Journal of Pakistan Association of Dermatologists 2009; **19**: 194-199.

Original Article

Frequency and pattern of nail changes in patients with psoriasis vulgaris

Ijaz Ahmed, Sarwat Nasreen

Department of Dermatology, Ziauddin University Hospital, KDLB Campus, Karachi

Abstract

Background Nails can be involved in up to 50% of psoriatics but less than 5% of cases of nail psoriasis have been reported even in the absence of classical skin lesions. Nail changes are often associated with psoriatic arthritis. Severe nail psoriasis can lead to functional and social impairment if left untreated. However, psoriatic nail disease is often overlooked in the clinical practice and therapeutic trials.

Objective To determine frequency and pattern of nail changes in patients with psoriasis vulgaris and their correlation with severity of the disease.

Patients and methods Clinically diagnosed cases of psoriasis vulgaris with concurrent nail changes, irrespective of the duration and severity of their illness, were enrolled. Detailed cutaneous and nail examination was performed. Severity of the dermatological disease was graded as mild, moderate and severe. Skin biopsy was performed in doubtful cases. Statistical analysis was carried out using the micro software SPSS 13.

Results One hundred two patients, comprising 55 males (54%) and 47 females (46%), with minimum age of presentation 16 years and maximum 66 years completed the study. Mean age of presentation was 40.9±12.7 years. Joint involvement in the form of joint pain or restricted movements was observed in 55 patients (54%). Nails were involved in 59 patients (58%, *P=0.05*) comprising 32 males (54%) and 27 females (46%). Of the 55 patients with joint involvement, 39 (71%) had their nails affected. Of the 59 patients with nail psoriasis, 49 (83%) had been suffering from psoriasis for more than 5 years. 27 (46%) had their fingernails involved, 19 (32%) toenail psoriasis while 13 (22%) patients had both sites involved. Of the 59 patients with nail disease, 5 (8.5%) had mild psoriasis, 38 (64.5%) moderate skin disease and remaining 16 (27%) severe psoriasis vulgaris. The most frequent nail finding was roughening seen in 55 patients (93%) followed by transverse ridging and pitting, color change, thickening, dystrophy, subungual hyperkeratosis, onycholysis and leukonychia.

Conclusion Nail changes are a frequent feature of psoriasis vulgaris and ridging, pitting and roughening being the most common. Nail dystrophy, color change, onycholysis, leukonychia and subungual hyperkeratosis are the other associated findings.

Key words
Nail psoriasis, psoriatic arthritis, subungual hyperkeratosis, onycholysis, oil drop sign.

Introduction

Psoriasis, a chronic inflammatory disease of autoimmune origin is characterized by erythematous, scaly plaques of various sizes on skin.[1] Classical disease in addition to skin also involves joints and nails. Nails can be involved in up to 50% of cases, and their involvement remains an important yet overlooked aspect of psoriasis.[2] Less than 5% of cases of nail psoriasis have been reported even in the absence

Address for correspondence
Dr. Ijaz Ahmed,
36/2 Khayaban e Shujaat,
DHA Phase 5 Karachi.
Ph: 021 2528910, 2524910
E-mail: ramza@cyber.net.pk
ramza_z@hotmail.com

of classical skin lesions. A combination of environmental, genetic and immunological factors contributes towards the pathogenesis. Nail changes are often associated with psoriatic arthritis.[3] However, nail changes are also a feature of other variants of psoriasis. The disease can affect any part of the nail unit but most commonly involves nail plate. Classical nail changes of psoriasis include transverse ridging and pitting, roughening, dystrophy, color changes, oil drop sign also called salmon's patch, leukonychia and onycholysis which in turn may be partial or complete. Williamson *et al*.[4] have reported a direct proportion between the severities of skin and nail psoriasis. Nail psoriasis affects patients of both sexes but the frequency increases with age.[4] Severe nail psoriasis can lead to functional and social impairment if left untreated.[5] Higher scores of anxiety and depression have been reported in patients with psoriasis having nail changes. Psoriatic nail disease is often overlooked in the clinical practice as well as therapeutic trials. There is a lack of data regarding the association between psoriasis and nail changes in our part of the world.

