

Lichen Planus: A Clinical and Epidemiological Study

Niraj¹, Surabhi Shandilya¹, Amit Ranjan², Gaurav Verma³

¹Assistant Professor, Department of Dermatology, Varun Arjun Medical College and Rohilkhand Hospital, Banthra, Shahjahanpur, Uttar Pradesh, India, ²Assistant Professor, Department of Dermatology, Netaji Subhas Medical College and Hospital, Bihta, Patna, Bihar, India, ³Associate Professor, Department of Psychiatry, Varun Arjun Medical College and Rohilkhand Hospital, Banthra, Shahjahanpur, Uttar Pradesh, India.

Abstract

Background: Lichen planus is a common pruritic inflammatory disease that affects the skin, mucous membrane, nails and hair. The initial description of LP was given by Hebra and later, Erasmus Wilson (1869) has given it this name. Endogenous- genetic and exogenous-environmental components like drugs or infection may interact to elicit the disease. The familial form of the disease is common among human leukocyte antigen (HLA) haplotypes —B7,-Aw19,-B18 and —Cw8. **Subjects and Methods:** After getting ethical committee approval patients were selected from the out patients department of Skin & VD Varun Arjun Medical College and Rohilkhand Hospital. A total of 180 cases of Lichen planus were screened, examined and recruited. A detailed history was taken and through examination carried out after proper consent and counseling. **Result:** Majority (20.00%) of the patients belonged to 11-20 year age group. Male: female ratio was 0.64:1. 124 (68.89%) patients came from urban area and 56 (31.11%) from rural areas. **Conclusion:** The majority of the patients presenting were in the second decade. The majority of cases had disease duration of 2-5 years. Family history was present in a subset of patients and maximum cases with positive family history had guttate type of Lichen planus. Pterygium was the most common nail finding among various nail changes.

Keywords: Lichen Planus, Inflammatory Dermatological Disease.

Corresponding Author: Niraj, Assistant Professor, Department of Dermatology, Varun Arjun Medical College and Rohilkhand Hospital, Banthra, Shahjahanpur, Uttar Pradesh, India.
E-mail: dmiraj1985@gmail.com

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Introduction

Lichen planus (LP) is a common pruritic inflammatory disease that affects the skin, mucous membrane, nails and hair. The initial description of LP was given by Hebra and later by Erasmus Wilson. The Greek word leichen (tree moss) and the Latin word planus (flat) was coined by them.^[1] The prevalence of Lichen planus is less than 1% worldwide.^[2] An incidence of 0.38% has been reported from India.^[3] The familial form of the disease is common among human leukocyte antigen (HLA) haplotypes B7, Aw19, B18 and Cw8.^[4] Lichen planus is an autoimmune diseases, both antigen specific and nonspecific mechanism seem to be involve in initiation of immune reaction.^[5] A recent meta-analysis has confirmed the association between hepatitis C virus infection and lichen planus.^[6]

Lichen planus can be classified as follows

According to the site of involvement

Skin

pruritic, polygonal, plane topped, purple papules are seen with predilection for flexural areas of wrist, arm & legs and lower back. Koebner phenomenon is another hallmark of classic lichen panus, seen around 28% of patients.^[7]

Scalp

Follicular lichen planus commonly involves the fronto-central scalp and may lead to scarring alopecia, Perifollicular erythma and acuminate keratotic plugs are characteristic features.^[8]

Mucous membrane

Different types including reticular, erosive- ulcerative, atrophic, popular, plaque like and bullous form of oral lichen planus have been described.^[9]

Nails

Typical nail lichen planus is characterized by diffuse nail ridging, thinning, splitting and dorsal pterygium. Its important to note that nail lichen planus presenting as 20 nail dystrophy known as idiopathic atrophy of the nail, is more common in



Figure 1: Skin Involment in Lichen Planus



Figure 2: Scalp involvement in lichen planus



Figure 3: Mucous membrane involvement in lichen planus

children than adult. [10]

According To Configuration of Lesion

Annular: Characterized by typical purple papules that are arranged in circle like fashion, then coalesce to formed large plaque that shows central clearing leaving behind active and raised border. It is usually present on the glans penis or trunk.



Figure 4: Annular type of lichen planus

Linear or zosteriform lichen planus: its spontaneous occurrence in a linear fashion along the line of blaschko is referred as linear lichen planus.

