



Title: Dermographic, clinical and histopathological profile of cutaneous lichen planus

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ABSTRACT

Objective: To study clinical and histopathological characteristics of lichen planus

Method: This is a cross-sectional descriptive study conducted over period from January 2013 to January 2015. All clinically suspected cases of cutaneous lichen planus were evaluated and subjected to histopathological examination.

Results: The study group comprised of clinical diagnosed 87 cases of lichen planus(LP). Out of 87 cases of lichen planus, most common was classical LP with 44(50.57%), followed by hypertrophic LP with 9(10.34%); LP pigmentosus were 8(9.19%); linear LP and eruptive LP were 6 (6.89%)each; atrophic LP were 4; LP pilaris, follicular LP and actinic LP were 3(3.44%) each; and bullous LP comprised of 1 patient. Among the 87 cases maximum 24 patients(27.58%) were in the age group 31 to 40 years. In this study male to female ratio was 0.89. Lower limb was the most common involved body part with 65 cases; followed by 49cases of upper limb involvement; minimum involvement of face/scalp with 11 cases.

Out of 87 cases biopsy was done in 62 patients. The lymphohistiocytic infiltrate in the upper dermis was band-like in 55/62 (88.71%) cases and basal cell vacuolation in 54 cases (87.09%); hyperkeratosis was found in 55cases (88.70%), 38 (61.29%) had wedge shaped hypergranulosis. Saw tooth rete ridges were identified in 21(33.87%) cases. Out of the 62 cases taken for biopsy, 55 cases (88.70%) were confirmed on histology. 3 cases (4.83%) were diagnosed as other than LP and diagnosis of 4 cases (6.45%) were inconclusive.

KEYWORDS

Lichen planus, clinical features, histopathological characteristics, band like lymphocytic infiltrate

Introduction:

Unique, common inflammatory disorder affecting skin, mucous membranes, nails and hair with prototypic "lichenoid" papules showing characteristic 4 P's are – 1)purple 2)polygonal 3)pruritic 4)papule¹. Lichen Planus(LP) has worldwide distribution, incidence varying from 0.22% to 1% depending upon geographic location². LP represents 0.38% of all dermatology outpatients in India.³

Histopathologically LP is characterized by massive band like infiltration of lymphocytes and histiocytes impinging on dermoepidermal junction (DEJ).^{4,5} The rete ridges appear flattened. Epidermal melanocytes are absent/decrease in number with pigmentary incontinence within dermal melanophages.⁶

There are studies about clinical features of LP in Indian patients^{7,8} but the histopathological feature have not been studied in detail. A combination of clinical data along with histopathological correlation, help in arriving at a more specific diagnosis.

Material and methods:

This is a cross-sectional descriptive study which was conducted over period from January 2013 to January 2015. Local Ethics Committee permission was taken for this study. All clinically suspected cases of lichen planus were evaluated and subjected to histopathological examination.

Inclusion criteria:

Patients with clinical diagnosis of lichen planus irrespective of age and gender were included and patients willing to participate in the study were included.

Exclusion criteria:

Patients not willing to be the part of study or undergo the required investigation were excluded. And patients having only mucosal lesions were excluded.

Methods of collection of data:

Patient's clinical history like age, sex, duration, site, number of lesion, significant personal history, family history, history of

associated diseases and any drug intake was taken and entered in Performa. After detailed local and systemic examination, site of biopsy was selected. Consent was taken. Punch biopsy technique was used for biopsy. Each biopsy tissue was sent to pathology department and stained with hematoxylin and eosin (H&E) stain for histopathological examination. These histopathological features were correlated with clinical features to arrive at an accurate diagnosis. I have done this study during my residency period.

Results:

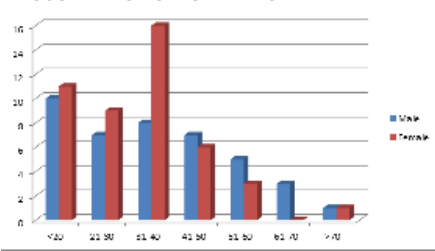
The study group comprised of clinical diagnosed 87 cases of lichen planus.

TABLE 1 : ACCORDING TO TYPE OF LICHEN PLANUS

Types of LP	No. of patients	Percentage (%)
LP	44	50.57
Hypertrophic LP	9	10.34
Atrophic LP	4	4.59
Linear LP	6	6.89
LP pigmentosus	8	9.19
LP pilaris	3	3.44
Follicular LP	3	3.44
Actinic LP	3	3.44
Bullous LP	1	1.14
Eruptive LP	6	6.89
Total	87	100

Out of 87 cases of lichen planus most common was classical LP with 44(50.57%), followed by hypertrophic LP with 9(10.34%); LP pigmentosus were 8(9.19%); linear LP and eruptive LP were 6 (6.89%)each; atrophic LP were 4(4.59%); LP pilaris, follicular LP and actinic LP were 3(3.44%) each; and bullous LP was 1(1.14%).