Current study was targeted to determine frequency and pattern of nail changes in patients with psoriasis vulgaris and to correlate them with severity of the disease.

Patients and methods

Study was carried out in the outpatient department of Dermatology, Ziauddin University Hospital, KDLB Campus, Karachi during the calendar year 2008. Clinically diagnosed cases of psoriasis vulgaris fulfilling the selection criteria were enrolled after a written consent. All the freshly registered patients presenting with psoriasis vulgaris above the age of 15 years belonging to both sexes, with concurrent nail changes were included. Patients suffering from psoriasis having joint involvement were also enrolled. Patients were enrolled irrespective of the duration and severity of their illness. Patients with other subtypes of psoriasis or any concomitant dermatological or systemic disease were excluded.

All the clinically diagnosed cases were subjected to a detailed history and clinical examination including systemic and dermatological examination. Nail changes were also recorded. Severity of the dermatological disease was graded as mild, moderate and severe. Patients having an area of involvement less than 5% were labeled as suffering from mild disease and those with 5-20% and more than 20% area of involvement were graded as moderate and severe disease, respectively.[2] Skin biopsy was performed in doubtful cases. Any routine or relevant investigations were carried out wherever required. These included hematological and biochemical profile as well as nail clippings for fungus for patients suspected to be suffering from onychomycosis.

All the findings were recorded, compiled and tabulated. Statistical analysis was carried out using the micro software SPSS 13. Chi square test was applied for statistical analysis (confidential interval 95%) and a *p* value equal to or <0.05 was considered significant.

Results

A total of 102 patients fulfilling the selection criteria were enrolled for the study. There were 55 males (54%) and 47 females (46%). Minimum age of presentation was 16 years and maximum 66. Age range was 45 years, mean age of presentation being 40.9±12.7 years. Of the enrolled 102 patients, 62 (61%) had psoriasis

for more than 5 years while remaining 40 (39%) for less than 5 years.

Moderate psoriasis was encountered in majority of the enrolled patients i.e. 50 patients (49%) while mild disease featured in 34 (33.5%) and 18 (17.5%) patients had severe form of psoriasis. Joint involvement in the form of joint pain or restricted movements was observed in 55 patients (54%).

Nails were involved in 59 patients (58%, *p=0.05*) while remaining 43 (42%) had normal nails. Among the 59 patients with nail involvement, there were 32 males (54%) and 27 females (46%). Of the 55 patients with joint involvement, 39 (71%) had their nails affected.

Among the 59 patients with nail changes 27 (46%) had their fingernails involved, 19 (32%) suffered from toenail psoriasis while remaining 13 patients (22%) had both finger and toe nails involved.

Forty nine (83%) of the patients with nail psoriasis (59) had been suffering from psoriasis for more than 5 years while remaining 10 (17%) for less than 5 years.

Correlating the skin disease severity and nail disease, of the 59 patients with nails involved, 5 (8.5%) had mild psoriasis, 38 (64.5%) had moderate skin disease and remaining 16 (27%) suffered from severe psoriasis vulgaris. Among 34 patients with mild disease, 5 (15%) had their nails involved while 38 (76%) of the 50 patients with moderate psoriasis suffered from nail involvement. Nails were affected in 16 (89%) of the patients with severe skin disease. Therefore, frequency of the nail disease increases with severity of the skin disease.

Table 1 reveals the pattern and frequency of nail changes in these patients. The most frequent nail finding was roughening seen in 55 patients (93%) followed by transverse ridging and pitting, color change, thickening, dystrophy, subungual hyperkeratosis, onycholysis and leukonychia.

