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Clinico-Dermoscopic Features of Psoriasis, Lichen Planus, and Pityriasis Rosea in Patients attending Dermatology Out Patient Department at J.J.M Medical College, Davangere

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Abstract: ***Background: Papulosquamous skin diseases can be challenging to diagnose, especially in dark skin phenotypes. Dermoscopy is reported to be helpful and avoid invasive procedures like biopsy. Few data available on its use in Fitzpatrick skin type IV or darker. Objective: To describe dermoscopic features in plaque type psoriasis (PP), Lichen planus (LP), and Pityriasis rosea (PR) patients attending Dermatology OPD at JJM medical college, Davangere and to compare the findings with published data. Methods: A descriptive cross-sectional study conducted at a tertiary care centre Bapuji Hospital, JJM medical college, Davangere from January 2022 to December 2022. 100 patients of plaque psoriasis, 50 with LP and 25 with Pityriasis rosea were enrolled. Dermoscopic vascular and non-vascular features from 340 lesions were analysed. Results: Out of 175 patients enrolled, 99 (56.5%) were males and 76(43.5%) were females. Median age among plaque psoriasis was 49, LP was 51 and among P.rosea was 22.5. In PP lesions red dots were found 70% and white scales in 53.3%. In LP lesions the background was violet in 70.8% and 37.5% revealed Wickham's striae. In PR lesions light red background was found in 70%, peripheral white scales in 54.2% but no vessels were detectable. Conclusion: Dermoscopy features in PP, LP, and PR in dark skin are mostly similar in those with light skin. It is an additive and supportive tool to the clinical diagnosis.***

Keywords: Dermoscopy, papulosquamous, plaque psoriasis, Lichen planus, pityriasis rosea

1. Introduction

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 the 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 non-invasive 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 inflammoscopy, 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 colour 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.

2. Materials and Methods

This hospital based descriptive cross-sectional study was conducted at Bapuji Hospital, JJM Medical College, Dermatology OPD from January 2022 to December 2022. All patients with clinical diagnosis of PP, LP and PR were enrolled. Clinical diagnosis was guided by standard descriptions [9-11]. The patients who were on treatment like topical steroids, salicylic acid, calcipotriol, coal tar or oral medication (steroids, methotrexate) were excluded. Patients who had mucous membrane or nail lesions only were excluded.

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

Dermoscopic images of active lesions were taken using polarized mode of 3gen Dermlite DL3N polarized and fluid dermoscope model. Vascular features (background colour, vessel morphology, distribution pattern) and non-vascular features (scale colour, distribution, Wickham striae, follicular disturbances and pigmentary changes) were assessed.

Data captured and analysis were through SPSS version 20. Continuous variables were summarised using median, while categorical variables were summarised using frequency and percentages.

3. Results

One seventy five patients were enrolled (56.5% men and 43.5% women). Patients with PP (n =100), LP (n =50) and PR (n =25) were enrolled. The demographic details of 3 skin diseases are shown in Table 1.

In patients with PP, 150 lesions were assessed. The majority of the lesions were from trunk and back followed by scalp, knee/elbow. In LP patients 120 lesions were scoped and majority were from arms, trunk and back. In PR patients 70 lesions were scoped and majority were on back and trunk.

Table 1: Demographic characteristics of PP, LP and PR patients

Variable	PP (n=100)	LP (n=50)	PR (n=25)
Sex			
Male	59 (59%)	30 (60%)	10 (40%)
Female	41 (41%)	20 (40%)	15 (60%)
Median Age (years)	49	51	22.5
<20	12	12	7
20-39	28	15	13
40-59	37	18	5
60-79	23	5	0
Fitzpatrick type			
Type IV	5 (5%)	2 (4%)	0 (0%)
Type V	75 (75%)	35 (70%)	20 (80%)
Type VI	20 (20%)	13 (26%)	5 (20%)
Body site	**Lesions (n=150)**	**Lesions (n=120)**	**Lesions (n=70)**
Scalp	25	2	0
Trunk	35	28	25
Back	45	25	35
Elbow	15	0	0
Knee	20	0	0
Arms	7	40	10
Legs	3	25	0

Dermoscopic Features in PP

The most common features of 150 PP lesions were light red background (76.6%), red dots (70%), regular vessels (66.5%), white scales seen in (63.3%), pigmentary changes (26%) and follicular changes comedo like opening (2%), perifollicular hyperpigmentation (4%), milia like cyst (3.3%).

