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Original Article

Nail changes in psoriasis: A hospital based clinico-epidemiological study

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Abstract

Background Psoriasis is a common immune mediated, multifactorial disease which is caused by genetic heterogeneity and phenotypic diversities.[1] It is characterized by red, scaly, sharply demarcated, indurate plaques mostly over scalp and extensor surface affecting 2-3% global population.[3,4] Beside cutaneous involvement, nail involvement is quite common in psoriasis patient (50%) and 5% cases had only nail involvement.[5,6]

Objective To assess the frequency, types of nail involvement in psoriasis patient and its association with the disease severity.

Methods Institution based Cross-sectional study on 100 consecutive patients attending Outpatient department was done for a period of 1 year March 2019 to February 2020.

Results 48% have nail changes with male having twice that of female. The mean age of the patients having nail changes was 42.450 with SD 13. Isolated finger nail and Toe nail involvement was noted in 52% and 1%, while 46% have both. Majority nail changes were pitting (68%), distal onycholysis (38%), longitudinal ridging (25%), subungual hyperkeratosis 22%, proximal onycholysis 19%, transverse ridging 8% etc.77% patient with nail changes has disease duration less than 5 years. Frequency of nail changes was noted highest in patient with severe disease (64.58%).

Conclusion Psoriatic nail changes are common in psoriasis patients. Severe nail psoriasis can lead to functional and social impairment if left untreated. An association was noted between severity of psoriasis and nail changes but elaborate study with large samples are required to establish that relationship.

Key words
Nail psoriasis; Pitting; Onycholysis; Ridging; Subungual hyperkeratosis.

Introduction

Psoriasis is a common immune mediated, multifactorial disease caused by phenotypic diversity and genetic heterogeneity. The condition was first described by Celsus who referred psoriasis as "impeto". The biblical term "Tsaraart" represents a range of skin condition including eczema, leprosy and psoriasis.[1,2] It is a chronic, inflammatory condition of skin characterized by red , scaly, sharply demarcated indurate plaques mostly over scalp and extensor surface affecting 2-3% of global populations.

Besides many cutaneous and systemic manifestations nail involvement is quiet common in psoriasis. About 50% psoriatic patients have been reported with nail involvement[5,6] and only 5% cases without skin

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manifestation are seen. Nail changes are significantly more common in patient with moderate to severe psoriasis, longer duration (>5 yrs.) and with age (>50 yrs.). Nail involvement with most common manifestation include pitting, beau line, leukonychia, oil drop sign, salmon patch, onycholysis, subungual hyperkeratosis, splinter hemorrhage.

There is lack of data regarding association between nail changes and psoriasis in our country.

Methods

This institution based cross sectional study includes consecutive psoriatic patients attending the Outpatient Department of Medical College and Hospital. Clinically diagnosed new cases of all age group are included in the study. Patients with other papulo-squamous skin disease, chronic systemic disease, terminally ill and mentally disabled patients were excluded from the study. The study period was from March 2019 to February 2020. Hundred consecutive patients were taken. A detailed history and clinical examination including dermatological and systemic were taken and then different types of nail changes were recorded. Severity was graded as per PASI (psoriasis area severity Index). Skin and nail biopsy done in doubtful cases. Routine and relevant investigations were done when required. Nail severity was graded as per NAPSI (Nail psoriasis severity index)

Results

Among the total 100 patients 57 were male and 43 were female. 48% have nail changes **(Table 1)**. Among patient with nail changes 64% were male and 32% were female. The age distribution among the study subjects is 42.40±13.43 and among those with nail involvement is 38.18±11.36. However this difference is statistically insignificant (p=0.096).

Table 1 Frequency distribution types of psoriasis among study population (n=100).

Psoriasis types	*Male*	*Female*	*Total (n=100)*
Chronic Plaque	42	35	77(77%)
Scalp	2	2	4(4%)
Guttate	3	2	5(5%)
Palmoplantar	4	2	6(6%)
Erythrodermic	4	1	5(5%)
Nail	1	0	1(1%)
Pustular	0	0	0(0%)
Psoriatic Arthritis	1	1	2(2%)

Our study shows majority of patient with only finger nail (52%) involvement followed by both finger and toe nail (46%) involvement and only single case with only toe nail involvement (2%). However when considering finger nail involvement (94%) and toe nail involvement (46%), p value is significant with value 0.01.

