SKIN

BRIEF ARTICLE

Blastomycosis-Like Pyoderma in a 59-year-old Male with Type 2 Diabetes Mellitus

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INTRODUCTION

Blastomycosis-like pyoderma (BLP) is a rare cutaneous disorder that results from an exaggerated response to a bacterial infection, most commonly *Staphylococcus aureus*. There are a variety of reported predisposing factors, including diabetes, obesity, leukemia, primary immunodeficiency, and active immunomodulatory therapy.[1] Clinical and histopathological findings of BLP can be quite disparate, often resulting in a delay in diagnosis.[2] We report here a case of a man who presented with an enlarging verrucous nodule of his neck, and was subsequently diagnosed with BLP. The purpose of sharing this case is to contribute to the existing literature of this rare disease by highlighting a unique presentation.

CASE REPORT

A 59-year-old Congolese male with a past medical history of Type 2 Diabetes Mellitus and latent Syphilis presented to the dermatology clinic with a one-month history of a tender, draining mass on his right neck. He had never had anything like this before, and denied any associated numbness, itching, or bleeding. He denied recent travel and new exposures but had moved to the US from Kenya through a Refugee Settlement Program in 2017. He was feeling well otherwise. He denied any history of other cutaneous conditions. On exam, there was a firm, hyperpigmented papillomatous nodule with central ulceration on the right lateral neck and upper back (**Figure 1**). Extending up the right posterior neck into the scalp, there were several similar, smaller firm nodules (**Figure 2**). Initial differential diagnosis included malignancy (in particular, squamous cell carcinoma vs lymphoma) vs. infection (deep fungal, atypical mycobacterium, sporotrichosis, and Leishmaniasis, amongst others). The patient had visited an outside primary care office one week earlier, where a punch biopsy with hematoxylin and eosin (H&E) stain was done.

This initial biopsy revealed nonspecific reactive epidermal hyperplasia with mixed dermal inflammatory infiltrate. The patient shortly thereafter returned to the dermatology office for an excisional biopsy, which yielded pseudoepitheliomatous hyperplasia with dermal abscess formation (**Figure 3**). AFB and fungal culture were negative for organisms, but the bacterial culture did return

positive for methicillin-resistant staph aureus (MRSA). One week after the excisional biopsy, the patient was reporting increased pain and purulent drainage of the primary lesion. The patient was started on doxycycline 100mg twice daily for 10 days, and he noted slight decrease in pain and drainage.

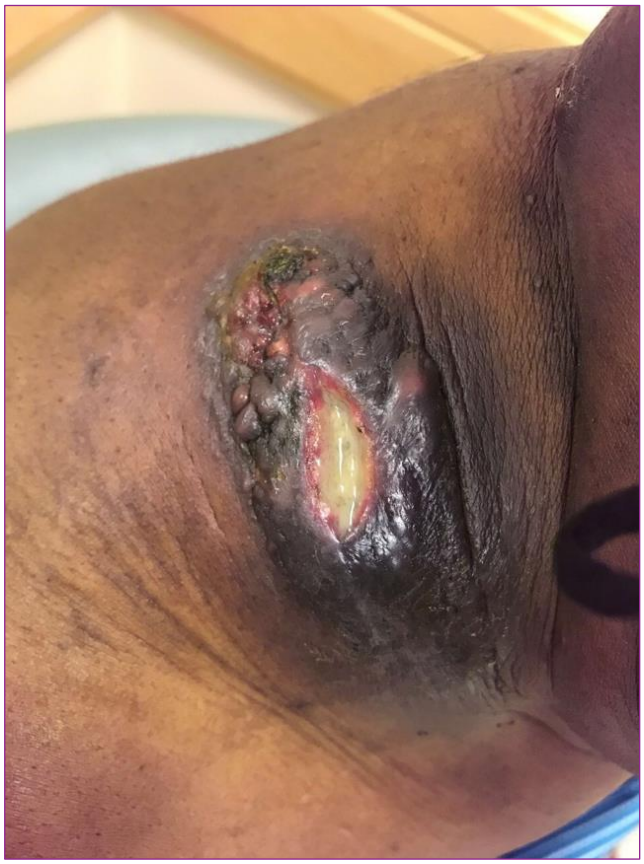

Figure 1. Firm, hyperpigmented papillomatous nodule with central ulceration on the right lateral neck and upper back.

As the lesion was continuing to grow, additional workup including Histoplasmosis urine antigen and serum antibody, HIV serology, blastomycosis urine antigen, and QuantiFERON gold were obtained. Given the patient's known history of latent syphilis, an RPR was obtained to monitor for recurrence. All of these tests returned negative. The differential diagnosis was further expanded to include pemphigus vegetans, halogenoderma, and blastomycosis-like pyoderma. To explore this further, a third biopsy was pursued, along with H&E, direct immunofluorescence (DIF), repeat tissue culture, and universal pathogen polymerase chain reaction (PCR). Punch biopsy specimens revealed reactive epidermal hyperplasia with dermal fibrosis and lymphoplasmacytic infiltrate, and DIF was negative. Tissue cultures were significant for Proteus mirabilis. Universal PCR returned negative for all clinically concerning organisms, including atypical mycobacterium, toxoplasma, and fungal species.

