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Original Research Paper

A CLINICAL STUDY ON ONYCHOSCOPY OF NAIL LESIONS IN SUBJECTS WITH DERMATOLOGICAL DISORDERS

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ABSTRACT

Background: Nearly 10% of all dermatological disorders and conditions are attributed to the disorders of the nails. Onychoscopy is beneficial in the diagnosis of nail conditions as well as for assessment of the progression, severity, and monitoring of the response to the therapy.

Aim: The present study aimed to assess the dermoscopic and sociodemographic features in subjects with nail disorders and Onychoscopy of nail lesions in subjects with dermatological disorders.

Methods: The present study assessed 88 subjects with nail disorders from both genders. There were 56.81% (n=50) males and 43.18% (n=38) females in the study. In all included subjects, dermoscopic and sociodemographic features were assessed. The data gathered were analyzed for results formulation.

Results: The study results showed that fingernails were more commonly affected in 37.5% (n=33) subjects compared to toenails in 84.09% (n=74) subjects. The most common nail condition was Onychomycosis seen in 32.9% (n=29) subjects that showed findings of onycholysis with spikes and jagged edges in 68.9% (n=20), subungual hyperkeratosis in 72.41% (n=21) subjects, and 75.86% (n=22) subjects respectively. The next common condition was nail psoriasis seen in 18.1% (n=16) of study subjects depicting dilated globose nail fold vessels on capillaroscopy, and onycholysis.

Conclusions: The present study concludes that onychoscopy can decrease the need for biopsy which is an invasive procedure by focusing on subtle changes and helps in excluding the differential diagnosis. Also, onychoscopy is a diagnostic choice in young children. The present study helped to assess connective tissue disorder severity and can help in diagnosing the benign nature of melanonychia.

Keywords: Nail disorders, onychoscopy, onychomycosis, dermoscopy, melanonychia

INTRODUCTION

Disorders affecting the nails can be primary or secondary. Primary nail disorders have primary etiology and secondary nail disorders are seen secondary to various systemic illnesses. Nail disorders account for nearly 10% of all dermatological diseases and conditions.[1] Various nail disorders, when left untreated, can lead to various abnormalities in the nails, permanent dystrophy, and functional interference. Also, the alterations affecting only the nails and not the skin which are subtle alterations are not seen with the naked eye and can be missed leading to delayed treatment.[2,3]

Dermoscopic assessment and visualization of the subsurface of the nails is a non-invasive and quick procedure that has the benefits of enabling the use of future references that could be helpful during the follow-up time, helps in retaining the photographic evidence of the disease and condition, high reproducibility of the technique, has low cost, and a shorter learning curve associated with the dermoscopic visualization.[4,5]

However, the existing literature data is scarce concerning the onychoscopy and dermoscopic assessment of the nails to assess and diagnose nail disorders.[6,7] Hence, the present study aimed to describe and assess the bronchoscopic features in subjects with nail disorders per se or related to dermatoses in subjects reporting to an Indian healthcare center. The study also assessed the sociodemographic profiles of these subjects.

MATERIALS AND METHODS

The present cross-sectional observational study was aimed to assess the dermoscopic and sociodemographic features in subjects with nail disorders and Onychoscopy of nail lesions in subjects with dermatological disorders. The study was done after the clearance was given by the concerned Institutional ethical committee. The study subjects were from the Department of Dermatology of the Institute. Verbal and written informed consent were taken from all the subjects before study participation.

The present study included 88 subjects from both genders with nail lesions. The inclusion criteria for the study were subjects from all the age ranges, subjects who were willing to participate in the study, and subjects with nail disorders. The exclusion criteria for the study were subjects having nail conditions secondary to a systemic disease and subjects who did not give consent for study participation.

After the final inclusion of the study subjects, detailed history was recorded for all the subjects along with the demographic data. Also, a preformed structured proforma was used for recording

the onset, duration, and progression of the nail lesions and conditions for all the study participants. The diagnosis made was based on the clinical picture of the study subjects.

In subjects where the diagnosis of the nail lesions was uncertain and non-confirmatory, nail biopsy, fungal culture, and nail scraping were done as and when indicated. The findings of onychoscopy were recorded under the magnification of 10X using the dermoscopy in both polarized and non-polarized modes with or without the use of the ultrasound gel as the medium of the interface.