Table 2: Dermoscopic Features in PP lesions (n = 150 lesions)

Background colour	
Light red	115 (76.6%)
Hyper red	35 (23.3%)
Vessel morphology	
Red dots	105 (70%)
No vessels	25 (16.6%)
Patchy	20 (13.3%)
Scale colour	
No scale	55 (36.6%)
White	95 (63.3%)
Scale distribution	
No scale	55 (36.6%)
Diffuse	65 (43.3%)
Patchy	30 (20%)
Follicular changes	
Comedo like opening	3 (2%)
Perifollicular hyperpigmentation	6 (4%)
Perifollicular hypopigmentation	4 (2.6%)
Milia like cyst	5 (3.3%)
No changes	7 (4.6%)
Pigmentary changes	
No pigmentary changes	111 (74%)
Brown dots, patches	19 (12.6%)
Grey dots, patches	20 (13.3%)

Dermoscopic Features in LP

The most common features of 120 LP lesions were pigmentary changes (41.5%), a violet background (70.8%), while vessel morphology and pattern (each 25%) , follicular changes (19.1%), scales (20.8%) were not observed. Irregular red dot vessels were common pattern (54.1%) seen. Follicular changes comedo like opening (12.5%), milia like cyst (8.3%) noted. Scale distribution was patchy type most commonly noted (37.5%) followed by (29.1%).

Table 3: Dermoscopic Features in LP lesions (n = 120)

Background colour	
Light red	15 (12.5%)
Violet	85 (70.8%)
Yellow	5 (4.1%)
Brown	10 (8.3%)
Others	5 (4.1%)
Vessel morphology	
No vessel	30 (25%)
Regular red dots	20 (16.6%)
Irregular red dots	65 (54.1%)
Linear	5 (4.1%)
Vessel pattern	
No vessel	30 (25%)
Patchy	55 (45.8%)
Peripheral	25 (20.8%)
others	10 (8.3%)
Scale distribution	
No scale	25 (20.8%)
Diffuse	35 (29.1%)
Patchy	45 (37.5%)
Peripheral	15 (12.5%)
Follicular changes	
No disturbance	23 (19.1%)
Comedo like opening	15 (12.5%)
Milia like cyst	10 (8.3%)
Pigmentary changes	
Brown dots	25 (20.83%)
Grey dots	10 (8.3%)
Mix grey and brown dots	15 (12.5%)

Dermoscopic Features in PR

Total 70 lesions of PR were scoped. 70% of the lesions show light red background. 82.85% shows the presence of whitish scale which has 54.2% has peripheral scale distribution. No pigmentary and follicular changes were noted.

Table 4: Dermoscopic Features in PR lesions (n = 70)

Background colour	
Light red	49 (70%)
Hyper red	21 (30%)
Yellow	0
Brown	0
Scale colour	
No scale	12 (17.1%)
white	58 (82.8%)
Scale distribution	
No scale	12 (17.1%)
Diffuse	10 (14.2%)
Patchy	12 (17.1%)
Peripheral	38 (54.2%)
Pigmentary changes	0
Follicular changes	0

