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Original Article

Prevalence of various types of nail involvement in psoriasis and its relevance to clinical presentation

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Abstract

Objective To determine the frequency of nail changes in patients of psoriasis to Dermatology Department of Services Hospital, Lahore.

Methods It was a cross-sectional survey conducted in the Department of Dermatology, SIMS/ Services Hospital, from September 2022 to March 2023. 80 patients of psoriasis were enrolled. Detailed history and examination for psoriasis was done. All patients underwent evaluation for nail changes (as per operational definition). The presence/absence of nail changes was recorded on a pre-designed proforma (annexure).

Results In this study, mean age of patients was 27.24±4.57 years, 59 (73.8%) were male whereas 21 (26.3%) were females, 55 (68.8%), moderate in 17 (21.3%) and severe in 8 (10%) of the cases. Descriptive statistics of nail changes of patients in psoriasis shows 72 (90%) had pitting, 64 (80%) had Onycholysis, 24 (30%) had Splinter Haemorrhage, Oil Drop Discoloration in 71 (88.8%) and Subungual hyperkeratosis in 64 (80%) of the cases.

Conclusion We found pitting as the leading nail change in psoriatic disease followed by Oil Drop Discoloration and Onycholysis. Psoriasis can significantly impair a patient's quality of life. Nail changes can significantly affect cosmetic concerns of the patients and need to be addressed adequately and timely.

Key words
Psoriasis; Nail changes; Association; Quality of life.

Introduction

Psoriasis vulgaris is a relatively common immune-mediated skin[1] disease suffered by about 2% of world's population.[2] About 15 to 79% of patients suffering from psoriasis has nail changes, with a lifetime incidence of getting nail psoriasis of 80–90%.[3]

The involvement of nail unit may predict inflammatory changes in joints. The clinical manifestations of nail psoriasis may manifest in a number of ways, like discoloration of nails, onycholysis, subungual hyperkeratosis and pitting. The clinical appearance depends upon the part of the nail unit damaged by the disease. These distorted and discoloured nails not only impair the quality of life of patients, but may also cause serious functional impairment in carrying out daily activities.[4]

The exact pathogenesis of nail disease in psoriasis is not clear, but it may be multifactorial. These factors include genes, immunological, and exogenous factors. Researchers across the world have shown that genetic factors in pathogenesis of nail psoriasis are not fully understood, however, an aberrant innate immune system is considered to be the stronger associated factor.[5]

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Regarding nail psoriasis, the national and international statistics vary significantly which may be due to difference in demographics or genetics, therefore, we wanted to re-evaluate these findings in our setup. This data from our population may assist in further research to reflect the nature of the disease. Our results will be helpful for patients and researchers both.

Since damaged nails may significantly compromise the cosmetic concerns of the patients, therefore, by understanding the enormity and pattern of the problem, the dealing clinicians can play an important role in decreasing the misery and stress of patients to help them better cope with their disease and psychosocial issues. This will lead to better control of this psychosomatic disease.

Materials and Methods

After getting approval from Hospital Ethical Committee, 80 patients of nail psoriasis fulfilling were enrolled from Dermatology OPD of Services Hospital, Lahore. All the patients signed informed consent to get their data collected for the research. Detailed history and examination for psoriasis was done. All the patients underwent evaluation of nail changes. Presence of the following nail changes was noted and recorded.

Nail Matrix Changes: can include pitting, Beaus lines (longitudinal ridges) and grooves on the nail plate. The most frequent change seen was pitting, individual pits were uniformly sized, almost 1mm in diameter and sometimes seen longitudinally.

Disease of the Nail bed: it appears as subungual oil drops. These are quite specific.

Onycholysis: It is seen as white area on the nail plate due to separation of nail plate from the nail bed.

Subungual hyperkeratosis: It is seen as increased scaling of the nail bed and hyponychium leading to lifting of nail plate.

Discoloration: It may be patchy or diffuse, yellow, brown, or green discoloration of nail plate.

Splinter Haemorrhages: seen on clinical examination. The presence/absence of nail changes was recorded by the researcher on a pre-designed proforma.

