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CASE FOR DIAGNOSIS

Recurrent pneumonia after cardiac surgery

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Case history

A 38-yr-old male presented to the outpatient clinic complaining of recurrent episodes of pneumonia in the last 4 yrs. He had a past medical history of mitral and aortic valve disease due to rheumatic fever in childhood and was submitted to mitral comissurotomy through median sternotomy 5-yrs-ago. He had six episodes of productive cough with blood-streaked sputum, dyspnoea, fever, and wheezing in the last 4 yrs. Antibiotics were prescribed on all occasions. He had smoked for 30 pack-yrs.

Spirometry revealed forced vital capacity (FVC) of 3.10 L (79%), forced expiratory volume in one second (FEV_1) of 2.14 L (65%), FEV_1/FVC of 0.69 (83%) with no response to bronchodilators.

A chest radiograph and a computed tomography scan of the chest were performed (figs. 1 and 2). Bronchoscopic examination found extrinsic compression of the right lower-lobe bronchus, but no endobronchial lesions.

He was submitted to right lower lobectomy through lateral thoracotomy. A partial atelectasis of the right lower lobe and a tumour were found. A right lower lobectomy was performed.

The pathological examination is shown in fig. 3.

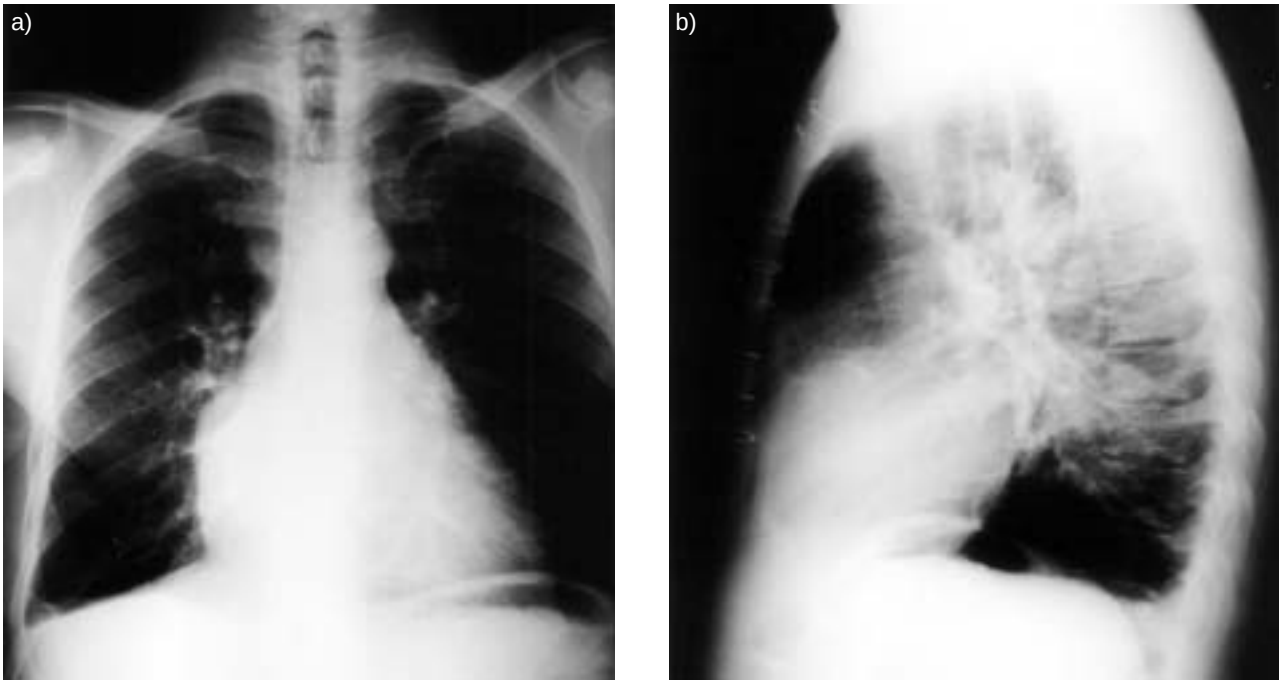

Fig. 1. – Chest radiographs performed on admission in the upright position a) front and b) lateral views.

