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Frequency of Various Dermoscopic Features in Clinically Diagnosed Cases of Plaque Psoriasis

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ABSTRACT

Introduction: Psoriasis, a chronic skin condition, presents with red, scaly plaques mainly on the body's extensor surfaces. Dermoscopy, a non-invasive tool, helps identify unique vascular and surface features of plaque psoriasis. This study aims to assess the frequency of dermoscopic characteristics like dotted vessels, vessel arrangement, white scales, and erythema in diagnosed plaque psoriasis patients. **Methodology:** A six-month cross-sectional study conducted at the Dermatology Unit-II, Mayo Hospital, Lahore, included ninty patients aged 16 to 60 diagnosed with plaque psoriasis using non-probability consecutive sampling. Exclusions comprised patients recently treated with corticosteroids or systemic drugs for psoriasis, or having concurrent skin infections. Dermoscopic examination with a DermLite DL3 dermatoscope aided by ultrasound gel highlighted key features like dotted vessels, a regular vascular pattern, white scales, and erythema. Data analysis using SPSS-26 involved descriptive statistics, Chi-square tests for associations, and considered a p-value of ≤0.05 significant. **Results:** Out of the 90 patients, 54.4% were male and 45.6% were female. The mean age was 44.09 ± 12.09 years. Patients were distributed as follows: 13.3% in the 16-30 years group, 33.3% in the 31-50 years group, and 53.3% in the 51-60 years group. The mean psoriasis duration was 9.16 ± 5.49 years, with 62.2% having the disease for ≤10 years and 37.8% for more than 10 years. Dot vessels were present in 83.3% of patients, white scales in 70.0%, erythema in 64.4%, and a regular vessel arrangement in 62.2%. **Conclusion:** Dermoscopy is valuable in diagnosing plaque psoriasis, with dotted vessels as a frequently seen feature. White scales, background erythema, and regular vascular arrangement are also commonly observed, emphasizing the utility of dermoscopy in diagnosis.

INTRODUCTION

Psoriasis is a chronic skin disease characterized by red, scaly plaques mainly found on extensor surfaces and scalp, affecting around 2-3% of patients seen in dermatology clinics.[1] While history and examination often suffice for diagnosing psoriasis, histopathology may be required for complex clinical cases.[2] Early and clear diagnosis of this condition is crucial to proper patient management, preventing functional losses, and enhancing quality of life due to its high prevalence and chronic nature.[3]

Dermoscopy is a crucial tool for diagnosing skin conditions through magnification, illumination, and depth, proving especially useful for pigmentary skin lesions. It is also effective in differentiating benign from concerning lesions and shows promise in non-pigmentary conditions like psoriasis, LP, and LE.[4] Dermoscopic features can aid diagnosis and often eliminate the need for biopsy in various skin diseases.[2] Dermoscopy has greatly aided in distinguishing psoriasis from similar disorders like eczema.[5]

Confirming diagnosis via biopsy can be crucial for long-term treatment decisions. Dermoscopy bridges clinical dermatology and dermatopathology in these cases.[6-7] The main dermoscopy criteria in dermatology include examining vascular structures, scaling patterns, and color.[5] In a Chinese clinical study, most psoriatic lesions showed dotted vessels (100%) and white scales (95.1%) on a light red/pink background (65.6%) with regular distribution (85.2%).[2] Dermoscopy of plaque psoriasis reveals a distinctive pattern of white scales and symmetrically distributed vessels on a red background. Due to clinical challenges in distinguishing psoriasis, a thorough evaluation is necessary for diagnosis.[8-9]

Psoriasis is a commonly seen skin disorder in our society. As it greatly affects the quality of life it is very important for early diagnosis to relieve the agony of patients. This is a unique study at national level in studying

dermoscopy in range of psoriasis patients. We have planned the present study for detailed evaluation of specific dermoscopic patterns in different forms of diseases that look like psoriasis.

METHODOLOGY

This cross-sectional study was conducted at Dermatology Unit-II, Mayo Hospital, Lahore, over a period of six months following the approval of the synopsis from 1st September 2024 to 1st March 2025. A total of 90 patients were enrolled using non-probability consecutive sampling. The sample size of 90 was estimated with a 95% confidence level, 10% absolute precision, and an expected percentage of dotted vessels at 65.6%.[2]

The study included patients clinically diagnosed with plaque psoriasis, characterized by distinct, scaly red patches on the trunk or limbs. Eligible participants, aged 16-60 years and of all genders, were included, while those who had recently used topical or systemic treatment (corticosteroids, methotrexate, retinoids) for duration less than 1 and 6 months, respectively, before recruitment were excluded. Patients with concurrent skin infections were also not part of the study.

