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A CLINICO-EPIDEMIOLOGICAL PROFILE OF PATIENTS PRESENTING WITH NAIL DISORDERS

Dermatology

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ABSTRACT

INTRODUCTION: Healthy-looking nails are an important part of an individual's body image. This study is aimed at describing the clinico-epidemiological profile of patients with nail disorder which present to our outpatient clinic.

METHODOLOGY: All patients, aged above 18 years who presented to our outpatient clinic with nail complaints and were diagnosed with any nail disorder were included. A detailed history, clinical examination and relevant investigations of all included patients were recorded in a pre-tested semi-structured proforma. The nail bed, nail folds, and hyponychium were assessed for discoloration, erythema, growths, scale, cuticle attachment, and vascular abnormalities, including pitting, ridging, longitudinal and transverse grooving. Associations were ascertained between frequency of various nail disorders with age, gender of the patients and degree of involvement.

RESULTS: During the study period 2509 patients were diagnosed with nail disorders at our hospital. Only nail involvement was in 74% of the patients, 13% had nails with skin or hair involvement and 12% had nail involvement with systemic diseases. The most common nail disorder diagnosed at our center was onychomycosis (39.9%), followed by onychomycosis and paronychia (13.2%). Other nail disorders diagnosed in the patient population were subungual Hyperkeratosis, pitting, onycholysis, onychoschizia, melanonychia, half and half nail, Trachyonychia, onychogryphosis and subungual melanoma.

CONCLUSIONS: Onychomycosis was the most common nail disorder in our patient population. People need to be more aware and physicians should be clinically alert to suspect dermatological and systemic diseases in patients presenting primarily with nail disorders.

KEYWORDS

Nail matrix ; Nail bed; Nail folds

INTRODUCTION

Both fingernails and toenails are important organs of our body, serving as protection for the tips of fingers and toes. Fingernails enhance fine touching and tactile sensitivity, as well as aid in the picking up of small objects. Healthy-looking nails are an important part of an individual's body image, playing an important role in interpersonal relationships. Therefore, nail abnormalities are considered a significant cosmetic problem, markedly influencing a person's self-esteem. The nail unit is composed of the nail matrix, nail bed, proximal and lateral nail folds, and hyponychium. Acquired nail disorders may involve all the components of the nail unit. They include infections, tumors, disorders associated with skin or systemic diseases, and abnormal pigmentation. Common signs of nail disease include transverse and longitudinal grooves, onychorrhexis, pitting, trachyonychia, leukonychia, longitudinal melanonychia, longitudinal erythronychia, splinter hemorrhages, onycholysis, and subungual hyperkeratosis. This study is aimed at describing the clinico-epidemiological profile of patients with nail disorder which present to our outpatient clinic.

METHODOLOGY

A descriptive observational study was carried out over a period of one year. All patients, aged above 18 years who presented to our outpatient clinic with nail complaints and were diagnosed with any nail disorder were included. A detailed history, clinical examination and relevant investigations of all included patients were recorded in a pre-tested semi-structured proforma. All nails were examined under adequate lighting without glare and with magnification. Transillumination of the distal phalanx by using a penlight was done, and to detect subtle changes of the nail plate surface, alcohol or acetone was used to cleanse the surface, remove any adherent substances, and reduce glare. Each component of the nail apparatus, including the nail plate, nail bed, proximal and lateral nail folds, and hyponychium were evaluated for any abnormalities. The nail bed, nail folds, and hyponychium were assessed for discoloration, erythema, growths, scale, cuticle attachment, and vascular abnormalities, including pitting, ridging, longitudinal and transverse grooving. The skin was examined for any concurrent findings and appropriate referral was indicated for patients with nail signs associated with systemic diseases. All nails of a patient were examined, and the required investigations (nail KOH, culture, or biopsy) were performed to establish the diagnosis. After approval of the institutional ethics committee, eligible patients were explained the purpose of the study and were included after obtaining their written consent.

Data were analysed in SPSS software version 21. Qualitative data were described as numbers and percentages. Associations were ascertained between frequency of various nail disorders with age, gender of the patients and degree of involvement using chi square or Fisher's exact test. Statistical analysis was performed at 95% level of confidence.

