Chromoblastomycosis

Dr. W. K. Tang

Date:	12 September, 2001
Venue:	Yaumatei Dermatology Clinic
Organizer:	Social Hygiene Service, DH; Clinico-pathological Seminar

CASE SUMMARY

History

A 74-year-old retired carpenter noticed an irregular itchy scaly patch over the right forearm, which slowly increased in size over the past three years. He did not receive any treatment before presenting to us. He enjoyed good past health except diabetes mellitus, which required oral hypoglycaemic treatment.

Physical examination

A solitary 4.5 cm x 7 cm well-defined excoriated erythematous scaly plaque was found on his right forearm (Figure 1). The lesion was non-tender with normal sensation. There was no regional lymphadenopathy detected. The rest of the physical examination was unremarkable.

Differential diagnoses

Cutaneous mycobacterial infection including *M. tuberculosis* and *M. marium* can produce similar lesion, which is difficult to be differentiated from other cutaneous fungal infection. Pre-malignant condition such as Bowen's disease may show similar features.

Investigations

Baseline blood tests were performed. Besides slight renal impairment (creatinine level 179 mmol/L; reference range: 70-150 μmol/L), raised HbA1c level (9.3%; reference range: 5-8%) and triglyceride level (6.8 mmol/L; reference range: 0.31-2.51 mmol/L), all other investigations were unremarkable.

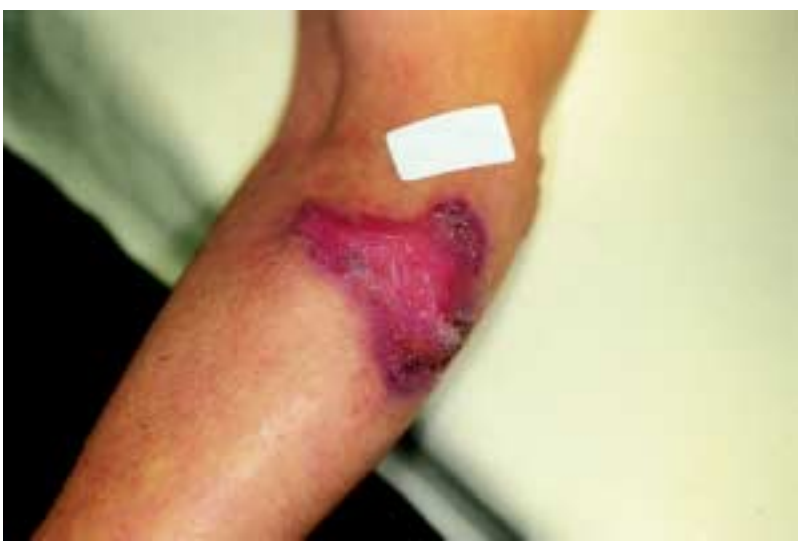

Figure 1: Hyperkeratotic erythematous plaque over the patient's right forearm at presentation

A skin biopsy was performed which showed patchy parakeratosis, irregular acanthosis with focal pseudoepitheliomatous hyperplasia. The upper dermis showed suppurative granulomatous inflammation containing foreign body giant cells. A few brownish fungal spores were present within the giant cells. There was no evidence of malignancy. This histological finding was suggestive of chromoblastomycosis. It was confirmed by tissue culture which yielded Fonsecaea pedrosoi. The mycobacterium culture was negative.

Diagnosis

The patient suffered from chromoblastomycosis.

Treatment and progress

The patient was put on oral itraconazole 200 mg daily with good response. The lesion regressed in size dramatically about one month after the anti-fungal therapy was started (Figure 2).

REVIEW ON CHROMOBLASTOMYCOSIS

Chromoblastomycosis is an uncommon chronic deep fungal infection of the skin. Even though it is regarded as a deep fungal infection, it usually localizes to the skin without systemic involvement. Thus it is actually the most "superficial" type of all deep fungal infections.

