

A clinical study of nail changes in common papulosquamous disorders

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Abstract *Objective* To determine the incidence and types of nail changes in various papulosquamous disorders.

Methods We undertook a descriptive study of 50 patients at department of Skin and STD, VMKVMCH, Salem. Nail biopsy of all patients was taken and histopathological analysis was done.

Results Of a total of 50 patients, the most common nail change was pitting seen in 60% of psoriasis patients followed by onycholysis in 58% and subungual hyperkeratosis which was 46%.

Conclusion Nail pitting was the prominent indicator of psoriasis in papulosquamous disorders.

Key words

Papulosquamous disorders, nail, psoriasis.

Introduction

Nail forms an integral appendage of human integument as man developed and dexterity increased. As civilization progressed and social interactions grew, it became an object of attention and social adornment. A pink and lustrous nail has always been a part of good health. Owing to its importance nail cosmetology is evolving in day to day life.

Apart from aesthetics, nail is an interesting organ of human body. It serves many important physical and social functions that cannot be disputed viz. protection, sensory perception, manual dexterity and scratching. It protects the terminal phalanx and fingertip from trauma and

gives deftness and precision in picking up small objects. Nail also serves to augment the sensation of touch.

Nail may be diseased in many dermatological, as well as, systemic disorders. About 10% of dermatological disorders are associated with nail changes. In the papulosquamous disorders of skin, it is more commonly diseased. This study was done to find out the nail changes in common papulosquamous disorders.

Methods

The descriptive study was conducted in department of dermatology, venereology and leprology of Vinayaka Mission Kirupanandha Variyar Medical College and Hospital, Salem, between October 2010 and August 2012. Patients with papulosquamous disorders like psoriasis, lichen planus, lichen striatus, erythroderma, pityriasis rubra pilaris and pityriasis rosea were included. Less common

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conditions like pityriasis rotunda, Reiter's disease, secondary syphilis and norwegian scabies were excluded.

A total of 50 patients including 39 males and 11 females were enrolled in this study. The patients were examined including personal particulars, detailed history, duration of skin and nail disease and treatment taken. General and systemic examinations were done. Fungal infection of nail was excluded by KOH examination of nail clippings. Findings were verified and confirmed and then were systematically recorded for each patient under all heading as per proforma.

Nail biopsy was done for all the 50 cases after getting informed consent. Under aseptic precautions a ring block was given with 2% lignocaine without adrenaline. A tourniquet was tied from the distal to proximal end of the finger to minimize the bleeding. Nail matrix biopsy was taken by double punch technique. This method was selected because of its minimal scarring among all biopsies. Two punches each of sizes 2.5mm and 3mm were used. The nail plate was removed with the help of 3mm punch and the matrix was taken with the help of 2.5mm punch with minimal bleeding. Homeostasis was attained and the tourniquet removed. A tight bandage was tied to the wound. Specimen was collected in formalin containing bottle and sent for histopathological examination. Antibiotic coverage was given for the patients.

All data were tabulated and statistical analysis was done where applicable. Comparison between groups of disorders regarding incidence rates was done using chi square test keeping the p value below 0.05 as the threshold for significance

Results

A total of 50 patients were included in the study of which 39 were males and 11 females. The age group ranged from 10 to 75 years. Mean age group was 46.5years. The common skin disorders included in this study were psoriasis (41, 82%), lichen planus (4, 8%), erythroderma (2,4%), pityriasis rubra pilaris (1, 2%), lichen striatus (1, 2%) and pityriasis rosea (1, 2%). The nail changes found out in this study were pitting, subungual hyperkeratosis, onycholysis, Beau's lines, onychoschizia and longitudinal melanonychia (**Table 1**).

The most common change observed in psoriasis was pitting (60%), where we saw 10 to 15 irregular type of pits. Pits were seen only in fingernails and toenails were not involved. The second common nail change observed in psoriasis was onycholysis (58%) followed by subungual hyperkeratosis (46%). The least common observed changes were onychomadesis and longitudinal melanonychia. Among different types of psoriasis, plaque type was the most common type (51%) followed by palmoplantar type (29%), scalp psoriasis (12%) and guttate psoriasis (8%).

Table 1 Frequency of different nail changes in papulosquamous disorders included in the study.

| Nail changes | Psoriasis | Lichen planus | Erythroderma | Pityriasis rubra pilaris | Pityriasis rosea | Lichen striatus |
|---------------------------|-----------|---------------|--------------|--------------------------|------------------|-----------------|
| Pitting | 25 | 0 | 0 | 0 | 0 | 0 |
| Subungual hyperkeratosis | 19 | 1 | 0 | 0 | 0 | 0 |
| Onycholysis | 24 | 3 | 1 | 0 | 0 | 0 |
| Beaus line | 0 | 0 | 2 | 0 | 0 | 0 |
| Onychoschizia | 3 | 1 | 0 | 1 | 1 | 1 |
| Longitudinal melanonychia | 6 | 2 | 0 | 0 | 0 | 0 |

A total of 4 cases of lichen planus were found in this study of which three had onycholysis, two had longitudinal melanonychia and one had subungual hyperkeratosis.

Beau's lines of toenails were observed in both the cases of erythroderma and one had onycholysis of fingernail.

Only one case each of lichen striatus, pityriasis rubra pilaris and pityriasis rosea was reported of which onychoschizia of fingernail was observed as the only change in all these cases.

Discussion

A total of 50 patients with papulosquamous disorders presenting with nail changes were included in this study, comprising of 39 males (78%) and 11 females (22%). Our study had a male preponderance which correlated with the study done by Armesto *et al.*¹ in which about 661 patients 47.4% had nail involvement, and male preponderance of 13.5%.

