

Dermoscopic Features of Psoriasis, Lichen Planus, and Pityriasis Rosea in Patients With Skin Type IV and Darker Attending the Regional Dermatology Training Centre in Northern Tanzania

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ABSTRACT **Background:** Papulosquamous skin diseases can be challenging to diagnose, especially in dark skin. Dermoscopy is reported to be helpful, but few data are available on its use in skin type IV or darker.

Objective: To describe dermoscopic features in plaque-type psoriasis (PP), lichen planus (LP), and pityriasis rosea (PR) patients attending the Regional Dermatology Training Centre in Moshi, Northern Tanzania, and to compare findings with published data.

Methods: A descriptive cross-sectional study was conducted at a tertiary hospital from October 2016 to June 2017. Fifty-six patients with PP, 25 with LP, and 9 with PR were enrolled consecutively. Clinical diagnosis was confirmed with histopathology in 74.4%. Dermoscopic vascular and nonvascular features from 225 lesions were analyzed.

Results: Of the 90 patients enrolled, 58.9% were male and the median age was 50 (interquartile range 32.8-60.0) years. In PP lesions, red dots were found in 64.2% and white scale in 45.5%. In LP lesions the background was violet in 45.5% and 58.2% revealed Wickham striae. In PR lesions a dull red background was found in 50.0%, white scale in 83.3%, but no vessels were detectable.

Conclusion: Dermoscopy features in PP, LP, and PR in dark skin are mostly similar to those in light skin.

Introduction and Background

Plaque-type psoriasis (PP), lichen planus (LP), and pityriasis rosea (PR) are common skin diseases and may have a negative impact on quality of life [1]. The clinical diagnosis can be challenging; sometimes a biopsy is needed, thus delaying the diagnosis and correct treatment [2]. Moreover, erythema often observed in these papulosquamous conditions may be masked in a dark-skin population [3,4]. In general, misdiagnosis is reported in up to 32% of papulosquamous diseases but may be even higher in patients with dark skin [5].

Dermoscopy as a noninvasive diagnostic tool can help to diagnose without the need of a biopsy [6]. However, few data are available so far about its use and impact in inflammatory skin diseases in patients with skin type IV or darker [6]. Published data about dermoscopy on inflammatory lesions, so-called inflamoscopy, is mainly from countries with Caucasian or Asian patients, but only a few articles describe their patients' skin type [7,8]. Thus, there is little knowledge regarding dermoscopic features in papulosquamous conditions in patients with dark skin (Fitzpatrick IV or darker) so far. A higher degree of dyspigmentation and less noticeable erythema has been described in psoriasis lesions in dark skin because of poorly visible dermal vessels [4,6]. In LP, a violaceous color is helpful as a diagnostic feature in lighter skin but it is less visible in darker skin, and therefore it is still not evident whether dermoscopy could be helpful here [9].

The aim of this descriptive study was to describe dermoscopic features in PP, LP, and PR lesions in a clinical setting where most of the patients had Fitzpatrick type IV or darker skin and to compare the results with the present literature.

Methods

This hospital (tertiary)-based descriptive cross-sectional study was conducted at the Regional Dermatology Training Centre outpatient department, Kilimanjaro Christian Medical Centre in Moshi, Northern Tanzania, from October 2016 to June 2017. The study received approval from the Kilimanjaro Christian Medical University College research and ethics committee and was conducted in accordance with the Helsinki Declaration, and written informed consent was obtained from participants.

All patients with clinical diagnoses of PP, LP, and PR were enrolled consecutively. Clinical diagnosis was guided by standard descriptions [9–11]. A biopsy was performed wherever possible and in all cases of any atypical presentation. Patients who were not receiving any treatment as well as those receiving treatment were enrolled. The ON treatment group included topical treatment (eg, steroids, salicylic acid, calcipotriene, or crude coal tar) or oral medication (steroids for at least 1 month or methotrexate for at least 3 months)

[6,8]. The NO treatment group was defined as no topical treatment in the last 4 weeks or none at all; no systemic treatment was defined as no systemic corticosteroids in the last 4 weeks, no methotrexate in the last 3 months, or no systemic treatment at all [6,8]. Patients who had mucous membrane or nail lesions only, and those with atypical clinical appearance and refused biopsy, were excluded.

