OPEN ACCESS
Saudi Journal of Pathology and Microbiology
Abbreviated Key Title: Saudi J Pathol Microbiol
ISSN 2518-3362 (Print) |ISSN 2518-3370 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com/sjpm

Original Research Article

A Study on Onychomycosis in Patients Attending Tertiary Care Hospital

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DOI: 10.36348/sjpm.2020.v05i03.007 | **Received:** 22.02.2020 | **Accepted:** 04.03.2020 | **Published:** 18.03.2020

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Abstract

Etiological agents causing infection in the nails vary with gender, age, occupation, A total number of 51 patients having clinically diagnosed Onychomycosis were selected, Direct microscopy of nail specimen in 40% KOH, culture on SDA, DTM was done. out of 51 patients, 17 were between 20-30 years of age (33.33%),out of 51 patients 33 were males and 18 were females, 27 patients (52.94%) had DLSO pattern, Of the 32 positive cultures, Dermatophytes were isolated in 10 (23.80%) and Non-Dermatophytes in 15 (29.41%). Non-Dermatophyte fungi are being isolated more frequently from nail infections.

Keywords: Onychomycosis, non dermatophytes, SDA, Trichophyton sps, Aspergillus sps.

INTRODUCTION

Onychomycosis is fungal infection of the nail with various etiological agents, viz. dermatophytes, yeasts and non-dermatophyte moulds (NDM), NDM are identified as most common etiological agents in causing nail infection [1-3]. Onychomycosis in immunocompromised patients, can pose a more serious health problem [4]. Not only does the difficult-to-treat infection serve as a constant reminder to the patient of his or her own deteriorated condition, but the possibility exists of transfer of a very high titer of fungal pathogens to another person [4]. The modern health movement and the associated use of occlusive footwear and locker rooms, and migration of people, promoted an increased incidence of onychomycosis [5]. Dermatophytoses of the fingernails and toenails, in contrast to those at other body sites, are particularly difficult to eradicate with drug treatment. This is the consequence of factors intrinsic to the nail—the hard, protective nail plate, sequestration of pathogens between the nail bed and plate, and slow growth of the nail—as well as of the relatively poor efficacy of the early pharmacologic agents This study was done to identify the clinical pattern and isolate the common fungal pathogens responsible for causing onychomycosis so appropriate treatment given.

MATERIALS AND METHODS

A total number of 280 patients were screened and 51 patients having clinically diagnosed Onychomycosis were selected.Informed consent was taken from them explaining the details in their own language.In all the 51 cases, data related to the age gender, occupation, Nail involvement etc. were noted, COLLECTION OF SPECIMEN: The specimen was collected from the affected portion of the nail bed. Nails were scraped/clipped near the bed, thorough cleansing of the nail area with alcohol to remove contaminants. Using a no.15 surgical blade, nail plate was removed sufficiently with white debris collected in a sterilized brown paper and kept in sterile labelled container. The specimen was processed on the same day SPECIMEN ANALYSIS: Direct microscopy was done after overnight incubation of the nail specimen in 40% KOH for the presence of fungal mycelia and spore, All the nail specimens were washed with absolute alcohol and cultured on, Sabouraud dextrose agar (SDA) with Chloramphenicol,SDA with Chloramphenicol and Cycloheximide, Dermatophyte test medium (DTM). Cultures were incubated at 25 and 37c for 4weeks, if any growth detected identified by colony characters and Lactophenol cotton blue preparation, slide cultures done if required.

RESULTS

In our study, out of 51 patients, 17 were between 20-30 years of age (33.33%), 18 were between 31-40 years of age (35.29%), 14 were between 41-50 years of age (27.45%) and 2 were between 51-60 years of age (3.92%).Out of the 33 male patients, 24 were manual labourers, 5 were farmers and 2 were vegetable vendors, while 2 were others. Out of 18 female patients, 8 were house wives, 6 were labourers and 4 were dhobis.

Clinical patterns and Nail involvement of Onychomycosis

Clinical pattern	Finger nails only	Toe nails only	Both finger nails and toe nails	Total
DLSO	02 (3.92%)	23 (45.09%)	02 (3.92%)	27 (52.94%)
PSO	01 (1.96%)	01 (1.96%)	-	02 (3.92%)
WSO	01 (1.96%)	06 (11.76%)	02 (3.92%)	09 (17.64%)
TDSO	03 (5.88%)	02 (3.92%)	08 (15.68%)	13 (25.49%)
Total	07 (13.72%)	32 (62.74%)	12 (23.52%)	51 (100%)

KOH and Culture positivity of the samples

KOH and Culture results	Sample	Percentage
Total KOH positive	33	64.70
Total KOH negative	18	35.29
KOH positive, Culture negative	11	21.56
Culture positive, KOH negative	10	19.60
Both positive	22	43.13
Both negative	08	15.68
Total Culture positive	32	62.74
Total Culture negative	19	37.25

Dermatophyte Isolates

Organism	Total
Dermatophytes 10 (23.80%)	
Trichophyton mentagrophytes	04 (9.52%)
T.verrucosum	02 (4.76%)
T.rubrum	01 (2.38%)
Epidermophyton floccosum	03 (7.14%)

Non Dermatophyte Isolates

Non-dermatophytes 15 (29.41%)	
Aspergillus spp.	04 (26.66%)
Epicoccum spp.	03 (20%)
Curvularia	02 (13.33%)
Fusarium	02 (13.33%)
Scopuloriopsis	02 (13.33%)
Trichosporon beigelii	01 (6.66%)
Scytalidium dimidiatum	01 (6.66%)

Yeast Isolates

Yeasts 7 (16.66%)	
Candida albicans	04 (9.52%)
Other Candida spp.	03 (7.14%)
No growth 19 (37.25%)	19 (37.25%)

Of the 32 positive cultures, Dermatophytes were isolated in 10 (23.80%) and Non-Dermatophytes in 15 (29.41%). Out of 10 positive dermatophytic cultures; *T.mentagrophyte* was grown on 04(9.52%), *Epidermophyton floccosum* 03 (7.14%), *T.verrucosum* 02 (4.76%), *T.rubrum* 1 (2.38%). Out of the 15 non-dermatophytic cultures *Aspergillus spp.* was isolated on 4(26.66%), *Epicoccum spp.* on 3(20%), *Curvularia* on 2(13.33%), *Fusarium on* 2(13.33%), *Scopuloriopsis* on 2(13.33%), *Trichosporon beigelii* on 1(6.66%), *Scytalidium dimidiatum* on 1(6.66%). *Candida species* were isolated on 7 (16.66%). Out of 7 isolates, 4 were *C.albicans*, 3 were non-albican species.

DISCUSSION

Most of the men in our study were manual labourers. We found a high incidence of onychomycosis in a age group of 20 to 30yrs which could be the result of occupation related trauma. Males are more predominant in our study may be due to occupation which is one of the predisposing risk factor. Higher incidence was noted amongst males (33) than females, which compares well with most of the studies [6].

We identified Non dermatophytes, especially Aspergillus spp, to be the most common etiological agents in onychomycosis, and Distal & Lateral Subungual Onychomycosis to be the common clinical pattern, which has been reported earlier [3]. In the present study Dermatophytes were 23.8% among this Trichophyton mentagrophytes is the most common which correlates with the study done by Grover *et al*., [7], The high incidence of DLSO pattern has been reported in our study comparable to. Garg *et al*., [8], In the present study we have come across more cases of fingernail onychomycosis, than toe nail.

CONCLUSION

Non-Dermatophyte fungi are being isolated more frequently from nail infections. Isolation of the etiological agent is important for proper treatment selection.

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