

# A fatal pseudallescheria boydii brain abscess

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## ABSTRACT

We present the clinical and radiological features of pseudallescheria boydii infection in a middle aged woman who presented with right frontal pseudallescheria abscess after two years use of prednisolone for rheumatoid arthritis. Despite early surgical excision and intravenous antifungal treatment she died after 7 weeks despite aggressive therapy.

**Keywords:** Brain abscess, fungal infection, pseudallescheria boydii, miconazole.

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**P**seudallescheria boydii (PAb) infection occurs in immunocompromised patients. Pseudallescheria boydii infection is also seen in normal hosts. Isolated central nervous system involvement is seen in fifty percent of reported cases. Surgical debridement is the corner stone of treatment. The medical therapy is adjunctive to surgery and includes a combination of intravenous liposomal amphotericin B and parenteral azole such as miconazole or voriconazole. The mortality rate remains high. In this report we discuss the clinical, radiological features and the management of an unfortunate patient who came to Riyadh Armed Forces Hospital with PAb brain abscess.

**Case Report.** A 55 year old Saudi lady with chronic seronegative rheumatoid arthritis, on prednisolone 40 mg once daily for two years and non-insulin dependent diabetes on oral hypoglycemic agents for 5 years. She came with a history of headache, lethargy for 1 month and progressive loss of consciousness for 1 week. Physical examination revealed an overweight lady with low-grade fever at

38.5°C. Systemic examination was normal. The neurological examination revealed a stuporous apathic lady with short attention span and slow speech. No meningeal irritation was observed. Cranial nerves and fundal examination were normal. Motor examination revealed mild generalized weakness of 4/5 and deep tendon hyperreflexia and up going planters bilaterally.

Initial laboratory investigations revealed peripheral leukocytosis  $16.4 \times 10^9/L$  with predominant neutrophilia. Hemoglobin 12.9 g/l and platelets  $306 \times 10^9/L$ , the erythrocyte sedimentation rate at 10 mm/h. The coagulation profile, urea and electrolytes, liver function and thyroid function tests were all within normal limits. Initial computerized tomography (CT) of the brain (Figure 1) revealed right frontal cystic lesion with enhancing rim and non-obstructive hydrocephalus with possible communication between the abscess and the lateral ventricle. The abscess was surgically drained and an external ventricular drain was sited. The macroscopic appearance of the surgical aspirate was cloudy serous yellow material with debris strands. The microscopic appearance

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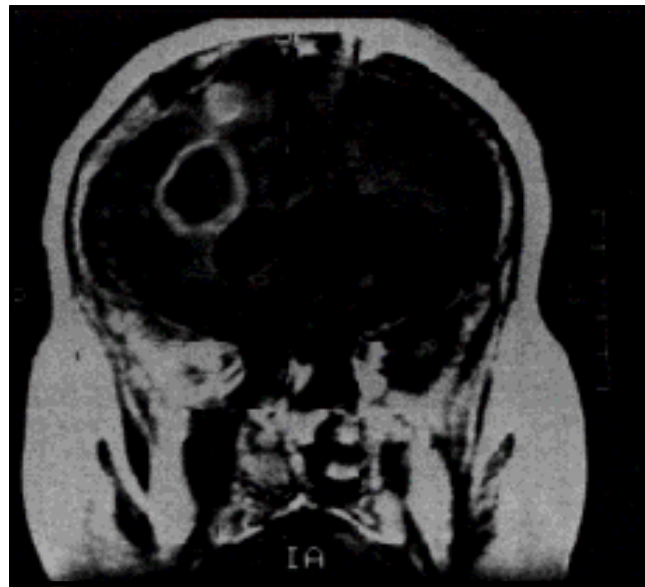
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**Figure 1** - Contrast CT brain reveals a ring enhancement of the lesion with enhancement of the ependymal lining of the right frontal horn of the lateral ventricle.



**Figure 2** - T1 weighted axial image of the brain with gadolinium reveals reaccumulation of the abscess with ependymal enhancement of the right lateral ventricle.

revealed fungal hyphae. The culture of the surgical aspirate grew a fungus called PAB. The antifungal sensitivity of PAB was technically difficult to determine. Cerebrospinal fluid (CSF) with WBC count 92/cumm with polymorphonuclear cells at 35% and mononuclear cells at 65%. No bacteria or acid fast bacilli, india ink stain was negative. Cerebrospinal fluid protein 0.49 g/l and CSF glucose 4.5 mmol/l. The patient showed improvement of her level of consciousness after the surgical drainage. Antifungal antibiotics were started in the form of liposomal amphotericin B at 5 mg/kg/day and oral itraconazole 400mg/day.

The patient remained stable for a few days and then her level of consciousness started to deteriorate again. An MRI brain scan (Figure 2) revealed reaccumulation of the abscess cavity and increased ependymal enhancement of the lateral ventricle. The abscess was aspirated with total capsular excision. The patient remained febrile post-operatively with fluctuating level of consciousness. Parenteral miconazole at 400mg three times per day under cardiac monitoring was started and oral itraconazole was stopped. The patient developed septic shock, disseminated intravascular coagulopathy and right frontal hematoma. She died after 7 weeks from admission.

## Discussion

This unfortunate patient was immunocompromised after a prolonged course of prednisolone. She acquired PAB infection from an undetermined source.

Despite early aggressive medical and surgical therapy, the patient died.

*Pseudallescheria boydii* (PAB) is a mold frequently found in the soil.<sup>2</sup> PAB commonly causes mycetoma, which is a chronic granulomatous infection that usually involves the lower extremities (Madura foot) but may occur in any part of the body.<sup>2,3</sup> *Pseudallescheria boydii* may also cause infections of the skin, lung, nasal sinuses and septum, joints, endocardium, external ear, eye, and bone.<sup>1-3</sup> Neurological complications of PAB are rare.<sup>2</sup> Cerebral pseudallescheria was seen as the first manifestation acquired immunodeficiency state<sup>4</sup> and near drowning.<sup>2</sup> Isolated neurological manifestation of PAB is seen in half the reported neurological cases where no sites of PAB infections other than the central nervous system (CNS) were found.<sup>4</sup> Neurological (PAB) infections may occur in normal hosts. These include diffuse infections such as meningitis and encephalitis<sup>5</sup> or focal infection such as abscess.<sup>2,5</sup> Diagnosis is based upon aspiration and culture of the abscess.<sup>2,6</sup>

Cerebrospinal fluid abnormalities are non-specific<sup>2</sup> and also neuroradiological features are non-specific and includes enhancement of the ependyma of the lateral ventricle and of the caudate nucleus ipsilateral to the abscess.<sup>9</sup> The corner stone treatment for PAB infection remains surgical excision of the lesion.<sup>2,7</sup> Adjunctive medical treatment includes a combination of intravenous liposomal amphotericin B and an antifungal azole, such as miconazole or itraconazole.<sup>2</sup> This must be accompanied by careful hydration and monitoring of electrolytes.<sup>2</sup> Parenteral

azoles are preferred in treating central nervous disease.<sup>8,9</sup> Patients who receive miconazole should be placed onto a cardiac monitor.<sup>2</sup> Although few case reports indicate complete cure of PAb infections, the mortality remains quite high particularly for CNS infections.<sup>2,3,7,8</sup>

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