

A STUDY OF NAIL CHANGES IN VARIOUS DERMATOSIS IN PUNJAB, INDIA

ZMIANY PAZNOKCIOWE W RÓŻNYCH DERMATOZACH W PUNJAB, INDIA

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Abstract

Nails act as a window to diagnosis of skin diseases. Various dermatosis affect the nails and the severity of the skin disorder is reflected in the nails. Nail changes are seen in various dermatosis like psoriasis, lichen planus, onychomycosis, collagen vascular disorders, vesicobullous disorders and other papulosquamous disorders. We will discuss in detail regarding nail changes in various dermatosis.

Streszczenie

Paznokcie są jak okno w diagnostyce chorób skóry. Różne dermatozy wpływają na paznokcie a ciężkość choroby skóry ma swoje odbicie na stanie paznokci. Zmiany w paznokciach widoczne są w różnych dermatozach takich jak łuszczyca, liszaj płaski, grzybica paznokci, kolagenowa choroba naczyń krwionośnych, zaburzenia pęcherzowe i inne zaburzenia grudkowo-złuszczone. Omówimy szczegółowo zmiany paznokci w różnych dermatozach.

Key words: nail disease; psoriasis; onychomycosis; lichen planus

Słowa kluczowe: choroby paznokcia; łuszczyca; onychomycosis; liszaj płaski

Introduction

Nail disorder comprises approximately 10% of all dermatological condition [1,2]. Any portion of the nail unit may get affected by various dermatological condition, systemic disease, infections, ageing process, internal and external medication, vascular insufficiency, physical and environmental agents, trauma, neurological abnormalities, nutritional deficiency and both benign and malignant tumour [3]. Various nail abnormalities result in pain or interference with functioning or both. Nail disorder may affect walking, picking up of fine objects and protective function. The increasing emphasis on the aesthetic consideration in dermatology means even the slightest nail change may assume significance for the patient [4]. Abnormal nails are of utmost clinical importance, especially when they are the only presenting feature without any other apparent signs and symptom of a disease. Hence nail provides us insight of window looking through which one can establish the diagnosis. Various dermatological conditions that characteristically involve the skin and hair may also involve the nail. The following is the classification of nail disorders:

- Genetic disorders:** Epidermolysis bullosa, congenital onychodysplasia of index finger, Racket nail, Dolichonychia, ichthyosis, incontinentia-pigmenti, acrodermatitis enteropathica.

- Nail changes in infections:** Various fungal, bacteria, viral, spirochete, yeast, HIV infection, leprosy may affect the nail.

- Nail changes in dermatological conditions:** Lichen planus, psoriasis, eczema, alopecia areata, vitiligo and pemphigus vulgaris.

- Nails in systemic conditions:**

- Cardiovascular diseases.
- Impaired peripheral circulation.
- Renal diseases: nephrotic syndrome.
- Respiratory diseases: tubercular empyema.
- Endocrine disorder: hypothyroid, hyperthyroid, diabetes mellitus.
- Gastrointestinal and hepatic disorders.

- Nail deformities due to trauma:** Nail biting, nail picking, habit-tic deformity, Heller's dystrophy, hang nails and ill fitting shoes.

- Occupational nail changes:** Rickshaw pullers, housemaids.

- Neoplasm of nails:**

Benign: like glomus tumour, myxoid cyst, periungual fibroma.

Malignant: Malignant melanoma and squamous cell carcinoma.

- Drug induced nail changes.**

9. Cosmetics induced nail changes.

10. Nail changes in: Children, elderly, pregnancy.

Aims

To study the abnormal nail changes in patients coming to the Department of Dermatology.

Material and Methods

For the present study, 500 patients with nail changes coming for various dermatological conditions was selected from the Department of Dermatology. A detailed clinical history regarding onset, duration and associated symptoms was asked. A thorough systemic and dermatological examination was conducted and all details were recorded on a special proforma. Routine investigations like Hb, TLC, DLC, ESR, platelet count, urine complete examination,

blood urea, and serum creatinine were carried out to confirm the diagnosis. Special investigations like nail clipping for bacteriological and fungal infection, nail biopsy and skin biopsy were carried out whenever required.

