Blastomycosislike Pyoderma: Verrucous Hyperpigmented Plaques on the Pretibial Shins

Lisa Cotter, MD; Kyle Cheng, MD; Kalyani Marathe, MD, MPH

PRACTICE **POINTS**

- Blastomycosislike pyoderma is a rare condition secondary to bacterial infection, but as the name suggests, it also can resemble cutaneous blastomycosis.
- Blastomycosislike pyoderma most commonly occurs in immunocompromised patients.
- The most common histologic findings include suppurative and neutrophilic inflammation with pseudoepitheliomatous hyperplasia.

To the Editor:

Blastomycosislike pyoderma (BLP), also commonly referred to as pyoderma vegetans, is a rare cutaneous bacterial infection that often mimics other fungal, inflammatory, or neoplastic disorders.[1] It is characterized by a collection of neutrophilic abscesses with pseudoepitheliomatous hyperplasia that coalesce into crusted plaques.

A 15-year-old adolescent girl with a history of type 1 diabetes mellitus was admitted for diabetic ketoacidosis. The patient presented with bilateral pretibial lesions of 6 years' duration that developed after swimming in a pool following reported trauma to the site. These pruritic plaques had grown slowly and were occasionally tender. Of note, with episodes of hyperglycemia, the lesions developed purulent drainage.

Upon admission to the hospital and subsequent dermatology consultation, physical examination revealed the right pretibial shin had a 15×5-cm, gray-brown, hyperpigmented, verrucous, tender plaque with purulent drainage and overlying crust (Figure 1). The left pretibial shin had a similar smaller lesion (Figure 2). Laboratory test results were notable for a white blood cell count of 41.84 cells/μL (reference range, 3.8–10.5 cells/μL), blood glucose level of 586 mg/dL (reference range, 70–99 mg/dL), and hemoglobin A_{1c} of 11.7% (reference range, 4.0%–5.6%). A biopsy specimen from the right pretibial shin was stained with hematoxylin and eosin for dermatopathologic evaluation as well as sent for tissue culture. Tissue and wound cultures grew *Staphylococcus aureus* and group B *Streptococcus* with no fungal or acid-fast bacilli growth.

Blood cultures were negative for bacteria. Results of radiographic imaging were negative for osteomyelitis. Biopsy specimens from the right pretibial plaque showed a markedly inflamed, ruptured follicular unit with a dense dermal lympho-neutrophilic infiltrate and overlying pseudoepitheliomatous hyperplasia (Figure 3). Periodic acid–Schiff, Gomori methenamine-silver, acid-fast bacilli, and Giemsa stains were negative for organisms. No

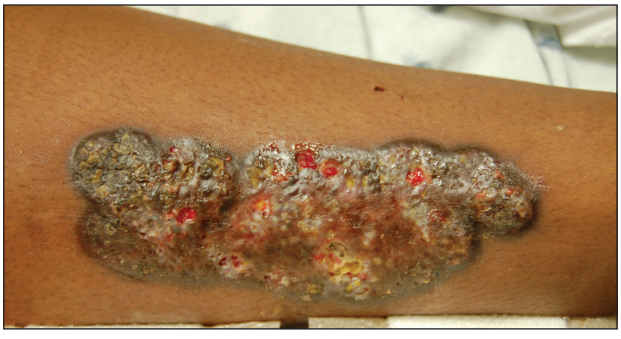

FIGURE 1. Right pretibial shin with a verrucous hyperpigmented plaque with purulent drainage measuring 15×5 cm.

Dr. Cotter is from the Department of Dermatology, University of Wisconsin School of Medicine and Public Health, Madison. Dr. Cheng is from the Division of Dermatology, Department of Medicine, David Geffen School of Medicine, University of California, Los Angeles. Dr. Marathe is from Children's National Health System, Washington, DC.

The authors report no conflict of interest.

Correspondence: Lisa Cotter, MD, 1 S Park St, 7th Floor, Madison, WI 53715 (Lisa.keller17@gmail.com).

doi:10.12788/cutis.0420

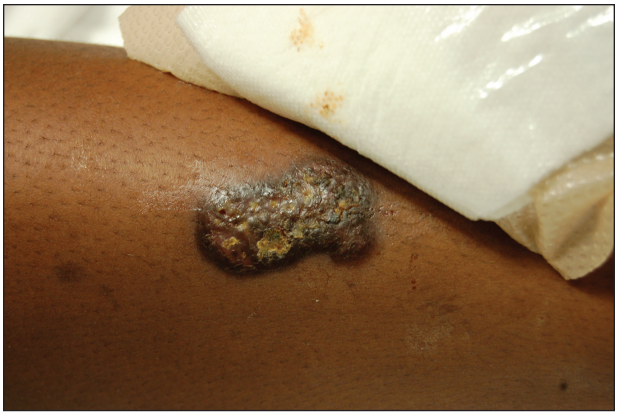

FIGURE 2. Left pretibial plateau with a similar verrucous hyperpigmented plaque.