Table 1 Nail changes in psoriasis vulgaris (n=59)

Nail changes	*N (%)*	*P value*
Roughening	55 (93)	<0.05
Transverse pitting	53 90	<0.05
Transverse ridging	50 84	<0.05
Color change	36 61	<0.05
Thickening	34 58	<0.05
Dystrophy	27 46	= 0.05
Subungual hyperkeratosis	17 29	= 0.05
Onycholysis	16 27	NS
Leukonychia	10 (17)	NS

NS= *p* value not significant

Discussion

Nail changes are relatively common in psoriasis, often seen in association with psoriatic arthritis.[6] Nails can be involved in up to 50% of patients with psoriasis but the involvement remains an important yet often overlooked aspect of the disease.[2] Findings in our study reflect similar results as reported in literature previously.[3] However, there is a relative lack of data regarding the nail changes in psoriasis, although studies have been conducted on other aspects of psoriasis in our part of the world. Different studies have been carried out in India reflecting nail changes in psoriasis.[7] Our results suggest a frequency of nail changes to be 58% in patients (*p=0.05*) with psoriasis with a male preponderance. Johan *et al*.[3] have also reported a frequency of more than 50% in their patients as far as the nail changes in psoriasis are concerned. Other workers have also reported up to 2/3rd of their patients to be suffering from psoriatic nail disease.[8,9] However; results can vary from one study to another depending upon

sample size, study design and population studied.

Joint involvement in association with psoriatic nail disease has been reported from time to time and our study is in agreement with the reports in literature.[4,10,11] Majority of our patients with joint involvement had joint pain while others had restricted joint movements. Joints are reported to be involved in 10% of the patients with psoriasis vulgaris in previous reports from Pakistan.[12,13] However, the association between nail disease and psoriatic arthropathy has never been studied in our part of the world. Psoriatic arthropathy is associated with a higher frequency of nail disease as compared to skin disease alone.[4] Williamson *et al*.[4] have pointed out that severity the of nail disease in association with psoriatic arthropathy has never been emphasized.

Correlating the skin disease, of the 59 patients with nails involved, frequency was the highest in patients with severe disease decreasing towards moderate and milder psoriasis respectively. Previous reports also suggest frequency of the nail disease to be more in patients with severe psoriasis.[14,15] Therefore the finding in our study is consistent with the reports in literature.[4,16] Severity of nail psoriasis has been classified in the past using different scales.[17,18] We observed that with an increasing frequency of nail involvement with skin disease the severity of nail psoriasis also increases. This seems to be in agreement with the past reports.[4,16]

Majority of our patients had a history of psoriasis for more than 5 years. Other workers have reported no association between nail changes and duration of psoriasis.[6] Prasad *et al*.[19] claimed that psoriatic arthritis may be associated with duration of the illness but not the nail disease. A small sample size could be the reason for this report from Prasad *et al*.[19]

Nails of either fingers or toes alone or both fingers and toes can be affected simultaneously. Our study also indicates a similar association. Finger nails alone were affected with the highest frequency followed by toe nails while combined disease of both sites was the least common. Langley *et al*.[20] in his study reports finger nails to be involved with the highest frequency. Ghosal *et al*.[21] also claimed a higher frequency of finger nail psoriasis as compared to toe nails. Therefore the finding in our study is comparable to the past reports.[20,21]

Nail changes in psoriasis vulgaris are well known. The most frequent nail finding was roughening seen in 55 patients (93%) followed by transverse ridging and pitting, color change, thickening, dystrophy, subungual hyperkeratosis, onycholysis and leukonychia. There is relative lack of data regarding nail changes in psoriasis as far as our population is concerned. However, different studies have been conducted in India from time to time.[2,19,21,22] Even these studies do not reflect a true picture being conducted on smaller scales.[2,19,21,22] Among our patients with nail involvement, all changes were not seen simultaneously. At least one nail change was present in each of these patients**.** Roughening was the most common finding in our study while others have reported ridging and pitting to be the most common.[19,21,22] It can readily be appreciated that ridging and pitting themselves contribute towards roughening of nail plate.[19,21,22] Pitting of nail plate in psoriasis is due to a defective formation of nail plate in the proximal part of nail matrix. However, workers have reported this change to be common in their studies.[19,21] Color change either diffuse or in the form of oil drop sign has been reported in psoriasis vulgaris.[2,21] Such a color change was noted with a lesser frequency in our study which in turn is consistent with past studies.[2]

