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Case Report

Chromoblastomycosis caused by *Cladophialophora carrionii* in a skin graft recipient

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Introduction

Chromoblastomycosis, also called chromomycosis, is a subcutaneous chronic mycosis caused by dematiaceous (black) fungi.¹ The most frequently isolated organisms in cases of chromoblastomycosis are *Phialophora verrucosa*, *Fonsecaea pedrosoi* and *Cladosporium carrionii*, and less frequently, *Rhinocladiella aquaspersa*.² It evolves slowly and involves exposed body parts, e.g., extremities. It is characterized by lesions that are crusted and raised. The pathognomonic feature of this group of fungi is the presence of typical sclerotic bodies in the lesions. Herein, we present a rare case of chromoblastomycosis in a skin graft recipient caused by *C. carrionii*. Though distributed worldwide, it is most commonly seen in tropical and subtropical regions.¹ *C. carrionii* has been reported only sporadically in India.^{3–6}

Case report

A 40-year-old male patient was admitted in a tertiary care centre with a nonhealing, painless ulcer over the right knee following a fall. It was 4 cm × 3 cm in diameter, and had well-defined margins, excoriated surrounding skin, and the surface was covered with granulation tissue and black crusts. The lesion later developed hypopigmentation. Patient was earlier treated with parenteral antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs) and daily dressing for the ulcer on an OPD basis. Swabs from the base of the ulcer sent for bacterial culture and sensitivity were negative. After a few days of treatment that showed good healing, skin grafting was done. The patient was managed with parenteral steroids to prevent graft rejection, intravenous antibiotics and oral NSAIDs. The patient was later

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Fig. 1 – Colony morphology of *C. carrionii* on SDA showing brown to black mould and leathery folded out texture.

discharged with tapered dose of steroids. Oral antibiotics were continued for 15 days.

After two weeks, patient developed a soft, fluctuating swelling over the skin graft. There were no accompanying features suggestive of bacterial cellulites like redness, tenderness or induration. The surrounding skin appeared normal. Initially, a differential diagnosis of cutaneous tuberculosis and aspergilloma was entertained clinically. A fine needle aspiration was carried out and frank pus was aspirated that was submitted for bacterial, fungal and mycobacterial cultures. No bacterial growth was obtained under aerobic and anaerobic conditions. The sample was negative for acid-fast bacilli by Ziehl Neelsen staining (Figs. 1–3).

We actively looked for Gram-positive organisms, especially Group A Streptococci (GAS), as it is known to lead to destruction of skin grafts. Fortunately, bacterial infection was not present and no antibiotics were used.

However, KOH mount and Gomori's methenamine silver (GMS) stain showed septate hyphal forms. The GMS stain also revealed a few grey black round structures measuring around 6–10 μm that was suggestive of Medlar bodies also known as sclerotic or copper penny bodies.

Culture on Sabouraud dextrose agar (SDA) with and without chloramphenicol, incubated at room temperature and 37 °C, revealed a slow growing mould, which was initially grey-brown and matured to olive-black (olivaceous) mould with leathery folded-out texture and a jet black reverse at the end of three weeks of incubation. The lactophenol cotton blue (LPCB) preparation, from the culture, showed septate hyphae with conidiophores bearing long chains of spindle-shaped conidia suggestive of *Cladophialophora* species. Laboratory tests for speciation revealed growth at 25 °C and 37 °C, but not at 42 °C and urease test was also negative. Based on these phenotypic characters, namely microscopic, cultural and biochemical findings, the fungus was identified as *C. carrionii*. Mycobacteriological culture showed no growth after eight weeks of incubation. The patient was diagnosed as a case of chromoblastomycosis caused by *C. carrionii* and was placed on oral

Fig. 2 – (A) LPCB mount of the isolate (400T) showing septate hyphae with conidiophores. (B) Bearing long chains of spindle shaped conidia.

itraconazole 400 mg for 6 weeks and asked to come for follow-up. The patient exhibited good response to the therapy and the condition did not recur.