Results

The data was collected, analysed and the following results were obtained.

I. Age Distribution

The above table shows that maximum number of patients with nail changes (40%) were in the age group of 21-40 years, followed by 30% in the age group of 41-60 years, 20% were less than 20 years and 10% were in the age group 61-80 years.

Sr No	Age	No. of cases	Percentage (%)
1	< 20	100	20
2	21-40	200	40
3	41-60	150	30
4	61-80	50	10

Table I. Incidence of nail changes among different age groups

II. Sex Distribution

The above table shows that out of 100 patients, 52% were males, while 48% were females. Male to female ratio was 1.08 : 1.

Sr No	Age	No. of cases	Percentage (%)
1	Males	260	52
2	Females	240	48
	Total	500	100

Table II. Sex distribution of patients with nail changes

III. Occupational Status

Above table shows majority of cases i.e. 34% with nail changes were housewives, whereas 30% of cases were

in service or business, 12% were students and 24% were labourers or farmers.

Occupational status	No. of cases	Percentage (%)
Housewives	170	34
Service\business	150	30
Students	60	12
Labourers\Farmers	120	24

Table III. Occupational status of patients with nail changes

IV. Number of Nails Involved

Above table shows that majority of cases i.e. 38% had 6-10 number of nail involvement, 35% patients had 1-5

number of nail involvement, 18% patients had 16-20 number of nail involvement and 9% patients had 11-15 number of nail involvement.

No. of nails	No. of cases	Percentage (%)
1-5	175	35
6-10	190	38
11-15	45	9
16-20	90	18
Total	500	100

Table IV. Number of nails involved

V. Nail changes in various dermatosis

The above table shows that majority of cases were of onychomycosis (25%), followed by psoriasis (20%), eczema

(20%), paronychia (8%), lichen planus (5%) and dariers disease (4%), to name a few.

Sr No	Dermatosis	No. of cases	Percentage (%)
1	psoriasis	100	20
2	eczema	50	10
3	tinea unguim	125	25
4	lichen planus	25	5
5	paronychia	40	8
6	alopecia	5	1
7	secondary syphilis	4	0.8
8	leprosy	10	2
9	HIV	10	2
10	systemic sclerosis	10	2
11	pemphigus	5	1
12	drug induced	30	6
13	epidermolysis bullosa	2	0.4
14	periungual warts	15	3
15	atopic dermatitis	11	2.2
16	Dariers disease	20	4
17	PRP	7	1.4
18	pachyonychia congenita	1	0.2
19	twenty nail dystrophy	20	4
20	nail changes due to trauma	5	1
21	vitiligo	5	1
	total	500	100

Table V. Nail changes in various dermatosis

VI. Nail changes in psoriasis

It is clear from table VI, that pitting was the most common finding in psoriasis, accounting for 70 % cases. Next most common nail changes were subungual hyperkeratosis in 40% and onycholysis in 52% cases. Discoloration was found in 25% cases followed by paronychia in 10% cases.

Splinter haemorrhages were seen in 12% and Beau's lines were observed in 14% cases salmon patches in 10 % cases, longitudinal ridging in 12% cases, longitudinal melanonychia in 4% cases, perilunular erythema/red lunules in 5% cases and twenty nail dystrophy in 3% cases.

Nail changes	No. of cases	Percentage (%)
Pitting	70	70
Subungual hyperkeratosis	40	40
Onycholysis	52	52
Discoloration	25	25
Paronychia	10	10
Splinter haemorrhage	12	12
Beau's line	14	14
Salmon patches	10	10
Longitudinal ridging	12	12
Dystrophy	6	6
Longitudinal melanonychia	4	4
Perilunular erythema/red lunules	5	5
Twenty nail dystrophy	3	3

Table VI. Nail changes in psoriasis (n = 100)

VII. Nail changes in lichen planus

The above table shows that longitudinal ridging was the most common finding accounting for 24% cases. Next most common nail changes were pterygium in 16% and

onycholysis in 16% cases. Longitudinal melanonychia was found in 20% cases followed by dystrophy in 4% cases. Twenty nail dystrophy was seen in 8% and subungual hyperkeratosis was observed in 12% cases.