After approval from the hospital's ethical committee, all participants provided informed written consent. A detailed clinical history, along with dermatological and systemic examinations, was conducted. Lesions were photographed using an iPhone 12, and dermoscopic evaluation was performed using a DermLite DL3 dermatoscope with ultrasound gel for enhanced visualization. Dermoscopic features assessed included dotted vessels, regular distribution of dotted vessels, whitish scales, and background erythema. Images were captured and systematically recorded. Vascular structures were further studied with digital magnification of dermoscopic features.

Data in the study was entered and analyzed using SPSS-26. Quantitative variables like age and disease duration were shown as mean and standard deviation, while qualitative variables such as gender and dermoscopic findings were reported as frequency and percentage. The data were stratified by gender, disease duration, and age before a post-stratification analysis using the Chi-square test was performed to evaluate these variables' effects. A p-value of ≤0.05 indicated statistical significance.

RESULTS

Table 1 presents the frequency distribution of demographic and clinical characteristics among the 90 patients included in the study. Among the participants, 49 (54.4%) were male, and 41 (45.6%) were female. The distribution of age groups showed that 12 patients (13.3%) were between 16-30 years, 30 (33.3%) were between 31-50 years, and 48 (53.3%) were between 51-60 years, with a mean age of 44.09 ± 12.09 years. The duration of psoriasis was 10 years or less in 56 patients (62.2%), while 34 patients (37.8%) had the disease for more than 10 years. The mean duration of psoriasis was recorded as 9.16 ± 5.49 years.

Table 2 summarizes the frequency distribution of various dermoscopic features observed in clinically diagnosed cases of plaque psoriasis. Dotted vessels were present in 75 patients (83.3%) and absent in 15 (16.7%). White scales were observed in 63 patients (70.0%), while 27 (30.0%) did not exhibit this feature. Erythema was noted in 58 patients (64.4%), whereas 32 (35.6%) showed no erythema. A regular arrangement of dotted vessels was observed in 56 patients (62.2%), while it was absent in 34 (37.8%).

In Table 3, dotted vessels were equally found in male (83.7%) and female (82.9%) patients without statistical significance (p = 0.925). Dotted vessels occurred in 91.7% of patients aged 16-30 years, 70.0% in 31-50 years, and 89.6% in 51-60 years with p-value 0.055. Patients with a disease duration ≤10 years had a slightly higher frequency of dotted vessels (83.9%) than those with longer durations (82.4%), but the association was not statistically significant (p = 0.846).

Table 4 shows the distribution of white scales based on various factors. In male patients, 69.4% had white scales, while in females, the percentage was 70.7% (p = 0.890). The prevalence of white scales varied by age groups: 83.3% in 16-30 years, 63.3% in 31-50 years, and 70.8% in 51-60 years (p = 0.435). Interestingly, the presence of white scales did not significantly differ between patients with disease duration of ≤10 years (69.6%) and >10 years (70.6%) (p = 0.924).

In Table 5, erythema rates were detailed based on different variables. Among males, 63.3% had erythema and 36.7% did not, while among females, the rates were 65.9% and 34.1%, respectively (p = 0.798). Erythema prevalence varied with age: 58.3% in 16-30 years, 56.7% in 31-50 years, and 70.8% in 51-60 years (p = 0.398). For disease duration, patients with ≤10 years had a 62.5% rate, while >10 years had 67.6%, with no significant association (p = 0.621).

Table 6 shows the breakdown of regular arrangement by different variables. In male patients, 61.2% had a regular arrangement, while the figure was 63.4% for females (p = 0.831). Younger patients, particularly those aged 16-30 years, were more likely to exhibit a regular arrangement compared to older age groups. There was no significant association between regular arrangement and disease duration.

Table 1

Frequency distribution of different variables (n=90)

Variables		Frequency	Percent
Gender	Male	49	54.4%
	Female	41	45.6%
Age groups	16-30 years	12	13.3%
	31-50 years	30	33.3%
	51-60 years	48	53.3%
	Mean age (years)	44.09±12.09	
Duration of psoriasis	≤10 years	56	62.2%
	>10 years	34	37.8%
	Mean duration of psoriasis (years)	9.16±5.49	

Table 2

Frequency distribution of various dermoscopic features in clinically diagnosed cases of plaque psoriasis (n=90)

Dermoscopic features in clinically diagnosed cases of plaque psoriasis	Frequency	Percent

Dotted vessels	Yes	75	83.3%
	No	15	16.7%
White scales	Yes	63	70.0%
	No	27	30.0%
Erythema	Yes	58	64.4%
	No	32	35.6%
Regular arrangement	Yes	56	62.2%
	No	34	37.8%

