Case Report:
Cutaneous Mucormycosis after Trauma

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Abstract

Background: Cutaneous mucormycosis is a rare, but frequently fatal fungal infection.

Case Report: We report a case of cutaneous mucormycosis following a road traffic accident.

Conclusions: A high level of clinical suspicion with appropriate tissue biopsy, prompt management and close follow-up are essential to reach recovery for mucormycosis.

Recommendations: To raise the awareness of Physicians toward this frequently fatal fungal infection in order to manage it properly and reach a good outcome.

Key Words: Mucormycosis – Antifungal drugs – Amphotericin B – Road traffic accident – Immunocompetent – Sepsis – Debridement.

Introduction

MUCORMYCOSIS is a rare infection caused by molds belonging to the subphylum Mucoromycotina in the order Mucorales [1]. The infection is more common among people with suppressed immune systems, but it can rarely occur in immunocompetent people, since the causative fungus is nonpathogenic for healthy individuals [2]. It represents an opportunistic rather than a true pathogen. The Rhizopus species are the most common causative organisms [3].

Rhinocerebral infection is the commonest form of mucormycosis in humans, followed by pulmonary infection. Cutaneous involvement is less common than these, and mainly occurs in two forms—a “benign” well-localized subcutaneous form, and a more fulminant cutaneous infection with necrotizing fasciitis, systemic sepsis, and a fatal outcome if the diagnosis and consequently the appropriate treatment is delayed [4].

Inhaled infectious spores may establish an infection in the sinuses. Other, less common routes of infection include the intestinal tract following ingestion, or by penetrating injuries to the skin [5]. Although dermal involvement rarely occurs, the instant diagnosis and prompt treatment can lead to reduction of mortality and morbidity [2].

Known risk factors for developing mucormycosis comprise uncontrolled diabetes mellitus, metabolic acidosis, high dose of corticosteroids, prolonged neutropenia, organ transplantation, skin trauma (cuts, scrapes, punctures, or burns), and catheter infection [6]. However, some patients with mucormycosis may have no identifiable risk factors [7].

Cutaneous mucormycosis is classified according to the extent of the infections localized when it affects only the skin or subcutaneous tissue; deep extension when it invades muscle, tendons, or bone; and disseminated when it involves other noncontiguous organs [8].

The typical presentation of cutaneous mucormycosis is a necrotic eschar accompanied by surrounding erythema and induration. However, a nonspecific erythematous macule may be the cutaneous manifestation of disseminated disease in an immunosuppressed patient [9]. When cutaneous mucormycosis presents with necrotic eschars, these lesions may mimic pyoderma gangrenosum, bacterial synergistic gangrene, or other infections produced by bacteria or fungi [10].
Successful treatment of mucormycosis includes several strategies, i.e., rapid diagnosis to recognize patients at increased risk and early signs of infection [11]; removal or reduction of risk factors to deal with any reversible predisposing factors (e.g., management of diabetic ketoacidosis, or reducing the level of immunosuppression) [5], specific antifungal therapy and surgical debridement, in addition to adjunctive therapies, e.g., the use of hyperbaric oxygen [12].

So, patients with mucormycosis should be treated in a tertiary referral center with subspecialty units experienced in the care of the condition and the underlying causes. Correction of the underlying abnormality and prompt institution of liposomal amphotericin B Therapy and Surgical resection are critical [13].

We report a rare case of skin mucormycosis following exposure to road traffic accident (RTA) trauma.

Case report

In September 2011, a 27-year old Saudi man presented to Aseer Central Hospital with a huge skin lesion in his left thigh. Two months earlier he had a RTA which resulted in pelvic fracture. Six weeks after the accident, he noticed an extremely painful swelling in the lateral aspect of his left thigh, which became extensively ulcerated and was rapidly progressive in size with time. That condition was associated with persistent fever with occasional sweating.

The patient was not diabetic or hypertensive. There was no history of itching, insect bite, immunosuppressive Therapy or any chronic Dermatological diseases. There was no family history of a similar disease. That was the first time for the patient to develop such skin lesion. He had no history of allergy to any medication or food.

General examination of the patient revealed that he was alert, not in respiratory distress, but he was in pain, especially when he turns over. He was febrile (38.8°C) with no palpable lymph nodes.

Local examination revealed well defined massive necrosis and ulceration in the posterolateral aspect of the left thigh with oozing and pus discharge (Fig. 1).

A wound swab was taken for bacterial culture and sensitivity which revealed no bacterial growth. However, skin biopsy from the lesion revealed non-septate hyphae with right angle branching (Figs. 2,3).

Fungal culture and sensitivity revealed the zygomycete “rhizopus”. So, the patient was diagnosed as a case of “cutaneous mucormycosis”.

Blood picture, fasting and post-prandial blood sugar levels, renal function tests and liver functions tests were all normal.

The Patient received 25 doses as I.V. 60mg amphotericin B in 500cc in dextrose 5% water over 6 hours. Excision of skin margins was performed with debridement of all necrotic tissues and curetting of the floor and margins, irrigation with H2O2, saline and betadine.

The patient’s condition improved with treatment and he was discharged after 4 weeks. The patient was advised to pay monthly visits to the Dermatology Clinic for follow-up and no recurrence for the patient’s condition was observed within 12 months.
Our patient presented with a huge necrotic skin lesion and ulceration in the left thigh with oozing and pus discharge. These are the classic presenting features of mucormycosis as a result of vascular invasion and subsequent thrombosis [14].

The patient was not diabetic or immunocompromised. Gomes et al., [15] noted that, although mucormycosis predominantly affects immunocompromised persons, cutaneous mucormycosis may also occur after trauma in immunocompetent persons.

Antoniadou [16] added that the causative fungi are ubiquitous in nature, particularly in soil and other organic matter. So, the source of the fungal infection in our case might be through skin injuries that may have occurred during exposure to the RTA that occurred two months earlier.

In our case, bacterial culture and sensitivity for the wound swab revealed no bacterial growth. Skin biopsy from the lesion revealed non-septate hyphae with right angle branching. So, the definite diagnosis of “cutaneous mucormycosis” was settled by fungal culture and sensitivity, which revealed the zygomycete “rhizopus”.

Petrikkos et al., [2] stated that mucormycosis is an uncommon, frequently fatal disease. However, during the past two decades, mucormycosis has emerged as an important fungal infection with high associated mortality rates. The importance of Mucorales species has grown in recent years as the number of patients with predisposing factors for mucormycosis has increased dramatically. Lass-Florl [17] added that the Mucorales species most often recovered from Clinical specimens are those of the genera Rhizopus.

Our case was successfully managed within 4 weeks by anti-fungal treatment and excision of skin margins with debridement of all necrotic tissues and curetting of the floor and margins, in addition to irrigation with H2O2, saline and betadine. Follow-up of the patient’s condition showed no recurrence within a year after cure.

Petrikkos et al., [2] stated that in mostcases of mucormycosis, the infection is usually rapidly progressive and would lead to death unless the underlying risk factors are managed and aggressive treatment is promptly started with antifungal agents in addition to surgical excision of skin margins with debridement of necrotic tissues.

In conclusion, a high level of Clinical suspicion with appropriate use of tissue biopsy, prompt management, and close follow-up are essential elements in reaching recovery for mucormycosis patients. It is recommended to raise the awareness of Physicians toward this rare but fatal fungal infection in order to manage it properly and reach a good outcome.

References


