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Original Research Paper

Histopathology

CLINICO- PATHOLOGICAL STUDY OF VARIANTS OF CUTANEOUS LICHEN PLANUS

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ABSTRACT **INTRODUCTION** Lichen planus is a common but, unique inflammatory disorder with distinctive clinical presentation in the form of prototypic "lichenoid" papules that show peculiar colour and morphology, develop in typical locations, manifest characteristic patterns of evolution and histopathological features. The current study was aimed to study the clinical and histopathological patterns of variants of cutaneous lichen planus. **METHODOLOGY** The study was carried out in the Department of Pathology, Jhalawar medical college, Jhalawar, and the cases received in the duration of 5 years from October 2016 to October 2021 were included in the study. Patients' demographic details and clinical data in terms of duration, number, type, color, site of lesions and other associated symptoms were noted. Epidermal and dermal changes were noted on histopathology (H & E stained skin biopsies). **RESULT** 73 cases of lichen planus were studied and classical lichen planus was the most common variant observed. Other variants were lichen planus hypertrophicus, atrophicus, pigmentosus, follicularis, actinic and linear. Most patients were in 3rd and 4th decades of life, slight female predominance was noted. Clinically lesions were mostly pruritic with violaceous papule formation. Most patients presented within 1 to 6 months of duration and lower extremities were most common site involved. Histopathologically basal vacuolation and band like infiltration were consistently seen features. Clinico- pathological correlation was seen in 95.89% cases. **CONCLUSION** Lichen planus is a common, chronic papulosquamous disorder and with dual approach of clinical and histopathological examination, an early and precise diagnosis can be made that will help patients receive timely treatment and reduce morbidity and risk of malignant transformation.

KEYWORDS : cutaneous lichen planus, skin biopsy, lichenoid, basal vacoulation.

INTRODUCTION:-

Lichen planus is a common (The prevalence of Lichen Planus in general population is 1%.[1]) but, unique inflammatory disorder with distinctive clinical presentation in the form of prototypic "lichenoid" papules that show peculiar colour and morphology, develop in typical locations and, manifest characteristic patterns of evolution.[2]

On histopathology, the lesions of lichen planus show lichenoid reaction pattern ('interface dermatitis') and is characterized by band like lymphohistiocytic infiltrate in the upper dermis, hugging and often obscuring the dermal- epidermal interphase, epidermal basal cell damage, which may be manifested by cell death in the form of shrunken eosinophilic cells, with pyknotic nuclear remnants, scattered along the basal layer of the epidermis (due to apoptosis). These cells are known as Civatte bodies [3]. Lichen planus is the prototypic lichenoid dermatitis.

A number of clinical variants of Lichen Planus occur and they show subtle variations in morphology, sites of involvement and microscopic features.

The spectrum of clinical diseases which is related to the lichenoid tissue reactions is wider. Most of the components of the lichenoid spectrum exhibit basal cell damage and a band like lymphocytic infiltrate that hugs the dermo-epidermal junction, except for subtle differences that define the particular variant such as the configuration or morphology of lesion and the site of involvement.[4]

Many of these lesions are self limited and they only require symptomatic treatment.[3,4] But with chronicity of this inflammatory disorder, there lies a risk of malignant transformation. It is necessary to distinguish these eruptions for the prediction of the course of the disease and for an optimal management.

In most of the cases, certain clinical characteristics enable the clinician in reaching a diagnosis, whereas in other cases, a biopsy may be required to get a definitive answer. A combination of the histologic details, in correlation with the clinical data, help in arriving at a more specific diagnosis.[4]

With the above background, the present study was conducted to explore the spectrum of clinical and histopathological features of Lichen planus of skin and its variants, and to explore its incidence in general population with respect to age and sex.

AIMS AND OBJECTIVES

- To study the clinical and histopathological features of variants of cutaneous lichen planus.

MATERIAL AND METHODS

This study was a 5 year duration prospective and retrospective descriptive type of study.