RESULTS

During the study period 2509 patients were diagnosed with nail disorders at our hospital. The most common age group was 40 to 49 years, followed by 30 to 39 years and 60% of the patients were females (Table 1). Only nail involvement was in 74% of the patients, 13% had nails with skin or hair involvement and 12% had nail involvement with systemic diseases. The most common nail disorder diagnosed at our center was onychomycosis (39.9%) [figure 1], followed by onychomycosis and paronychia (13.2%) [figure 2]. Other nail disorders diagnosed in the patient population were subungual hyperkeratosis [figure 3], pitting, onycholysis [figure 4], onychoschizia [figure 5], melanonychia, half and half nail [figure 6], trachyonychia, onychogryphosis [figure 7] and subungual melanoma. In our patient population, we found significantly higher number of cases of onychomycosis and onychomycosis with paronychia among females, in older age groups, without the involvement of skin, hair or other systemic diseases (Table 2, 3 and 4). Paronychia alone was also more common among females (Table 2). Pitting of nails, melanonychia and half and half nails were more common among male patients. Subungual hyperkeratosis was found to be be more common among patients of older age group (40 to 49 years), while pitting of nails and melanonychia was found more common among patients of younger age group (Table 3). Furthermore, paronychia, subungual hyperkeratosis, onychoschizia involved nails only, without involving any other body system. Pitting of nails was significantly associated with involvement of skin or hair and melanonychia was significantly associated with other systemic diseases.

DISCUSSION

Nail plate is hard and does not desquamate is contributed to by the high sulfur content in the form of cystine, poor ability to hold water because of low lipid content, filament alignment, marginal band formation, and highly developed junctional structures. These same biophysical features probably operate in preventing easy delivery of medications into the nail. These information have important practical application in treating nail disorders. In the present study, onychomycosis was the most commonly diagnosed nail disorder. There are few large community-based studies looking at the epidemiology of onychomycosis. A study of over 15,000 patients presenting to dermatology clinics in Canada found that 8% had onychomycosis. Most patients had only toenail involvement (7.6%); few had fingernail involvement alone (0.15%) or both toenail and fingernail involvement (0.27%). Distal subungual onychomycosis has been reported as the most common presentation. As from a retrospective study of approximately 4000 cases of onychomycosis, 90% were distal subungual onychomycosis, 7% were superficial white onychomycosis, and 3% were proximal subungual onychomycosis. Risk factors that have been associated with onychomycosis include older age, swimming, tinea pedis, psoriasis, diabetes, immunodeficiency, genetic predisposition, and living with family members who have onychomycosis. In the present study, onychomycosis was found to be more common among older female patients.

Paronychia is an inflammation involving the lateral and proximal fingernails folds and was diagnosed alone in 3.4% of the patients and concurrently with onychomycosis in 13.2% of the patients. One of the differential diagnosis of paronychia includes proximal onychomycosis, in which the nail plate is friable and the nail folds are not predominantly involved. Paronychia must also be distinguished from felon, an infection of the digital pulp characterized by severe pain, swelling, and erythema in the pad of the fingertip that is typically more dramatic than the onset of paronychia. Treatment of felon is an emergency situation and requires incision and drainage to prevent the development of osteomyelitis, permanent nail deformities, and ischemic necrosis of the fingertip.

In the present study, 13.5% of the patients had concurrent skin or hair involvement. Psoriasis is the most common dermatosis involving the nails. Nail pitting is the most common sign of nail psoriasis and results from focal areas of abnormal keratinization of the nail matrix that produce foci of parakeratotic cells in the dorsal nail plate as it grows beyond the cuticle. Onycholysis results from the distal separation of the nail plate from the inflamed underlying nail bed. An erythematous border and splinter hemorrhages are often associated with onycholysis. Furthermore, approximately 10 to 25% of patients with lichen planus have nail involvement. Nail involvement occurs in approximately 50% of children and 20% of adults with alopecia areata. Nail changes may not occur at the same time as hair loss and are more common in males and severe cases. In our patient population, 12% had nail disorders with systemic diseases. Signs of temporary disturbance in nail growth such as Beau lines and onychomadesis may occur in association with high fever, viral diseases (eg, hand, foot, and mouth disease), or Kawasaki syndrome. Half-and-half nails, a manifestation of chronic renal insufficiency and uremia, was seen in 12 patients in our study.

