Rev Iberoam Micol. 2014;31(3):203–206

Revista Iberoamericana de Micología

www.elsevier.es/reviberoammicol

Note

# Phaeohyphomycosis caused by *Cladophialophora bantiana*

Lucía Martínez-Lamas[a,*], Maximiliano Álvarez[a], Jose Llovo[b], Josepa Gené[c], José Cano[c]

[a] *Servicio de Microbiología e Parasitoloxía, Complexo Hospitalario Universitario Vigo, Vigo, Pontevedra, Spain*
[b] *Servicio de Microbiología e Parasitoloxía, Complexo Hospitalario Universitario de Santiago, Santiago de Compostela, A Coruña, Spain*
[c] *Unitat de Microbiologia, Facultat de Medicina i Ciéncies de la Salut, Universitat Rovira i Virgili, Institut d'Investigació Sanitaria Pere Virgili (IISPV), Reus, Tarragona, Spain*

ARTICLE INFO

*Article history:*
Received 8 October 2012
Accepted 8 May 2013

*Keywords:*
Phaeohyphomycosis
*Cladophialophora bantiana*

ABSTRACT

*Background:* *Cladophialophora bantiana* is the most frequent cause of central nervous system phaeohyphomycosis.
*Aims:* We report a case of phaeohyphomycosis by *C. bantiana* in a patient with underlying lung disease on steroid therapy.
*Methods:* An 81-year-old male was admitted in August 2011 with a history of difficulty speaking and deflection of the oral commeasure to the left side with a brain abscess. Brain tissue was cultured on Sabouraud media and sequence analysis of the internal transcribed spacer region of the ribosomal DNA was done for identification purposes. Susceptibility testing to various antifungal agents was performed using the microdilution test.
*Results:* Histopathological examination of the brain tissue ruled out malignancy and the presence of dematiaceous hyphae was observed. Culture showed the presence of a single black fungus, identified as *C. bantiana*. It was susceptible to all antifungals, except to caspofungin. The patient was treated with voriconazole plus liposomal amphotericin B. Cerebral cranial computed tomography [CCT] scans demonstrated persistence of the intraparenchymal abscess collection. Despite surgical and medical treatment with antifungal drugs, the patient died 5 months after the first diagnosis of the cerebral occupying lesion was made.
*Conclusions:* Phaeohyphomycosis is an uncommon infection with severe limitations on the clinical clues that can help in early diagnosis. Fungal species identification is mandatory for epidemiological and therapeutic reasons. The MICs could be useful in selecting the appropriate antifungal agent. Avoiding the unnecessary exposure to soil or other media potentially contaminated with fungal spores should be recommended to any immunosuppressed patient.


## Feohifomicosis causada por *Cladophialophora bantiana*

*Palabras clave:*
Feohifomicosis
*Cladophialophora bantiana*

RESUMEN

*Antecedentes:* *Cladophialophora bantiana* es la causa más frecuente de feohifomicosis del sistema nervioso central.
*Objetivos:* Describimos un caso de feohifomicosis por *C. bantiana* en un paciente con una enfermedad pulmonar subyacente en tratamiento con corticosteroides.
*Métodos:* En agosto de 2011, ingresa un hombre de 81 años de edad con antecedentes de dificultad para hablar y desviación de la comisura bucal a la izquierda por un absceso cerebral. Se cultivó el aspirado del absceso cerebral en medio de Sabouraud y para la identificación definitiva del hongo se secuenció la región espaciadora transcrita interna del ADN ribosomal. Las pruebas de sensibilidad a los diferentes antifúngicos se efectuaron mediante microdilución.
*Resultados:* El examen histopatológico de las muestras descartó la presencia de un tumor maligno y confirmó la existencia de hifas. El cultivo reveló la presencia de un hongo dematiáceo identificado como *Cladophialophora bantiana*, sensible a todos los antifúngicos excepto a la caspofungina. El paciente fue tratado con voriconazol combinado con anfotericina B liposomal. La tomografía computarizada craneal mostró la persistencia del absceso intraparenquimatoso. A pesar del tratamiento con antifúngicos y del procedimiento quirúrgico, el paciente falleció 5 meses después de que se estableciera el diagnóstico inicial.

* Corresponding author.
*E-mail address:* lucia.martinez.lamas@sergas.es (L. Martínez-Lamas).

1130-1406/$ – see front matter 
http://dx.doi.org/10.1016/j.riam.2013.05.004

*Conclusiones:* La feohifomicosis es una infección poco frecuente, con importantes limitaciones de los indicios clínicos que pueden contribuir a un diagnóstico precoz. Por razones tanto epidemiológicas como terapéuticas, es indispensable la identificación de la especie de hongo responsable. La determinación de la concentración inhibitoria mínima podría ser de utilidad en la selección del tratamiento antifúngico apropiado. Los pacientes inmunodeprimidos deben evitar la exposición al suelo u otros medios potencialmente contaminados por esporas de hongos.



