patient so that most of the course was received at home.

A CT scan of the chest taken at the end of treatment shows an empty cavity (fig 1c). The cavity has remained empty for four months and she continues to take oral itraconazole as her sputum still grows *Aspergillus*. She has been referred back to a transplant centre and has been accepted as a suitable candidate for the active transplant list.

Discussion

Aspergilloma of the lung grows in a pre-existing cavity and usually requires treatment if the patient develops symptoms, most commonly severe haemoptysis. The cavity may communicate with a bronchus and is occasionally viewed directly by fibreoptic bronchoscopy.[3] Medical treatment with either oral antifungal agents or intravenous amphotericin B has a poor record of success.[4,5] Surgery by lobectomy or marsupialisation may be required to clear an aspergilloma, but because of underlying lung disease it carries a high morbidity and mortality.[5,6]

We report the successful clearance of an aspergilloma in a patient with cystic fibrosis by percutaneous instillation of amphotericin directly into the cavity. We were encouraged in this approach by the report by Jackson and colleagues of four patients with aspergilloma treated with intracavitary instillation of amphotericin by an indwelling catheter. In one patient the fungal ball cleared completely, resolution of symptoms occurred in two patients, and there was no effect in the fourth.[1] A Korean group treated seven patients with haemoptysis caused by an aspergilloma using an indwelling catheter in four patients with twice daily cavitary injection in three patients. Haemoptysis ceased in all, and in three of the patients the aspergilloma cleared completely.[2]

Patients with cystic fibrosis and aspergilloma are likely to have many cysts and dilated bronchi colonised by *Aspergillus*. This may be a limiting factor in the success of this approach, with recurrence in the same cavity or another, although the treatment could be repeated if necessary. Only two cases of cystic fibrosis with an aspergilloma have been reported, though with longer survival and a higher prevalence of diabetes mellitus it may become more common.[7] We hope that this treatment has led to long term resolution of the aspergilloma and that our patient will now undergo successful lung transplantation.

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Colonisation with *Aspergillus* of an intralobar pulmonary sequestration

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Abstract

Pulmonary sequestration is a term used to describe an area of embryonic lung tissue supplied by an anomalous systemic artery. Two forms are recognised – extralobar and intralobar – with different clinical presentations. A patient is reported with intralobar pulmonary sequestration in the left lung and colonisation with *Aspergillus* which was successfully treated by lower lobectomy.

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Keywords: pulmonary sequestration, *Aspergillus*, aspergilloma.

Pulmonary intralobar sequestration, although uncommon, is seen more frequently than the extralobar type. The sequestered lung shares a common pleural covering with normal pulmonary tissue. The areas most frequently affected are the medial and posterior basal segments of the lower lobes, with the left being involved twice as often as the right. Pulmonary intralobar sequestration does not usually communicate with the normal bronchial tree although this communication can occur following infection. It is characteristic of both intralobar and extralobar sequestration that the blood supply is from a systemic artery usually arising from the aorta and, with extralobar sequestration, most commonly from the abdominal aorta.[1]

We report a case of an unusual presentation of pulmonary intralobar sequestration with colonisation by *Aspergillus*.

Case report

A 28 year old woman with no known history of pulmonary disease presented with fever, cough and sputum. A diagnosis of left lower lobe pneumonia was made and antibiotics were prescribed with improvement except for persistent weakness. A month later she developed further respiratory symptoms associated with fever and was admitted to hospital. There were no con-

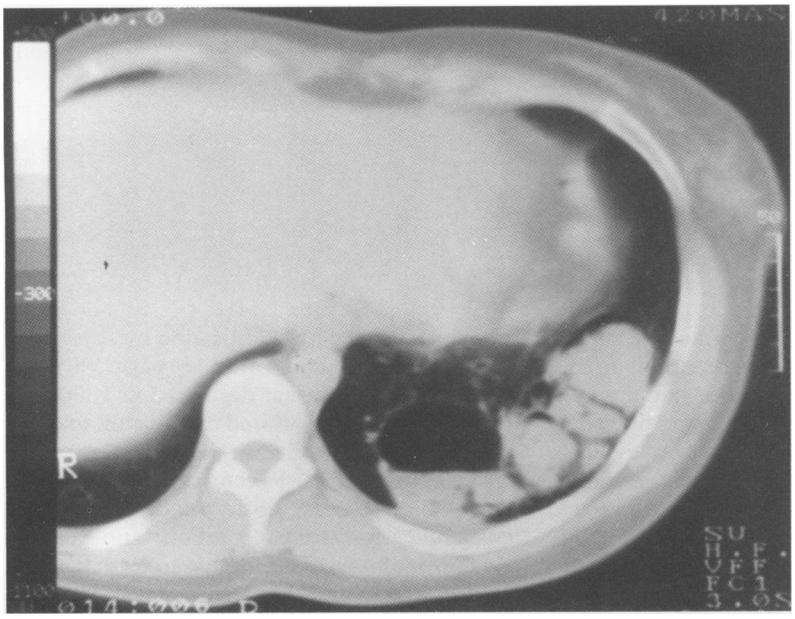

Figure 1 Chest CT scan showing cavitary lesions in the left lower lobe.