According To Morphology of Lesions:

Hypertrophic: Also called lichen planus verrucosus. These extremely itchy lesions are most often found on the extensor aspects of lower leg especially around the ankles. They are often chronic and heal with scarring and hyper pigmentation.

Atrophic: Atrophic lichen planus is characterized by well differentiated bluish white papules with central superficial atrophy, its because of thinning of epidermis and fibrosis of papillary dermis.

Vesico-bullous:- These lesions develop on the lower limbs or in the mouth from pre-existing lichen planus lesions.

Erosive and ulcerative: Commonly seen on the mucosal surfaces and can rarely occur on the feet with chronic painful bullae.

Follicular: characterized by keratotic follicular papules that may coalesce in to form plaque. Follicular LP mainly present on the trunk and medial aspects of proximal extremities. Involvement of scalp may lead to scarring alopecia.

Actinic: its is characterized by nummular patches with a hypopigmented zone surrounding a hyperpigmented centre. These mildly pruritic lesions present on the sun-exposed areas.

Lichen planus pigmentosus: It was originally described from india by Bhutani et al in 1974.^[11] It is characterized by hyperpigmented dark brown ash like macules in sun-exposed areas and flexural folds. Other rare types of lichen planus include perforating type, guttate type, exfoliative and exanthematous forms and invisible lichen planus.

Special Form of Lichen Planus

- Drug induced lichen planus or lichenoid drug eruption
- Lichen planus-Lupus erythematosus overlap
- Lichen planus pemphigoides
- Keratosis lichenoides chronica
- Lichenoid reaction of graft versus host disease
- Lichenoid keratosis
- Lichenoid dermatitis

Squamous cell carcinoma may arise from lesion of hypertrophic lichen planus and from oral lichen planus.^[10] Lichen planus has been associated with Hepatitis C virus infection, chronic active hepatitis, primary biliary cirrhosis and with diseases of altered immunity including ulcerative colitis, alopecia areata, vitiligo, dermatomyositis, morphea, lichen sclerosus and myasthenia gravis.^[11] The main histopathological finding in lichen planus are basal epidermal keratinocyte damage and lichenoid interface lymphocytic reaction. Apoptotic keratinocytes known as colloid or civatte bodies are seen in the dermo-epidermal junction. Treatment of lichen planus For widespread lesions systemic corticosteroids or PUVA or

retinoids like acitretin or isotretinoin and cyclosporine. Beneficial effect of hydroxychloroquine, Dapsone, metronidazole, and griseofulvin have also been reported.

The present study was done to find out the varied clinical manifestations of lichen planus and at the same time to analyse the epidemiological profile of these patients.

Subjects and Methods

After ethical committee approval lichen planus patients were selected from the out patients department of skin & vd Varun Arjun Medical College and Rohilkhand Hospital. It is a tertiary hospital based observational, cross-sectional, clinico-epidemiological study.

Selection criteria

Inclusion criteria

All patients of lichen planus attending the opd clinic of vame shahjahanpur u.p.

Exclusion criteria

Patients not willing to take part in the study or unwilling to give written consent for the study.

Tools : Digital photography

Technique:

Direct interview of the patient

Clinical examination

Laboratory examination if required

Plan of work

- Each patient was explained about the nature of study in their own language and official consent was signed by them.
- Detailed clinical history and examination of patient were done only at base line visit. the clinical data pertaining to all patients were recorded as per the proforma
- Base line investigations such as cbc, urine examination (r/e) and (c/s), lft, rft and blood sugar were done to determine any associated co-morbid condition.
- Specific investigations such as skin biopsy were done in selected cases to confirm the diagnosis.

Data Analysis

Results of the study were tabulated, analyzed and discussed. simple proportions and percentages for comparing different variables like age, sex, occupation, socio-economic status etc. were used. final outcome was expressed as the percentage of variables among the study group as a whole.

