Aspergillosis of bone

By Michael Grossman, M.D.*

Department of Radiology, University of Cincinnati College of Medicine, Cincinnati, Ohio 45229

Although usually a harmless inhabitant of the upper respiratory tract, Aspergillus species may at times be associated with human disease. Aspergillus fumigatus is by far the most common pathogen, but other species (A. niger, A. flavus and A. nidulans) have also been implicated.

Aspergillus is most commonly found in a fungus ball within a pre-existing cavitary lung lesion; it may also be seen in hypersensitivity reactions associated with mucoid impaction. Primary infection with Aspergillus is rare, and presents as a chronic localized pulmonary infection, usually with cavitation (Felson, 1973; Fraser and Pare, 1970).

Occasionally, and particularly in patients with disordered immune response, Aspergillus may become invasive. The increasing use of immunosuppressive therapy has seen a corresponding increase in the incidence of "opportunistic" aspergillosis. This virtually always presents as lung disease, most often as single or multiple areas of consolidation with cavitation. Dissemination from the initial pulmonary disease may occur, and involvement of nearly every organ in the body has been reported. Young and co-workers (1970) in describing their experiences with 98 cases of aspergillosis recorded nearly every organ in the body has been reported.

Case history
R. T., a 44-year-old Caucasian male with chronic renal failure received a renal allograft transplant at Cincinnati General Hospital in July, 1971. He was placed on Prednisone and Imuran and did reasonably well until one year later, when a cough and fever brought him to the hospital. Chest radiographs revealed a right lower lobe infiltrate, which progressed to cavitation. Spine films (Fig. 3) showed complete loss of the L2-3 interspace with destruction of the adjacent surfaces of the vertebral bodies. Patchy sclerosis, collapse, and fragmentation were noted. Although the vertebral bodies of L2 and L3 were involved, the posterior elements appeared normal, and there was no recognizable paravertebral mass.

Open biopsy of L2 revealed a soft, pulpy vertebral body which was partially collapsed. Microscopic sections demonstrated a chronic granulomatous reaction in which hyphae were evident. A culture subsequently grew Aspergillus fumigatus, and brush biopsy of the pulmonary infiltrate yielded the same organism. Anaerobic culture of the spine lesion also yielded a gram-negative pleomorphic rod, thought to be Corynebacterium.

Amphotericin B therapy was begun but could not be tolerated in adequate doses. A few days later, the patient expired suddenly of acute coronary thrombosis. At autopsy, a chronic granulomatous process was found involving the spine, meninges and brain, and both lungs, with abscess formation in the right lower lobe. Aspergillus fumigatus was identified in the cerebrospinal fluid.

Discussion

Despite the relatively large number of reports of pulmonary and systemic aspergillosis in recent years, aspergillosis of bone appears to be extremely rare. The condition generally results from direct spread of a contiguous primary infection, in the lung or elsewhere. Just (1931) reported a patient who had a spontaneous brain abscess with destruction of the underlying orbit and frontal bone. Spread from a primary nasopharyngeal infection was postulated but could not be proved. Skull films in this case were reportedly normal.

Skull involvement secondary to aspergillosis of the sinuses or orbits has also been reported. Green, Font and Zimmerman (1969) collected 10 cases of primary orbital aspergillosis, some of which apparently had involvement of the bony orbit as well as the soft tissues.

Aspergillosis of the spine generally results from direct extension of a pulmonary infection. Redmond and her colleagues (1965) reported a patient with lung disease caused by Aspergillus nidulans with extensive destruction of ribs and thoracic vertebrae. A similar case, in which the patient presented with
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symptoms of spinal cord compression was reported by Seres, Ono and Brenner (1972). Cawley (1947) described aspergillosis of the lung with a soft tissue mass associated with periosteal reaction about a rib. Tobler and Minder (1954) described another patient in whom pulmonary aspergillosis spread to destroy contiguous vertebrae and ribs. Unfortunately, in none of these cases were radiographs included in the reports.

Bony aspergillosis may also occur from haematogenous dissemination, as was the case with our patient. Shaw and Warthen in 1936 reported an instance of osteomyelitis of the finger secondary to a foreign body. The patient subsequently developed extensive destruction of thoracic vertebrae and adjacent ribs without evident lung disease. Aspiration of both the hand and spine lesions yielded pure cultures of *Aspergillus fumigatus*.
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Disseminated aspergillosis may also produce widespread microgranulomata within the bone marrow, as described by Francombe and Townsend (1965). Radiographic findings relative to the marrow involvement were not present.

In the present case, a patient on immunosuppressive therapy developed a lung lesion followed by gradually progressive destruction of a remote area of the spine, attributable to aspergillosis.

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REFERENCES

A "false-positive" abdominal scan for Meckel's diverticulum

By B. C. Lentle, M.D., F.R.C.P.(C) and G. W. Scott, F.R.C.S.(C)

Dr. W. W. Cross Cancer Institute and the Charles Camsell Hospital, Edmonton, Alberta, Canada

Because of the concentration of $^{99m}$Tc-pertechnetate by gastric mucosa, abdominal scintiscanning has been reported to be of value in the diagnosis of heterotopic gastric mucosa in Meckel's diverticulum (Duszniski, Jewett and Allen, 1971; Kilpatrick and Aseron, 1972; Rosenthal et al., 1972). Chaudhuri and Christie (1972) have described false-positive findings in four patients.

This report concerns a patient with a positive abdominal scan in whom a jejunal intussusception