Cutaneous Mucormycosis: A Case Report

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Cutaneous mucormycosis is a rare opportunistic fungal infection. It usually is benign in immunocompetent patients, but it can lead to devastating consequences in immunocompromised patients. Immediate diagnosis and treatment are crucial in preventing fatality. We describe a case of cutaneous mucormycosis in a man with a history of non-Hodgkin lymphoma in an effort to raise diagnostic suspicion of this life-threatening infection and prevent a fatal outcome.

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Case Report

A 67-year-old man with a history of non-Hodgkin lymphoma was seen on our inpatient consultation service for a rapidly growing plaque on his neck of 2 days' duration. He was admitted 2.5 weeks prior to presentation for neutropenic fever and was found to have septic shock with multiorgan failure, necessitating ventilatory support, hemodialysis, and pressors. Repeat cultures of blood, urine, sputum, and stool were negative. He was empirically treated with broad antibacterial, antifungal, and antiviral agents including azithromycin, meropenem, linezolid, daptomycin, acyclovir, pentamidine, and cancidas. Overall, he was improving but still had recurrent fevers at the time of presentation. Physical examination revealed an 8×5.5-cm tender, warm, violaceous plaque on his right posterior neck with overlying punctate areas of hemorrhagic crust (Figure 1). A 4-mm punch biopsy obtained from the plaque on the neck revealed large, nonseptate, irregular, 90° branching hyphae in the deep dermis and subcutaneous fat with both hematoxylin and eosin (Figure 2A) and Gomori methenamine-silver stains (Figure 2B), diagnostic of mucormycosis.

After the preliminary histologic analysis, he was taken to the operating room for emergent surgical debridement and started on intravenous voriconazole and amphotericin B. His condition initially improved but then began to deteriorate with further fevers and worsened respiratory status. A second surgical debridement was performed 2 weeks later for a presumed continued infection. He died of respiratory distress several weeks later. It is not clear if it was caused by complications of excess blood products needed for his surgeries (platelets and blood for his thrombocytopenia) or by pulmonary or even wider spread of this infection.

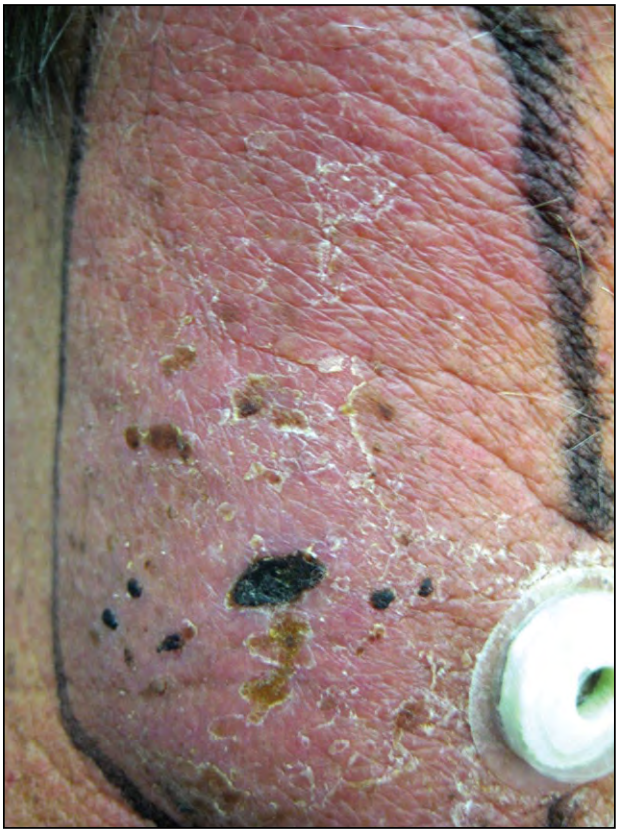

Figure 1. An 8×5.5-cm tender, warm, violaceous plaque on the right posterior neck with overlying punctate areas of hemorrhagic crust.

