

First case of chromoblastomycosis from Bangladesh



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ABSTRACT

Chromoblastomycosis is a rare and chronic cutaneous and subcutaneous infection caused by black fungi and mostly reported in tropical and subtropical areas. Here we report the first case of chromoblastomycosis from Bangladesh. Molecular biology permitted to identify *Fonsecaea nubica*, and the patient responded well to antifungal treatment alone.

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1. Introduction

Chromoblastomycosis is a rare, chronic, fungal infection of the skin and subcutaneous tissues caused by dematiaceous (black) fungi living as saprophytes on plants or vegetable debris in the soil. The causative agents are most often three fungal species: *Fonsecaea pedrosoi*, *Phialophora verrucosa* and *Cladophialophora carrionii*. All of the causative agents generate the same parasitic forms, known as muriform or sclerotic cells. Most patients have a history of trauma caused by wood or vegetation. Clinically, the infection is characterized by slowly expanding nodules that eventually lead to large papillary-like eruptions. Chromoblastomycosis has a worldwide distribution but is mostly seen in tropical and subtropical zones with high incidence in endemic areas. Most cases are from Madagascar but many cases have been reported from Gabon, Central and South America, Caribbean islands, Australia, China, Sri Lanka and India [1]. To the best of our knowledge, we herein report the first case of chromoblastomycosis from Bangladesh.

2. Case

A 32-year-old man, photoreporter by occupation, arrived in

France from Bangladesh two months before he presented at day 0 at the dermatology consultation for a right wrist lesion painful to pressure. This lesion appeared in Bangladesh one year before (year -1), following a trauma with a knife during a demonstration in Dacca. Examination at day 0 revealed a pigmented erythematous and squamous plaque of 2 × 2.7 cm topped with infiltrated papules (Fig. 1).

The rest of the examination was without any peculiarity. Histopathological examination of the skin biopsy showed a granulomatous infiltrate with many lymphocytes and the presence of brown sclerotic bodies suggesting the presence of black fungi (Fig. 2).

Fungal cultures at 25 °C yielded at day +14 one black colony with a suede and fluffy-like surface and a black reverse. Microscopic examination of the colony showed dark brown septate hyphae with branching and cladosporium-type conidiation suggestive of *F. pedrosoi*. The patient was then given terbinafin 250 mg daily during six months allowing a complete clinical recovery after three months with pigmented sequelae (Fig. 3).

Finally, molecular identification of the isolate was obtained by sequencing the ITS1-5.8S-ITS2 region of rDNA with primers V9D and LS266 [2]. Comparison of the nucleotide sequences (568 bp) with the GenBank database revealed 99.3% similarity with *Fonsecaea nubica* type strain CBS 269.64 (accession number EU938592).

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Fig. 1. Pigmented erythematous and squamous plaque of the wrist topped with infiltrated papules, before treatment.

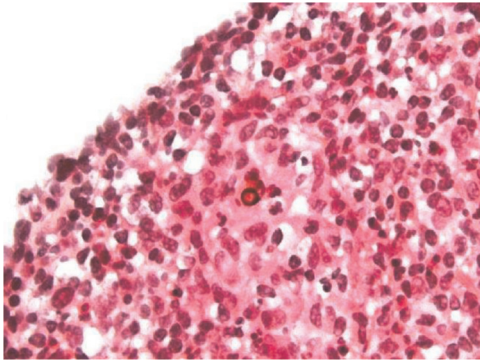


Fig. 2. Histopathological examination of the skin biopsy showing a granulomatous infiltrate with many lymphocytes and the presence of a brown sclerotic cell (HES stain, 40 ×).

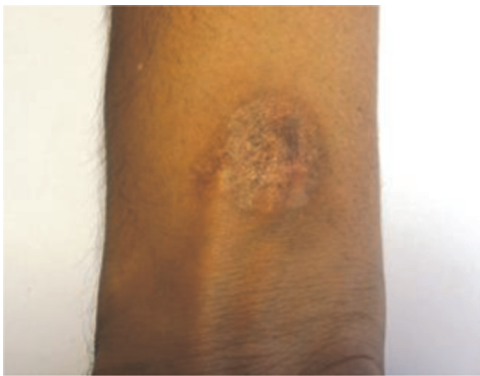


Fig. 3. Complete clinical recovery with pigmented sequelae after three months of oral terbinafin.

3. Discussion

Chromoblastomycosis is a chronic subcutaneous mycosis that predominantly occurs in tropical and subtropical regions. It mainly affects men living in rural areas and aged between 30 and 60 years, who likely acquire the infection by traumatic inoculation while working. Typically, the infection develops after injury or mechanical trauma, which provides the entry site for fungi. The lesions are characterized by slowly expanding nodules that eventually lead to emerging, cauliflower-like, mutilating and disfiguring eruptions and their severity is divided into mild, moderate and severe forms [1]. Infection proceeds with muriform cells in tissue provoking a granulomatous immune response.

