

Cerebral Abscess by *Fonsecaea monophora*—The First Case Reported in Germany

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We report the first case of cerebral *Fonsecaea monophora* infection in a German woman without immunodeficiency or travel history. *F. monophora* infection is a rare differential diagnosis of cerebral tumors; it was previously considered a tropical fungus. This case adds to the scarce reports in nontropical regions.

Keywords. cerebral; melanized; *Fonsecaea monophora*; immunocompetent; Europe.

CASE

A 78-year-old German woman presented with subacute onset of right lower extremity paresis and facial nerve palsy. She denied preexisting headache, nausea, vomiting, fatigue, anorexia, fever, chills, cough, dyspnea, skin lesions, or visual complaints. Her medical history was significant for chronic obstructive pulmonary disease, presumably related to her work history as a baker. Her medications included inhaled budesonide/formoterol and fenoterol, but no systemic steroids. She denied travel outside Germany or previous exposure to or injury from exotic plants or wooden objects.

Relevant physical findings on admission were a right lower extremity weakness and mild facial nerve palsy. Vital signs were within normal limits. Pertinent laboratory findings were a white blood cell count of 10.5/μL (normal range, 3.8–9.8/μL), C-reactive protein, creatinine, and liver function tests within normal limits, and negative test for HIV serology. Brain

magnetic resonance imaging (MRI) showed an 18 × 13-mm left thalamic mass with surrounding edema, with a 4-mm central area of restricted diffusion on diffusion-weighted imaging and a strong peripheral ring enhancement after intravenous contrast administration (Figure 1). Intravenous (IV) dexamethasone was started.

Stereotactic biopsy of the thalamic mass while on dexamethasone treatment revealed branching septated hyphae morphologically suggestive of aspergillus without evidence of malignancy on histopathology (Figure 2A). No microbiologic evaluation was performed at that time. Serum cryptococcus and aspergillus antigen were negative. Antifungals were not started. Cerebrospinal fluid analysis showed: 1 cell/μL, protein 1364 mg/L, glucose 2.94 mmol/L, cryptococcal antigen negative, bacterial, fungal, and mycobacterial culture negative, and negative blood culture and mycobacterial blood culture. Thoracic computed tomography scan was not suggestive of fungal disease. Ear, nose, throat, and ophthalmologic exams were unremarkable.

Follow-up MRI 1 week after admission showed progressive enlargement of the ring-enhancing mass (24 × 20 mm) and the perifocal edema, prompting radical open excision of the mass. Histopathologic evaluation showed again many septated branching hyphae with chronic and acute inflammation and necrosis. A brain tissue culture was performed that showed growth of a filamentous fungus (Figure 2B and C). Pan-fungal internal transcribed spacer-based polymerase chain reaction (rDNA) revealed *Fonsecaea monophora*. Final species confirmation as *F. monophora* and in vitro susceptibility testing were performed by the National Reference Laboratory for Cryptococcosis, Scedosporiosis, and Imported Systemic Mycoses (Robert Koch Institute, Berlin, Germany). Susceptibility to voriconazole was demonstrated (minimal inhibitory concentration 0.125 μg/mL).

Voriconazole 5 mg/kg bodyweight twice daily IV was then initiated, and it was well tolerated. The patient's neurological and functional capacity had been improving; therefore no follow-up MRI was obtained. Unfortunately, the patient died 4 months postsurgery due to pneumonia.

DISCUSSION

Fonsecaea spp. is a melanized tropical fungus. There are, however, sporadic reports in temperate climate zones. Classically, *Fonsecaea* spp. causes chromoblastomycosis [1, 2]. Cerebral infection is rare and frequently lethal.

The fungus is found on tropical plants and wooden objects. The way of transmission can rarely be elicited. Transmission via traumatic inoculation, the pulmonary route, and per continuitatem after sinus infection has been speculated. Long

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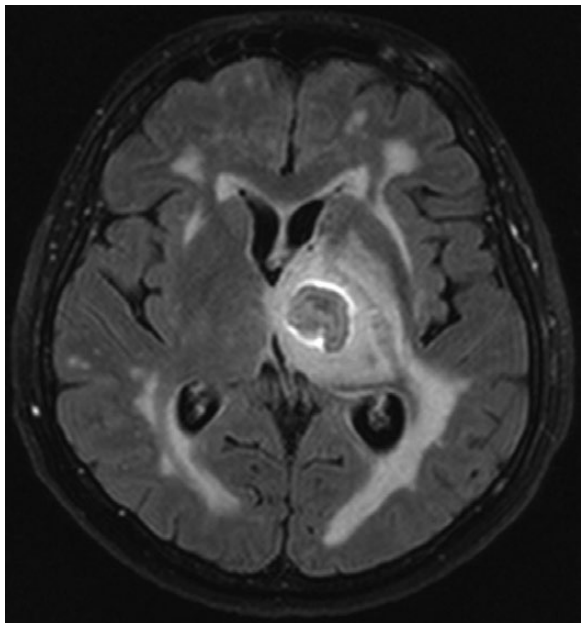


