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Histomorphological Study of Lichen Planus

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Abstract
Skin disease is one of the most common human illnesses. It pervades all cultures, occurs at all ages, and affects between 30% and 70% of individuals, with even higher rates in at-risk subpopulations1.
Among the various skin disorders Lichen planus accounts for about 0.5 to 2.6% of general population. Lichen planus is a unique, common immune-mediated inflammatory disorder that affects the skin, mucous membranes, nails, and hair. Though this condition is mostly self-limiting, sometimes the patient may have considerable discomfort and disability. The lesions may heal with pigmentary changes and scarring. Malignant transformation may occur rarely. This descriptive study, a prospective and retrospective one, which includes 50 histopathologically proven lichen planus cases reported over a period of eight years 4 months (January 2008 - May 2017). The cases were taken from the Pathology registry of Rajah Muthiah Medical College & Hospital and Rajah Muthiah Dental College & Hospital, Annamalai University, Chidambaram, Cuddalore District, Tamilnadu.
Key Words: *Lichen planus, Histomorphology.*

Introduction

Lichen planus is derived from the Greek word "Leichen" means tree moss and the latin word "planus" which means flat[1] was first explained in 1869 by Dr. William James Erasmus Wilson as an inflammatory disorder of the stratified squamous epithelia with an unknown etiology[2]. Besides the typical lesions, there are many variants of the disease. It is associated with significant psychological (stress)[3] and physical morbidity. In the developing countries, especially the rural and urban population are exposed to various etiological factors which are responsible for immunomodulation. So, there is a need to study the Lichen planus in detail, which will be useful for future understanding of this disease pathogenesis, morphological presentation and management and prevention of the disease.

Aims and Objectives

To study the histomorphological pattern of the lichen planus.

Materials and Method

This descriptive study, a prospective and retro-spective one, which includes histopathologically proven lichen planus cases reported over a period of 9 years 4 months (January 2008 - May 2017). The cases were taken from the pathology registry of Rajah Muthiah Medical College and

Hospital and Rajah Muthiah Dental College and Hospital, Annamalai University, Chidambaram, Cuddalore District, Tamilnadu.

Inclusion criteria

All diagnosed patients with lichen planus, in all age groups, were included in this study.

Exclusion criteria

Patients with lichenoid variant, were excluded from the study.

Data Collection

All the slides from January 2008 diagnosed as lichen planus are studied. In the prospective study, the slides collected from October 2015 to June 2017 are analysed.

Results

Table 1. Distribution of study population based on their age

Age range	Frequency	Percentage
<20	14	28
21 – 40	23	46
41 – 60	12	24
>60	1	2
Total	**50**	**100**

Majority of the study population 23(46%) have age between 21 to 40 yrs. The youngest case was 5 years old and the oldest was 62 years old.

Table 2 Distribution of study population based on their gender

Gender	Frequency	Percentage
Male	26	52
Female	24	48
Total	**50**	**100**

Majority of the study population 26(52%) are male gender.

Fig 1 Bar chart showing Age and gender distribution

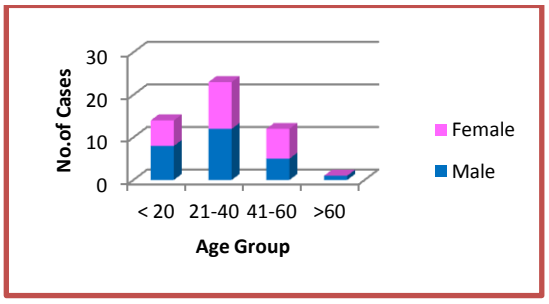


Table 3. Distribution of study population based on their clinical diagnosis

Clinical diagnosis	Frequency	(%)
Classical lichen planus	27	54
Hypertrophic lichen planus	2	4
Atrophic lichen planus	1	2
Genital lichen planus	2	4
Oral lichen planus	9	18
Oral erosive lichen planus	3	6
leukoplakia	2	4
Cutaneous + oral lichen planus	2	4
Cutaneous lichen planus + scabies	1	2
Cutaneous lichen planus + diabetes mellitus	1	2
Total	**50**	**100**

Majority of the study population 27(54%) of cases are classical lichen planus. Oral lichen planus is seen in 9(18%) of cases. Erosive variant of oral lichen planus is seen in 3(6%) of cases. 2(4%) of cases were diagnosed clinically as leukoplakia. Genital lichen planus is seen in 2(4%) cases. Involvement of both cutaneous and oral lichen planus were seen in 2(4%) of cases. Other than these, cutaneous lichen planus was found to be associated with 1(2%) of scabies and 1(2%) of diabetes mellitus.

