

## Cerebral Epidural Abscess Secondary to *Blastomyces dermatitidis* Masquerading as an Epidermoid Tumor

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There have been infrequent reports of isolated central nervous system blastomycosis. We report a case of intracranial epidural abscess secondary to *Blastomyces dermatitidis* in a patient residing in Rhode Island with a history of remote travel to an endemic area. The clinical, radiographic, and pathologic features of this unique case are reviewed.

**Keywords:** blastomyces; cranial epidural abscess.

### CASE PRESENTATION

A 31-year-old woman from Rhode Island presented to an outside hospital with a 1-month history of right-sided headaches and dizziness. She had a history of stroke at 21 years of age due to endocarditis. She had been camping in Ohio 2.5 years prior with no cranial abrasions or trauma.

Magnetic resonance imaging (MRI) revealed a 6.7-cm right frontal epidural mass with involvement of the adjacent skull (Figure 1). This lesion was T1 hypodense, T2 hyperintense, partially peripherally enhancing and demonstrated homogenous restricted diffusion. These findings were felt to be likely related to a large epidermoid tumor.

She was transferred to our medical center where she rapidly deteriorated and was taken to the operating room where a large epidural abscess was encountered and drained. Pathology demonstrated necrotic debris, active and chronic inflammation, multinucleated giant cells, and occasional yeast forms in large macrophages (Figure 2A). The Gomori methenamine silver stain revealed scattered areas of broad-based budding yeast (Figure 2B).

Gram stain and bacterial cultures were negative. However, calcofluor stain revealed yeast forms and fungal culture grew a dimorphic fungus. Serum antigen testing was positive for *Blastomyces dermatitidis* using enzyme immunoassays (MiraVista, Indianapolis, IN). Fungal susceptibility testing demonstrated the listed minimum lethal concentrations as follows:  $\leq 0.015$  mcg/mL amphotericin B; 0.06 mcg/mL anidulafungin; 0.06 mcg/mL caspofungin;  $>64$  mcg/mL fluconazole; 0.25 mcg/mL itraconazole; 0.03 mcg/mL micafungin; 0.125 mcg/mL posaconazole; and 0.125 mcg/mL voriconazole. After surgical intervention, the patient was treated with liposomal amphotericin B for 4 weeks followed by oral voriconazole with an anticipated 12-month course.

### DISCUSSION

*Blastomyces dermatitidis* is a dimorphic fungal pathogen found in soil of specific regions of North America [1]. Subclinical blastomycosis has been reported in endemic areas [2]. Blastomycosis most frequently involves the lungs, although it can affect the central nervous system (CNS) in 5%–10% of cases [4]. Central nervous system involvement has been reported in 5%–10% of cases, often associated with morbidity and mortality [3].

Isolated intracranial epidural abscess due to blastomycosis is highly unusual. Cerebral epidural infections result from (1) direct extension of an adjacent infection such as mastoiditis or sinusitis or (2) direct seeding after neurosurgical procedures. We believe our patient seeded her skull leading to contiguous infection of the epidural space.

In many cases of cerebral epidural abscess, MRI demonstrates features which closely resemble those observed in epidermoid tumors [4]. Given the MRI findings in our patient, the fact that she resides in a region where blastomycosis is not endemic, and the lack of clinical evidence suggesting systemic or sinonasal infection, an epidermoid tumor was believed to be a likely diagnosis.

Treatment of blastomycosis involving the CNS typically consists of surgical drainage if an abscess is present, followed by antifungal agents. Intravenous amphotericin B (lipid formulation) is the initial drug of choice, administered for 4–6 weeks. Transition to an extended course of an oral azole, such as voriconazole, is recommended [5].

### CONCLUSIONS

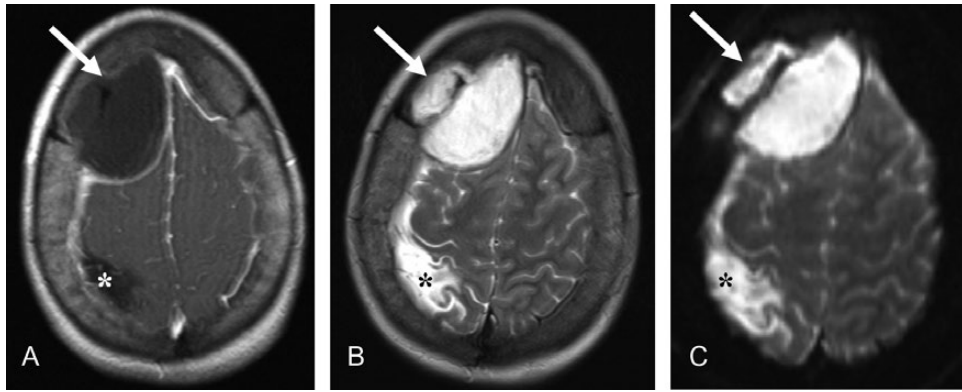
We report a rare case of an isolated intracranial epidural abscess due to *B dermatitidis*. The imaging and clinical features resemble those observed in an epidermoid tumor, which is much

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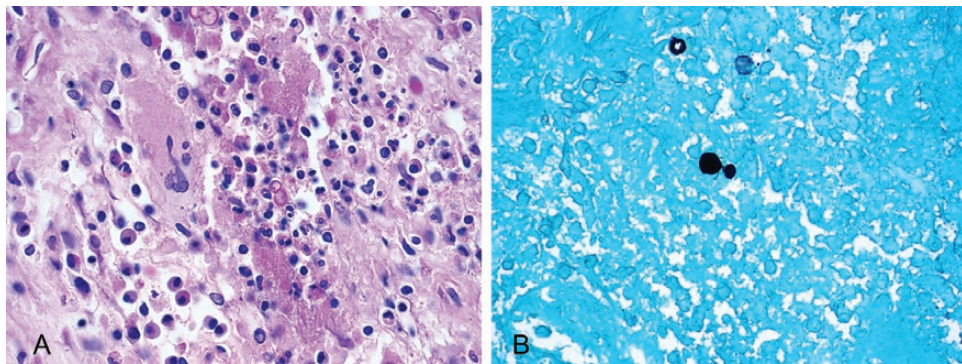
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**Figure 1.** Axial enhanced T1 weighted (A), T2 weighted (B), and restricted diffusion (C) magnetic resonance images demonstrate a large right epidural mass with adjacent bone involvement (arrow). The lesion is T1 hypodense with partial surrounding rim enhancement, T2 hyperintense, and demonstrates homogenous restricted diffusion. Also evident is the patient's known previous right frontoparietal stroke (\*).



**Figure 2.** Necrotic debris, acute and chronic inflammation, and rare giant cells are present amidst scattered bone fragments (magnification,  $\times 40$ ) (A). Rare yeast forms can be seen within large macrophages. A special stain for fungi (Gomori methenamine silver) reveals scattered broad-based budding yeast, morphologically consistent with North American blastomycosis (magnification,  $\times 40$ ) (B).

more common. Although serum testing may be useful, surgical pathology with isolation of the organism is required to make the diagnosis in these cases.

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