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Five year descriptive study of the histomorphological features of lichen planus

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Abstract
Background: Lichen planus is a chronic or sub-acute disorder characterized by small, flat-topped, shiny, erythematous or violaceous, pruritic polygonal papules most commonly involving the wrists and/or ankles in symmetric fashion.
The spectrum of clinical diseases related to the lichenoid tissue reaction is getting wider with a recent increase in new subgroups of the lichenoid clinical picture. Lichen Planus contributes to the major bulk of cases of lichenoid tissue reactions.
This study is designed to study the histopathology of clinical variants of lichen planus and its distribution in relation to age, sex and site of lesion.
Objectives of the study: To study the histopathological features of lichen planus and its variants and clinicopathological correlation with respect to age and sex.
Methods: This study was carried out over 5 years (retro and prospective) at Mahadevappa Rampure Medical College, Kalaburagi on clinically diagnosed cases of lichen planus. The tissue was fixed in 10% formalin and paraffin embedded sections were obtained for microscopic examination.
Results: We studied 107 skin biopsy specimens. The variants of lichen planus received were classical lichen planus (55), hypertrophic lichen planus (27), follicular lichen planus (12), actinic lichen planus (6), isolated oral lichen planus (3), lichen planus pigmentosus (3), lichen planus pemphigoides (1). Maximum number of cases occurred in 2nd decade (29.9%). A slight female preponderance was noted (53.2%). Extremities were the most common site affected in 59 cases (55.1%).
Conclusion: Lichen planus presents with varied morphology and microscopy, hence detailed clinical examination with data collection and proper histopathological examination is necessary for categorization and understanding of lichen planus and differentiation from various, diverse and perplexing lichenoid tissue reactions.

Keywords: Lichen planus, lichenoid tissue reaction, oral lichen planus

1. Introduction

Skin disorders are common and need attention not only for the various functions but also for cosmetic concern.

Due to various reasons like infection, allergy, climatic conditions, heredity, iatrogenic, the spectrum of skin disorders is widening. Skin diseases are known to run a chronic course with high recurrence rate. Proper clinical assessment and histopathological confirmation is important in accurate diagnosis and treatment. Hence there is a need to carry out clinicopathological studies for clinical, epidemiological and histopathological categorisation of diseases.

Lichen planus is one such chronic disease, which is the prototype of lichenoid tissue reaction or interface dermatitis. It affects the skin, hair, nail, mucus membrane and the genitals and presents with violaceous, pruritic, polygonal papules and plaques and affects the flexural surfaces.

The spectrum of lichenoid reaction is getting wider with many other entities that enter the differential diagnosis of lichen planus, which forms the bulk of lichenoid reaction. The exact incidence of LP is unknown. In 1895, Kaposi noted the disease as "rather frequent" with 25 to 30 cases presenting annually [1] Cutaneous LP has worldwide distribution with its incidence varying from 0.22% to 1% depending upon geographic location [2]. Reports from studies across various countries suggest an incidence varying from 0.5 to 1% among patients with skin diseases [3].

It is generally accepted that 0.5 percent to 5.0 percent of patients with oral lichen planus

develop squamous cell carcinoma. Most of these cases are in situ carcinoma or with microinvasive pattern. The most common site for malignant transformation is the tongue, followed by buccal mucosa, gingiva, and, rarely, the lip.

Lichen planus has a very striking histopathological picture, basal epidermal keratinocyte damage and lichenoid-interface lymphocytic reaction being the most important. In a classical lichen planus (CLP) skin lesion, five major features predominate: compact orthokeratosis, wedge-shaped hypergranulosis, irregular acanthosis, vacuolar alteration of the basal layer, band-like dermal lymphocytic infiltrate in close approximation to the epidermis [4]. This constellation of findings is sufficiently diagnostic that a histologic diagnosis can be rendered in more than 90% of cases.

This study was undertaken to study the clinicopathological characteristics of lichen planus with respect to age, sex, site of lesion, symptoms and histopathological features and the variants of lichen planus.

