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Original Article

A Hospital-Based Analysis of Frequency of Various Types of Nail Changes in Psoriasis

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Abstract

Objective: To assess the frequency of nail changes in patients of psoriasis.

Methods: This was a hospital-based cross-sectional study conducted in the Department of Dermatology, Allied/ D.H.Q Hospitals, Faisalabad Medical University over a period of six months. After approval from hospital ethical committee, all the patients of psoriasis with nail changes were enrolled through non-probability consecutive sampling. Detailed cutaneous examination was done. Types of psoriatic nail changes i.e. pitting, onycholysis, oil drop discoloration, subungual hyperkeratosis, leukonychia and splinter haemorrhages were noted. Demographic and clinical data was recorded on a predesigned proforma.

Results: Out of total 125 patients, 90 (72%) were males while 35(28%) were females. Mean age of the patients was 37.58±8.19 years. Frequency of various types of nail changes in psoriasis was recorded as follows: Pitting was seen in 77 (61.6%), Onycholysis in 64 (51.2%), Oil drops in 56 (44.8%), Leukonychia in 48 (38.4%), Subungual Hyperkeratosis in 43 (34.4%) and Splinter haemorrhages in 18 (14.4%) patients.

Conclusion: We concluded Pitting as the commonest change in nails of psoriatic patients followed by Onycholysis, Oil drop discoloration, Leukonychia, Subungual hyperkeratosis and Splinter haemorrhages.

Key words: Frequency, Psoriasis, Types of nail changes

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Introduction

Psoriasis is a frequently encountered chronic skin disease which may involve nails and other organs of the body. The chronic inflammatory process in psoriasis may involve the nail bed or nail matrix leading to typical changes of nail psoriasis.[1] Majority of the patients suffering from psoriasis develop nail changes at some time in their life. The frequency has been reported to be as much as 90%.[2] Involvement of nails in psoriasis has been declared as a definite indicator of activity and severity of the disease. It can also predict development of psoriatic arthritis and inflammatory damage to other organs in future. It has a huge impact on psychological and social life of patients especially as it involves cosmetically visible areas of skin.[3] Nail changes in psoriasis are so diverse that they mimic many other commonly encountered nail disorders. Particularly important among those is Onychomycosis which accounts for almost half of all nail diseases.[4] Studies indicate that the two diseases can sometimes be too difficult to distinguish.[5]

Nail involvement in psoriasis is not affected by gender or race. Association with HLA-C0602 has also been negated. However, psoriatic nail changes have been seen in association with inflammation at the insertion sites of ligaments and tendons leading to enthesitis. Therefore, instead of autoimmunity aberrant immune response involving nail-joint unit has been postulated to be responsible for nail disease.[6] Both classical and atypical changes have been reported in psoriasis. Fingernails due to their quicker growth are more prone to these inflammatory changes. Psoriasis may involve nail bed, nail matrix or both. Studies have indicated Nail pits as the most typical and frequently seen nail change in psoriasis. They are produced due to small psoriatic lesions in nail matrix. Complete involvement

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of nail matrix leads to complete destruction of nail plate. Leukonychia is seen as a white band or line formed due to retention of parakeratosis in nail matrix making it opaque. Splinter hemorrhages represent leakage of blood or blockage of dilated blood vessels in nail bed. Other interesting findings include Salmon patches or Oil drops, which are formed due to psoriasis of nail bed and distal matrix. They appear as brown spots with erythematous borders due to retention of psoriatic plaques under the nail plate. Subungual hyperkeratosis and paronychia are other psoriatic nail lesions frequently observed.[7] Red spots in lunulae have been reported as atypical lesions due to psoriasis involving blood capillaries.[8]

Hence, nail psoriasis can manifest in various ways depending on the involvement of nail unit. Affection of nail matrix produces pits, trachyonychia, Beau's lines, leukonychia and onychomadesis, while disease of nail bed is seen as oil drops, subungual hyperkeratosis, onycholysis and splinter hemorrhages.[9] Diagnosis of nail psoriasis is mainly clinical. Many assessment tools are in use to grade the severity and extent of nail involvement in psoriasis. These include Psoriasis Nail Severity Score (PNSS), Nail Psoriasis Severity Index (NAPSI) and Modified Nail Psoriasis Severity Index (mNAPSI). The mNAPSI scale is considered to be more reliable and objective tool of assessing nail involvement.[10]

