

## Case Report

### Onychomycosis by *Syncephalastrum racemosum* a rare non-dermatophyte mould: Case Report from Karnataka, India.

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#### Abstract

Onychomycosis is a common nail infection caused by two groups of pathogenic fungi, dermatophyte and yeast. However, in a small portion of the cases, the etiological agents are non-dermatophyte moulds, belonging to different genera and species. Among the non-dermatophytes, the yeast like *Candida albicans*, *Candida tropicalis*, and other moulds like *Scopulariopsis* spp., *Scytalidium* spp, *Fusarium* spp, and *Aspergillus* spp may be responsible.

We are reporting here, a case of onychomycosis in a 45-year-old female who is non-diabetic, immunocompetent patient, due to *Syncephalastrum racemosum* which is a rare non dermatophyte mould and its complete improvement with oral Itraconazole and topical Nystatin combination. The affected nails were clipped after disinfecting the surface and collected in sterile container. The nails were subjected for potassium hydroxide wet mount and fungal culture was done on Sabouraud Dextrose Agar with cycloheximide. The culture slants were incubated at 37°C. The growth observed on the slants was identified using Lacto phenol cotton blue (LPCB) by morphological characteristics.

**Keywords:** Onychomycosis, *Syncephalastrum*.

#### Introduction

Onychomycosis is a fungal infection of the nail that expands slowly and if left untreated the nail become discoloured, thick, and more likely to crack and break which results in complete destruction.<sup>1</sup> The non-dermatophyte fungi are normally seen in soil and decayed plant debris. These are generally considered as the secondary pathogens of onychomycosis.<sup>2</sup> Onychomycosis accounts for 30% of all dermatophyte infections, among which 18–40% are nail disorders.<sup>3</sup>

Prevalence of onychomycosis among general population ranges from 2% to 28% and is most commonly seen in specific populations such as in HIV, diabetes mellitus, immunosuppressed and elderly.<sup>4,5</sup> Onychomycosis is usually dermatophytic infection (99%) and/or rarely non-dermatophytic, including yeasts (1%).<sup>3</sup> Among the non-dermatophytes, the yeast *Candida albicans*, *Candida tropicalis*, and other moulds like *Scopulariopsis* spp, *Scytalidium* spp, *Fusarium* spp, and *Aspergillus* spp. may be responsible. To the best of our knowledge, only few cases were reported in the medical literature and similar case was reported from Kerala in a diabetic patient.<sup>2</sup> Here, we are reporting a case of onychomycosis in a 45-year-old female who is non-diabetic, immunocompetent patient, due to *Syncephalastrum racemosum* which is a rare non dermatophyte mould and there was complete improvement with oral Itraconazole and topical Nystatin combination.

#### Case report

A 45-year-old female patient developed an injury to great toe nail of left leg while working in

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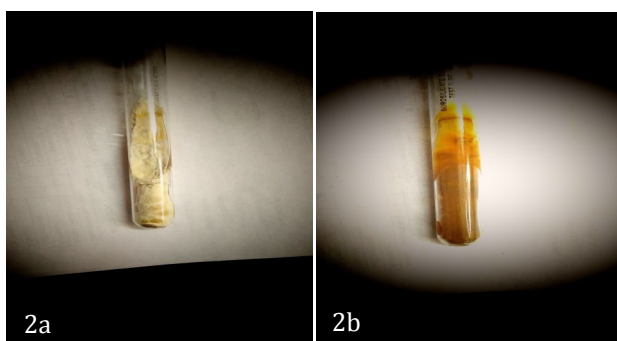
paddy fields 3 months ago. The patient developed pain and swelling of the left great toe following injury for which patient took treatment in a local nursing home where symptomatic treatment was given and pain and swelling reduced after the treatment. But after 2 months of taking treatment patient experienced re-appearance of pain, yellow to brownish discoloration and thickening of nail plate associated with inflammation of surrounding area like redness, swelling and tenderness.

On taking history, she was non-diabetic and immunocompetent. On examination, the nail appeared to be dystrophic with yellowish-brownish discoloration, nail plate thickening and sub ungual hyperkeratosis [Figure 1]. There was no sign of inflammation. The nail clippings were taken and sent to microbiology for potassium hydroxide (KOH) mount and culture. Direct microscopy was done for the nail clippings with 40% KOH which showed thin, hyaline, aseptate and branched hyphae suggestive of one of the zygomycetes. The nail clippings were cultured on two different agar tubes containing Sabouraud Dextrose Agar with and without cycloheximide and the tubes were incubated in biological oxygen demand (BOD) incubator at 37°C for. The tube without cycloheximide showed aerial mycelia [Figure 2a and 2b] but no growth was seen in tube containing SDA with cycloheximide. The mycelial growth was subjected for direct microscopy using Lacto phenol cotton blue (LPCB) mount which showed broad, aseptate, branching hyaline, ribbon like hyphae and fruiting bodies resembling *Aspergillus*. The mycelial growth was put up for slide culture for studying better morphology of the fungal elements and kept in moist chamber. After 48 hours, the slide culture was examined for conidiation. LPCB mount was prepared from the slide culture set which showed hyaline aseptate hyphae branching at right angles i.e., sporangiophores. Sporangiophores terminated in to a columella with cylindrical merosporangia along the entire circumference [Figure 3]. Hence the isolate was identified as *Syncephalastrum racemosum*. Since the isolate is environmental contaminant, it was reconfirmed by taking another sample from the patient during next visit.