Results

Majority (20%) of the patients belonged to 11-20 year age group. Male : female ratio was 0.64 :1. 124 (68.89%) patients came from urban area and 56 (31.11%) from rural areas. Age of onset ranged from 3- 91 years. Maximum patients 39 (21.67%) had age onset between 11-20 years while least number of cases had onset in between 51 -60 years (5.56%). Majority of the patients had duration of the disease between 2-5 years (51.67%) followed by 39 (21.67%) patients had duration of disease between 6-10 years. The most common morphological variant was guttate(Eruptive) type seen in 70 (38.89%) cases followed by hypertrophic type 37 (20.55%), annular type 22(12.22%), Lichen planus pigmentosus 19 (10.56%), linear type 12 (6.67%), actinic type 7 (3.89%), atrophic type 2(1.11%). The most common clinical symptom at presentation was pruritus seen in 170(94.44%) cases. Other common clinical presentation was papules/ plaque 165(91.67%), scaling 40 (22.22%) [Table 1].

The site most commonly involved was upper limb seen in 103(57.22%) cases. Other site commonly involved were lower limb 87 (48.33%), trunk 80 (44.44%), genitalia 23 (12.72%), face 15 (8.33%), scalp 11(6.11%), flexural 11(6.11%). History of smoking was present in 33 (18.33%) cases, alcohol intake in 17 (9.44%) cases and tobacco intake in 41(22.78%) cases.

Most of the cases were literate with 68(37.78%) cases being secondary and only 25(13.89%) cases were illiterate. Maximum cases were students 35.56% followed by housewife 24.44%.

Family history of Lichen planus was present in 13 (7.22%) cases. Trauma was the most common aggravating factor seen in 23(12.78%) cases followed by infection 13(7.22%).[Table 2].

Winter is being the most common season of exacerbation seen in 48(26.67%) cases. Most common nail finding was pterygium seen in 17(9.44%) cases followed by discoloration of nail plate 7.22%, longitudinal ridges 12 (6.67%), thickening of nail plate 6.11% ,subungual hyperkeratosis 10 (5.56%), twenty nail dystrophy 08(4.44%) , onycholysis 07(3.89%). Presence of diabetes mellitus was seen in 05 (2.78%) cases. Most common co-morbidity seen was psychosocial co-morbidity reported in 41(22.78%) cases followed by hepatitis in 11(6.11%) cases, hypertension 10(5.56%), metabolic syndrome 07(3.89%) [Table 3].

Lichen planus cases were associated with seborreic dermatitis 03 (1.67%), 5 (2.78%) cases with alopecia areata, 08 (4.44%) cases with vitiligo, 6 (3.34%) cases with atopic dermatitis and 4 (2.22%) cases were associated with DLE [Table 4].

Discussion

This was a study of 18month duration conducted on 180 patient to study the clinical and epidemiological profile of Lichen planus patients to determine its association with various co-morbidity.

Age distribution

The age of the patients ranged from 3years to 91years. Majority of Lichen planus cases were in the age group of 11-20 years (20.00%, n=36), followed by 35 cases (19.44%) in 31-40 years, 30 cases (16.67%) in 41-50 years, 30 cases (16.67%) in 21-30 years, 22 cases (12.22%) in 0-10 years, 14 cases (7.78%) in more than 61 years, 13 cases (7.22%) in 51-60 years. According to western studies, at least two third of cases of Lichen planus occur between the ages of 30 and 60 years; however, it can occur at any age.^[12] Most commonly affected age group was 30-60 years.^[12] The disease is less common in the very young and elderly. Schmidt H et al also reported 30-60 years as most commonly affected age group.^[13] In the tropics and subtropics younger age group is also affected.^[14] European studies that have reported childhood Lichen planus to be a common problem had a significant proportion of their population of Indian origin.^[15]

The overall findings in our study about age incidence of Lichen planus are in conformity to the observations made by various workers in the past as mentioned above.

Gender wise distribution

Out of total 180 Lichen planus cases, 70 were males and 110 female. Male female ratio of Lichen planus was 0.64: 1. Singh OP and Kanwar AJ reported a sex ratio of 3:2 (female : male).^[16] Recently male: female ratio of 1.1:1 has been reported by Handa S and Sahoo B, in 2002.

Urban/rural distribution

Out of 180 patient, 124 (68.89%) came from urban area and 56 (31.11%) from rural area. The urban population is still educationally behind the rural.

Educational status

Out of 180 patients 25 (13.89%) were illiterate, 47 (26.11%) were educated up to primary, 68 (37.78%) up to secondary and 40 (20.22%) were graduates and above. As such the education part is not of much significant.

