Primary Cutaneous *Candida tropicalis* Infection in a Patient With B-Cell Lymphoma

Alison M. Schram, BS; Brian Kim, MD; Casey Carlos, MD, PhD; Michael T. Tetzlaff, MD, PhD; Mindy Schuster, MD; Misha Rosenbach, MD

Practice Points

- Cellulitis in severely immunosuppressed patients may be due to atypical organisms, including *Candida*.
- Most cutaneous manifestations of *Candida* infection arrive through hematogenous spread.
- Primary cutaneous candidiasis can occur and should be in the differential for immunosuppressed patients with cellulitis that fails to respond to antibacterial agents.

We report the case of a 61-year-old man with diffuse large B-cell lymphoma who presented with a tender skin lesion on the left side of the flank of 5 weeks' duration after undergoing myeloablative chemotherapy. Prior treatment with intravenous vancomycin showed minimal response. Clinical examination revealed a tender, indurated, erythematous plaque on the left side of the flank. A skin biopsy demonstrated a lymphohistiocytic and neutrophilic infiltrate with deep dermal necrosis and fungal forms in the dermis and subcutis. A tissue culture grew Candida tropicalis*; however, blood cultures remained negative for yeast. A diagnosis of primary cutaneous candidiasis was made based on the lack of response to antibiotics, tissue evidence of* C tropicalis*, and negative blood cultures. Although rare, primary cutaneous candidiasis should be considered in immunocompromised patients presenting with cellulitis or an abscess that is unresponsive to treatment.*

Cutis. 2014;93:204-206.

From the University of Pennsylvania, Philadelphia. Ms. Schram is from the School of Medicine. Drs. Kim, Carlos, and Rosenbach are from the Department of Dermatology. Dr. Tetzlaff is from the Department of Pathology and Laboratory Medicine. Dr. Schuster is from the Division of Infectious Disease.

The authors report no conflict of interest.

Correspondence: Misha Rosenbach, MD, 2nd Floor, Maloney Bldg, 3400 Spruce St, Philadelphia, PA 19104 (misha.rosenbach@uphs.upenn.edu).

Case Report

A 61-year-old man with diffuse large B-cell lymphoma who had undergone myeloablative chemotherapy presented with a chronic tender plaque on the left side of the flank. It started as localized superficial erythema 5 weeks prior and 3 days after the resolution of treatment-associated neutropenia. Clinical examination revealed a well-demarcated, 6×8-cm, reddish brown, indurated plaque (Figure 1). The patient reported no history of trauma to the area other than subcutaneous heparin injections (3 times daily), and repeat bone marrow biopsy showed no evidence of lymphoma. The patient was afebrile with negative blood cultures, and abdominal computed tomography revealed only soft tissue edema. Eight days of treatment with vancomycin had provided no notable response. The dermatology consultation team performed a diagnostic biopsy and tissue culture. The skin biopsy showed mixed lobular and septal panniculitis with adipocyte necrosis and a mixed inflammatory infiltrate; Gomori methenamine-silver staining highlighted budding yeast and pseudohyphal forms (Figure 2). A tissue culture grew *Candida tropicalis*. Treatment with oral fluconazole was started.

The lesion progressed and the patient developed worsening flank pain with purulent discharge from the biopsy site. Localized incision and drainage was performed. Wound cultures grew C *tropicalis*, while blood cultures remained negative; a fundoscopic examination was unremarkable. The patient was