Patient characteristics included sex, age, diagnosis, treatment status, anatomical site, Fitzpatrick skin type [12], and lesion morphology. The skin color was assessed at a non-sun-exposed area (right upper medial arm).

Dermoscopic images of active lesions were taken using polar light mode in a handyscope (Fotofinder, Bad Birnbach, Germany) coupled with an iPhone 6 (8 megapixels, 1334 × 750 pixel resolution at 326 pixels/inch; Apple Inc., Cupertino, CA, USA). In any particular person, lesions were chosen (if present) from 6 different sites, ie, scalp, face, trunk/limbs, intertriginous areas (axilla, inframammary, or groin), palms/soles, and knees/elbows [7]. Vascular features (background color, vessel morphology, vessel distribution/pattern) and nonvascular features (scale color, scale distribution, Wickham striae/pearly whitish structures, follicular disturbances, and pigmentary changes) were assessed [6,8]. Two examiners (M.K.N.-M. and R.M.) independently analyzed the dermoscopic images and a third examiner (A.B.) was involved when no consensus was reached.

Data capture and analysis were through SPSS version 20 (IBM SPSS Inc., Armonk, NY, USA). Continuous variables were summarized using medians and interquartile ranges (IQRs), while categorical variables were summarized using frequency and percentages.

Results

Ninety patients were enrolled (58.9% men and 41.1% women). The median age was 50 years (IQR 32.8-60). Patients with PP (n = 56) and LP (n = 25) were older (51 years [IQR 36.2-59.8] and 55 years [IQR 45.5-69]) than the patients with PR (n = 9) (19 years [IQR 7-30]). The demographic characteristics according to the 3 skin diseases are shown in Table 1.

In patients with PP, 148 lesions were assessed. The majority of the lesions (64.2%) were from the trunk and limbs, followed by elbows/knees (15.3%), scalp (13.5%), palmoplantar (8.8%), face (7.4%), and intertriginous sites (6.1%). In the patients with LP, 55 lesions were examined and the majority (67.3%) were from the trunk or limbs. In the PR patients, 54.5% of the 22 lesions were located on the trunk and limbs.

Dermoscopic Features in PP

The most common features of the 148 PP lesions were light red background (43.9%), red dotted vessels (64.2%), regu-

Table 1. Characteristics of PP, LP, and PR Patients (and Lesions) at Regional Dermatology Training Centre, Northern Tanzania (N = 90; 225 Lesions)

Variable	PP (n = 56); 148 Lesions		LP (n = 25); 55 Lesions		PR (n = 9); 22 Lesions	
	Patients n (%)	Lesions Scoped n (%)	Patients n (%)	Lesions Scoped n(%)	Patients n (%)	Lesions Scoped n (%)
Sex						
Female	20 (35.7)		11 (44.0)		6 (66.7)	
Male	36 (64.3)		14 (56.0)		3 (33.3)	
Age (years)						
Median (IQR)	51.0 (36.2-59.8)		55 (45.5-69.0)		19 (7.0-30.0)	
<20	4 (7.1)		1 (4.0)		6 (66.7)	
20-39	13 (23.2)		4 (16.0)		2 (22.1)	
40-59	25 (44.6)		11 (44.0)		1 (11.1)	
60-79	12 (21.4)		6 (24.0)			
≥80	2 (3.6)		3 (12.0)			
Fitzpatrick skin type						
Type IV	3 (5.4)	10 (6.8)				
Type V	11 (19.6)	42 (28.4)	10 (40.0)	20 (36.4)	4 (44.4)	10 (45.5)
Type VI	42 (75.0)	96 (64.9)	15 (60.0)	35 (63.6)	5 (55.6)	12 (54.5)
Treatment status						
ON treatment	37 (66.1)	83 (56.1)	17 (68.0)	36 (65.5)	2 (22.2)	4 (16.7)
NO treatment	19 (33.9)	65 (43.9)	8 (32.0)	19 (34.5)	7 (77.8)	18 (83.3)
Body site						
Scalp		20 (13.5)		1 (1.8)		
Face		11 (7.4)		2 (3.6)		3 (13.6)
Intertriginous		9 (6.1)		3 (5.5)		5 (22.7)
Trunk/limbs		74 (50.0)		37 (67.3)		12 (54.5)
Palms/soles		13 (8.8)		0 (0)		1 (4.5)
Knees/elbows		21 (14.2)		12(21.8)		1(4.5)
Lesion morphology						
Macule/patch		70 (47.3)		19 (34.5)		19 (86.4)
Papule		5 (3.4)		14 (25.5)		2 (9.1)
Plaque		73 (49.3)		22 (40.0)		1 (4.5)

