Annals of Case Reports
Kumari M, et al. Ann Case Rep: 11: 102647
www.doi.org/10.29011/2574-7754.102647
www.gavinpublishers.com

OPEN ACCESS

Research Article

GAVIN PUBLISHERS

Clinico-Histopathological and Dermoscopic Correlation in Hyperkeratotic Palmoplantar Dermatoses: A Cross-Sectional Study.

Monika Kumari[1], Benazir Hakim[2], Soumi Biswas[1], Adityendu Chakraborty[1], Arghya Bandyopadhyay[3], Arun Achar[4*]

[1]Post Graduate Resident, Department of Dermatology, Nil Ratan Sircar Medical College, Kolkata, West Bengal, India

[2]Senior Resident, Department of Dermatology, Nil Ratan Sircar Medical College, Kolkata, West Bengal, India

[3]Associate Professor, Department of Pathology, Nil Ratan Sircar Medical College, Kolkata, West Bengal, India

[4]Professor and Head of Department, Department of Dermatology, NRS Medical College, Kolkata, West Bengal, India

[*]**Corresponding author**: Prof. Dr. Arun Achar, Professor and Head of Department, Department of Dermatology, Nil Ratan Sircar Medical College and Hospital, Kolkata, West Bengal, India

Citation: Kumari M, Hakim B, Biswas S, Chakraborty A, Bandyopadhyay A, et al. **(2026)**. Clinico-Histopathological and Dermoscopic Correlation in Hyperkeratotic Palmoplantar Dermatoses: A Cross-Sectional Study. Ann Case Report. 11: 2647. DOI: 10.29011/2574-7754.102647

Received: 25 June 2026; **Accepted:** 29 June 2026; **Published:** 04 July 2026

Abstract

Background: Palmoplantar hyperkeratotic dermatoses represent a heterogeneous group of inflammatory disorders with considerable clinical overlap, often leading to diagnostic difficulty. Dermoscopy offers a non-invasive approach to identify characteristic morphological patterns and their correlation with histopathological changes.

Objective: To evaluate dermoscopic features of palmoplantar hyperkeratotic dermatoses and assess their clinico–histopathological correlation.

Methods: This cross-sectional observational study included 52 patients with clinically suspected palmoplantar hyperkeratotic dermatoses. All patients underwent detailed clinical examination, dermoscopic evaluation, and histopathological analysis using hematoxylin and eosin staining. Statistical analysis was performed using appropriate tests, with $p < 0.05$ considered significant.

Results: Hyperkeratotic eczema was the most common diagnosis (53.8%), followed by psoriasis (36.5%). Psoriasis showed silvery white scaling and regularly arranged dotted vessels, correlating with parakeratosis and dilated capillary loops. Eczema demonstrated yellowish scaling with irregular vascular patterns, corresponding to spongiosis and inflammatory changes. Significant correlations were observed between dermoscopic and histopathological parameters.

Limitations: Small sample size, particularly for PPLP and PRP, and single-center design may limit generalizability.

Conclusion: Dermoscopy is a reliable, non-invasive adjunct that demonstrates significant clinico-histopathological correlation and improves diagnostic accuracy in palmoplantar hyperkeratotic dermatoses.

Keywords: Palmoplantar hyperkeratosis; Dermoscopy; Histopathology.

Introduction

Hyperkeratotic dermatoses involving the palmoplantar region represent a heterogeneous group of inflammatory skin disorders characterized by scaling, fissuring, erythema and marked hyperkeratosis. Common conditions include psoriasis, hyperkeratotic eczema, palmoplantar lichen planus, and pityriasis rubra pilaris (PRP). [1] Despite differences in etiopathogenesis, these disorders frequently present with overlapping clinical features at acral sites, posing significant diagnostic challenges in routine dermatological practice [2].

The unique anatomical and functional characteristics of palmoplantar skin, including a thick stratum corneum, absence of pilosebaceous units, and constant mechanical stress, often modify the classical morphology of dermatoses. As a result, psoriasis may lack well-demarcated erythematous plaques with silvery scaling, while eczema may predominantly present with hyperkeratosis and fissuring rather than vesiculation, thereby complicating clinical differentiation [2, 3].

Histopathological examination remains the gold standard for diagnosis, providing detailed insights into epidermal and dermal alterations. Psoriasis typically demonstrates parakeratosis, acanthosis, and dilated capillary loops, whereas eczema is characterized by spongiosis and inflammatory infiltrate. [3, 4] However, biopsy from palmoplantar sites may be limited by procedural discomfort, thick keratin layer, and potential sampling errors, in addition to being invasive [4].

