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Original Research Article

Dermoscopic evaluation of nail psoriasis: a cross-sectional study

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ABSTRACT

Background: Psoriasis is a chronic inflammatory immune mediated disease that can involve skin, nails, scalp, etc. Nails can be involved in up to 90% of psoriatic patients in their lifetime. Also, psoriatic arthritis is commonly found in patients having nail involvement. Nail changes in psoriasis can be imperceptible to the unaided eye and easily missed on clinical examination. Onychoscopy has helped in improving diagnosing these subtle clinical features. Aim of the research was to study dermoscopic features in nails involved in psoriasis.
Methods: 50 patients having clinically evident nail psoriasis, of which 2 were excluded due to positive KOH examination were recruited in the cross-sectional descriptive study. After clinical examination, all the nails were subjected to dermoscopic examination. The findings were tabulated in Excel and comparisons were made.
Results: The common dermoscopic findings were pits (79.2%), splinter haemorrhage (72.9%), onycholysis (68.8%), subungual hyperkeratosis (50%), nail plate scales (50%), dilated PNF/LNF capillaries (20.8%), ridges (18.8%), leukonychia (14.5%), salmon spots (10.4%), fuzzy lunula (8.3%), and dilated hyponychial capillaries (6.3%).
Conclusions: Dermoscopy is a simple, easy, rapid and an office-based technique. It helps in picking up subtle nail changes not visible to the naked eye. It also precludes from doing painful nail biopsy in nail disease without its skin manifestation. Onychoscopy helps in picking up early nail findings in psoriasis and thereby warning the patients against impending disease severity.

Keywords: Dermoscopy, Nail, Nail psoriasis, Onychoscopy

INTRODUCTION

Psoriasis is a chronic inflammatory immune mediated disease that can involve skin, nails, scalp, flexures, and joints. Prevalence of nail involvement is between 10% to 82% while the lifetime involvement of nails is seen in up to 90% patients, hence, may cause significant morbidity due to its aesthetic appearance. Early diagnosis of nail psoriasis is imperative as it can predict the occurrence of psoriatic arthritis (PsA). In a survey, PsA was present in 46% of patients with nail involvement and in only 30% of patients without nail involvement.[1] Isolated nail psoriasis is seen in 5-10% patients, diagnosing which can be challenge for the clinicians.[2] Nail changes in psoriasis can be imperceptible to the unaided eye and easily missed on clinical examination. Onychoscopy has helped in improving diagnosing these subtle clinical features.

METHODS

After obtaining clearance from the institutional ethics committee, this cross-sectional observational study was conducted in 50 consequent psoriatic patients attending dermatology outpatient department of a tertiary care hospital over a period of 6 months, from June 2019 to December 2019. Patients with any morphological forms of psoriasis not undergoing any treatment and having clinically visible nail involvement were recruited for study. After taking written consent, patients underwent a

detailed history regarding onset, duration, number of nails involved, underlying skin disease and systemic complaints. Then they were subjected to general physical examination, systemic and cutaneous examination. Relevant laboratory investigations like potassium hydroxide (KOH) examination and nail biopsy were carried out wherever necessary. 2 patients with positive KOH examination were excluded from the study. All nails were then examined by a handheld dermoscope Dermlite DL4 with a magnification of 10×. Higher magnification of up to 50× was used in both non polarized and polarized mode with and without interface medium (ultrasound gel). Digital photographs were taken by iPhone 6s. The findings were recorded and tabulated in master chart.

RESULTS

Amongst the 48 patients enrolled, a mean age of 38.6 years was observed. The youngest patient was a 10-year-old while the oldest was 76 years old. 42 (87.5%) patients were males and 6 (12.5%) were females with a male: female ratio was 7:1. Majority patients [26(54.1%)] belonged to the middle class while lower and upper class comprised 33.3% and 12.5% of the total, respectively. The duration nail involvement in psoriasis ranged from 2 months to 10 years with a mean of 1.5 years.

