

Blastomycosis



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KEYWORDS

- Endemic mycoses • *B dermatitidis* • Blastomycosis • Fungal pneumonia
- Amphotericin B • Itraconazole

KEY POINTS

- *Blastomyces dermatitidis* is endemic to the shore of lakes and rivers in Central and Southern North America.
- Infection can occur in any host but is more severe in immunocompromised patients.
- Acute respiratory distress syndrome and central nervous system involvement are the two most serious complications of blastomycosis.
- Early diagnosis of blastomycosis can be made by demonstrating distinctive yeast forms in tissue biopsy and by antigen detection using enzyme immunoassay techniques.
- Mild to moderate blastomycosis is treated with itraconazole, and moderate to severe blastomycosis with lipid formulations of amphotericin B followed by itraconazole.

INTRODUCTION

Blastomycosis is one of 3 major dimorphic endemic mycoses that occur predominantly in North America. Infection is acquired by inhalation of organisms that exist as molds in the environment; conversion to the yeast phase occurs in the lungs.¹⁻³ Most cases of infection with *Blastomyces dermatitidis* are asymptomatic or manifest as an undiagnosed, self-limited illness. Symptomatic blastomycosis can present as acute or chronic pulmonary infection; a small number of patients progress to severe lung involvement manifested as acute respiratory distress syndrome (ARDS).⁴ Hematogenous dissemination can involve many organs; but skin lesions are most commonly seen, followed by involvement of the genitourinary tract in men and osteoarticular structures. Diagnosis has improved with the use of antigen detection assays,⁵ and

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new azole antifungal agents have increased the available armamentarium for treatment of this infection.⁶

EPIDEMIOLOGY

Blastomycosis is seen most frequently in the Mississippi and Ohio River valleys, Midwestern states and Canadian provinces that border the Great Lakes, and areas adjacent to the Saint Lawrence Seaway^{1,7-14} (Fig. 1). However, occasional cases have been reported from Florida, Colorado, Hawaii, Israel, India, Africa, and Central and South America.^{2,15,16} Within areas known to be endemic for blastomycosis, the disease occurs in certain areas much more frequently than in others.^{7,8,13} A survey in Wisconsin found that the mean annual incidence was 40.4 per 100,000 persons in one county, and for a specific area within that county it was 101.3 per 100,000 persons.⁸ Within endemic areas, the specific environmental niche for *B dermatitidis* is likely soil and decaying vegetation, especially in proximity to lakes and rivers.⁷ It is difficult to isolate *B dermatitidis* from soil samples, delaying firm identification of the specific environmental requirements for this organism.

Mandatory public health reporting of blastomycosis is required in only 6 states and 2 Canadian provinces, so the true occurrence of this infection in humans is unknown. More cases are reported in men than women, which is most likely related to having greater risk for exposure in the environment. In some but not all instances, a history of activities that led to disruption of soil or decaying wood can be elicited.⁷ In some reports, the incidence has been reported to be higher among African American populations in the United States and aboriginal populations in Canada.^{10,11} One report described an outbreak of blastomycosis that clustered in certain neighborhoods in north central Wisconsin in which the rate of infection was 12 times higher among Asian residents, most of whom were immigrants of Hmong ethnicity.¹⁷ Typical environmental exposures usually associated with blastomycosis were absent, raising speculation of genetic factors predisposing to disease among this group of individuals.

B dermatitidis also infects animals, especially dogs.¹ In areas of north central Wisconsin with many human cases, the incidence in canine cases is correspondingly high.¹⁸ In one report as many as a third of patients who had blastomycosis and who

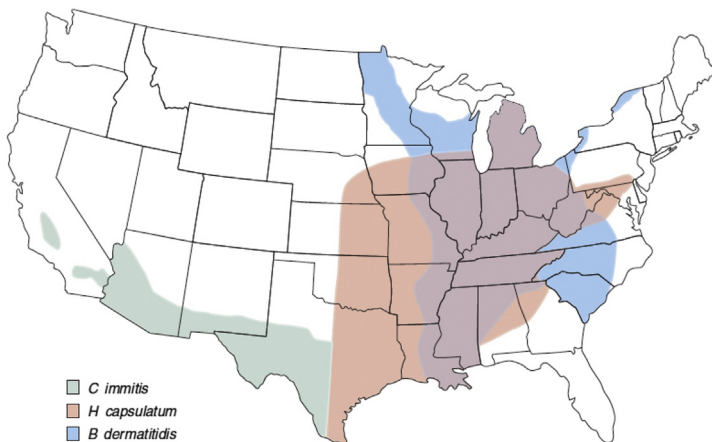


Fig. 1. Distribution of the major endemic mycoses in the United States. *C immitis*, *Coccidioides immitis*; *H capsulatum*, *Histoplasma capsulatum*.

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