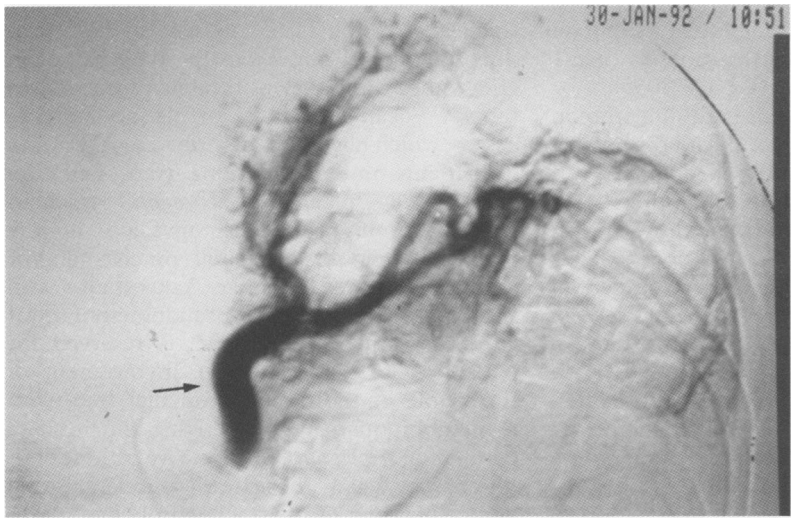

Figure 2 Aortogram showing a large artery (arrow) arising from the abdominal aorta and irrigating the malformation.

stitutional symptoms. Breath sounds were diminished at the left base. There was no evidence of other thoracic or extrathoracic abnormality.

The results of routine serum biochemical investigations were normal. Sputum and blood cultures were negative but precipitins against *Aspergillus fumigatus* were present.

The chest radiograph revealed an infiltrate with two cavities in the left lower lobe. A chest computed tomographic (CT) scan demonstrated a lesion in the posterior basal segment of the lower lobe containing an infiltrate and two cavities with homogeneous dense masses suggestive of fungal colonisation (fig 1). There was no evidence of pleural effusion nor mediastinal involvement and bronchoscopic examination was normal. An aortogram established the diagnosis of intralobar sequestration (fig 2).

A left posterolateral thoracotomy was performed. The left upper lobe was normal but the left lower lobe was hepatised, containing many nodules and cysts. A lower lobectomy was performed and the anomalous artery arising from the abdominal aorta was ligated.

Histological examination of the left lower lobe confirmed the anomalous systemic artery and also chronic pneumonia with bronchiectasis. Microscopically the lung parenchyma had been destroyed and replaced by cysts, lymphoid nodules, interstitial chronic inflammation, and fibrosis. There were cavities containing masses of hyphae of *Aspergillus*.

The patient made an uneventful recovery and was discharged on the seventh postoperative day.

Discussion

Pulmonary intralobar sequestration is a spectrum of disorders involving the bronchopulmonary airway, the arterial supply of the lungs, the lung parenchyma, and its venous drainage. The commonest clinical presentation is chronic cough, sputum, and recurrent attacks of pneumonia.[1 2] Several associations with this bronchopulmonary malformation are potentially life threatening including colonisation with *Aspergillus*,[3] broncho-oesophageal fistula,[4] or aortitis associated with severe rheumatoid arthritis.[5]

An aspergilloma develops when the fungus colonises and proliferates in pre-existing cavities or bronchiectatic areas. Abnormalities that predispose to the development of an aspergilloma include bullae, abscess, carcinoma, bronchiectasis, sarcoidosis, and tuberculous cavities, the latter being the most common.[6] To our knowledge pulmonary intralobar sequestration associated with aspergillomas has been reported only once before.[3] Radiological signs of an aspergilloma are large intrapulmonary cavities containing a solid mass,[6] as in our case. The positive precipitin test to *Aspergillus* confirmed the diagnosis.

The radiological diagnosis of pulmonary sequestration is based on chest CT scan, selective bronchography, pulmonary arteriography, or aortography. The most accurate way to establish the diagnosis is to visualise the systemic arterial blood supply radiologically. These vessels may arise from the descending thoracic aorta some distance below the diaphragm and even from intercostal arteries or from a branch of a renal artery.[7]

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