

# Perianal North American Blastomycosis

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## PRACTICE POINTS

- Cutaneous North American blastomycosis usually occurs in a periorificial distribution.
- The perianal region should be included in the periorificial regions considered in North American blastomycosis infections.

*Cutaneous North American blastomycosis most often results from the hematogenous spread of Blastomyces dermatitidis following pulmonary infection. Cutaneous lesions, which may be either verrucous or ulcerative plaques, commonly occur on or around orifices contiguous to the respiratory tract. We report the case of a 57-year-old man with cutaneous North American blastomycosis who presented with a well-demarcated, firm, moist, verrucous perianal plaque 4 months following the onset of a prolonged upper respiratory tract infection. Dissemination of B dermatitidis to the perianal skin is rare, but North American blastomycosis should be considered in the broad differential diagnosis of perianal lesions in any patients who have lived in or traveled to endemic regions.*

*Cutis.* 2015;96:E23-E26.

**C**utaneous North American blastomycosis is a deep fungal infection caused by *Blastomyces dermatitidis*, a thermally dimorphic fungus that is endemic to the Great Lakes region as well

as the Mississippi and Ohio River valleys where it thrives in moist acidic soil enriched with organic material.<sup>1,2</sup> In humans, the annual incidence rate is estimated to be 0.6 cases per million,<sup>3</sup> though it may be as high as 42 cases per 100,000 in endemic areas.<sup>4</sup> Infection typically results from the inhalation of conidia and manifests as either acute or chronic pneumonia.<sup>5</sup> Most patients with acute disease present with nonspecific flulike symptoms and a nonproductive cough.

Dissemination occurs in approximately 25% of cases,<sup>6</sup> most commonly affecting the skin. Other potential sites of dissemination include bone, the genitourinary tract, and the central nervous system. Cutaneous lesions, which may be either verrucous or ulcerative plaques, often occur on or around orifices contiguous to the respiratory tract.<sup>7</sup> Verrucous lesions tend to have an irregular shape with well-defined borders and surface crusting. Ulcerative lesions have heaped-up borders and often have an exudative base.<sup>8</sup> The differential diagnosis of cutaneous North American blastomycosis lesions includes squamous cell carcinoma, giant keratoacanthoma, verrucae, basal cell carcinoma, scrofuloderma, lupus vulgaris, nocardiosis, syphilis, bromoderma, iododerma, granuloma inguinale, tuberculosis verrucosa cutis, mycetoma, and actinomycosis.<sup>7,8</sup>

Although periorificial cutaneous manifestations of disseminated blastomycosis are common, perianal lesions are rare. The differential diagnosis of perianal verrucous plaques includes condyloma acuminatum, squamous cell carcinoma, adenocarcinoma, Buschke-Löwenstein tumor, actinomycosis, and localized fungal infections such as blastomycosis.<sup>9</sup>

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The authors report no conflict of interest.

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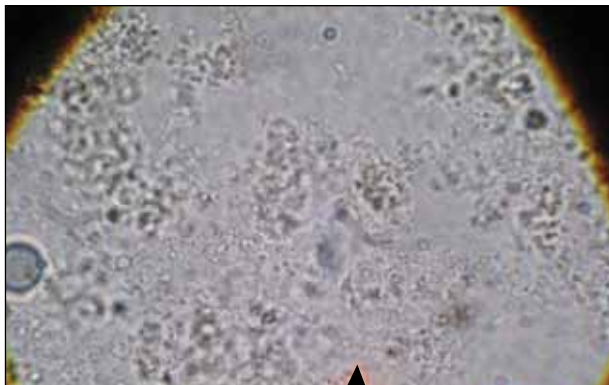
### Case Report

A 57-year-old man presented with a palpable perianal mass that produced small amounts of blood in his underwear and on toilet paper. The patient reported no history of hemorrhoids, anoreceptive intercourse, or sexually transmitted disease. Four months prior to presentation, he had a prolonged upper respiratory tract illness with a subjective fever and productive cough of 2 months' duration. The patient described himself as an avid outdoorsman who worked at a summer resort and spent a great deal of time in the forests of central Wisconsin last autumn. Physical examination revealed a well-demarcated, firm, moist plaque with a verrucous surface that measured 3.5×2.7 cm and extended from the anal verge to the perianal skin (Figure 1).

