Pneumonic aspergillosis complicating healed tuberculosis

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INTEREST in pulmonary aspergillosis was stimulated by the review by Hinson, Moon & Plummer (1952) who classified the lesions as (1) saprophytic, (2) allergic, (3) septicaemic or pyaemic. Most reports of pulmonary as opposed to bronchial infection, are of aspergilloma, i.e. saprophytic infection of an existing cavity, usually tuberculous (Campbell & Clayton, 1964). There have been few reports of invasive and destructive pulmonary disease and these have mostly come from the United States, e.g. Des Autels, Hoffman & Montes (1962), Finegold, Will & Murray (1959) and Utz & Treger (1959).

This paper presents a further case of extensive pulmonary invasion in which the patient had few symptoms and survived the illness.

Case report

A 73-year-old woman presented in 1959 with an 18 months' history of weight loss and cough. Several sputum cultures for *M. tuberculosis* were positive and treatment with streptomycin, PAS and isoniazid was given until 1962. The radiological features remained static until December 1965, when new shadowing in the right lower zone was observed (Fig. 1). A short course of tetracycline was given but radiological improvement did not occur and she was admitted to hospital. She complained of a poor appetite and had lost a few pounds in weight over the preceding 3 months.

On examination there was flattening of the right side of the chest with diminished expansion. Bronchial breathing was audible over most of the right lung. She produced 2-3 oz/day of green sputum, from which *A. fumigatus* was twice cultured. Prick test for *A. fumigatus* was negative but serum precipitins were present, the reaction being reported as moderately strong. Hb 72% WBC 22,300/mm³ (94% polymorphs but no eosinophilia). ESR 77 mm/hr (Westergren). Temperature was 99-100°F for 6 weeks but subsided

FIG. 1

after potassium iodide therapy was begun. Six sputa were negative for AFB. The lesions rapidly progressed to involve all the right lung (Fig. 2) but apart from a productive cough the patient was symptom-free 8 months later having been well throughout.

Discussion

The aspergilli are only slightly pathogenic (Orie, de Vries & Kikstra, 1960) and progressive or disseminated disease is usually a consequence of either a pre-existing lung disease or some predisposing condition or both. In the present case it followed tuberculosis and may have been accelerated by the short course of tetracycline. Other predisposing conditions include leukaemia, bronchiectasis, diabetes mellitus (Seabury &

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FIG. 2

Samuels, 1963), Hodgkin's disease (Gowing & Hamblin, 1960), carcinoma of bronchus (Utz & Treger, 1959), leukopenia (Welsh & Buchness, 1955), staphylococcal pneumonia (Wahner *et al.*, 1963). Treatment with broad-spectrum antibiotics, corticosteroids, antimitotic agents or radiotherapy have also been incriminated. These factors are reviewed by Zimmerman (1955) and by Gowing & Hamblin (1960).

Several factors explain the pathogenesis. *A. fumigatus* produces a necrotizing endotoxin (Henrici, 1939, 1940). Mycotic invasion of blood vessels and nonmycotic vasothrombosis are not uncommon in aspergillosis and the fungus may also invade pulmonary infarcts (Symmers, 1962). The medium-sized arteries and veins were involved in all five of Gowing & Hamblin's (1960) cases.

Positive sputum culture alone is insufficient evidence of aspergillosis but in the invasive type the presence of serum precipitins provides useful confirmatory evidence, the prick test being usually negative. Ideally the histology and culture of lung biopsy material is required but lung biopsy is not without risk. Of four cases in children (Wahner *et al.*, 1963) it was followed by open pneumothorax in one case and by cold abscess and generalization of the disease in the other.

The patient's tolerance of the infection prob-

ably reflects the absence of severe underlying disease; it is the debilitated who succumb to aspergillosis.

Treatment is difficult. Belcher & Plummer (1960) discourage surgery in broncho-pulmonary aspergillosis and their strictures seem applicable here also. Potassium iodide is useful symptomatically but amphotericin B probably offers best hopes of a cure. Edwards & La Touche (1964) are hopeful of Pimaricin.

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