

## Chromoblastomycosis in Kerala, India

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## ABSTRACT

**Background:** We are reporting 35 new cases of Chromoblastomycosis from Central Kerala. A majority of the cases from India are reported from the Sub Himalayan belt and South India. The disease scenario in India and abroad is briefly reviewed. **Aims:** To study chromoblastomycosis in Central Kerala including the demographic and clinico-investigative profile. **Methods:** This report is a retrospective record analysis of 35 cases of chromoblastomycosis who presented to the Dermatology Outpatient department of our tertiary center from January 2003 to July 2010 after obtaining Institutional Review Board approval. **Results:** The disease was found to be more common among male agriculturists. The majority of cases were from the central districts of Kerala in and around the Western Ghats. The lower extremity (60%) was more affected with 40% of the subjects remembering a prior history of trauma. Sclerotic bodies were demonstrable in scrapings from black dots in 42.8%. The characteristic mixed mycotic granuloma was demonstrable in 77.1% of cases. The most common species isolated was *Fonsecaea pedrosoi*. **Conclusions:** Chromoblastomycosis is very common in Central Kerala. The disease mainly affects male agriculturists especially those employed in rubber plantations. The most common organism is *F. pedrosoi*.

**Key words:** Chromoblastomycosis, *Fonsecaea pedrosoi*, mixed mycotic granuloma, sclerotic body

## INTRODUCTION

Chromoblastomycosis is a chronic fungal infection caused by different species of dematiaceous fungi such as *Fonsecaea pedrosoi*, *Phialophora verrucosa*, *Fonsecaea compacta*, *Cladophialophora carrionii* and other species. The disease is characterized by the presence of thick walled, brownish, septate sclerotic bodies in the tissues. A majority of cases have been reported from the tropics and subtropics. We herein report 35 cases of chromoblastomycosis

from a tertiary care institution in Central Kerala, India.

## METHODS

This report is a retrospective record analysis of 35 cases of chromoblastomycosis who presented to the Dermatology Outpatient department of our tertiary center from January 2003 to July 2010 after obtaining Institutional Review Board approval. A detailed history including demographic data, occupation, and history of trauma were recorded. Cutaneous and systemic examinations were performed and the findings were noted. Microscopic examination of scrapings from the surface black dots was performed using 10% potassium hydroxide. A skin biopsy was taken from the lesions and subjected to histopathologic examination with routine Hematoxylin and Eosin stain. No special stains were used. A separate skin tissue sample was sent for

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fungal culture using Sabouraud’s dextrose agar and also AFB culture. Other co-morbidities like diabetes mellitus were noted. Our experience with treating 10 of the cases with Saturated Potassium iodide solution is included.

**RESULTS**

The youngest patient was 25 years of age and the oldest was 69. There were 30 males and 5 females. Twenty-one were employed in various agricultural tasks including rubber tapping. The cases were from central Kerala, majority from our district (28) and the rest from adjoining districts (7). Twenty cases were from the Western Ghats and its premises [Table 1]. The rest were from the immediate adjoining zones and midlands. Twenty-one cases had lower limb lesions, 11 had upper limb lesions, and the remaining 3 had truncal lesions. Fourteen of them recalled a history of trauma including penetrating injury (4), abrasion (4), laceration (4), and burns (4). Twenty-four were asymptomatic while the remaining 11 experienced symptoms including itching, pain, or both. All the patients presented with plaques of varying morphology with sizes ranging from 12 × 8 cm to 3 × 2 cm [Table 2]. Extracutaneous involvement was not seen in any of the cases. Scrapings from black dots gave positive results for sclerotic bodies in 15 of

the cases. All of the cases were histopathologically proven with the characteristic brownish thick-walled sclerotic bodies being demonstrable in all the cases either within or outside the giant cells [Table 3].

