Original Research Paper

Volume - 11 | Issue - 01 | January - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Microbiology

CHROMOBLASTOMYCOSIS IN A TERTIARY CARE HOSPITAL, HARYANA- A STRUGGLING ENTITY

Manoj Kumar Assistant Professor, Department of Microbiology, Government Medical College, Haldwani-263139, Nainital, Uttarakhand.

ABSTRACT

Background: Chromoblastomycosis (CBM) is a chronic, granulomatous, suppurative mycosis of skin and subcutaneous tissues caused by traumatic inoculation of saprophagous dematiaceous fungi of the family *Herpotrichiellacae*. It is classified as deep mycosis. This disease is mostly reported in tropical and subtropical areas, often caused by *Fonsecaea (F.) pedrosoi and Cladosporium (Cladophialophora) carrionii,* mainly affects current or former farmer workers, mostly males, often leaving disabling sequelae.

Methods: 5 cases with suspicion of deep-seated fungal infection referred to the Department of Microbiology, N.C. Medical College and Hospital, Panipat, Haryana from April 2017 to August 2018 were analysed. A detailed history including occupational history and history of trauma was recorded. Cutaneous and systemic examinations were performed and the findings were noted. Microscopic examination of scrapings from the presenting cutaneous lesion was performed using 20% potassium hydroxide. Fungal culture was put up for all the samples according to standard protocol.

Results: All 5 cases were diagnosed as CBM. The age ranged from 24- 65 yrs. There were 4 females and 1 male. Four had lower limb lesions, one truncal lesion and one both. None recalled history of trauma. Extracutaneous involvement was not seen in any. Scrapings from various cutaneous lesions gave positive results for sclerotic bodies in 2 of 5 cases. Isolation of the organism in culture was possible in all the 5 cases. The species identified were *F. pedrosoi* (4) and *Cladosporium* species (1).

Conclusions: A high index of suspicion by both treating clinicians and microbiologists is necessary for the diagnosis of CBM. In every case in which fungal infection is suspected, attempts must always be made to identify the specific fungus using appropriate microbiological methods or histopathological methods, if possible.

KEYWORDS : Chromoblastomycosis, *F. pedrosoi, Cladosporium* species

INTRODUCTION

Chromoblastomycosis (CBM) is a chronic granulomatous, suppurative mycosis of skin and subcutaneous tissues caused by traumatic inoculation of saprophagous dematiaceous fungi of the family *Herpotrichiellacae*, present in soil, plants, and decomposing wood, prevalent in tropical and subtropical regions of the world[1]. CBM is a progressive, disabling, difficult-to-treat occupational disease, evolving with episodes of secondary bacterial infections, leading to low work productivity and frequent absenteeism. It has a wide spectrum of presentation ranging from local infections due to trauma to widely disseminated infections in immunocompromised patients. This disease is mostly reported in tropical and subtropical areas and is often caused by *Fonsecaea (F.) pedrosoi*. Other lesser etiologic agents are *Cladosporium (Cladophialophora) carrionii*, *Phialophora verrucosa*, *Rhinocladiella aquaspersa*, *F. compacta*, *Exophiala (E.) dermatitidis*, *E. jeanselmei and E. spinifera*[2-6]. This fungal infection is slowly progressive and the general health of the patient is usually preserved. A high level of suspicion and routine fungal cultures are required to identify these uncommon cases. Amongst azoles, itraconazole has shown most consistent in vitro activity and has remained the cornerstone in treatment of such infections in comparison to other antifungal drugs. Further studies are needed to better understand the pathogenesis and better treatment of these uncommon infections.

MATERIALS AND METHODS

5 patients with suspicion of deep-seated fungal infection referred to the Department of Microbiology, N.C. Medical College and Hospital, Panipat, Haryana from April 2017 to August 2018 were analysed. Detailed history including occupational history and history of trauma was recorded. Cutaneous and systemic examinations were performed and the findings were noted. Microscopic examination of scrapings from the presenting cutaneous lesion was performed using 20% potassium hydroxide. Fungal culture was put up for all the samples according to standard protocol[7].

RESULTS

All the 5 cases were diagnosed as having chromoblastomycosis (Table 1).

Table 1: The Clinical Features of Cases of Chromoblastomycosis

Patient	Age/ Sex	Occupation	Duration (in years)	Site	Skin lesion	KOH mount	Isolated organism
1.	37yrs/F	Domestic help/ worked in farms temporarily	2 ½	Trunk, right leg	Verrucous and scaly	Copper penny appearance	*F. pedrosoi*
2.	45yrs/F	Domestic help/ worked in farms temporarily	2	Both legs	Scaly psoariasiform	Copper penny appearance	*Cladosporium carrionii*
3.	65yrs/F	Previously agricultural worker	3	Right leg	Verrucous plaque	-	*F. pedrosoi*
4.	30yrs/M	Labourer	2	Both feet	Scaly psoariasiform	-	*F. pedrosoi*
5.	24yrs/F	Agricultural worker	1 ½	Trunk	Erythematous plaque	-	*F. pedrosoi*

The youngest patient was 24 years of age and the oldest was 65. There were 4 females and 1 male. None of them recalled a history of trauma.There was no underlying comorbidity in any of the patients.