Aetiology

Aetiologic agent is a small group of dermatiaceous (pigmented) fungi. At least five species of fungi have been recognized to cause chromoblastomycosis: Cladosporium carrionii, Fonsecaea compacta, Fonsecaea pedrosoi, Phialophora verrucosa, and Rhinocladiella aquaspersa. Cladosporium carrionii and Fonsecaea pedrosoi are responsible for most of the cases.[1] These fungi can be found in vegetation, decaying wood or soil. The infection is thought to be secondary to trauma or autoinoculation.

Since our patient used to be a carpenter, wooden spike injury is not uncommon and inoculation of the pathogen might occur during his work.

Epidemiology

Chromoblastomycosis is primarily a disease of tropical or subtropical regions. It is endemic in Madagascar, but cases have been reported from temperate climates as well.

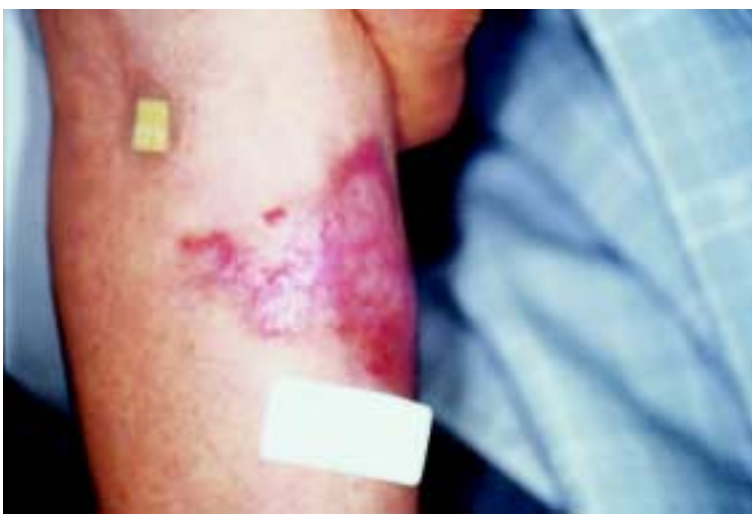

Figure 2: One month after the patient was put on antifungal treatment. The lesion was reduced in size and flattened

Clinical features

Chromoblastomycosis usually presents as slow growing solitary lesion on the extremity. Nodular and tumorous lesions are the most common forms, followed by warty and cicatricial lesions. The plaque type in our patient is the least common presentation.[2] Lesions are often pruritic but non-tender. There is usually no systemic symptom.

Differential diagnosis

Chromoblastomycosis should be differentiated from tuberculosis, leprosy, mycetoma, blastomycosis, leishmaniasis and tertiary syphilis. Tuberculosis and leprosy can present as skin nodules or ulcer, while tertiary syphilis is a great mimic of various skin diseases. However, the clinical and microscopic findings are diagnostic.

Investigation

Diagnosis can be confirmed by examination of the lesion with 10-20% KOH preparations or by skin biopsy to look for the sclerotic bodies.

Mycology

Tissue culture provides the definitive diagnosis. The colonies are usually olive green-brownish black in colour with woolly to velvety texture. They are initially flat and later become a convex cone with protruding centre.

The hyphae are septated, branched and brown in colour. In Fonsecaea, the conidiophores are septated and erect. The distal end of the conidiophore develops swollen denticles that bear primary single-celled ovoid conidia. Denticles on the primary conidia support secondary single-celled conidia that may produce tertiary conidia. But long chains are not formed. Fonsecaea compacta forms compactly arranged conidial chains.

The sclerotic bodies, also called Medlar bodies or copper-pennies, are actually an adaptive tissue form of the fungi. The fungus phenotypically arrested between the yeast and hyphal stages. Their size ranged from 5 to 15 μm. They are golden-brown in colour, and their thick wall has internal septa. They may appear singly or in chains and clusters within giant cells as well as free in the tissue. This form of fungus is characterized by its persistent viability. It has been found that the sclerotic bodies remain viable after isolated from the host for up to 18 months.[3]

Histology

The histology may show hyperkeratotic, pseudoepitheliomatous hyperplasia and keratolytic microabscess formation in the epidermis. The sclerotic bodies may occur either within macrophages and giant cells or extracellularly. These histological features are independent of the species of causative organisms.

