MENINGEAL ASPERGILLOSIS

(A Case Report)

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Introduction

Aspergillosis, an infection caused by fungi of aspergillus species (*A. fumigatus*, *A. niger* and others), usually occurs in immunocompromised hosts. These are usually transplant recipients or patients with haematological malignancies. We present an unusual case of meningitis caused by aspergillus species in an apparently immunocompetent host without any primary focus elsewhere in the body.

Case Report

A 30-year-old male patient underwent an operation in a civil hospital in 1995 for an intradural, extramedullary tumour, which was reported as a Schwannoma. The patient at that time had features of subacute onset, gradually progressive paraparesis with a sensory level at the tenth spinal level. Subsequent to the operation he was apparently asymptomatic. No details of the basis of the histological diagnosis were available. He developed headache, stiffness of the neck, vomiting and intermittent fever 3 months later. There was no history suggestive of sinusitis or otitis media. At the time of admission, general physical examination was normal. Nervous system examination showed normal higher mental functions and speech. He had papilloedema. The right lower limb had increased muscle tone and mild weakness. Other limbs were normal. Deep tendon jerks were exaggerated on both sides and plantar reflexes were flexor bilaterally. Examination of other systems was non-contributory.

Routine haematological and biochemical parameters were normal. Lumbar puncture was performed. The CSF was turbid with an RBC count of 6/cu mm and a WBC count of 210/cu mm; predominant white cells were neutrophils. CSF proteins were 90 mg/dL and sugar was 70 mg/dL. No organisms were seen on Gram's stain, Ziehl Neelsen stain or India ink preparation. No organisms were isolated on CSF culture. Blood for HIV antibodies was negative. CT scan of the brain showed an infarct of the right thalamic region.

A diagnosis of pyogenic meningitis was made and patient was treated with parenteral cefotaxime alongwith supportive therapy. The patient however, developed low to moderate grade

fever (maximum 102°F) and symptoms persisted. He was put on anti tuberculous chemotherapy (SHRZ regimen) 2 weeks after initial admission. He continued deteriorating and expired 3 weeks after hospitalisation.

At autopsy, the brain and meninges weighed 1.5 kg. The meninges were thickened and shaggy. The brain appeared oedematous and showed large haemorrhages in the left caudate and lentiform nuclei. The thalami appeared normal. No space-occupying lesion was seen.

Histologically, the meninges exhibited severe vascular congestion. The meningeal surface was covered by a fibrinous exudate and a dense mixed inflammatory infiltrate composed mainly of polymorphonuclear neutrophil leukocytes. Embedded on the surface of the meninges, were seen septate fungal hyphae, with vesicular swellings, in masses. The hyphae had dichotomous branches at acute angles and were of relatively uniform width (3-6 µm) and appeared pale and eosinophilic on H&E stain (Fig 1). The fungal elements were better demonstrated with Grocott's silver methenamine (GSM) stain (Fig 2). The hyphae were at places surrounded by neutrophil leukocytes. Morphologically, the appearance of the hyphae corresponded to that of aspergillus species. Sections from the left caudate and lentiform nuclei showed extensive haemorrhages and blood vessel congestion, associated with oedema and reactive gliosis. Other areas of the brain were unremarkable except for extreme vascular congestion. No fungi were seen within the brain substance per se. All other organs were unremarkable on gross as well as on histopathological evaluation.

Discussion

Aspergillosis refers to a variety of diseases of man and lower animals caused by several species of *Aspergillus*. Usually *A. fumigatus* group is the pathogen involved, but other groups, such as *A. flavus*, *A. niger* and *A. terreus*, can also cause aspergillosis [1]. The diseases vary in severity and clinical course, depending upon the organs affected, the host, and the form of the disorder.

All the common species of *Aspergillus* which

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Fig. 1 : Section from meninges showing hyphae of *Aspergillus* Spp (H & E x 400)

cause disease in humans are ubiquitous in the environment, growing on dead leaves, stored grain, compost piles and other decaying vegetation. The main portal of entry is via the respiratory route. However, while inhalation must be common, disease is rare, and is almost entirely confined to immunocompromised patients. About 90 per cent will have 2 of the 3 conditions, viz, less than 500 granulocytes per microlitre of blood, administration of supraphysiological doses of adrenal corticosteroids and history of cytotoxic drug ingestion such as azathioprine [2]. Aspergillosis may occur in transplant recipients, in patients with haematological malignancies, or in patients with advanced HIV infection.

It presents mainly with pulmonary symptoms [3]. Extrapulmonary forms of aspergillosis are seen almost exclusively in severely neutropenic and immunocompromised patients as part of the spectrum of invasive aspergillosis and most commonly involve the central nervous system causing abscesses, haemorrhagic or mycotic aneurysms, or meningitis [4]. *Aspergillus* can gain access to the circulatory system through trauma, self administered heroin, blood transfusion, or surgical implantation of a prosthesis.

Central nervous system involvement usually results from haematogeneous dissemination of the disease. Direct extension can also occur from le-

sions in the orbit, nose and paranasal sinuses, with entry of the fungus through the base of the skull. Although central nervous involvement occurs in more than 50 per cent of the cases, it is still a rare event [5-7].

Our case presents the following unusual features :

1. Our patient was negative for HIV antibodies, and was immunocompetent.
2. The focus of aspergillosis in the meninges was sole lesion in the entire body.
3. The mode of introduction of the organism into the body appears to be intrathecal, during spinal surgery.
4. No mycotic abscesses were found in the brain substance itself.

To the best of our knowledge, ours is the first reported case in the Indian literature of Aspergillosis presenting as a primary meningeal lesion, with symptoms of an acute to subacute meningitis, in an immunocompetent individual.

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