2. Material and methods

- This study was carried out over 5 years from august 2012 to July 2017 (3 years retrospective and 2 years prospective) at Mahadevappa Rampure Medical College, Kalaburagi. Biopsy specimens of clinically diagnosed cases of lichen planus received at the Dept. of Pathology, MR Medical College, Kalaburagi, from Basaveshwara Teaching and General Hospital, Govt. General Hospital, and other Private Hospitals and Laboratories in and around Kalaburagi were included in this study. All specimens submitted for histologic diagnosis were accompanied by detailed clinical information, including differential diagnosis for proper clinicopathological correlation. The gross details of the skin biopsies were noted and biopsies were taken for routine paraffin processing. 3-4µm thick paraffin sections of the skin biopsies were stained with routine haematoxylin and eosin stain. Detailed histopathological examination of skin biopsies was performed taking note of the age, sex, clinical history, morphology of skin lesion, site affected and spectrum of histopathological changes present.

3. Results

The study was conducted over a period of 5 years i.e. from August 2012 to July 2017 in which we obtained 107 skin biopsy specimens of clinically diagnosed cases of lichen planus. There were 50 male patients and 57 female patients, with male: female ratio being 0.8:1. Table 1 depicts distribution of variants of lichen planus. We found classical LP to be the most common variant.

Table 1: Distribution of Lichen Planus Variants

Sl. No.	Distribution of Lichen planus Variants	No of cases n = 107 (%)
1.	Classical lichen planus	55 (51.4%)
2.	Hypertrophic lichen planus	27 (25.2%)
3.	Follicular lichen planus	12 (11.2%)
4.	Actinic lichen planus	06 (5.6%)
5.	Isolated oral lichen	03 (2.8%)
6.	Lichen planus pigmentosus	03 (2.8%)
7.	Lichen planus pemphigoides	01 (0.9%)

No marked seasonal variation in the incidence of lichen planus was noted. Majority of the cases were seen in the age group of 21-30 yrs. Minimum age was 11 years and maximum age was 75 years. Mean age was 35.3 years. In the present study females were affected more than males, with the male: female ratio being 0.8:1. Table 2 shows age and sex distribution of lichen planus. Classical lichen planus was the predominant subtype in both the sexes. Follicular LP and oral LP showed male predominance. Figure 1 shows affected sites in variants of lichen planus, most common being extremities.

Table 2: Age and Sex distribution

Age	11-20yrs	21-30yrs	31-40yrs	41-50yrs	51-60yrs	61-70yrs	71-80yrs	Total no. (%)
Male	3	16	17	5	5	2	2	50 (46.7%)
Female	11	16	10	13	4	3	-	57 (53.2%)
Total no. (%)	14 (13.1%)	32 (29.9%)	27 (25.2%)	18 (16.8%)	9 (8.4%)	5 (4.6%)	2 (1.8%)	107 (100%)

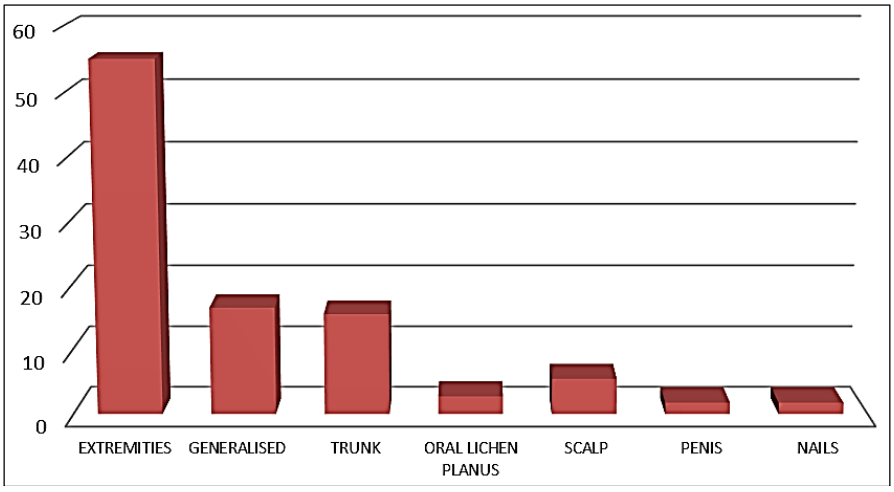

Fig 1: Affected Sites in Variants of Lichen Planus

Fig 2: Clinical photograph of (a) Classical lichen planus, (b) Oral lichen planus, (c) Hypertrophic lichen planus, (d) Lichen planus involving nails

