ORIGINAL ARTICLE

Onychoscopic Changes in Psoriatic Patients with Skin of Color

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Abstract

Background: Nail changes are observed in over half of psoriasis patients and may be associated with significant morbidity, more severe cutaneous involvement, and an increased risk of psoriatic arthritis. Onychoscopy or dermoscopy of the nails offers a rapid, non-invasive method for detailed assessment of psoriatic nail abnormalities. **Aims and Objectives:** This study aimed to document the onychoscopic findings observed in patients with psoriasis and determine their correlation with disease severity. **Materials and Methods:** A cross-sectional observational study was carried out over 2 months among patients with clinically diagnosed psoriasis attending a tertiary care hospital. Detailed assessment of cutaneous and nail findings was performed, followed by dermoscopic examination of all nails using polarized and non-polarized modes (Heine Delta 30™ dermoscope). Statistical processing of the collected data was performed using IBM Statistical Package for the Social Sciences™ software version 25.0. **Results:** A total of 22 patients participated in the study. The most common nail bed abnormality detected on onychoscopy was onycholysis, seen in 20 (90.9%) of patients. The other common nail bed finding observed was splinter hemorrhages, which were seen in 13 (59.1%) patients, whereas subungual hyperkeratosis was noted in 5 (22.7%) patients. Salmon patches were seen in 2 (9.1%) of patients. Among nail matrix abnormalities, pitting was the predominant feature, seen in 11 (50%) patients. This was followed by crumbling or nail plate thickening seen in 5 (22.7%) of patients each and punctate leukonychia in 2 (9.1%) patients. Overall, 15 (68.2%) patients had subclinical findings that were missed on clinical examination but picked up on onychoscopy. Nail psoriasis severity index calculated with the aid of onychoscopy was found to show a statistically significant correlation with both psoriasis area severity index and % body surface area involvement. **Conclusion:** Onychoscopy serves as a useful adjunct in the assessment of psoriatic nail involvement. It can help identify early subclinical nail changes and thereby accurately quantify the severity of nail involvement.

Key words: Nail psoriasis, nail psoriasis severity index, onychoscopy, psoriasis, subclinical nail changes

INTRODUCTION

Psoriasis is a frequently encountered chronic inflammatory skin disorder with multifactorial and immune-mediated pathogenesis, typically characterized by erythematous papules and well-demarcated plaques covered with silvery white scales.[1,2] Skin lesions may be accompanied by characteristic nail changes at some point in their life in 80% of cases. Nail changes may be classified into those arising from the involvement of the matrix, such as leukonychia, pitting, crumbling, and red lunula, and those arising from nailbed involvement, such as splinter hemorrhages, subungual hyperkeratosis, onycholysis, and oil-drop sign. Nail changes, while not specific, may still aid in disease diagnosis. Nail inflammation is known to predispose patients to secondary fungal nail infections. Nail psoriasis has also been associated with greater cutaneous disease severity, increased risk of psoriatic arthritis, and substantial impairment in patient quality of life.[2]

Clinical examination alone may be insufficient to assess all possible nail changes. Moreover, distinguishing nail psoriasis from other nail disorders with similar presentation. Dermoscopy, a novel, non-invasive technique that allows visualizing skin or nail changes at ×10 magnification under

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polarized or non-polarized light, may be useful in this regard. It augments clinical evaluation in augmenting the accuracy of diagnosis, thereby reducing the need for more expensive and more invasive testing such as biopsies.[2] Onychoscopy refers to the application of dermoscopic techniques to the nail. Previous studies have suggested that a large number of psoriatic patients may have subclinical involvement of the nail that can be visualized only on onychoscopy.[1,3] Dermoscopy may additionally assist in differentiating psoriatic onycholysis from other causes, such as onychomycosis and trauma.[4] Hence, the present study aimed to evaluate the onychoscopic features seen in psoriasis and to determine their relationship with disease severity.

MATERIALS AND METHODS

A cross-sectional observational study was performed between March 2024 and May 2024 in the dermatology outpatient department of a tertiary care hospital in Southern India. Patients clinically diagnosed with psoriasis by a senior dermatologist who consented to participate were included in the study after obtaining written informed consent. Each participant underwent detailed history taking along with a comprehensive examination of the skin and nails with the aid of a clinical questionnaire. Severity of skin involvement was assessed using the psoriasis area severity index (PASI) along with percentage body surface area (BSA) affected, while nail disease severity was determined using the dermoscopic nail psoriasis severity index (dNAPSI). All 20 nails were subsequently examined dermoscopically in both polarized and non-polarized modes with a Heine Delta 30™ dermoscope.