Phaeohyphomycoses are infections caused by dematiaceous moulds that contain melanin pigments in their walls and spores. The natural habitat of dematiaceous fungi is the soil or vegetative matter. The *Cladophialophora* genus consists of dematiaceous fungi that have a worldwide distribution.[1] Nevertheless, infections by these fungi are very rare and occur mainly in subtropical and non-arid climate zones.[7] Several species are potentially able to cause human infections, and they have being increasingly recognised as a cause of serious disease in both immunocompetent and immunocompromised patients.[2,15]

Binford et al.[8] described the first culture-proven case of cerebral phaeohyphomycosis due to *Cladophialophora bantiana* in 1952. To date, there have been few reports of dematiaceous fungal infections in immunocompetent hosts, and up to 40% of cases were reported in patients with predisposing factors, such as solid organ transplants, glucocorticoid treatment, diabetes mellitus, lymphoma, eye and skin trauma, and intravenous drug use.[7,10] This fungus is the most frequent cause of central nervous system phaeohyphomycosis. Although clinical presentations of phaeohyphomycosis vary considerably, disseminated infection is rarely identified,[8] and the majority of cases are related to the formation of cerebral abscesses and have a high mortality.[6,9,15]

The high degree of phenotypic similarity between new recently described *Cladophialophora* species makes identification a challenging matter and requires expert interpretation of microscopic morphology or the use of molecular identification methods.[3] Otherwise, the infection is usually diagnosed after the agent is isolated in culture, which usually delays treatment.[12] Antifungal therapy is mainly based on the experience of clinicians or the drugs used in the scarce case reports published.[2] The optimal therapy is unknown.[11]

We report the case of a patient with underlying lung disease on steroid therapy. This is the third case reported in Spain.[5,13] Because no standard therapy is available, the antifungal treatment was based on the available antifungal susceptibility data.

## Case report

An 81-year-old male former smelting iron worker who was diagnosed with extrinsic allergic alveolitis and treated with corticosteroid tapering (prednisone 40 mg p.o. daily) was admitted in August 2011 with a history of difficulty in speaking and deflection of the mouth to the left side. Cerebral tomography revealed a space-occupying left frontal multinodular lesion with oedema, which was compatible with a brain abscess (Fig. 1). Thorax and cranial computed tomography ruled out any pulmonary lesion and sinusitis. A treatment with metronidazole, cefotaxime and linezolid was started before culture results were available. On day 2, a craniotomy was performed with a total resection of the abscess. Histopathological examination of the brain tissue ruled out malignancy, and the presence of dematiaceous hyphae was observed with a direct Gram stain and Gomori-methenamine-silver and hematoxylin–eosin stains (Fig. 2). Empiric antifungal treatment was started with voriconazole 4 mg/kg/12 h and caspofungin 50 mg/d, while maintaining the broad-spectrum antibiotics.

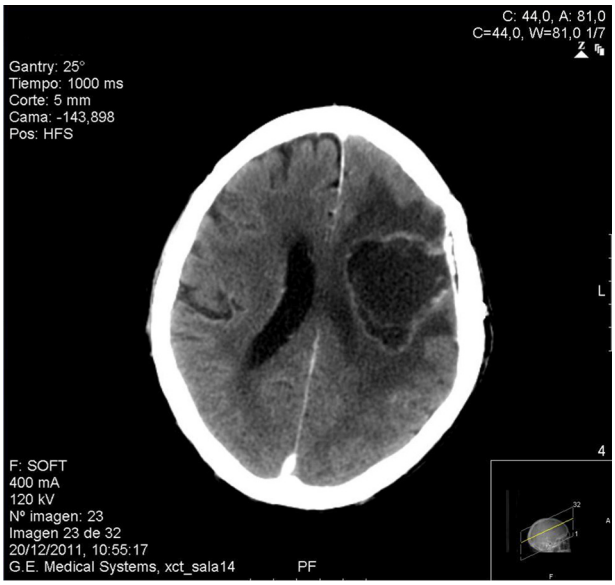


**Fig. 1.** Computerised tomography [CT] showing the left frontal occupying lesion.

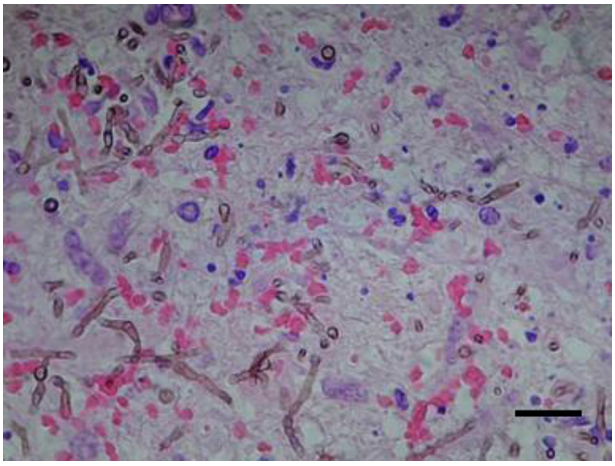

**Fig. 2.** Histopathological features of brain tissue with hematoxylin and eosin staining showing dematiaceous septate hyphae. Bar = 20 μm.

Prednisone was withdrawn after the diagnosis of a fungal infection was done.

Culture on routine media for bacteria and fungi showed the presence of a single black fungus, which was isolated for identification purposes. *C. bantiana* was not isolated from other clinical samples, including lower respiratory tract specimens, nasal samples, and blood cultures. After 2 weeks of growth on Sabouraud media at 30 °C, the fungus appeared as black velvety colonies (Fig. 3a) and microscopically produced long, sparsely branched, wavy chains of conidia (Fig. 3b) similar to those observed for *C. bantiana*. A culture of the isolate was sent to the Medical