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Original Research Article

The study of epidemiological, clinical, histopathological and dermoscopic features of lichen planus

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ABSTRACT

Background: Lichen planus (LP) is a common papulosquamous condition seen by the dermatologists. It can involve the skin, mucous mebranes, hair and nails. There are many subtypes of LP with various clinical, histopathological and dermoscopic features. In this study we intended to study the epidemiological, clinical, histopathological and dermoscopic features of LP.
Methods: A total of 73 patients of LP, above the age of 18 years who qualified the inclusion and exclusion criteria were included in the study. A proforma of epidemiological details was noted, clinical and dermoscopic examination of the lesions were done. The punch biopsy specimens of cutaneous lesions were subjected to histopathological examination and the findings noted.
Results: Out of the 73 patients included in the study, 44 were males and 29 females with a ratio of 1.51:1. Classic LP was the commonest type of LP. Wickham's striae (WS) was the most typical and commonest dermoscopic feature of cutaneous LP except lichen planus pigmentosus. Hyperkeratosis, hypergranulosis, acanthosis, band shaped lymphocytic infiltrate, melanophages, basal cell degeneration and saw tooth shaped rete ridges were the significant histopathological features.
Conclusions: LP is more common in young adults and shows a male preponderance. WS is the most important diagnostic feature seen on dermoscopy of all the cutaneous types of LP excluding LPP. Interface dermatitis with a band of lymphocytic infiltrates and dermal melanophages is a notable feature of histopathology of LP.

Keywords: Lichen planus, Wickham's striae, Dermoscopy, Interface dermatitis

INTRODUCTION

LP is a chronic inflammatory T cell mediated disease that affects the skin, nails, hair and mucous membranes. The worldwide prevalence of LP is 0.22% to 5%.[1] Infections, genetics and autoimmune mechanisms have been suggested as probable etiological factors. Recent studies have shown the role of autoreactive cytotoxic T lymphocytes in the pathogenesis of LP. Histopathological features of LP are characterized by interface dermatitis and the findings are classical but not all features can be identified in all cases.[3]

Dermoscopy is a non-invasive diagnostic modality which enables the visualization of morphologic features of skin that are otherwise invisible to the naked eye, thus forming a bridge between macroscopic clinical dermatology and microscopic dermatopathology. Dermoscopic patterns of many inflammatory skin diseases have already been described and it has been considered to be of high diagnostic accuracy for differentiating between common inflammatory skin disorders such as psoriasis and LP.[4]

The typical features seen on dermoscopy in a classic LP are WS, vascular patterns such as red dots, red globules, radial linear pattern and pink or violet background colour.[5]

Our study intended to throw some light on the epidemiological, clinical, dermoscopic and histopathological features in patients of LP.

METHODS

This was a prospective, cross-sectional study conducted in our dermatology OPD over the period of 10 months (from December 2018 to August 2019). Sample size was calculated to be 73 using,

$n=\frac{Za^2pq}{E^2}$,

considering 5% prevalence of LP,

where Za=1.96 at 95% confidence level,

E=0.05.

Informed consent was taken from all patients prior to inclusion into the study.

A total of 73 newly diagnosed LP patients were included in the study.

Inclusion criteria

Patients who were willing to give informed written consent for enrolment into the study and patients diagnosed with LP were included in the study.

Exclusion criteria

Patients of age <18 years, patients diagnosed with malignancies or other immunocompromised states and pregnant patients were excluded from the study.

Detailed history was elucidated and complete cutaneous, mucosal and hair examination was done in all the patients. Dermoscopy of all cutaneous lesions were done using Dermlite DL3 and photographed using Canon Ixus camera. Baseline investigations such as complete blood count, liver function test, renal function tests and skin/mucosal biopsy of the affected lesions were done. The histopathological assessment and reporting were done by pathologists.

Collected data was coded and entered into SPSS (statistical package social science) version 17 for statistical analysis.

RESULTS

A total of 73 patients were recruited, out of which 44 were males and 29 females with a ratio of 1.51:1. The patients in 18 to 30 years age group were the majority (36.9%), followed by 31 to 40 years (28.7%), 41 to 50 years (21.9%) and least (12.3%) was in the patients over 51 years of age. The mean age of patients included in the study was 36.38 years. Twenty two patients had associated co-morbidities including diabetes mellitus (DM) in 19 patients (13 patients also had co-existing hypertension (HTN)), only HTN in 14 patients and bronchial asthma in 2 patients.