Isolation of the organism in culture was possible in 31 cases. The most common species identified was *F. pedrosoi* (24). The other species identified included *F. dermatitidis* (3), *F. compactum* (2), *P. verrucosa* (1) and *Cladosporium* species (1). As proper follow up data is missing for some of the old cases, we couldn't include the data regarding treatment of all the cases [Table 4]. But we found excellent response to saturated Potassium iodide solution in 10 of the cases [Table 5]. The other drugs given included Terbinafine and Itraconazole [Figures 1-13].

**DISCUSSION**

Chromoblastomycosis was originally reported from Brazil. It was first reported from India in 1957 by Thomas *et al.*<sup>[1]</sup> Other than India and Brazil, Chromoblastomycosis has been reported from Madagascar, Sri Lanka, West Central Africa, Japan, Mexico, Cuba, Dominican Republic, Nepal, Australia, and Venezuela.<sup>[2-14]</sup> According to one report,

**Table 1: Geographic distribution of cases**

Type of landscape	No. of cases
Western Ghats high ranges	4
Foothills of Western Ghats	16
Midland	15

**Table 2: Morphology of lesions**

Morphology	No. of cases	Additional features
Verrucous plaques	31	Surface black dots (19)
Hyperkeratotic plaques with scaling	3	Atrophy (5) Hypertrophy (3)
Nodular cauliflower-like growth	1	

**Table 3: Histopathological features of chromoblastomycosis**

Histologic features	No. of cases	Additional features
Mixed mycotic granuloma with sclerotic bodies within or outside giant cells	27	Pseudoepitheliomatous hyperplasia (24) Acanthosis (18)
Granuloma composed of epitheloid cells, lymphocytes and plasma cells with sclerotic bodies	5	Hyperkeratosis (15) Papillomatosis (4)
Collections of epitheloid cells and lymphocytes in dermis with giant cell formation and sclerotic bodies	3	Epidermal microabscesses (3) Dermal microabscesses (3) Foci of collagenisation (1)

**Table 4: Our treatment modalities**

Drug	Dosage
Saturated potassium iodide solution (1000 gm in 1000 ml of distilled water)	Started as monotherapy at a rate of one drop thrice daily. The rate is increased by one drop per dose every day until a maximum of 40 drops thrice daily. Maintained at that level until complete resolution. The dose is then tapered at a rate of 1 drop/dose/day
Terbinafine	250 mg twice daily until complete resolution
Itraconazole	200 mg once daily

Madagascar represents the most important focus of this fungal disease.<sup>[7]</sup> Brazil is another country reporting large number of cases.<sup>[2-6]</sup> In most of these reports, chromoblastomycosis is seen to be a disease of rural male agriculturists and the commonest etiological agent is *F. pedrosoi*.

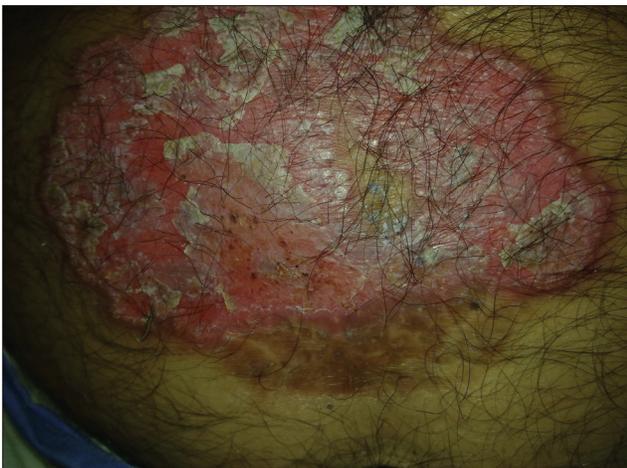
In India, Thomas *et al* first reported two cases of chromoblastomycosis from Assam.<sup>[1]</sup> Since then, there has been several case reports from the Sub-Himalayan belt, Western and Eastern coasts.

