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Verrucous Nail Dystrophy with Proximal Nail-Bed Mass: Rare Presentation of Curvularia Associated Onychomycosis in a Diabetic Patient

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Abstract

Diabetic patients are pre-disposed to developing toe-nail onychomycosis due to yeasts, dermatophytes and non-dermatophytic molds and rarely by *Curvularia species*. However, hypertrophic proximal onychomycosis by *Curvularia species* in diabetic patient is not reported frequently. A 64-year-old diabetic male presented with proximal nail bed mass with total nail dystrophy associated with pain and purulent discharge for 6 months. Differential diagnosis included onychomycosis and squamous cell carcinoma of the nail unit. Potassium hydroxide mount of the nail clipping revealed thin septate hyphae. Biopsy from nail bed mass did not reveal any features suggestive of malignancy. Fungal culture in *Sabouraud Dextrose Agar* medium revealed growth of *Curvularia species.* The patient reported significant improvement after 8 weeks of oral itraconazole. In diabetic patients, *Curvularia species* can rarely cause hypertrophic proximal onychomycosis associated with purulent discharge.

Keywords: ***Curvularia; Total nail dystrophy; Verrucous onychomycosis; Itraconazole***

1. Introduction

The incidence of toe-nail onychomycosis is higher in diabetic patients, more so in elderly males than females [1]. *Curvularia species* are a group of dematiaceous saprophytic fungi, which are less frequently associated with onychomycosis [2,3]. Here, we report a rare presentation of onychomycosis caused by *Curvularia species* in a diabetic patient.

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2. Case Report

A 64-year-old male presented with blackish discolouration and dystrophy over the left great toe-nail for six months, associated with pain and purulent discharge from the proximal as well as lateral nail folds. He had diabetes mellitus for 10 years, which was well-controlled with medication. There was no history of doing prolonged wet work, farming or prior trauma. On examination, the nail plate was irregularly thickened and dystrophic, which was brittle and fragmented distally, while proximally there was a well-defined, firm, mildly tender pinkish dome-shaped nodule with overlying convex nail plate and longitudinal heaping-up and blackish discoloration of the nail plate, laterally. There was complete loss of cuticle and swelling of lateral and proximal nail folds along with post-inflammatory hyperpigmentation, amounting to chronic paronychia (shown in FIG. 1). Other nails were uninvolved. Systemic examination was unremarkable.

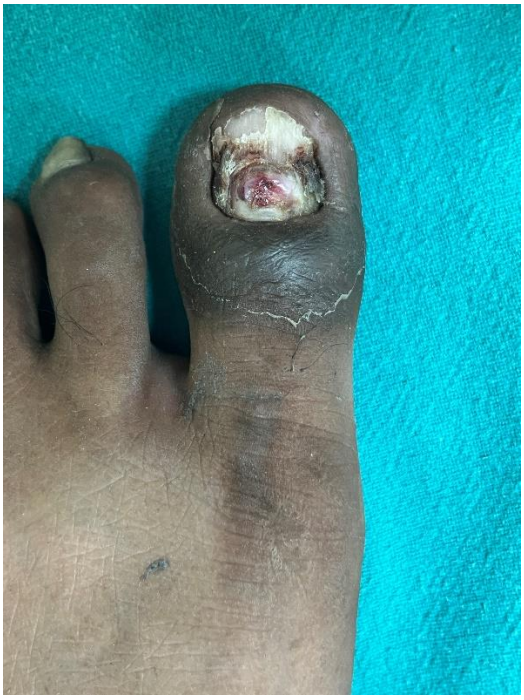

FIG. 1. **Left great toe-nail showing proximal nail bed mass with overlying convex nail plate and longitudinally heaped-up verrucous nail changes in surrounding nail plate along with loss of cuticle.**

The differential diagnosis included onychomycosis and squamous cell carcinoma of the nail unit. Potassium hydroxide mount of the nail clipping revealed thin septate hyphae. Biopsy from proximal nail bed showed acanthotic epidermis with hyperkeratosis and parakeratosis, along with peri-vascular infiltrate of plasma cells and lymphocytes and focal areas of hemorrhage in superficial and mid dermis. Fungal culture in *Sabouraud Dextrose Agar medium* at 22ºC revealed septate hyphae with darkly pigmented curved conidia distinctive of *Curvularia species* after 1 week of incubation (shown in FIG. 2). Serology for Human Immunodeficiency Virus was negative.