TABLE 2 : ACCORDING TO AGE AND SEX



Among the 87 cases maximum 24 patients(27.58%) were in the age group 31 to 40 years, comprising of 10 cases of classical lichen planus, 4 cases of LP pigmentosus; 2 cases of atrophic LP and linear LP each, 3 cases of hypertrophic LP; 1 case of eruptive LP, actinic LP and follicular LP each.

The next common age group was 0-20 years comprising 21(24.13%) patients followed by 21-30 years age group having 16 (18.39%), then 41-50 age group with 13 patients (14.94%) followed by 8 patients (9.19%) of 51-60 years age group and 3 patients(3.44%) of 60-70 years age group and least common being 70 years and above age group with only 2 patients (2.29%).

In my study male to female ratio was 41/46 that is 0.89.

TABLE 3 : AGE DISTRIBUTION OF THE INDIVIDUAL CASES

Age Group	LP	Hypertrophic LP	Atrophic LP	Linear LP	LP pigmentosus	LP pilaris	Follicular LP	Actinic LP	Bullous LP	Eruptive LP
Birth - 10 Yr	2	-	-	-	-	-	-	-	-	-
11 - 20 Yr	9	1	1	3	2	-	-	-	1	2
21 - 50 Yr	25	6	2	3	5	2	2	3	-	4
> 50 Yr	7	2	1	-	1	1	1	-	-	-

In the present study, maximum number of cases occurred in the middle aged group of 21 to 50 years in which there were 25 cases of classical LP, 6 cases of hypertrophic LP, 5 cases of LP pigmentosus, 4 eruptive LP, 3 actinic LP, linear LP; 2 cases each of follicular LP, LP pilaris atrophic LP.

In the age group of above 50 years, 7 cases were of classical LP; 2 cases of hypertrophic LP. 1 case of LP pigmentosus, LP pilaris, follicular LP, atrophic LP

The minimum number of cases occurred with 0-10 year age group with only 2 cases of LP

TABLE 4: ACCORDING TO DURATION OF DISEASE

Duration of disease	No of cases
≤ 1 month	20
1-6 months	37
6-12 months	5
>1 year	25

TABLE 5: CLINICAL SYMPTOMS

Symptoms	No of cases
No symptoms	11
Itching	75
Burning	13
Pain	2

Moderate to severe degree of itching was present in almost all the patients. The itching was more severe in patients with generalized variety than in localized form except those with localized hypertrophic type which was extremely pruritic.

TABLE 6: ANATOMIC DISTRIBUTION OF DIFFERENT TYPES OF LICHEN PLANUS

Type of LP	Face/Scalp	Trunk/abdomen	Upper limb	Lower limb	Mucosa(oral/genital)
LP	3	11	28	36	12
Hypertrophic LP	-	1	4	9	3
Atrophic LP	-	1	1	4	-
Linear LP	-	2	1	3	1
LP pigmentosus	4	5	5	2	1
LP pilaris	1	-	-	-	-
Follicular LP	-	1	2	3	-
Actinic LP	2	1	2	1	1
Bullous LP	-	1	1	1	-
Eruptive LP	1	3	5	6	1

Lower limb was the most common involved body part with 65 cases; followed by 49 cases of upper limb involvement; trunk 26 cases; mucosa 19 cases and minimum involvement of face/scalp with 11 cases.

Five patients had nail involvement in the form of longitudinal ridges, pitting and pterygium.

TABLE 7: ACCORDING TO ASSOCIATION WITH OTHER DISEASE

Systemic	No of cases	Cutaneous	No of cases
Diabetes	2	Vitiligo	1
Hypertension	2	Psoriasis	-
Thyroid disorders	2	Alopecia	1

Associated conditions were Diabetes, Hypertension, Thyroid disorder and minimum association of 1 case each in Vitiligo and Alopecia. None of them had psoriasis.

Out of total 87 patients biopsy was done in 62 patients.