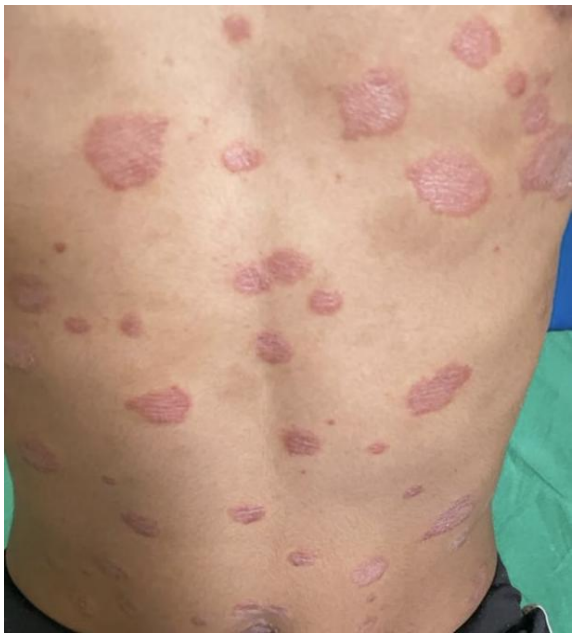
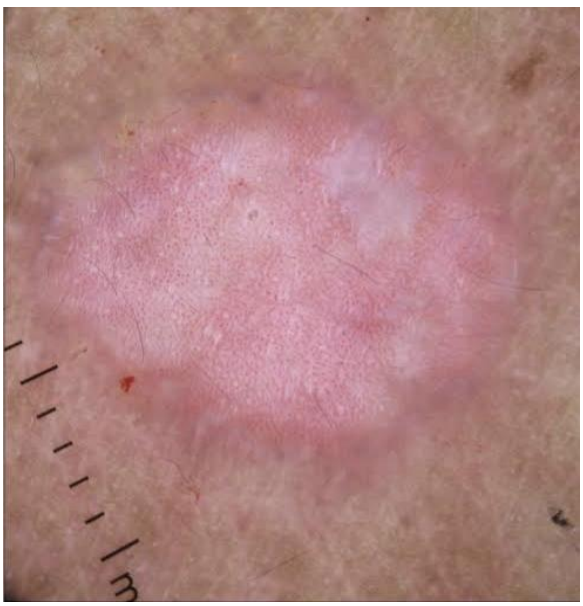


Figure 1 (a): Plaque Psoriasis



Regular arrangement of red dots vessels
Figure 1 (b): Dermoscopic image

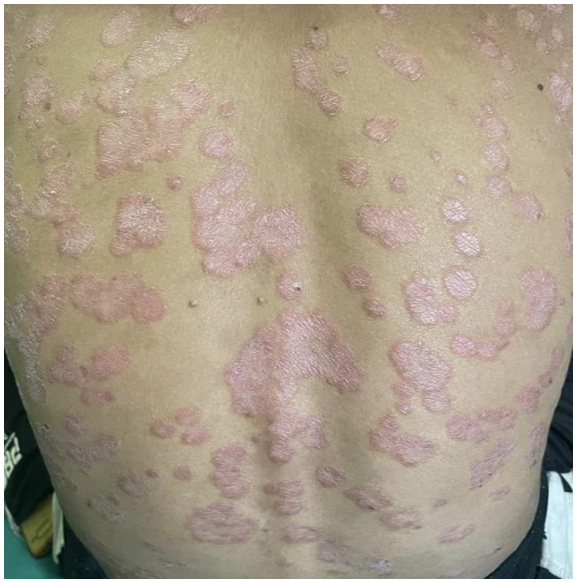
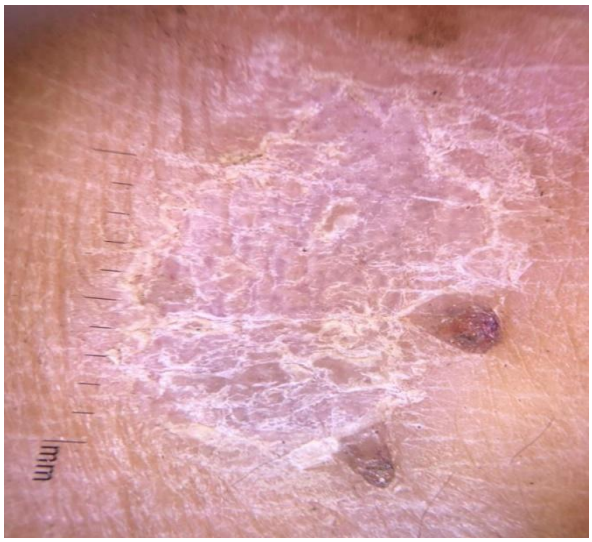


