Removal of the patient from the nursing home to hospital allows time for appropriate investigation and clarification of the circumstances which aroused suspicion. While not wishing to dissuade medical and nursing staff

from reporting abuse of the elderly we would caution against precipitately reaching this diagnosis until other reasonable possibilities have been excluded, bearing in mind that abuse may coexist with the above-mentioned conditions.

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Spontaneous regression of pulmonary mucormycosis

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Summary
A case of pulmonary mucormycosis with spontaneous resolution is presented. The patient had no known underlying predisposing disease.

Keywords: pulmonary mucormycosis, Graves thyrotoxicosis

Mucormycosis is usually a fulminant infection with a high mortality unless treated aggressively with amphotericin and surgical debridement. It occurs primarily in patients who have diabetes mellitus and immunocompromised states. We report an unusual case of pulmonary mucormycosis which regressed spontaneously without antifungal or surgical treatment. Also unusual was the fact that the patient did not have any described underlying predisposing cause for developing the infection. He had Graves thyrotoxicosis, which has not so far been described in association with mucormycosis.

Case report

A 50-year-old man from North Eastern India, who had been suffering from thyrotoxicosis and chronic diarrhoea intermittently for 12 years, presented with jaundice, worsening diarrhoea dehydration and altered sensorium, for three weeks. He had abused alcohol in the past, but had abstained for the last five years. He had no respiratory symptoms. Examination revealed a dehydrated, icteric, emaciated man. The liver was palpable 2 cm below the costal margin. Splenomegaly, ascites, and signs of liver cell failure were absent. The thyroid gland was diffusely enlarged. The blood pressure was 100/70 mmHg and pulse was 88 beats/min.

The respiratory and cardiovascular systems were normal.

The results of pertinent laboratory investigations are given in the box. Serum potassium, calcium, phosphorus and bicarbonate values were normal. Hepatitis B surface antigen and antibodies to HIV were negative. Stool microscopy, culture and fat content were normal. Sputum was negative for acid-fast bacilli and fungus.

Chest X-ray showed two nodular opacities in the midzones with cavitation, the largest measuring 4 cm (figure 1). Computed tomography (CT) revealed a 3-cm soft tissue density nodule in the lingula, with no evidence of cavitation or calcification. A similar 1-cm lesion was also seen in the middle lobe (figure 2).

The patient's renal function and general condition improved rapidly with hydration. Neomercazole was thought to contribute to hepatic derangement, and after its withdrawal,

Laboratory results	
haemoglobin (g/dl)	8.9
total white cells ($\times 10^9/l$)	26
neutrophils (%)	85
blood urea (mmol/l)	71
serum creatinine ($\mu\text{mol/l}$)	62
serum sodium (mmol/l)	122
total bilirubin ($\mu\text{mol/l}$)	126
direct bilirubin ($\mu\text{mol/l}$)	56
total protein (g/l)	61
serum albumin (g/l)	2
serum aspartate transaminase (IU/l)	126
serum alanine transaminase (IU/l)	75
serum alkaline phosphatase (IU/l)	153
random blood sugar (mmol/l)	5.4
total thyroxine (nmol/l)	168.5
free thyroxine (pmol/l)	36.2

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the liver function tests reverted to normal. Radio-iodine at a dose of 5 mCu was administered for ablation of the thyroid gland. With steady improvement over 25 days of hospitalization, an fine-needle aspiration cytology of the lung opacities was undertaken. Microscopy showed necrotic material and cellular debris. There were haphazardly branched fungal hyphae, of irregular width, with rare septae, resembling *Mucorales* species (figure 3).

After much deliberation it was decided to withhold antifungal treatment because the patient had no respiratory symptoms, his general condition was vastly improved, and the lesions appeared well encapsulated. The patient was discharged on propranolol 40 mg tid for control of thyrotoxic symptoms.

The patient returned for follow-up after nine months. He was in good general health and denied fever, cough or haemoptysis. The

thyroid gland was still diffusely enlarged but overt signs of thyrotoxicosis were not present. He had gained 7 kg in weight. Chest X-ray revealed complete clearing of the bilateral nodular opacities (figure 4). Follow-up CT scan of the thorax showed a residual parenchymal fibrosis in the lingular region on the left side; the right lung fields were clear (figure 5).

Mucormycosis: taxonomy	
Class	– Zygomycetes
Order	– Mucorales
Genera	– Rhizopus
	– Mucor
	– Absidia
	– others

Mucormycosis: microscopy	
•	hyphae – broad (10–20 µm diameter)
•	aseptate, right-angled branching

Figure 1 On admission: bilateral nodular midzone lesions can be seen

Figure 2 On admission: a 3-cm nodular lingular lesion is seen with no evidence of cavitation or calcification

Figure 3 Haphazardly branched, rarely septate hyphae of irregular width. PAP/400

Figure 4 Nine months after admission: the nodular midzone lesions have resolved

Figure 5 Nine months later: the lingular lesion has reduced in size leaving a 1-cm hyperdense parenchymal scar

Discussion

Although mucor are ubiquitous saprophytic fungi, normal healthy individuals are not usually infected. Infection with mucor occurs in the setting of diabetes, leukaemia, lymphomas, other immunocompromised states and desferrioxamine therapy. Pulmonary infection with mucor is rare, only 255 cases having been reported so far.¹ Pulmonary mucor has been described without known predisposing factors in only two patients.^{2,3} The present case did not have an immunocompromised state, but he was malnourished after several months of chronic diarrhoea. Malnutrition may have been responsible for an opportunistic infection, but it has not previously been described as predisposing to mucor infection.

The second unusual feature in this case is the fact that there was spontaneous resolution of the mucor lesions without antifungal therapy

Mucormycosis: events predisposing to infection
<ul style="list-style-type: none">• haematologic – leukaemia, lymphoma, aplastic anaemia, myeloma• diabetes mellitus• organ transplant recipients• renal failure• immunosuppressive therapy• solid tumours• desferrioxamine therapy
Mucormycosis: clinical manifestations
<ul style="list-style-type: none">• rhinocerebral• pulmonary• cutaneous• gastrointestinal• central nervous system• disseminated

or surgical intervention. Such a course has been described before in two patients,⁴ one with diabetes and the other with neutropenia. However, such regression is very unusual. This case suggests that, in the absence of predisposing factors, or if there is rapid clinical improvement in nutrition, and if respiratory symptoms are not present, then pulmonary mucormycosis, can be left alone.

There is a theoretical possibility that radioiodine used for ablation of the thyrotoxic gland may have been lethal to the pulmonary fungus. Iodides are used in the treatment of subcutaneous phycomycosis.⁵ However, it is highly unlikely that the isotope could have reached the lung in sufficient quantity, in the presence of an intact thyrotoxic thyroid gland, to have any therapeutic effect.

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