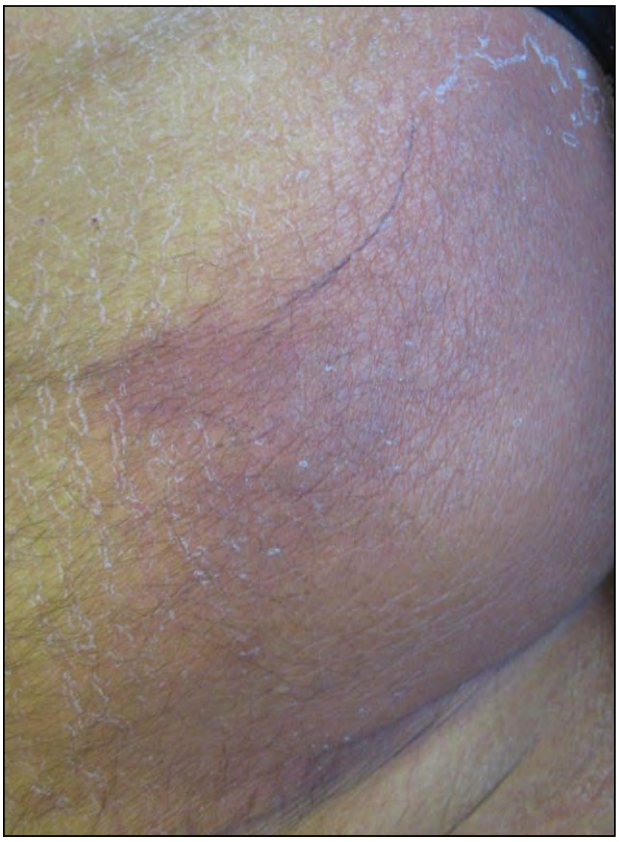

Figure 1. A large, reddish brown, indurated plaque on the left side of the flank. Violaceous erythema progressed beyond a previously drawn pen mark demarcating the clinical boundary of the lesion 1 day prior to the current presentation.

switched to intravenous fluconazole. Repeat abdominal imaging revealed subcutaneous nodularity and inflammatory stranding with a 1.4×6.2-cm enhancing fluid collection. The patient underwent extensive debridement of necrotic skin and placement of a vacuum-assisted closure dressing. Fluconazole was continued and the lesion progressively improved. The patient recovered remarkably and restarted chemotherapy but died from tumor lysis syndrome. Autopsy revealed a healing wound with isolated areas of yeast and pseudohyphal forms. There was no evidence of disseminated *Candida* infection.

Comment

Primary *Candida* infections of the deep skin and soft tissue are extremely rare. Furthermore, the majority of *Candida* infections with cutaneous findings are caused by *Candida albicans*.[1] The reported cases are primarily heterogenous in presentation and nearly every patient was immunosuppressed.[2-7] Wolfson et al[7] reported a case of primary deep skin infection with *C tropicalis* as the sole pathogen.

The uncommon nature of primary *Candida* skin infection led to a delay in diagnosis in our patient. The infection followed an indolent course, with skin erythema evolving into an abscess over 5 weeks without constitutional symptoms. The patient's death was unrelated to the infection, and the lesion was remarkably improved at autopsy.

Cutaneous candidiasis may result from inoculation injury, direct contact with infected tissue, or