Thickening and dystrophy of psoriatic nails have been reported in the past from time to time.[2,19,21,22] Such nail changes generally reflect an association with severe form of psoriasis vulgaris. Frequency of these changes observed in our study is at par with the reports in literature.[2,19,21] Subungual hyperkeratosis was also observed in our study with a lesser frequency and is usually associated with severe psoriasis vulgaris. However, it may be seen in any of these subjects irrespective of severity of the skin disease.[2,19,21,22] Subungual hyperkeratosis is an outcome of the collection of yellow keratinous material. Onycholysis i.e. complete or partial detachment of the nail plate has been reported with variable frequency in the past as far as psoriasis vulgaris is concerned. The detachment may be distal or lateral. We observed both partial and complete onycholysis but the frequency was comparable to the past reports.[19,21] Leukonychia was another important finding with a comparatively low frequency to other changes, but the finding is in agreement with the reports in literature.[2,19,21]

As patients presenting with other less frequent patterns of psoriasis were excluded, therefore the frequency of nail changes in these subjects were not studied. All the patients with their joints involved had either complaints of joint pain or restricted joint movement. Therefore, the association of nail changes with any particular subtype of psoriatic arthropathy could not be correlated. We recommend large scale studies correlating skin, nail and joint disease in psoriasis vulgaris as well the other variants of psoriasis.

The association of psoriatic nail disease and psoriatic arthropathy can lead to functional impairment.[23] High scores of anxiety and depression have been reported in such patients.[24] Although there have been a number of advances in the treatment of psoriatic nail disease, it is uncertain whether these therapies have been widely adopted in clinical practice.[25,26,27] Thus such a study can be helpful in planning therapeutics for the nail disease. We have also emphasized the correlation between the severity of nail disease and skin disease, an aspect of psoriasis ignored previously. Nail and joint disease together in the absence of skin disease can be helpful in ruling out seropositive rheumatoid arthropathy. Collaboration between rheumatologists and dermatologists should be useful.

Conclusion

It is concluded that nail changes are a frequent feature of psoriasis vulgaris, ridging, pitting and roughening being the most common. Nail dystrophy, color change, onycholysis, leukonychia and subungual hyperkeratosis are the main associated findings. Frequency and severity of these nail changes correlate well with the severity of skin disease. These nail changes are especially prevalent in patients with joint involvement.

References

1. Bajaj DR, Mahesar SM, Ghani MH. Hemoglobin content and sedimentation properties of erythrocytes in psoriasis. *J Pak Assoc Dermatol* 2008; **18:**132-7.
2. Jiavarvuthism MM, Sassaville D, Vendor RB *et al.* Psoriasis of the nail: anatomy, pathology, clinical presentation and a review of the literature on therapy. *J Am Acad Dermatol* 2007; **57**: 1-27.
3. Alexander EMY, Jerome P, Ganesh SP *et al.* Disease concomitance in psoriasis: A clinical study of 61 cases *Ind J Venereol Dermatol Leprol* 2001; **67**: 66-68.
4. Williamson L, Dalbeth T, Dockerty JL *et al.* Extended report nail disease in psoriatic arthritis-clinically important, potentially treatable and often overlooked. *Rheumatol* 2004; **43**: 790-4.