Clinical course

The disease tends to be chronic and progressive up to many years. Late complications include local destruction, secondary bacterial infection, lymphoedema and development of squamous cell carcinoma.

Treatment

Surgery is one form of treatment for those refractory to other non-aggressive therapy. As the disease is usually advanced at presentation, wide surgical excision is not feasible in most cases. Moreover, it is difficult to assess an adequate margin.

Physical treatment modalities such as local thermotherapy, cryotherapy, electrosurgery and radiation have the advantage of relatively short duration of therapy and non-expensive. Their efficacies are largely anecdotal. Evidence of clinical study is lacking.

Among systemic anti-fungal agents, 5-fluorocytosine is most effective in Fonsecaea pedrosoi and it works synergistically with amphotericin B.[4] High dose oral amphotericin B alone had been tried (3 gm/day) with conflicting results.[5] In view of the relatively benign course of the disease and side effects associated with high dose amphotericin B, only a few authors would recommend it as the first line treatment in chromoblastomycosis.

Triazole derivatives (especially itraconazole) and terbinafine are more effective in treating Fonsecaea pedrosoi and Cladosporium carrionii.[4] Terbinafine is effective even in thiabendazole resistant cases.[6] Itraconazole has been given at 200 mg or 400 mg daily.[7] The dose of terbinafine ranged from 250 mg to 500 mg daily.[8,9] The efficacy of these newer anti-fungal agents are based on case reports and open labeled trials. It is a good area to conduct randomized controlled study. The optimal dose and duration of treatment is still remained to be defined.

A combination of various treatment modalities is sometimes needed to achieve the best result.

Learning points:

Chromoblastomycosis is diagnosed by a combination of clinical features and microbiological findings. Because of the rarity of this disease, there is still no standard treatment, and combination therapy is usually required. Even though the new antifungal agents show promising results, randomized controlled trial is needed to confirm their efficacy.

References

1. Elgart ML. Subcutaneous mycoses (including Mycetoma, chromoblastomycosis, sporotrichosis, and miscellaneous mycoses). In: Elewski BE (ed). Cutaneous Fungal Infections. New York: Igaku-Shion, 1992:124.
2. Carrion AL. Chromoblastomycosis and related infections: new concepts, differential diagnosis, and nomenclatorial implications. Int J Dermatol 1975;14:27-32.
3. Rosen T, Overholt M. Persistent viability of the Medlar body. Int J Dermatol 1996;35:96-8.
4. Poirriez J, Breuillard F, Francois N, et al. A case of chromoblastomycosis treated by a combination of cryotherapy, shaving, oral 5-fluorocytosine, an oral amphotericin B. Am J Trop Med Hyg 2000;63:61-3.
5. Iijima S, Takase T, Otsuka F. Treatment of chromomycosis with oral high-dose amphotericin B. Arch Dermatol 1995;131: 399-401.
6. Esterre P, Inzan CK, Ramarcel ER, et al. Treatment of chromomycosis with terbinafine: preliminary results of an open pilot study. Br J Dermatol 1996;134(suppl 46):33-6.
7. Bonifaz A, Martinez-Soto E, Carrasco-Gerard E, Peniche J. Treatment of chromoblastomycosis with itraconazole, cryosurgery, and a combination of both. Int J Dermatol 1997; 36:542-7.
8. Hay RJ. Therapeutic potential of terbinafine in subcutaneous and systemic mycosis. Br J Dermatol 1999;141(suppl 56):36-40.
9. Serigny GM, Ramos-Caro FA. Treatment of chromo-blastomycosis due to Fonsecaea Pedrosoi with low-dose terbinafine. Cutis 2000;66:45-6.