After obtaining approval and clearance from the ethical committee, following parameters were considered and/or measured in all patients: name, age, gender, address, history of present illness including symptoms and duration, past history of similar illness, history of any allergic disorder, family history, drug history and clinical information of the lesions under the headings of site, number, colour and, type of lesions with associated pigment alteration in the form of hyper pigmentation or hypopigmentation and, oedema, type of margins and other associated symptoms present, if any. Each skin biopsy was assessed in the sequence of the epidermal changes, like basal cell death or vacuolar change and the varying thickness of the different layers of epidermis i.e. acanthosis, hypergranulosis,.

The dermal changes like lichenoid infiltrate and the compositions of the different cell types in the inflammatory infiltrate as well as in dermis and, the melanin pigment incontinence, along with the involvement of dermal adnexa, were noted.

RESULTS AND OBSERVATIONS

A total of 73 cases of Lichen planus and its variant were diagnosed histopathologically in the study duration..

Table 1- Distribution of Cases on Histopathology.

Sr. No.	Variant Of Lichen Planus	No. Of Cases	Perentage
1.	Classical lichen Planus	39	53.42%
2.	Hypertrophic Lichen Planus	9	12.33%
3.	Lichen Planus Pigmentosus	9	12.33%
4.	Atrophic Lichen Planus	7	9.59%
5.	Follicular Lichen Planus	4	5.48%
6.	Linear Lichen Planus	3	4.11%
7.	Actinic Lichen Planus	2	2.74%
	TOTAL	73	100%

In the present study, the most common variant of lichen planus on histopathological examination, was found to be Classical Lichen Planus in 39 cases (53.42%) out of total 73 cases.

Table 2- Age Distribution According to Variants of Lichen Planus

LP variant	0-10 years	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	>60 years	Total
Classical LP	1	4	5	11	7	6	5	39
LP pigmentosus	1	-	1	3	4	-	-	9
LP hypertrophicus	1	3	2	-	1	2	-	9
LP atrophicus	-	2	1	3	-	-	1	7
LP follicularis	-	1	-	1	2	-	-	4
Linear LP	1	1	1	-	-	-	-	3
Actinic LP	-	-	-	1	-	-	1	2
Total	4	11	10	19	14	8	7	73

Classical type of lichen planus was the most common subtype in all age groups. 31-40 years was the most commonly affected age groups. However, majority of cases of hypertrophic lichen planus i.e. 6/9 cases were observed in age ≤30 years. Similarly all 3 cases of linear lichen planus were observed in age ≤30 years (Fig.1).

Table 3- Gender Distribution of cases

Lichen planus variant	Male cases	Percentage	Female cases	Percentage
Classical lichen planus	16	21.92%	23	31.50%
Lichen planus pigmentosus	6	8.22%	3	4.11%
Lichen planus hypertrophicus	5	6.85%	4	5.48%
Atrophic lichen planus	1	1.37%	6	8.22%
Follicular lichen planus	2	2.74%	2	2.74%
Linear lichen planus	-	-	3	4.11%
Actinic lichen planus	2	2.74%	-	-
Total	32	43.84%	41	56.16%

We observed slight female predominance in our study. A total of 32 cases (43.84%) were male and and 41 cases (56.16%) were female. The most common subtype in both the genders was classical lichen planus.

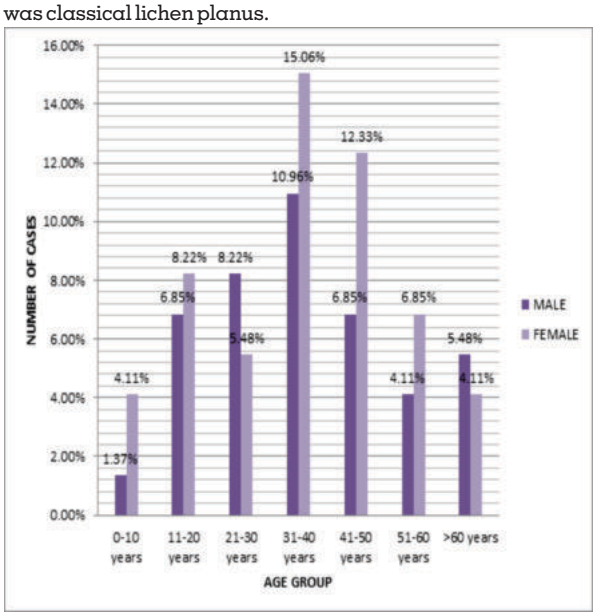

Figure 1 Age and Gender Distribution of Lichen Planus

Most common morphological presentation of the lesions was observed to be Papule formation in 43 cases (58.91%), followed by papule with plaque formation in 13 cases (17.80%). Macular lesions were seen in 8 cases (9.59%), macule and papule formation was seen in 7 cases (9.59%) and a combination of papule, plaque and nodule formation was seen in 2 cases (2.74%).

