ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Comparative Study On Prevalence Of Onychomycosis In Psoriatic And Non Psoriatic Patients Attending Skin OPD In Tertiary Care Hospital, Chennai Tamil Nadu, India.

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ABSTRACT

Onychomycosis, the common important infection caused by fungal pathogens. This infection was occur in the 50% of nail abnormalities. Psoriasis patients were found with these nail abnormalities including chronic inflammation and hyper proliferative skin conditions finally turns onychomycosis. To study the prevalence of fungal infection of nail in Psoriatic and Non-Psoriatic patients who attending the dermatology outpatient department in a tertiary care hospital, Chennai. This present study was conduct by the department of microbiology in the outpatient unit of dermatology during the month of January to June 2015. 50 Psoriatic and 50 non-Psoriatic patients were investigated for the study. Scrapings of both toenails and fingernails (which are clinically abnormal) were examined under microscopy and culture was done for all the collected samples. A prevalence of onychomycosis among patients with psoriasis (48%) and without psoriasis (26%) was found, the non-psoriatic patients attending the skin OPD regularly for skin problems. The prevalence of fungal infection of nails is higher in male and in elderly patients of both psoriatic and non-psoriatic patients. Higher percentage of dermatophytic moulds was found in patients with psoriasis. There is an increased prevalence of onychomycosis in male patients with psoriasis.

Keywords: Onychomycosis, Psoriatic Patients, Non psoriatic patients.

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ISSN: 0975-8585

INTRODUCTION

Onychomycosis, the fungal infection of nails is a very common nail disorder[1]. The prevalence of onychomycosis is varied among the Psoriatic patients [2]. The frequency of fungal infection of nails increases with age and more often seen in male than in females [2]. *Tricophyton rubrum*, a dermatophyte is the most common etiologic agent of onychomycosis followed by non-dermatophytic moulds and yeast [2]. Psoriasis is a chronic, inflammatory, hyperproliferative, which predominantly involves skin [3]. Often the psoriatic patients have abnormalities of the nails, such as oil spots, pitting, thickening of the nail, sub-ungual hyperkeratosis and also change in the nail colour [1, 2].

These psoriatic changes in the nails can also co-existence with onychomycosis [1, 4]. The psoriatic changes of the nail may resemble onychomycosis (the fungal infection of nails) to some extent and make it difficult to differentiate from it [5, 6]. In the present study the prevalence of Onychomycosis infection in psoriatic and normal skin patients were investigated for the infectivity at Agewise and sexwise distribution at tertiary care hospital Chennai.

MATERIALS AND METHODS

Study Population

The study was conducted during the period of January 2015 to June 2015, information were got from 50 psoriatic patients (34 males and 16 females from the department of dermatology outpatient clinic at tertiary care hospital, Chennai) and 50 non-psoriatic patients (31 males and 19 females, without any nail disorders).

Collection of samples

Samples were segregated and collected from Psoriatic and Non Psoriatic Patients. The control group (non-psoriatic) included were patients aged between 17-64years (median of 40 years). The Psoriatic patients age ranged from 16 to 58 years (median 44 years) duration of the condition was between 18 months and 40 years. The psoriatic were identified as 7 types of palmo-plantar psoriasis and 43 plaque type of psoriasis.

Culture and Detections of Fungal Pathogens

Nail scrapings were collected from the patients and examined under direct microscopy and all the samples were cultured in two different sabouraud dextrose agar (one with cyclohexamide which is selective for dermatophytic moulds and candida albicans, the other one without cyclohexamide to isolate other yeasts and non-dermatophytic moulds). At 28 C all the cultures were incubated for 2-7 weeks until colonies developed. Macroscopic and microscopic examination of the colonies for the identification of fungus was done. If both the direct microscopy and the culture were positive, it is included in the study.

Exclusion Criteria

- Patients on antifungal treatment (systemic and topical).
- Patients with proven fungal diseases of skin and nail.

