

Rhino-orbitocerebral Infection Caused by *Aspergillus flavus* in a Diabetic Patient

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Abstract

A 65 year old male with uncontrolled diabetes mellitus presented with history of headache, epistaxis, mass in nose and one week history of progressive swelling and pain, ptosis of right eye and loss of vision. In spite of surgical debridement and IV Amphotericin B, the patient developed facial palsy, three days after debridement.

Introduction

Aspergillosis may be noninvasive or invasive. The invasive Aspergillosis of sinus can be localized or fulminant.¹ Invasive infections are usually seen in patients with one or more predisposing factors as corticosteroid therapy, HIV infection, diabetes mellitus, alcoholism, trauma and advanced age.² Rare cases have been reported in immunocompetent patients.³ *Aspergillus fumigatus* is the commonest species encountered in invasive Aspergillosis^{2,4} followed by *Aspergillus flavus*.³ Response to treatment depends upon early diagnosis and initiation of antifungal treatment augmented by surgical debridement. Many a times complete cure is rarely achieved.² Here we report a case of localized invasive rhino-orbitocerebral Aspergillosis in an uncontrolled diabetic patient.

Case Report

A 65 year old male with uncontrolled diabetes mellitus presented with history of headache, epistaxis, mass in nose since 15 days. There was a history of pain in right eye, periorbital region, ptosis and loss of vision of right eye. He was HIV seronegative. The

patient's routine haematological investigations were within normal limits. There was no abnormality on his X-ray chest. Blindness of the right eye was confirmed by ophthalmological examination. A CT Scan of paranasal sinuses (Fig. 1) showed enhanced density in right maxillary sinus, bilateral sphenoidal sinuses. Inflammation was seen in right intraocular fat. Soft tissue swelling with inflammation in right maxillofacial region, mild swelling in right zygomaticotemporal region. Mucosal thickening of right maxillary sinus was present. Inflammatory soft tissue extending in right periorbital region with retro-orbital extension along orbital floor was observed. CT Scan of brain showed ischaemic changes in bilateral parieto-occipital white matter, while MRI scanning of brain showed significant fluid collection in maxillary sinus, right frontal and sphenoidal sinus.

Initially biopsy was taken from nasal mass, which showed plenty of septate hyphae in KOH preparation (Fig. 2). Haematoxylin and Eosin stained smears showed septate hyphae. Gram staining showed Gram positive hyphae and Gomori's Methenamine silver staining showed septate hyphae (Fig. 3). Biopsy was cultured on Sabouraud's Dextrose agar (SDA) without and with antibiotics. Yellowish growth suggestive of *Aspergillus flavus* was observed on SDA. Lactophenol Cotton blue preparation (LPCB) from colony on SDA showed head of *Aspergillus flavus* surrounded by sterigmata and conidia all over the surface (Fig. 4). Debridement of tissue with enucleation of right eye was done. The tissue was again processed similar to nasal biopsy which revealed similar findings. The patient was started on I.V. Amphotericin B along with oral Voriconazole treatment, but after three days he developed facial palsy when last follow up was taken.

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Fig. 1 : CT Scan of paranasal sinuses showing enhanced density in right maxillary sinus, bilateral ethmoidal and sphenoidal sinuses. Soft tissue in right maxillary region extending to right periorbital region with retroorbital extension along orbital floor.

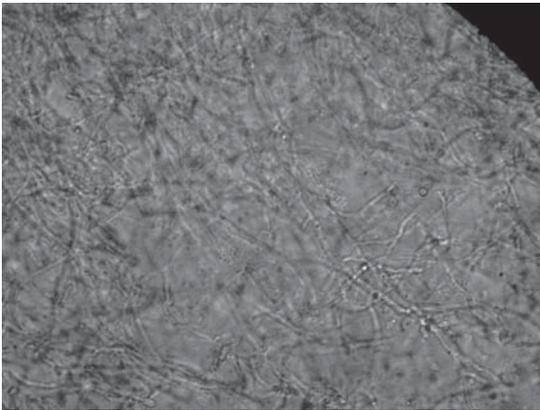


Fig. 2 : KOH preparation showing septate hyphae.