The collected data was added to and analyzed by SPSS version 19.0. Means and standard deviations were calculated for variables like age and duration of psoriasis. Percentages and frequencies were used to present variables like patients' gender, severity, pitting, Onycholysis, Splinter hemorrhages, oil drops, subungual hyperkeratosis and discoloration. Stratification for age, gender, severity and duration of psoriasis was recorded to address the effect modifiers. Post stratification chi-square test was applied to see the significance. A p-value of <0.05 was set as significant.

Results

Total number of cases enrolled was 80. The mean age of patients was 27.24±4.57 years. The mean duration of psoriasis was 2.23±0.80 years. Out of 80, 59 (73.8%) patients were male whereas 21 (26.3%) were females, which shows significant male predominance (2.8:1). Regarding severity of disease, mild psoriasis was seen in 55 (68.8%) patients, moderate in 17 (21.3%) and severe in 8 (10%) of the cases.

Descriptive statistics of nail changes showed that 72 (90%) patients had pitting, 64 (80%) had oncholysis, 24 (30%) had splinter haemorrhages,

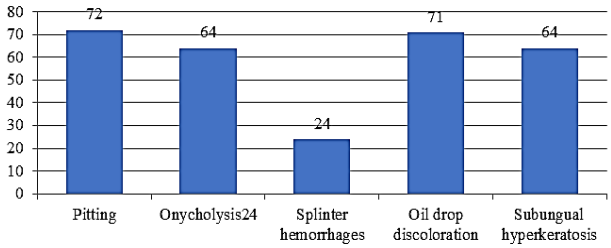

Figure 1 Frequency of various nail changes in patients of psoriasis.

Table 1 Stratification of nail changes in psoriasis by age of patients.

Nail Changes	*Age(years)*		*p-value*
	18-25	*26-40*	
Pitting			
Yes	27(37.5%)	45(62.5%)	0.161
No	5(62.5%)	3(37.5%)	
Oncholysis			
Yes	26(40.6%)	38(59.4%)	0.527
No	6(37.5%)	10(62.5%)	
Splinter Haemorrhage			
Yes	13(54.2%)	11(45.8%)	0.075
No	19(33.9%)	37(66.1%)	
Oil Drop Discoloration			
Yes	28(39.4%)	43(60.6%)	0.521
No	4(44.4%)	5(55.6%)	
Subungual hyperkeratosis			
Yes	26(40.6%)	38(59.4%)	0.527
No	6(37.5%)	10(62.5%)	

Table 2 Stratification of nail changes in psoriasis by gender of patients.

Nail Changes	*Gender*		*p-value*
	Male	*Female*	
Pitting			
Yes	53(73.6%)	19(26.4%)	0.650
No	6(75%)	2(25%)	
Oncholysis			
Yes	45(70.3%)	19(29.7%)	0.139
No	14(87.5%)	2(12.5%)	
Splinter Haemorrhage			
Yes	20(83.3%)	4(16.7%)	0.159
No	39(69.6%)	17(30.4%)	
Oil Drop Discoloration			
Yes	53(74.6%)	18(25.4%)	0.436
No	6(66.7%)	3(33.3%)	
Subungual hyperkeratosis			
Yes	48(75%)	16(25%)	0.413
No	11(68.8%)	5(31.3%)	

oil drop discolorarion was seen in 71 (88.8%) and subungual hyperkeratosis in 64 (80%) of the cases **(Figure 1)**.

Stratification for age, gender, duration and severity of psoriasis was done to address the role of effect modifiers **(Table 1-4)**. No significant effect of any of these factors was noted on frequencies of nail changes as p-value was >0.05.

Discussion

Nail psoriasis is a disabling disease both cosmetically and physically. Pain and difficulty in wearing socks or shoes and performing daily activities is extremely distressing for patients who are already struggling with skin and joint psoriasis.[6] Therefore, a lot of work is being done on the pattern, association and management of nail disease in psoriasis. We concluded from our study that most of the patients had had pitting (72,90%), followed by Oil Drop Discolorarion (71, 88.8%), Oncholysis and Subungual hyperkeratosis were next frequent change seen in 64(80%) cases each, and Splinter Haemorrhages was the least common change seen in 24(30%) patients.

