Original Article

Frequency Of Nail Changes In Patients With Psoriasis At Tertiary Care Hospital Peshawar

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Abstract

Psoriasis is a chronic, immune-mediated, inflammatory disease that affects about 2% of the world population. The disease is caused by genetic and environmental factors, and its exact pathogenesis is still unclear. To determine the frequency of nail changes in patients with psoriasis, a descriptive cross-sectional study was conducted at the Department of Dermatology, Hayatabad Medical Complex, Peshawar, from March 2021 to September 2021. A total of 126 patients with psoriatic nail changes were examined using a consecutive non-probability sampling technique. The mean age of the patients was 43.36 ± 12.03 SD, with the majority falling into the age group of 51-60 years. Female patients (51.6%) were more common than male patients (48.4%). The patients were divided into two groups based on the duration of the disease, with 65.1% having psoriasis for more than 6 months. Fingernails were affected more commonly (68.3%) than toe nails (31.7%). The most common nail finding was pitting (24.6%), followed by onycholysis (19.8%) and subungual hyperkeratosis (19.8%). Ridges were observed in only 1.6% of the patients. The duration of psoriasis was significantly higher in patients with psoriatic nail changes. In conclusion, pitting was the most common nail abnormality observed in psoriatic patients, and the duration of the disease was an important factor in the development of nail changes.

Introduction

Psoriasis is a chronic inflammatory skin condition that affects approximately 2-3% of the worldwide population, making it one of the most prevalent dermatological diseases [1]. This multifactorial disease presents as red, scaly, and thickened plaques that can occur anywhere on the body, including the nails [2]. Nail psoriasis affects up to 50% of patients with psoriasis, making it one of the most common clinical manifestations of the disease [3].

Nail psoriasis can have a significant impact on the quality of life of affected individuals, as it can cause pain, deformity, and difficulty performing daily activities [4]. Moreover, nail psoriasis can be challenging to diagnose and treat, which further adds to the burden of the disease [5].

There are several clinical manifestations of nail psoriasis, including pitting, ridging, onycholysis, subungual hyperkeratosis, and splinter hemorrhages [6]. These nail changes can occur independently or in combination, and their frequency and severity can vary among patients [7].

Several studies have investigated the frequency of nail changes in patients with psoriasis. A study conducted by Dogra et al. evaluated the prevalence of nail changes in 132 patients with psoriasis and found that nail changes were present in 90.9% of patients [8]. Another study by Rich et al. reported nail changes in 80% of patients with psoriasis [9].

The frequency of nail changes in psoriasis may vary depending on the patient population and the severity of the disease. For instance, a study by Pons et al. evaluated the frequency of nail changes in 191 patients with psoriasis and found that nail changes were more common in patients with severe psoriasis [10].

In addition to the clinical manifestations of nail psoriasis, several imaging techniques, such as ultrasound and optical coherence tomography (OCT), have been used to assess nail changes in psoriasis [11, 12]. These imaging techniques can provide detailed information on the nail unit and may help in the diagnosis and monitoring of nail psoriasis [13].
In conclusion, nail psoriasis is a common clinical manifestation of psoriasis that can significantly impact the quality of life of affected individuals. The frequency and severity of nail changes in psoriasis can vary among patients, and their diagnosis and treatment can be challenging. Imaging techniques such as ultrasound and OCT may provide valuable information on nail changes in psoriasis. Further research is needed to better understand the pathogenesis and optimal management of nail psoriasis.

Material and Methods

This descriptive cross-sectional study was designed and conducted in the Department of Dermatology at Hayatabad Medical Complex, Peshawar, from March 28th, 2021 to September 28th, 2021. The study used non-probability consecutive sampling, and the sample size was determined using WHO software, with 126 patients meeting the inclusion criteria. Inclusion criteria were patients between 18-60 years of age, both genders, and cutaneous psoriasis, while exclusion criteria included patients with nail changes secondary to trauma, concomitant systemic disease, psoriatic arthritis or other inflammatory conditions affecting joints, and co-existing dermatological disease other than cutaneous psoriasis. A detailed history and examination were recorded for all study subjects, including clinical findings, and if necessary, a skin biopsy and histopathology examination was performed. Nail changes were noted, and in patients with suspicious fungal infection, further mycological investigations were performed. Data were analyzed using SPSS version 23, and descriptive statistics, frequencies, percentages, and chi-square tests were used to analyze the data. The results were presented in tables and graphs. The study was conducted after obtaining approval from the hospital's ethical and research committee, and written informed consent was obtained from all study participants.

Results

The present study examined 126 patients with psoriatic nail changes, with a mean age of 43.36 years + 12.03 SD. The patients were divided into four different age groups, and the majority of the psoriatic patients were in the age group of 51-60 years as shown in **Table 1**.

Table 1: Age wise distribution(n=126)

Age	Frequency	Percent
18-30 Years	25	19.8
31-40 Years	16	12.7
41-50 Years	42	33.3
51-60 Years	43	34.1
Total	126	100.0

Mean age was 43.36 years $\pm$ 12.032 SD

Females (51.6%) were found to be more affected than males (48.4%) as given in **Table 2**. Patients were also stratified based on the duration of the disease, and it was found that 65.1% of patients had a disease duration of more than 6 months (**Table 3**. Finger nail involvement (68.3%) was more common than toe nail involvement (31.7%) as shown in **Table 4**.