Dermoscopy has emerged as a valuable non-invasive diagnostic modality that enables in vivo visualization of subsurface structures, including vascular morphology and scaling patterns. [5] It has shown good correlation with histopathological findings, with psoriasis demonstrating regularly arranged dotted vessels and white scaling, while eczema shows yellowish scaling with irregular vascular patterns. [6-8] In addition, dermoscopy has been increasingly utilized in the evaluation of inflammatory dermatoses (inflammoscopy), further aiding diagnostic precision [5, 9].

Despite these advances, comprehensive studies evaluating clinico dermoscopic histopathological correlation in palmoplantar hyperkeratotic dermatoses remain limited, particularly in the Indian population. Therefore, the present study was undertaken to evaluate clinical, dermoscopic, and histopathological features of these conditions and to establish their correlation to improve diagnostic accuracy and guide appropriate management.

Materials and Methods

This cross-sectional observational study was conducted in the Department of Dermatology at a tertiary care center over a period of 1 year. The study was carried out after obtaining approval from the Institutional Ethics Committee. A total of 52 consecutive patients presenting with clinically suspected hyperkeratotic dermatoses during the study period were included, irrespective of age and gender. Patients with secondary infection and those unwilling to provide consent were excluded from the study.

A detailed clinical history was obtained in all patients, including duration of disease, occupation, associated systemic illnesses, and seasonal variation. Cutaneous examination was performed to assess the distribution and symmetry of lesions, presence of erythema, fissuring, and degree of hyperkeratosis. Based on clinical findings, cases were provisionally categorized into psoriasis, eczema, and other hyperkeratotic dermatoses.

Dermoscopic evaluation was carried out using a DermLite DL4 dermoscope on representative lesions. Dermoscopic parameters assessed included surface pattern, color, scaling pattern, vascular morphology. All dermoscopic findings were systematically recorded and categorized for further analysis.

For histopathological examination, a 4-mm punch biopsy was obtained from the most representative non-fissured lesion under aseptic precautions in all 52 patients. The specimens were fixed in 10% neutral buffered formalin and processed using standard histopathological techniques. Sections were stained with hematoxylin and eosin and examined under light microscopy. Histopathological parameters evaluated included epidermal changes such as hyperkeratosis, parakeratosis, acanthosis, and spongiosis, along with dermal features including vascular alterations and inflammatory infiltrate.

Statistical analysis was performed using SPSS software version 30 . Descriptive statistics such as mean, standard deviation, frequencies, and percentages were calculated. Correlation between clinical, dermoscopic, and histopathological findings was assessed using appropriate statistical tests (Chi-square test or Fisher's exact test). Each histopathological parameter was correlated with corresponding dermoscopic and clinical features, and similarly, dermoscopic findings were correlated with clinical patterns. A p-value of less than 0.05 was considered statistically significant.

Result

A total of 52 patients with hyperkeratotic dermatoses involving the palmoplantar region were included in the study. The age of the patients ranged from 20 to 70 years, with a mean age of 44.2 ± 12.6 years, indicating a predominance of middle-aged individuals. There was a male preponderance, with 35 males (67.3%) and 17 females (32.7%), resulting in a male-to-female ratio of approximately 2:1.

Based on clinical evaluation, hyperkeratotic eczema was the most

common diagnosis, observed in 28 out of 52 patients (53.8%), followed by psoriasis in 19 patients (36.5%), pityriasis rubra pilaris (PRP) in 3 patients (5.7%), and palmoplantar lichen planus (PPLP) in 2 patients (3.8%). The predominant clinical morphology was diffuse hyperkeratosis with thick scaling, seen in 45 patients (86.5%), followed by fissuring in 34 patients (65.3%) and erythema in 30 patients (57.6%).

Dermoscopy revealed distinct morphological patterns corresponding to different clinical entities as depicted in Figure 4 and Table 1. Silvery white scaling was observed in 34 patients (65.3%), predominantly in psoriasis. Regularly arranged dotted vessels were seen in 26 patients (50%), showing a statistically significant association with psoriasis ($p = 0.001$). Hemorrhagic dots and areas were noted in 22 patients (42.3%), also demonstrating significant association with psoriatic lesions ($p = 0.031$) (Figure 1).

