A case of chromoblastomycosis caused by 
*Fonsecaea pedrosoi*: challenge in diagnosis

Trisiswati Indranarum1, Presstisa Gifta Axelia1, Willy Sandhika2, Muhammad Yulianto Listiawan1, Evy Ervianti1

**ABSTRACT**

**Background:** Chromoblastomycosis (CBM) is a chronic, granulomatous mycosis of the skin and subcutaneous tissue produced by the traumatic inoculation of various dematiaceous fungi of the order Chaetothyriales and family *Herpotrichiellaceae*, present in soil, plants, and decomposing wood.1 The most prevalent species (90%) is *Fonsecaea pedrosoi*.2 This disease is categorized as a Neglected Tropical Disease and mainly affects populations living in poverty with significant morbidity, including stigma and discrimination. Yet, the global incidence of CBM remains unclear. Santos DWCL et al. reported in the literature review a total of 7,740 patients with CBM were identified on all continents except Antarctica from 1914 to 2020.3

**INTRODUCTION**

Chromoblastomycosis (CBM) is a chronic, granulomatous mycosis of the skin and subcutaneous tissue produced by the traumatic inoculation of various dematiaceous fungi of the order Chaetothyriales and family *Herpotrichiellaceae*, present in soil, plants, and decomposing wood.1 The most prevalent species (90%) is *Fonsecaea pedrosoi*.2 This disease is categorized as a Neglected Tropical Disease and mainly affects populations living in poverty with significant morbidity, including stigma and discrimination. Yet, the global incidence of CBM remains unclear. Santos DWCL et al. reported in the literature review a total of 7,740 patients with CBM were identified on all continents except Antarctica from 1914 to 2020.3

Characteristically, most etiological agents of chromoblastomycosis will transform into the parasitic form when embedded in tissue and become muriform cells with transverse and longitudinal cross-walls. The morphological change contributes to the resistance against the host immune response and drives the chronicity of the disease. Although the lesions of chromoblastomycosis progress slowly and are limited to the subcutaneous tissues, this disease gradually produces fibrotic changes and lymphatic stasis with clinical complications, such as lymphedema and malignant transformation.4

CBM lesions are clinically polymorphic and often misdiagnosed as various infectious and noninfectious diseases. The diagnosis remains a challenge, and sometimes, patients come with chronic wounds or lesions after several years. Early diagnosis and prompt treatment of CBM are important to prevent further complications and refractory to antifungal therapy.2 The treatments of CBM are systemic antifungal, often combined with physical treatments like surgery, cryotherapy, thermotherapy, and CO2 laser.1,5,6 The antifungals that have shown the greatest efficacy for CBM are itraconazole (200–400mg/day) and terbinafine (500–1000mg/day) for at least 6-12 months.7 However, the duration of therapy seems to be prolonged and uncertain.7 Itraconazole is the drug of choice for CBM treatment, followed by terbinafine. Cure rates for monotherapy with itraconazole or terbinafine vary from 15% to 80%.8

Based on those mentioned above, we report a case of a chronic wound with a diagnosis of Chromoblastomycosis caused by *Fonsecaea pedrosoi* that had a favorable outcome after receiving treatment with itraconazole, with adjuvant thermotherapy and CO2 laser.
CASE PRESENTATION

A male, 47 years old, a construction worker, came to dermatovenereology clinic with a main complaint of a wound on his right leg 17 years ago. At first, the wound was caused by trauma caused by the compression of a wood ladder while working. The patient had been treated by doctors, but the wound was not resolved, and later, the surrounding skin became reddish. For years, the wound and the reddish skin widened, and the skin also appeared thicker, scaly and rough. The patient sometimes complained of pain and an itchy sensation on the wound. Recently, he had difficulty walking due to the pain. A history of diabetes mellitus, an autoimmune disease, was denied by the patient.

Normal vital signs were obtained from the patient. Head, neck, thorax, abdomen, and extremity examination results were within normal limits. A dermatological examination of the cruris dextra region revealed multiple erythematous plaques, verrucous, sized 10x20 cm, irregular with a well-defined and elevated border and black punctum as seen in Figure 1.

A dermoscopy examination revealed multiple black dots, crusts, and scales. Potassium hydroxide examination revealed brown hyphae and muriform bodies as seen in Figure 2A. Fungal culture was also performed, which obtained a blackish velvety colony with regular, melanized, and branched hyphae in the apical part and broadly clavate conidium, which in turn produces 1 to 2 smaller conidia on denticles (Figure 2B, C, D). Histopathology with hematoxylin and eosin (H&E) staining revealed parakeratosis, acanthosis with elongated dermal papillae, dense lymphocytic infiltrate with multinucleated giant cells at the epidermis. Muriform bodies were present at the dermis (Figure 3). These findings were consistent with F. pedrosoi. The patient was diagnosed with Chromoblastomycosis.

The patient was treated with oral itraconazole 2x200mg, local thermotherapy with a temperature around 40 degrees used an hour a day, acetaminophen oral 3x500 mg for pain, and CO₂ laser on week 7 of observation. The area chosen for the laser was an erythematous plaque with thick verrucous. A potassium hydroxide examination before the procedure revealed muriform bodies in the area. Laser CO₂ was performed in one session. The patient was evaluated every week for clinical and micological evaluation. The patient was followed up for 19 weeks with improvements in his complaints and objective examinations. However, potassium hydroxide examination still revealed muriform bodies and hyphae; complete resolution has not yet been achieved as seen in Figure 3.

DISCUSSION

Chromoblastomycosis is primarily an occupational disease associated with a considerable social stigma and severe
CBM should be differentiated from verrucous skin tuberculosis, syphilis, disseminated blastomycosis (affected skin), primary cutaneous sporozoites, sporotrichosis, and squamous cell carcinoma. Histopathology examination was performed to confirm the diagnosis of Chromoblastomycosis and exclude the differential diagnosis. The histopathological findings of CBM are muriform bodies, which may be found individually in clusters or within giant cells.

Treatment choice and results depend on the etiological agent, size and extent of the lesions, topography, and complications. CBM lesions are often unresponsive to many antifungal and surgical procedures. A complete clinical response of CBM is defined as a definitive resolution of all lesions, topography and complications. The absence of fungi on direct mycological examination and negative culture proves the mycological cure. Histopathology of the healed lesion shows atrophic epidermis and cicatricial fibrosis associated with chronic inflammatory infiltrate and absence of fungi in serial slices. The treatments of CBM are systemic antifungal, often combined with physical treatments like surgery, cryotherapy, thermotherapy, and CO₂ laser.

The antifungals that have shown the
The greatest efficacy for CBM are itraconazole (200-400mg/day) and terbinafine (500-1000mg/day) for at least 6-12 months. However, the duration of therapy seems to be prolonged and uncertain. Itraconazole is the drug of choice for CBM treatment, followed by terbinafine. Cure rates for monotherapy with itraconazole or terbinafine vary from 15% to 80%. The combination of itraconazole and terbinafine also has a synergistic effect. Second-generation triazoles (voriconazole, ravuconazole, posaconazole, and isavuconazole) also have in vitro activity against these fungi. Isavuconazole also has in vitro activity against these fungi.


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CONFlict of interest

The authors declare that they have no conflict of interest.

EThical Consideration

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AUTHor Contribution

Commencing with the planning and ending with the case report publication, all authors participated in this study.

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