

Various studies on the fungus *Blastomyces dermatitidis*

Background

Blastomycosis is a potentially fatal fungal infection in humans, dogs, cats, and other animals. *Blastomyces dermatitidis*, exists as a mold in nature and is generally acquired through the inhalation of spores that transform to the yeast forms in the lungs. The ecology of this fungus is incompletely defined due to lack of reliable skin testing, infrequent environmental isolations, significant rates of asymptomatic disease, and uncertain incubation periods of the disease. Thus, case clusters provide valuable opportunities to further understand the environmental niche of *B. dermatitidis*.

Objectives

- Add to existing knowledge of the ecology and epidemiology of *B. dermatitidis*.
- Raise awareness of this disease in urban and other “non-classic” settings and to identify environmental risk factors.

Designs

- Retrospective/prospective chart reviews
- Telephone interviews
- Geocoding
- Case studies
- Fieldwork
- Basic research
- Studies with both patients and clinicians

Findings

- Evidence to support the possibility that humans and animals may acquire *B. dermatitidis* in or very near one’s home regardless of one’s population density.

- Lack of geographic epidemiologic and basic ecological data regarding *B. dermatitidis*. This data is essential to describe the risk factors for this environmentally acquired disease.

Implications

Clinicians must take care to include *B. dermatitidis* in the diagnosis of any humans or animal with suggestive symptoms that have a history of travel to an endemic area, even if that individual is primarily homebound or in an urban area.

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PROJECT BRIEF

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Selected Publications

- Baumgardner, D.J. (In press). Environmental Determinants of Dimorphic Systemic Mycoses: The Macro and The Micro. Commentary, *International Journal of Epidemiology*.
- Baumgardner, D.J. (In press). Microecology of *Blastomyces dermatitidis*: The Ammonia Hypothesis. *Medical Mycology*.
- Meece JK, Anderson JL, Klein BS, Sullivan TD, Foley SL, Baumgardner DJ, Brummitt CF, Reed KD. (In press) Genetic diversity in *Blastomyces dermatitidis*: implications for PCR detection in clinical and environmental samples. *Med Mycology*.
- Varani N, Baumgardner DJ, Czuprynski CJ, Paretsky DP. (In press) Attempted isolation of *Blastomyces dermatitidis* from the nares of dogs: Northern Wisconsin, USA. *Med Mycology*.
- Lemke, M., Baumgardner, D.J., Brummitt, C.F., Swain, G.R., Buggy, B.P., Meidl, J.J., et al. (2009). Blastomycosis in Urban Southeastern Wisconsin. *Wisconsin Medical Journal*, 108 (8).

Blondin, N., Baumgardner, D.J., Moore, G.E., Glickman, L.T. (2007). Blastomycosis in indoor cats: suburban Chicago, Illinois, USA. *Mycopathologia*, 163:59-66.

Baumgardner, D.J., Knavel, E.M., Steber, D., Swain, G.R. (2006). Geographic distribution of human blastomycosis cases in Milwaukee, Wisconsin, USA: association with urban watersheds. *Mycopathologia*, 161: 275-282.

Baumgardner, D.J., Steber, D., Glazier, R., et al. (2005). Geographic information system analysis of blastomycosis in northern Wisconsin, USA: waterways and soil. *Medical Mycology*, 43:117-125.

Recent Presentations

- Lemke, M., Baumgardner, D.J., Brummitt, C.F., Swain, G.R., Buggy, B.P., Meidl, J.J., et al. (2009). Blastomycosis in Urban Southeastern Wisconsin. Poster presented at *NAPCRG's 2009 Annual Meeting*, Montreal, QC (November).
- Lemke, M., Baumgardner, D.J., Brummitt, C.F., Swain, G.R., Buggy, B.P., Meidl, J.J., et al. (2009). Blastomycosis in Urban Southeastern Wisconsin. Poster presented at the *Population Health Sciences 50th Anniversary Symposium*, Madison, WI (August).
- Baumgardner, D.J., Baesman, Z.J., Schreiber, A., Paretsky, D.P., Vilas County Health Department. (2009). Blastomycosis: Sand and water, seasons and reasons. Rieselbach Distinguished Paper Presentation, *Aurora Scientific Day*, Milwaukee, WI (May).
- Lemke, M.A., Baumgardner, D.J., Brummitt, C., Swain, G.R., Buggy, B., Meidl, J., Baesman, Z., Schreiber, A. (2009). Urban Blastomycosis Case Series. Oral presentation at *URISA's GIS in Public Health Conference*, Providence, RI (June).