

# Cutaneous Blastomycosis: A Rare Presentation Leads to Clear Diagnosis in Setting of Chronic Symptoms

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## Statement of Purpose

The purpose of this case report was to highlight the rare cutaneous form of Blastomycosis, as the fungus may avoid detection in both blood and lung assays.

## Presentation

79 year old male presents for evaluation of increased levels of fatigue with minimal effort, increased shortness of breath, vague chest soreness and discomfort only relieved with rest. PMH: HTN, HLD, Hx of CVA, Tobacco use (quit as a teenager), Retired construction worker whom spent much time outside

## Patient Course

10/23: Pulmonology appointment: cough, SOB, wheezing has decreased, no sputum, more exercise tolerance  
New CT: 8mm lung nodule, lesion slowly resolving

9/23: Placed on Itraconazole for 2 months

8/23: Surgical excision

Surgical Path: psuedoepitheliomatous hyperplasia with underlying acute/chronic inflammation an yeast forms consistent with blastomycosis

PAS stain performed and interpreted as positive within yeast forms having broad-based budding consistent with blastomycosis species. An AFB stains is performed and interpreted as negative for mycobacterial organisms

7/23: Wound biopsy: 'dermal fibrosis, ruptured follicular / inclusion cyst

MRI: reveals "no evidence of acute osseous injury, fracture, or osteomyelitis"

ID: likely superinfected ruptured inclusion cyst, questioned if need to remove

6/23: Presented to urgent care for right foot swelling and redness over heel; complaints of non-productive cough  
Denied trauma or foreign body, placed on oral Bactrim/cephalexin  
Referred to podiatry

4/23 : CT chest obtained: Right-sided mass in lower right lobe. Mass like nodular consolidation inflammatory vs infectious vs neoplastic

7/22 SOB improving w/ pulm rehab and albuterol

1/22: Pulmonology appointment for shortness of breath and fatigue with minimal effort

Patient reported chest wall soreness

Participating in pulmonary rehab; prescribed telegly and albuterol; helped symptoms

3/21: Pulmonology appointment: Reported exercise intolerance, SOB, vague pain sensation/discomfort that improved with rest

## Background

Blastomycosis, a systemic fungal infection caused by dimorphic fungi found in the great lake region and Ohio river basin. The opportunistic fungi primarily exists in its mycelial form in the environment but transitions into the yeast form after inhalation. Inhalation is the most common route of infection, however direct inoculation or hematogenous dissemination may lead to a cutaneous manifestation.

Cutaneous manifestation of blastomycosis is a diagnostic hurdle due to the diverse clinical appearances and the mimicry to other infectious manifestations. Cutaneous manifestations are normally presented as ulcerative or verrucous forms. Verrucous forms present as irregular raised plaques that often mimics squamous cell carcinoma. Ulcerative forms present as well-demarcated ulcers with violaceous borders. Cutaneous lesions commonly arise on the face, neck, and upper extremities associated with the inoculation sites.

Diagnosing via culturing may take several weeks for the fungus to grow, yet remains the gold standard. PCR detection has improved but still has lower specificity. Special stains should reveal the characteristic broad-based budding as seen with GMS or PAS. Yet the highest detection for early diagnosis remains to the clinic exam with thorough patient history, particularly patient's potential exposure with non-healing ulcers or plaques resistant to antibiotics.

## Discussion and Conclusion

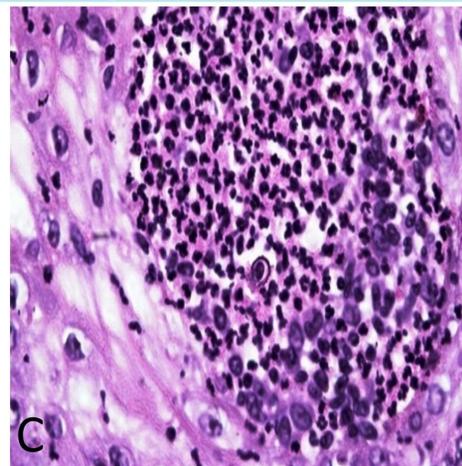
Blastomycosis remains an underrecognized endemic fungal infection despite predictable geographic distribution and well-described clinical manifestations. The disease frequently presents with nonspecific pulmonary, cutaneous, or osseous findings that closely mimic more common conditions such as bacterial pneumonia, tuberculosis, or malignancy. As a result, diagnostic delay remains the most significant contributor to patient morbidity. In endemic regions, failure to consider blastomycosis early in the differential diagnosis often leads to prolonged ineffective antimicrobial therapy, unnecessary invasive procedures, and progression to disseminated disease. A key clinical challenge lies in the variable nature of its presentation. Pulmonary disease may appear radiographically as mass-like consolidation, prompting oncologic evaluation, while cutaneous or musculoskeletal involvement may resemble chronic wounds or neoplastic processes. Importantly, blastomycosis frequently affects immunocompetent individuals, which may further lower clinical suspicion and contribute to delayed recognition. Careful exposure history, geographic awareness, and early tissue sampling are therefore critical components of evaluation.

Definitive diagnosis relies on identification of the organism through histopathology or culture, with broad-based budding yeast serving as an important diagnostic hallmark. Because culture confirmation may require several weeks, early biopsy of atypical lesions plays a pivotal role in expediting diagnosis and initiating therapy. Antigen testing may support clinical suspicion but should be interpreted within the broader clinical context due to cross-reactivity with other endemic fungi.

Timely initiation of antifungal therapy significantly improves outcomes and prevents dissemination. Current treatment strategies emphasize severity-based management, with oral azole therapy effective for mild-to-moderate disease and amphotericin B reserved for severe or central nervous system involvement. Delayed treatment has been associated with increased hospitalization, respiratory failure, and higher mortality rates, underscoring the importance of early clinical recognition. Multidisciplinary collaboration among infectious disease specialists, surgeons, radiologists, and pathologists is therefore essential to optimizing patient outcomes.

Overall, blastomycosis exemplifies a highly treatable infection in which prognosis is largely determined by clinician awareness rather than therapeutic limitation. Increased recognition of endemic risk factors, earlier diagnostic evaluation, and prompt antifungal therapy remain the most effective strategies for reducing morbidity and preventing disseminated disease. Continued education and awareness initiatives supported by organizations such as the Centers for Disease Control and Prevention are critical to improving early detection and patient outcomes.

## Pathological Findings



- Lesion day of surgical excision
- Lesion day of punch biopsy
- Microscopic evaluation of blastomycosis: broad based budding on H&E

## References

- Melton et al. Primary Cutaneous Blastomycosis: An Ulcerated Wound in an Immunocompetent Patient. *Cereus*. 2023
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