Table 2: Gender wise distribution(n=126)

Gender wise Distribution	Frequency	Percent
Male	61	48.4
Female	65	51.6
Total	**126**	**100.0**

Table 3: Distribution of duration of disease(n=126)

Duration Of Disease	Frequency	Percent
Equal to 6 Months	44	34.9
More than 6 Months	82	65.1
Total	126	100.0

Table 4: Nail involvement(n=126)

Nail Involvement	Frequency	Percent
Finger Nails	86	68.3
Toe Nails	40	31.7
Total	126	100.0

The most common nail finding in the study was pitting (24.6%), followed by onycholysis (19.8%) and subungual hyperkeratosis (19.8%). However, ridges were seen in only 1.6% of patients as given in **Table 5**. Stratification of patients based on age and type of nail changes showed that subungual hyperkeratosis was the most common finding in patients aged between 18-30 years and 31-40 years, while grooves were the most common finding in patients aged between 41-50 years. Onycholysis was the most common finding in patients aged between 51-60 years as given in **Table 6**.

Table 5: Type of nail changes (n=126)

Type Of Nail Changes	Frequency	Percent
Pitting:	31	24.6
Ridges	2	1.6
Grooves	20	15.9
Onycholysis	25	19.8
Subungual Hyperkeratosis	25	19.8
Paronychia	23	18.3
Total	126	100.0

Table 6: Stratification with reference to age andtype of nail changes (n=126)

Age	Type Of Nail Changes						Total	P. Value
	Pitting	Ridges	Grooves	Onycholysis	Subungual Hyperkeratosis	Paronychia		
18-30 Years	0	0	0	1	16	8	25	<0.001
	.0%	.0%	.0%	4.0%	64.0%	32.0%	100.0%	
31-40 Years	1	2	0	0	9	4	16	
	6.25%	12.5%	.0%	.0%	56.25%	25.0%	100.0%	
41-50 Years	18	0	19	2	0	3	42	
	42.85%	.0%	45.23%	4.76%	.0%	7.14%	100.0%	
51-60 Years	12	0	1	22	0	8	43	
	27.9%	.0%	3.32%	51.16%	.0%	18.6%	100.0%	
Total	23	2	31	23	24	23	126	
	24.6%	1.6%	15.9%	19.8%	19.8%	18.3%	100.0%	

Stratification with reference to gender and type of nail changes showed that grooves were the most common finding in males, while subungual hyperkeratosis was the most common finding in females. Stratification with reference to nail involvement and type of nail changes showed that pitting was the most common abnormality in fingernails, while grooves were the most common nail abnormality in toe nails **Tables 7-8**.

Table 7: Stratification with reference to genderand type of nail changes (n=126)

Gender	Type Of Nail Changes						Total	P. Value
	Pitting:	Ridges	Grooves	Onycholysis	Subungual Hyperkeratosis	Paronychia		
Male	9	1	16	15	5	15	61	<0.001
	14.75%	1.64%	26.22%	24.59%	8.2%	24.59%	100.0 %	
Female	22	1	4	10	20	8	65	
	33.84%	1.54%	6.15%	15.38%	30.76%	12.3%	100.0 %	
Total	31	2	20	25	25	23	126	
	24.6%	1.6%	15.87%	19.84%	19.84%	18.3%	100.0 %	

Table 8: Stratification with reference to nailinvolvement and type of nail changes (n=126)

Nail Involvement	Type Of Nail Changes						Total	P. Value
	Pitting:	Ridges	Grooves	Onycholysis	Subungual Hyperkeratosis	Paronychia		
Finger Nails	23	0	11	18	18	16	86	<0.001
	26.74 %	.0%	12.79 %	20.93%	20.93%	18.6%	100.0 %	
Toe Nails	8	2	9	7	7	7	40	
	20.0%	5.0%	22.5%	17.5%	17.5%	17.5%	100.0 %	
Total	31	2	20	25	25	23	126	
	24.6%	1.6%	15.87 %	19.84%	19.84%	18.3%	100.0 %	

Stratification with reference to the duration of disease and type of nail changes showed that onycholysis was seen in 34.09% of patients with disease duration of equal to 6 months, while pitting was the most common finding in patients with disease duration of more than 6 months as presented in **Table 9**. Overall, the present study provides useful insights into the prevalence and distribution of various psoriatic nail changes in a sample of patients, stratified by age, gender, nail involvement, and disease duration.