Three cases had lower limb lesions, one had truncal lesion (Figure 1) and one patient had lesions spreading over the trunk and lower limbs.

Figure 1: Truncal lesion in one patient

Two patients had itching (40%) and three complained of cosmetic problems (60%). None experienced pain. All the patients presented with plaques of varying morphology. Extracutaneous involvement was not seen in any of the cases. The patients belonged to migrant population group who previously worked or were working as agricultural workers/labourers.

Scrapings from the lesions showed sclerotic bodies (copper penny appearance) (Figure 2), present intracellularly and extracellularly in 2 patients.

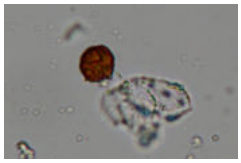

Figure 2: Sclerotic bodies (copper penny appearance)

Growth on SDA (Sabouraud's Dextrose Agar) revealed black coloured, heaped and folded colonies (Figure 3).

Figure 3: Growth on SDA

The reverse of the slant showed jet black colour. Microscopic examination of the cultured organism showed sporulation with acrogenous conidia with short branching chains of *F. pedrosoi* (Figure 4). In one sample, the growth was initially gray-green with a velvety texture, which slowly turned olive-green with cottony texture and produced a jet black reverse after three weeks of incubation at 25°C. The lactophenol cotton blue preparation from the culture showed septate fungal hyphae with acropetal long chains of conidia suggestive of *Cladosporium s*pp. (Figure 5). This confirmed the diagnosis of Chromoblastomycosis.

Figure 4. *F. Pedrosoi*

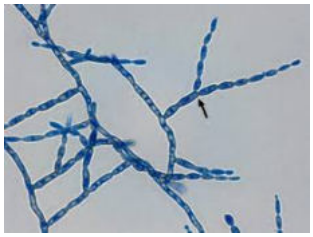

Figure 5. *Cladosporium* spp.

The most common species identified was *F. pedrosoi* (4) and *Cladosporium* species (1). All the patients were treated with itraconazole (400mg/day); three showed promising results and other two did not respond over a period of 2 months of treatment.

DISCUSSION

Phaeohyphomycosis is the term given to infections caused by melanized fungi. It is capable of causing a spectrum of disease ranging from superficial to deep-seated infections. The term chromoblastomycosis refers to skin and subcutaneous tissue infections caused by melanized fungi. The CBM lesion may be verrucous with central scarring (tuberculoid), severe scarring with a serpiginous border (syphiloid), scaly (psoriasifiorm) or indurated with fistula formation (mycetomatoid)[8]. The most common agent predominantly found in tropical and subtropical climates is believed to be *Fonsecaea pedrosoi*[4,6]. The Carrion morphologic types consist of nodular, tumorous, verrucous plaque and cicatricial lesions[9] . Diagnosis of CBM should be confirmed either by direct microscopy of the scrapings from the lesion in 20% KOH when thick-walled dark brown tissue forms of the fungus (fumagoid bodies/ muriform bodies/ copper penny bodies) are seen; by histological examination of a biopsy specimen with granulomatous reaction and spores; or by culture of scrapings or biopsy material[4,9].

The predominance of lesions on the lower limbs is explained by the fact that the majority of these patients live in rural areas, living and working without adequate protection. The lower limbs are the area of the body that would be most likely to be in contact with material contaminated by fungi[2,4,9]. Majority of the patients were females who presented due to cosmetic reasons rather than any symptom. Ordinarily, the infection occurs commonly in the age group of 20-40 years with male predominance[10,11]. The patients belonged to migrant population group who previously worked or were working as agricultural workers/ labourers.

In the present study, patients had lesions of psoriasiform type and verrucous type for over 2- 3 years duration. In chromoblastomycosis the most common presenting picture of the patients is of severe and chronic verrucous type of lesion of more than 10 years duration. Cell mediated immunity appears to be less competent when lesions are of the verrucous type. Clinically, chromoblastomycosis is hallmarked by the presence of verrucous nodules at sites of fungal implantation. This disease is confused with other clinical conditions like cutaneous TB, squamous cell carcinoma, cutaneous leishmaniasis, sporotrichosis, lupus erythematosus etc

Direct microscopy was positive in 2 patients (40%) and this is in agreement with the findings of Pires et al[12]. Its characteristic muriform bodies (Copper penny bodies) are easily scraped from the surface of the lesions in most of the cases. In chromoblastomycosis, fungal elements are eliminated through the skin (transepidermal elimination)[13]. Thus, these fungal elements in the form of muriform bodies can be obtained by simply scraping the lesions[4,13]. Epidermis plays an active role in eliminating fungi in some types of mycosis and the presence of a substance in the papillary dermis that is foreign to the organism is more easily removed by the epidermis without causing any major alterations or degeneration through a mechanism that remains to be fully clarified.