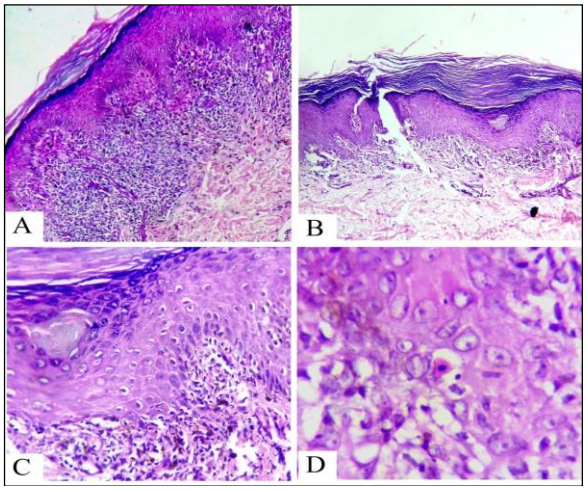

Fig 3: Photomicrograph of classical lichen planus demonstrating (a) band like infiltrate in the papillary dermis. (b) Orthokeratosis, (c) Hypergranulosis, (d) civatte bodies.

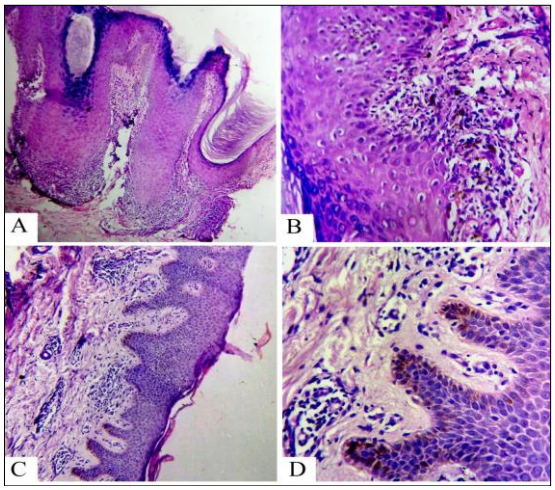

Fig 4: Photomicrograph of (a) Hypertrophic lichen planus showing irregular hyperplasia and dermal infiltrate concentrated on the tips of rete ridges. (b) Actinic lichen planus demonstrating melanin incontinence. (c) & (d) Lichen planus pigmentosus.

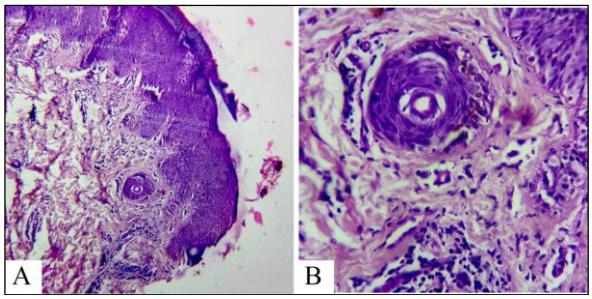

Fig 5: Photomicrograph of follicular lichen planus demonstrating perifollicular infiltrate

In the present study, the most common epidermal changes were hypergranulosis, orthokeratosis and liquefactive degeneration of basal layers accounting to 93.4%, 90.6% and 89.7% respectively. The most common dermal changes include lymphocytic infiltration and band like infiltrate in basal layer in 94.39% and 96.2% cases respectively. Table 3 depicts the histopathological changes in epidermis and dermis.

Table 3: Spectrum of histopathological Changes in epidermis and Dermis

Sl. No	Epidermis	Cases n=107 (%)	Sl. No	Dermis	Cases n=107 (%)
1	Parakeratosis	06 (5.6%)	1	Band like infiltrate in basal layer	103 (96.2%)
2	Orthokeratosis	97 (90.6%)	2	Infiltrate mostly lymphocyte	101 (94.39%)
3	Acanthosis	62 (57.9%)	3	Melanin incontinence	32 (29.9%)
4	Hypergranulosis	100 (93.4%)	4	Plasma cells	09 (4.6%)
5	Spongiosis	68 (63.5%)			
6	Papillomatosis	52 (48.59%)			
7	Saw tooth rete ridges	74 (69.1%)			
8	Civatte bodies	56 (52.3%)			
9	Liquefactive degeneration of basal layer	96 (89.7%)			
10	Max josephs spaces	31 (28.97%)			

4. Discussion

Lichen planus, an inflammatory disorder of uncertain cause, consists of variably distributed erythematous to violaceous polygonal papules and plaques, typically well defined in contour and often grouped on flexor surfaces.

Etiology of this disease which is immune mediated, is still not understood. The prevalence of LP differs in various regions of the world and is found to have genetic basis specific to certain races. Therefore, there is a need to study the distribution of age, sex, sites affected by variants of

lichen planus and the spectrum of histopathological changes. We conducted a study on 107 cases of lichen planus over a period of 5 years.