Table 9: Stratification with reference toduration of disease and type of nail changes (n=126)

Duration Of Disease	Type Of Nail Changes						Total	P. Value
	Pitting:	Ridges	Grooves	Onycholysis	Subungal Hyperkeratosis	Paronychia		
Equal to 6 Months	6	1	10	15	4	8	44	<0.001
	13.63%	2.27%	22.72%	34.1%	9.1%	18.18%	100.0 %	
More than 6 Months	25	1	10	10	21	15	82	
	30.48%	1.22%	12.19%	12.19 %	25.6%	18.29%	100.0 %	
Total	31	2	20	25	25	23	126	
	24.6%	1.6%	15.87%	19.84 %	19.84%	18.3%	100.0 %	

Discussion

Psoriasis is associated with significant nail changes, which may range from mild pitting to severe nails dystrophy. A combination of genetic, environmental, and immune factors may be responsible for psoriatic nail changes. [14]. There are few published studies on epidemiology and clinical patterns of nail psoriasis in local population. The aim of this study was to determine the frequency of nail involvement in patients with psoriasis in our local population.

In this study, the majority of the patients were in age group 51-60 years (mean age =43.36 + 12.03 years),(Table 1). A study conducted by Radtke M et al [15] the mean age of psoriatic patients presenting with nail changes was 57.0 ± 11.7 years, which is significantly higher as compared to the mean age in our study. The reason for this was that patients with long-standing disease, are more likely to join a patient organization for a longer period of time.

According to literature, nail involvement is present in 20% to 50% of psoriatic patients [16,17]. Among various nail changes described in the literature 71% of our psoriasis patients had nail abnormalities [18]. However, this frequency is higher than reported in some other studies. This observed difference may be because most of our study patients had disease duration for more than 5 years and there were very few patients who were first diagnosed at the time of the study.

In our study, finger nail involvement was more common (68%) as compared to toenails (Table 4). In a study conducted by Schons K et al, [19] a similar trend was observed, where most of the patients examined had fingernail involvement. This similarity could be due to similar sampling technique, which was consecutive non-probability sampling in our study as well as in the referred study.

The most common nail findings in this study was pitting, followed by onycholysis and subungual hyperkeratosis (Table 5). This is similar to study conducted by Tham et al. 12 in Singapore where 410 psoriatic patients were taken for clinical observation on nail changes [20]. The prevalence of nail changes was 78%. Common changes were pitting and onycholysis. A single local study by Saleem and Azim [21] and study conducted by De Berker [22] evaluated the efficacy of modified regime of intralesional steroid injection for the treatment of psoriasis. They along with another study also have similar observation that pitting and onycholysis were the common clinical combination [23]. However, in some studies subungual hyperkeratosis and pitting appeared to be the most common nail abnormality [24, 25].

The least common nail finding that was observed in our study was ridges (1.6%)(Table 5). A study conducted by Jendoubi F [26] et al in 2019, a similar trend was observed. This similarity could be due to similar sampling technique, which was consecutive non-probability sampling in our study as well as in the referred study.

In our study, the nail changes also varied according to the anatomical sites. The most common fingernail change observed was pitting followed by onycholysis and subungual hyperkeratosis. This is similar to some other studies where the most common fingernail change observed was pitting followed by onycholysis. [27, 28] On the contrary, in our study, Grooves and pitting were most commonly observed toenail findings. This is different from some studies where the most common toenail changes observed were onycholysis and subungual hyperkeratosis. [29,30]

There are very few available data evaluating the frequency of nail psoriasis depending on clinical parameters. A prospective study in 2003 was done on psoriatic nails in Poland where one hundred six admitted psoriatic patients were evaluated for nail changes [31]. In this study, the researchers found positive correlation between age of the patient and the presence of nail abnormalities. Similarly some other studies found positive correlation between the prevalence of nail changes in psoriatic patients and severity and duration of the disease [32,33]. They reported that nail abnormalities were more often observed in patients older than 50 years.

Another study conducted by de Jong et al [34] on psoriasis of the nails associated with disability in a large number of patients showed a positive association between the duration of psoriasis and nail changes, but no relationship was found between patients' age and the presence of nail abnormalities. Our results confirmed significant positive correlation between the age of patients and the nail involvement as shown in Table 6, and psoriatic nail changes were more common in patients who had disease duration more than 6 months. The increasing incidence of nail abnormalities with age of psoriatic patients is not surprising, as almost all onychopathies are more likely to develop in elderly patients, mainly due to coexistence of other predisposing factors, such as: impaired peripheral circulations, metabolic and neurological disturbances (diabetes or polyneuropathy), repeated nail traumatization, and others [35].

In the present study we found nail fungal infections in 9% of psoriatic individuals with psoriatic nail dystrophy (in this study only clinically lesional nails were sampled for mycology). This is slightly lower than previous reports. That showed the frequency of onychomycosis in all psoriatic patients was as highas10-13% [36]. The observed differences might be because mycological culture was not conducted in our study patients. The different ages of the subjects may influence the results, as it is well known that prevalence of onychomycosis increases with age.

Conclusion

The most common abnormality noted was pitting followed by onycholysis and subungual hyperkeratosis. Patients with psoriatic nail changes were significantly older than psoriatic patients without nail changes. Duration of psoriasis was significantly higher in patients with psoriatic nail changes. Fungal colonization of psoriatic nails is quite frequent clinical problem and it is recommended that it should be taken into consideration by dermatologists working with psoriatic patients.

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