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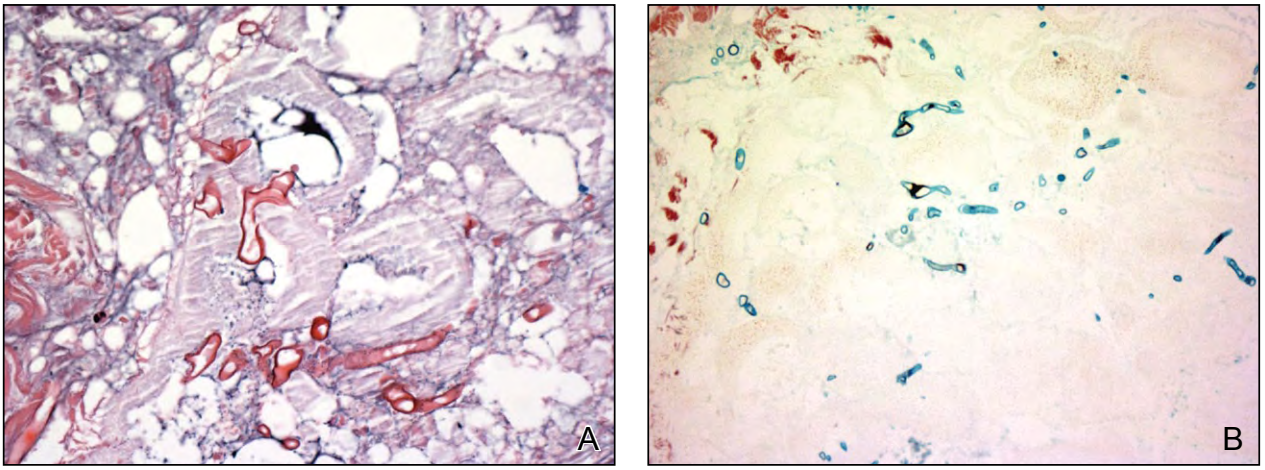

Figure 2. Nonseptate, irregular, 90° branching hyphae in the deep dermis and subcutaneous fat on histology with hematoxylin and eosin stain (A) and Gomori methenamine-silver stain (B).

Comment

Mucormycosis, also known as zygomycosis, is a highly aggressive fungal infection with an up to 80% mortality rate depending on the type of involvement.[1] Although it occurs at a much lower rate than other cutaneous fungal infections, such as *Candida*, there has been a rise of mucormycosis among patients with hematologic malignancies who are neutropenic and immunodeficient.[2] Mucormycosis is caused by members of the order Mucorales from the class Zygomycetes. Mucorales are ubiquitous saprophytic fungi usually affecting immunocompromised hosts. The main offenders are of the genera *Mucor*, *Rhizopus*, *Rhizomucor*, and *Absidia*. There are 5 major clinical forms: rhinocerebral, pulmonary, cutaneous, gastrointestinal, and disseminated. Rhinocerebral is the most common form, representing 44% to 49% of cases, followed by cutaneous (10%–19%), pulmonary (10%–11%), disseminated (6%–11%), and then gastrointestinal (2%–11%).[3] Clinically, the zygomycoses can present with a variety of skin findings, ranging from firm papules to necrotic papulonodules to hemorrhagic bullae and necrotic ulcers. They also can produce bland subcutaneous nodules and cellulitis. The rhinocerebral and disseminated forms may have mortality rates up to 80%; the cutaneous form typically has the best prognosis with a mortality rate near 15%.[3]

Diagnosis of cutaneous mucormycosis can be difficult because of its rarity and variable clinical presentation. All physicians should consider mucormycosis in their differential diagnosis when dealing with a skin lesion that is culture negative in an immunocompromised patient who is undergoing a rapidly aggressive clinical course despite typical treatments. The key to diagnosis and management is biopsy of the affected tissue. One cannot rely on a fungal culture alone because of its extremely low sensitivity. Even if it is positive, it may take 3 or 4 days for this result. Because early diagnosis is essential in improving the patient's survival, it is imperative to recognize the following characteristic features on biopsy: large, irregular, nonseptate, 90° branching hyphae that course along vessel walls. Once these findings are observed, therapy consisting of intravenous antifungals and surgical debridement should be instituted without delay. The clinical appearance is variable, and our case demonstrates a possible presentation. Even the short delay in making a diagnosis may have contributed to our patient's death.

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