Management of psoriatic nail disease is complicated and difficult due to many factors. Most important of these hurdles is the poor penetration of drugs through nail plate. Treatment depends upon the extent and severity of disease, presence of arthritis and patient preferences. Topical agents, cosmetic procedures, biological and non-biological drugs are some of the available treatment options.[11]

Due to the cosmetic issues associated with nail disease in patients of psoriasis, psychosocial morbidity and extremely challenging treatment strategies, the quality of life of patients is negatively impacted upon. Psoriasis is considered as a psychosomatic disorder, which means physical and psychological factors concomitantly are involved in aggravation of disease,[12] therefore this stress can further make the treatment difficult or ineffective.

The purpose of this study was to assess the frequency and pattern of nail changes in psoriasis in our population in order to better understand and formulate the strategies for their management, since clinical data is limited in nail psoriasis in our population. Up to 5% patients may present with nail changes of psoriasis in the absence of cutaneous lesions,[13] in these cases by knowing the pattern of nail disease we may predict and prevent development of skin lesions in future. By knowing the magnitude of the problem, we can play an important role in reducing the anxiety and misery of patients and help them better cope with their appearance and psychosocial issues. This may eventually lead to better management of this psychosomatic disorder.

Methods

After getting approval from Ethical Review Board, patients of nail psoriasis presenting to the Outpatient Department of Dermatology, Allied/ D.H.Q Hospitals, Faisalabad Medical University were enrolled from May 2020 to November 2020. Patients were selected by non-probability consecutive sampling. Inclusion criteria included adult patients from 15 to 55 years of age, who were diagnosed cases of Psoriasis on basis of presence of erythematous, scaly plaques on body and having nail changes of psoriasis. Patients who were excluded from the study were; patients having any other co-existing disease of skin or nails or any systemic illness which may lead to nail changes. Patients suffering from onychomycosis proven by microscopy or culture were also excluded.

After taking written informed consent, patients of nail psoriasis were enrolled in this cross-sectional survey. Their demographic data was registered on predesigned proformas. The pattern and type of nail disease was noted by physical examination

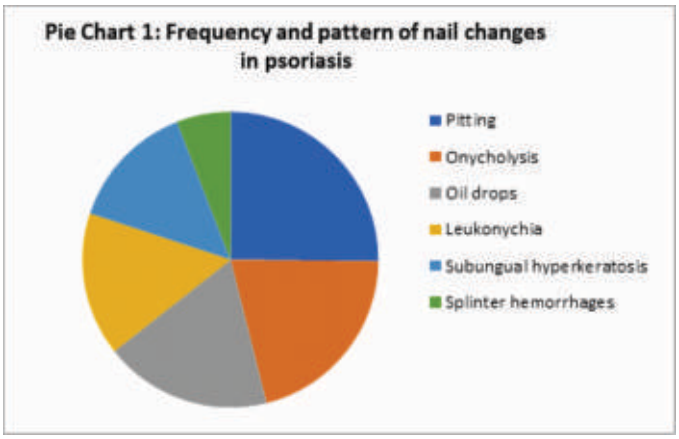
Data was entered and analysed using SPSS Vs 27. Descriptive statistics were calculated for all variables. Mean and standard deviation was calculated for all quantitative variables like age. Frequency and percentages were calculated for qualitative variables like gender and type of disease.

Results

A total of 125 patients were included in the study during the study period of six months. Mean age of the patients was 37.58±8.19 years. It was observed that 28 (22.4%) patients were 15-30 years old, while 97 (77.6%) were between 31-55 years of age. There was significant male predominance in our study, 90 (72%) were males while

remaining 35 patients (28%) were females (Table-1).

Frequency and pattern of various nail changes noted was as follows: Pitting was seen in 77(61.6%), Onycholysis in 64 (51.2%), Oil drops in 56 (44.8%), Leukonychia in 48 (38.4%), Subungual Hyperkeratosis in



43 (34.4%) and Splinter haemorrhages in 18 (14.4%) patients (Pie chart 1).