lar vessels (46.6%), white scales (77.0%), patchy scale distribution (55.4%), and pigmentary changes (56.8%), while pearly white structures (PWS) (100%) or follicular changes (79.9%) were not observed. Differences between the NO and the ON treatment group were less than 10% with the exception of more regular vessels in the ON compared with the NO treatment group (51.8% vs 40.0%), no follicular changes (86.7% vs 70.8%), and no pigmentary changes (48.2% vs 36.9%) (Table 2).

Dermoscopy features were stratified according to various body sites. Dull red was the most common background color in face (n = 8; 72.7%), intertriginous areas (n = 5; 55.6%), and scalp (n = 9; 45.0%), while light red was more often found in trunk/limbs (n = 37; 50.0%) and elbows/knees (n =

10; 47.6%). Among the 12 palmoplantar lesions the 2 most common colors were light and dark red (both at 47.6%). Red dots were seen at intertriginous sites (n = 8; 88.9%), scalp (n = 15; 75%), elbows/knees (n = 15; 71.4%), trunk/limbs (n = 46; 62.2%), palmoplantar (n = 7; 53.8%), and face (n = 4; 36.4%). The most common distribution was regular across all sites, seen in intertriginous sites (n = 7; 77.8%), trunk/limbs (n = 36; 48.6%), palmoplantar (n = 6; 46.2%), scalp (n = 9; 45.0%), elbows/knees (n = 8; 38.1%), and face (n = 3; 27.3%). White scales were seen in face (n = 6; 54.5%), elbows/knees (n = 15; 71.4%), trunk/limbs (n = 58; 78.4%), intertriginous sites (n = 7; 77.8%), palmoplantar (n = 11; 84.6%), and scalp (n = 17; 85%). The scale distribution was mostly patchy across all the body sites, ranging between 55%

in scalp lesions (n = 11) to 69.2% in palmoplantar lesions (n = 9). Pigmentary and follicular changes were similar across different anatomical sites.

Seventy-four (50.0%) of the PP lesions were located on the trunk and limbs and were stratified according to type of lesions: 34 were patches (45.9%), 1 papule (1.4%) and 39 plaques (52.7%). The main background color was light red in 15 patches (44.1%) and 22 plaques (56.4%), followed by dark red in 9 patches (26.5%) and 14 plaques (35.9%). Red dots were seen in 29 plaques (74.4%) and in 16 patches (47.1%) (Figure 1A). There was regular distribution of vessels in 22 plaques (56.4%) and 13 patches (38.2%). White scales were seen in 23 patches (67.6%) and in 34 plaques (87.2%). Patchy scale distribution was found in 15 patches (44.1%) and in 21 plaques (53.8%).

Dermoscopic Features in LP

The most common features of the 55 LP lesions were pigmentary changes (69.1%), PWS (58.2%), and a violet background (45.5%), while vessel morphology and pattern (each 80.0%), scales (65.5%), or follicular changes (67.3%) were not observed. More than 10% differences between the NO and the ON treatment group were observed, being in the violet background color (75.0% vs 28.6%), no scales (50.0% vs 74.3%), PWS (75.0% vs 48.6%), and no follicular disturbance (90.0% vs 54.3%) (Table 3; Figure 1B).

