

Introduction to *Blastomyces dermatitidis*

Visaria Gitelman*

Department of Veterinary Medicine, Iowa State University, Iowa, USA

Opinion Article

Received: 05-Jan-2022, Manuscript No. JVS-22-52152; **Editor assigned:** 07-Jan-2022, PreQC No. JVS-22-52152(PQ); **Reviewed:** 19-Jan-2022, QC No. JVS-22-52152; **Accepted:** 21-Jan-2022, Manuscript No. JVS-22-52152(A); **Published:** 28-Jan-2022, DOI: 10.4172/2581-3897.6.1.004

***For Correspondence:**

Visaria Gitelman, Department of Veterinary Medicine, Iowa State University, Iowa, USA

E-mail: visaria.gitelmen@gmail.com

DESCRIPTION

Blastomycosis is caused by the fungus *Blastomyces dermatitidis*, which causes an invasive and frequently fatal fungal illness in humans and other animals in endemic areas. The causative organism is a fungus that lives in soil and decaying wood, usually near a waterway like a lake, river, or stream. Indoor growth can also develop in wet sheds. Sections of eastern North America, including boreal northern Ontario, south eastern Manitoba, Quebec south of the St. Lawrence River, and parts of the United States, are endemic to the fungus. Furthermore, it is found throughout Africa, both north and south of the Sahara Desert, as well as the Arabian Peninsula and the Indian subcontinent, but only on a rare basis. It is expected to grow in nature as a cottony white mould, comparable to the growth seen in artificial culture. In an infected human or animal, however, it transforms into large-celled budding yeast and grows. Blastomycosis is largely curable with systemic antifungal medicines once it is appropriately diagnosed; however, even in highly endemic locations, delayed diagnosis is fairly common.

Morphology

Blastomycosis is caused by *Blastomyces dermatitidis*, a potentially fatal fungus that starts as a mild pneumonia-like infection and progresses to a disseminated phase after 1–6 months, causing lesions to form in capillary beds throughout the body, most notably in the skin, internal organs, central nervous system, and bone marrow. The ascomycetous fungus *Ajellomyces dermatitidis* is known as *Blastomyces dermatitidis*. Blastomycosis is caused by *Blastomyces dermatitidis*, a potentially fatal fungus that starts as a mild pneumonia-like infection and progresses to a disseminated phase after 1–6 months, causing lesions to form in capillary beds all over the body, most notably in the skin, internal organs, central nervous system, and bone marrow. The ascomycetous fungus *Ajellomyces dermatitidis* is known by the name *Blastomyces dermatitidis*.

The genus *Blastomyces* is now invalid under the International Code of Botanical Nomenclature, despite its widespread use. *Blastomyces* species, along with two other significant human-pathogenic fungi, *Histoplasma capsulatum*, *Paracoccidioides brasiliensis*, and *Polytolypa hystricis*, belong to the *Ajellomycetaceae*, a newly described fungal family. The three main pathogens in this family are all classified as "dimorphic fungus" because they convert from a mold-like (filamentous) development form in the natural environment to a yeast-like growth form in the warm-blooded animal host. *Blastomyces dermatitidis* is a sexual organism that can be found in nature. This is significant from an epidemiological standpoint for two reasons: first, it implies that the organism will be genetically variable, potentially leading to differences in disease severity, treatment response, and habitat preference; and second, it implies that a suitable, stable habitat is required for the complex process of sexual reproduction to occur. This habitat has yet to be discovered. The fungus grows as a colony microfungus in its asexual state, similar to *Penicillium* or *Rhizopus* mould forms typically found on mouldy bread.

Ecology

Blastomyces dermatitidis is an ecologically mysterious bacterium that causes sickness in humans and animals. Our lack of understanding of where and how this organism normally thrives in nature makes both predicting disease risk and preventing sickness extremely difficult. *B. dermatitidis* has only been isolated from the environment 21 times, despite decades of attempts to isolate organisms from epidemic hotspots.

The majority of these isolations were based on laborious isolation techniques that involved suspending soil or other environmental items in aqueous medium with antibacterial drugs, injecting mice with these materials, and then killing the animals when they became unwell or after six weeks. The mice's internal organs are next examined microscopically for signs of blastomycosis. The cost and difficulty of conducting such research is prohibitive, especially as the ethical clearance procedures for animal research get increasingly extensive. Dilution plating, a more direct and cost-effective mycological approach for environmental isolation, has never provided positive results for *Blastomyces* growth. Because *B. dermatitidis* grows rapidly on ordinary laboratory media from clinical samples, the inability to isolate it from environmental materials is usually attributed to the inhibitory effects of co-existing common moulds and antibiotic-resistant bacteria.