

Chromoblastomycosis: a retrospective study of 325 cases on Amazonic Region (Brazil)

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Abstract

A retrospective study of 325 cases of chromoblastomycosis diagnosed in the last 55 years in the Amazon region was carried out by the main Mycology services of the state of Pará, Brazil (Department of Tropical Pathology – UFPA and Mycology Department of the Evandro Chagas Institute/FNS). The data obtained showed that: (a) the main age group affected by the diseases range from 41 to 70 years-old, (b) 86.1% of the patients were agricultural-workers, (c) 93.2% of them were males and (d) 80.7% showed lesions on the lower limbs (feet and legs). The diagnosis of 62% of the cases was confirmed by laboratory studies considering the tissue form in histopathological analysis. In 24% of patients (78 cases), the etiological agent was isolated and identified through culture. *Fonsecaea pedrosoi* was present in 77 cases and *Phialophora verucosa* in only one case.

Key words: Amazon, chromoblastomycosis, epidemiology

Introduction

Chromoblastomycosis is a chronic, suppurative and granulomatous disease of subcutaneous tissues and skin, which shows no major tendency to disseminate to deeper organs. Lesions may be flat or raised. Long-term lesions may become secondarily infected by bacteria [1, 2].

Originally reported in 1914 in Brazil by Pedroso and Gomes [1], chromoblastomycosis is world wide in distribution [3–10], but it is prevalent in tropical and sub-tropical countries, notably Brazil, Mexico, Cuba and the Dominican Republic [1, 3]. However, recently some cases have been described in temperate regions [8, 11, 12]. Climatic conditions associated with underdeveloped regions contribute to maintain endemic areas well characterized. Chromoblastomycosis is produced by a group of closely related black molds that vary in their microscopic appearance in culture but have only one single tissue form, the sclerotic or muriform cell [1, 2, 13]. The most frequently isolated organisms are *F. pedrosoi*, *P. verucosa*, *Clad-*

dosporium carrionii, and more rarely *Rhinocladiella aquaspersa* [1, 2, 6].

In Brazil, the Amazon region has been considered the main chromoblastomycosis endemic area. Its annual rainfall (1500–1700 mm/year), temperature (24–26 °C), relative humidity (around 83% all year round) and underdeveloped condition may contribute to this position [14]. The Pará State is the major focus of chromoblastomycosis in the Amazon region and retains the major demographic area of the region. This state comprises an area of 1,253,164.5 km², has 5,448,598 inhabitants [15] and is crossed by the Amazon River which discharges into the Atlantic Ocean near the Marajó Island (Figure 1). The purpose of this report is to update chromoblastomycosis cases in Pará in a sequence of studies begun by Dr. Domingos Silva in 1968 [16, 17] and to correlate them with the eco-epidemiology of the region.