RESULTS

The prevalence of onychomycosis in patients with psoriasis was observed as 48% and non-Psoriatic patients (26%) shown in table-1. Age and Gender wise distributions of population showed that, the prevalence of fungal infection of nails, results high in male and elderly patients (Table 1). The types of psoriasis and the duration of the condition was also play an vital impact over the prevalence of fungal infection of nails. The prevalence plaque type psoriasis was higher in patients than the palmo-plantar psoriasis (Figure 1a). The longer the disease present, fungal infection of nails prevailed more (Figure 1b). The distribution of the fungal isolates was found as 58.3% of dermatophytes viz.,*T.rubrum* (42.8%) *T.mentagrophytes* (28.5%) *E.floculossum* (28.5%) shown in table-2. 33.3% of yeasts and 8.3% other moulds were identified in the psoriatic

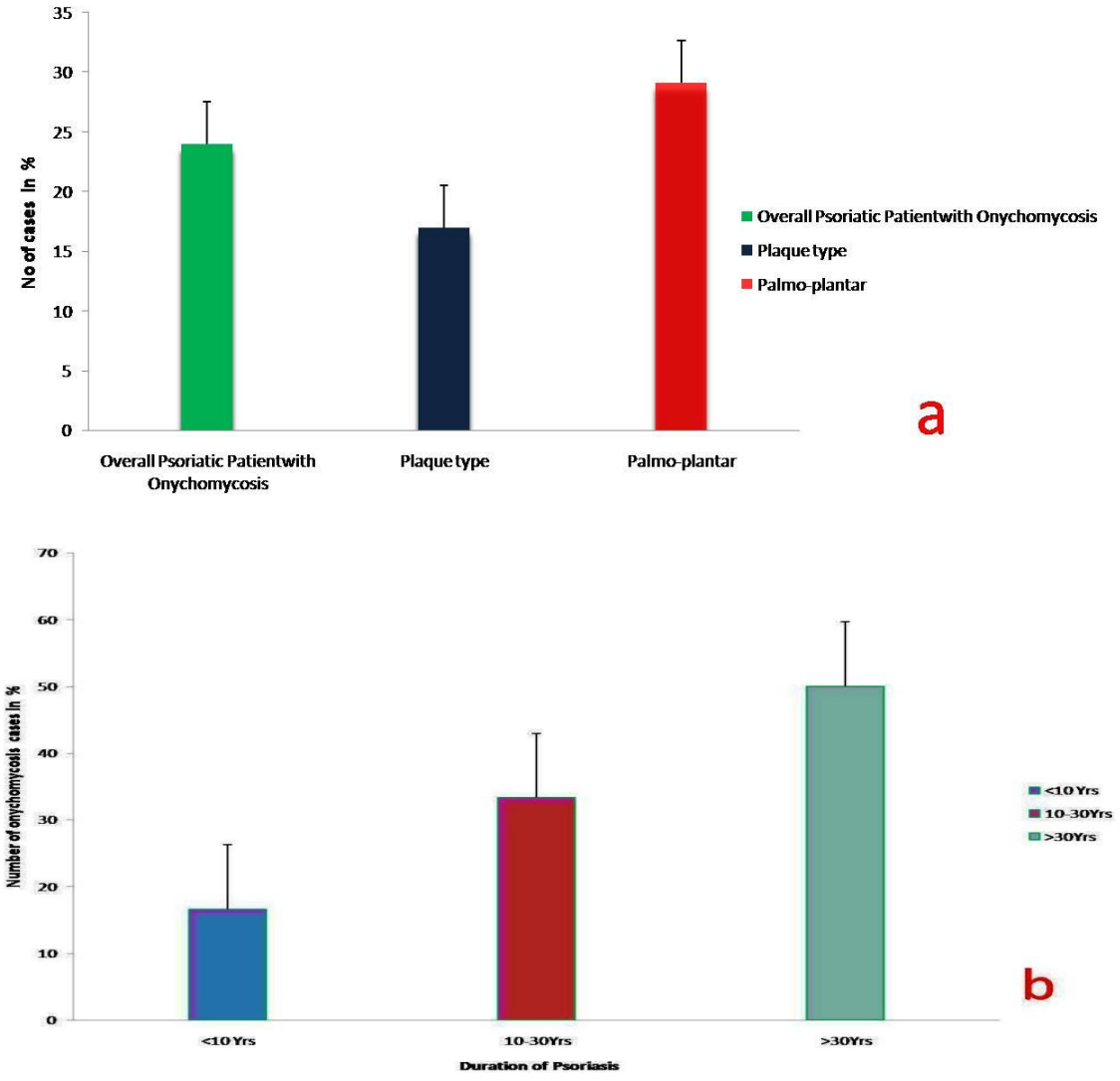
ISSN: 0975-8585

patients. In non-psoriatic patients the distribution was observed as 38.4% of dermatophyes, 38% of yeast and 23% of other moulds (Table 2).