Figure 2-Bar chart showing Distribution of study population based on their clinical diagnosis.

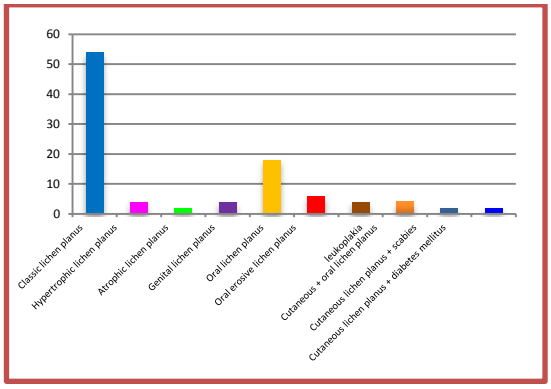


Table 4. Distribution of study population based on their histopathological diagnosis

Histopathological diagnosis	Frequency	Percentage
Classical LP	29	58
Hypertrophic LP	2	4
Atrophic LP	1	2
Genital LP	2	4
Oral LP	14	28
Cutaneous and oral LP	2	4
Total	**50**	**100**

Majority of the study population showed 29 cases (58%) classical Lichen Planus, followed by 11 cases (22%) of oral lichen planus, 2 cases (4%) each in hypertrophic lichen planus, genital lichen planus.1 case (2%) of atrophic Lichen Planus is seen. Both cutaneous and oral lichen planus was involved in 2 cases.

Figure 3 Pie chart showing distribution of study population based on their histopathological diagnosis.

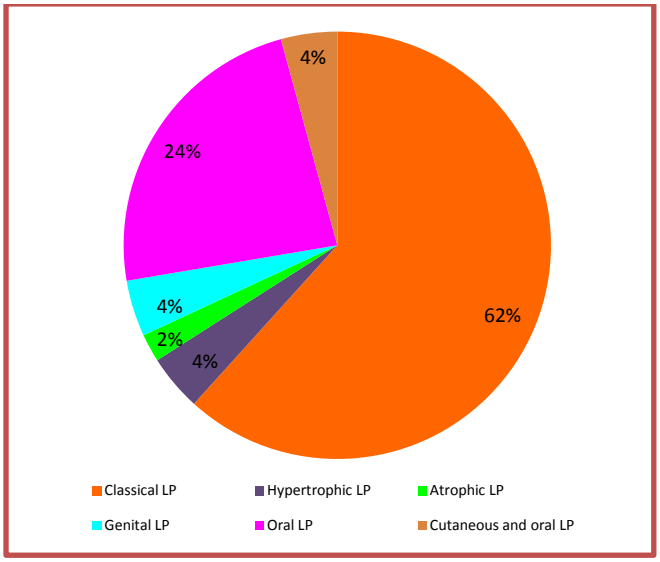
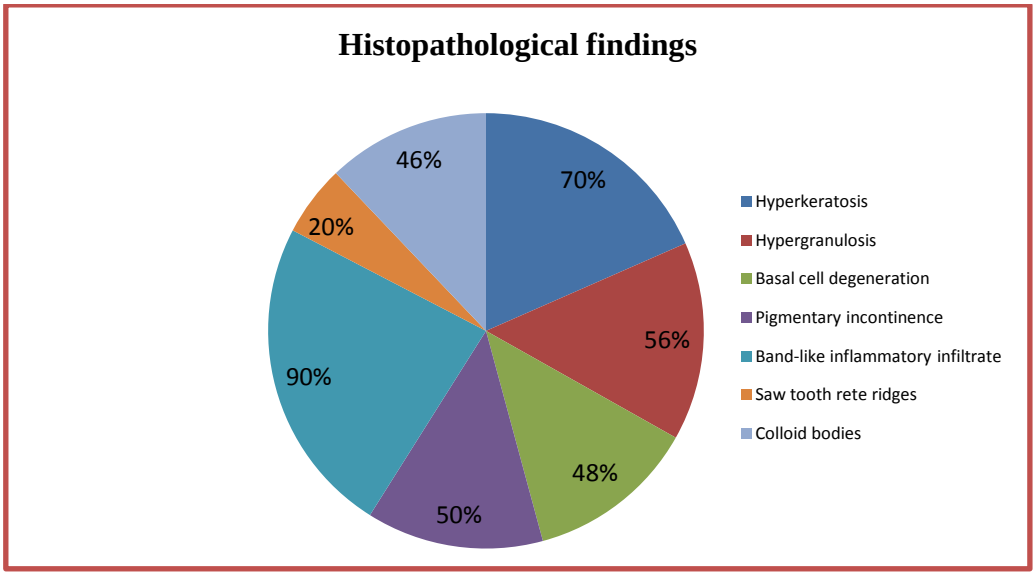


