First description of a local *Coprinopsis cinerea* skin and soft tissue infection

C. Correa-Martinez[1], A. Brentrup[2], K. Hess[3], K. Becker[1], A. H. Groll[4] and F. Schaumburg[1]

1) *Institute of Medical Microbiology,* 2) *Pediatric Neurosurgery, Department of Neurosurgery,* 3) *Institute of Neuropathology, University Hospital Muenster, Münster and* 4) *Pediatric Hematology and Oncology, University Children's Hospital Muenster, Münster, Germany*

Abstract

Coprinopsis cinerea is an environmental fungus which can cause disseminated infections in immunocompromised patients, often leading to death. Here we report the case of a paediatric patient with an invasive wound infection due to *C. cinerea,* which was successfully treated with surgical debridement and oral posaconazole.

Keywords: Coprinopsis, *hormographiella*, immunosuppression, posaconazole, skin, wound infection
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Corresponding author: C. Correa-Martinez, University Hospital Münster, Institute of Medical Microbiology, Domagkstraße 10, 48149, Münster, Germany
E-mail: carlos.correa@ukmuenster.de

Introduction

Coprinopsis cinerea is a filamentous fungus of the *Basidiomycota* division also known as *Hormographiella aspergillata,* its asexual form. Since 2011, the term *C. cinerea* officially encompasses both sexual and asexual stages [1]. Widely spread in the environment [2], *C. cinerea* is an uncommon pathogen that can infect animals [3] and cause severe illness in immunocompromised human hosts. Most case reports describe respiratory infections with variable involvement of other structures: small intestine, skin, brain and heart. Nearly all patients developed multiorgan failure and died [4–7].

We present the case of an immunosuppressed paediatric patient with a skin and soft tissue infection due to *C. cinerea* without lung involvement who recovered satisfactorily after antifungal treatment.

Case report

A 6-year-old girl in aplasia, undergoing chemotherapy because of a nephroblastoma with lung metastasis, presented with fever and a 5-cm-long infected laceration on the head (Fig. 1A) which had been sutured one day before at another hospital. An antimicrobial treatment with ceftriaxon (1500 mg q.d. -once daily- i.v.) was started at admission. During hospitalization, the patient developed severe headaches, but she showed neither focal neurologic deficits nor signs of intracranial bleeding or inflammation (MRI scan). Despite intermittent treatment with piperacillin/tazobactam, teicoplanin, meropenem, vancomycin and linezolid, the wound became swollen, red and painful and developed a necrotic area with purulent discharge. C-reactive protein increased from 1.7 mg/dL to 32.2 mg/dL and leucocytes from 0.1 to 2.9 × 10^3/μL, which was interpreted according to the concomitant aplasia. Blood cultures were repeatedly negative. Histopathologic and microbiologic diagnostic methods were performed on samples obtained by surgical debridement. No bacterial growth was detected under aerobic and anaerobic conditions. White/cream-coloured colonies with aerial mycelium grew on Kimmig agar containing chloramphenicol and oxytetracycline after 48 hours of incubation at 37°C (Fig. 1C). These were identified as *Coprinopsis cinerea* by gene sequence analysis of the ITS1/ITS2 regions (100% similarity with *C. cinerea*

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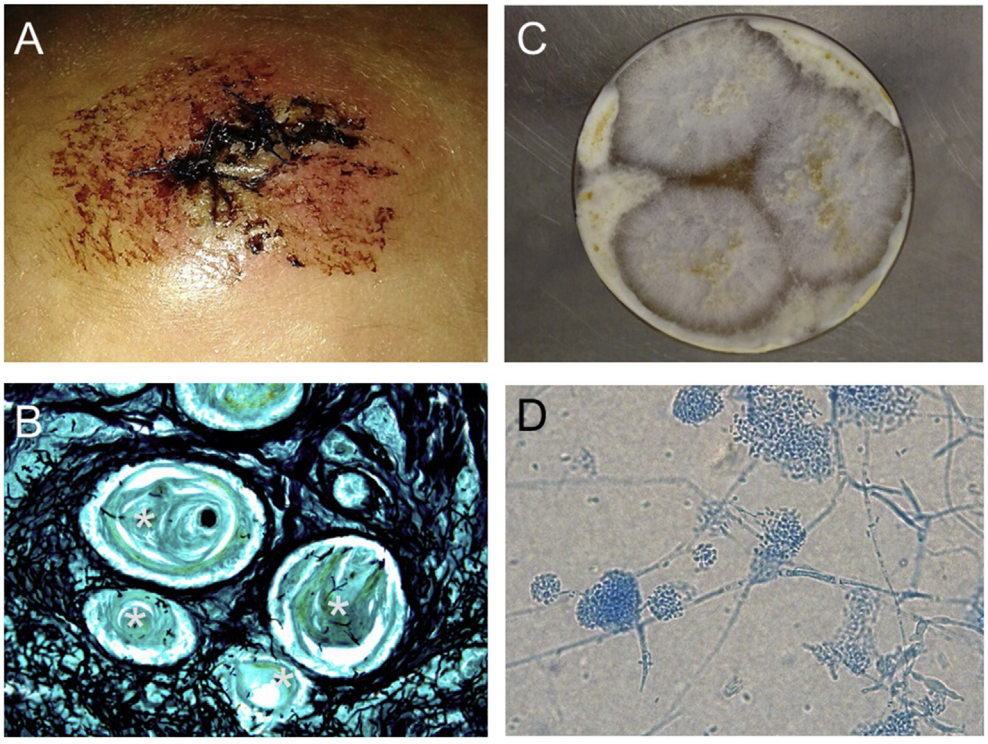

