Haemorrhagic pleural effusion
several months after inhalation of a foreign body

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ABSTRACT: We present the case of a 50 yr old female with chronic obstructive lung disease, who, secondary to inhalation of a foreign body, developed recurrent pneumonia and a haemorrhagic pleural effusion (HPE). The foreign body (vegetable matter) was removed by rigid bronchoscopy and the patient recovered.

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The main cause of haemorrhagic pleural effusion (HPE) is malignancy of the pleura [1]. HPE may also be secondary to pulmonary infarction and malignant lymphoma, and in rare cases rheumatoid arthritis, tuberculosis, myocardial infarction, chronic pancreatitis [2], benign asbestos pleurisy and systemic lupus erythematosus [1].

We present a case of HPE following inhalation of a foreign body. Considerations regarding the pathophysiology of HPE are discussed.

Case Report

This 50 yr old Caucasian charwoman, with mild chronic obstructive lung disease and a smoking habit of 15-20 cigarettes per day for 30 yrs, had been treated for pulmonary tuberculosis in childhood, at the age of 2 yrs. Complete recovery was achieved.

The initial symptoms were severe cough, green sputum and fever. X-ray of the thorax showed a basal right-sided lung infiltrate and the patient was medically treated with pivampicillin and erythromycin. Her temperature normalized and cough decreased but there was still the production of yellowish sputum.

One month later, X-ray showed an improvement of the lung infiltrate. Forced expiratory volume in one second (FEV₁) was 53% of predicted value and forced vital capacity (FVC) 54% of predicted. There were no signs of bronchial asthma, after treatment with beta-agonists and budesonide.

After 3 months, the patient again developed fever and severe coughing with inflamed sputum. Chest X-ray showed increased blurring at the base of the right lung. Pondercinil was administrated for 10 days, and the basal right-sided infiltrate decreased, temperature normalized and cough decreased. Sputum was clear, but the patient still had intermittent coughing. Appetite was good and there was no loss of weight.

Cytological investigation of sputum showed no malignant cells or tubercle bacilli.

Nine months after the first visit, the patient developed intermittent right-sided chest pain, associated with severe cough and a 14 day period of abundantly green sputum, which cleared spontaneously. There was no fever. X-ray showed unchanged basal right-sided lung infiltrate.

On admission to hospital, muffled respiratory sounds at the lower right-side of the thorax were heard. Laboratory investigation showed an erythrocyte sedimentation rate of 35 mm·h⁻¹ (normal 2-20 mm·h⁻¹), a slightly increased white cell count, 11.8×10⁹·l⁻¹ (normal 3-9×10⁹·l⁻¹) and platelet count increased to 421×10⁹·l⁻¹ (normal 125-350×10⁹·l⁻¹). Electrocardiograms were normal.

Chest radiography showed a partially organized pleural effusion anterior and posterior to the right lung. Old tuberculous changes were seen apically on the same side (fig 1).

During pleurocentesis one litre of strongly haemorrhagic pleural fluid (i.e. a lot of erythrocytes present) containing 54 g·l⁻¹ protein was extracted. There were some leucocytes, but no lymphocytes in the pleural fluid. No malignant cells or tubercle bacilli were seen on smears, and all cell cultures were sterile.

Thoracoscopy showed a thickened visceral and a white and waxy parietal pleura with adherences and small pits of liquid haemorrhagic fluid. Histological examination of the pleural parietal biopsy specimens, showed chronic unspecific inflammation, and no sign of tuberculosis was found in cultures from pleura parietalis. Cytological examination of sputum was normal, without malignant cells or tubercle bacilli.
Fibreoptic bronchoscopy was then performed and a 1 cm², humpy, tumour-like process, with yellowish fibrosis, was found proximally and almost occluding the right intermediary bronchus. In addition, abundant, viscous and purulent mucus was found. Results of biopsies were inconclusive.

A bronchoscopic examination, using the rigid bronchoscope, was performed. In an attempt to biopsy the tumour, the bony consistency was observed. A firm grip removed a peanut-like foreign body (fig. 2). All of the visible bronchial tree was normal, with no pathological findings.

Histopathological studies of the mass demonstrated the presence of vegetable fibres. Afterwards, the patient recalled having inhaled a food matter before onset of symptoms nine months previously.

The chest radiogram, two months later, had returned to normal, and the patient had recovered.

Discussion

The finding of a foreign body in the right intermediary bronchus causing HPE is unique. Only casuistic reports of foreign bodies in the airways, without acute symptoms, have previously been reported [3, 4]. Development of pleural effusion after aspiration of vegetable matter into the right intermediary bronchus has been described in children [5].

The mechanism for developing HPE is uncertain. Pneumonopneumonia may lead to pleural effusion, which could be blood-stained [1]. In our patient, however, there was too much blood present to justify this explanation.

Pleural effusion may also be secondary to a reactivation tuberculosis (RTB). Typical roentgenographic pulmonary parenchymal infiltrates may be absent in patients with RTB [6]. Cultures for tubercle bacilli from pleural effusions are positive in approximately 50% of patients considered to have tuberculous pleurisy [7]. The chance of a positive culture is increased in proportion to the amount of fluid sent to the laboratory. Pleural biopsies show granulomata in about two thirds of patients and culturing the biopsies increases the rate of diagnosis to 90% [1]. Since all tests for TB were negative and the microscopy was dominated with erythrocytes and leucocytes, the possibility of TB causing HPE in our patient was unlikely.

Because of the massive amount of blood in the pleural fluid, the patient might be suspected of suffering from diffuse pleural mesothelioma (DPM), which is the most common cause of HPE. LODDENKEMPER [8] showed thoracic pain in 58% of patients suffering from DPM, and pleural effusion was found on thoracic X-ray in 80%. Cytological investigation showed a sensitivity of 50%, while histological examination of biopsies by thoracoscopy showed DPM with a sensitivity of 90–95% [8, 9]. Our patient retained her weight and investigations showed no malignancy. The right-sided infiltrate close to the pleura seen on X-ray disappeared after removal of the foreign body. Thus, there is no reason to believe that DPM caused HPE in this patient.

Asymptomatic chronic pancreatitis causing HPE is rarely seen [2]. Pleural thickening with no specific changes on biopsy specimens [2, 10] and raised amylase activity in the pleural fluid [11] are then seen. We did not measure the amylase activity in the pleural fluid. However, all symptoms disappeared as the foreign body was removed.

Food matter of bony consistence situated in the lung over a period of time has been described previously [12]. It is most likely that prolonged irritation with intermittent infections causes a severe pleurisy leading to fragility of the small vessels and secondary HPE. This condition may resolve as soon as the foreign body is removed.

References

1. After inhalation of foreign body.


