

A Case of Onychomycosis which was Caused by *Exophiala jeanselmei*

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ABSTRACT

Exophiala jeanselmei is a dematiaceous fungus which is associated with cutaneous, subcutaneous and invasive diseases. Only

2 cases of nail involvement with this fungus have been reported in the literature till now. We are reporting here another case of onychomycosis which was caused by *Exophiala jeanselmei*.

Key Words: *Exophiala jeanselmei*, Onychomycosis, Sub-Himalayan region

INTRODUCTION

Onychomycosis is a common nail disorder which is caused by dermatophytes, yeasts and non-dermatophyte molds [1]. In 90% of the cases, anthropophilic dermatophytes are the causative agents [2]. *Exophiala jeanselmei* causes mycetoma and phaeohyphomycosis, whereas chromoblastomycosis like infections have only rarely been reported [3]. We are reporting here a case of onychomycosis which was caused by *Exophiala jeanselmei*. Till now, only two such cases have been reported [4,5].

CASE REPORT

A 50-year old male patient presented with black discoloration and hyperkeratosis of his right great toenail which had a history of 5 years [Table/Fig-1]. There was no history of trauma. All the other nails of his feet and hands appeared to be normal. There was no history which was suggestive of immunosuppression or any other chronic disease. The patient had no other complaints. The patient had received treatment for onychomycosis with griseofulvin for 6 months without any improvement before he was advised to get a fungal culture done.

Scrapings from the nail were collected and they were examined under a KOH mount. Dark coloured, septate hyphae were present on direct examination [Table/Fig-2]. The culture was done on Sabouraud's Dextrose Agar (SDA) with and without cycloheximide at 25°C and 37°C. Growth was observed by the end of 1 week at 25°C and it was slow at 37°C. In the young culture, yeast like budding cells which were light brown in colour were seen and the texture of the colonies was membranous. By the end of 2 weeks, the colonies were found to have become dark brown to black and velvety with a black reverse. Their growth was sensitive to cycloheximide. Microscopically, the hyphae were brown and septate and they produced branched and unbranched conidiophores laterally and at the apex. The conidiogenous cells were brown and cylindrical with annellations which were produced at the tip of the tapering conidiophores. The conidia were oval (1-3×2-5µ) and they were gathered at the tip and the sides of the conidiophores and at points along the hyphae [Table/Fig-3] [3,6]. The culture was identified as that of *Exophiala jeanselmei*. A repeat culture of the nail scrapings which was done after one week was also positive. The patient was treated with itraconazole and he showed clinical

improvement. The lesion turned culture negative after one month of the treatment.

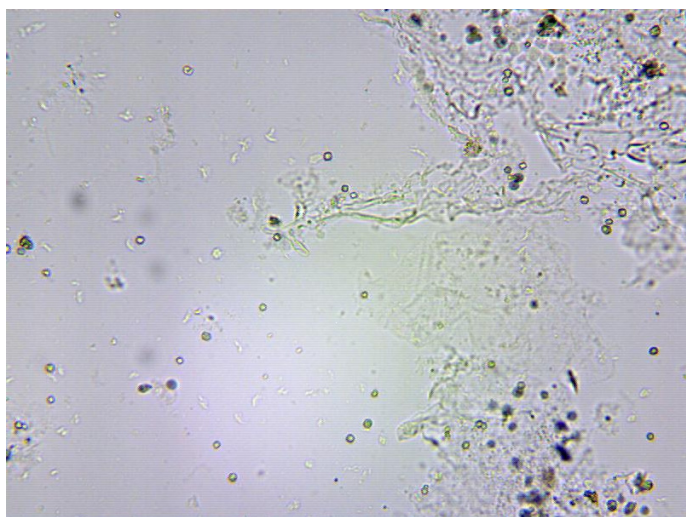
DISCUSSION

Onychomycosis is most commonly caused by dermatophytes, the most common isolate being *Trichophyton rubrum* [1]. Non-dermatophyte molds and yeasts are being increasingly recognized as pathogens in nail infections. The diagnosis is made by the clinical presentation, KOH preparations and the culture of the samples [7]. The toenails are more often affected than the fingernails in a ratio of about 4:1 and it is difficult to treat them successfully [2]. Among the non-dermatophyte molds, *Scopulariopsis brevicaulis* is the most common one, which usually infects the great toenails [8]. To distinguish their colonization from their infection, their repeated isolation and the presence of hyphae in the nails help in their confirmation [2,8].