In India, most of the previously reported cases were from South India, Assam and recently from various other states because of frequent migration of labour (Table 2).

Table 2: Chromoblastomycosis cases reported from India.

Year of reporting	Journal	Place	Age (yr)	Presenting lesion	Occupation	Signs/ Symptoms	Organism isolated
2012	Int JMR [10]	Maharashtra	50	Plaque	Labourer	Itching/ cosmetic	*F. pedrosoi*
2011	JIDC [11]	Pondicherry	9	Hyperpigmented, verrucous lesion	-	Itching	*Cladosporium carrionii*
2011	IJMM [14]	Chattisgarh	38	Verrucous	Farmer	Bloody discharge	*F. pedrosoi*
2010 2 cases	Mycopathologia [15]	Assam	-	Verrucous Cauliflower- like growth	Agriculture workers	cosmetic	*Cladosporium carrionii* *F. pedrosoi*
2006	IJDVL [16]	Kerala	40	Nodular	Agriculture worker	Non healing ulcer	*F. pedrosoi*
2006	Eur Respir J [17]	Chandigarh	40	Mediastinal mass	-	Dyspnoea, dysphagia	*F. pedrosoi*

These cases presented had certain unusual features. The disease was caused by unusual fungi (*Fonsecea, Cladosporium*), patients were migrants who came to Haryana for better life. Most affected were females with duration of complaints being only 2-3 years and commonest complaint was cosmetic disfiguration. The present study shows the extent to which chromoblastomycosis still affects the quality of life of local populations and that the infection continues to affect individuals, predominantly those working in agriculture, resulting in a chronic infection with no effective treatment. The importance of conducting further studies should be emphasized.

CONCLUSION

A high index of suspicion by both treating clinicians and microbiologists is necessary for the diagnosis of this entity. In every case in which fungal infection is suspected, attempts must always be made to identify the specific fungus using appropriate microbiological methods or histopathological methods, if possible. Investigations should not be stopped after mere documentation of fungal detection in routine screening methods.

REFERENCES

1. Brito AC, Bittencourt MJS. Chromoblastomycosis: an etiological, epidemiological, clinical, diagnostic, and treatment update. An Bras Dermatol 2018;93(4):495-506.
2. Queiroz-Telles F, Esterre P, Perez-Blanco M, Vitale RG, Salgado CG, Bonifaz A. Chromoblastomycosis: an overview of clinical manifestations, diagnosis and treatment. MedMycol 2009;47:3-15.
3. Kwon-Chung KJ, Bennett JE. Medical mycology. Philadelphia: Lea & Febiger, 1992:337-355.
4. López Martínez R, Méndez Tovar LJ. Chromoblastomycosis. Clin Dermatol 2007;25:188-194.
5. Suh MK, Lee YH. Infectious caused by dematiaceous fungi. Korean J Med Mycol 2005;10:77-82.
6. Santos AL, Palmeira VF, Rozental S, Kneipp LF, Nimrichter L, Alviano DS, et al. Biology and pathogenesis of *Fonsecaea pedrosoi*, the major etiologic agent of chromoblastomycosis. FEMS Microbiol Rev 2007;31:570-591.
7. Chromoblastomycosis. In: Jagdish Chander, editor. Textbook of Medical Mycology 3rd ed. New Delhi: Mehta Publishers;2010:175-186.
8. Vollum DI. Chromomycosis: A review. Br J Dermatol 1977;96:454-458.
9. Carrión AL. Chromoblastomycosis. Ann N Y Acad Sc. 1950;50:1255-1282.
10. Angadi KM, Misra RN, Gandham NR, et al. Chromoblastomycosis: A Rare Case of Infection by *Fonsecaea compacta* from Western Maharashtra, India. International Journal of Microbiology Research 2012;4:330-331.
11. Pradeepkumar N, Joseph N. Chromoblastomycosis caused by *Cladophialophora carrionii* in a child from India. *J Infect Dev Ctries* 2011:556-560.
12. Pires CAA, Xavier MB, Quaresma JAS, Macedo GMM, Sousa BRM, Brito AC. Clinical, epidemiological and mycological report on 65 patients from the Eastern Amazon region with chromoblastomycosis. An Bras Dermatol. 2012;87:555-560.
13. Batres E, Wolf Jr JE, Rudolph AH, Knox JM. Transepithelial elimination of cutaneous chromomycosis. Arch Dermatol. 1978;114:1231-1232.
14. Murthy R, Swain JP. Concurrent mycetoma and chromomycosis. Indian J Med Microbiol 2011;29:437-439.
15. Sharma A, Hazarika NK, Gupta D. Chromoblastomycosis in sub-tropical regions of India. Mycopathologia 2010;169:381-386.
16. Muhammed K, Nandakumar G, Asokan KK, Vimi P. Lymphangitic chromoblastomycosis. Indian JDermatol Venereol Leprol 2006;72:443-445.
17. Singh N, Agarwal R, Gupta D, Shivaprakash MR, Chakrabarti A. An unusual case of mediastinal mass due to Fonsecaea pedrosoi. Eur Respir J 2006;28:662–664.