Ahmed and Nasreen² studied 102 patients, comprising of 55 males (54%) and 47 females (46%), with a minimum age of presentation as sixteen years and a maximum of 66 years. The mean age of presentation was 40.9 ± 12.7 years. Nails were involved in 59 patients (58%, $P=0.05$) comprising of 32 males (54%) and 27 females (46%). Of the 59 patients, 55 patients had 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.

In our study common nail changes observed with psoriasis were pitting (60%), onycholysis (58%), subungual hyperkeratosis (48%) and longitudinal melanonychia (6%) and lastly onychomadesis. Our study correlates with study done by Al-Mutairi N *et al.*³ where the nail pitting was found to be the most common

manifestation (61.84%) followed by onycholysis (30.26%), subungual hyperkeratosis (13.16%), and discoloration of the nail plate (7.9%).³

Our study had similar correlation with the work done by Edwards and de Berker.⁴ who studied 120 patients of psoriasis with nail changes and found that manifestations of nail dystrophy in psoriasis included pitting, onycholysis and subungual hyperkeratosis.

Nail pitting was the commonest nail deformation observed in a study done by De Jong *et al.*⁵ They surveyed 1728 psoriasis patients, among which 51% of patients presented pitting of the nails correlated with our study.

Natarajan *et al.*⁶ noted nail changes in 66.66% (48/72) of psoriasis patients. The most common fingernail changes observed were pitting, onycholysis and subungual hyperkeratosis, and the most common toenail changes were onycholysis and subungual hyperkeratosis which was also observed in our study. They also noted that nail changes were significantly more common in males.

Farber and Nall⁷ studied 200 patients with psoriasis and they observed that psoriatic nail involvement is common and accompanies skin lesions on the body surface. The occurrence of nail psoriasis has been reported in up to 50 percent of patients, including children, adults, and the elderly. They also observed the characteristics of psoriatic nails were pitting, discoloration, onycholysis and subungual hyperkeratosis, as well as crumbling and grooving of nails and splinter hemorrhages. Our study did not show any grooving or splinter hemorrhages of nail plate. In our study the changes were commonly observed in fingernail rather than toenail.

Our study correlates with the work done by

Ahmed and Nasreen² who found that 27 (46%) of 59 patients of psoriasis had their fingernails involved, 19 (32%) had toenail psoriasis while 13 (22%) patients had both finger and toenail involved. The most frequent nail finding was roughening seen in 55 (93%) patients followed by transverse ridging and pitting, color change, thickening, dystrophy, subungual hyperkeratosis, onycholysis and leukonychia. This inference does not correlate with our study as pitting was the most common nail change seen by us.

Yap and Pubalan⁸ studied 150 patients with psoriasis and found that the mean age of patients with nail psoriasis was 47.4 years. They also observed that 20.8% of patients with nail psoriasis had body surface area involvement of more than 10%. The main pattern seen was pitting, followed by onycholysis, subungual hyperkeratosis and discoloration.

Lichen planus was observed in 4 out of 50 patients in our study which was common in age group 10-35 years. The nail changes in our study were onycholysis and onychoschizia, all with involvement of fingernail alone. This correlates with clinical study done by Goettmann *et al.*⁹ who in 67 patients with nail lichen planus noted involvement of fingernails in 98% of subjects.

Only one case of pityriasis rubra pilaris was included in our study and the nail change observed was onychoschizia. Sonnex *et al.*¹⁰ examined the fingernails of 24 patients with classical adult (type 1) pityriasis rubra pilaris for changes in nail morphology and a comparison was made with the fingernail morphology of 27 consecutive psoriatic patients with nail changes. Onychoschizia, distal yellow-brown discoloration, subungual hyperkeratosis, nail plate thickening, and splinter hemorrhages indicated a diagnosis of type 1 pityriasis rubra pilaris rather than psoriasis.

One case of lichen striatus in our study showed fraying and longitudinal ridging. A study done by Baran *et al.*¹¹ of four cases of lichen striatus with nail involvement found that there were several types of nail dystrophy: fraying, longitudinal ridging, splitting and shedding, onycholysis, and total nail loss. All of them were transient and can be explained by the pathologic changes observed, particularly the transitory disruption of the basal layer. We observed only two of the above changes. Donald and Owens reported lichen striatus involving the nail plate along the line of cutaneous lesions.¹²

In our study the nail change with lichen striatus was seen along the line of skin lesions. Tosti *et al.*¹³ found that nail lichen striatus is associated with skin lesions but can also be an isolated finding. Our study correlates with this. They also noted that the diagnosis of nail lichen striatus should be strongly suspected when a child or a young patient presents with lichen planus-like nail abnormalities localized to the lateral or medial portion of a single nail.

Erythroderma with nail involvement is not much reported in the literature. In our study two cases of erythroderma were included and Beau's lines were noted in the toenails of both patients.

Nail biopsies were done in all patients. The histopathological features seen with psoriatic nails were hypergranulosis of nail bed and neutrophilic infiltrate in nail matrix. In lichen planus nail biopsy showed dense lymphocytic inflammatory infiltrate in the nail matrix. In cases with lichen striatus, pityriasis rubra pilaris, pityriasis rosea and erythroderma nail biopsies did not show any specific nail changes.

Conclusion

Amongst papulosquamous disorders, psoriasis was the commonest disease with pitting as the

frequent nail change. Other diseases like lichen planus, erythroderma, lichen striatus, pityriasis rubra pilaris and pityriasis rosea were less common. This indirectly reflects the lower incidence of nail changes in these disorders.

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