Rajendran *et al* in 1997 reviewed 30 cases till then from all over India and reported 4 new cases including 2 cases from Jammu and Kashmir and Bihar.<sup>[15]</sup> Sharma *et al* in 1999 also reviewed the Indian scenario and reported four more cases.<sup>[16]</sup> Kumar *et al* reported two cases in 2000 and Sharma A reported four cases from Assam in 2010.<sup>[17,18]</sup> All these areas have warm and humid climatic conditions and it is seen that the Central and North Western arid zones of the country are free of the disease.<sup>[16]</sup> Among the previously reported cases, 18 were from South India [Andhra Pradesh (5), Karnataka (5), Tamil Nadu (4), Kerala (3), Pondicherry (1)] [Table 6].<sup>[15]</sup>

**Table 5: Our experience with potassium iodide therapy for chromoblastomycosis**

Time for resolution with potassium iodide	No. of patients
1 to 3 months	3 patients
4 to 6 months	6 patients
7 to 9 months	1 patient

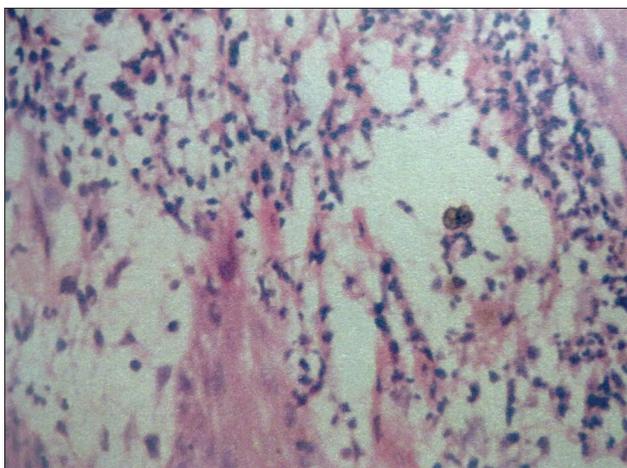
We herein report 35 cases of chromoblastomycosis from central Kerala. Our cases were from the foothills of Western Ghats and adjoining midland areas. The foothill areas of Western Ghats and the adjoining areas