Most of the cases had violaceous colour of lesions. It was observed in 28 cases (38.36%). In 17 cases (23.29%), hyperpigmented appearance of lesions was observed. Erythematous lesions were seen in 15 cases (20.55%). In 13 cases (17.80%), the lesions were violaceous, as well as hyperpigmented (Fig.2)

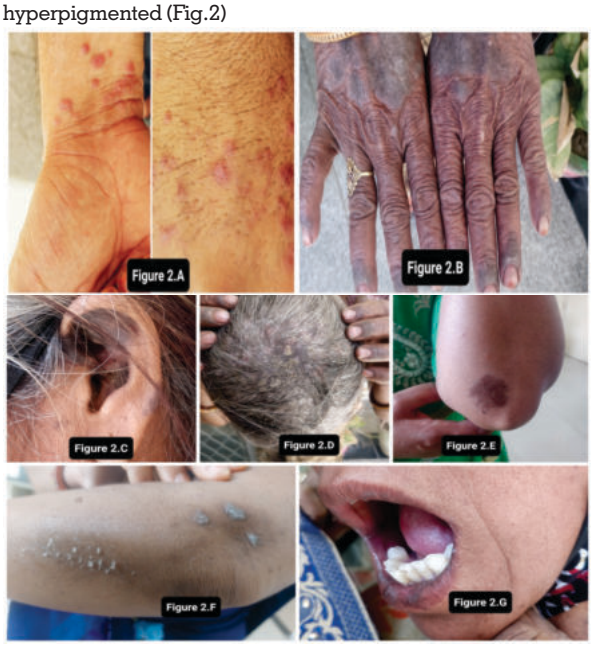

Figure 2 Showing various clinical presentations in Lichen Planus. A.-erythematous and umbilicated papules, B.- Lichenified Plaques, C.- plaque in ear, D.- Follicular keratotic papules in scalp, E.- macule, F.- Hyperkeratotic plaques, G.- pigmented oral lesion.

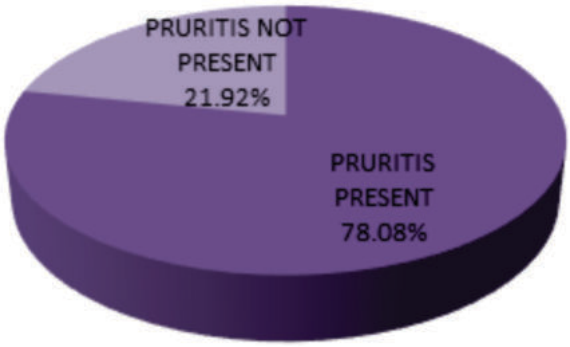

Figure3- Distribution According to presence of Pruritis

Out of the total 73 cases studied, pruritis was a complaint in 57 cases (78.08%), while 16 cases (21.92%) were asymptomatic.(Fig.3)

No complaint other than pruritis was noted in any of the cases

Table 4- Distribution of cases according to Site of involment

Site Of Involvemnt	Classical Lichplanus	Lichen Pligmentosus	Hypertrophiclichen Planus	Atrophic Lichen	Follicular Lichen Planus	Actini Lichen Planus	Linear Lichen Planus
UPPER LIMB	27	7	2	6	4	2	2
LOWER LIMB	33	7	7	6	3	1	1
TRUNK	20	4	-	5	1	1	-
BACK	17	4	2	3	1	-	-
NECK	5	1	-	2	-	1	-
FACE	3	4	-	-	-	1	-
SCALP	4		-		1	-	-
ORAL MUCOSA	4	-	-	1	-	-	-
NAIL	4	-	1	-	-	-	-
GENITALIA	2	-	-	-	-	-	-
PALM & SOLE	1	-	1	-	-	-	-

Lower limbs were the most common site of involvement in classical lichen planus, and hypertrophic lichen planus. Involvement of upper limbs and lower limbs was equal in lichen planus pigmentosus and atrophic lichen planus. In follicular lichen planus, actinic lichen planus, and linear lichen planus, upper limbs were involved more frequently than lower limbs.