5. Bogoch ER, Judd MG. The hand: a second face? *J Rheumatol* 2002; **29**: 2477-83.
6. Johann EG, Karason A, Arna A *et al*. HLA-Cw6-positive and HLA-Cw6-negative Patients with psoriasis vulgaris have distinct clinical features. *J Invest Dermatol* 2002; **118**: 362-5.
7. Leung YY, Tam LS, Kun EW, Li EK. Psoriatic arthritis as a distinct entity. *J Post Grad Med* 2007; **53**: 63-71.
8. Sadek HA, Abdel-Nasser AM, El-Amawy TA, Hassan SZ. Rheumatic manifestations of psoriasis. *Clin Rheumatol* 2007; **26:** 488-98.
9. Al-Mutairi N, Manchanda Y, Nour-Eldin O. Nail changes in childhood psoriasis: A study from Kuwait. *Paediatr Dermatol* 2007; **24**: 7-10.
10. Scarpa R, Soscia E, Peluso R *et al*. Nail and distal interphalangeal joint involvement in psoriatic arthritis. *J Rheumatol* 2006; **33**: 1315-9.
11. Sarasalan G, Guler H, Karazincir S. The relationship between nail- and distal phalangeal bone involvement severity in patients with psoriasis. *Clin Rheumatol* 2007; **26**: 1245-7.
12. Ahmed TJ, Kapadia N, Ashgaiz H. Patterns of joint involvement in psoriasis: An observational study in local population. *J Pak Assoc Dermatol* 1998; **8**:22-8.
13. Ejaz A, Raza N, Iftikhar N *et al*. Presentation of early onset psoriasis in comparison with late onset psoriasis: A clinical study from Pakistan. *Ind J Venereol Dermatol Leprol* 2009; **75**: 35-9.
14. Naldi L, Gambini D. The clinical spectrum of psoriasis. *Clin Dermatol* 2007; **25**: 510-8.
15. Garcia-Diez A, Foraster CF, Sebastian FV *et al*. What characterizes the severity of psoriasis? Results from an epidemiological study of over 3,300 patients in the Iberian region. *Dermatology* 2008; **216**: 137-51.
16. Ferrandiz C, Pujot R, Garcia-Patos V *et al*. Psoriasis of early and late onset: A clinical and epidemiologic study from Spain. *J Am Acad Dermatol* 2002; **46**: 867-73.
17. Baran RL. A nail psoriasis severity index. *Br J Dermatol* 2004; **150**: 568-9.
18. Rich P, Scher RK. Nail psoriasis severity index: a useful tool for assessment of nail psoriasis. *J Am Acad Dermatol* 2003; **49**: 206-12.
19. Prasad PVS, Bikku B, Kaivarasan PK, Senthilnathan A. A clinical study of psoriatic arthropathy. *Ind J Venereol Dermatol Leprol* 2007; **73**: 166-70.
20. Langley RGB, Krueger GG, Griffiths CEM. Psoriasis: epidemiology, clinical features and quality of life. *Ann Rheum Disease* 2005; **64**: 18-23.
21. Ghosal A, Gangopadhyay DN, Chanda M, Das NK. Study of nail changes in psoriasis. *Ind J Dermatol* 2004; **49**: 18-21.
22. Bedi R. Clinical profile of psoriasis in north India. *Ind J Venereol Dermatol Leprol* 1995; **61**: 202-5.
23. De Jong EM, Seegers AB, Gulink MK *et al*. Psoriasis of the nail is associated with disability in a large number of patients: results of a recent interview with 1728 patients. *Dermatology* 1996; **193**: 300-3.
24. Nasreen S, Ahmed I, Effendi S. Frequency and magnitude of anxiety and depression in patients with psoriasis vulgaris. *J Coll Physicians Surg* 2008; **18**: 497-500.
25. De Berker DA, Lawrence CM. A simplified protocol of steroid injection for psoriatic nail dystrophy. *Br J Dermatol* 1998; **138**: 90-5.
26. De Berker D. Management of nail psoriasis. *Clin Exp Dermatol* 2000; **25**: 357-62.
27. Cannavo SP, Guarneri F, Vaccaro M *et al*. Treatment of psoriatic nails with topical cyclosporin: a prospective, randomized placebo-controlled study. *Dermatology* 2003; **206**: 153-6.

Authors Declaration

Authors are requested to send a letter of undertaking signed by all authors along with the submitted manuscript that:

The material or similar material has not been and will not be submitted to or published in any other publication before its appearance in the *Journal of Pakistan Association of Dermatologists.*