The duration of 3 to 6 months was the commonest which was seen in 29 patients (39.7%), followed by 6 to 12 months duration in 21 patients (28.7%), less than 3 months duration in 16 patients (21.9%) and more than 12 months duration was seen in 7 patients (9.5%). The mean duration of symptoms in the patients included in the study was 5.79 months. None of the patients in our study had a family history of LP. Demographic features are listed in Table 1.

The commonest symptom was itching which was seen in 66 patients (90.4%), followed by burning sensation in 17 patients (23.2%). Most common site of involvement was forearms, seen in 51 (69.8%) patients. All 73 (100%) patients in our study had cutaneous lesions. 5 patients also had oral lesions. Majority of the patients had classical LP 61 (83.5%), 5 (6.8%) patients had LP pigmentosus (LPP), 4 (5.4%) patients had hypertrophic lichen planus (HLP), 2 (2.7%) patients actinic lichen planus (ALP) and only 1 (1.3%) patient had annular lichen planus (Table 2). Five patients (6.8%) had coexisting mucosal LP. Nail lesions such as pitting, longitudinal ridging, trachyonychia and pterygium unguium were seen in 4 patients (5.4%).

On dermoscopic examination, characteristic WS was seen in all patients except the 5 LPP patients. In these 68 patients, WS showed leaf venation, linear, reticular and radial streaming patterns. The vessel patterns seen were linear irregular and dotted vessels arranged peripherally in all these cases. Additionally, in HLP, bluish and brown globules, sparse white scales and comedo like structures were seen. Dermoscopy of LPP lesions did not have WS but showed the presence of greyish blue pigmentation patterns and pigment deposition in perifollicular and peri-eccrine region over a brown background colour.

Table 1: Demographic profile of patients.

Variables	Number of patients (n=73)	Percentage (%)
Age group (in years)		
18-30	27	36.9
31-40	21	28.7
41-50	16	21.9
>50	9	12.3
Sex		
Male	44	60.2
Female	29	39.7
Duration of symptoms (in months)		
<3	16	21.9
3-6	29	39.7
6-12	21	28.7
>12	7	9.5
Treatment taken before		
Yes	52	71.2
No	21	28.7

Table 2: Clinical features.

Variables	Number of patients (n=73)	Percentage (%)
Symptoms		
Itching	66	90.4
Burning sensation	17	23.2
Pigmentation	10	13.6
Visible rash	7	9.5
Sites involved		
Forearms	51	69.8
Arms	30	41
Hands	6	8.2
Thighs	18	24.6
Legs	23	31.5
Feet	4	5.4
Trunk	12	16.4
Face and neck	3	4.1
Oral cavity	5	6.8
Types of lichen planus		
Classic lichen planus	61	83.5
Lichen planus pigmentosus	5	6.8
Hypertrophic lichen planus	4	5.4
Actinic lichen planus	2	2.7
Annular lichen planus	1	1.3
Oral lichen planus	5	6.8

HPE of the biopsy specimens in all patients except LPP showed hyperkeratosis, hypergranulosis, acanthosis, band shaped lymphocytic infiltrate, melanophages, basal cell degeneration and saw tooth shaped rete ridges. In LPP patients, the HPE was characterized by atrophic epidermis, hypergranulosis, lymphocytic infiltrate, basal cell degeneration and melanophages.

DISCUSSION

Our study intended to elucidate the clinical histopathological and dermoscopic features of LP.

Wilson in 1869 had described LP as an inflammatory condition that affected the stratified squamous epithelia.[6] The typical surface markings over the papules were initially described as WS by Weyl.[7]

The prevalence of LP worldwide ranges from 0.22% to 5% but the exact prevalence is not known.[1] For calculation of sample size we considered the prevalence to be 5%.

The LP lesions can involve the skin, mucosal surfaces and nails to be called as cutaneous lichen planus (CLP), mucosal lichen planus and nail LP respectively. Various subtypes of CLP based on the morphologies are papular (classic), hypertrophic, atrophic, annular, bullous, linear, follicular, actinic, LP pigmentosus and LP pigmentosus-inversus.