In the present study the maximum number of cases were that of classical lichen planus accounting to 55 cases (51.4%) followed by hypertrophic lichen planus in 27 Cases (25.2%), which correlated with studies carried out by Bhattacharya *et al.* [5] and A. Parihar *et al.* [6]

Follicular lichen planus was diagnosed in 12 (11.2%) cases, which was similar to the findings of A. Parihar *et al*. [6]

In studies conducted by Bhattacharya *et al*, [5] and Singh *et al*, [7] Actinic LP was the 3rd most common variant, while in the present study it was the 4th most common variant accounting to 5.6%. Isolated cases of oral lichen planus were only 3 (2.8%). The incidence of Lichen planus pigmentosus was found to be 2.8%, which was very low compared to 27.5% reported by A. Parihar *et al*. [6] Actinic variant is related to sun exposure and can vary in different geographical locations. One case of Lichen planus pemphigoides was noted.

No marked seasonal variation in the incidence of lichen planus was noted in the present study similar to the studies done by Sehgal and Rege *et al*. [8], Singh *et al*. [7] Most of the cases of LP in western literature occur between the ages of 30-60 years [9] In the present study most cases were seen in 2nd decade which correlated with other Indian studies like Sehgal VN *et al*. [8], Kachhawa D *et al*. [10]. While A. Parihar *et al*. [6] have found more cases in the 3rd decade. The youngest patient to be affected was 11 years old.

In the present study, a slight female preponderance was noted. Studies with similar results by Boyd AS and Neldner KH [2], Kumar MU *et al*. [11], Hegde VK *et al*. [12] (2014), Parihar A *et al*. [6] are present in the western and Indian literature. However, studies done by Singh OP *et al*. [7], Kachhawa D *et al*. [10] have reported a male predominance. In the present study, there was a marginal difference in the number of male patients (50/107) and female patients (57/107).

Majority of the cases complained of itchy skin lesions. Follicular LP mostly presented with hair loss and OLP with ulcers.

The severity of the pruritus was noted to be more in the hypertrophic and generalized LP variants. Other symptom was of burning sensation in the affected site. Pruritus was seen in 69.1% of cases, burning sensation in 8.4% of cases while 21.49% showed no symptoms. Koebnerization (skin lesions appearing on lines of trauma) was seen in 54% of cases and in the resolution phase post-inflammatory hyperpigmentation was seen, which was similar to studies by Singh *et al*. [7], Kumar MU *et al*. [11] and Ireddy SG *et al* [13].

Most common sites to be affected were the upper and lower extremities (55.1%), wherein lower extremities were involved in 38 cases (35.5%) and upper extremities were involved in 21 cases (19.6%), which were concordant with studies done by Kachhawa D *et al*. [10] and A Parihar *et al*. [6]. At these sites most common LP variant were CLP and HLP. The scalp was the most common site affected by FLP. A Parihar *et al*. [6] also noted scalp to be the predominant site affected in FLP (82%). In the present study 3 cases of oral LP were noted, which was very much less compared to other studies. Nails and penis were affected in 2 cases each accounting to 1.8% respectively. And in all these cases the histologic finding was of classical lichen planus.

In the present study the most common histological feature in the epidermis were liquefactive degeneration (89.7%), hypergranulosis (93.4%) and orthokeratosis (90.6%). The most prominent dermal change noted was band like pattern seen in 103 cases (96.2%) and lymphocytic infiltration in 101 cases (94.39%). The results in the present study correlated with studies conducted by Ireddy *et al*. [13] (2014) and A. Parihar *et al.* (2015) [6]. In the present study acanthosis was present in 57.9% of the cases, and it was still the 4th most common change noted in the epidermis.

Table 4: Comparison of distribution of different variants.