Sr No	Nail changes	No. of cases	Percentage (%)
1	pterygium	4	16
2	longitudinal melanonychia	5	20
3	longitudinal ridging	6	24
4	onycholysis	4	16
5	dystrophy	1	4
6	subungual hyperkeratosis	3	12
7	twenty nail dystrophy	2	8

Table VII. Nail changes in lichen planus (n = 25)

VIII. Types of Onychomycosis

The above table shows that longitudinal ridging was the most common finding accounting for 24% cases. Next most common nail changes were pterygium in 16% and

onycholysis in 16% cases. Longitudinal melanonychia was found in 20% cases followed by dystrophy in 4% cases. Twenty nail dystrophy was seen in 8% and subungual hyperkeratosis was observed in 12% cases.

Sr No	Type	No. of cases	Percentage (%)
1	distal lateral sub ungual onychomycosis	93	74.4
2	superficial white onychomycosis	5	4
3	proximal sub ungual onychomycosis	2	1.6
4	total dystrophic onychomycosis	25	20

Table VIII. Types of onychomycosis (n = 125)

IX. The etiologic distribution of twenty nail dystrophy

The above table shows that the commonest cause of TND was idiopathic (45%). Other causes of TND were psoriasis

in 25% cases, lichen planus in 20% cases and alopecia areata was seen in 10% cases.

Sr No	Type	No. of cases	Percentage (%)
1	psoriasis	5	25
2	lichen planus	4	20
3	alopecia areata	2	10
4	idiopathic	9	45
5	Total	20	100

Table IX. Nail changes in twenty nail dystrophy

X. Nail changes in paronychia

The above table shows that absent cuticles and nail fold inflammation were the commonest nail changes seen in all

the cases, discoloration in 70% cases, transverse grooves in 50% and onycholysis in 40% cases.

Sr No	Nail Changes	No. of cases	Percentage (%)
1	absent cuticles	40	100
2	nail fold inflammation	40	100
3	subungual hyperkeratosis	6	15
4	onycholysis	16	40
5	discoloration	28	70
6	longitudinal striations	2	5
7	transverse grooves	20	50
8	nail dystrophy	2	5

Table X. Nail changes in paronychia

Discussion

Nail disorders are seen in various dermatosis like fungal infection, psoriasis, lichen planus, vesicobullous and collagen vascular disorders.

Onychomycosis represents a broad term for any fungal infection of any part of the nail unit by dermatophytes, molds or yeast [5].

Onychomycosis caused by dermatophytes is also called as *tinea unguium*. Fungal infection of nail may be classified as [6]:

1. Distal subungual onychomycosis primarily involves the distal nail bed and hyponychium.
2. Superficial white Onychomycosis is an invasion of the surface of the nail plate.
3. Proximal subungual onychomycosis involves the nail plate from the proximal nail fold.
4. Candidal onychomycosis involves all the nail plates [7,8,9]. There is true invasion of nail plate by *Candida albicans* resulting in dystrophic nail. It occurs in patients with chronic mucocutaneous candidiasis.