In addition, 20 lesions of the NO treatment group were stratified according to lesion type (5 patches, 6 papules, and 9 plaques). The most common background color was violet in all lesion types (6 papules [100%], 7 plaques [77.8%], and 2 patches [40%]). Yellow color was seen only in patches (n = 2; 40%). Linear vessels were observed in 33.3% of papules (n = 2), in 11.1% of plaques (n = 1), and in none of patches. Also, none of the papules had scales. White scales were observed in 80.0% of patches (n = 4) and 55.6% of plaques

Table 2. Dermoscopic Features in PP Lesions at Regional Dermatology Training Centre, Northern Tanzania (n = 148 Lesions)

Variable	NO Treatment (n = 65) n (%)	ON Treatment (n = 83) n (%)	Total (n = 148) n (%)
Background color			
Light red	30 (46.2)	35 (45.2)	65 (43.9)
Dull red	25 (38.5)	34 (41.0)	59 (39.9)
Others	10 (15.4)	14 (13.8)	24 (16.2)
Vessel morphology			
No vessels	26 (40.0)	27 (32.5)	53 (35.8)
Red dots	39 (60.0)	56 (67.5)	95 (64.2)
Vessel pattern			
No vessels	26 (40.0)	27 (32.5)	53 (35.8)
Regular	26 (40.0)	43 (51.8)	69 (46.6)
Patchy	13 (20.0)	13 (15.7)	26 (17.6)
Scale color			
No scale	10 (15.4)	9 (10.8)	19 (12.8)
White	48 (73.8)	66 (79.5)	114 (77.0)
Others	7 (10.8)	8 (9.5)	15 (10.2)
Scale distribution			
No scale	10 (15.4)	9 (10.8)	19 (12.8)
Diffuse	19 (29.2)	18 (21.7)	37 (25.0)
Patchy	33 (50.8)	49 (59.0)	82 (55.4)
Others	3 (4.6)	7 (8.5)	10 (6.8)
PWS			
No PWS	65 (100)	83(100)	148 (100)
PWS present	0 (0)	0 (0)	0 (0)
Follicular changes			
No changes	46 (70.8)	72 (86.7)	118 (79.7)
Comedo-like opening	3 (4.6)	4 (4.8)	7 (4.7)
Perifollicular hyperpigmentation	4 (6.2)	2 (2.4)	6 (4.1)
Perifollicular hypopigmentation	6 (9.2)	3 (3.6)	9 (6.1)
Milia-like cysts	2 (3.1)	1 (1.2)	3 (2.0)
Others	4 (6.2)	1 (1.2)	5 (3.4)
Pigmentation			
No pigmentary changes	24 (36.9)	40 (48.2)	64 (43.2)
Brown dots and patches	14 (21.5)	10 (12.0)	24 (16.2)
Gray dots and patches	11 (16.9)	19 (22.9)	30 (20.3)
Mix of gray and brown	16 (24.6)	14 (16.9)	30 (20.3)

(n = 5). Patchy scale distribution was found in 60% of patches (n = 3) and in 44.4% of plaques (n = 4). PWS were seen in 83.3% of papules (n = 5), 88.9% of plaques (n = 8), and 40% of patches (n = 2). Gray dots and patches were the

major pigmentary changes in patches (n = 3; 60%) and papules (n = 2; 33.3%). Plaques showed brown dots and patches (n = 2; 22.2%), gray dots and patches (n = 2; 22.2%), and a mix of brown and gray dots and patches (n = 2; 22.2%).