Discussion

Invasive *Aspergillus* infection of sinuses involving adjoining structures is a well documented cause of morbidity and mortality in immunocompromised hosts.^{2,4,5} There are many cases of Aspergillosis invading orbit and causing visual loss.²⁻⁵ Neuroaspergillosis is an uncommon infection, which accounts for 5% of intracranial fungal infections.⁶ In comparison with cerebrum, cerebellum and brain stem are less commonly affected. Commonest mode of CNS Aspergillosis

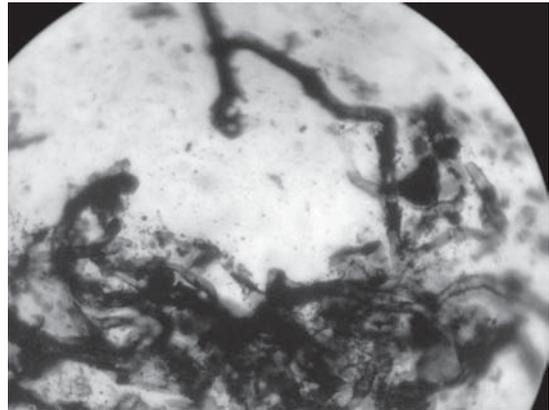
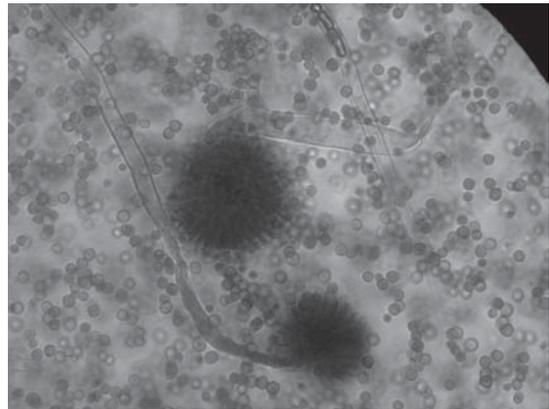


Fig. 3 : GMS stained smear of biopsy showing brownish black hyphae against green background.



*Fig. 4 : LPCB preparation from colony on SDA showing head of *Aspergillus flavus* surrounded on whole surface with sterigmata and conidia.*

reported in India is via sinocranial route.^{7,8}

The mechanism causing invasive Aspergillosis remains unclear. It is possibly caused by qualitative cellular and subcellular immunodeficiency. Regarding a mechanism of damage at cellular level in cerebral Aspergillosis, recent invitro studies have implicated secretions of various necrotising factors with toxic and lytic activity towards neurons and ganglion cells.⁶

CNS Aspergillosis is favoured by working in agriculture and by a tropical climate.⁷

Aspergillus flavus has a peculiar propensity to grow and flourish in microaerophilic environment of nasal and paranasal sinuses in climates such as Africa, Saudi Arabia and the Indian Subcontinent.⁹

Voriconazole treatment together with neurosurgical management is currently the best approach to treat patients with CNS Aspergillosis.¹⁰

Specific diagnosis is often delayed as it may mimic mucormycosis or malignancy.⁵ Factors such as nonspecific early symptoms, long time taken for diagnosis and initiation of antifungal treatment determine the outcome of the cases.

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DAY OR NIGHT BLOOD PRESSURES TO PREDICT CARDIOVASCULAR EVENTS?

The predictive value of 24-h blood pressure for cardiovascular events is greater than that seen for office blood-pressure values in populations, as well as in people with untreated and treated hypertension.

In 1988, O'Brien and colleagues reported that patients in whom the nocturnal decrease in blood pressure was blunted had a greater prevalence of organ damage and a less favourable outcome than those whose blood pressure dropped at night. Several studies then confirmed the higher prognostic value of night-time blood pressure than daytime blood pressure for cardiovascular events.

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