21 patients had fingernails involved exclusively while 27 patients had both fingernails and toenails involved. A total of 322 nails (232 fingernails and 90 toenails) were affected in 48 patients with a mean number of nails involved were 6.7±4.15.

The most common underlying morphological type of psoriasis was chronic plaque psoriasis. Only 2 (4.2%) patients had exclusive nail psoriasis.

Onycholytic edge was dented in 36 (75%) patients of nail psoriasis and had an erythematous or yellowish-orange proximal border in 19 (39.6%) patients.

Pits were defined as circular punctate depressions in the nail plate. Pits in nail psoriasis were deep (>1 mm) in 30 (75%) while superficial in 10 (25%) and were commonly random in distribution. Whitish halo around pits was present in 20 (41.6%) patients.

Table 1: Types of psoriasis.

Type of psoriasis	Number of patients	Percentage (%)
Chronic plaque psoriasis	37	77.1
Palmoplantar psoriasis	5	10.4
Erythrodermic psoriasis	3	6.3
Nail psoriasis	2	4.2
Pustular psoriasis	1	2
Total	48	100

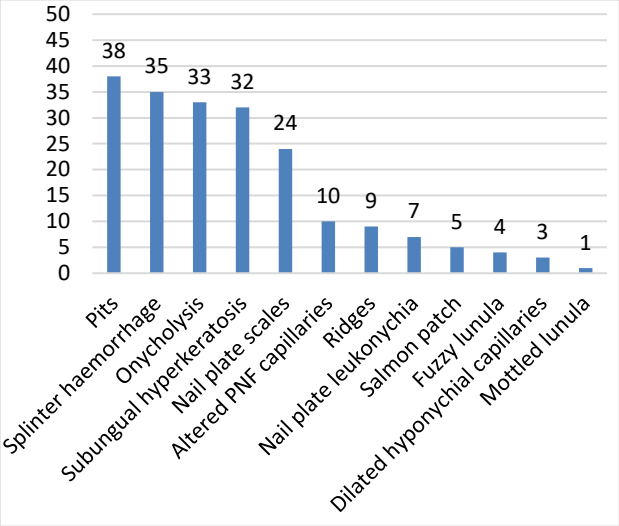

Figure 1: Dermoscopic findings of nail psoriasis.

DISCUSSION

Dermoscope is a novel, non-invasive diagnostic tool in dermatology. Now, dermoscopy utility horizon has extended to include nearly all dermatological disorders and acts as a supportive tool for the examination of nail changes associated with various dermatological diseases. It stands vital when the nail features imperceptible to the naked eye or when there are no skin manifestations. Dermoscopy can enhance visualization of these nail changes, as well as reveal new additional features that may be specific to psoriasis.

Table 2: Comparison of dermoscopic findings of nail psoriasis.

	Present study	Wanniang et al[3]	Chauhan et al[4]	Yorulmaz et al[5]	Polat et al[6]
Year	2020	2020	2020	2017	2017
Total patients	48	50	55	67	40
M: F	7:1	3.2:1	-	3.8:1	0.7:1
Mean age (years)	38.6	45.02	-	43.4	34.05
Duration of nail psoriasis	2 months-10 years	5 months-12 years	-	1-50 years	5.9±7.6 years
Onychoscopic findings					
Pits (%)	79.2	54	60.5	58.2	77.5

Continued.