In contrast, hyperkeratotic eczema demonstrated yellow-white to yellow-brown scaling in 28 patients (53.8%) and crusting in 20 patients (38.4%). (Figure 2) Irregularly arranged vascular patterns were observed in 18 patients (34.6%), showing a statistically significant association with eczema ($p = 0.020$). Yellow-brown crusting also showed significant association with eczema ($p = 0.044$), reflecting underlying spongiotic changes (Table 2).

Palmoplantar lichen planus demonstrated dermoscopic features such as diffuse white scaling, structureless areas, and peripheral hyperpigmentation with minimal vascular prominence. Pityriasis rubra pilaris (PRP) showed diffuse scaling with peripheral accentuation and focal areas of relative clearing along with sparse vascular structures.

However, due to the small sample size, findings in PPLP and PRP were interpreted descriptively and no definitive conclusions could be drawn (Figure 3).

Additional dermoscopic findings included fissures and surface cracks in 30 patients (57.6%), erosions in 16 patients (30.7%), and erythematous background in a significant proportion of chronic lesions.

Histopathological examination revealed hyperkeratosis as the most consistent finding, observed in 44 patients (84.6%). Parakeratosis was present in 30 patients (57.6%), showing significant association with psoriasis ($p = 0.012$). Acanthosis was observed in 36 patients (69.2%).

Spongiosis was identified in 24 patients (46.1%), predominantly in eczema, and showed a statistically significant association ($p = 0.027$). Lymphocytic exocytosis was observed in 22 patients (42.3%), also significantly associated with eczema ($p = 0.020$) (Table 2).

Histopathological feature of various clinical entities are depicted in Figure 5.

Palmoplantar lichen planus showed basal cell degeneration with a band-like lymphocytic infiltrate at the dermoepidermal junction. PRP demonstrated characteristic alternating orthokeratosis and parakeratosis in a checkerboard pattern with follicular plugging. However, due to the limited number of cases, no statistically significant correlation was derived for these conditions.

Correlation analysis between dermoscopic and histopathological findings revealed that white/silvery scaling showed significant association with hyperkeratosis and parakeratosis ($p = 0.021$), while yellow scaling correlated with spongiosis ($p = 0.034$). Regularly arranged dotted vessels showed strong association with dilated capillary loops ($p = 0.001$), and hemorrhagic dots corresponded to erythrocyte extravasation ($p = 0.019$). Irregular vascular patterns correlated with inflammatory vascular changes ($p = 0.028$), and fissures corresponded to epidermal disruption ($p = 0.041$) (Table 3).

Overall, a statistically significant correlation was observed between clinical, dermoscopic, and histopathological findings in major study groups (psoriasis and eczema). Observations in PPLP and PRP were descriptive due to small sample size, limiting definitive statistical interpretation.

Clinical Type	Dermoscopic Feature	n	%	p-value
Psoriasis	Silvery white scales	14	73.7	0.032
Psoriasis	Regular red dots	15	78.9	0.001
Psoriasis	Hemorrhagic dots	12	63.2	0.028
Eczema	Yellow-white scales	20	71.4	0.015
Eczema	Yellow-brown crust	15	53.6	0.041
Eczema	Irregular vessels	14	50.0	0.020
PPLP	Structureless areas	2	100	-
PRP	Peripheral scaling	2	66.7	-

Table 1: Clinical-Dermoscopic Correlation.

Clinical types	Histopathological Feature	n	%	p-value
Psoriasis	Parakeratosis	15	78.9	0.012
Psoriasis	Hyperkeratosis	17	89.5	0.030
Eczema	Spongiosis	19	67.9	0.027
Eczema	Lymphocytic exocytosis	18	64.3	0.020
PPLP	Basal cell degeneration	2	100	-
PRP	Checkerboard pattern	3	100	-

Table 2: Clinical-Histopathological Correlation.

Dermoscopic Feature	Histopathological Feature	Number (n)	Percentage (%)	p-value
Silvery white scaling	Hyperkeratosis ± Parakeratosis	28	82.4%	0.021
Yellow scaling	Spongiosis	19	67.9%	0.034
Regular red dots	Dilated capillary loops	21	80.8%	0.001
Irregular vessels	Inflammatory vascular changes	14	77.8%	0.028
Hemorrhagic dots	RBC extravasation	15	68.2%	0.019
Fissures/cracks	Epidermal disruption	20	66.7%	0.041
Peripheral scaling	Checkerboard pattern (PRP)	2	66.7%	-

Table 3: Dermoscopic-Histopathological Correlation.

