

CASE FOR DIAGNOSIS

Cough, dyspnoea and purulent sputum in a 66-yr-old nonsmoking female

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Case history

A 66-yr-old female presented with dyspnoea on exercise, severe cough, purulent sputum and intermittent chest pain under both costal arches for the last 14 days. Five months prior to admission, pulmonary tuberculosis of both lower lobes had been diagnosed microscopically as the cause of recurrent bilateral pleural and pericardial effusions and pericardial thickening, and the patient was still under a two-drug antituberculous regimen. Loss of weight and fever were denied. She was a nonsmoker. Physical examination revealed wheeze over the left lower chest.

The chest radiograph on admission was normal except for pleural thickening at the left lower chest wall associated with a small pleural effusion. Pulmonary function tests showed the following results: total lung capacity (TLC) 4.5 L (70% pred), forced expiratory volume in one second (FEV₁) 1.3 L (45% pred), forced vital capacity (FVC) 2.2 L (59% pred), peak expiratory flow (PEF) 51%, maximal expiratory flow when 75% of the FVC remains to be exhaled (MEF_{75%}) 36% pred; FEV₁/FVC 83% pred, airway resistance (R_{aw}) 0.55 kPa·L⁻¹·s and a slight hypoxaemia (9.1 kPa).

Because a swab of the throat when cultured grew *Escherichia coli*, *Pseudomonas fluorescens* and *Staphylococcus epidermidis*, oral antibiotics were added to a routine antiobstructive therapy. There was some improvement in the symptoms, but residual cough and dyspnoea persisted.

Owing to the development of haemoptysis, fiberoptic bronchoscopy was performed, which showed a tumour almost occluding the entrance of the lingula bronchus (fig. 1). The biopsy of the tumour area is shown in figure 2. Subsequently, the chest radiograph as well as a computed tomographic (CT) scan changed from almost normal to the states shown in figures 3 and 4. After a second bronchoscopy to gain a definitive histology the patient experienced severe paroxysms of coughing.

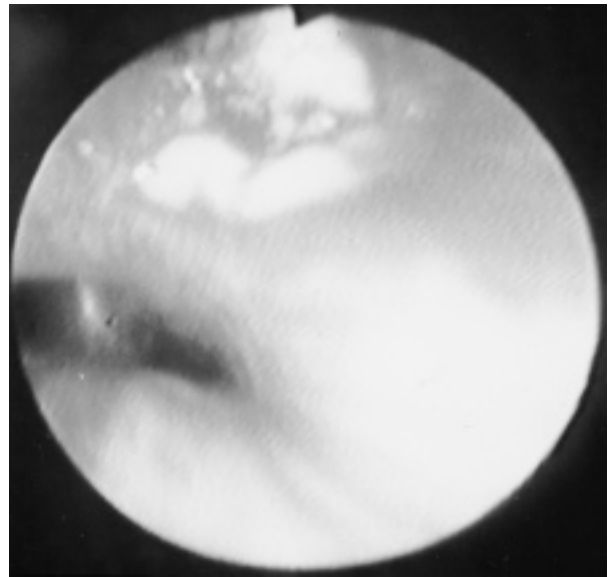


Fig. 1. – A white exophytic tumour at the entrance of the lingula bronchus, seen at the first bronchoscopic examination.

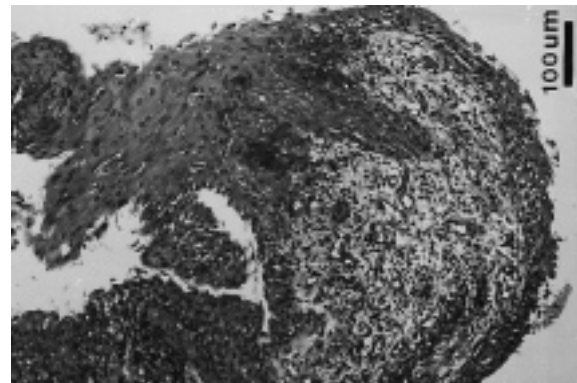


Fig. 2. – Histological picture of the tumour area. Haematoxylin-Eosin. (Internal scale bar=100 µm.)

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a)



b)



Fig. 3. – a) Posteroanterior and b) lateral chest radiograph before the second bronchoscopy.



Fig. 4. – Computed tomography of the chest before the second bronchoscopy.

BEFORE TURNING THE PAGE, WRITE DOWN YOUR INTERPRETATION OF THE FIGURES, YOUR DIAGNOSIS, ALTERNATIVE DIAGNOSIS AND SUGGESTED TREATMENT.

Interpretation

Chest radiographs

Frontal radiograph (fig. 3a): a veil-like increase in density of the left lung without a sharp margin, elevated left hilum and diaphragm and slight mediastinal shift to the left. The outlines of the left hilum and heart border are ill-defined, indicating atelectasis of the left upper lobe.

Computed tomographic scan (fig. 4)

Partial atelectasis of the left upper lobe (segments 1–3). Radiopaque structure at the branching of the left main stem bronchus.