CONCLUSION

In our patient population, onychomycosis was the most common primary nail disorder. With the emergence of new effective systemic and topical therapies, large scale epidemiological studies are important to know the extent and impact of nail disorders in population. People need to be more aware and physicians should be clinically alert to suspect dermatological and systemic diseases in patients presenting primarily with nail disorders.

Table 1. Baseline characteristics of the patients included in the study

Variable	N (%)
Age distribution (in years)	
10 to 19	53 (2.1)
20 to 29	190 (7.6)
30 to 39	907 (36.1)
40 to 49	1068 (42.6)
≥ 50	291 (11.6)
Gender distribution	
Females	1520 (60.6)
Males	989 (39.4)
Degree of involvement	
Nails only	1870 (74.5)
Nails with skin or hair	338 (13.5)
Nails with systemic diseases	301 (12%)
Nail disorders diagnosed	
Onychomycosis	1000 (39.9)
Onychomycosis and paronychia	332 (13.2)
Onychomycosis positive on alkali	492 (19.6)
Paronychia	85 (3.4)
Subungual hypertrophy	347 (13.8)
Pitting	378 (15.1)
Pterygium	14 (0.6)
Onycholysis	126 (5)
Onychoschizia	73 (2.9)
Melanonychia	115 (4.6)
Half and half nail	12 (0.5)
Trachonychia	22 (0.9)
Onychogryphosis	2 (0.1)
Subungual melanoma	2 (0.1)

Table 2. Association of various disorders with gender of the patient

Nail disorder	Female (n=1520)	Male (n=989)	p value
Onychomycosis	633 (41.6)	367 (37.1)	0.02
Onychomycosis and paronychia	248 (16.3)	84 (8.5)	<0.0001
Onychomycosis positive on alkali	329 (21.6)	163 (16.5)	<0.0001
Paronychia	73 (4.8)	12 (1.2)	<0.0001
Subungual hypertrophy	221 (14.5)	126 (12.7)	0.20
Pitting	152 (10)	226 (22.9)	<0.0001
Pterygium	5 (0.3)	9 (0.9)	0.06
Onycholysis	75 (4.9)	51 (5.2)	0.80
Onychoschizia	48 (3.2)	25 (2.5)	0.35
Melanonychia	45 (3)	70 (7.1)	<0.0001
Half and half nail	3 (0.2)	9 (0.9)	0.011
Trachonychia	15 (1)	7 (0.7)	0.46
Onychogryphosis	0 (0)	2 (0.2)	0.07
Subungal melanoma	0 (0)	2 (0.2)	0.07

All numbers are n (%)

Table 3. Association of various disorders with age group of the patients

Nail disorders	Age group (in years)					p value
	10-19 (n=53)	20-29 (n=190)	30-39 (n=907)	40-49 (n=1068)	≥ 50 (n=291)	
Onychomycosis	1 (1.9)	5 (2.6)	246 (27.1)	559 (52.3)	159 (64.9)	<0.0001
Onychomycosis and paronychia	0 (0)	2 (1.1)	178 (19.6)	103 (9.6)	49 (16.8)	<0.0001
Onychomycosis positive on alkali	1 (1.9)	3 (1.6)	161 (17.8)	233 (21.8)	94 (32.3)	<0.0001
Paronychia	0 (0)	4 (21)	60 (6.6)	20 (1.9)	1 (0.3)	<0.0001
Subungual hypertrophy	0 (0)	3 (1.6)	63 (6.9)	245 (22.9)	36 (12.4)	<0.0001
Pitting	37 (69.8)	134 (70.5)	175 (19.3)	28 (2.6)	4 (1.4)	<0.0001
Pterygium	2 (3.8)	9 (4.7)	3 (0.3)	0 (0)	0 (0)	<0.0001
Onycholysis	7 (13.2)	3 (1.6)	52 (5.7)	62 (5.7)	2 (0.7)	<0.0001
Onychoschizia	0 (0)	2 (1.1)	38 (4.2)	31 (2.9)	2 (0.7)	0.006
Melanonychia	6 (11.3)	28 (14.7)	63 (6.9)	14 (1.3)	4 (1.6)	<0.0001
Half and half nail	0 (0)	0 (0)	8 (0.9)	4 (0.4)	0 (0)	0.20
Trachonychia	0 (0)	0 (0)	20 (2.2)	2 (0.2)	0 (0)	<0.0001
Onychogryphosis	0 (0)	0 (0)	0 (0)	0 (0)	2 (0.7)	0.004
Subungal melanoma	0 (0)	0 (0)	0 (0)	0 (0)	2 (0.7)	0.004