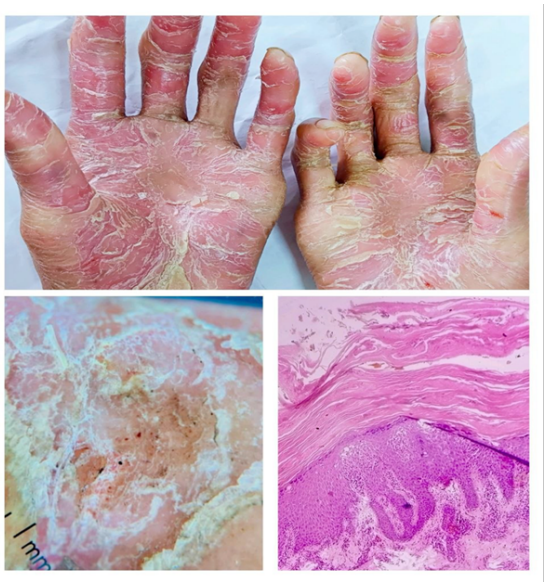

Figure 1: Palmoplantar psoriasis showing diffuse hyperkeratosis; dermoscopy reveals silvery white scaling with regularly arranged dotted vessels and hemorrhagic dots; histology shows parakeratosis with acanthosis and dilated capillary loops.

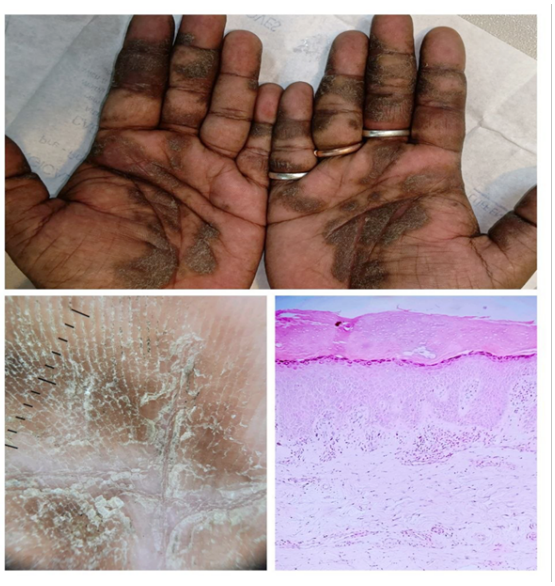

Figure 2: Hyperkeratotic eczema showing palmoplantar hyperkeratosis with fissuring; dermoscopy reveals yellow-white scaling with irregular vessels; histology shows spongiosis with inflammatory infiltrate.

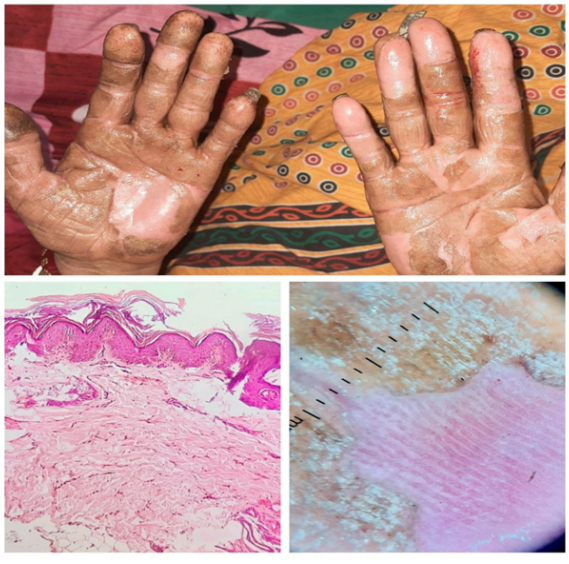

Figure 3: Pityriasis rubra pilaris showing palmoplantar hyperkeratosis; dermoscopy reveals diffuse scaling with peripheral accentuation and islands of sparing; histology shows alternating orthokeratosis and parakeratosis in a checkerboard pattern.

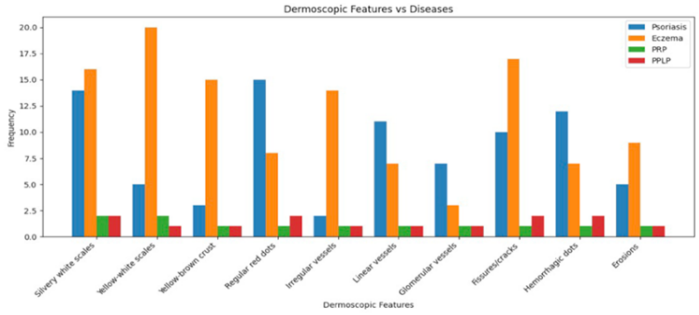

Figure 4: Bar graph showing dermoscopic feature distribution in hyperkeratotic palmoplantar dermatoses.