Figure 2 (a): Plaque Psoriasis



Diffuse whitish scales on light red background
Figure 2 (b): Dermoscopic image

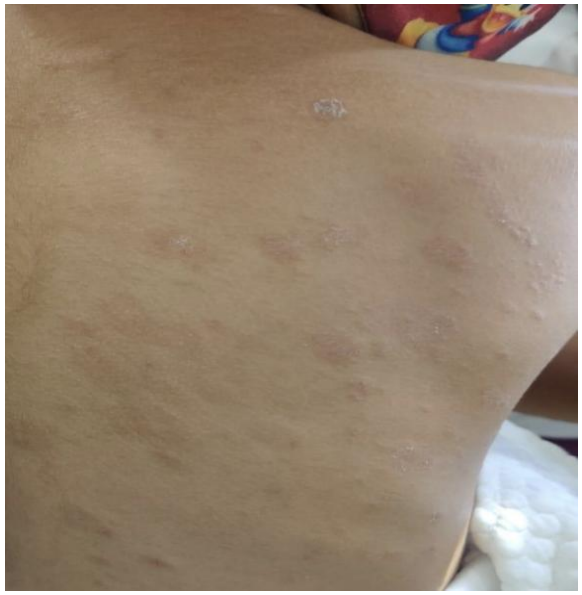


Figure 3 (a): Pityriasis Rosea

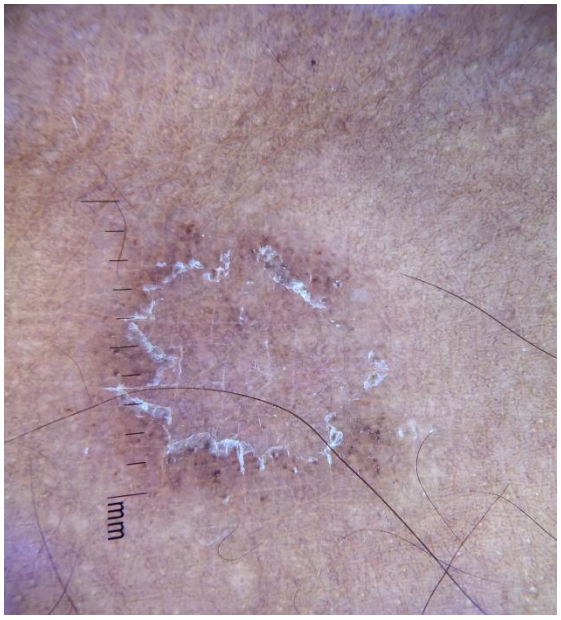


Figure 3 (b): Peripheral whitish collarette scale

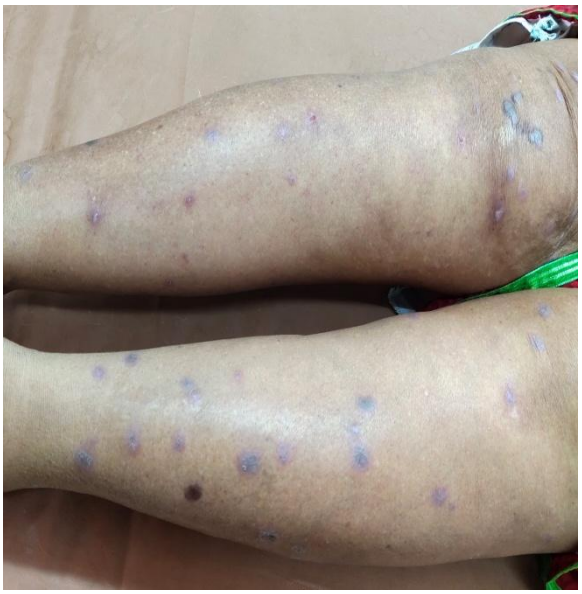


Figure 4 (a): Classic Lichen Planus

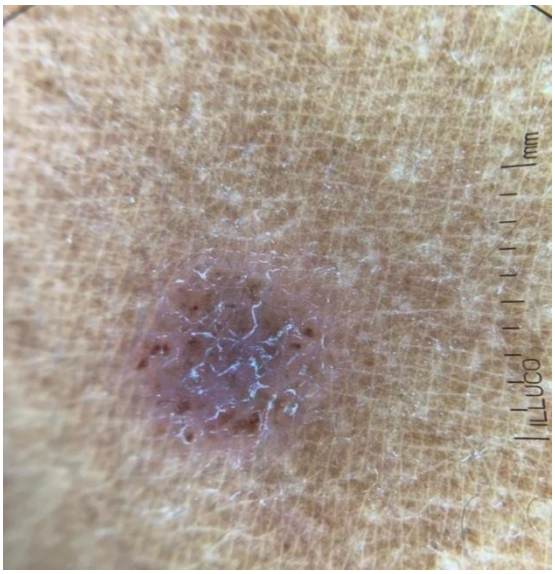


Figure 4 (b): Wickham's striae on violaceous Background

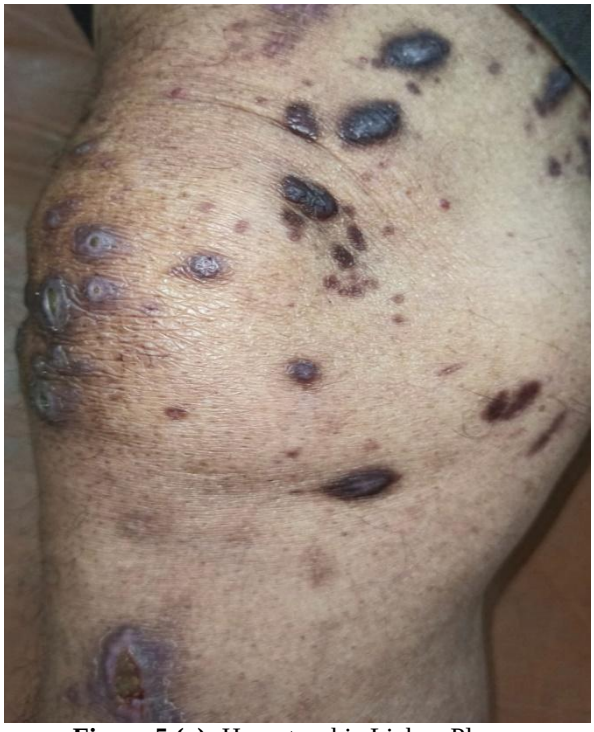


Figure 5 (a): Hypertrophic Lichen Planus

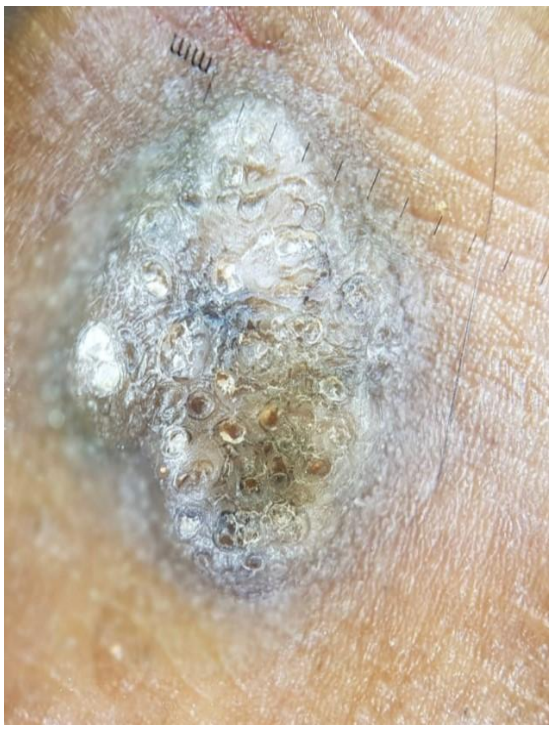


Figure 5 (b): Comedo like opening and Milia like cyst

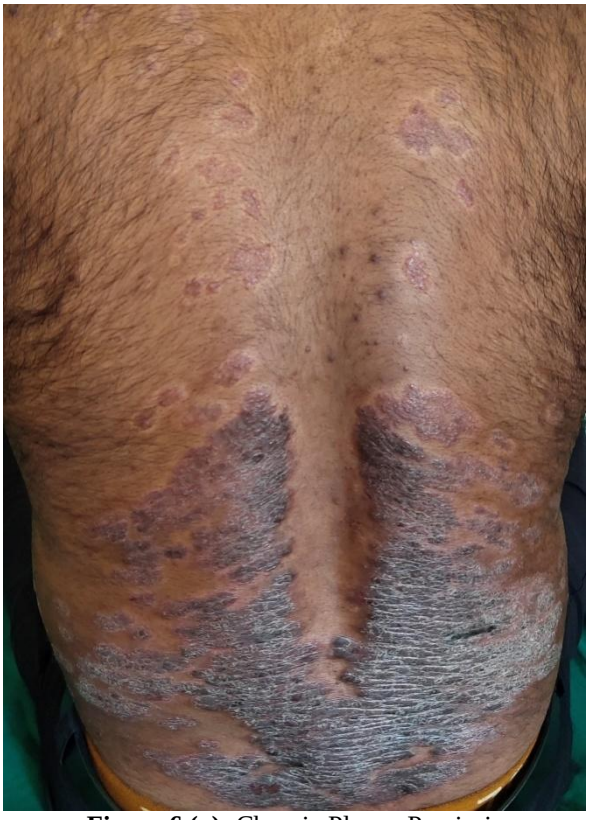


Figure 6 (a): Chronic Plaque Psoriasis

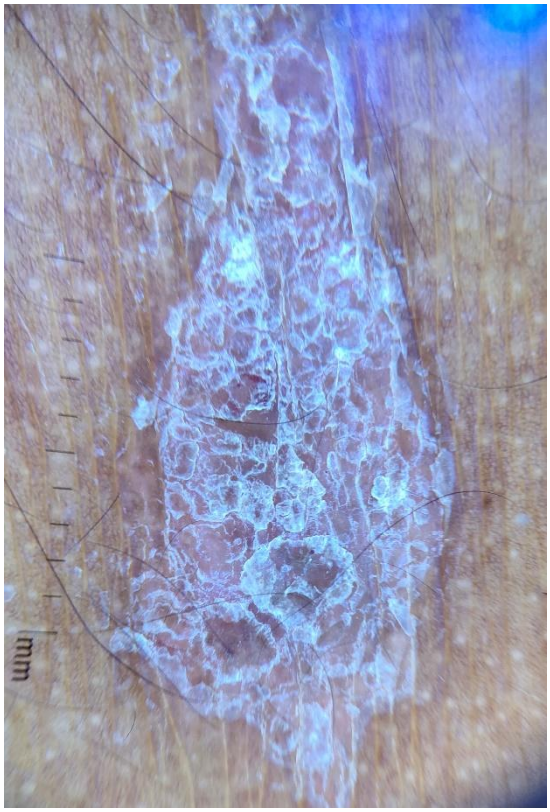


Figure 6 (b): Diffuse whitish scale on dull red background

4. 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). Among patients with PP, red dots were seen in 70% of lesions in contrast to Lallas et al[7], who described them in 97.1%. 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 same features were present, although in lower percentages i.e light red background 76.6%, regular vessels 70% compared to 63%-100% [7,13], white scale in 63.3% vs 64.7%-87.5%[7,8]. A possible explanation could be that in darker skin, the red background and vessels are not easily compared to patients with a lighter skin type.