Mucosal LP can be seen to affect oral mucosa, esophagus, larynx and conjunctiva. The subtypes of oral lichen planus are reticular, atrophic, erosive, bullous and papular types. Nail LP is more common in children than adults. Dorsal pterygium is the typical finding of nail LP. Other features such as onychorrhexis, onycholysis, trachyonychia, melanonychia, anonychia may be seen.[8,9]

In our study, 18 to 30 years (36.9%) was the commonest age group affected, followed by 31 to 40 years (28.7%). The most common age group affected in a few other Indian studies are 20 to 39 years (45.7%) Kachhawa et al, 20 to 39 years (46.9%) Ireddy et al, 20 to 40 years (53.7%) Singh et al.[2,10,11] Most Indian studies report that LP is more common in younger population. The ratio of male to females included in the study was 1.51:1. Other Indian studies have also reported a similar ratio with an increased male preponderance.[2,10,12]

In our study, a total of 22 (30.1%) patients had associated co-morbidities including DM in 19 (26%) patients, hypertension in 14 patients and bronchial asthma in 2 patients. Associated DM in our study was much higher than that seen in a study by Vijaysingham et al which was 11%.[13] Associated HTN was lower than that seen in a study by Singla et al.[14]

The duration of presenting symptoms in our study ranged from 10 days to 15 months. Majority of them (40%) belonged to between 3 to 6 months duration and the lowest was 9% in the more than 12 months duration group. In a study by Bhattacharya et al, more than two-third of the patients had a duration of less than 1 year.[15]

The commonest symptom was itching which was seen in 66 patients (90.4%), followed by burning sensation in 17 patients (23.2%). The studies by Ireddy et al and Abdallat et al also show a higher percentage of patients presenting with itching which was 82.6% and 83.6% respectively.[11,16]

The commonest site to be involved was the forearms as seen in a study by Bhattacharya et al.[15] Simliar to their study, our study too showed a predominance of papular lesions in the wrist area in all the classic LP patients.

All the 73 patients in our study had CLP, which is unlike in many other studies such as Singh et al (69.61%), Andreasen et al (44%).[2,17] Five (6.8%) patients also had oral lesions along with CLP (Figure 1). This may be due to the fact that most patients with oral lesions will usually present to the dentists.

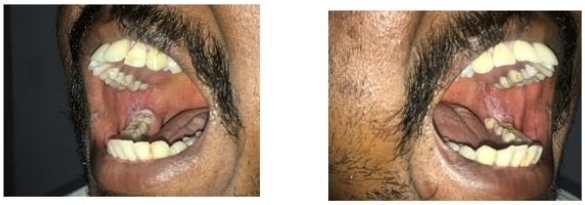

Figure 1: Oral lichen planus.

Among the CLP patients, 61 (83.5%) had classic LP, 5 (6.8%) patients had LPP, 4 (5.4%) patients had HLP, 2 (2.7%) patients ALP and only 1 (1.3%) patient had ALP (Figure 2-4). Nail lesions such as pitting, longitudinal ridging, trachyonychia and pterygium unguium were seen in 4 patients (5.4%).

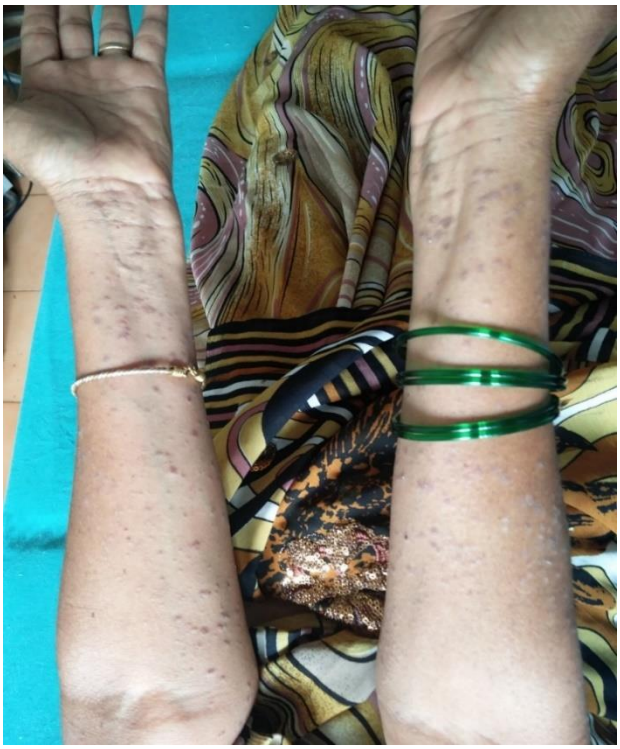

Figure 2: Classic lichen planus.

