Primary Cutaneous Cryptococcosis Presenting as an Extensive Eroded Plaque

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PRACTICE **POINTS**

- Primary cutaneous cryptococcosis is rare in nonimmunosuppressed patients.
- Primary cutaneous cryptococcosis secondary to inoculation can have a clinical presentation similar to more common conditions, such as molluscum, acne, and dermatitis.

To the Editor:

Primary cutaneous cryptococcal infection is rare. Cryptococcal skin infections, either primary or disseminated, can be highly pleomorphic and mimic entities such as basal cell carcinoma or even severe dermatitis, as in our case.

An 80-year-old woman who was residing in a nursing facility presented to the emergency department with an itchy nontender rash on the left arm of 2 to 3 weeks' duration that gradually spread. The patient had not started any new topical or oral medications and was otherwise healthy. A review of symptoms was negative for fever, weight loss, or new cough. Her medical history was notable for congestive heart failure, chronic obstructive pulmonary disease requiring chronic low-dose prednisone, hypothyroidism, atrial fibrillation, hypertension, and dementia. On physical examination the patient had a large, well-demarcated, pink, scaly plaque with areas of ulceration extending from the dorsal aspect of the hand and fingers to the mid upper arm. There was minimal overlying yellow-brown crust (Figure 1). A potassium hydroxide preparation from a superficial scraping was negative. A punch biopsy specimen was obtained from the lesion and microscopic examination revealed histiocytes with innumerable intracytoplasmic yeast forms demonstrating small buds (Figure 2). The organisms were highlighted by periodic acid–Schiff and Grocott-Gomori

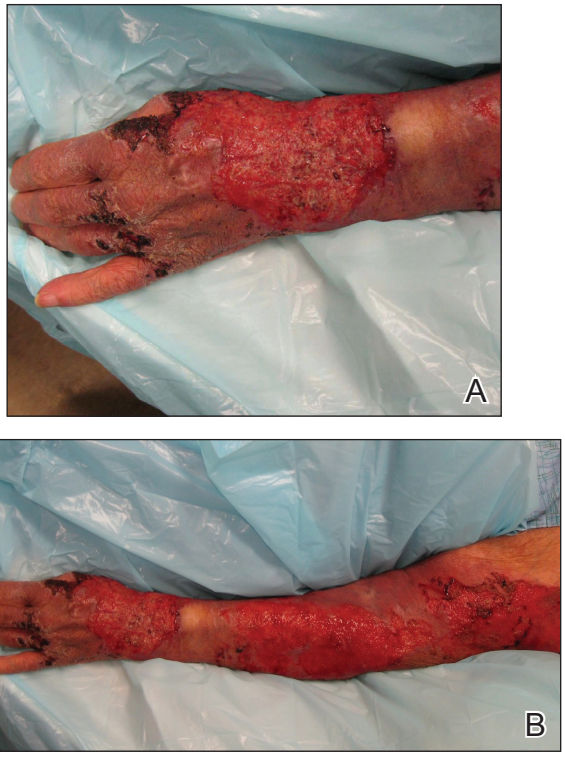

Figure 1. Primary cutaneous cryptococcosis. Red scaly plaque with extensive erosion on the dorsal aspect of the hand and fingers (A) extending to the upper arm (B).

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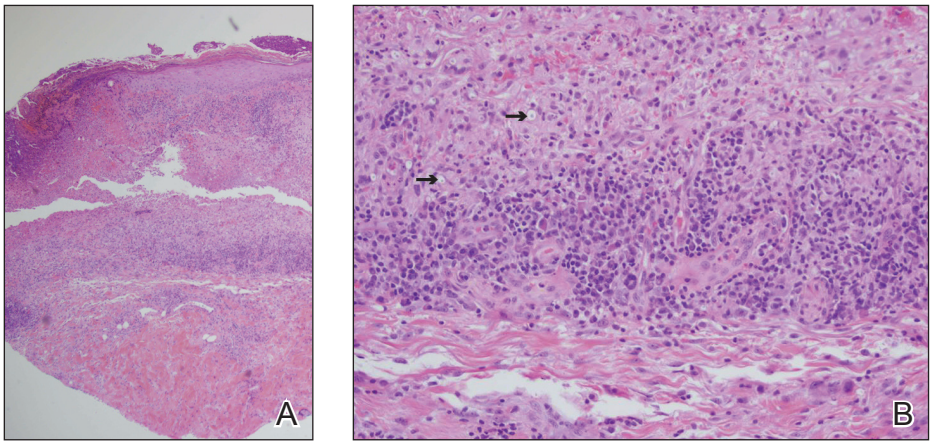

