Case Report: Arthrocladium fulminans Arthritis and Osteomyelitis

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Abstract. Arthrocladium fulminans is the only species in the Arthrocladium genus that has been involved in a previous human infection. To date, only one case of A. fulminans infection in a patient with GATA-2 immunodeficiency has been reported. We here report the second human case and the first case of septic arthritis and osteomyelitis due to A. fulminans in an immunocompetent patient, living in Mayotte, a French island in western Indian Ocean. He was successfully treated with surgical debridement and 6 months of antifungal treatment. This second observation of human invasive disease caused by A. fulminans is an additional argument for the pathogenicity of this rare species.

INTRODUCTION

We report the first case of septic arthritis and osteomyelitis due to Arthrocladium fulminans in a previously healthy man. Arthrocladium fulminans is the only species in the Arthrocladium genus that has been involved in a previous human infection. One case of A. fulminans infection in a patient with GATA-2 immunodeficiency has been reported.1 The isolate shown by the E-test assay for this A. fulminans isolate showed low minimum inhibitory concentrations (MICs) for itraconazole (0.19 mg/L), voriconazole (0.094 mg/L), and posaconazole (0.032 mg/L), and a relatively higher MIC for amphotericin B (6 mg/L). The patient was treated with oral terbinafine (500 mg/day) combined with itraconazole (200 mg/day) for 6 months. He recovered, the purulent drainage stopped at 7 days, and the skin fistula healed at 4 weeks from the beginning of antifungal treatment. The patient was treated for 6 months and he recovered fully, with normal mobility of the right shoulder without sequelae at the 6-month follow-up.

DISCUSSION AND CONCLUSION

This article presents the first case of osteoarticular chromoblastomycosis caused by A. fulminans in a man living in the French overseas region and department of Mayotte, located in the Comoros Islands and situated in the Indian Ocean off the coast of southeast Africa, between southwestern Madagascar and northeastern Mozambique. Chromoblastomycosis is a subcutaneous mycosis due to pigmented (black) fungi in the dematiaceous group, which is common in tropical climates in different regions of Africa and in the western tropical Indian Ocean. These fungi are natural saprophytes and are filamentous, and they can be isolated from dead wood, thorns, and soil. Transmission is direct, usually after trauma from wood debris or plants. It is a disease of adult humans, often arising in farmers or loggers who walk barefoot, and three-quarters of cases occur in the feet and legs. The route of transmission of osteoarticular chromoblastomycosis in our case may be direct inoculation, because the patient often carries fair-sized...
strips of wood on his shoulder. No bacteremia, no secondary or concomitant infected site was found in our case.

The diagnosis of chromoblastomycosis is based on direct examination, culture, and histopathology. Three infectious agents that are often involved in chromoblastomycosis are *Fonsecaea pedrosoi*, *Phialophora verrucosa*, and *Cladophialophora carrionii*.4 Identification of etiological agents of chromoblastomycosis from culture of surgical bone biopsies with antifungal susceptibility testing is crucial.
to cure these infections, which are difficult to cure and have a high relapse rate. We believe that precise identification of fungal species using molecular identification such as the ITS regions in fungal DNA analysis is necessary for epidemiological purposes and to identify strains with significant virulence to humans.

To our knowledge, few cases of osteoarticular chromoblastomycosis have been reported in the literature, including two cases of arthritis and osteomyelitis caused by *F. pedrosoi*, two cases of foot osteomyelitis caused by *P. verrucosa*, and one case of nasal osteomyelitis. The combination of surgical debridement and itraconazole therapy has been used to treat cases of *F. pedrosoi* osteomyelitis.

In a few reported cases, terbinafine was used at high dosage or combined with itraconazole to treat cases of chromoblastomycosis refractory to antifungal treatment. The combination of terbinafine and voriconazole was synergistic in vitro on the *F. pedrosoi* strain of refractory chromoblastomycosis.

The genus *Arthrocladium* refers to nonsporulating dematiaceous (black) fungi of the Trichomieriaceae (Chaetothyriales) family. It includes four species: *Arthrocladium caudatum*, *Arthrocladium tropicale*, and *Arthrocladium tardum*, which are rotten wood saprophytes, and the single known strain of the *A. fulminans* species, which was involved in a fatal infection in an immunocompromised patient. We here report the second human case and the first case of septic arthritis and osteomyelitis due to *A. fulminans* in an immunocompetent patient, successfully treated with surgical debridement and 6 months of antifungal treatment. This second observation of human invasive disease caused by *A. fulminans* is an additional argument in favor of the particular pathogenicity of this relatively rare species.

**CONSENT**

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal.

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