

Cutaneous Mucormycosis of the Legs in a Diabetic Patient

Abstract

Mucormycosis is highly invasive and devastating fungal infection. Here, we report a rare case of cutaneous mucormycosis presenting in both legs in a type 2 diabetic patient who showed response to oral antifungal therapy.

Introduction

Mucormycosis is an uncommon acute and often fatal opportunistic fungal infection¹. Conditions most commonly

associated with mucormycosis include poorly controlled diabetes mellitus, metabolic acidosis, organ transplantation, leukemia, lymphoma, AIDS, malnourished children, severe burns, patients who receive desferoxamine therapy as a chelating agent and chronic steroid use. The commonest form of mucormycosis normally affects the rhinocerebral form while other types are less common. Cutaneous mucormycosis is a rare form of the lesion. Hence, we report on a case of cutaneous mucormycosis.

Case report

A 47-year-old newly detected type 2 diabetic patient presented with complaints of non-healing ulcer in both legs of 6 months' duration. She also complained of weight loss, blurred vision and weakness. On examination, she was overweight, febrile, blood pressure 140/96 mmHg and pulse rate 88/minute with feeble

peripheral pulsations.

Local examination revealed dark, pigmented non-healthy ulcers with necrotic tissue, in the anterior aspect of right leg and on the lower one-third of posterior aspect of the left leg (Fig. 1). Retinal examination revealed

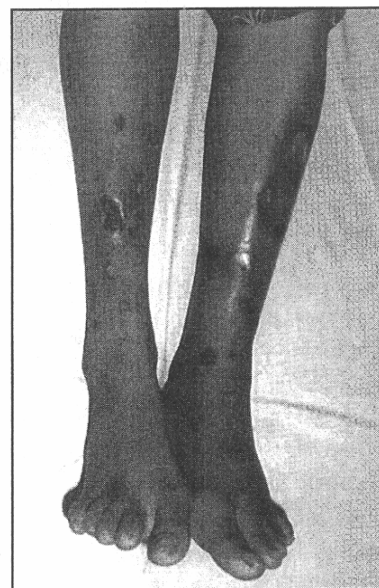


Figure 1. Multiple ulcers on both legs.

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moderate non-proliferative diabetic retinopathy in both eyes. Rest of the systemic examination was unremarkable. On laboratory investigation fasting and postprandial blood sugar were found to be 390 mg/dl and 555 mg/dl, respectively and the glycated hemoglobin 11.8% indicating a long period of undiagnosed diabetes. The 24-hour protein excretion was 536 mg/day indicative of diabetic nephropathy. Hemogram, blood urea, serum creatinine, serum electrolytes and liver function test were normal. Serology for Widal, HIV, VDRL and rheumatoid factor were negative. Urine examination was normal. ECG, chest X-ray and X-rays of both legs were normal.

Pus culture and sensitivity showed growth of *Klebsiella pneumoniae*. Wound debridement of both legs was done and skin biopsy from both legs was taken in view of the unusual appearance of

the ulcer (Fig. 2). This showed many branching septate hyphal elements, budding form of *Candida* in the necrotic crust on the surface and broad non-septate hyphal elements of fungus consistent with *Mucor* seen haphazardly in the necrotic dermis indicating necrotising invasive fungal infection (mucormycosis) with candidial colonisation. A diagnosis of cutaneous mucormycosis of both legs was made and she was treated with oral antifungal drugs in addition to i.v. antibiotics and divided doses of human insulin along with oral hypoglycemic drugs for her glycemic control and regular dressing was done. Although i.v. amphotericin B is the drug of choice for mucormycosis, oral antifungals were started because of mixed infections and also because of the toxicity of amphotericin B. On review after 2 months, her blood sugar was under control, she had gained weight and the wound showed good signs of healing.

Discussion

Mucormycosis is caused by ubiquitous saprophytic fungi of the order *Mucorales*, class *Zygomycetes*, family *Mucoraceae*. *Mucoraceae*, that cause mucormycosis belong to the genera *Rhizopus*, *Absidia* and *Mucor*. These organisms are widely disseminated in the environment and infections are due to inhalation of spores which may be deposited in the nasal turbinate or may pass through the pulmonary alveoli. Growth and proliferation occur once the spores germinate and these organisms have the capacity

This patient had a mixed fungal and bacterial infection, which was identified and treated with good results. Associated fungal infections should be thought of in unusual looking ulcers or if the response to conventional therapy is poor.

to grow rapidly. It spreads by direct extension of the infected area and by vascular and lymphatic routes. Invasion of tissue and blood vessels, results in obstruction of blood flow and subsequent hypoxia, thrombosis, necrosis and hemorrhage.

On histology, the fungi appears as broad (10-20 μm in diameter) non-septate hyphae with branches occurring at right angles. Hyperglycemia, acidosis and increased amount of unbound iron appear to promote fungal growth by diminishing or inhibiting phagocytosis, which is a primary mechanism for prevention.

Clinical forms of mucormycosis consists of rhinocerebral, pulmonary, gastrointestinal, cutaneous and disseminated forms of which rhinocerebral infection is most common.

Primary cutaneous mucormycosis occurs in patients who have diabetes (because of a weakened immune system, hyperglycemia), severe burns, immunosuppression or chronic renal failure. Ryan, et al.⁵ described 2 types of primary



Figure 2. Close up view of ulcer showing necrotic tissue with eschar formation.

Case Report

cutaneous mucormycosis: Superficial and gangrenous. The Superficial form is characterized by vesicles or pustules involving the superficial dermis and subcutaneous tissue. The gangrenous form, which develops as the disease progress is characterized by ulceration and formation of eschar. The mainstay of treatment is early surgical intervention to remove all dead and infected tissue, treatment of underlying medical disease, hyperbaric oxygen, local irrigation of infected tissue and anti-fungal therapy. This patient had a

mixed fungal and bacterial infection, which was identified and treated with good results. Associated fungal infections should be thought of in unusual looking ulcers or if the response to conventional therapy is poor.

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