In our study dermoscopy revealed the characteristic WS in all patients (93.1%) except the 5 LPP patients. In these 68 patients, WS showed leaf venation pattern in 56, linear pattern in 7, reticular pattern in 4 and radial streaming pattern in 2 patients (Figure 5 a-d). The background colour was red, reddish pink or pink in all patients. The vessel patterns seen were linear irregular and dotted vessels arranged peripherally in all these cases.

Dermoscopy of HLP showed additional features such as bluish and brown globules, sparse white scales and comedo like structures (Figure 6).

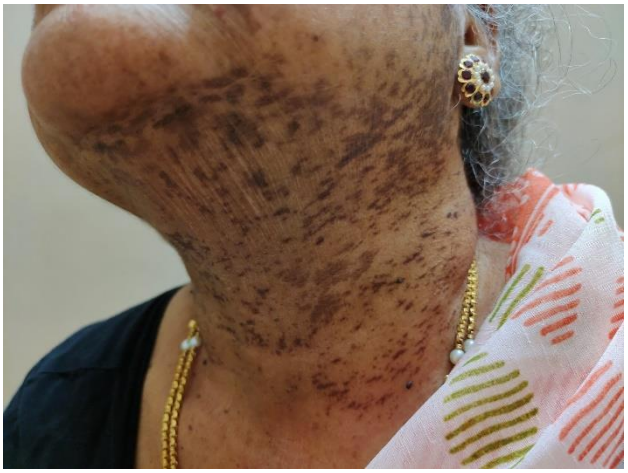

Figure 3: Lichen planus pigmentosus.

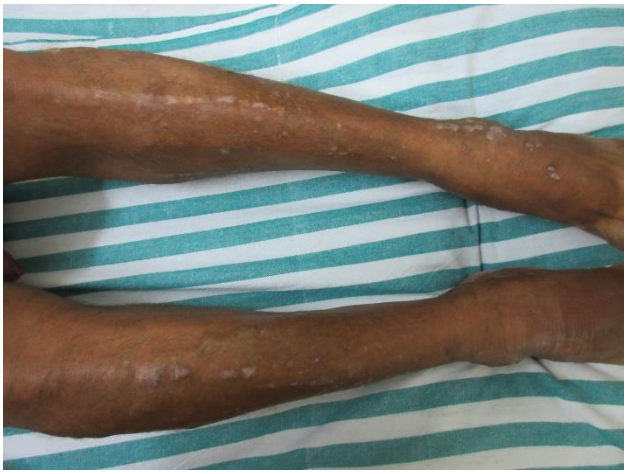

Figure 4: Hypertrophic lichen planus.

Dermoscopy of LPP lesions did not have WS but showed the presence of greyish blue pigmentation patterns and pigment deposition in perifollicular and peri-eccrine region over a brown background colour.

In various dermoscopic studies of LP, the vessel patterns seen on dermoscopy of LP lesions are dotted, globular and/or linear vessels, usually seen at periphery of the lesion. Various background colours such as brown, violet, red and pink. White or yellow dots and pigmented structures are other features. The most classical feature of classic LP is WS (pearly-whitish, yellow or blue-white structures). The patterns of Wickham's striae may be annular, leaf venation, linear, reticular, radial streaming and round.[5,18-20] HLP shows a typical rippled appearance with the presence of comedo-like structures (corn pearls), structureless areas, sparse scales and central hyperpigmentation.[18-21]