	Present study	Wanniang et al[3]	Chauhan et al[4]	Yorulmaz et al[5]	Polat et al[6]
Splinter haemorrhage (%)	72.9	84	-	73.1	80
Onycholysis (%)	68.8	54	40.8	55.2	77.5
Subungual hyperkeratosis (%)	66.7	62	52.8	9	32.5
Nail plate scales (%)	50	46	-	-	-
Dilated PNF/LNF capillaries (%)	20.8	-	35.8	-	-
Ridges (%)	18.8	-	-	-	-
Leukonychia (%)	14.5	-	-	6	92.5
Salmon spots (%)	10.4	22	-	22.4	47.5
Fuzzy lunula (%)	8.3	-	33.6	-	-
Dilated hyponychial capillaries (%)	6.3	10	38.6	64.2	-
Pseudo-fiber sign (%)	-	-	-	34.3	-

Dermoscopic findings are contingent on the involvement of the concerned area of the nail unit. Nail bed affection causes onycholysis, oil spots (salmon patch), subungual hyperkeratosis, and splinter haemorrhage while nail matrix involvement can lead to pitting, leukonychia, red spots in the lunula and crumbling.[7]

In the current study, the most common observation was pits (83.3%), which were dermoscopically seen as superficial or deep circular punctate depressions (Figure 1), randomly distributed and sometimes surrounded by whitish halo peripherally. They were irregular in size and shape. On applying gel, these pits were filled with it. Parakeratosis is the key cause of leukonychia, onycholysis, salmon patch besides nail pitting. In the matrix, these parakeratotic cells hamper the normal process of keratinization, hence, as the nail increases in size, these cells shed off, causing coarse depressions. When a large area of nail matrix is involved, it leads to formation of horizontal ridges (Figure 7). Whereas the existence of parakeratotic cells inside the nail bed lead to salmon patches and their sloughing at the hyponychium leads to onycholysis.

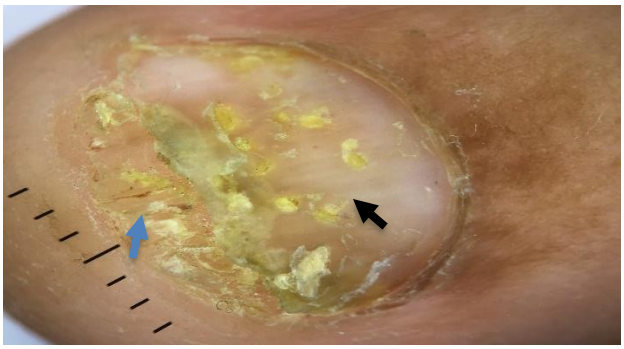

Figure 1: Multiple deep circular punctate depressions surrounded by whitish halo present irregular in distribution. Dilated hyponychial capillaries seen (blue arrow). Fuzzy lunula can also be appreciated (black arrow).

Splinter haemorrhage (Figure 2) (72.9%) was the second most frequent finding in our study while the most common dermoscopic feature in studies by Wanniyang et al and Yorulmaz et al. They were appreciated as reddish-brown or purplish-black streaks arranged longitudinally, usually on distal nail plate. Capillary breakage causes the seeping of extravasated blood beneath the nail plate into the grooves, thus creating 'splinter' shaped pattern.

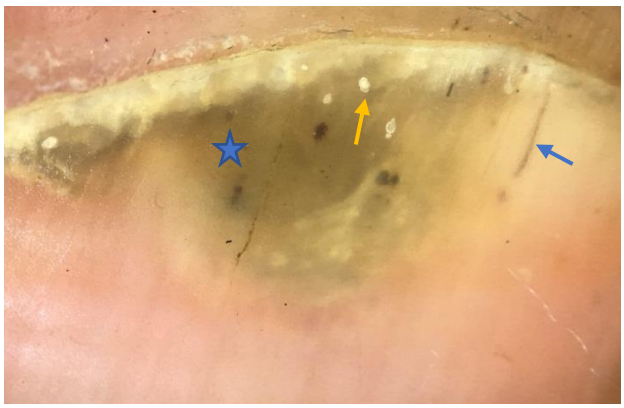

Figure 2: Multiple longitudinal reddish-brown streaks and dots (splinter hemorrhages-blue arrow) on distal nail plate. Dented onycholysis (star) with leukonychia (yellow arrow).