FIG. 1. Local *Coprinopsis cinerea* skin and soft tissue infection in immunocompromised paediatric patient. Fungus was detected in infected laceration on head (A). Grocott-stained tissue obtained after surgical debridement showed hyphae within and around hair follicles and surrounding inflammatory infiltrate (B). Colonies of *C. cinerea* grew on Kimmig agar under aerobic conditions (C). Lactophenol cotton blue preparation of fungal colonies displayed hyaline septated hyphae and arthroconidia (D).

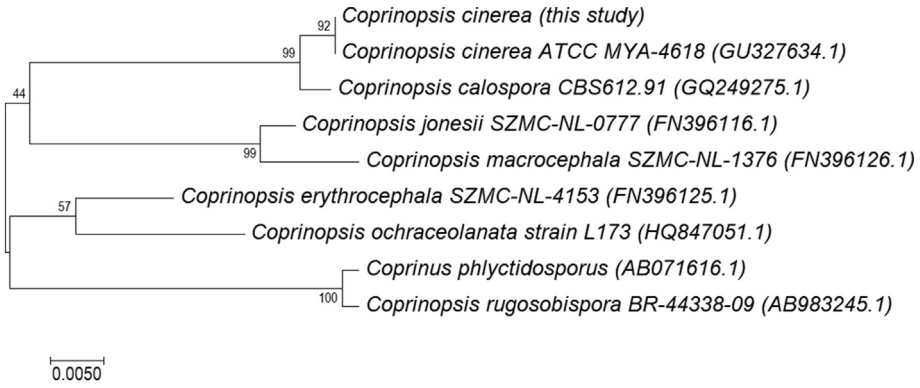

FIG. 2. Phylogenetic tree of *Coprinopsis* sp. Neighbour-joining-tree was constructed using ITS1 sequences of isolates from this study; most closely related species within genus *Coprinopsis*. Species and accession numbers (in brackets) are reported for each taxon. Bootstrap values (bootstrap test with 500 replicates) are shown next to branches.

ATCC MYA-4618; accession no. GU327634.1; Fig. 2) [8]. Periodic acid–Schiff– (not shown) and Grocott-stained tissue samples displayed invasive hyphal growth and an inflammatory infiltrate. Fungal structures were also observed in lactophenol cotton blue preparations of the culture (Fig. 1B, D). Antifungal susceptibility testing was not performed because we lacked European Committee on Antimicrobial Susceptibility Testing species-specific breakpoints. Under empirical therapy with posaconazole 100 mg q.d. p.o., the patient showed a progressive clinical recovery, and C-reactive protein decreased. After 8

days, the patient was discharged with an alternate-day regimen of 100 mg/200 mg q.d. p.o. of posaconazole. Two weeks later, the wound was nearly dry and showed no signs of inflammation or purulent discharge.

Discussion

C. cinerea is an environmental mould that rarely causes infections in humans. It affects mainly the respiratory tract of immunocompromised patients, and it has a high mortality [9]. We report the case of a localized wound infection in a paediatric oncologic patient. Here, gene sequence analysis played a key role in the identification of the pathogen. Different resistance patterns against amphotericin B, azoles and echinocandins have been described in previous clinical reports [2]. In this case, an empirical therapy with posaconazole was effective. However, specific susceptibility breakpoints would lead to a more rational use of antimycotics and higher treatment success rates.

Conflict of interest

None declared.

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