Figure 1: Dermoscopic Features Showing Regular Arrangement of Dotted Vessels, Background Erythema, and White Scales

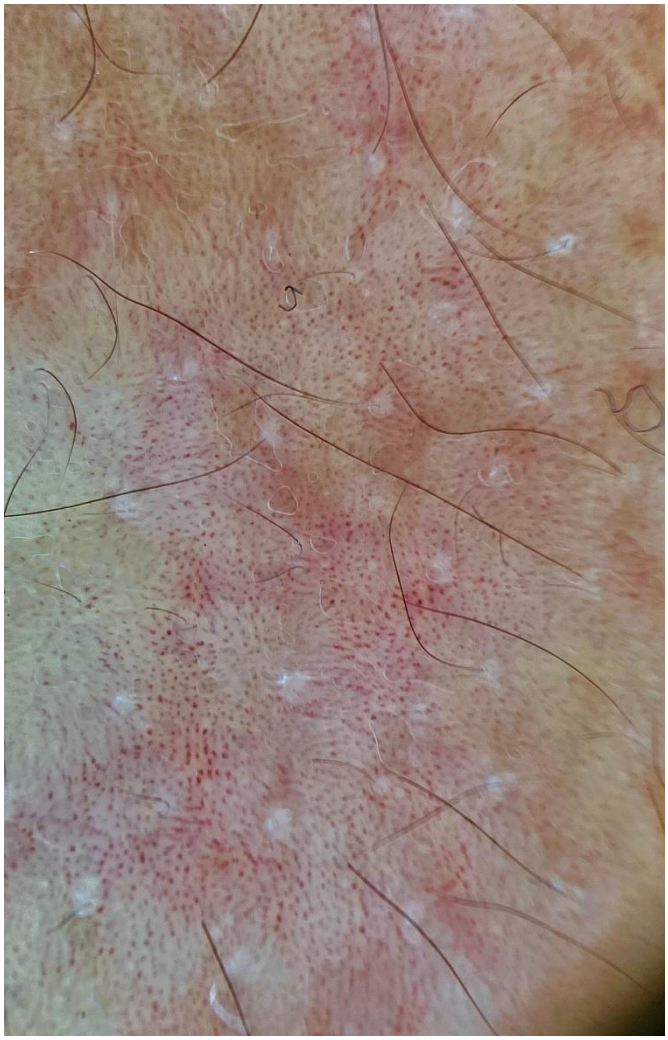

Table 3

Stratification of dotted vessels with respect to different variables

Variables		Dotted vessels		p-value
		Present	Absent	
Gender	Male	41(83.7%)	8(16.3%)	0.925
	Female	34(82.9%)	7(17.1%)	
Age groups	16-30 years	11(91.7%)	1(8.3%)	0.055
	31-50 years	21(70.0%)	9(30.0%)	
	51-60 years	43(89.6%)	5(10.4%)	
Duration of psoriasis	≤10 years	47(83.9%)	9(16.1%)	0.846
	>10 years	28(82.4%)	6(17.6%)	

Table 4

Stratification of white scales with respect to different variables

Variables		White scales		p-value
		Present	Absent	
Gender	Male	34(69.4%)	15(30.6%)	0.890
	Female	29(70.7%)	12(29.3%)	
Age groups	16-30 years	10(83.3%)	2(16.7%)	0.435
	31-50 years	19(63.3%)	11(36.7%)	
	51-60 years	34(70.8%)	14(29.2%)	
Duration of psoriasis	≤10 years	39(69.6%)	17(30.4%)	0.924
	>10 years	24(70.6%)	10(29.4%)	

Table 5

Stratification of erythema with respect to different variables

Variables		Erythema		p-value
		Present	Absent	
Gender	Male	31(63.3%)	18(36.7%)	0.798
	Female	27(65.9%)	14(34.1%)	
Age groups	16-30 years	7(58.3%)	5(41.7%)	0.398
	31-50 years	17(56.7%)	13(43.3%)	
	51-60 years	34(70.8%)	14(29.2%)	
Duration of psoriasis	≤10 years	35(62.5%)	21(37.5%)	0.621
	>10 years	23(67.6%)	11(32.4%)	

Table 6

Stratification of regular arrangement with respect to different variables

Variables		Regular arrangement		p-value
		Present	Absent	
Gender	Male	30(61.2%)	19(38.8%)	0.831
	Female	26(63.4%)	15(36.6%)	
Age groups	16-30 years	9(75.0%)	3(25.0%)	0.404
	31-50 years	20(66.7%)	10(33.3%)	
	51-60 years	27(56.3%)	21(43.8%)	
Duration of psoriasis	≤10 years	37(66.1%)	19(33.9%)	0.334
	>10 years	19(55.9%)	15(44.1%)	

DISCUSSION

Psoriasis is a chronic, immune-mediated inflammatory skin disorder that predominantly affects the skin and joints, characterized by erythematous, well-demarcated plaques covered with silvery-white scales. The disease affects approximately 2–3% of the global population and significantly impacts the quality of life due to its chronicity and recurrent nature. Plaque psoriasis, the most common clinical variant, is often diagnosed clinically; however, in ambiguous cases, dermoscopy serves as a valuable non-invasive diagnostic tool.