The data gathered were analyzed statistically using the SPSS software version 21.0 (IBM Corp., Armonk, NY, USA) and the chi-square test. The data were expressed as mean and standard deviation and frequency and percentage. Statistical significance was kept at a p-value of <0.05. To evaluate the change in parameters of any group before and after surgery, repeated measurements and ANOVA (analysis of variance) were used.

RESULTS

The present cross-sectional observational study was aimed to assess the dermoscopic and sociodemographic features in subjects with nail disorders and Onychoscopy of nail lesions in subjects with dermatological disorders. The present study included 88 subjects from both genders with nail lesions. There was a higher number of males with 56.81% (n=50) subjects compared to females with 43.18% (n=38) subjects. The age range of the study subjects was 1 year to 70 years and the mean age of 35.78±14.94 years. The majority of the study subjects were in the age range of 32-40 years with 22.7% (n=20) subjects minimum subjects were in the age range of 0-8 years with 1.13% (n=1) subjects. The duration of the disease was 4 days to 30 days with the mean disease duration of 1.53 years.

The study results showed that the changes in cutaneous and nail structures were seen in 48.86% (n=43) of subjects. The nail changes alone were seen in 51.13% (n=45) of study subjects. It was seen that the fingernails were more commonly involved in the study subjects with 84.09% (n=74) subjects compared to the involvement of the toenails which was seen in 38.64% (n=34) study subjects. Only toenails and only fingernails were involved in 23.86% (n=21) subjects and 14.77 (n=13) study subjects respectively.

It was also seen that the most common diagnosis in nail disorders was onychomycosis in 32.95% (n=29) study subjects followed by nail psoriasis in 18.1% (n=16) study participants. The least common nail condition was nutritional deficiency seen in 4.55% (n=4) subjects along with lichen planus, acute paronychia, chronic paronychia, and tracyonychia seen in 5.68% (n=5), 5.68% (n=5), 6.82% (n=6), 9.09% (n=8), and 18.1% (n=16) study subjects respectively. The lesser common and common conditions are summarized in Tables 1 and 2/.

DISCUSSION

The present study included 88 subjects from both genders with nail lesions. There was a higher number of males with 56.81% (n=50) subjects compared to females with 43.18% (n=38) subjects. The age range of the study subjects was 1 year to 70 years and the mean age of

35.78±14.94 years. The majority of the study subjects were in the age range of 32-40 years with 22.7% (n=20) subjects minimum subjects were in the age range of 0-8 years with 1.13% (n=1) subjects. The duration of the disease was 4 days to 30 days with the mean disease duration of 1.53 years. These data were similar to the studies of Yadav TA et al[8] in 2015 and Yorulmaz A. et al[9] in 2018 where authors assessed subjects with similar demographic and sociodemographic data as assessed in the present study.

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It was also seen that the most common diagnosis in nail disorders was onychomycosis in 32.95% (n=29) study subjects followed by nail psoriasis in 18.1% (n=16) study participants. The least common nail condition was nutritional deficiency seen in 4.55% (n=4) subjects along with lichen planus, acute paronychia, chronic paronychia, and tracyonychia seen in 5.68% (n=5), 5.68% (n=5), 6.82% (n=6), 9.09% (n=8), and 18.1% (n=16) study subjects respectively. These findings were in agreement with the results of Nakamura R et al[12] in 2013 and Singal A et al[13] in 2015 where authors reported that the most common nail disorder is onychomycosis as seen in the present study results. Also, the studies of Kayarkatte MN et al[14] in 2020 and De Crignis G et al[15] in 2014 where authors suggested that nails are less commonly affected by nutritional deficiency as seen in the results of the present study.

CONCLUSIONS

Considering its limitations, the present study concludes that onychoscopy can decrease the need for biopsy which is an invasive procedure by focusing on subtle changes and helps in excluding the differential diagnosis. Also, onychoscopy is a diagnostic choice in young children. The present study helped to assess connective tissue disorder severity and can help in diagnosing the benign nature of melanonychia. However, further longitudinal studies with larger sample sizes are needed for definitive conclusions.