Hence, the final diagnosis was onychomycosis with verrucous nail dystrophy caused by *Curvularia species*. Patient reported significant improvement with resolution of purulent discharge after 2 months of oral itraconazole (100 mg twice daily).

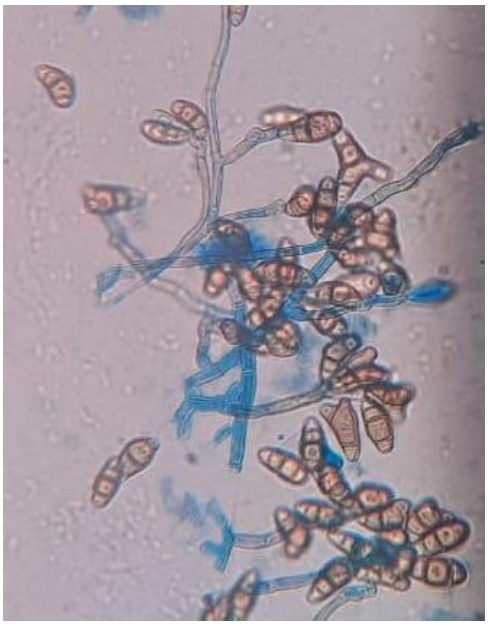

FIG. 2. **Photomicrograph of fungal culture on Sabouraud Dextrose agar medium showing septate hyphae with darkly pigmented curved conidia distinctive of Curvularia species.**

3. Discussion

Onychomycosis is the commonest infective nail disorder and patients with diabetes are at 1.9-2.8 fold higher risk. Dogra et al. reported prevalance of onychomycosis to be 17% among 400 patients with diabetes and the etiological agents included dermatophytes (*Trichophyton rubrum* [25.9%], *Trichophyon mentagrophytes* [11.1%]), *yeasts (Candida albicans* [22.2%], *Candida tropicalis* [14.8%], *Candida guillermondi* [11.1%] and *molds* (*Fusarium species* [11.1%], *Alternaria species* [3.7%]) [2]. In a review by Mayser et al. similar rates of prevalence were reported [1].

Infections due to *Curvularia species* are rare. There are reports of invasive fungal rhinosinusitis, orbital cellulitis and locally invasive pheohyphomycosis due to curvularia species in diabetic patients [4-6].

Onychomycosis due to *Curvularia species* is also infrequent, and only few cases of verrucous onychomycosis have been reported [7]. The most common manifestations include distal nail involvement of a single digit, with blackish discolouration of the nail plate. Our case was a diabetic patient who developed hypertrophic onychomycosis in the proximal nail unit which progressed to total nail dystrophy. It can be hypothesised that due to chronic paronychia and loss of cuticle, the proximal nail plate and nail bed were predisposed to the entry of the organism via the proximal nail fold through the cuticle. In verrucous onychomycosis, the nail bed becomes hypertrophic and is locally invasive. It is postulated to be due to a suboptimal response of the host immune system.

Toe-nail onychomycosis predisposes diabetic patients to trophic ulcers due to sharp nail edges. The management includes optimal glycemic control, foot care (including cleaning the feet with soap and water and avoiding wet work and contact with soil, etc.) and oral antifungals. In curvularia-associated onychomycosis, itraconazole and voriconazole have shown the highest success rate at a dosage of 200 mg - 600 mg daily, and a minimum inhibitory concentration of 0.125 g/mL or less. Other

treatment options include amphotericin B, terbinafine, and echinocandins. Surgical excision can be done in unresponsive or recurrent cases. In disseminated cases initiation of intravenous itraconazole and/or amphotericin B is recommended [4-7].

4. Conflict of Interest

The authors have no conflicts of interest to declare.

5. Funding Source

None.

6. Ethics

Ethical approval is not required for this study in accordance with local or national guidelines.

7. Patient Consent Obtained

Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

8. Data Availability Statement

All data generated or analyzed during this study are included in this article. Further enquiries can be directed to the corresponding author.

9. Author Contribution

TD: conceptualization, data curation, formal analysis, investigation, methodology, validation, writing - original draft, and writing - review and editing; GL: data curation, investigation, original draft, and writing - review and editing; AG: data curation, investigation, writing - original draft, and writing - review and editing; HS: data curation, investigation; OS: investigation, validation, and writing - review and editing.

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