Fatal Cerebral Abscess caused by *Cladophialophora bantiana*


**Abstract**

Primary cerebral phaeohyphomycosis is caused by pigmented fungi that exhibit distinct neurotropism often in immunocompetent individuals. A 20 yr old male presented with multiple brain abscess which was subsequently proven microbiologically to be due to *Cladophialophora Bantiana*. In spite of near total excision and appropriate antifungal agents succumbed to his illness. We report this case to highlight its rarity and high mortality in an immunocompetent host. There is no initial clinical or laboratory feature that makes a preoperative diagnosis possible and relies on microbiological confirmation.

**CASE REPORT**

A 20 year-old male from North East India presented at the Emergency Department with fever, headache and vomiting for the preceding one month. There was no history of seizures, loss of consciousness, ear discharge or trauma. On admission he was drowsy with a Glasgow Coma Score (GCS) of 13/15. His pulse rate was 56 beats per minute and blood pressure was 110/70 mm of mercury. He had bilateral papilledema, with no cranial nerve involvement or any other focal neurological deficits. The rest of the physical examination was unremarkable. His routine blood tests including a complete blood count, blood chemistry and serum electrolytes were normal and he was seronegative for HIV1 and HIV2 by ELISA. A Computed Tomography (CT) scan of his brain revealed multiple ring enhancing discrete lesions in the right frontal lobe, the largest measuring 26 x 16 mm with moderate perilesional oedema. There was mass effect in the form of an effaced right frontal horn and minimal midline shift (Fig. 1). A

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Fig 1: CT Scan showing discrete ring enhancing lesions in the right frontal lobe, the largest measuring 26x 16.5 mm, with moderate perilesional edema and mass effect in the form of effaced right frontal horn and minimal midline shift.
search for a parameningeal focus of infection including an ear, nose and throat endoscopic evaluation was negative.

A right frontal craniotomy and near total excision of the mass was done on the second day of admission. The dura and the underlying brain were tense and pulsatile. A corticetomy was done after ultrasound localisation and the abscess cavity was encountered about 1 mm beneath the cortex. The cavity contained thick yellow pus, which was drained and most of the abscess wall was excised, except a small portion posterior to prevent opening into the ventricle.

The direct microscopy of the pus showed septic dematiaceous fungal hyphae. Subsequently a fungus was cultured from abscess wall and pus and was identified on the basis of colonial and microscopic morphology as *Cladophialophora bantiana*. Histopathology of the abscess wall revealed an organising abscess with sepsate, dematiaceous fungal hyphae and associated granulomatous inflammation.

Post-operatively the patient’s sensorium remained the same with mild left hemiparesis. He was initiated on Intravenous (IV) Amphotericin B in the immediate post-operative period. The option of a triple regimen with injectable Flucytosine and oral Itraconazole in addition to IV Amphotericin was considered once the organism was identified as this combination was reported to have improved survival. Injectable Flucytosine was later discontinued after 2 days due to financial constraints. Anti-cerebral edema measures were also undertaken. There were no adverse reactions to therapy apart from hypokalemia due to Amphotericin, which was corrected immediately. However the patient failed to respond, developed progressive worsening of sensorium and remained febrile. Fifteen days post-surgery he died of an abrupt cardio respiratory arrest possibly due to cerebral edema. Urgent neurosurgical intervention was ruled out due to the absence of brain stem reflexes.

**DISCUSSION**

Fungal infections of the CNS are often associated with severe immunodeficiency, but primary cerebral phaeohyphomycosis appears to be an exception to this rule with most cases occurring in immunocompetent patients. This was the situation with this patient, who had no underlying disease that could be detected and had previously been healthy. A recent study of 101 patients with primary cerebral phaeohyphomycosis found that over 50% of them were immunocompetent and had no apparent risk factors for the infection. It was also found that *Cladophialophora bantiana* was the most common aetiological agent, found in 48 of the cases. Other reported causes of cerebral phaeohyphomycosis include *Ramichloridium mackenziei*, *Fonsecaea monophora* and *Ochroconis gallopavum*.

In the majority of cases of cerebral phaeohyphomycosis reported there is no evidence of sinus or lung disease. Indeed, symptomatic sinusitis or localized infection due to dematiaceous fungi at another site is very rare. Inhalation and hematogenous spread to the CNS from a primary sub clinical pulmonary focus can be presumed to be the portal of entry. Most cases present as brain abscesses with focal neurologic deficits and/or generalized seizure.

Cerebral phaeohyphomycosis is a rare condition; therefore there are no guidelines as to accepted therapy and no clinical trials comparing regimens. It is generally accepted that the best outcomes are seen in patients who receive both surgical evacuation of the abscess and systemic antifungal therapy. Complete surgical clearance should be the aim as this appears to be associated with a higher rate of success. In our case a small portion of the abscess wall was left behind to avoid opening into the ventricle which could potentially lead to a ventriculitis. In addition, a fungal infection was not suspected.

The overall mortality associated with cerebral phaeohyphomycosis is around 70%. In the study by Revankar et al, treatment with the combination of amphotericin B, 5-flucytosine, and itraconazole was associated with improved survival however the number of patients who received this combination therapy was small.

Previous case reports of cerebral phaeohyphomycosis due to *C. bantiana* from India have reported varying outcomes. Whilst Deb et al reported a successful outcome in a patient treated with total excision of the abscess and amphotericin B, a patient treated by Jayakeerthi et al succumbed to the infection despite excision of the abscess and therapy with fluconazole, flucytosine and amphotericin B. In our patient despite near total resection of the abscess and appropriate antifungal agents he succumbed to his illness, again emphasizing the importance of total removal of affected tissue, and overall high mortality.

Unfortunately, there are no initial clinical or laboratory features that yield a preoperative etiological diagnosis of this condition. This case is being reported for its rarity and to sensitize physicians to suspect phaeohyphomycosis in evaluating a brain abscess especially in an immunocompetent host.

**REFERENCES**


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**Announcement**

**6th International Congress on Geriatric Care & Anti Ageing Medicine** to be held at Indian Islamic Cultural Centre, 87-88 Lodhi Road, New Delhi 110 003 from 14th -16th November, 2008.

**Organiser : Geriatric Society of India**

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**Announcement**

17th Annual Conference of Hypertension Society of India (HSICON 2008) is to be held on 21st to 23rd November, 2008 at Kalianna Arangan, Chennai 600 002.

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