Differential diagnosis depends on clinical presentation. It typically includes scars, psoriasis, tumoral nodules and inoculation disease. In our patient, considering squamous lesions, infiltration and pigmentation, other diagnosis were suspected such as

tuberculosis verrucosa cutis, sarcoidosis, leishmaniasis or lichen planus pigmentosus,

The causative agents are dematiaceous fungi living as saprophytes of decaying wood and plants. *F. pedrosoi* is the most frequent agent in tropical zones of Latin America, with a high frequency in rural populations in Cuba, Puerto Rico, and the Dominican Republic. It is also the most common etiologic agent in Mexico. *C. carrionii* is found in arid and semiarid zones, in Venezuela, and also in Australia, South Africa, and Mexico. *P. verrucosa* is found in lowlands under the same conditions as *F. pedrosoi* [3].

In areas where it is endemic, the disease incidence is high as in rural communities of Venezuela where a frequency of 16 cases/1000 population under arid climatic conditions is noted [4]. Chromoblastomycosis in that region is caused mainly by *C. carrionii*. In contrast, *Fonsecaea* spp. are prevalent in humid tropical climates. 1343 Cases of chromoblastomycosis have been reported from Madagascar, 61.8% of which were caused by *Fonsecaea* spp. [1]. In Gabon (equatorial Africa), 64 cases have been reported, all caused by *Fonsecaea* spp., and 325 cases in the Amazon region of Brazil, 98% of which had *Fonsecaea* spp. as the etiologic agent [4].

In Sri Lanka, 94% of 71 chromoblastomycosis cases were caused by *Fonsecaea* spp. [1]. Chromoblastomycosis is also endemic in south India (Kerala state) where *Fonsecaea* is the most common species [5]. In north India, chromoblastomycosis is sporadic in the sub-Himalayan belt as well as in East Bengal and Assam states (eastern regions bordering Bangladesh) [6]. Assam state is the state where the two first Indian cases were reported in 1957 by Thomas et al. [7] and only four more cases have been reported there since then [1,8]. In Nepal, not far from Bangladesh, only 15 cases have been reported [9,10]. Finally in China, more than 500 cases are documented and the predominant agents are *C. carrionii* in northern China and *F. pedrosoi* in southern China [11]. Interestingly, no report on chromoblastomycosis has been published, to our knowledge, in Bangladesh.

The genus *Fonsecaea* comprises three species that can cause human infections: *F. pedrosoi*, *Fonsecaea monophora* and *F. nubica* [3,12,13]. *F. nubica* is a new agent of chromoblastomycosis revealed in 2010 using molecular data [12]. *F. pedrosoi* and *F. nubica* are strictly associated with chromoblastomycosis, whereas *F. monophora* is also involved in phaeohyphomycosis of brain [12]. *F. pedrosoi* is relatively homogeneous and is found nearly exclusively in Central and South America, while *F. monophora* and *F. nubica* have worldwide distribution. Cases are found in a tropical climate zone around the equator, while the few clinical cases outside endemic areas are supposed to have been distributed by recent migration of the human host [4]. Moreover, Sun et al. showed genetic identity between clinical and environmental isolates of *Fonsecaea* spp. suggesting a transmission to human by soil debris and genetic differences between African, Asian and American isolates [13]. Finally, those three species can only be differentiated by molecular methods, which are still rarely employed in the routine mycological identification algorithm in most of the laboratories from the areas where chromoblastomycosis is endemic.

For our patient, oral therapy with terbinafine during 6 months was a good option as his lesion was small. However, usually chromoblastomycosis is extremely difficult to treat and is often refractory to various therapeutic approaches. Drug therapy for at least 6 months may result in a favorable clinical response, but relapses during or after therapy are common. Many therapeutic approaches have been reported, including intravenous (amphotericin B) or oral (i.e., 5-fluorocytosine, itraconazole, and terbinafine) antifungals, surgical excision, and physical treatments (i.e., cryotherapy and thermotherapy), used alone or in combination. However, there is currently no gold standard therapy for chromoblastomycosis. The few published therapeutic trials report widely variable success rates, with some studies reporting relapses

in up to 80% of patients [1].

In localized lesions, the best option is oral itraconazole (300–400 mg/d) or terbinafine (250 mg/d) given 3 months before surgical excision and for an additional 6–9 months [3]. Cryosurgery with liquid nitrogen is indicated as an isolated or supplementary therapeutic method but expensive for mild disease. New drugs, such as posaconazole and voriconazole have been used in a limited number of cases, and comparison of the efficacies of these new drugs with the older ones can hardly still be made [14]. In patients with disseminated, chronic, or resistant disease, long-term continuous treatment or even monthly pulses are necessary to prevent a relapse. Modalities have to be matched with individual tolerance and affordability by the patient.

To conclude, we present the first case of chromoblastomycosis in Bangladesh. It was caused by the recently described species, *F. nubica*. In order to better know the epidemiology of the different species involved in chromoblastomycosis, dermatologists should easily perform skin biopsies in patients presenting a small erythematous nodule or plaque after an injury in a tropical country, for histology, mycological culture and molecular identification.

Conflict of interest

There are none.

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