All numbers are n (%)

Table 4. Association of various disorders with the degree of involvement

Nail disorder	Degree of involvement			p value
	Nails (n=1870)	Nails with skin or hair (338)	Nails with systemic diseases (n=301)	
Onychomycosis	869 (46.5)	23 (6.8)	108 (35.9)	<0.0001
Onychomycosis and paronychia	293 (15.7)	3 (0.9)	36 (12)	<0.0001
Onychomycosis positive on alkali	431 (23)	8 (2.4)	53 (17.6)	<0.0001
Paronychia	74 (4)	2 (0.6)	9 (3)	0.006
Subungual hypertrophy	309 (16.5)	6 (1.5)	32 (10.6)	<0.0001
Pitting	91 (4.9)	270 (79.9)	17 (5.6)	<0.0001
Pterygium	0 (0)	14 (4.1)	0 (0)	<0.0001
Onycholysis	99 (5.3)	17 (5)	10 (3.3)	0.34
Onychoschizia	65 (3.5)	1 (0.3)	7 (2.3)	0.004
Melanonychia	45 (2.4)	1 (0.3)	69 (22.9)	<0.0001
Half and half nail	0 (0)	0 (0)	12 (4)	<0.0001
Trachonychia	21 (1.1)	1 (0.3)	0 (0)	0.07
Onychogryphosis	2 (0.1)	0 (0)	0 (0)	1.00
Subungal melanoma	1 (0.1)	0 (0)	1 (0.3)	0.22

All numbers are n (%)

ONYCHOLYSIS

FIG – 1

ONYCHOMYCOSIS AND PARONYCHIA

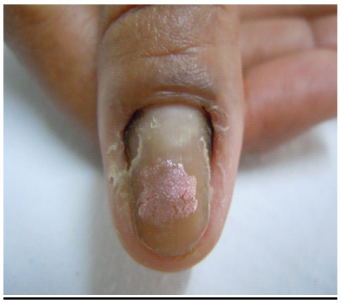

FIG – 2

SUBUNGAL HYPERKERATOSIS

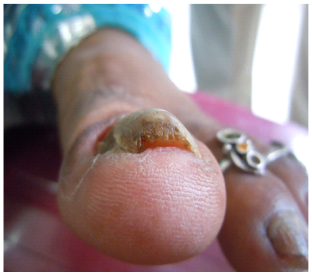

FIG-3

ONYCHOLYSIS

FIG-4

ONYCHOSCHIZIA

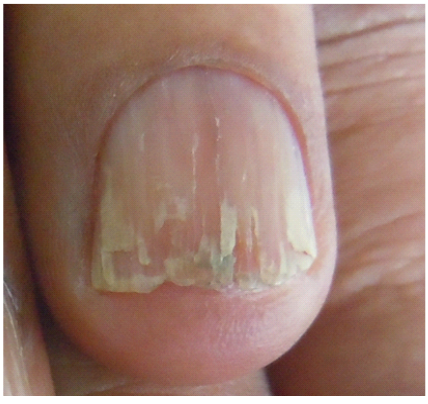

FIG-5

HALF AND HALF NAILS

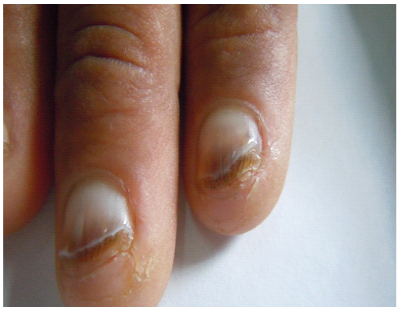

FIG -6

ONYCHOGRYPHOSIS

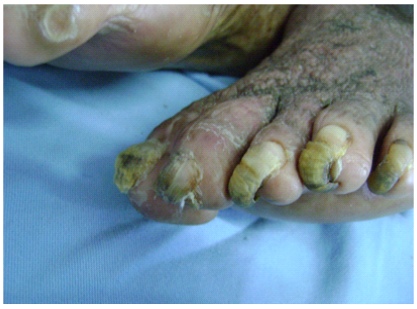

FIG-7

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