TABLE 8 : HISTOPATHOLOGICAL FINDING OF LICHEN PLANUS

Epidermal Finding	Dermal				
	No of cases	Percent age(%)	Finding	No of cases	Percent age(%)
Hyperkeratosis	55	88.70	Bandlike lymphocytic infiltration	55	88.71
Parakeratosis	11	17.74	Perivascular infiltration	18	29.03
Acanthosis	46	74.19	Pigment incontinence	33	53.22
Hypergranulosis	38	61.29			
Saw tooth rete ridges	21	33.87			
Basal cell vacuolation	54	87.09			
Spongiosis	2	3.22			
Colloid bodies	14	22.58			
Atrophy	8	12.90			
Papillomatosis	5	8.06			
Max joseph space	3	4.83			

Hyperkeratosis was found in 55 cases (88.70%). Irregular acanthosis was seen in 46/62 (74.19%) cases. Saw tooth rete ridges and dome shaped papillae were identified in 21/87 (33.87%) cases. 38/62 (61.29%) had wedge shaped hypergranulosis. Parakeratosis was found in 11 cases (17.74%). Liquefaction degeneration was found in 54 cases (87.09%). The least common histopathological finding was spongiosis in 2 patients followed by max joseph space in 3 cases. Civatte bodies or necrotic keratinocytes were present in 14/62 (22.58%) of cases in the lower epidermis and especially in the papillary dermis. They had a homogeneous, eosinophilic appearance and fair number of them also contained pyknotic or fragmented nuclei.

The infiltrate in the upper dermis was bandlike in 55/62 (88.71%) at DEJ. Infiltrate was composed almost entirely of lymphocytes intermingled with few histiocytes. Pigment incontinence is a result of damage to the basal cells and was seen in 33/62 (53.22%)

cases.

TABLE 9: CLINICAL AND HISTOPATHOLOGICAL CORRELATION OF LICHEN PLANUS

Clinical	Histopathological diagnosis	Correlation	No of cases	Percentage (%)
LP	LP	Positive	55	88.70
LP	Other than LP	Negative	3	4.83
LP	Inconclusive	Inconclusive	4	6.45
	Total		62	100

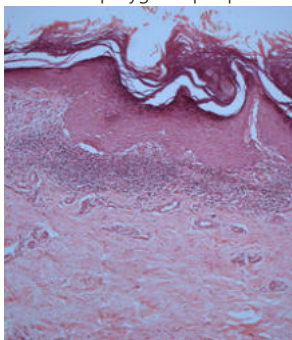
Out of the 62 cases taken for biopsy, 55 cases (88.70%) were diagnosed as LP and were confirmed on histology.

Three (4.83%) patients had negative correlation on histopathology. One case of clinically diagnosed hypertrophic LP had histopathological findings of verrucous hyperplasia with dermatophytes, one case of LP was histopathologically diagnosed as lichen nitidus, and one actinic LP was diagnosed as pigmented nevus on histopathology.

Histopathology was inconclusive in 4 (6.45%) patients and didn't show characteristic finding like BCV or band like lymphocytic infiltration.



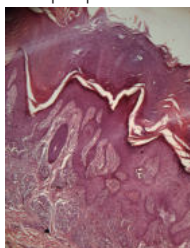
1. Lichen planus: Violaceous polygonal plaques



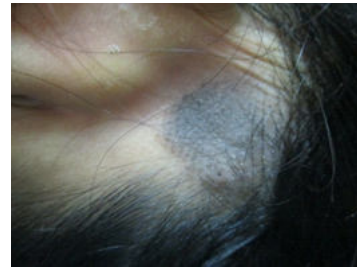
2. Band like lymphocytic infiltrate at DEJ (H&E stain 40 X)



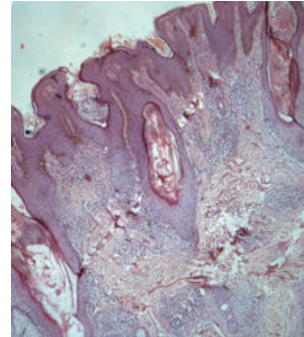
3. Hypertrophic LP: Verrucous plaques



4. Hyperkeratosis, lymphocytic infiltrate (H&E stain 40 X)



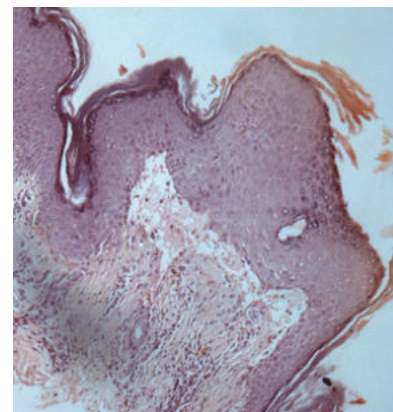
5. LP Pilaris: Follicular papules, cicatricial alopecia



6. Lymphocytic infiltrate around hair follicle (H&E stain 10 X)



7. Bullous LP: Bullae on lesions of LP



8. Subepidermal blister, lymphocytic infiltrate (H&E stain 10 X)



9. Eruptive LP: erythematous to violaceous guttate lesions



10. Linear LP: Lesions along Blaschko's lines



11. Annular LP: Raised violaceous border, subtle atrophy



12. LP pigmentosus: Hyperpigmented macules

Discussion

Clinically lichen planus is characterized by faintly to erythematous to violaceous, shiny, flat topped and polygonal papules of different sizes occurring in clusters, creating a pattern that resembles lichen growing on rock. Lichen refers to a tree moss while planus is latin for flat.¹

In this study the clinical and histopathological characteristics of patients with lichen planus are described and the findings are compared with the other studies.