Data were compiled using Microsoft Excel™, and statistical evaluation was performed with IBM Statistical Package for the Social Sciences™ software version 25.0. (IBM Corp., New York, USA). Demographic and clinical variables were analyzed using descriptive statistical methods and expressed as mean ± standard deviation. Associations among variables were analyzed using Spearman's correlation coefficient, and a p-value of < 0.05 was interpreted as statistically significant.

RESULTS

The study population comprised 22 patients diagnosed with psoriasis. The demographic and clinical characteristics of the study participants are shown in [Table 1].

Mean age of the patients was 44.50 ± 12.08 years, and slightly more than double the number of males was recruited compared to females with a sex ratio of 15:7. Of the patients recruited, 15 (68.2%) had chronic plaque psoriasis, 4 (18.2%) had unstable psoriasis, 2 (9.1%) had palmo-plantar psoriasis and a single patient (4.5%) had erythrodermic psoriasis. Disease duration showed wide variation from 6 months to 20 years, with a mean of 48.25 ± 52.79 months. Mean PASI was 11.32 ± 8.94, and mean extent of BSA involvement was 24.45 ± 24.37. Mean dermoscopic NAPSI was 15.86 ± 18.99. Ongoing systemic therapy, including methotrexate, cyclosporine, or apremilast, was being given to 5 (22.7%) of patients. Only 3 (13.6%) patients had a current or previous history of psoriatic arthritis.

Table 1: Demographic and clinical characteristics

Variable	Value
Mean age	44.50±12.08 years
Sex (M: F)	15:7
Type of psoriasis	Chronic plaque/unstable/ palmoplantar/erythrodermic
Mean disease duration	48.25±52.79 months
Mean PASI	11.32±8.94
Mean %BSA	24.45±24.37
Mean dNAPSI	15.86±18.99
Psoriatic arthritis	3 (13.6%)
Systemic therapy	5 (22.7%)

PASI: Psoriasis area severity index, BSA: Body surface area, dNAPSI: Dermoscopic nail psoriasis severity index

The onychoscopic nail findings seen in the study participants are shown in [Table 2 and Figure 1]. Among the nail bed abnormalities, onycholysis was the most frequently identified finding, seen in 20 (90.9%) of patients. Of these, 6 (27.3%) patients showed a jagged margin, whereas 14 (63.6%) patients had a regular margin bordering the zone of onycholysis. The other common nail bed finding observed was splinter hemorrhages seen in 13 (59.1%) patients, followed by subungual hyperkeratosis seen in 5 (22.7%) patients. Salmon patch was seen in 2 (9.1%) of patients. Pitting was the most frequently observed nail plate abnormality, seen in 11 (50%) patients. This was followed by crumbling or nail plate thickening seen in 5 (22.7%) of patients each and punctate leukonychia in 2 (9.1%) patients. Overall, 15 (68.2%) patients had subclinical findings that were missed on clinical examination but picked up on onychoscopy.

dNAPSI was found to correlate significantly with both PASI ($\rho = 0.601$, $P = 0.003$) and % BSA involvement ($\rho = 0.459$, $P = 0.042$).

DISCUSSION

The profile of patients presenting with psoriasis to our center was similar to that seen in previous studies from tertiary care centers in Southern India, which also noted a mean age of psoriasis diagnosis and presentation in the 5th decade of life. The higher proportion of males in our study may be due to the greater mobility among males in rural India, allowing them to travel to a tertiary care hospital for treatment. The mean duration of disease and proportion of patients with psoriatic

Table 2: Onychoscopic nail changes

Onychoscopic finding	*n* (%)
Onycholysis	20 (90.9)
Splinter hemorrhages	13 (59.1)
Pitting	11 (50)
Subungual hyperkeratosis	5 (22.7)
Nail plate thickening	5 (22.7)
Crumbling	5 (22.7)
Salmon patch	2 (9.1)
Leukonychia	2 (9.1)