A recent study conducted by Chauhan *et al*.[7] in India, studied nail changes in psoriasis and confirmed their findings by dermoscopy. They too reported Pitting as the commonest (60.5%) change in fingernails, followed by subungual hyperkeratosis (SUH) (52.8%) and onycholysis (40.8%). In toenails, they observed SUH in 85.1%, nail plate thickening in 82.1%, and onycholysis in 77.2% nails. These results were quite similar to our study results, however, we didn't study toe nails separately. Another study by Ijaz Ahmed[8] showed that the most frequent nail finding was roughening seen in 55 patients (93%) followed by transverse ridging and pitting, colour change, thickening, dystrophy, subungual hyperkeratosis, onycholysis and leukonychia. They studied 59 patients with nail psoriasis, which is a small sample. More studies are needed to confirm and correlate the findings.

Table 3 Stratification of nail changes in psoriasis by Duration of disease.

Nail Changes	*Duration of psoriasis (years)*		*p-value*
	1-2	*>2*	
Pitting			
Yes	53(73.6%)	19(26.4%)	0.383
No	5(62.5%)	3(37.5%)	
Oncholysis			
Yes	48(75%)	16(25%)	0.241
No	10(62.5%)	6(37.5%)	
Splinter Haemorrhage			
Yes	20(83.3%)	4(16.7%)	0.124
No	38(67.9%)	18(32.1%)	
Oil Drop Discoloration			
Yes	51(71.8%)	20(28.2%)	0.527
No	7(77.8%)	2(22.2%)	
Subungual hyperkeratosis			
Yes	46(71.9%)	18(28.1%)	0.536
No	12(75%)	4(25%)	

Table 4 Stratification of nail changes in psoriasis by Severity of disease.

Nail Changes	*Severity of psoriasis*			*p-value*
	Mild	*Moderate*	*Severe*	
Pitting				
Yes	48(66.7%)	16(22.2%)	8(11.1%)	0.435
No	7(87.5%)	1(12.5%)	0(%)	
Oncholysis				
Yes	44(68.8%)	13(20.3%)	7(10.9%)	0.813
No	11(68.8%)	4(25%)	1(6.3%)	
Splinter Haemorrhage				
Yes	17(70.8%)	6(25%)	1(4.2%)	0.493
No	38(67.9%)	11(19.6%)	7(12.5%)	
Oil Drop Discoloration				
Yes	49(69%)	15(21.1%)	7(9.9%)	0.988
No	6(66.7%)	2(22.2%)	1(11.1%)	
Subungual hyperkeratosis				
Yes	43(67.2%)	14(21.9%)	7(10.9%)	0.797
No	12(75%)	3(18.8%)	1(6.3%)	

We found significant preponderance of males with nail psoriasis compared to females (2.8:1). This observation was also reported by a number of researchers including Wanniang *et al.*[9] (3.1:1), Daulatabad *et al.*[10] (2.1:1), and Hashimoto *et al.*[11] (5:1). Therefore, it is agreed that men are more prone to develop psoriatic nail disease then women across the world.

Regarding age, our study subjects had a mean age of 27.24±4.57 years which was less than those observed in other studies, Daulatabad *et al.*[10] (36.3 years), Yadav and Khopkar[12] (38.36 years), Wanniang *et al.*[9] (45.02 years), Brazzelli *et al.*[13] (52.53 years), Marina *et al.*[14] (51.89 years), and Hashimoto *et al.*[11] (47.5 years). This difference may be due to our cultural and social norms where only younger people are more concerned about cosmesis and grooming, while older population tends to ignore these changes.

Schons *et al.*[15] reported Onycholysis as the commonest feature (80%). They also concluded significant association of nail changes with longer disease duration (p=0.001) and severity of disease (p=0.044). We couldn't find any significant association with any of the effect modifiers (p>0.5). These differences can be attributed to difference of ethnicity and cultural norms, since they studied Brazilian population.

Nail changes and cosmetic concerns can seriously impair the psychosocial life of psoriasis patients particularly the females. Understanding of these issues and there adequate management can significantly reduce morbidity in these patients. Larger scale studies are recommended to further address and prove our results. However, we have tried to pave the way for further research on the said topic.

Conclusion

In our study we found pitting as the leading nail disorder in psoriatic disease followed by Oil Drop Discoloration and Onycholysis. Dermatologists should pay more attention towards this aspect of the disease and treat it appropriately with available modalities.

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