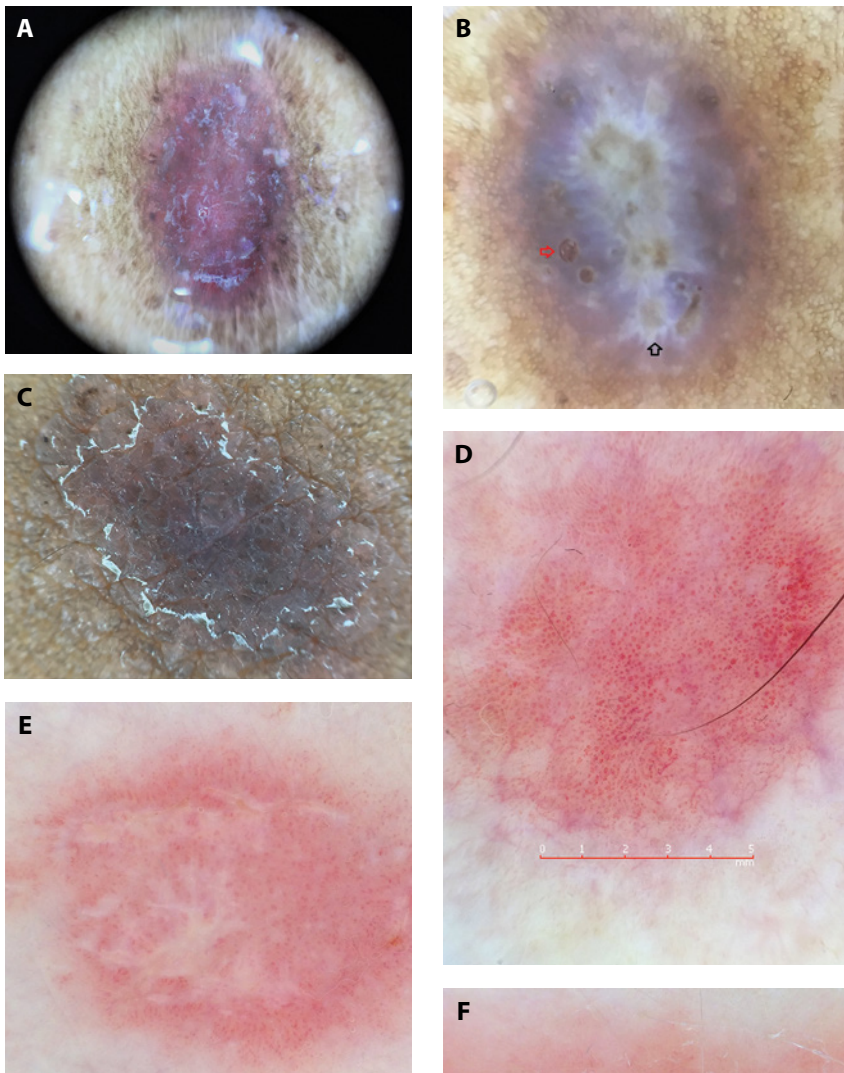


Figure 1. (A) Psoriasis plaque dermoscopy image showing dotted vessels and white scales in skin type VI. (B) Lichen planus patch dermoscopy image showing a violet background, Wickham striae (black arrow), and comedo-like openings (red arrow) in skin type V. (C) Pityriasis rosea dermoscopy image showing a dull red background and white scale in skin type VI. (D) Psoriasis plaque dermoscopy showing dotted vessels in skin type II. (E) Lichen planus dermoscopy image showing Wickham striae and dotted vessels in skin type II. (F) Pityriasis rosea dermoscopy image showing dotted vessels and peripheral scale. [Copyright: ©2019 Nwako-Mohamadi et al.]

Dermoscopic Features in PR

The most common features of the 22 PR lesions were pigmentary changes (63.6%), a dull red background (50.0%), white scale color (81.8%), and patchy/peripheral scale distribution (each 36.4%) No vessels, PWS, or follicular changes were seen in the PR lesions. More than 10% differences

between the NO and the ON treatment group were observed in the dull red background color (55.6% vs 25.0%), white scales color (77.8% vs 100%), patchy scales distribution (27.8% vs 75%), peripheral scales distribution (38.9% vs 25%), and mix of brown and gray pigmentation (each 38.9% vs 25%) (Table 4; Figure 1C).

Discussion

Dermoscopic features in PP, LP, and PR were observed to differ between these skin diseases in patients with skin type IV and darker (Table 5). Compared to the literature, these findings were mostly similar to lighter skin types (I-III) (Figure 1, D-F), but in lower frequencies.

Among patients with PP, red dots were seen in 64.2% of lesions in contrast to Lallas et al [7], who described them in 97.1% (Figure 1E). A light red background with regularly distributed dotted vessels and white diffuse scales is reported to help in the diagnosis of psoriasis with 80%-88% specificity and 84.9%-87.8% sensitivity as studied in Caucasian patients [6,13]. In this study, the same features were present, although in lower percentages, ie, a light red background in 43.9%. Regular vessels were seen in 46.6% compared to 63%-100% [7,13], white scale in 77% vs 64.7%-87.5% [7,8], and diffuse scale in 25% vs 44.6%-60% [7,14]. A possible explanation could be that in darker skin, the red background and vessels are not easily visible compared to patients with a lighter skin type.