We noted non-vascular features to be more common in LP, in agreement with literature reports. A violaceous background was the most common finding in 70.8% of the lesions which is similar to 68.5% described by Chandravathi and colleagues[8]. The violet colour background might correspond to inflammatory infiltrate, necrotic keratinocytes and pigmentary incontinence over blood vessels[17]. Follicular changes were some of the less observed findings with comedo like opening at 12.5% similar to the 20% reported by Garg et al [18].Pigmentary changes were seen in 41.5% of the lesions and this could be related to more pigmentation in dark skin[9]. Wickham's striae which are diffuse (29.1%) and patchy (37.5%) were in comparable with the study Garg et al[18].

In PR lesions the most common background colour in our study was dull red (70%) compared to light yellow 65% among Caucasian patients, as reported by Lallas and colleagues [6]. This observation supports the idea that erythema could have various presentation based on pigmentation i.e more light yellowish in light skin and more dull red in dark skin. Perhaps due to dark pigmentation, we observed no vessels in contrast to Lallas et al, who reported red dots in 100% of their patients[6].The characteristic peripheral collarette scales noted in 54.2% of the lesions in this study which was similar in proportion to other studies 61.5% by Lallas et al[6]. In our study peripheral distribution of scales more compared to patchy and diffuse variant which is comparable in the literature[6].

5. Limitations

This study was performed in one centre 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 enrolment 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.

6. Conclusion

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 vascular features,

predominant background colours, 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.

Table 5: Most Common Features in PP, LP and PR In Dark skin type IV or Darker.

Plaque-Type Psoriasis	Lichen Planus	Pityriasis Rosea
Light red background Red dotted vessels White scales	Violet background Pearly white structures Wickham's striae	Dull red background White scale colour Patchy and peripheral scales

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