules in the biopsy specimen is virtually diagnostic of actinomycosis. Disappearance of the endobronchial mass before the second bronchoscopy was probably due to expectoration of the necrotic material. Although anaerobic culture failed to grow actinomycetes, the clinical, radiographic, and bronchoscopic improvement following treatment with penicillin supports that diagnosis.

This case illustrates the importance of bronchoscopy and bronchial biopsy in all patients with evidence of localised bronchial obstruction presenting as recurrent pneumonia. Actinomycosis should be considered in the differential diagnosis.

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