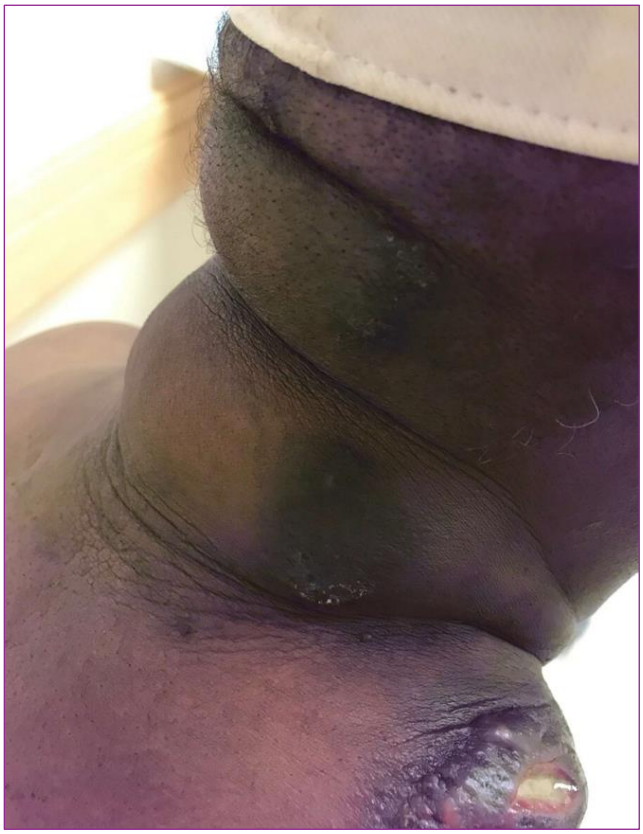

Figure 2. Smaller nodule Extending up the right posterior neck into the scalp.

Given these results and the patient's clinical presentation, the working diagnosis was BLP. The patient was placed on an additional 3-month course of doxycycline 100 mg twice daily and experienced rapid healing of the lesion. With the patient's remarkable

response to a course of doxycycline, it was presumed that the likely provoking factor for his BLP was MRSA. The patient has continued to do well since, without any recurrence.

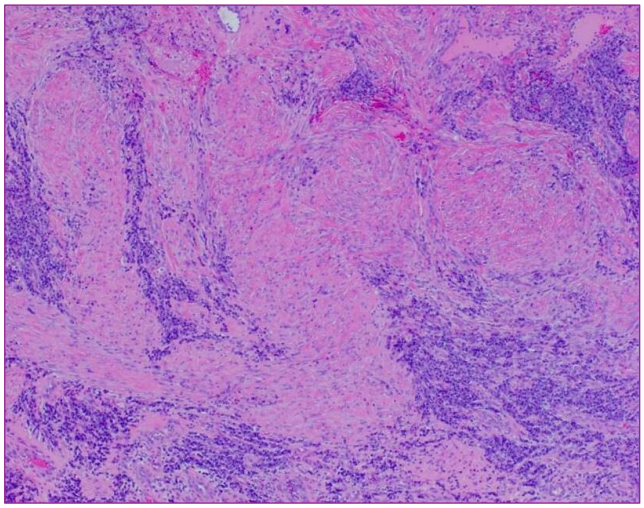

Figure 3. Excisional biopsy which yielded pseudoepitheliomatous hyperplasia with dermal abscess formation.

DISCUSSION

BLP is a rare cutaneous disease characterized by an exuberant response to a bacterial infection, most commonly *Staphylococcus aureus*. Other reported etiologies have included *Streptococcus pyogenes*, *Pseudomonas aeruginosa*, *Escherichia coli*, and *Candida albicans*. The mechanism by which these pathogens lead to the development of BLP is not known, but it has been hypothesized that the microorganisms induce local immune dysfunction.[3] BLP classically presents in immunocompromised individuals, but has been reported after tattooing, local trauma, radiotherapy, and foreign body reactions in immunocompetent hosts.[3,4] Sahli et al., published a case report in 2022 of BLP of the left wrist in an immunocompetent female patient with type 2 diabetes mellitus.[3] Similarly, our patient also had a history of type 2 diabetes mellitus, but was otherwise immunocompetent.

The classic exam findings for BLP are large verrucous plaques with multiple pustules, elevated borders and draining sinuses, often on sun-exposed areas.[2] However, a case series of 39 patients with a history of BLP highlighted the overall wide variety of potential findings, including plaques (with or without sinuses and crypts), solitary nodules, or ulcers.[2] Only three patients of the 39 presented with multiple lesions.

Representative histopathology can be just as diverse, but most commonly reveals pseudoepitheliomatous hyperplasia and abscess formation. Scuderi et al. reported findings of chronic granulomatous inflammation, transepidermal elimination and scarring, and focal suppuration as well.[2] Understandably, this array of nonspecific features often leads to delayed diagnosis.

Directed antibiotics have been the mainstay of treatment for BLP, although many patients do not experience full resolution. Recent reports have emphasized the use of acitretin to treat BLP. A patient with BLP of her left palm in association with recurrent vesicular hand eczema had full resolution of her BLP on oral acitretin 25 mg daily for ten weeks. Other reported efficacious treatments include combined antibiotic and acitretin therapy, topical antibiotics, steroids, surgery, curettage and electrodessication, and laser therapy.[5]

CONCLUSION

Our case represents another unique presentation of BLP, as it highlights this diagnosis in an overall immunocompetent individual and the process of detecting BLP through a broadened differential after initial

testing. In addition, besides a history of Diabetes Mellitus, this patient did not present with any other known risk factors for BLP including: trauma to skin, malnutrition, tattooing activity, smoking, cancer, or alcoholism.[6] There can be great difficulty in making a diagnosis of BLP and it is important to consider this diagnosis when a patient presents with a verrucous lesion mimicking Blastomycosis. We are hopeful this case is helpful in expanding the differential diagnosis of clinicians faced with similar findings in patients with or without risk factors.

Consent: The patient gave consent for their medical information to be published in print and online and with the understanding that this information may be publicly available.

Conflict of Interest Disclosures: None

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