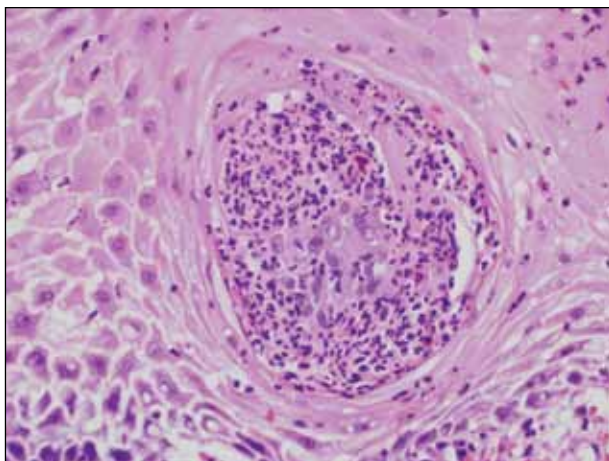
Potassium hydroxide preparation of a biopsy specimen (Figure 2), a punch biopsy of the lesion (Figure 3), and Gomori methenamine-silver staining (Figure 4) revealed scattered yeast spores, some demonstrating broad-based budding, with pseudoepitheliomatous hyperplasia, dermal neutrophils, and intraepithelial microabscesses. The patient's urine was positive for *Blastomyces* antigen (1.04 ng/mL). Chest radiography demonstrated a localized infiltrate in the right hilum with possible mass effect. Computed tomography showed a consolidative opacity measuring 4.0×3.4 cm in the upper lobe of the right lung (Figure 5).



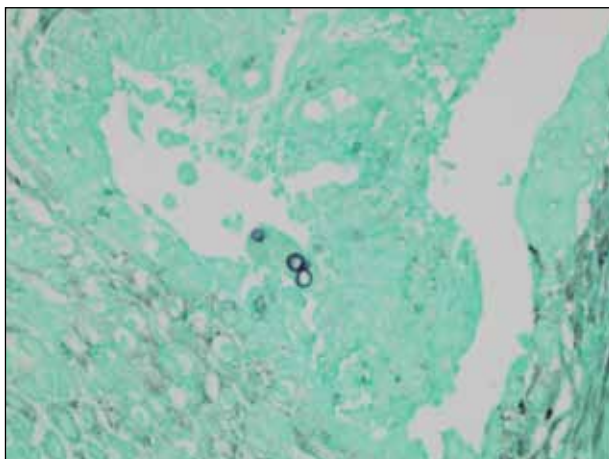
**Figure 1.** A well-demarcated, firm, moist plaque with a verrucous surface extended from the anal verge to the perianal skin.



**Figure 2.** A biopsy specimen prepared with potassium hydroxide showed broad-based, figure eight-shaped budding yeast spores above the arrowhead (original magnification ×600).



**Figure 3.** A punch biopsy of the lesion revealed scattered yeast spores, some demonstrating broad-based budding, with pseudoepitheliomatous hyperplasia and microabscesses (H&E, original magnification ×400).



**Figure 4.** Gomori methenamine-silver stain demonstrated broad-based budding yeast (original magnification ×400).



**Figure 5.** Computed tomography revealed a consolidative opacity measuring 4.0×3.4 cm in the upper lobe of the right lung.

The patient was diagnosed with cutaneous North American blastomycosis and prescribed a 6-month course of oral itraconazole 200 mg twice daily. At his 3-month follow-up visit, the perianal plaque had almost completely resolved (Figure 6). However, because the patient had increasing lower extremity edema, subjective hearing loss, and abnormal liver function tests, itraconazole treatment was discontinued and replaced with oral fluconazole 400 mg daily for the next 3 months. The right hilar mass had visibly improved on follow-up chest radiography 2 months after the patient started antifungal therapy with itraconazole and had resolved within another 3 months of treatment.

### Comment

Cutaneous blastomycosis results most often from the hematogenous spread of *B dermatitidis* from the lungs and rarely from direct inoculation.<sup>5,10</sup> Skin lesions tend to occur on exposed areas, such as the face, scalp, hands, wrists, feet, and ankles.<sup>7,11-13</sup> Dissemination to the perianal skin is rare, though it has been reported in 2 other patients; both patients, similar to our patient, had evidence of pulmonary involvement at some point in their clinical course.<sup>9,14</sup>

Diagnosis is based on identification of *B dermatitidis* by microscopy or culture. Potassium hydroxide preparation of biopsy specimens typically shows broad-based budding yeast.<sup>13</sup> Characteristic findings of histopathologic studies include pseudoepitheliomatous hyperplasia, intraepidermal abscesses, and a dermal infiltrate of polymorphonuclear leukocytes.<sup>15</sup> On fungal culture, *B dermatitidis* is slow growing and may require a 2- to 4-week



**Figure 6.** The perianal plaque had almost completely resolved after 3 months of oral itraconazole therapy.

incubation period. Serologic tests are available, but sensitivity is low, at 9%, 28%, and 77% for complement fixation, immunodiffusion, and enzyme immunoassay, respectively.<sup>16</sup>

### Conclusion

North American blastomycosis should be considered in patients who have verrucous or ulcerative perianal lesions and have lived in or traveled to endemic regions, especially if they have recent or ongoing pulmonary symptoms. Potassium hydroxide preparation and fungal staining of biopsy specimens can aid in diagnosis.

*Acknowledgment*—The authors thank the Marshfield Clinic Research Foundation's Office of Scientific Writing and Publication (Marshfield, Wisconsin) for editorial assistance in the preparation of this manuscript.

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