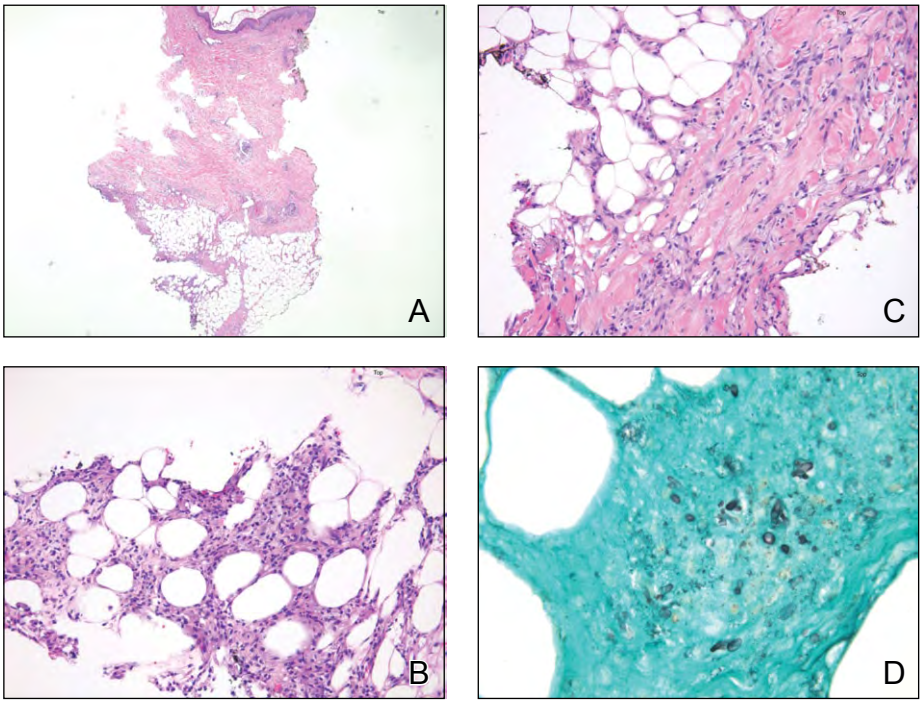

Figure 2. Scanning magnification revealed mixed septal and lobular panniculitis (A)(H&E, original magnification ×2). Mixed acute and chronic inflammation infiltrating lobules among individual adipocytes was present (B)(H&E, original magnification ×20). Septal fibrosis and lymphohistiocytic inflammation were demonstrated (C)(H&E, original magnification ×20). Special stains highlighted budding yeast along with pseudohyphal forms in the fibrotic septa (D)(Gomori methenamine-silver, original magnification ×40).

hematogenous spread.[8] Although our patient may have experienced transient candidemia and seeding, the patient's negative blood cultures and lack of systemic symptoms suggest that it was unlikely. Additionally, no nearby tissue was affected, ruling out direct extension. Inoculation injury is a plausible explanation given his daily abdominal heparin shots.

Candida panniculitis is diagnosed using tissue biopsy and culture. Biopsy reveals *Candida* yeast forms with possible necrosis and inflammation. Of the reported cases, the majority of patients have been treated with antifungals with or without surgery, and the prognosis has been favorable.[2-6,8]

Conclusion

Although rare, primary cutaneous candidiasis should be considered in immunocompromised patients presenting with cellulitis or a lesion that is unresponsive to therapy.

REFERENCES

1. Janik MP, Heffernan MP. Yeast infections: candidiasis and tinea (pityriasis) versicolor. In: Wolff K, Goldsmith LA, Katz SI, et al, eds. *Fitzpatrick's Dermatology in General Medicine*. 7th ed. New York, NY: McGraw-Hill; 2007:1822-1830.
2. Celik AD, Yulugkural Z, Kuloglu F, et al. *Candida glabrata*: etiologic agent of soft tissue abscess in a diabetic patient. *Indian J Pathol Microbiol*. 2010;53:590-591.
3. Chen HM, Shih CC, Yen KL, et al. Facial *Candida albicans* cellulitis occurring in a patient with oral submucous fibrosis and unknown diabetes mellitus after local corticosteroid injection treatment. *J Oral Pathol Med*. 2004;33:243-245.
4. Cuozzo DW, Aaronson B, Benson PM, et al. *Candida krusei* abdominal wall abscess presenting as ecchymosis. diagnosis with ultrasound. *Arch Dermatol*. 1995;131:275-277.
5. Kwak OS, Kang MI, Kim JB, et al. A rare case of facial *Candida albicans* cellulitis in an uncontrolled diabetic patient [published online ahead of print October 22, 2008]. *Mycoses*. 2009;52:379-381.
6. Manfredi R, Mazzoni A, Nanetti A, et al. Isolated subcutaneous candidal abscess and HIV disease. *Br J Dermatol*. 1997;136:647-649.
7. Wolfson JS, Sober AJ, Rubin RH. Dermatologic manifestation of infections in immunocompromised patients. *Medicine (Baltimore)*. 1985;64:115-133.
8. Tuon FF, Nicodemo AC. *Candida albicans* skin abscess. *Rev Inst Med Trop Sao Paulo*. 2006;48:301-302.