**Figure 1: Clinical picture of affected geat toe nail.**



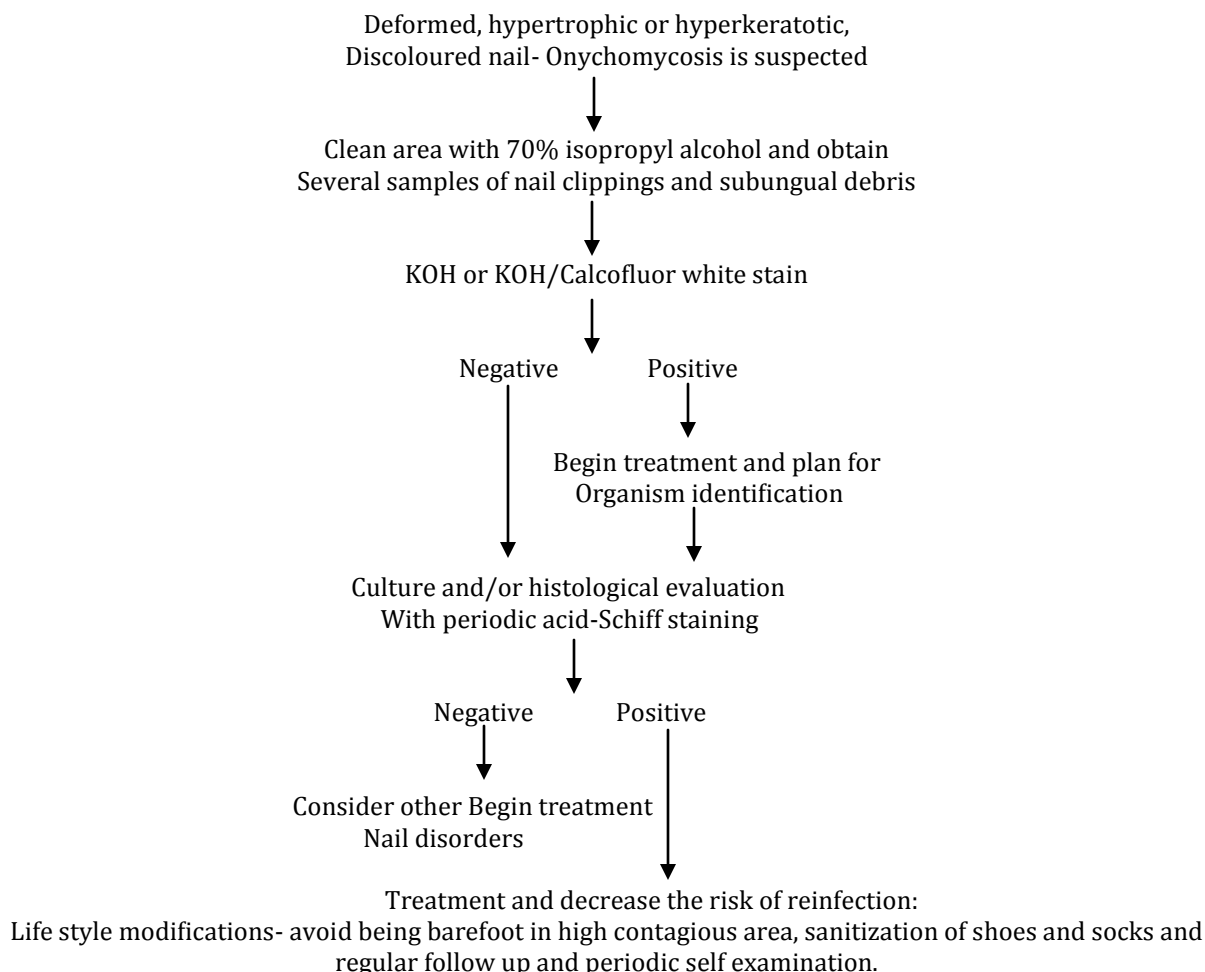
**Figure 2a and 2b: SDA slates with growth of fungus on obverse and reverse.**



**Figure 3: LPCB mount showing hyaline aseptate hyphae with cylindrical merosporangia along the entire circumference.**



### Proposal plan for diagnosis and management of toenail onychomycosis



### Discussion

Onychomycosis is traditionally broached as non-dermatophytic infection of the nail<sup>6</sup>. Non-dermatophyte moulds cause 2% of total cases of onychomycosis.<sup>3</sup> Only four cases of onychomycosis caused due to *S. racemosum* have been reported previously.<sup>4-7</sup> *Syncephalastrum racemosum* has been isolated from normal finger and toe nail clippings from several Egyptian students with no clinical disease presentation, creating uncertainty whether this fungus is a pathogen or not. It is usually described as having low pathogenic potential in immunocompetent host by Ribes AJ et al.<sup>8</sup> A previous history of nail trauma is a known predisposing factor for non-dermatophyte mould onychomycosis.<sup>8</sup> In our case the patient used to work in paddy fields and there is history of trauma while working from where she could have acquired the infection. The typical microscopic features and culture findings on two

different occasions in the absence of any other growth of fungus supports the pathogenicity of *Syncephalastrum* in our case. Although not life threatening accurate diagnosis through microbiological confirmation of the isolate is necessary to considerably diminish the discomfort by choosing the appropriate antifungal agents.

### Conclusion

Since *Syncephalastrum racemosum* has broad aseptate hyaline hyphae branching at right angles i.e. sporangiophores and the sporangiophores terminated in to a columella with cylindrical merosporangia, it closely mimics *Aspergillus* species in microscopy and is usually considered a contaminant, the isolate should be reconfirmed with duplicate sample for unerring diagnosis and to choose appropriate antifungals.

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