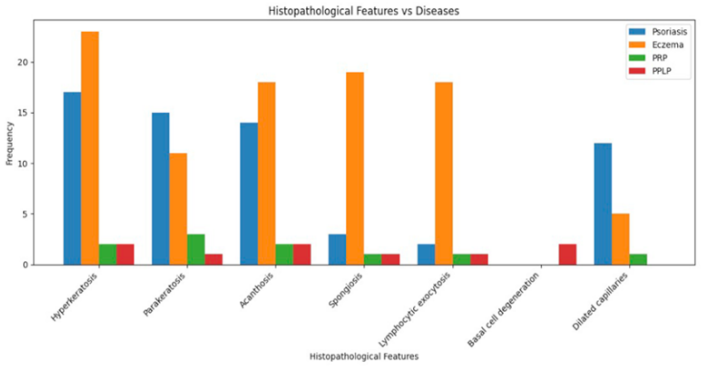

Figure 5: Bar graph showing histopathological feature distribution in hyperkeratotic palmoplantar dermatoses.

Discussion

The present study demonstrates that palmoplantar hyperkeratotic dermatoses predominantly affect middle-aged individuals, with a mean age of 44.2 years and a clear male preponderance (67.3%). This demographic pattern likely reflects the cumulative effects of occupational exposure, repeated trauma, and environmental factors acting on acral skin. Hyperkeratotic eczema emerged as the most common clinical diagnosis, followed by psoriasis, reinforcing the established distribution pattern in palmoplantar dermatoses [10, 11].

Dermoscopy revealed consistent and diagnostically relevant morphological patterns across major dermatoses. Psoriasis was characterized by silvery white scaling, regularly arranged dotted vessels, and hemorrhagic dots, all showing statistically significant association. These findings are in close agreement with dermoscopic criteria described by Lallas A et al. and Errichetti E et al., highlighting the reliability of vascular morphology and scaling patterns in the diagnosis of psoriasis [12, 13].

In contrast, hyperkeratotic eczema demonstrated yellow-white to yellow-brown scaling and irregular vascular patterns, correlating with underlying spongiotic changes. These observations are consistent with those reported by Bhat YJ et al., emphasizing the role of dermoscopy in differentiating spongiotic from psoriasiform dermatoses in clinically overlapping cases [14].

Palmoplantar lichen planus and pityriasis rubra pilaris exhibited characteristic but less definitive dermoscopic features, including structureless areas with peripheral pigmentation and diffuse scaling with peripheral accentuation, respectively, as described in previous reports [15, 16].

Histopathological examination revealed classical features, with psoriasis demonstrating parakeratosis, acanthosis, and dilated capillaries, whereas eczema showed spongiosis and lymphocytic exocytosis, reaffirming established dermatopathological descriptions.

A key finding of the present study was the statistically significant correlation between dermoscopic and histopathological parameters. Silvery white scaling correlated with hyperkeratosis and parakeratosis, while yellow scaling correlated with spongiosis. Regularly arranged dotted vessels corresponded to dilated capillary loops, and hemorrhagic dots reflected erythrocyte extravasation. Similar clinico dermoscopic histopathological correlations have been reported in previous studies, supporting the concept that dermoscopy reliably reflects underlying histological architecture [13, 17].

These findings underscore the role of dermoscopy as a robust, non-invasive diagnostic adjunct in palmoplantar dermatoses, enhancing diagnostic accuracy and strengthening clinicopathological correlation [18-20].

The present study demonstrates a significant clinico–dermoscopic–histopathological correlation in palmoplantar hyperkeratotic dermatoses. Dermoscopy reliably differentiates clinically overlapping conditions such as psoriasis and hyperkeratotic eczema by reflecting underlying histopathological changes. Its incorporation into routine clinical practice can enhance diagnostic accuracy, improve clinical decision-making, and potentially reduce the need for invasive diagnostic procedure.