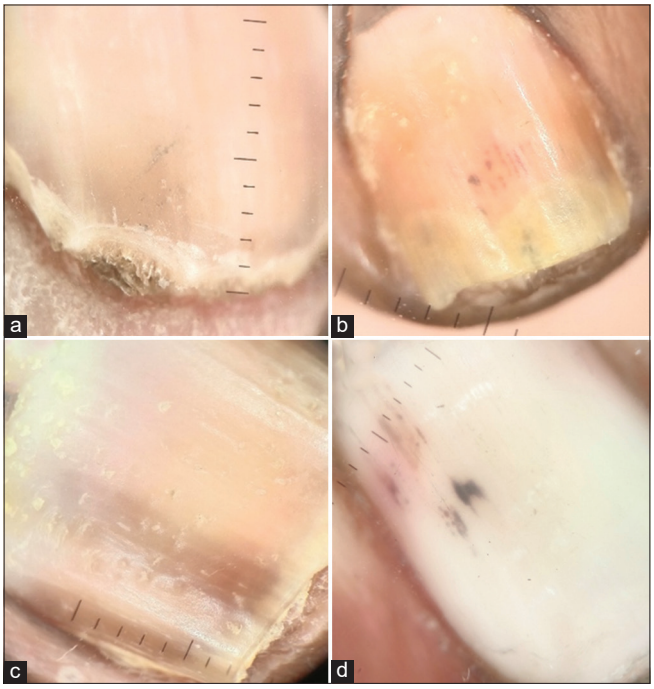

Figure 1: Onychoscopic features of nail psoriasis. (a) Subungual hyperkeratosis, (b) Onycholysis, Splinter hemorrhages, Salmon patch, (c) Pitting, (d) Splinter hemorrhages, Leukonychia

arthritis also appear similar to previous epidemiological studies. In contrast to previous studies, however, all our patients had clinical nail involvement, possibly due to the larger proportion of our patients presenting with chronic and severe disease.[5,6]

Nail matrix involvement findings include leukonychia, pitting, crumbling, and red lunula, whereas nail bed involvement includes onycholysis, splinter hemorrhages, subungual hyperkeratosis, and oil spots.

Several studies have evaluated onychoscopic findings in nail psoriasis, though the predominant abnormalities reported have varied considerably. Some authors identified pitting as the most common finding,[7-9] while others reported onycholysis as the predominant abnormality.[10,11] Nail plate thickening and crumbling have also been frequently described.[12-14] This variability may be attributed to differences in disease duration, severity, skin phototype, and methodological approaches across studies. In our study, onycholysis was the predominant onychoscopic finding, followed by splinter hemorrhages and pitting, suggesting predominant nail bed involvement. These findings further highlight the role of dermoscopy in early detection and objective assessment of nail psoriasis.

While a regular or smooth edge to the region of onycholysis with adjacent erythema has been identified as a characteristic onychoscopic finding in patients with psoriatic onycholysis, we observed jagged margins in nearly a third of patients with onycholysis.[15] It remains uncertain whether this is due to concomitant onychomycosis, as a KOH mount or fungal culture was not performed.

Some studies have reported vascular abnormalities such as dilated globose vessels and dotted vessels in the hyponychium in patients with psoriasis. No such changes were observed in our patients. It is possible that these findings were less visible in our patients due to darker skin pigmentation.[11,16,17]

In our study, 68.2% of cases had subclinical findings that were not visible or missed during clinical examination but picked up by dermoscopic examination. Previous studies have suggested that several patients with no visible psoriatic involvement clinically may have nail involvement on onychoscopy.[18]

NAPSI is a validated scoring system widely employed for the objective evaluation of nail psoriasis severity. The scoring system assesses each nail by dividing it into four quadrants and evaluating the individual involvement of the nail bed and matrix.[19] Previous studies have shown a significant correlation between NAPSI and disease severity.[9,13] Dermoscopic findings may also be included during NAPSI calculation to obtain the dNAPSI. Earlier studies have reported a significant correlation between dNAPSI and PASI, which was also noted in the present study.[20] The present study was, however, limited by a smaller sample size and the cross-sectional nature of the design, which precluded evaluation of the long-term prognostic significance of onychoscopic findings.

CONCLUSION

Dermoscopy is a simple, non-invasive adjunctive tool that aids in the evaluation of psoriatic nail involvement, including isolated nail disease, and facilitates early detection of subtle nail changes that may not be apparent on routine clinical examination. Dermoscopy can therefore be used as a gauge of the occurrence and course of a disease.

AUTHOR'S CONTRIBUTIONS

Mridula T and Varun Rajagopal, Narasimhalu CRV**:** Conceptualization, study design and data statistical

analysis; Narasimhalu CRV: Data collection, dermoscopic examination, and data analysis.

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