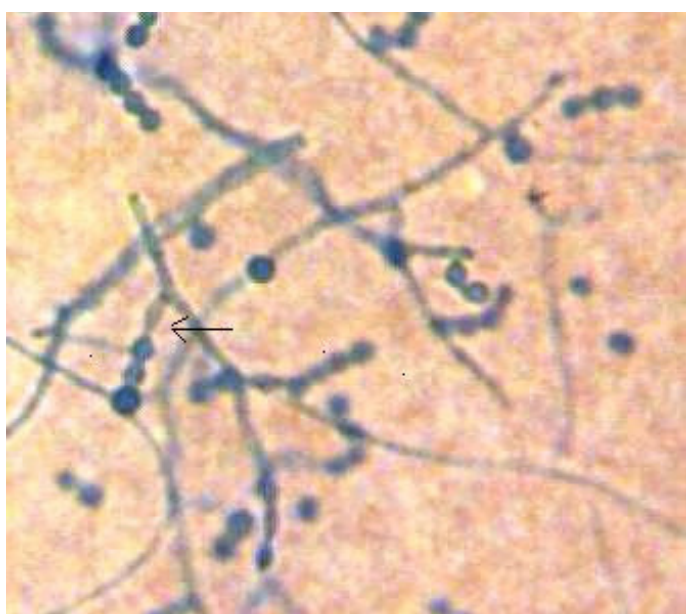
Garg et al., [9] in their study on 90 patients with onychomycosis from central India, reported *Trichophyton rubrum* (23.07%) to be the most common aetiologic agent, followed by *T. verrucosum* (2.22%) and *Epidermophyton floccosum* (1.11%).



[Table/Fig-1]: Photograph of the dystrophic great toenail of the patient



[Table/Fig-2]: KOH preparation (x400) of nail scrapings showing pigmented, branched septate hyphae



[Table/Fig-3]: Lactophenol Cotton Blue preparation (x400) of mycelial growth showing narrow elongated tip of conidiophore with pigmented conidia and branched, septate hyphae with swollen areas

Garsaud et al., [4] reported the first case of onychomycosis which was caused by *Exophiala jeanselmei* in 2002 in a 60-year old man. This patient was a renal transplant recipient and he had been treated with prednisone and azathioprine. The nails of his two thumbs and his two big toes had been involved for a duration of 4 years.

Another case of a 39-year old woman was reported by Oudaina et al., [5] in 2009. Her right big toe nail was involved for a duration of two years. *E. jeanselmei* was isolated from the cultures of the repeated samplings from the pathologic nail. The isolate was resistant to fluconazole. The treatment was given for one year, with no improvement.

There are few reports on the occasional isolation of *E. jeanselmei* in the Indian literature. It survives and proliferates better in relatively arid areas with a short rainy season [10]. Our case belonged to the sub-Himalayan region with a cold climate and heavy rainfall. This fungus gets lodged in the tissues by thorn pricks which are caused by repeated minor trauma. In our case, no such history was elicited [6].

CONCLUSION

The correct diagnosis of the aetiological agent of onychomycosis can only be made by direct examination and by its repeated isolation in the culture, which should always be done whenever it is possible. The fungal agents which were never previously associated or which had been rarely associated with this condition can be responsible for causing the infection, particularly in the wake of the increasing immunosuppression among patients. In the severely neutropaenic patients, the nail infection may be followed by systemic dissemination [8]. The microbiologists must therefore remain alert while reporting such cases.

REFERENCES

- [1] Adhikari L, Dasgupta A, Pal R, et al. The clinico-etiological correlates of onychomycosis in Sikkim. *Ind J Path Microbiol.* 2009;52(2):194-97.
- [2] Chander J. Dermatophytoses. In: Textbook of Medical Mycology. Second edition. *Mehta Publishers*;2002;91-112.
- [3] Larone DH. A guide for the identification of fungi in culture. In: Medically Important Fungi – A guide to identification. Fourth edition. Washington D.C.: ASM Press; 2002;200-01.
- [4] Garsaud AMB, Desbois N, Guillermin ML, et al. Onychomycosis which was caused by *Exophiala jeanselmei*. *Dermatol.* 2002;204:150-52.
- [5] Oudainan W, Tligui H, Boughaidi A, et al. Onychomycosis which was caused by *Exophiala jeanselmei*. *J Med Mycol.* 2009;19(2):126-8.
- [6] Fisher F, Cook NB. Subcutaneous Fungi. In: Fundamentals of Diagnostic Mycology. Saunders. An imprint of Elsevier; 1998;166-71.
- [7] Trepanier EF, Amsden GW. Current issues in Onychomycosis. *Ann Pharmacother.* 1998;32:204-14.
- [8] Hay RJ. Dermatophytosis and other superficial mycoses. In: Mandell, Douglas and Bennett's Principles and Practice of Infectious Disease. Sixth edition. *Elsevier Churchill Livingstone*;2005;3060.
- [9] Garg A, Venkatesh V, Singh M, et al. Onychomycosis in central India: a clinicoetiologic correlation. *Int J Dermatol.* 2004;43(7):498-502.
- [10] Capoor MR, Khanna G, Nair D, et al. Eumycetoma pedis which was caused by *Exophiala jeanselmei*. *Indian J Med Microbiol.* 2007;25(2):155-57.

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