Conclusion

Hyperkeratotic Palmoplantar dermatoses exhibit characteristic dermoscopic features that correlate significantly with underlying histopathological changes. Psoriasis was associated with silvery-white scales and regularly arranged dotted vessels, while hyperkeratotic eczema demonstrated yellowish scaling and irregular vascular patterns. These findings highlight dermoscopy as a valuable, non-invasive diagnostic adjunct that enhances clinicopathological correlation, improves diagnostic accuracy, and may reduce the need for biopsy in clinically overlapping palmoplantar dermatoses. However, the relatively small sample size, particularly for palmoplantar lichen planus and pityriasis rubra pilaris, and the single-center study design may limit the generalizability of these findings. Larger multicentric studies are warranted to validate and standardize these observations.

Acknowledgement

The authors would like to thank the faculty members, residents, and staff of the Department of Dermatology, Venereology and Leprosy, Nil Ratan Sircar Medical College and Hospital, Kolkata.

Ethical guidelines

Ethical approval was obtained from the Institutional Ethics Committee prior to commencement of the study, Approval No.: NRSMC/IEC/105/2024. Written informed consent was obtained from all participants before enrollment. Confidentiality and anonymity of patient information were maintained throughout the study.

Conflict of interest: Nil.

References

1. Bolognia JL, Schaffer JV, Cerroni L. (2018). Dermatology. 4th ed. Philadelphia: Elsevier.
2. James WD, Elston DM, Treat JR, Rosenbach MA. (2019). Andrews' Diseases of the Skin: Clinical Dermatology. 13th ed. Philadelphia: Elsevier.
3. Weedon D, Strutton G, Rubin AI. (2015). Weedon's Skin Pathology. 4th ed. London: Elsevier.
4. Murphy M, Carmichael AJ. (2007). Psoriasis: Histopathology. Clin Dermatol. 25: 524-528.
5. Errichetti E, Stinco G. (2016). Dermoscopy in general dermatology. Dermatol Pract Concept. 6: 71-82.
6. Sharma R, Mahajan VK, Mehta KS, Chauhan PS. (2018). Clinico-epidemiological study of palmoplantar dermatoses. Indian J Dermatol. 63: 154-158.
7. Nair PA, Vora RV, Kota RK. (2021). A clinical study of palmoplantar dermatoses. Indian J Dermatol. 66: 239-244.
8. Lallas A, Kyrgidis A, Tzellos T, Apalla Z, Lefaki I. (2014). Dermoscopy in inflammatory dermatoses. J Eur Acad Dermatol Venereol. 28: 579-588.
9. Errichetti E, Lacarrubba F, Micali G, Stinco G. (2019). Dermoscopy of inflammatory dermatoses. Dermatol Pract Concept. 9: 169-180.
10. Bhat YJ, Hassan I, Latif I, Rather PA. (2021). Dermoscopy in inflammatory dermatoses: An Indian perspective. Indian Dermatol Online J. 12: 34-40.
11. Vazquez-Lopez F, Maldonado-Seral C, Perez-Oliva N. (2007). Dermoscopy of lichen planus. Arch Dermatol. 143: 1092-1094.

12. Lallas A, Apalla Z, Ioannides D. (2018). Dermoscopy in general dermatology: practical tips. Dermatol Clin. 36: 369-380.

13. Errichetti E. (2020). Dermoscopy in inflammatory dermatoses: current applications and future perspectives. Dermatol Pract Concept. 10: e2020031.

14. Kibar M, Aktan S, Bilgin M. (2021). Dermoscopy of pityriasis rubra pilaris. Medicine (Baltimore). 100: e25218.

15. Chauhan P, Mehta R, Sharma D. (2023). Role of dermoscopy in palmoplantar dermatoses. Indian J Dermatol. 68: 210-215.

16. Adabala SS, Ramesh V, Kumar S. (2022). Dermoscopic patterns in inflammatory dermatoses. Indian Dermatol Online J. 13: 45-50.

17. Lacarrubba F, Verzì AE, Dinotta F, Scavo S, Micali G. (2015). Dermatoscopy in inflammatory and infectious skin disorders. G Ital Dermatol Venereol. 150: 521-531.

18. Errichetti E, Stinco G. (2016). Dermoscopy in inflammatory dermatoses: a review. Dermatol Ther. 29: 471-482.

19. Micali G, Lacarrubba F, Verzì AE. (2011). Dermoscopy: alternative uses in inflammatory dermatoses. J Am Acad Dermatol. 64: 1135-1146.

20. Chauhan P, Sendhil Kumaran M, Vinay K. (2020). Dermoscopy of palmoplantar dermatoses. Indian Dermatol OnlJ. 11: 720-728.