The majority of psoriasis lesions had white scales, in agreement with the literature, but most had a patchy distribution in contrast to a diffuse distribution reported in most studies [6,8]. In addition, we found white scales in 77.8% of intertriginous lesions compared to 13.2% in another study [7]. With these contrasting results, further research might be of help. The ON and NO treatment groups showed features in similar proportions except for vessel distribution, follicular changes, and pigmentary changes, suggesting that dermoscopy can be of use in diagnosis of psoriasis even for patients who are receiving treatment. The type of lesion also seems to affect features, with the expected features seen more in plaques compared to patches (eg, red dots [74.5% vs 47.1%]; white scale [87.2% vs 67.6%]). This is

not surprising as plaques are expected to be more active.

We noted nonvascular features as seen in Figure 1B to be more common in LP, in agreement with literature reports. A pearly white background (PWS) was the most common finding, in 58.2%, and this is similar to the 60% described by Chandravathi and colleagues [8]. PWS were also more often detectable in the nontreated lesions [15]. In the nontreated group, PWS were seen more in papules and plaques compared to patches, and this is expected as PWS correspond to compact orthokeratosis over areas of hypergranulosis and acanthosis [16].

No difference was found in the frequency of violet background in our population compared to the Caucasian population of Gungör et al [15] (45.5% vs 38%). Nonetheless a clear difference could be found in the NO vs the ON treatment group (75% vs 27.3%). The violet color might correspond to inflammatory infiltrate, necrotic keratinocytes, and pigmentary incontinence over blood vessels [17]. In the NO treatment group, the violaceous color was seen more in raised lesions compared to patches, and this is expected as papules and plaques are expected to be more active in LP.

Follicular changes were some of the less observed findings, with comedo-like openings at 16.4% similar to the 20% reported by Garg et al [18]. Pigmentary changes were seen in 69.1% of lesions, and this could be related to more pigmentation in dark skin [9]. PWS are reported to be the most helpful dermoscopic feature in diagnosing LP, especially in untreated patients [6]. Our study confirms this observation in skin type IV and darker.

In PR lesions the most common background color in our study was dull red (50%) compared to yellow (65%) among Caucasian patients, as reported by Lallas and colleagues [6]. This observation supports the idea that erythema could have various presentations based on pigmentation, ie, more yellowish in light skin (Figure 1F) and

Table 3. Dermoscopic Features in LP Lesions at Regional Dermatology Training Centre, Northern Tanzania (n = 55 Lesions)

Variable	NO Treatment (n = 20) n (%)	ON Treatment (n = 35) n (%)	Total (n = 55) n (%)
Background color			
Light red	1 (5.0)	7 (20.0)	8 (14.5)
Violet	15 (75.0)	10 (28.6)	25 (45.5)
Yellow	2 (10.0)	6 (17.1)	8 (14.5)
Brown	1 (5.0)	9 (25.7)	10 (18.2)
Others	1 (5.0)	3 (8.6)	4 (7.3)
Vessel morphology			
No vessels	16 (80.0)	28 (80.0)	44 (80.0)
Red dots	0 (0)	3 (8.6)	3 (5.5)
Lines	3 (15.0)	3 (8.6)	6 (10.9)
Others	1 (5.0)	1 (2.8)	2 (3.6)
Vessel pattern			
No vessels	16 (80.0)	28 (80.0)	44 (80.0)
Patchy	1 (5.0)	4 (11.4)	5 (9.1)
Peripheral	2 (10.0)	3 (8.6)	5 (9.1)
Others	1 (5.0)	0 (0)	1 (1.8)
Scale color			
No scale	10 (50.0)	26 (74.3)	36 (65.5)
White	9 (45.0)	8 (22.8)	17 (30.9)
Others	1 (5.0)	1 (2.9)	2 (3.6)
Scale distribution			
No scale	10 (50.0)	26 (74.3)	36 (65.5)
Diffuse	1 (5.0)	0 (0)	1 (1.8)
Patchy	8 (40.0)	9 (25.7)	17 (30.9)
Peripheral	1 (5.0)	0 (0)	1 (1.8)
PWS			
No PWS	5 (25.0)	18 (51.4)	23 (41.8)
PWS	15 (75.0)	17 (48.6)	32 (58.2)
Follicular disturbance			
No disturbance	18 (90.0)	19 (54.3)	37 (67.3)
Comedo-like opening	1 (5.0)	8 (22.8)	9 (16.4)
Milia-like cysts	0 (0)	5 (14.3)	5 (9.1)
Others	1 (5.0)	3 (8.6)	4 (7.2)
Pigmentation			
No pigmentary changes	6 (30.0)	11 (31.4)	17 (30.9)
Brown dots and patches	5 (25.0)	7 (20.0)	12 (21.8)
Gray dots and patches	7 (35.0)	7 (20.0)	14 (25.5)
Mix of gray and brown	2 (10.0)	10 (28.6)	12 (21.8)

more dull/dark red in dark skin (Figure 1C). Perhaps due to the dark pigmentation, we observed no vessels, in contrast to Lallas et al, who reported red dots in 100% of their patients [6].