Table 1: *Descriptive Demographic Data of Patients*

		No. of Patients (n = 125)	
		n	%
Gender	Male	90	72
	Female	35	28
Age	15–30	28	22.4
	31-55	97	77.6
Pattern of nail changes	Pitting	77	61.6
	Onycholysis	64	51.2
	Oil drops	56	44.8
	Leukonychia	48	38.4
	Subungual hyperkeratosis	43	34.4
	Splinter hemorrhages	18	14.4

Discussion

Nail manifestations due to psoriasis are varied. These are mainly divided into those affecting the nail bed (onycholysis, oil drops, subungual hyperkeratosis and splinter hemorrhages) and nail matrix (pitting, Beau's lines, leukonychia, mottled lunulae and onychomadesis).[14]

We found that Nail pitting was the commonest (61.6%) psoriatic nail change seen in our patients (Fig 1), followed by onycholysis, oil drops, leukonychia, subungual hyperkeratosis and splinter hemorrhages (51.2%, 44.8%, 38.4%, 34.4% and 14.4% respectively).

We found that most our patients were males (72%) and rest were females (28%). Other researchers have also reported male preponderance in cases of nail psoriasis. Yap et al[15] studied 520 patients of psoriasis in Malaysian population and concluded that 65.6% of them had nail changes. 61.3% of those with nail changes were males. This was comparable to our results. However, they found Subungual hyperkeratosis as the most frequent (90%) and pitting as the least common (50.4%) nail change in psoriasis. This was contrary to our findings. The mean age of their study population was also higher than ours.

Fig 1: *Pitting of Nails in a 35 Years Old Patient of Psoriasis*

Armesto et al[16] studied pattern of nail psoriasis in 661 Spanish patients. They also found that nail changes were 13.5% more frequently seen in males than females. They reported a frequency of nail psoriasis of 47.4%. They reported higher incidence of nail changes in association with psoriatic arthritis, longer disease duration, higher body mass index and a positive family history. These findings were also supported by Mease et al[17] who reported the incidence of nail changes to be 40.5% with higher incidence and severity in males, those with psoriatic arthritis and higher disease related severity scores. They also highlighted that nail involvement was associated with more pain, fatigue, disability and loss of job than without nail involvement.

Mirza et al[18] surveyed 100 patients of psoriasis in Karachi and reported presence of nail changes in 79% patients and higher prevalence of nail changes in males. They observed ridging of nails as the most frequent (94.93%) nail change due to psoriasis followed by pitting, discoloration, onycholysis, subungual hyper-

keratosis, paronychia, melanonychia and splinter hemorrhages.

Marina et al[19] studied pattern of nail changes in psoriatic patients of Romania and concluded that severity of nail changes correlated with severity and age of onset of cutaneous lesions. Another interesting observation they reported was that third fingernail of right hand and first fingernail of left hand were most severely involved in majority of cases. They too observed pitting to be the most common nail manifestation of psoriasis, followed by oil drops and subungual hyperkeratosis.

In Tunisia, Jendoubi et al[20] studied association of nail psoriasis and onychomycosis. They reported nail changes in 71.2% patients of psoriasis. However, this percentage increased to 90% in patients of psoriatic arthritis. They too documented male predominance as we did. They found subungual hyperkeratosis to be the commonest nail manifestation of psoriasis, followed by onycholysis, pitting and leukonychia. This was contrary to our results probably due to the military and ethnic background of the study population.

In an Iranian study,[21] 69.5% patients of psoriasis had nail changes. Most common abnormality noticed by them was onycholysis, followed by pitting and salmon patches. They too reported higher prevalence of nail changes in patients of psoriatic arthritis.

Psoriasis is a common skin disease with an unknown aetiology and unpredictable course which leads to a particularly huge dilemma especially in darker races like ours where beauty and complexion have conventional standards and enormous psychosocial impact.

In our sociocultural setup, nails form an integral part of physical and cosmetic appearance. Damaged or unsightly nails due to disease process severely damage the psychological wellbeing of the patients. These factors can seriously impair the social life of psoriasis patients especially the females. Since stress has a profound effect on causation and aggravation of diseases like psoriasis and this can lead to difficulty in management of patients. Therefore, for effective management of patients, adequate knowledge of the pattern of nail disease is inevitable.

Conclusion

Nail psoriasis has a significant impact on psychosocial life of patients. Dermatologists should pay more attention towards this aspect of the disease and treat it appropriately with available modalities.

Conflict of Interest: None

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Authors Contribution

A.M: Conceptualization of Project
A.K: Data Collection
A.S: Literature Search
A.S: Statistical Analysis
M.S: Drafting, Revision
H.T: Writing of Manuscript