Dermoscopy enhances the visualization of key morphological features, including vascular patterns, scaling, and background color, which help differentiate psoriasis from other papulosquamous disorders like eczema and lichen planus. The hallmark dermoscopic findings in psoriasis include dotted vessels arranged in a regular pattern, white scales, and a pinkish erythematous background. The present study aimed to assess the frequency of these dermoscopic features in clinically diagnosed cases of plaque psoriasis.

The results of this study demonstrated that among 90 patients diagnosed with plaque psoriasis, the most frequently observed dermoscopic feature was dotted vessels, present in 83.3% of cases. This finding is consistent with previous studies, which report regular arrangement of dotted vessels as the most characteristic dermoscopic marker of psoriasis, with prevalence rates ranging from 65% to 95% in different populations. [10-11] However, if dotted vessels are irregular, it is a feature of eczema.

A study by Lallas et al. observed dotted vessels in 91.3% of psoriatic lesions, while another study by Errichetti et al. found them in 89% of cases.[12-13] The presence of these vessels has been attributed to the dilatation of capillaries in the papillary dermis due to underlying inflammation. The slight variation in frequency among studies may be influenced by differences in sample

size, dermoscope model, disease severity, and patient demographics. White scales were observed in 70% of patients in this study, a finding comparable to previous research, which has reported scaling in 67–85% of psoriasis cases.[14]

Lallas et al. noted the presence of white scaling in 78% of their study population, whereas Ankad et al. documented it in 72% of cases.[15] The characteristic silvery-white appearance of scales is due to the parakeratotic stratum corneum, which results from the accelerated turnover of keratinocytes in psoriasis. The slight discrepancy in the prevalence of scaling across studies may be attributed to variations in disease chronicity and treatment history, as scales tend to be more prominent in untreated or chronic cases.

Background erythema, a result of persistent inflammation and vascular proliferation, was observed in 64.4% of cases. This finding is in agreement with the work of Argenziano et al., who described a pinkish-red background as a common feature in 60–70% of psoriatic lesions.[16] However, some studies have reported a higher prevalence, exceeding 80%, which may be due to differences in skin phototypes, as erythema tends to be more pronounced in lighter skin tones.

A regular arrangement of dotted vessels was found in 62.2% of cases, which aligns with previous studies reporting a frequency of 55–75%.[17] This pattern is considered a distinguishing feature of psoriasis, helping differentiate it from other inflammatory dermatoses such as eczema and pityriasis rosea, where vascular patterns tend to be patchy and irregular. Studies by Zaballos et al. and Lallas et al. confirm that a regularly distributed vascular pattern is more commonly associated with psoriasis than other dermatological conditions.[18]

Despite its valuable findings, this study had certain limitations. First, it was conducted at a single tertiary care hospital, which may limit the generalizability of the results to broader populations. Second, the study did not account for disease severity or treatment history beyond the defined exclusion criteria, which could have influenced dermoscopic findings. Third, inter-observer variability was not assessed, as all dermoscopic evaluations were performed by a single investigator. Future studies with larger, more diverse populations, multi-center participation, and objective scoring of disease severity may help enhance the reliability and applicability of the findings.

Dermoscopy has emerged as a crucial adjunct in the non-invasive diagnosis of psoriasis, reducing the need for biopsies and enhancing diagnostic confidence. The findings of this study reinforce its utility in routine dermatological practice. Future research should focus on establishing standardized dermoscopic scoring systems to differentiate psoriasis from other mimicking dermatoses more accurately. Studies exploring the correlation between dermoscopic features and histopathological changes may further enhance the understanding of psoriatic disease progression.

CONCLUSION

Dermoscopy is a valuable tool in diagnosing plaque psoriasis, mainly detecting dotted vessels as the most common feature. Other frequently observed aspects include white scales, background redness, and a regular vascular pattern. Despite this, no significant links were found between these dermoscopic features and patient demographics like gender, age, and disease duration. These results highlight dermoscopy's usefulness in plaque psoriasis diagnosis as well as differentiating it from similar cases of psoriasiform eczema, indicating consistent features across various patient groups.

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