Nail involvement of one or all the nail component occur in 10% of patient with lichen planus [10,11]. Severe inflammatory focus in the nail matrix, leads to adhesion formation between epidermis of proximal nail fold and nail bed and result in pterygium formation, which is highly suggestive of LP. Other less common features include onycholysis, shedding of the nail, subungual hyperkeratosis, erythematous patches in the lunula, koilonychia, pitting and nail discoloration may also occur [12,13,14]. Psoriasis is a common disease affecting nails with subsequent dystrophy. Nail involvement has been reported up to 50% of case [15,16], but over a life time, the incidence cumulatively increases to 80-90%. In order of decreasing frequency, nail changes of psoriasis are pitting, onycholysis, subungual hyperkeratosis, nail plate discoloration, uneven nail surface, splinter haemorrhages [2] and lastly acute and chronic paronychia [17,18,19]. Nail changes are common in alopecia areata, ranging from 7% to 66% [20]. Nail changes are not only seen in extensive alopecia areata but may also be present with minimal hair loss and does not imply a poor prognosis for regrowth. Uniform pitting is the most common abnormality seen in alopecia areata. Pits are often uniformly arranged in lines both transversely and longitudinally in a geometrical or scotch plaid pattern [21]. Other nail changes include ridging, onychorrhexis, beau's lines or transversely arranged pits, thinning or occasionally thickening of the plate, koilonychia, onychomadesis leading to nail shedding, leukonychia punctata due to nail bed dystrophy and lunules may be red or mottled. Round finger pad sign could be the early sign of scleroderma. Pterygium inversum unguis may be the helpful diagnostic sign in scleroderma [22]. It is characterized by obliteration of the distal groove due to adherence of the distal portion of the nail bed to the ventral surface of the nail plate. Other nail signs like onycholysis, longitudinal ridging, onychorrhexis, onychogryphosis, haplonychia, longitudinal striation, absent lunulae, periungual vesiculation has been reported in scleroderma. Parrot beak deformity is another distinctive feature of the disease characterized by over curvature of the free margins of the nail over a shortened finger tip. It is due to atrophy of the soft tissue. Twenty nail dystrophy (TND) is a condition in which all twenty nails are uniformly and simultaneously affected [23,24]. Earlier it was called as excessive ridging of

childhood or Trachonychia [25]. TND can be idiopathic, congenital or acquired [26]. The acquired type may be related to variety of disorders like lichen planus, psoriasis, alopecia areata, ichthyosis vulgaris, eczema and perhaps Pemphigus. In our study, out of 500 patients, nail changes were seen in various dermatosis. Maximum number of patients (25%), were of onychomycosis (Fig. 1) followed by 20% patients of psoriasis (Fig. 2), 20% patients of eczema, 8%, patients were of paronychia (Fig. 3), 5% patients of lichen planus (Fig. 4) and 4% patient were of darier's disease to name a few. We had one patient of tuberous sclerosis with koenens tumour (Fig. 5). Out of 100 patients of psoriasis the most common changes were pitting, subungual hyperkeratosis, onycholysis and discoloration. Out of 125 cases of lichen planus, the most common changes were longitudinal ridging, pterygium and onycholysis. Twenty nail dystrophy was seen in 20 cases and the commonest cause of twenty nail dystrophy was idiopathic in 45% cases, psoriasis in 25% cases, lichen planus in 20% cases and alopecia areata was seen in 10% cases.



Figure 1. Distal lateral subungual onychomycosis



Figure 2. Pitting and onycholysis in a psoriasis



Figure 3. Paronychia with nail fold inflammation



Figure 4. Pterygium formation in lichen planus



Figure 5. Koenigs tumour

Conclusions

From the foregoing account, it can be concluded that a variety of nail changes can occur in various dermatological, systemic and other conditions. The nail unit is capable of only a limited number of reaction patterns, therefore, many diseases share similar changes, but correlation of the nail changes helps dermatologist to reach conclusive diagnosis. In order to evaluate the nail changes skillfully one must be familiar with the terminology and classification of the nail disorders. Thus knowing the normal and abnormal variants of the nail and their association with wide range of disease is beneficial not only for the establishing diagnosis but also for the specific management of the disease. Hence, no physical examination is complete without the study of nails. However, nails remain an understudied and yet quiet accessible structure that lends itself for examination and evaluation. Hence truly said that nails are the windows through which one can look into the health of the patients.

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