**Figure 1: A scaly plaque with surface black dots**



**Figure 2: A case of chromoblastomycosis with nodular, cauliflower-like lesions**



**Figure 3: Mixed mycotic granuloma with sclerotic body (H and E, x40)**



**Figure 4: A verrucous crusted plaque with central atrophy**



Figure 5: Black colored colonies when grown on agar media

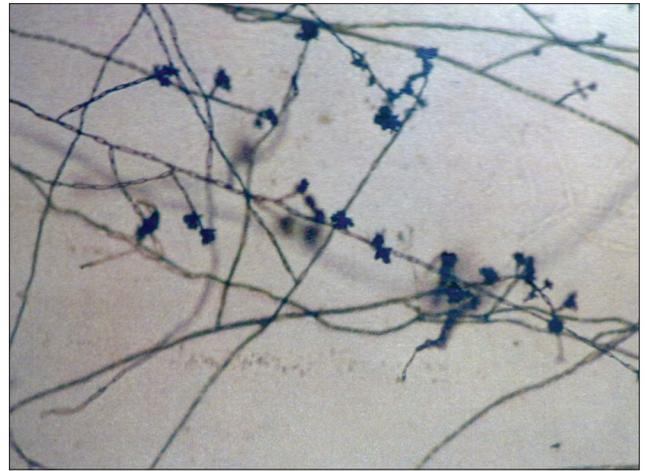


Figure 6: *Fonsecaea pedrosoi*

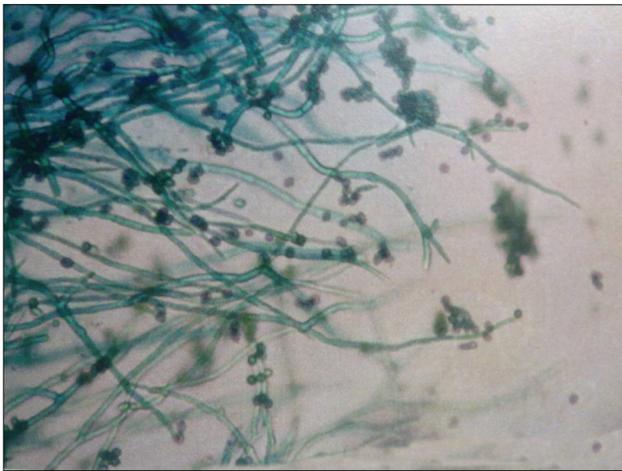


Figure 7: *Fonsecaea compactum*



Figure 8: *Phialophora verrucosa*



Figure 9: Scaly plaque on the right foot



Figure 10: The same patient after 4 months of treatment with potassium iodide

are well known for their rubber plantations where there is plenty of decaying vegetative matter. Such an environment could be favorable for the growth of the

fungus. The etiological agents of chromoblastomycosis have been discovered from soil, wood, vegetable debris, and similar substances.<sup>[19]</sup> Most of our patients



Figure 11: Scaly verrucous plaque on the right leg



Figure 12: Multiple plaques on the leg



Figure 13: Sclerotic bodies arranged in a group

were employed in various agricultural tasks including rubber tapping. Rural males from an agricultural background were commonly affected which is the common pattern of the disease worldwide.<sup>[3,8,9,12]</sup>

Table 6: A few case series from India and abroad

1957-1997	India	Rajendran <i>et al.</i> <sup>[15]</sup> Sharma <i>et al.</i> <sup>[16]</sup>	30
1973	Kenya	Cameron <i>et al.</i> <sup>[10]</sup>	33
1995	Gabon, West Central Africa	Kombila <i>et al.</i> <sup>[9]</sup>	64
1996	Madagascar	Esterre <i>et al.</i> <sup>[7]</sup>	1343
1996	Australia	Santos <i>et al.</i> <sup>[13]</sup>	6
1997	India	Rajendran <i>et al.</i> <sup>[15]</sup>	4
1997	Sri Lanka	Attappattu <i>et al.</i> <sup>[8]</sup>	71
1998	Brazil	Silva <i>et al.</i> <sup>[2]</sup>	325
1999	India	Sharma <i>et al.</i> <sup>[16]</sup>	4
2000	India	Kumar <i>et al.</i> <sup>[17]</sup>	2
2001	Brazil	Minotto <i>et al.</i> <sup>[3]</sup>	100
2006	Venezuela	Pérez-Blanco <i>et al.</i> <sup>[14]</sup>	22
2007	Nepal	Pradhan <i>et al.</i> <sup>[12]</sup>	13
2010	Brazil	Correia <i>et al.</i> <sup>[5]</sup>	27
2010	India	Sharma <i>et al.</i> <sup>[18]</sup>	4
2011	Brazil	Mouchalouat <i>et al.</i> <sup>[6]</sup>	18

The relationship with trauma correlates well with the predominant involvement of extremities among agriculturists. The most common species of fungus isolated was *F. pedrosoi*. *F. pedrosoi* is the most common organism causing Chromoblastomycosis worldwide and is also the most common isolate in humid tropical climates.<sup>[2-6,9]</sup>

We could obtain positive results with fungal scraping study using 10% potassium hydroxide in 42.8% of the cases. Fungal scraping study is a simple and non invasive test for the diagnosis of this subcutaneous mycosis.<sup>[20,21]</sup>

Potassium iodide is considered to be an effective drug for chromoblastomycosis.<sup>[22]</sup> The therapeutic response to Itraconazole and Terbinafine are thought to be better if the causative agent is *C. carrionii*.<sup>[23]</sup> Our most common isolate was *F. pedrosoi*. We tried potassium iodide in some of our patients and found it to be cost effective, especially in a setting like ours.

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