The white scale observed was similar in proportion to other studies (81.8% in our study and 85% by Lallas et al [6]), but in our patients patchy and peripheral distribution were in equal

proportion (36% each) while in the literature peripheral distribution was seen in 70% [6] (Figure 1C).

Strengths

This study explored dermoscopy features of PP, LP, and PR with focus on skin type IV and darker, thus adding to scientific data available on dark skin. Similar, but less frequent, dermoscopic features were found in skin type IV and darker compared to the Caucasian skin type. Our results may encourage the use of dermoscopy and further research among dark-skinned patients with papulosquamous and other skin diseases.

Limitations

This study was performed in one center only and participants were recruited consecutively. This may lead to a selection bias. However, the study was at a referral hospital that receives patients from several regions and thus the sample would provide a good representation of the population having skin diseases in this area. Consecutive enrollment allowed us to capture a reasonable number of patients. We used a medium price range dermatoscope, and the difference in resolution compared with pricier models might be of significance in dark skin.

Conclusions

Among dark-skinned patients (Fitzpatrick type IV and darker) in PP, LP, and PR, dermoscopic findings were mostly the same as for skin types I-III as reported in the literature. The main findings in PP lesions were vascular, while in LP and PR the predominant findings were nonvascular. Only the frequencies of vas-

Table 4. Dermoscopic Features in PR Lesions at Regional Dermatology Training Centre, Northern Tanzania (n = 22 Lesions)

Variable	NO Treatment (n = 18) n(%)	ON Treatment (n = 4) n(%)	Total (n = 22) n(%)
Background color			
Light red	7 (38.9)	1 (25)	8 (36.4)
Dull red	10 (55.6)	1 (25)	11 (50.0)
Yellow	1 (5.5)	1 (25)	2 (9.1)
Brown	0 (0)	1 (25)	1 (4.5)
Vessels	0 (0)	0 (0)	0 (0)
Scale color			
No scale	4 (22.2)	0 (0)	4 (18.2)
White	14 (77.8)	4 (100)	18 (81.8)
Scale distribution			
No scale	4 (22.2)	0 (0)	4 (18.1)
Diffuse	2 (11.1)	0 (0)	2 (9.1)
Patchy	5 (27.8)	3 (75)	8 (36.4)
Peripheral	7 (38.9)	1 (25)	8 (36.4)
PWS	0 (0)	0 (0)	0 (0)
Follicular disturbance	0 (0)	0 (0)	0 (0)
Pigmentation			
No pigmentary changes	7 (38.9)	1 (25)	8 (36.4)
Brown dots and patches	2 (11.1)	2 (50)	4 (18.1)
Gray dots and patches	2 (11.1)	0 (0)	2 (9.1)
Mix of brown and gray	7 (38.9)	1 (25)	8 (36.4)

cular features, predominant background colors, and pigmentary changes revealed differences between light and dark skin which could be explained by the different intensity of skin pigmentation. However, the dermoscopic diagnosis of PP, LP, and PR is possible in patients with dark skin and should encourage the use of dermoscopy in daily clinic for an early correct diagnosis and to avoid unnecessary biopsies. Further studies, probably with higher-resolution dermatoscopes, are needed to further explore dermoscopic features in dark skin.

Recommendations

Further studies, probably with high-resolution dermoscopy and bigger sample sizes, are needed especially in skin type IV and darker to further elaborate dermoscopic features in inflammatory skin diseases.