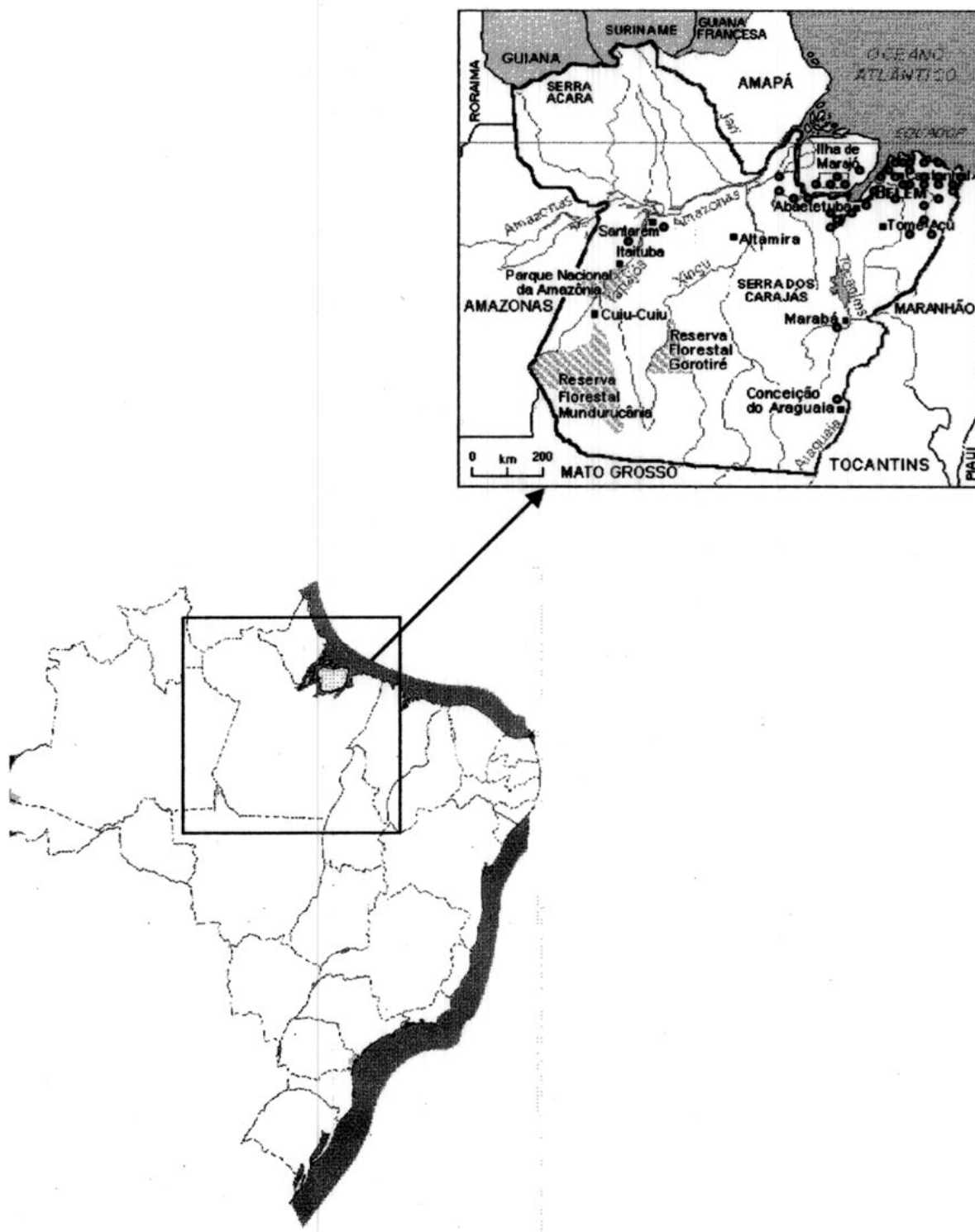


Figure 1. Geographic distribution of chromoblastomycosis cases. The cases were reported in 41 municipalities (small circles).

Material and methods

Patients: This retrospective study included 325 chromoblastomycosis cases reported in the last 55 years (1942–1997) and documented by the Department of Tropical Pathology – Dermatology service/Universidade Federal do Pará and Mycology sector of the Evandro Chagas Institute/Fundação Nacional de Saúde.

Analysis data: The data were catalogued, grouped and analyzed according to the anatomical localization of the lesions, patient's occupation, age group, and sex distribution.

Results

Geographic distribution: The cases were mainly reported in 41 municipalities located at the main river mouth of the Amazon Basin, at the coast of Pará and at Marajó Island (Figure 1).

Main activity of the patients: The great majority of the cases reported were agricultural workers (86.1%). However, other occupations such as carpenters, joiners, low rank builders, lumbermen and latex gatherers, were associated with this disease (Table 1).

Age and Sex distribution: The males were mostly affected, with 93.2% of the cases, only 6.7% of patients were female (Table 2). The main age group affected ranged from 41 to 70 year-old and comprised 66.5% of the cases at the time the lesions were observed. It is important to point out that this age does not necessarily coincide with the period of infection, since most of the patients reported that the beginning of the lesion occurred years before.

Anatomical distribution of infection: Lesions were mostly seen on the lower limbs, feet and legs (80.74%), followed by those located on the upper limbs, hands and arms (16.8%). Only 2.46% of the lesions were located on the trunk (Figure 2).