Onycholysis (Figure 3) (68.8%) was the next common finding. Psoriatic onycholysis was dermoscopically seen as whitish onycholytic area distally with a proximal characteristic reddish border (40.63%). The onycholytic edge was dented in 25 (75%) while linear in others. Onycholysis along with subungual hyperkeratosis is a commonly seen finding of toenails. Subungual hyperkeratosis (Figure 4) was regarded as non-ruinous aspect (non-destructive or compact) and was seen in 66.7% patients.

Mottled lunula on dermoscopy was found in 4 (8.3%) cases which was attributed to inflammatory response of

vessels in nail matrix beneath the nail plate. Fuzzy lunula (Figure 1) was a new dermoscopic finding by Chauhan et al.7 which was uncovered in 4 (8.3%) cases while in 33.6% in their study.

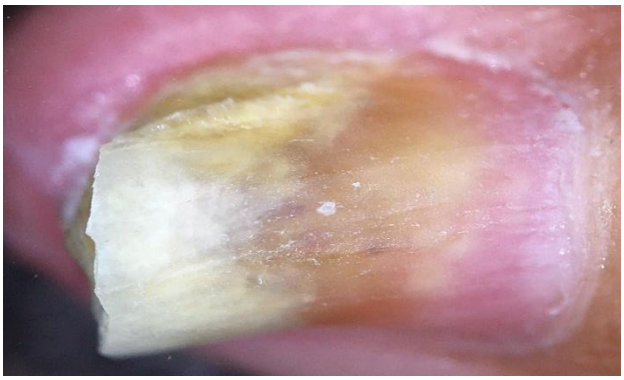

Figure 3: Distal onycholysis and proximal yellowish-orange band. The nail plate is elevated due to subungual hyperkeratosis.

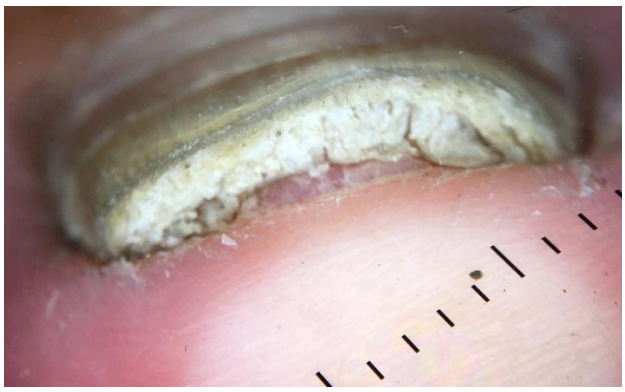

Figure 4: Compact subungual hyperkeratosis beneath the nail plate.

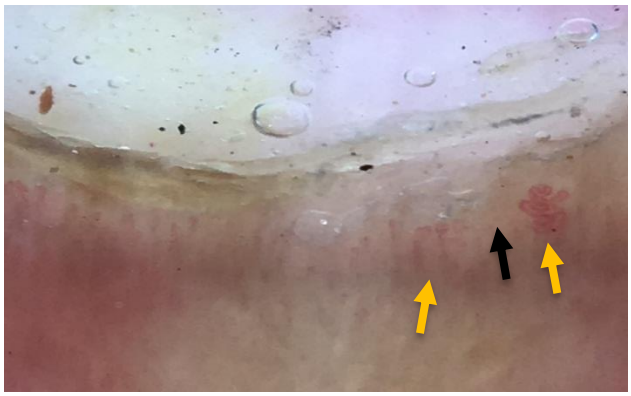

Figure 5: Proximal nail fold showing dilated and tortuous capillaries (yellow arrow) with avascular area (black arrow).

