Blastomycosis

Case Definition

This surveillance case definition was developed for state reporting of blastomycosis, it is not intended to be used in clinical diagnosis. While blastomycosis is not a nationally notifiable disease, in Michigan it is a reportable disease.

Background

Blastomycosis is a disease that is caused by a dimorphic fungus (exists as a mold in the environment or as a yeast in tissues), *Blastomyces dermatitidis*, which is found in various regions of the United States and Canada. Regions include parts of the south-central and eastern states that border the Mississippi and Ohio Rivers, the mid-western United States and Canadian provinces that border the Great Lakes (including Michigan), and the St. Lawrence Riverway. From 2007-2011 there were 85 human cases of blastomycosis reported in Michigan. The majority of cases in Michigan are reported from counties in the Upper Peninsula and northern Lower Peninsula.

The infection is spread to people by inhalation of airborne spores after disturbance of contaminated soil. People who are at highest risk for blastomycosis are those living or recreating in endemic areas and exposed to moist soil enriched with organic material in wooded sites and along waterways (e.g., farmers, forestry workers, hunters, and campers). Men are more commonly infected, presumably due to outdoor activities that put them at increased risk of exposure. Blastomycosis also commonly occurs in dogs that live in endemic areas. Blastomycosis is not transmitted from person to person or from animal-to-person.

Clinical Presentation

Blastomycosis primarily affects the lungs, but can spread lymphohematogenously to extrapulmonary sites such as skin, or less commonly bone, the central nervous system and genitourinary system. The severity of the infection ranges from asymptomatic to acute or chronic pneumonia and disseminated disease, depending on the individual and factors such as age and immune system status. Elimination of the infection depends on T lymphocyte activity. Because not all of the fungal organism may be eliminated by the immune response, reactivation can occur sometimes years after the initial infection.

Signs and symptoms vary but usually include: cough (possibly with blood), fever, night sweats, weight loss, chest pain, shortness of breath, muscle aches, back pain, bone pain, and fatigue. Skin lesions can be nodular to ulcerative with minimal inflammation, and are most commonly located on the face and distal extremities. Symptoms may appear between 3 and 15 weeks after exposure.

MICHIGAN DEPARTMENT
OF COMMUNITY HEALTH

201 Townsend St.
Capitol View Bldg, 5th Floor
Lansing, MI 48913

Phone: 517-335-8165
Fax: 517-335-8263

Laboratory Criteria for Diagnosis*

- Isolation of *B. dermatitidis* from sputum, bronchial wash, or skin lesion **OR**
- Positive DNA probe performed on culture isolate

  OR
- Visualization of the organism in cytologic or histologic specimens by direct microscopic examination (characteristic thick walled, broad-based budding yeast)

*Note—**Serologic tests** (enzyme-linked immunosorbent assay, complement fixation, immunodiffusion) lack specificity and sensitivity and should not be used alone to diagnose or rule out blastomycosis. Likewise, **urine antigen assays** are not specific for blastomycosis and cross-reactivity occurs with histoplasmosis, paracoccidiodomycosis ("South American blastomycosis"), and penicilliosis.

Case Classification

Confirmed: A clinically compatible illness that is laboratory confirmed.

References

Saccente M, Woods GL. "Clinical and Laboratory Update on Blastomycosis". *Clinical Microbiology Reviews*. 2010;23(2):367-381.

Chapman SW, Dismukes WE, Proia LA , RW Bradsher, Pappas PG, Threlkeld MG, Kauffman CA. "Clinical Practice Guidelines for the Management of Blastomycosis: 2008 Update by the Infectious Diseases Society of America". *Clinical Infectious Diseases*. 2008;46:1801-12.

Durkin M, Witt J, LeMonte A, Wheat B, Connolly P. "Antigen Assay with the Potential to Aid in the Diagnosis of Blastomycosis". *Journal of Clinical Microbiology*. 2004;42(10):4873-4875.

Smith JA, Kauffman CA. "Blastomycosis". *Proceedings of the American Thoracic Society*. 2010;7(3):173-180.

Heymann, David L, ed. *Control of Communicable Diseases Manual*. 19th ed. Washington DC: American Public Health Association, 2008. "Blastomycosis": 77-79.

Pickering LK, Baker CJ, Long SS, McMillan JA, eds. *Red Book: 2006 Report of the Committee on Infectious Diseases*, 27th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2006. "Blastomycosis":232-233.

"Blastomycosis *(Blastomyces dermatitidis)*". Minnesota Department of Health Infectious Disease Epidemiology, Prevention and Control Division. <http://www.health.state.mn.us/divs/idepc/diseases/blastomycosis/index.html> Accessed 5/1/2012

"Blastomycosis". Center for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases, Division of Foodborne, Waterborne and Environmental Diseases. < http://www.cdc.gov/fungal/blastomycosis/ > Accessed 5/1/2012

"Blastomycosis." *Disease Fact Sheet Series*. May, 2004. Wisconsin Department of Health Services, Division of Public Health, Bureau of Communicable Disease, Communicable Disease Epidemiology Section. <http://dhs.wisconsin.gov/communicable/factsheets/Blastomycosis_42030_0504.htm> Accessed 5/1/2012