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Table 5. Most Common Features in PP, LP, and PR In Dark Skin (Skin Type IV or Darker)

Plaque-Type Psoriasis	Lichen Planus	Pityriasis Rosea
Light red background Red dotted vessels Regular vessels White scales	Violet background Pearly white structures	Dull red background White scale color Patchy and peripheral scale distribution Mix of brown and gray pigmentation

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References

1. Armstrong AW, Schupp C, Wu J, Bebo B. Quality of life and work productivity impairment among psoriasis patients: findings from the National Psoriasis Foundation survey data 2003-2011. *PLoS One*. 2012;7(12):e52935.
2. Korfitis C, Gregoriou S, Antoniou C, Katsambas AD, Rigopoulos D. Skin biopsy in the context of dermatological diagnosis: a retrospective cohort study. *Dermatol Res Pract*. 2014;2014:734906.
3. Lisi P. Differential diagnosis of psoriasis. *Reumatismo*. 2007;59 Suppl 1:56–60.
4. Alexis AF, Blackcloud P. Psoriasis in skin of color: epidemiology, genetics, clinical presentation, and treatment nuances. *J Clin Aesthet Dermatol*. 2014;7(11):16–24.
5. Faraz A, Dharamshi HA, Zahir N, Saleem A, Ullah S. Role of skin biopsy in papulosquamous lesions—a comparative study. *Comp Clin Path*. 2015;24(5):1205–1209.
6. Lallas A, Kyrgidis A, Tzello TG, et al. Accuracy of dermoscopic criteria for the diagnosis of psoriasis, dermatitis, lichen planus and pityriasis rosea. *Br J Dermatol*. 2012;166(6):1198–1205.
7. Lallas A, Apalla Z, Argenziano G, et al. Dermoscopic pattern of psoriatic lesions on specific body sites. *Dermatology*. 2014;228(3):250–254.
8. Chandravathi PL, Awake P, Kota M. A cross-sectional analysis of dermoscopic patterns distinguishing between psoriasis and lichen planus : a study of 80 patients. *J Evolution Med Dent Sci*. 2015;4(105):17017–17022
9. Gorouhi F, Davari P, Fazel N. Cutaneous and mucosal lichen planus: a comprehensive review of clinical subtypes, risk factors, diagnosis, and prognosis. *Sci World J*. 2014; Jan 30;2014:742826.
10. WHO. WHO: IRIS Global report on psoriasis. WHO Press; 2016:1–48. http://apps.who.int/iris/bitstream/10665/204417/1/9789241565189_eng.pdf. Accessed May 11, 2016.
11. Zavar V, Chuh A. Follicular pityriasis rosea: a case report and a new classification of clinical variants of the disease. *J Dermatol Case Rep*. 2012;6(2):36–39.
12. Treesirichod A, Chansakulporn S, Wattanapan P. Correlation between skin color evaluation by skin color scale chart and narrowband reflectance spectrophotometer. *Indian J Dermatol*. 2014;59(4):339–342.
13. Pan Y, Chamberlain AJ, Bailey M, Chong AH, Haskett M, Kelly JW. Dermatoscopy aids in the diagnosis of the solitary red scaly patch or plaque: features distinguishing superficial basal cell carcinoma, intraepidermal carcinoma, and psoriasis. *J Am Acad Dermatol*. 2008;59(2):268–274.
14. Abdel-Azim NE, Ismail SA, Fathy E. Differentiation of pityriasis rubra pilaris from plaque psoriasis by dermoscopy. *Arch Dermatol Res*. 2017;309(4):311–314.
15. Güngör Ş, Topal IO, Göncü EK. Dermoscopic patterns in active and regressive lichen planus and lichen planus variants: a morphological study. *Dermatol Pract Concept*. 2015;5(2):45–53.
16. Vásquez-López F, Manjón-Haces JA, Maldonado-Seral C, Raya-Aguado C, Pérez-Oliva N, Marghoob AA. Dermoscopic features of plaque psoriasis and lichen planus: new observations. *Dermatology*. 2003;207(2):151–156.
17. Goncharova Y, Attia EAS, Souid K, Protzenko O, Koktishv I. Dermoscopic features of clinically inflammatory dermatoses and their correlation with histopathologic reaction patterns. *Arch Dermatol Res*. 2015;307(1):23–30.
18. Garg P, Kaur T. Study of the dermoscopic findings and their correlation with histopathological findings in various lichenoid dermatoses. *J Clin Exp Dermatol Res*. 2015;6:308.