The duration of disease at the time of presentation was variable from 15 days to 20 years. Most of the patients (28.76%) report to the clinic within 1 to 6 months duration after onset of the disease symptoms. The maximum duration was seen in one patient who presented after 20 years of duration.

Table 5- Histopathology- Epidermal Features

EPIDERMAL FEATURES	NO. OF CASES	PERCENTAGE
Hyperkearatosis	53	72.60%
Orthokeratosis	42	57.53%
Acanthosis	59	80.82%
Hypergranulosis	60	82.19%
Saw- toothing of rete ridges	47	64.38%
Basal vacuolation	73	100%
Civatte bodies	18	24.66%
Follicular plugging	5	6.85%

Basal layer vacuolation was consistently seen in all the 73 cases (100%). Hypergranulosis was irregular, wedge shaped and, was present in 60 cases (82.19%). Acanthosis and hyperkeratosis was seen in 59 (80.82%), and 53 (72.60%) cases respectively. Sharply pointed rete ridges with saw- toothing were seen in 47 cases (64.38%).

Civatte bodies were seen in 18 cases (24.66%) only.

Follicular plugging was present in 5 cases (6.85%).

Table 6- Histopathology- Dermal Features

Sr. No.	DERMAL FEATURES	NO. OF CSES	PERCENTAGE
1.	Band like infiltrate	71	97.26%
2.	Lymphocytes	73	100%
3.	Melanin pigment incontinence	51	69.86%
4.	Periadnexal infiltrate	3	4.11%
5.	Fibrocytes	4	5.48%

A band like inflammatory infiltrate at the dermo- epidermal junction was seen in most of the cases. Lymphocytes were seen in all the cases as a constituent of inflammatory infiltrate and also as a constituent of perivascular infiltrate.

Melanin pigment incontinence was seen in 51 cases (69.86%). In 3 cases (4.11%) periadnexal lymphocytic infiltrate was also seen. In 4 cases (5.48%) fibrocytes were seen in dermis.

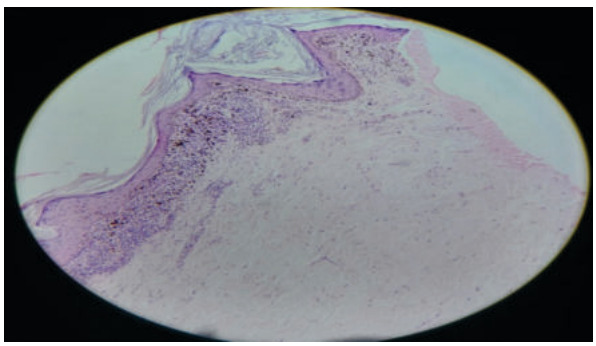

Figure 4- Lichen Planus, Low Power View Showing Band Like Infiltrate With Follicular Plugging And Heavy Pigment Incontinence

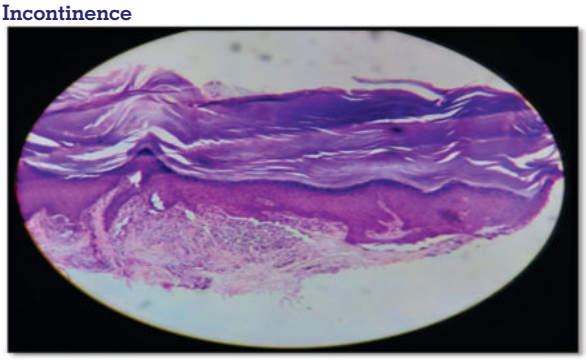

Figure 5 Hypertrophic Lichen Planus, Low Power View Showing Hyperkeratosis, Acanthosis, Basal Vacuolation Limited To Tips Of Rete Ridges And Lichenoid Infiltrate.

