Case of Onychomycosis Caused by *Microsporum racemosum*

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We report the case of a Spanish 60-year-old female who presented in 1997 with onychomycosis of the left thumbnail following an injury caused by a fresh fish bone. *Microsporum racemosum* was repeatedly cultured from nail scrapings, and its identity was confirmed by sequencing the isolate’s ITS1/ITS2 and 5.8S rRNA regions. The patient was successfully treated with itraconazole, which was administered for 12 weeks. This represents the first case of onychomycosis due to *M. racemosum* and the first time that this species has been isolated from a human in Europe.

Mycotic nail infections are caused by dermatophytes, yeasts, and opportunistic filamentous fungi, such as *Scopulariopsis brevicatulis* or *Nattrassia mangifera*, among others (5, 6). These infections are not readily treated, and the exact number of people affected is unknown because adequate mycological studies are not always performed (12) and cases are underreported. In our country, species of *Trichophyton* are the most frequent causes of nail infections in humans, with *T. rubrum* and *T. mentagrophytes* being the predominant species (7, 8, 13).

The present report records, for the first time, the isolation of *Microsporum racemosum* from a human being in Europe. It was isolated from a fingernail of an otherwise healthy woman.

**Case report.** A 60-year-old female, a housewife, presented herself to the Servicio de Dermatología del Hospital Universitario “Puerta del Mar” with onychomycosis of the left thumbnail. The disease appeared following an injury caused by a fresh fish bone. The symptoms appeared 1 week later as a yellow, purulent exudate and a slight perilesional erythema when the thumb became painful. The patient was treated topically with an antiseptic and antibiotics. Clinically, the infection

![FIG. 1. Clinical appearance of nail infection caused by *M. racemosum*.](image-url)
was of the subungual type, with the nail being soft, friable, and opaque and exhibiting various degrees of onycholysis without hyperkeratosis. Since discomfort persisted, the nail was surgically removed. Eight weeks later, the nail bed was dystrophic, with hyperkeratosis and yellow nail tissue (Fig. 1). Direct microscopic examination of the affected nail revealed the presence of scarce, hyaline, septate hyphal elements. Treatment was initiated with itraconazole (100 g/day), which was administered orally for 12 weeks and to which the patient responded favorably; the patient was then discharged.

Scrapings of the lesion were cultured on Sabouraud dextrose agar with chloramphenicol (0.05 mg/ml) and cycloheximide (0.5 mg/ml) and on potato dextrose agar, incubated at 25°C. Both media gave rise to cream-colored velvety colonies, which spread very rapidly and became powdery, with a wine-red reverse. Abundant verrucose and moderately thick-walled macroconidia, measuring 50 to 70 μm by 10 to 15 μm, with 4 to 9 (to 11) septa, and numerous microconidia arranged in grape-like clusters and measuring 4 to 7 μm by 2.5 to 3 μm had developed (Fig. 2). The isolate was morphologically identified as *M. racemosum* (4, 9). Additionally, the ITS1/ITS2 and 5.8 rRNA regions of the isolate were sequenced according to the procedure described by Stchigel et al. (15). Further comparison of the sequence obtained with that of the ex-type strain of *M. racemosum* (CBS 450.65), verified by Y. Graeser (Humbolt University, Berlin, Germany), confirmed the identity of the isolate. The isolate was subcultured under various conditions and is maintained in the culture collection of the Medical School, University Rovira i Virgili, as isolate FMR 6313. Living cultures of this isolate have been deposited in the International Mycological Institute of England and in the Centraalbureau voor Schimmelcultures of The Netherlands.

The geophilic dermatophyte *M. racemosum* is the anamorph of *Arthroderma racemosum* (17), which belongs to the order Onygenales. It was isolated for the first time in 1965 by Borelli from the hair of a wild rat in South America (2) and in 1969 from Romanian soil (1). It is a rare fungus that grows readily on common culture media, with optimum growth at 23 to 28°C and poor growth at 37°C. *M. racemosum* shows certain similarities with other *Microsporum* species: *M. boullardi*, *M. gypseum*, *M. praecox*, and *M. vanbreuseghemi*. However, macroscopically it is distinguished by its cream-colored colonies with a deep wine-red reverse, and microscopically it is distinguished by its moderately thick-walled macroconidia, which frequently have terminal filaments, and its stalked microconidia arranged in typical racemose clusters. Although it has been considered to be potentially pathogenic (9, 14), human infections are extremely rare (11). In 1976 in the United States, the first case was reported in a 79-year-old white man with numerous lesions on the forehead, scalp, and nape of the neck (3). The second case, also from the United States, was characterized by a macropapular lesion on the hand of the patient (10). Apart from these cases, only a few other reports of its occurrence exist. This species was isolated in Poland in a survey of keratinophilic fungi in a polluted area of Katowice (16). The present work represents the first case of onychomycosis due to *M. racemosum* and the first time that this species has been isolated from a human in Europe.

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