Discussion

As first described by Medlar in 1915, the term chromoblastomycosis is used for cases in which sclerotic bodies are present in tissue.⁷ The phaeohyphomycosis group of fungi (dematiaceous) showing sclerotic bodies are grouped under chromoblastomycosis. Sclerotic bodies, also known as Medlar bodies or copper penny bodies, are cigar-coloured, globe-shaped, thick-walled structures that are 4–12 μm in diameter.⁷ The International Society for Human and Animal Mycology (ISHAM) recommended the name chromoblastomycosis for this disease.⁸ Terra et al. in 1922 defined chromoblastomycosis as a polymorphic fungal disease affecting lower limbs, consisting of nodular or verrucous plaques. These plaques at times ulcerate and develop hyperkeratosis and acanthosis of the affected skin.⁹ This condition is often misdiagnosed as it is clinically indistinguishable from condition like tuberculosis verrucosa cutis, squamous cell metaplasia, palmo-plantar psoriasis and sporotrichosis.³ In this case also, a differential diagnosis of cutaneous tuberculosis was kept in mind.

Fig. 3 – (A) Gomori's methenamine silver stain (GMS) from fine needle aspirate (1000X) showing black coloured septate hyphae. (B) Grey-black, thick walled, 6–10 mm sclerotic bodies also called Medlar or copper penny bodies.

C. carrionii should be differentiated from other similar dematiaceous fungi, such as *Cladophialophora bantiana* and *F. pedrosoi*. *C. bantiana* and *C. carrionii* cannot be differentiated on the basis of colony morphology and microscopic appearance alone. However, *C. bantiana* has the ability to grow at 42 °C and exhibits urease positivity, which can be used to differentiate it from *C. carrionii*. Macroscopically, *F. pedrosoi* appears as dark green, grey and black, with silvery mycelial growth, which may mimic *C. carrionii*. However, microscopically, *F. pedrosoi* produces short chains of primary, secondary and tertiary conidia, unlike *C. carrionii*. Moreover, in *Fonsecaea* spp., at least two of the three types of anamorphic conidiation (rhinocladiella, phialophora, cladosporium) will be seen. Slide culture technique is useful for proper identification of the above-mentioned features.¹⁰

Surgery was considered the treatment of choice for chromoblastomycosis before the advent of triazole antifungal agents. Chemotherapy has become the first-line of treatment with itraconazole and terbinafine being the drugs of choice and surgery being performed only for limited or small lesions.³

Pradeepkumar et al. (2014) reported a case of chromoblastomycosis in a 9-year-old boy from Andhra Pradesh which was misdiagnosed as cutaneous tuberculosis and was treated with anti-tubercular drugs for one and a half years.³ Similar cases of chromoblastomycosis were also reported by Shanthala et al. (2011)⁴ and Mandal et al. (2013).⁵ Kindo et al. (2013) isolated *C. carrionii* from prostatic abscess of a 22-year-old male renal transplant recipient.⁶

In India, two cases of chromoblastomycosis were initially reported from Assam in 1957 by Thomas et al. Subsequently, cases were also reported from various regions of the country that included Bihar, Assam, Western and Eastern coasts and the Sub-Himalayan belt. These areas have hot and moist climate that predispose to fungal infections, especially in young and middle-aged males who are involved in agricultural work and are thereby injury prone. The lesions are often

complicated by ulcerations and secondary bacterial infections. Morbidity may be high due to long treatment regimes but mortality is rare.¹¹

Usually, we tend to find a mixture of suppurative and granulomatous lesions in chromoblastomycosis. The usual presentation of suppurative subcutaneous lesions in phaeohyphomycosis is cystic. Cell-mediated immune reactions in the cutaneum are responsible for the variety of lesions seen in chromoblastomycosis.^{12,13}

These reports also highlight the presence of superficial or penetrating injuries to be a common and significant prequel.^{3–5} Our patient too elicited a history of superficial injury following a fall and treated surgically by skin graft and with steroids. It is possible that in presence of a local injury that was evidently contaminated with soil flora, surgical intervention and steroid therapy may have contributed to this fungal infection. As there have been only few and sporadic case reports of chromoblastomycosis caused by *C. carrionii* from India, this case report assumes importance.

Conclusion

Injuries, superficial or penetrating, are the most common prequel reported in cases of chromoblastomycosis by *C. carrionii*. This phaeohyphomycete being an inhabitant of soil and vegetation causes opportunistic infections. Compromise in cleanliness and immunosuppression in cases of transplant and graft recipients are significant contributors in such infections. Typical phenotypic characters play a very vital role in identification and differentiation of this fungus from other fungi in the group.

Conflicts of interest

The authors have none to declare.

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