Figure 2. Primary cutaneous cryptococcosis. A punch biopsy from the left arm showed histiocytes and intracytoplasmic yeast forms (black arrows)(A and B)(H&E, original magnifications ×4 and ×20).

methenamine-silver stains (Figure 3), while acid-fast bacillus and Fite stains were negative. The presumptive diagnosis of cutaneous cryptococcosis was made, and subsequent culture and latex agglutination test was positive for *Cryptococcus neoformans*. A chest radiograph showed no evidence of active disease. Infectious disease specialists were consulted and ordered additional laboratory studies, which were negative for human immunodeficiency virus, hepatitis, and fungemia. The patient had a low CD4 count of 119 cells/µL (reference range, 496–2186 cells/µL). Workup for systemic *Cryptococcus*, including head computed tomography, cerebral spinal fluid analysis, and bone marrow biopsy were all negative. Epstein-Barr virus and human T lymphotropic virus tests were both negative. The source of the patient's low CD4 count was never discovered. She gradually began to improve with diligent wound care and continued fluconazole 400 mg daily. The patient's history did reveal working on a chicken farm as an adult many years ago.

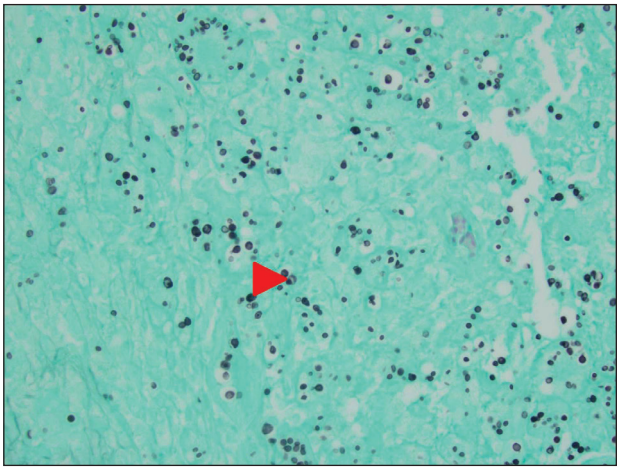

Figure 3. Primary cutaneous cryptococcosis. Grocott-Gomori methenamine-silver stain highlighted intracytoplasmic organisms (red arrowhead)(original magnification ×40).

Cryptococcus is a yeast that causes infection primarily through airborne spores that lead to pulmonary infection. *Cryptococcus neoformans* is the most common pathogenic strain, though infection with other strains such as *Cryptococcus albidus*[1] and *Cryptococcus laurentii*[2] have been reported. Primary cutaneous cryptococcosis is an exceedingly rare entity, with the majority of cases of cutaneous cryptococcosis originating from primary pulmonary infection with hematogenous dissemination to the skin. Primary cutaneous cryptococcosis rarely can be caused by inoculation in nonimmunosuppressed hosts and infection of nonimmunosuppressed hosts is more common in men than in women.[3] Manifestations of cutaneous cryptococcosis can be incredibly varied and diagnosis requires a high index of suspicion along with appropriate histological and serological confirmation. Cutaneous cryptococcosis can present in various clinical ways, including molluscumlike lesions, which are more common in patients with AIDS; acneform lesions; vesicles; dermal plaques or nodules; and rarely cellulitis with ulcerations, as in our patient. Cryptococcosis also can imitate basal cell carcinoma, nummular and follicular eczema, and Kaposi sarcoma.[4]

Histologic examination reveals either a gelatinous or granulomatous pattern based on the number of organisms present. The gelatinous pattern is characterized by little inflammation and a large number of phagocytosed organisms floating in mucin. The granulomatous pattern shows prominent inflammation with lymphocytes, histiocytes, and giant cells, as well as associated necrosis.

Treatment depends on the type of infection and host immunological status. Immunocompetent hosts with cutaneous infection may spontaneously heal. Treatment consists of surgical excision, if possible,

followed by fluconazole or itraconazole. For disseminated cryptococcal infections in immunosuppressed hosts, the standard of care is amphotericin B with or without flucytosine.[3]

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