Journal de Mycologie Médicale (2013) 23, 265—269

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CASE REPORT/CAS CLINIQUE

Three cases of cutaneous mucormycosis with *Lichtheimia* spp. (ex *Absidia/Mycocladus*) in ICU. Possible cross-transmission in an intensive care unit between 2 cases

Trois cas de mucormycose cutanée dus à Lichtheimia *sp. (ex* Absidia/Mycocladus*) dans un service de soins intensifs. Possible transmission croisée pour deux cas*

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Received 4 April 2013; received in revised form 13 August 2013; accepted 12 September 2013
Available online 18 October 2013

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1156-5233/$ — see front matter
http://dx.doi.org/10.1016/j.mycmed.2013.09.002

KEYWORDS
Cutaneous;
Mucormycoses;
Cross-transmission;
Lichtheimia;
Absidia;
Mycocladus

Summary Mucormycoses are rare but emerging diseases with poor prognosis caused by ubiquitous fungi from the environment. In November 2008, our teaching hospital experienced three cutaneous mucormycosis due to *Lichtheimia* spp. (ex *Absidia*/*Mycocladus*) in the intensive care and orthopaedic units. Environmental and epidemiological investigations suggested a possible cross-transmission of *L. ramosa* between two patients in intensive care. This is the first report of possible person-to-person transmission of mucormycosis species. These cases show the ineffectiveness of hydro-alcoholic solutions against spores and underline the need to respect standard precautions to prevent fungi dissemination.

MOTS CLÉS
Mucormycose cutanée ;
Transmission croisée ;
Lichtheimia ;
Absidia ;
Mycocladus

Résumé Les mucormycoses sont des maladies rares mais émergentes, avec un mauvais pronostic, elles sont dues à des champignons ubiquitaires de l'environnement. En novembre 2008, notre hôpital universitaire a eu trois cas de mucormycose cutanée dus à *Lichtheimia* sp. (ex *Absidia*/*Mycocladus*) dans le service de soins intensifs et celui d'orthopédie. Les investigations environnementales et épidémiologiques suggèrent une transmission croisée de *L. ramosa* entre deux patients de soins intensifs. Il s'agit du premier cas possible de transmission d'un agent de mucormycose de personne à personne. Ces cas montrent l'inefficacité des solutions hydro-alcooliques vis-à-vis des spores et soulignent la nécessité de respecter les précautions standards pour prévenir une dissémination fongique.

Introduction

Mucormycoses are rare but emerging diseases with poor prognosis caused by ubiquitous fungi from the environment [8]. A literature review of 929 cases of mucormycosis reported that of the 19% of the patients who presented with cutaneous infection about half had no underlying conditions [9]. Cutaneous mucormycoses are frequently associated with minor or major trauma [5]. Minor trauma caused by medication patches or catheters are iatrogenic factors of cutaneous mucormycosis while road traffic accidents and crush injuries are the major causes of community-acquired cutaneous mucormycosis [6,7,9]. In the study of Roden et al., the etiological agents recovered from cutaneous infections were *Rhizopus* spp. (43%) and *Lichtheimia* spp. (21%) [9].

Twelve nosocomial outbreaks caused by mucormycosis species were documented between 1977 and 2008 [1]. All were related to environmental contamination or contaminated medical devices, and there were no instances of patient-to-patient transmission.

We report a case series of three cutaneous mucormycosis due to *Lichtheimia* spp. observed in the teaching hospital of Clermont-Ferrand, France, between October and November 2008 with a possible cross-transmission between two of the patients.

Patients and methods

Mycological assays

Clinical and environmental samples were grown on Sabouraud media (Oxoid, France) at 25 °C and 37 °C. Clinical samples were sent to the mycology laboratory for direct examination and Gomori—Grocott staining.

Molecular identification

Sequencing of the whole ITS1-5.8s-ITS2 region, the D1/D2 domains of the 28S rDNA and a small region of the 5′-elongation factor 1α (*EF-1α* nuclear gene) of *Lichtheimia* sp. strains from clinical and environmental samples were performed as previously described [2]. Briefly, amplification was carried out with Platinum® Taq DNA polymerase high fidelity (Invitrogen, France), according to the manufacturer's recommendations. PCR products were cloned in PGEM®-T easy vector (Promega, France) and sequenced in both strands by MWG eurofins (Germany). The results were analyzed using Chromas Pro® and Clustal® W program. The sequences were submitted to Gene Bank database for identification.

Patient characteristics

Case 1

Case 1 was a 21-year-old man admitted on 10th October to the intensive care unit (ICU) for multiple compound fractures of the lower limbs following a road traffic accident (Table 1). Post-surgical wound-dressings were changed in the operating theatre every 3 to 4 days. The first symptoms of wound infection in both legs were recorded on 14th October. Bacteriological samples were taken on 28th October, and *Escherichia coli*, *Candida albicans* and *Lichtheimia* spp. were isolated from green, mouldy discharges. The samples were sent to the bacteriology laboratory and hence, no direct examination with specific fungal staining was performed. On 31st October, the patient underwent partial amputation of the right leg, and 14-day treatment with liposomal amphotericin B (LamB) 3 mg/kg daily was initiated. He was transferred to the orthopaedics department on 14th November, where he stayed until discharge on 22nd December.