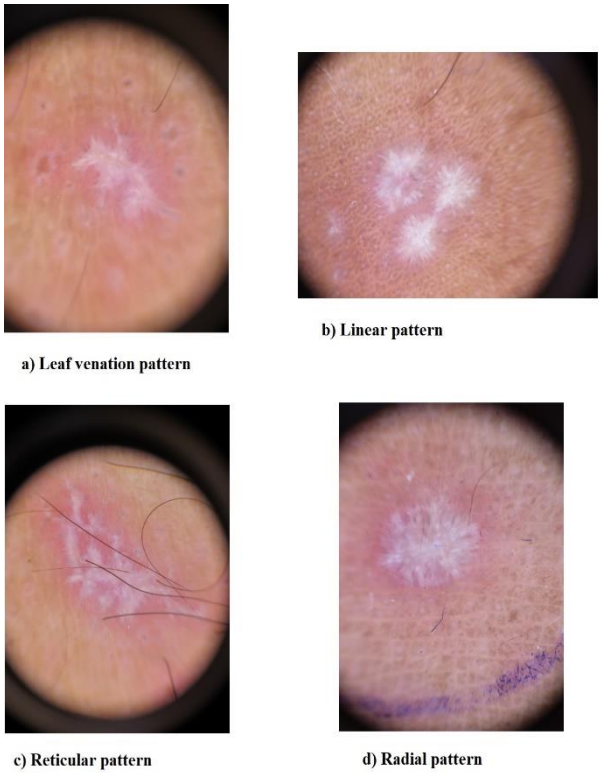

Figure 5: Wickham's striae; (a) leaf venation; (b) linear pattern; (c) reticular pattern; (d) radial pattern.

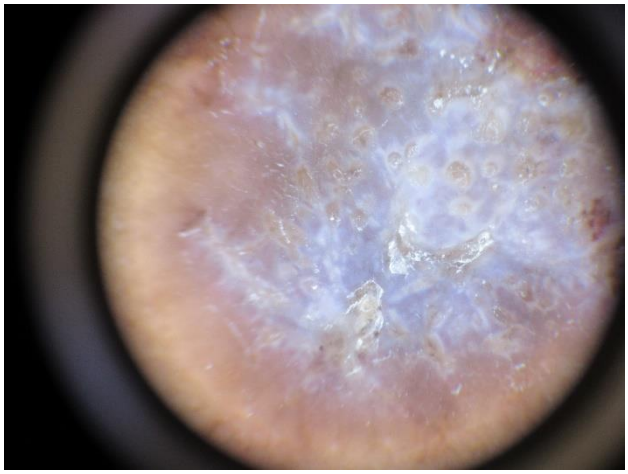

Figure 6: Dermoscopic feature of HLP.

Dermoscopy of LPP lesions was different from other types of LP due to the absence of WS and the presence of greyish blue pigmentation patterns and pigment deposition in perifollicular and peri-eccrine region over a brown background colour. These features were similar to those observed by Güngör et al.[5]

HPE of the biopsy specimens in all our patients except LPP showed hyperkeratosis, hypergranulosis, acanthosis, band shaped lymphocytic infiltrate, melanophages, basal

cell degeneration and saw tooth shaped rete ridges (Figure 7). In LPP patients, the HPE was characterized by atrophic epidermis, hypergranulosis, lymphocytic infiltrate, basal cell degeneration and melanophages. The characteristic histopathologic features of LP seen in various studies are hyperkeratosis, hypergranulosis, irregular acanthosis with a saw toothed appearance, basal layer liquefactive degeneration, civatte bodies, dermal melanophages and a band-like lymphocytic infiltrate at the dermo-epidermal junction.[22,23]

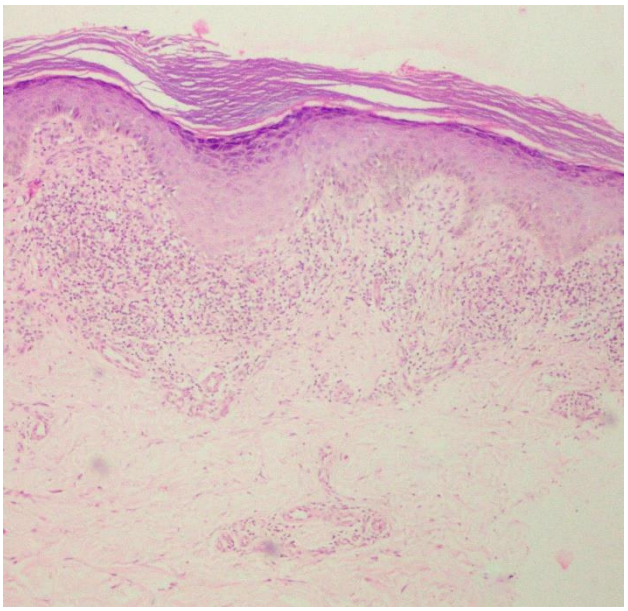

Figure 7: Histopathological features of lichen planus.

CONCLUSION

Our study indicates that LP is more common in young adults and shows a male preponderance with itching being the most symptom at presentation. WS is the most important diagnostic feature seen on dermoscopy of all the cutaneous types LP excluding LPP. Interface dermatitis with a band of lymphocytic infiltrates and dermal melanophages is a notable feature on histopathological examination of LP. Many such studies in different populations with a larger sample size are required to highlight the characteristic epidemiological, clinical dermoscopic and histopathological aspects of LP.