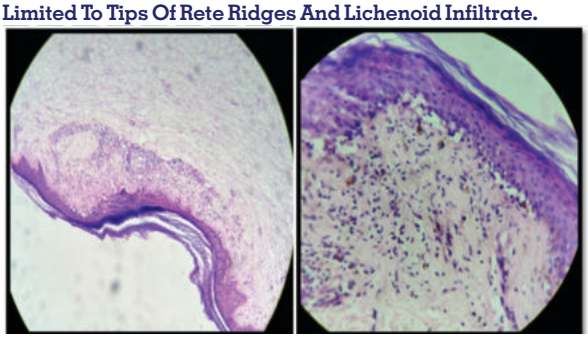

Figure 6.- Atrophic Lichen Planus, Low Power And High Power View Showing Orthokeratosis, Thinned Out Atrophic Epidermis, Basal Vacuolation And Band Like Infiltrate That Is Less Denser. Pigment Incontinence And Fibrocytes Are Also Appreciable.

Out of total 73 cases studied, 70 cases (95.89%) were diagnosed clinically as lichen planus and their histopathology was also consistent with the clinical diagnosis.

In remaining 3 cases, one was diagnosed as psoriasis clinically and turned out to be lichen planus on histopathology.

Other two cases were diagnosed as lupus vulgaris clinically, but showed features of hypertrophic lichen planus on histopathology.

DISCUSSION

We observed that some of the clinical and histological features were seen in a specific subtype of lichen planus.

Classical Lichen Planus

It was the most common subtype in all age groups and both genders.

39 cases (53.42%) out of 73 were diagnosed as classical lichen planus. Most common age group affected was 31- 40 years, followed by 41-50 years. A slight female predominance was seen as 23 cases (58.97%) were females and, 16 cases (41.03%) were males. The findings are consistent with observations of Singh and Kanwar [5] and Kacchawa et al [6]

Clinically the lesions presented as erythematous papules plaques or violaceous and hyperpigmented papules, plaque and, macules. Parihar et al [7] had also reported violaceous lesions as most common presentation.

The lesions were bilaterally symmetrical with extremities being the most common sites of involvement. Lower extremities are reported to be most commonly involved by Kacchawa et al[6], Garg et al[8] and Parihar et al[11]. however, Bhattacharya et al[13] observed upper extrimities being involved more than lower.

Involvement of lower limbs, upper limbs, trunk, back, neck, scalp, oral mucosa, nail, face, genitalia and palm and sole was seen. Cases with generalised lichen planus were also seen.

Pruritis was a common symptom seen in most of the cases i.e. 37 cases (94.87%) and, no other complaints were present. Garg et al[8] reported 100% and Parihar et al[7] 90% cases pruritic.

On histopathology, the characteristic features of lichen planus were noted i.e. hyperkeratosis, hypergranulosis, irregular acanthosis with saw- toothing of rete ridges, basal layer vacuolation, band like dermo-epidermal lymphohistiocytic infiltrate, Civatte body formation and a variable degree of melanin pigment incontinence. The findings were comparable with those of Ellis francis[10], Garg et al[8] and Parihar et al[7].

Hypertrophic lichen planus

It was the second most common variant observed. Similar findings were of Singh and Kanwar[5]. In contrast to classical lichen planus, 66.67% of cases were seen in patients of age lesser than 30 years.

No significant gender predilection was noted in this variant. Clinically keratotic, and verrucous plaques mostly located over lower extremities were present. No case of generalised involvement was seen for this variant. But, Involvement of nails and palm and soles was noted in one case. The lesions were extremely pruritic, even after being a localised form of eruption.

on histopathology, marked hyperkeratosis and Acanthosis was noted along with hypergranulosis in all the cases (100%).

Basal vacuolation was not seen in continuity and was limited to to the tips of rete ridges.

No atypia or malignant transformation was seen in our study. However, cases of malignant transformation to squamous cell carcinoma in long standing lesions are reported[11].