Distribution of lichen planus variants	Bhattacharya *et al*. [5] (2000)	Ireddy SG *et al*. [13] (2014)	Asmita Parihar *et al*. [6] (2015)	Present study (2017)
Classical lichen planus	47.4%	63.04%	61%	51.4%
Hypertrophic lichen planus	14.2%	14.13%	-	25.2%
Follicular lichen planus	-	1.09%	11.5%	11.2%
Actinic lichen planus	4.7%	5.43%	-	5.6%
Isolated oral lichen	-	1.09%	-	2.8%
Lichen planus pigmentosus	-	2.17%	27.5%	2.8%
Lichen planus pemphigoides	-	1.09%	-	0.9%

Table 5: Comparison of epidermal change

Epidermis	Ireddy SG *et al*. [13] (2014)	Arora S K *et al* [14] (2014)	Asmita Parihar *et al*. [6] (2015)	Present study (2017)
Parakeratosis	-	-	-	5.6%
Orthokeratosis	92%	92%	100%	90.6%
Acanthosis	92%	10.5%	94%	57.9%
Hypergranulosis	84%	82%	96.5%	93.4%
Spongiosis	-	-	-	63.5%
Papillomatosis	-	10.5%	-	48.6%
Saw tooth rete ridges	84%	-	-	69.1%
Civatte bodies	40%	29%	82%	52.3%
Liquefactive degeneration of basal layer	100%	-	-	89.7%
Max josephs spaces	-	-	29.5%	28.9%

Table 6: Comparison of dermal changes

Dermis	Ireddy *et al*. [13] (2014)	Arora S K *et al*. [14] (2014)	A. Parihar *et al*. [6] (2015)	Present study (2017)
Band like infiltrate	96%	100%	94%	96.2%
Lymphocytes	-	-	-	94.39%
Melanin incontinence	76%	36.8%	99%	29.9%

5. Conclusion

Lichen planus presents with a heterogeneous morphologic pattern and varied histopathology, which poses difficulty in classifying the disorder and differentiating it from other lichenoid reactions. With incidence of malignant transformation, especially in oral lichen planus, this disorder seeks due attention by the clinicians and pathologist for its proper diagnosis and timely treatment.

Therefore, detailed clinical examination and data collection along with proper histopathological evaluation is necessary for the study of specific features of all the variants for better categorization and understanding of lichen planus and to differentiate it from diverse and perplexing lichenoid tissue reactions.

6. References

1. Gupta S, Jawanda MK. Oral lichen planus: An update on etiology, pathogenesis, clinical presentation, diagnosis and management. Indian J Dermatol. 2015; 60:222-9.
2. Boyd Alan S, Neldner Kenneth H. Lichen Planus. Journal of the American Academy of Dermatology. 1991; 25(4):593-619.
3. Mellgren L, Hersle K. Lichen planus-a clinical study with statistical methods. Ind J Dermatol. 2001; 46(1):55-8.
4. Mobini N, Toussaint S, Kamino H. Noninfectious erythematous, papular and squamous disease. In: Elder DE, Elenitsas R, Johnson BL, Murphy GF, editors. Lever's histopathology of the skin. 10th ed. Philadelphia: Lippincott Williams and Wilkins, 2010, 185-191.
5. Bhattacharya M, Kaur I, Kumar B. Lichen planus: a clinical and epidemiological study. J Dermatol. 2000; 27(9):576-582.
6. Parihar A, Sharma S, Bhattacharya SN, Singh UR. A clinicopathological study of cutaneous lichen planus. Journal of Dermatology & Dermatologic Surgery. 2015; 19:216.
7. Singh OP, Kanwar AJ. Lichen Planus in India: An Appraisal of 441 cases. International Journal of Dermatology. 1976; 15:752-6.
8. Sehgal VN, Rege VL. Lichen planus: an appraisal of 147 cases. Indian J Dermatol Venereol Leprol. 1974; 40:104-7.
9. Daoud MS, Pittelkow MR. lichen planus. In: Freedberg IM, Eisen AZ, Wolff K, Austen KF, Goldsmith LA, Katz SI. Fitzpatrick's dermatology in general medicine. 7th edition. Newyork. McGraw Hill. 2008, 244-255.
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(5):276-9.
11. Mahesh Kumar U, Balasaheb Ramling Yelikar, Arun C Inamadar Swaroopa Umesh, Amrita Singhal, Anirudha V Kushtagi. Journal of Clinical and Diagnostic Research. 2013; 7(2):312-316.
12. Hegde VK, Khadilkar UN. A clinicopathological study of interface dermatitis. Indian J Pathol Microbiol. 2014; 57(3):386-9.
13. Ireddy SG, Udbalkar SG. Study of Lichen Planus and its different types and associated conditions. BMR Journals. 2014; 1(1):1-11.
14. Sandeep K Arora, Seema Chhabra, Uma N Saikia, Sunil Dogra, Ranzana W Minz. Lichen Planus: A Clinical and Immunohistological Analysis. Indian J Dermatol. 2014; 59(3):257-261.