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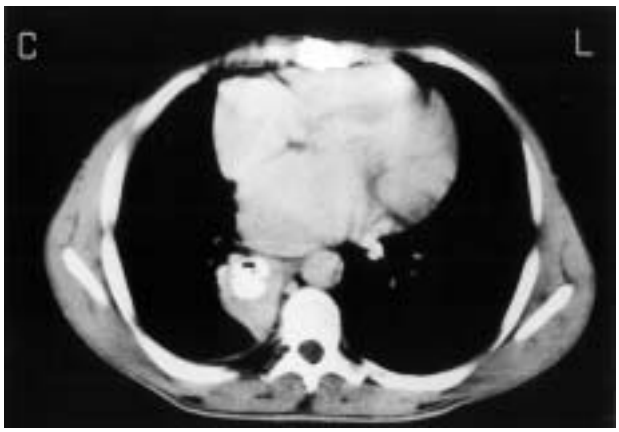

Fig. 2. – Computed tomography of the chest performed on admission.

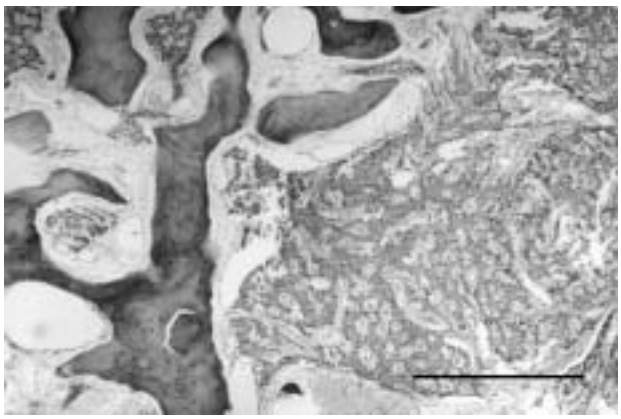

Fig. 3. – Photomicrograph of a histology slide from the resected lung mass (internal scale bar=250 μm).

BEFORE TURNING THE PAGE, INTERPRET THE RADIOGRAPHS AND HISTOLOGICAL EXAMINATIONS AND SUGGEST A DIAGNOSIS.

Interpretation

Chest radiography

A mass behind the right cardiac border, suggestive of partial atelectasis of the right lower lobe can be seen. A previous median sternotomy is best seen at the lateral view. Retrospective review of the chest radiographs showed this pattern 1 yr after the cardiac surgery.

Computed tomography

This disclosed a 6.0×4.5 cm mass in the right lower lobe with well-defined margins and a 3 cm calcified component.

Histological examination

This showed a 3.0×3.0 cm atypical carcinoid (well-differentiated neuroendocrine carcinoma) with extensive bone metaplasia, focal necrosis and microvascular invasion. Adjacent lung parenchyma was atelectatic, and a chronic bronchiolar inflammation was present. Staining for enolasis, chromogranin and carcinoembrionic antigen were positive. No foreign body was found.

Diagnosis: "Atypical lung carcinoid with bone metaplasia"

Clinical course

The patient's postoperative course was complicated by empyema, requiring prolonged chest drainage and antibiotics, but he ultimately recovered well. He had no respiratory complaints 1 yr after surgery.

Discussion

The patient had recurrent episodes of pneumonia 1 yr after cardiac surgery. A foreign body was initially suspected. Differential diagnosis also included carcinoid tumour and other bronchogenic tumours.

The chest radiographical examination showed a mass with a calcified component. Although calcification is usually taken as a sign of nonmalignancy, several authors have described a variety of calcified tumours including typical and atypical carcinoid tumours [1–4], adenocarcinoma and squamous cell carcinoma [5]. Up to 10 % of the carcinoid tumours may present with calcification, sometimes with extensive bone metaplasia [6], as in this case.

The carcinoid tumour is a neoplasm derived from the neuroendocrine Kulchitsky's cells located in the bronchial mucosa, which accounts for 2% of primary lung neoplasms. It usually presents between the fourth and sixth decades of life, but can be found at any age. Carcinoid tumours have more recently been classified as either well-differentiated neuroendocrine tumour (typical carcinoid) or well-differentiated neuroendocrine carcinoma (atypical carcinoid) [6]. Carcinoid tumors are often perihilar in location, characteristically with endobronchial lesion. Patients often present with cough, haemoptysis, chest pain, and recurrent pneumonia.

Approximately one-third of pulmonary carcinoids have atypical histological features [6]. They tend to be larger and occur more commonly in the peripheral lung fields. Metastases are found in 30–50% of atypical carcinoid tumours, often in the mediastinal nodes, liver, bone, and skin [7]. The treatment of choice is the complete surgical resection of the tumour. Limited bronchial disease may be treated with conservative resection and bronchoplasty. The response to systemic chemotherapy and radiotherapy is poor [7, 8]. The 5-yr survival rate is 40–60% when complete resection is possible [9].

Since calcification and ossification are important landmarks in the identification of a pulmonary lesion, both benign and malignant tumours must be included in the differential diagnosis.

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