Out of 87 cases of lichen planus most common was classical LP with 43(50.57%), followed by hypertrophic LP with 9(10.34%); LP pigmentosus were 8(9.19%); linear LP and eruptive LP were 6 (6.89%) each; LP pilaris, follicular LP and actinic LP were 3(3.44%) each; atrophic LP were 4 and bullous LP was 1. Singh OP et al⁹ found the incidence of various lesions in North India and Sehgal VN et al¹⁰ in Goa studied 147 patients and found the incidence of lichen planus are compared in table below.

TABLE 10 : ACCORDING TO TYPE OF LICHEN PLANUS

Types of LP	Singh OP et al ⁹	Sehgal VN et al ¹⁰	Present study(%)
LP	74.6	75.2	50.57
Hypertrophic LP	12.7	15.5	10.34
Atrophic LP	1.8	-	4.59
Linear LP	-	-	6.89
LP pigmentosus	1.8	-	9.19
LP pilaris	-	1.5	3.44
Follicular LP	-	-	3.44
Actinic LP	7.48	-	3.44
Bullous LP	-	-	1.14
Eruptive LP	-	-	6.89

There was no seasonal variation in the incidence or progress of LP. Similar observations were made by other workers [Altman J et al¹¹, Sehgal VN et al¹⁰, Samman PD et al¹², Tompkins JK et al¹³] In my study male to female ratio was 41/46 that is 0.89.

Some studies have shown a marked predilection for females. Tompkins JK et al¹³ in 1955 has shown a 61% incidence in females. Altman J et al¹¹, Fordyce JA et al¹⁴ in 1919 and White C.J. et al¹⁵ have all noted a female preponderance in their series. Schmidt HF et al¹⁶ had 1.5, Samman PD et al¹² had 1.0 and Sehgal VN et al¹⁰ had 0.50 male to female ratio.

In this study, most common age group is 31-40 years as compared with other studied like in Sehgal VN et al¹⁰ having 11-40 age group, Singh OP et al⁹ 30-39 age group Tompkins JK et al¹³ having 30-60 age group.

Moderate to severe degree of itching was present in almost all the patients. The itching was more severe in patients with the generalized variety than in the localized form except those with localized hypertrophic type which was extremely pruritic.

75 of the 87 patients experienced some form of itching depending on the type and distribution of lesion. Singh OP et al⁹, Tompkins JK et al¹³ and Samman PD et al¹² shared similar views.

Only four patients in the present study gave family history of lichen planus. Copeman et al¹⁷ in 1978 has made a detailed study of 10 patients with familial lichen planus and found that the parents of these patients were carrying HLA B7 statistically more frequently than in the normal population or in those with the characteristic forms of lichen planus.

In my study, associated conditions were Diabetes; Hypertension Thyroid disorder and minimum association of 1 case each in vitiligo and alopecia. None of them had psoriasis.

Altman J et al¹¹ found various skin conditions like alopecia areata, vitiligo, psoriasis, seborrhea scalp in his series of lichen planus.

TABLE 11 : COMPARISON OF HISTOPATHOLOGICAL FINDINGS:

Features	Ellis FA et al ¹⁸ (%)	Present Study (%)
Changes in epidermis		
Parakeratosis	12	17.74
Acanthosis	23	74.19
Atrophy	47	12.90
Civatte bodies	37	22.58
Basal cell vacuolation	100	87.09
Max-Joseph space	17	4.83
Follicular lesions	6	4.8
Changes in dermis		
Band like lymphocytic infiltration at DEJ Layer	100	88.71
Pigment incontinence	-	53.22

Conclusion:

Lichen planus is a disease of adults (20-40 years) and least common in older age group. The disease is relatively more common in females than males. Lower limb was the most common involved body part in lichen planus. The lymphohistiocytic infiltrate in the upper dermis was band-like and basal cell vacuolation found in most of cases. A combination of clinical data along with histopathological correlation, help in arriving at a more specific diagnosis.

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