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Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Gorouhi F, Daravi P, Fazel N. Cutaneous and mucosal lichen planus: A comprehensive review of clinical subtypes, risk factors, diagnosis and prognosis. Scientific World J. 2014;2014:742826.
2. Singh OP, Knawar AJ. Lichen planus in India: An appraisal of 441 cases. Int J Dermatol. 1976;15:752-6.
3. Daoud MS, Pittellkow MR. Lichen planus. In: Freedberg IM, Eisen AZ, Wolff K, eds. Fitzpatrick's dermatology in general medicine. 6th ed. New York: McGraw-Hill; 2003: 463-77.
4. Lallas A, Zalaudek I, Argenziano G, Longo C, Moscarella E, Di-Lernia V, et al. Dermoscopy in general dermatology. Clin Dermatol. 2013;31(4):679-94.
5. 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.
6. Wilson E. On leichen planus. J Cutan Med Surg. 1869;3(10):117-32.
7. Weyl A. Comments on the Lichen Planus. German Med Wkly. 1885;11:624-6.
8. Tosti A, Piraccini BM, Cambiaghi S, Jorizzo M. Nail lichen planus in children: clinical features, response to treatment, and long-term follow-up. Arch Dermatol. 2001;137(8):1027-32.
9. Tosti A, Piraccini BM, Cambiaghi S, Jorizzo M. Nail lichen planus. Color Atlas of Nails. Berlin, Germany: Springer; 2010: 83-5.
10. Kachhawa D, Kachhawa V, Kalla G, Gupta LP. A clinico-aetiological profile of 375 cases of lichen planus. Indian J Dermatol Venereol Leprol. 1995;61:276-9.
11. Ireddy SG, Udbalkar SG. Epidemiological study of lichen planus. BMR Med. 2014;1(1):1-9.
12. Samman PD. Lichen planus. An analysis of 200 cases. Trans St Johns Hosp Dermatol Soc. 1961;46:36-8.
13. Vijaysingham SM, Lim KB, Yeoh KH, Cheong WL, Chong YY, Daniel M, et al. Lichen planus: a study of 72 cases in Singapore. Ann Acad Med Singap. 1988;17(4):541-4.
14. Singla R, Ashwini P K, Jayadev B. Lichen planus and metabolic syndrome: Is there a relation? Indian Dermatol Online J. 2019;10(5):555-9.
15. Bhattacharya M, Kaur I, Kumar B. Lichen planus: a clinical and epidemiological study. J Dermatol. 2000;27(9):576-82.
16. Abdallat SA, Maaita TJ. Epidemiological and clinical features of lichen planus in Jordanian patients. Pak J Med Sci. 2007;23(1):92-4.
17. Andreasen JO. Oral lichen planus. 1. A clinical evaluation of 115 cases. Oral Surg Oral Med Oral Pathol. 1968;25(1):31-42.
18. Lallas A, Kyrgidis A, Tzellos TG, Apalla Z, Karakyriou E, Karatolias A, et al. Accuracy of dermoscopic criteria for the diagnosis of psoriasis, dermatitis, lichen planus and pityriasis rosea. Br J Dermatol. 2012;166(6):1198-205.
19. Vazquez-Lopez F, Alvarez-Cuesta C, Hidalgo-Garcia Y, Perez-Oliva N. The handheld dermatoscope improves the recognition of Wickham

striae and capillaries in lichen planus lesions. Arch Dermatol. 2001;137(10):1376.
20. Vazquez-Lopez F, Manjon-Haces JA, Maldonado-Seral C, Raya-Aguado C, Perez-Oliva N, Marghoob AA. Dermoscopic features of plaque psoriasis and lichen planus: new observations. Dermatology. 2003;207(2):151-6.
21. Haldar SS, Khopkar U. Dermoscopy of Lichen Planus. In: Khopkar U, Valia A, eds. Lichen Planus. 1st ed. New Delhi: Jaypee Brothers Medical Publishers; 2013: 148-62.
22. Parihar A, Sharma S, Bhattacharya SN, Singh UR. A clinicopathologic study of cutaneous lichen planus. J Dermatol Dermatol Surg. 2015;19(1):21-6.
23. Ellis FA. Histopathology of lichen planus based analysis of 100 cases. J Investig Dermatol. 1967;48(2):143.

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