Figure 1. Fluid attenuated inversion recovery (FLAIR) magnetic resonance image in the axial plane showing the left thalamic mass with FLAIR hyperintense perifocal edema.

latency periods of up to years between exposure and infection have been reported [1, 2]. We describe the first cerebral *F. monophora* infection in Germany; it is the second in Europe [3]. Nine more cases have been published outside temperate Europe (MEDLINE via PUBMED, English language) [4–7], one-third were presumably acquired in non-endemic regions [3, 6, 7]. In these cases, the pathogenesis is unknown. *F. monophora* seems to have a unique neurotropic affinity. Although most fungi cause opportunistic infections

in immunosuppressed hosts, *F. monophora* appears to affect immunocompetent hosts alike [1]. Of the 11 cases reported so far, 8 (including our case) occurred in immunocompetent patients and 3 in immunodeficient patients (AIDS, solid organ transplant) [6, 7].

Cerebral fungal infection may appear as a tumor-like mass lesion. The surprising diagnosis is often made by histopathology reporting fungal elements. Microbiologic evaluation is prudent for pathogen identification.

Neuroimaging findings in fungal infections are nonspecific. Fungi with hyphal growth, like *Fonsecaea*, tend to cause intraaxial, parenchymal lesions, varying from cerebritis to abscesses. On MRI, a fungal abscess may have a “target-like appearance,” as in our patient (Figure 1); the annular enhancement is believed to correspond with granulation tissue, the central nonenhancing nodule in the abscess cavity with hyphae [8].

Unfortunately, cerebral infection by melanized fungi has been associated with high mortality. Due to the paucity of the disease, the optimal treatment strategy remains unknown.

This is the first report of *F. monophora* cerebral abscess in Germany. Our report adds to the scarce literature and highlights the consideration of *F. monophora* as a rare differential diagnosis of a cerebral tumor also in temperate climate zones and immunocompetent hosts.

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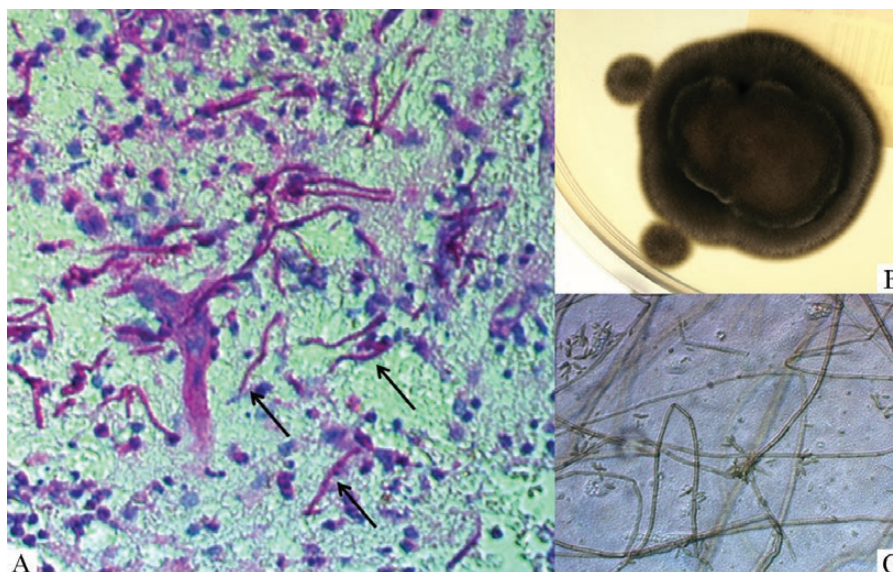


Figure 2. A, Numerous purple-stained hyphae (black arrows) on Periodic acid Schiff (PAS) stain of brain tissue (magnification x40). B, Black velvet-like colonies of *Fonsecaea monophora* on Sabouraud Glucose Agar after 12 days of incubation at 25°C. C, Micromorphology of colony fragments on lactophenol cotton blue stain (LCBS) with septate hyphae, conidiophores, and many solitary conidia (magnification x400).

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Potential conflicts of interest. All authors: no reported conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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