Capillary pattern examination in the hyponychium and proximal nail fold helps in evaluating severity of the disease and treatment response.[8] Hyponychial capillaries (Figure 1) were witnessed as dilated, tortuous and with an irregular distribution in all the cases [30 (100%)] by Lorizzo et al by means of a videodermoscope.[9] Yorulmaz et al correlated such hyponychial capillaries to be associated with a severe disease.[5] On the other hand, proximal nail fold capillaries (Figure 5) showed a reduced capillary width and density which was not found to be correlated to duration and extent of disease.[8] We also observed tortuous proximal nail fold capillaries in 15.4% cases. Capillaries along onychodermal band (Figure 6) were dilated and prominent and surrounded by whitish halo in 6.3% cases in our study. However, capillary prominence was not associated with PASI and NAPSI in the study by Polat et al.[6] Errichetti et al recommended dermoscopic examination of vascular structures of elbow and proximal nail fold to distinguish between rheumatoid and psoriatic arthritis.[10]

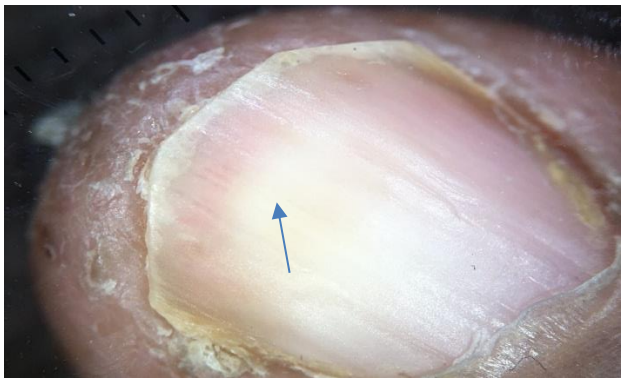

Figure 6: Multiple dilated capillaries seen in onychodermal band (arrow).

Nail folds showed whitish scales on an erythematous background in 5 (10.4%) cases. This has been found in moderate to severe psoriasis.[7] Nail plate scales were noticed in the proximal part of nail plate as whitish irregular scales.

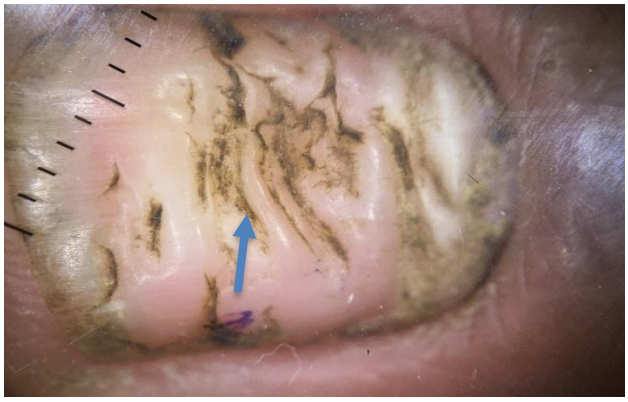

Figure 7: Multiple incomplete horizontal ridges on nail plate.

Salmon spot (also known as oil drop) were dull red to orange-red globules in the nail plate found in 4 cases seen due to entrapment of parakeratotic cells and glycoproteins in the nail bed.

Pseudo-fiber sign corresponded to arterial and venous ends of capillaries seen in 34.3% cases in a study by Yorulmaz et al.[5] They were visible as reddish and black filamentous structures in cuticle, beneath the distal free edge and in detached areas of nail plate at a magnification of 60×. Pseudo-fiber sign could not be appreciated in this study owing to the low magnification (10×) of our dermoscope

CONCLUSION

We conclude by saying that dermoscope has aided in picking up subtle changes in the nails of psoriasis patients. It should always be carried out apart from routine clinical examination as splinter hemorrhage, salmon patch, capillaries were better visualized using a dermoscope. The erythematous linear band bordering the onycholytic whitish area is characteristically observed with a dermoscope and can help differentiate with other causes of onycholysis. Dermoscopic evaluation of nails is a favored, non-invasive, painless, bedside method, which can help to make a diagnose nail psoriasis even in patients without any skin manifestation. This can thereby preclude the need of distressing procedures like nail biopsy.

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Ethical approval: The study was approved by the institutional ethics committee

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