Etiological agents: In most cases, the diagnosis was made by observing muriform or sclerotic cells, the characteristic tissue form of the chromoblastomycosis agents. Only in 78 cases, was the etiological agent identified in cultures. *F. pedrosoi* was identified in 77 cases and *P. verrucosa* in the other one.

Table 1. Chromoblastomycosis patient's occupations

Profession	Frequency	Percentage
Agricultural worker	280	86.10
Baker's mate	01	0.31
Bricklayer	01	0.31
Carpenter	08	2.48
Docker	01	0.31
Driver	04	1.24
Handyman	01	0.31
Joiner	01	0.31
Latex gatherer	01	0.31
Low rank builder	08	2.48
Lumber-man	01	0.31
Maid	06	1.86
Sailor	01	0.31
Stoker	01	0.31
Tire repair man	01	0.31
Tractor driver	01	0.31
Unknown	08	2.48
Total	325	100

Table 2. Age and sex distribution of chromoblastomycosis cases.

Age group	Male	Female	Unknown	Total
0–10	09	0	0	09
21–30	16	03	0	19
31–40	40	01	0	41
41–50	69	03	01	73
51–60	72	07	02	81
61–70	54	08	0	62
71–80	33	0	0	33
81–90	02	0	0	02
Unknown	05	0	0	05
Total	300	22	03	325

Discussion

Some important epidemiological aspects were observed when we made a comparative analysis of the 325 cases of chromoblastomycosis, which occurred in the last 55 years in the Amazon region, Pará state [16–18].

The majority of cases are located in the western region of the state, near the Tocantins River and the

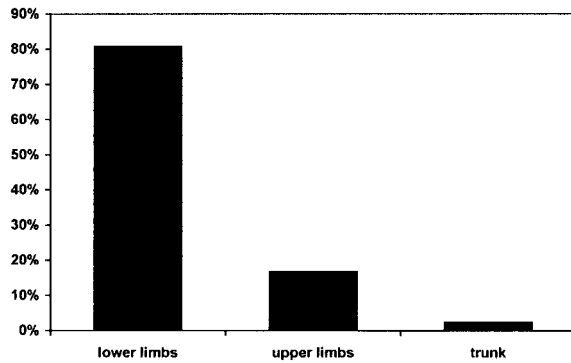


Figure 2. Anatomical distribution of chromoblastomycosis infection sites.

Amazon River mouth, and at the Marajó Island. These areas are the most populated regions of Pará.

The disease affects more males (92%) and agricultural-workers, in agreement with previous reports [1–3, 19]. It is important to point out that a significant number of patients with chromoblastomycosis had worked with the extraction and industrialization of wood and as low rank builders. The low percentage of chromoblastomycosis cases in females in Amazon should not be related only to the professional activity, since women in this area are involved – although not intensely – in agricultural activities. Observations of some authors dealing with *Paracoccidioides brasiliensis*, another pathogenic dimorphic fungus, are suggestive that estrogen may interfere in the transformation of fungal mycelial forms to yeast cells, decreasing the pathogenicity of the fungi [20, 21]. It is possible that female sexual hormones have a similar role on agents of chromoblastomycosis.

The body portion mainly affected by the lesions is the lower limb (legs and feet). This is probably due to the fact that in rural activities, in this underdeveloped region, people work without proper care and protection in the handling of the soil, vegetables and decomposing organic matter, the natural habitat of the fungus [1, 3].

The identification of *F. pedrosoi* as the main etiological agent of chromoblastomycosis in the Amazon area is in agreement with other epidemiological analyses carried out in tropical regions [3–4, 5, 10, 22–24]. In semi-arid regions *C. carrionii* may be found as the main agent [1, 2].

Despite of the fact that chromoblastomycosis is not a disease of compulsory notification and the epidemiological data for the Brazilian territory are scanty, we can conclude that the state of Pará is an important

focus of the disease in the Amazon. Furthermore, considering the number of cases reported in the literature it is probably the main focus in Brazil [11, 12, 16–18, 23, 24].

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