82% cases are of less than 5 years duration and 18 are of more than 5 years duration. 37 cases with nail changes are of less than 5 years duration. 37 cases with nail changes are of more than 5 years duration. However no statistical significance is observed in between the duration and nail changes (p>0.05, Chi square 0.49).

The Rank sum test between Nail Psoriasis Severity Index and Psoriasis Area severity Index is calculated. The z value is 2.2788 and p value 0.01, which prove association between severity of psoriasis and severity of nail psoriasis.

Discussion

Psoriasis, a chronic inflammatory disease of autoimmune origin is characterized by erythematous, scaly plaques of various size on skin.[7] Classical disease in addition to skin also involves nail and joints. Nails can be involved in up to 50% of cases and their involvement remains an important yet overlooked aspect of psoriasis.[8] Nail changes are often associated with Psoriatic arthritis.[9] Nail psoriasis affects patients of both sexes but frequency increase

with age.[10] Severe nail psoriasis can lead to functional and social impairment if left untreated.[11]

In our study the sex distribution among cases did not match with normal epidemiological trend of psoriasis. In the literature, it was known that psoriasis affects both sexes equally worldwide but in our study; we found increased prevalence of psoriasis among the males (57%) than the females (43%). Some others studies in India also reported an increased prevalence in males.

Our study shows nail involvement in 48%while the rest had normal nails. Out of 48 cases of nail involvement 66.67 % were male and rest are females **(Table 1)**. This finding was similar to study by Alexander EMY et al.[8] Johann et al also reported a frequency of more than 50% nail changes in psoriasis.[12] Others studies also reported 2/3rd of patients having nail involvement in psoriasis.[13,14]

Finger nail versus Toe nail involvement Our study supports Langley et al[19] and Ghosal et al[20] study finger nail alone were affected with highest frequency followed by both nail, while toe nail is least affected.

Pattern of nail changes Our study showed pitting as the most common nail changes in psoriasis (68.75%) followed by distal onycholysis, longitudinal ridge, and subungual hyperkeratosis **(Table 2)**. This is consistent to previous studies.[18,20] Color changes either diffuse or in the form of oil drop sign has been reported in psoriasis.[8,20] Such color change was noted with a lesser frequency in our study which in turn is consistent with past studies.

Subungual hyperkeratosis was also observed with high frequency; however it may be seen irrespective of the severity.[8,18,20,21]

37 seven patient (77%) have been suffering from psoriasis more than 5 years while 23% for less than 5 years. This has no statistical association which is similar to past study.[12] Only 2% patient presented with psoriatic arthropathy and both showed nail changes. Our study includes 58% severe psoriasis, 36% moderate psoriasis and 6% mild psoriasis. Of the 48 patient having nail involvement, two have mild psoriasis (4.17%), Fifteen have moderate psoriasis (31.25%) and 31 have severe psoriasis (64.58%). So frequency of nail psoriasis increases with the severity of the disease, which is consistent with previous studies.[15,16] There is also a direct correlation between NAPSI and PASI with severity of psoriasis. This seems to be in agreement with previous reports.[10,17]

Table 2 Frequency distribution of nail changes in psoriasis patients. (n=48).

Types of nail changes	*Frequency (n=48)*
Pitting	33 (68%)
Longitudinal Ridging	12 (25%)
Transverse Ridging	4 (8%)
Distal Onycholysis	15 (38%)
Proximal Onycholysis	9 (19%)
Subungual Hyperkeratosis	11 (22%)
Dyschromia	4 (8%)
Beau's Line	3 (6%)
Melanonychia	1 (2%)
Oil drop	1 (2%)
Leuconychia	1 (2%)

Conclusion

Different studies have been conducted in different parts of India from time to time.[8,18,20,21] However true picture was not reflected due to small sample size. Our study is also not conducted on a large scale. However the study has provided important insights to the association of psoriasis and nail changes. Although there have been a number of advances in the treatment of psoriatic nail disease it is uncertain whether they are adopted widely in clinical practices. We have emphasized the correlation between the severity of nail diseases and skin disease an aspect which was ignored

previously. However further prospective studies including larger sample size are needed to establish our observation.

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