Lichen Planus pigmentosus

Incidence of cases for this variant were equal to hypertrophic variant and thus, it was also the second most common variant observed in our study. Parihar et al[7] reported its incidence next in frequency to classical variant.

The age incidence was similar as classical lichen planus as most of the cases were in 4th and 5th decades of life. In contrast to classical variant, male predominance was noted for this variant of lichen planus. M:F- 2:1.

Clinical presentation was in form of hyperpigmented macules with no pruritis.

Both extremities were equally affected and sun exposed sited were commonly affected.

On histopathology, orthokeratosis with thinned out flattened epidermis, basal vacuolation and marked pigment incontinence was noted. Band shaped inflammatory infiltration was seen focally and in 22.22% cases it was not seen but, a deeper extension in the form of perivascular lymphocytic infiltrate was seen. Civatte body formation was seen in 22.22% cases only.

Atrophic lichen planus

Most of the cases were seen in young and middle aged. Female predominance similar to classical subtype was noted for this variant also. The clinical presentation was in the form of violaceous, hyperpigmented plaque and in some cases an atrophic centre with hyperpigmented border was present.

Pruritis was not present in most of the cases studied (71.43% were asymptomatic).

Involvement of both upper and lower limbs was seen in most cases. Other sites involved were trunk, back, neck, scalp and, oral mucosa.

On histopathology, atrophic epidermis with loss of rete ridges, basal layer vacuolation was present in all cases with band like infiltrate of comparatively less intensity than the classical variant. Areas of fibrocytic proliferation were also seen. Melanin pigment incontinence was variably seen in all the cases.

Follicular lichen planus

Clinically keratotic follicular papules were seen. Lower limbs and scalp involvement was seen. The lesions were pruritic.

On histopathology, hyperkeratosis, acanthosis, wedge shaped hypergranulosis with follicular plugging and perifollicular basal vacuolation and lymphocytic infiltrate were.

Linear Lichen Planus

This is not a very common variant (4.11% of the total cases of lichen planus). Lesions were localised, solitary in form of

linear violaceous papules and were limited to extremities.

Younger age groups were involved (<30 years). On histopathology, features similar to classical lichen planus were seen i.e. irregularly acanthotic epithelium with basal vacuolation, band shaped lymphohistiocytic infiltrate.

Actinic lichen planus

The lesions presented as violaceous and hyperpigmented papules, limited to sun- exposed sites, associated with pruritis. Both the cases were males and, no female case was reported. Predominantly, upper limb involvement was noted. However, lower limb, trunk, neck and, face involvement was also seen. Kacchawa et al[6] and Bhattacharya et al[9] have reported a high incidence of this variant, but these observations might have a geographical correlation.

On histopathology, hyperkeratotic epithelium with basal vacuolation, band shaped inflammatory infiltrate and pigment incontinence was seen.

CONCLUSION

Lichen planus is a common chronic papulosquamous disorder affecting skin as well as mucosa, nails and, hair and, presents most commonly in middle aged people (4^{th} and 5^{th} decade) with slight female predilection (M:F- 1:1.28).

Different variants exist of which the classical lichen planus is overall the most common.

These variants show subtle differences clinically in terms of type of lesions, configuration and site of involvement. The eruption are almost pruritic (78.08%), and classically present as violaceous to erythematous papules and plaques that sometimes may show atrophic changes, hypertrophic changes, or hyperpigmented macule formation.

Extremities are common site of involvement, specially lower extremities (79.45%).

There is variable duration of disease at the time of presentation i.e. 15 days to 20 years.

On histopathology they differ from the classical variant in terms of epidermal thickness, intensity of dermo- epidermal infiltrate and melanin pigment incontinence.

In our observations, the most consistent histopathological features seen in lichen planus are vacuolation of basal layer of epidermis (100%), and band like dermo- epidermal infiltrate (97.26%).

Clinico- pathological correlation was seen in 95.89% cases. The clinco- histopathological correlation with the help of these peculiar features yields a more specific diagnosis and helps the patient to get accurate treatment, reduce patient morbidity and, prevents rare but possible risks of malignant transformation.

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