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TABLES

S. No	Diagnosis	Onychoscopy features	N	%
1.	**Lichen planus**	Splinter hemorrhage, pup tenting, jagged edges with spikes, onycholysis, dorsal pterygium, anonychia, aurora borealis	1	20
		Chromonychia, dystrophic nail	2	40
		Longitudinal ridging, grey-black band, onychorrhexis	4	80

2.	**Acute paronychia**	Ingrown toe nail	1	20
		Nail plate uplifting, PNF swelling, LNF erythema	2	40
		red dots on the nail bed	3	60
		Structureless white area	4	80
3.	**Chronic paronychia**			
		Longitudinal ridging, grey-black band, dystrophic nail	1	16.6
		LNF erythema	2	33.3
		Onychomadesis	3	50
		LNF and PNF scaling, brown discoloration	4	66.6
		Destroyed cuticle	5	83.3
4.	**Trachyonychia**	Splinter hemorrhage, onycholysis onychomadesis, onycholysis, dorsal pterygium, chromonychia, anonychia	1	12.5
		Koilonychia, beau lines, onychoschizia	2	25
		Longitudinal grey-black bands	2	25
		Brittle nails	4	50
		Onychorrhexis, dystrophic nail	5	62.5
		Longitudinal ridging	7	87.5
5.	**Psoriasis**	Subungual hyperkeratosis, splinter hemorrhage, LNF, and PNF scaling Longitudinal ridging, grey-black band, lamellar micro splitting, green discoloration	1	6.25
		Psoriatic nail fold lesion, leukonychia, dystrophic nail, onychorrhexis	2	12.5
		PNF dilated global vessels, erythematous band at proximal onycholytic border	4	25
		Onycholysis	10	62.5
		Pitting	13	81.25
6.	**Onychomycosis**	Nail plate uplifting, PNF erythema, onychoschizia, onychomadesis, pitting, beau lines, green discoloration, destroyed cuticle	1	3.45
		Splinter hemorrhage, PNF swelling, LNF and PNF scaling, brown discoloration	2	6.9
		Onychorrhexis, lamellar micro splitting	4	13.97
		Leukonchyia	5	17.24
		Longitudinal grey-back band	7	24.14
		Dystrophic nails	8	27.59
		Longitudinal white steaks	11	37.93
		Chromonychia	16	55.17
		Jagged edges with spikes, onycholysis	20	68.97
		Subungal hyperkeratosis	21	72.41
		Aurora borealis	22	75.86

Table 1: Dermoscopic features of various dermatologic lesions in the study subjects

S. No	Diagnosis	Onychoscopic features	N	%
1.	**Subungual hemorrhage**	Hemogenous reddish-purple patch with irregular margins	1	100
2.	**Longitudinal melanochyia**	Longitudinal grey-black bands	1	100
3.	**Eczema**	Beau lines	1	100
4.	**Erythroderma**	Shiny nails, pitting, onycholysis	1	100
5.	**Subungal fibroma**	Grey white striations with yellow polypoidal growth below the nail plate, nail plate uplifting, onycholysis	1	100
6.	**Leprosy**	Subungual hyperkeratosis, onychomadesis, onycholysis, leukonychia, chromonychia	1	100
7.	**Pyogenic granuloma**	Hyperkeratotic mass on proximal nail, hemorrhagic spots, criss-cross white lines, brown necrotic area	1	100
8.	**Pachyonychia congenital**	Nail plate uplifting, subungual hyperkeratosis, pincer nail deformity, onycholysis, chromonychia	1	50
9.	**SLE**	Longitudinal grey-black band, onychorrhexis, onycholysis, glomerular and linear vessels on NFC	1	100
10.	**Systemic sclerosis**	Giant capillaries on NFC, capillary hemorrhages and dropouts on NFC, avascular pattern, dilated capillary loops	2	100
11.	**Pseudomonas infection**	Subungual hyperkeratosis, LNF and PNF scaling, chromonychia, green discoloration	1	50
12.	**Periungual warts**	Grouped whitish papillae, normal skin marking distortion, dotted thrombosed vessels with a white halo	2	100
13.	**Nutritional deficiency**	Ingrown toenail, nail plate uplifting, subungual hyperkeratosis, pup testing, pitting, pincer nail, onychomadesis, koilonychia, onychorrhexis, beau lines, longitudinal ridges	2	50

Table 2: Dermoscopic findings of less common ḍermatologic disorders in study subjects