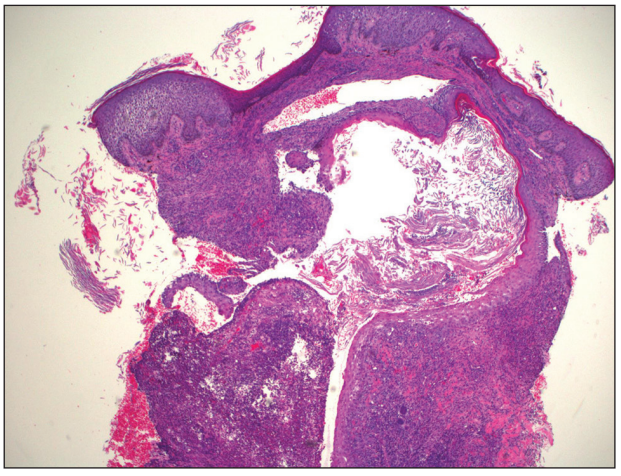

FIGURE 3. Biopsy specimens from the right pretibial plateau showed a dense dermal lympho-neutrophilic infiltrate and overlying pseudoepitheliomatous hyperplasia (H&E, original magnification ×25). No granules consistent with a Splendore-Hoeppli phenomenon were observed.

granules consistent with a Splendore-Hoeppli phenomenon were observed. These observations were consistent with a diagnosis of BLP.

Blastomycosislike pyoderma is a rare cutaneous bacterial infection that often mimics other fungal, inflammatory, or neoplastic disorders.[1] Pediatric cases also are uncommon. Blastomycosislike pyoderma most commonly is caused by infection with *S aureus* or group A streptococci, but several other organisms have been implicated.[2] Clinically, BLP is similar to cutaneous botryomycosis, as both are caused by similar organisms.[3] However, while BLP is limited to the skin, botryomycosis may involve visceral organs.

Blastomycosislike pyoderma typically presents as verrucous, hyperkeratotic, purulent plaques with raised borders. It most commonly occurs on the face, scalp, axillae, trunk, and distal extremities. Predisposing factors include immunosuppressed states such as poor nutrition, HIV, malignancy, alcoholism, and diabetes mellitus.[3,4] Hyperglycemia is thought to suppress helper T cell (T_H1)–dependent immunity, which may explain why our patient's lesions worsened with hyperglycemic episodes.[5]

Histopathology revealed pseudoepitheliomatous hyperplasia with neutrophilic abscesses.[1] The distinguishing feature between botryomycosis and BLP is the development of grains known as the Splendore-Hoeppli phenomenon in botryomycosis.[6] The grains are eosinophilic and contain the causative infectious agent. The presence of these grains is consistent with botryomycosis but is not pathognomonic, as it also can be found in several bacterial, fungal, and parasitic infections.[3,6]

The differential diagnosis of BLP includes atypical mycobacterial infection, pyoderma gangrenosum, fungal infection, and tuberculosis verrucosa cutis.[7]

Although BLP is caused by bacteria, response to systemic antibiotics is variable. Other treatment modalities include dapsone, systemic and intralesional corticosteroids, retinoids, debridement, CO_2 laser, and excision.[6,8] Lesions typically start out localized, but it is not uncommon for them to spread to distal or vulnerable tissue, such as sites of trauma or inflammation. Our patient was started on oral trimethoprim-sulfamethoxazole and showed improvement, but she worsened with subsequent hyperglycemic episodes when antibiotics were discontinued.

REFERENCES

1. Adişen E, Tezel F, Gürer MA. Pyoderma vegetans: a case for discussion. *Acta Derm Venereol*. 2009;89:186-188.
2. Scuderi S, O'Brien B, Robertson I, et al. Heterogeneity of blastomycosis-like pyoderma: a selection of cases from the last 35 years. *Australas J Dermatol*. 2017;58:139-141.
3. Marschalko, M. Pyoderma vegetans: report on a case and review of data on pyoderma vegetans and cutaneous botryomycosis. *Acta Dermatovenerol Alp Pannonica Adriat*. 1995;4:55-59.
4. Cerullo L, Zussman J, Young L. An unusual presentation of blastomycosislike pyoderma (pyoderma vegetans) and a review of the literature. *Cutis*. 2009;84:201-204.
5. Tanaka Y. Immunosuppressive mechanisms in diabetes mellitus [in Japanese]. *Nihon Rinsho*. 2008;66:2233-2237.
6. Hussein MR. Mucocutaneous Splendore-Hoeppli phenomenon. *J Cutan Pathol*. 2008;35:979-988.
7. Lee YS, Jung SW, Sim HS, et al. Blastomycosis-like pyoderma with good response to acitretin. *Ann Dermatol*. 2011;23:365-368.
8. Kobraei KB, Wesson SK. Blastomycosis-like pyoderma: response to systemic retinoid therapy. *Int J Dermatol*. 2010;49:1336-1338.