Table 5. Distribution of study population based on their histopathological findings

Histopathological findings	Frequency	Percentage
Hyperkeratosis	35	70
Hypergranulosis	28	56
Basal cell degeneration	24	48
Pigment incontinence	25	50
Band-like inflammatory infiltrate	45	90
Saw tooth rete ridges	10	20
Colloid bodies	23	46

45 cases (90%) of the study population shows band-like inflammatory infiltrate, followed by hyperkeratosis in 35 cases (70%), hypergranulosis in 28 cases (56%), pigment incontinence in 25 cases (50%), basal cell degeneration in 24 cases (48%), colloid bodies in 23 cases(46%), saw tooth rete ridges in 10 cases (20%).

Figure 3 Pie chart showing distribution of study population based on their histopathological findings.



Discussion

This is a descriptive cross sectional study in a tertiary care centre – Rajah Muthiah Medical and Dental College Hospital, Chidambaram. Biopsy proved (50) cases of lichen planus are taken for the study.

Age Incidence

In the present study, maximum incidence of (24%) was found in the age group of 20 to 39 years. The disease was uncommon in the extremes of age. This is similar to an study which shows (46.93%) 20-39 years[4] and also another study where 20-49[5] years are the commonest age groups affected. In another Indian study Garg et al, the peak incidence was observed in the age group between 31-40 years (30.60%)[6].

Age incidence	Kachhawa et al (1995)	Bhattacarya et al (2000)	Garg et al (2000)	In the present study
Maximum age(yrs)	20 - 39	20-49	31-40	20-39
Percentage(%)	46.93	-	30.60	24

Gender Incidence

In the present study, slight male preponderance was found with the ratio of (M:F - 1.08:1).This is quite similar to Bhattacharya et al where both sexes were equally affected[5]. Kachhawa et al is contrast to the present study[4], where M:F ratio is 1.41:1. Another Indian study Garg et al[6], was observed to have the male to female ratio 1:1.3.

Gender incidence	Kachhawa et al (1995)	Bhattacarya et al (2000)	Garg et al (2000)	In the present study
Gender predominance	Male	Equally affected.	Female	Male
Male:Female	1.41:1	1:1	1:1.3	1.08:1

Symptomatology

In the present study, itching is the predominant symptom in 35 cases (70%) of cutaneous lichen planus and burning sensation is the predominant symptom in 25 cases (50%) of oral lichen planus, in the present study. Battacharya et al and Garg et al has also observed to have itching as the predominant symptom[5,6].

The duration of disease varied from 10 days to 3 years in the present study. In Bhattacharya et al the duration is observed from 1 month to 7 years[5]. In Kachhawa et al the duration observed is 5 days to 30 years[4].

History of recurrence was found in 3 (6%) cases which is contradictory to the study done by Bhatacharya et al, where the recurrence was found to be 10.3%[5].

Studies compared with the present study	Symptoms		Duration of the disease.	Recurrence of the disease.
	Predominant symptom	No. of cases.		
Kachhawa et al (1995)	-	-	5 days to 30 years.	-
Bhattacarya et al (2000)	Itching.	184 (79.3%)	1 month to 7 years.	24(10.3%)
Garg et al (2000)	Itching	75(100%)	-	-
In the present study	Itching. Burning sensation.	35(70%). 25(50%).	10 days to 3 years.	3 (6%)

Clinical Types

In the present study, majority of the patients had Classical LP (54%) followed by oral mucosal LP (22%) and Erosive OLP (6 %). According to Bhattacharya et al, the majority of the patients (47.4%) had classical lesions, which is similar to the present study[5]. In another Indian study Garg et al, 55 (73.3%) cases of classical lichen planus were observed[6].

In the present study, genital involvement is seen in 2(4%) cases. According to Bhattacharya et al, genital involvement in only 5.2%[5]. No malignant transformation of hypertrophic lesions was found in the present study, which is similar to Bhattacharya et al[5].