Histological picture (fig. 2)

Strongly inflamed bronchial biopsy with granulation tissue in the subepithelial stroma. The squamous epithelium is hyperplastic and shows focal cellular and nuclear atypia, indicating severe inflammatory and metaplastic reaction of the bronchial mucosa at the margin of the ulceration caused by the impacted foreign body.

DIAGNOSIS: "Foreign body aspiration".

Clinical course

After a third bronchoscopy, which surprisingly had not been able to show the "tumour", the patient recalled having expectorated a grey material after the second endoscopy, which was now identified as a piece of a cutlet bone she had swallowed while eating soup 2 weeks prior to admission (fig. 5a, b). After this fortunate change for the better, the patient made a quick recovery. Findings were normal on a follow-up bronchoscopy 1 month later and lung function showed a slight residual restrictive impairment.

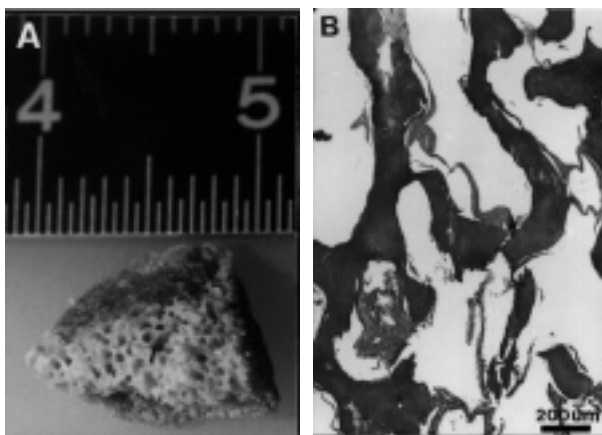


Fig. 5. – A) Expectorated piece of cutlet bone and B) photomicrograph of the predominantly avital piece of bone. A) Scale in cm; B) internal scale bar=200 µm.

Discussion

Although foreign body aspiration is frequently suspected in children with acute or recurrent pulmonary symptoms, it is rarely considered in adults with subacute or chronic respiratory symptoms, unless a clear history of an aspiration event is obtained. Predisposing conditions for foreign body aspiration in adults are primary neurological disorders (seizures, brain tumours, Parkinson's disease, mental retardation or cerebral palsy), unconsciousness because of trauma or general anaesthesia, manipulations at tracheostomas or endotracheal tubes, local anaesthesia during dental procedures and alcohol or sedative use [1]. In most cases of patients with normal sensoria, diagnosis is made promptly, since aspiration is usually a stressful experience and an alert adult would be expected to volunteer a clear history of the episode. However, in cases of unawareness of the aspiration or neglect of the symptoms, occult foreign body aspiration can remain undetected for years, with the longest period recorded being 40 yrs [2–4].

If the foreign body is large, it may lead to the life-threatening blockage of major airways, the "cafe coronary" syndrome [5] with acute dyspnoea, laryngeal oedema, asphyxia and cardiac arrest. Small foreign bodies can lodge in a peripheral airway, predominantly in the right lower lobe. The most commonly inhaled objects are food items, medical equipment and pins [1, 2, 6].

The most common symptoms after an asymptomatic interval of varying length are cough, expectoration, wheezing, bouts of fever, loss of weight, haemoptysis, dyspnoea and pleuritic chest pain, leading to the erroneous diagnosis of asthma, chronic obstructive pulmonary disease, bronchitis, chronic pneumonia or pulmonary embolism [1, 3, 4, 6]. Nonradiopaque foreign bodies may be easily missed on routine chest radiography, but may be suggested by associated atelectasis or infiltration in the postobstructive region or by air trapping, hyperinflation and mediastinal shift on postexhalation chest radiography [1]. If an infiltrate is slow to resolve, recurs in the same location or migrates between segments or even from one lung to the other, a history suggestive of foreign body aspiration should be sought carefully [4].

Foreign body aspiration can also mimic bronchogenic carcinoma, as in the present case. In particular, organic material, chronically impacted in the bronchial system, may rapidly induce severe inflammatory reactions [7, 8], including squamous cell metaplasia [4]. If the foreign body is totally embedded in friable granulation tissue or inflammatory polyps, which on histology show only an inflammatory reaction, the foreign body may be invisible to the endoscopist's eye and even appear as a malignant tumour [1, 4, 6, 7, 9]. Similar histological phenomena can be found in the bronchial mucosa at the site of biopsies taken 2–4 weeks previously [10].

Pulmonary complications that have been described with foreign body aspiration are chronic airway obstruction, bronchial stricture with alveolar hypoventilation, bronchiectasis, haemoptysis, lung abscess, empyema, bronchiolitis obliterans, granulomatous process, cysts and cavities, pneumothorax and, finally, "destroyed lobe" or "destroyed lung" [1, 3, 4]. The definite treatment of tracheobronchial foreign bodies is removal by fiberoptic or rigid bronchoscopy before permanent damage occurs.

Keywords: Bronchial carcinoma, foreign body aspiration

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