Table 1: Statistical data of psoriatic and non-psoriatic patients

Description	Psoriatic patients			Non-Psoriatic patients		
	Overall	Male	Female	Overall	Male	**Female**
Number of Patients : n (%)	50(100)	34(68)	16(32)	50(100)	31(62)	**19(38)**
Patients with onychomycosis (positive for both KOH and cultures) n (%)	24(48)	18(85)	6(25)	13(26)	11(84.6)	**2(15.3)**
Age (years)	17-64	30-64	17-62	16-58	22-58	**16-54**
Confirmed Patients with onychomycosis at different age groups	**40-60**	**40-55**	**45-60**	**38-49**	**40-49**	**41-45**

Figure-1a: Comparison of Psoriasis types, b : Duration of psoriasis in Onychomycosis patients



ISSN: 0975-8585

Table 2: Identification and distribution of Fungus among psoriatic and non-psoriatic patients

Microorganisms	Number of Psoriatic Patients in %	Number of Non Psoratic Patients in %
Candida albicans	3 (37.5)	3(60)
Candida Glabrata	3 (37.5)	1(20)
Candida Krusei	2(25)	1(20)
Yeast	**8(33.3)**	**5(38.4)**
Trychophyton rubrum	6(42.8)	3(60)
Trychophyton Mentagrophytes	4(28.5)	1(20)
Epidermophyton flucculosum	4(28.5)	1(20)
Dermotophytes	**14(58.3)**	**5(38.4)**
Aspergillus flavus	1(50)	1(33.3)
Aspergillus niger	1(50)	1(33.3)
Total Other Moulds	**2(8.3)**	**3(23)**

DISCUSSION

The recent dermatological literatures indicate that there is no relationship (or) any co-existence between the psoriatic condition and onychomycosis. Likely Hamnerius et.al, 2004 states that there is no difference in the fungal infections of nails between the psoriatic and general population [7]. Similarly Lasrson G.K.et.al.2003 also highlights that there is no relationship in fungal infection of nail between psoriatic patient and patients with other skin disease [8]. Based on their results, it was developed and hypothesized that, due to rapid growth in the nails of psoriatic patients, opportunity of the fungal pathogens invade the psoriatic nails is decreased and thereby it checks the prevalence of fungal infection of nail.

This present study compares and found that prevalence of onychomycosis or the fungal infection of nails (48%) is more in the psoriatic patients in which the dermatophytes (58.3%) includes *Trychophyton rubrum* (42.8), *Trychophyton Mentagrophytes* (28.5), *Epidermophyton flocculosum* (28.5) which are the most frequent fungus which is isolated from the psoriatic patients. Further our study was coincide with reports of Gupta et al 1997 [9] and Kacar et al [10] 2007 on the psoriatic nails have risk factor for fungal infection of nails specifically by the dermatophytic moulds. The possible theory which explain that due to abnormal microcirculation (or) the capillary unit in the psoriatic nails affects the normal defense contributed by the hyponychium, which predispose the fungal infection in the psoriatic patient [9,13,14].

The yeast isolates were indicated as 33.3% in psoriatic and 38.4% in non-psoriatic patients with other skin diseases in this study, which is controversial to the earlier reports of Larsen et al 2003 [8], and Stander et al 2001 [11], and our study demonstrates that the higher probability of onychomycosis infection was caused by the dermatophytes.

The prevalence of other non-dermatophytic moulds in causing in psoriatic patients is revealed as 8.3% and 23% in non-psoriatic patients, while Szepes 1964 [12] found non- dermatophytic moulds having higher probability, and they all also found that the prevalence of onychomycosis did not differ between psoriatic and non-psoriatic patients.

In both the non-psoriatic and psoriatic patients, there is a high prevalence of fungal infection of nails in males and regarding age more fungi were isolated from elderly patient and it is agreement with Leiberici et.al [1], who states the prevalence of the fungal infection nail increases with age due to the reduced growth of nail when compared to young age. The plaque type psoriasis has more prevalence than the palmo-plantar psoriasis, and the duration of the disorder were also have a impact over the prevalence these are coincide with the results of Ver leibovici etal ,2008 [1].

CONCLUSION

The present study highlights that, there is a high prevalence of onychomycosis in psoriatic patients (48%), with higher percentage of dermatophytic moulds. In both psoriatic and non-psoriatic patients the prevalence of fungal infection of the nail was higher in males than females. In the age group distribution the elderly patients indicates the highest infection rate than the young. The duration and the type of psoriasis were also have an impact over the prevalence of onychomycosis. We suggested that all the psoriatic patients

with nail changes should be tested for the presence of fungi for the early diagnosis and management of the onychomycosis.

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