Cutaneous LP with mucosal involvement was seen in 2(4%) cases in the present study. In studies by Kacchawa et al 19.16% cutaneous lichen planus cases was involved with mucous membrane[4]. In another study Garg et al, mucosal involvement was seen in 24% in addition to skin involvement[6]. According to Bhatacharya et al mucosal involvement along with cutaneous lesions were observed in 16.8%[5].

Isolated oral mucosal involvement was seen in 11(22%) cases in the present study. According to Kacchawa et al, 10.18% of cases only mucous membrane was involved[4]. In another Indian study Garg et al, 2 patients (2.33%) had isolated oral mucosal lichen planus[6].

Studies compared with the present study	Most common clinical variant (Classic LP)	Cutaneous with mucosal involvement	Isolated Oral mucosal involvement.	Genital involvement
Kachhawa et al (1995)	-	72(19.16%)	38(10.18%)	-
Bhattacarya et al (2000)	110(47.4%)	39(16.8%)	-	12(5.2%)
Garg et al (2000)	55(73.3%)	18(24%)	2(2.33%)	-
In the present study	27(54%)	2(4%)	11(22%)	2(4%)

Distribution of Lesions

In the present study, limbs (Upper limb) was the most frequent intial site of involvement in 27(54%) cases, which is comparable with Bhattacharya et al (55.6%)[5]. It is contradictory to the study by Kacchawa et al where involvement of lower extremities is highest (61.9%)[4].

In the present study, Buccal mucosa 13(26%) cases was the commonest site followed by lips 4(8%) cases in case of oral lichen planus. Pigmented patches & plaques were more common than reticulate networks.

Studies compared with the present study	Most common site(Cutaneous LP)	Most common site(Mucosal LP)
Kachhawa et al (1995)	Lower limbs 232(61.9%)	Oral mucosa 97(25.9%)
Bhattacarya et al (2000)	Limbs 129(55.6%)	-
Garg et al (2000)	Lower limbs 28(38%)	-
In the present study	Upper limbs 27(54%)	Oral mucosa 13(26%)

Histopathology

Cases which are histopathologicaly diagnosed as lichen planus are taken for the study.

Histopathological findings in the present study shows majority of 45 cases (90%) of the study population shows band-like inflammatory infiltrate, followed by hyperkeratosis in 35 cases (70%), hypergranulosis in 28 cases (56%), pigment incontinence in 25 cases (50%), band-like inflammatory infiltrate in 45 (90%) cases, basal cell degeneration in 24 cases (48%), colloid bodies in 23 cases (46%), saw tooth ret ridges in 10 cases (20%).

According to an Indian study Garg et al, the epidermal changes were characterized by hyperkeratosis (100%), focal hypergranulosis (85%), and saw-tooth rete ridges (82%) and basal cell liquefaction (100%). Dermal changes were char acterized by a band-like inflammatory infiltrate pre dominantly of lymphocytes with a few macrophages hugging the dermo-epidermal junction in all the cases (100%). Pigment incontinence in the form of melanophages was seen in the superficial dermis in all cases (100%). Civatte bodies were seen in only (37%) of cases[6].

Histopathological findings	In a comparable Indian study-Garg et al (2000)	In the present study
Hyperkeratosis	75(100%)	35(70%)
Hypergranulosis	64(85%)	28(56%)
Basal cell degeneration	75(100%)	24(48%)
Pigment incontinence	75(100%)	25(50%)
Band-like inflammatory infiltrate	75(100%)	45(90%)
Saw tooth rete ridges	61(82%)	10(20%)
Colloid bodies	28(37%)	23(46%)

Associated Disorders

In the present study, association of lichen planus with diabetes mellitus is observed in 1(2%) case; another association of lichen planus with scabies is also observed in 1(2%) case. It is comparable with kachhawa et al, where lichen planus is associated with diabetes mellitus in 1.6% cases[4].

Associated disorders.	Kachhawa et al (1995)	In the present study
Diabetes mellitus.	6(1.6%)	1(2%)
Scabies.	1(0.4%)	1(2%)

Conclusion

Lichen planus is most common in the age group 21-40 years, with male predominance. The most frequent site being affected is the limbs in cutaneous lichen planus, buccal mucosa is the most common site in oral lichen planus. The most common symptoms are itching and burning sensation in cutaneous and oral lichen planus. Classic lichen planus is the most common clinical variant. The majority of the cases show band-like inflammatory infiltrate, followed by hyperkera-tosis and other classic histopathological findings.

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