ORIGINAL ARTICLE

Outcome of mucormycosis after treatment: report of five cases

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Abstract

Mucormycoses are serious infections caused by filamentous fungi of the order *Mucorales*. They occur most often in immunocompromised patients. We report five cases of mucormycosis in patients hospitalized in the Infectious Diseases Department in Sousse – Tunisia between 2000 and 2013. They were 4 males and one female, mean age 60 years. Three patients were diabetic and one patient had acute leukemia. The locations of mucormycosis were rhinocerebral, rhino-orbital, auricular, pulmonary and cutaneous. The *Mucorales* isolated were *Rhizopus* arrhizus in 3 cases and *Lichteimia* in 2 cases. All patients were treated with amphotericin B and 2 patients had, in addition, surgical debridement. Two patients died and 2 kept peripheral facial paralysis.

Keywords: Amphotericin B, diabetes, *Lichteimia corymbifera*, Mucormycosis, *Rhizopus arrhizus*
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Introduction

Mucormycosis is a rare but serious infection due to filamentous fungi of the division of *Mucorales*, the class *Zygomycetes*. They occur most often in immunocompromised patients with diabeties or haematological malignancies with prolonged neutropenia they represent the third cause of fungal infection in these patients after invasive candidiasis and aspergillosis [1,2]. We report five cases of confirmed mucormycosis in patients hospitalized in the Infectious Diseases department of Sousse, Tunisia, between 2000 and 2013.

Result

The main data are summarized in Table 1.

The patiuents were four men and one woman, mean age 60 years (25–77 years). Three patients had type 2 diabetes, one patient had acute leukemia (AL) in treatment failure with prolonged neutropenia and one patient was immunocompetent. Mucormycosis was rhino-cerebral, rhino-orbital, auricular (left otitis media), pulmonary and cutaneous. The mean duration of symptoms was 11 days (2–30 days).

Clinical signs included fever (all cases), peripheral facial palsy (PFP) and an orbital edema (two cases each), subcutaneous frontal abscess (Fig. 1) with mental confusion, ear pain with purulent otorrhea and hearing loss left, productive cough with dyspnea and necrotizing fasciitis of the left leg. Ketotic decompensation was noted in three patients with diabetes. All patients had received antibiotics before diagnosis of mucormycosis. The diagnosis of mucormycosis was made after average 17 days of hospitalization (2–57 days).

Imaging and laboratory data

Computed tomography (CT) of the facial bones showed pansinusitis in two patients, associated with subcutaneous frontal abscess in a patient.

CT showed a rocks filling the mastoid cells in a patient.

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TABLE 1. Main clinical, therapeutic and outcome data in 5 patients with mucormycosis

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Year of diagnosis	2007	2011	2012	2012	2013
Gender, age (years)	F, 72	M, 77	M, 25	M, 54	M, 76
Comorbiditie (s)	Type 2 diabetes	None	Acute leukemia	Type 2 diabetes	Type 2 diabetes
Infection localisation	Rhino-orbital pansinusitis	Chronic otitis media	Necrotizing fasciitis	Pneumonia	Rhino-cerebral + pansinusitis
Clinical signs	Hemiface inflammation	Otalgia, otorrhea, hypoacusis; PFP	Leg necrotizing inflammation	Cough, fever, dyspnea	Front subcutaneous abscess; confusion
Disease duration (days)	2	30	15	4	4
CT scan	Pansinusitis; infraorbital abscess	Filling the mastoid cells	—	Bilateral alveolo-interstitial syndrome	Pansinusitis
Direct examination	Hyphae	Hyphae	Negative	Hyphae	Negative
Culture	*Lichtemia*	*Lichtemia*	*Lichtemia*	*Rhizopus arrhizus*	*Rhizopus arrhizus*
Diagnostic delay (days)	57	15	7	2	7
Ampho B duration (days)	46	34	21	15	4
Ampho B side effects	ARF	Hypokalemia; ARF	None	None	None
Surgery	Yes	No	Yes	No	No
Outcome	Sequelae/PFP	Sequelae/PFP	Local improvement death/shok-multiorgan failure	Death/ARDS	Death/brain hemorrhage

F: female, M: male; PFP: peripheral facial paralysis; ampho B: amphotericin B; ARF: acute renal failure; ARDS: Acute respiratory distress syndrome.

Chest CT showed bilateral alveolar-interstitial infiltrate with alveolar consolidation in the right lower lobe (Fig. 2). The magnetic resonance imaging (MRI) showed bilateral predominantly frontal right lesion hyperintense on T2-Flair in a patient (Fig. 3).

The direct examination showed live mycological wide non septate hyphae with irregular diameter, indicative of Mucorales, in three cases. Culture was positive in all cases. Mucorales were isolated from the following samples: pus from the subcutaneous frontal abscess obtained by needle puncture, pus ear swab obtained on five different samples spaced several days, sinus biopsy, bronchial biopsy and intraoperative biopsy the soft tissue. It was identified as *Lichteimia corymbifera* (formerly *Absidia corymbifera*) in three cases and *Rhizopus arrhizus* in two cases.

Treatment – Evolution

All patients were treated with intravenous amphotericin B 0.7 to 1 mg / kg / day. Apart from one patient who died after four days of hospitalization, the mean duration of treatment was 32 days (15–46). Hypokalemia was observed in one patient in the course of moderate acute renal failure at the end of treatment in two patients. In two cases, the treatment was continued with correction of hypokalemia and hydration.

The evolution was marked by the early death in two patients (inter- hemispheric cerebral hematoma complicated with coma and respiratory distress in one case, and extensive pneumonia with respiratory distress in one case) and persistent sequelae in two other patients (PFP in two cases and hearing loss in one

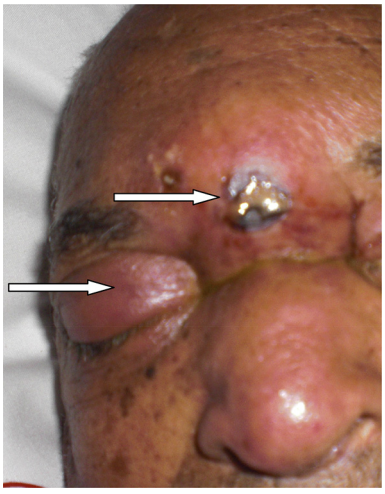

FIG. 1. Frontal abscess with right orbital subcutaneous edema in one patient with mucormycosis.

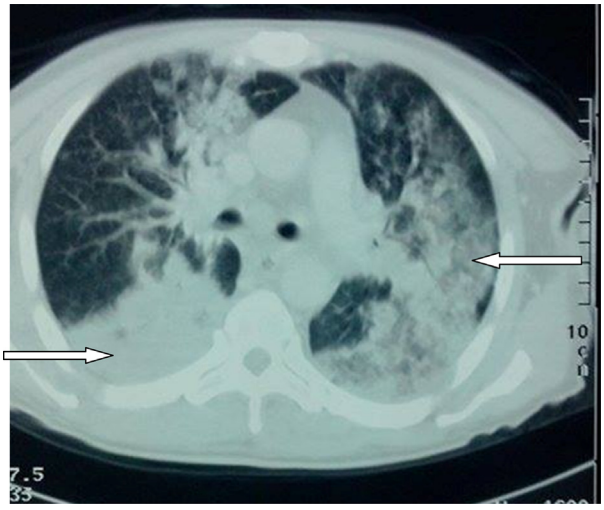

FIG. 2. Chest CT. Bilateral iterstitiel and alveolar interstitial with lower right lobar alveolar consolidation.