Occupational status

Out of 180 patients 20 (11.11%) were labourers, 15 (8.33%) were farmers, 44 (24.44%) were house-wife, 30 (16.67%) were government servants, 64 (35.56%) were students, 07 (3.89%) belonged to other profession. Our finding regarding occupational status are common in student followed by housewife.

Type of Lichen planus

Table 1:

Age	0-10	11-20	21-30	31-40	41-50	51-60	61 and above	Total
Percentage (%)	12.22%	20.00%	16.67%	19.44%	16.67%	7.22%	7.78%	100%
Gender	Male			Female				
Percentage (%)	38.89%			61.11%				
Area	Urban			Rural				
%	68.89%			31.11%				
Education	Illiterate	above	Up to Primary	Up to Secondary	Graduate &	Total		
Percentage (%)	13.89%		26.11%	37.78%	22.22%	100%		
Occupation	Labourer	Farmer	House-wife	Government service	Student	Others	Total	
Percentage (%)	11.11%	8.33%	24.44%	16.67%	35.56%	3.89%	100%	
Types of Lichen Planus	Hypertrophic	Atrophic	Guttate	Linear	Follicular	Annular	Actinic	Lichen Pigmentosus
Percent (%)	20.55%	1.11%	38.89%	6.67%	6.11%	12.22%	3.89%	10.56%
Clinical symptoms	Pruritus			Papules/Plaques		Scaling		
Percentage(%)	94.44%			91.67%		22.22%		

Table 2:

Age of onset	0-10	11-20	21-30	31-40	41-50	51-60	61 and above	
Percentage (%)	15.00%	21.67%	18.89%	17.22%	15.55%	5.56%	6.11%	
Duration of Lichen Planus		< 2 years	2-5 years	6-10 years	> 10 years			
Percentage		20.55%	51.67%	21.67%	6.11%			
Site of lesions	Scalp	Trunk	Upper limb	Lower limb	Palm & Sole	Face	Flexural	Genitalia
Percentage	6.11%	44.44%	57.22%	48.33%	3.89%	8.33%	6.11%	12.78%
Family History	Present			Absent				
Percentage	7.22%			92.77%				
Risk factor	Smoking		Alcohol		Tobacco			
Percentage	18.33%		9.44%		22.78%			

Aggravating factors	Climate	Stress	Infection	Drugs	Pregnancy	Trauma
Percentage	5.56%	2.78%	7.22%	3.89%	1.11%	12.78%

Table 3:

Season of exaggeration	Winter	Summer	Monsoon	None
Percentage	26.67%	3.89%	8.33%	61.11%

Nail changes	Present	Absent
Percentage	29.44%	71.56%

Type of nail changes	Pterygium	Subungual hyperkeratosis	Thickening of nail plate	Onycholysis	Twenty nail dystrophy	Discoloration of nail plate	Longitudinal Ridges
Percentage	9.44%	5.56%	6.11%	3.89%	4.44%	7.22%	6.67%

Presence of Diabetes	Yes	No
Percentage	2.78%	97.22%

Known co-morbidities	Hypertension	Cardiovascular disease	Chronic liver disease with hepatitis B and C infection	Psychosocial co-morbidities	Metabolic syndrome
Percentage	5.56%	3.89%	6.11%	22.78%	3.89%

Oral lichen planus	Present	Absent
Percentage	52.78%	47.22%

Types of oral lichen planus	Reticular	Erosive/ulcerative	Atrophic	Bullous	Plaque
Percentage	43.89%	5%	2.2%	0.00%	1.67%

Table 4:

Associated disorders	Seborrheic dermatitis	Alopecia areata	Vitiligo	Atopic dermatitis	DLE
Percentage	1.67%	2.78%	4.44%	3.34%	2.22%

Guttate(eruptive) type Lichen planus was the most common clinical type affecting 70(38.89%) patients, followed by hypertrophic 37 (20.55%), annular 22(12.22%), Lichen planus pigmentosus 19(10.56%),12 (6.67%) were linear, follicular 11(6.11%), actinic 07(3.89%), atrophic 02(1.11%). Annular Lichen planus is considered to be an uncommon variant of

Lichen planus, occurring in 7-10% of all cases.^[17]

Out of 180 patients, 37 (20.55%) presented with hypertrophic variety, 02 (1.11%) were atrophic variety, 70(38.89%) were guttate, 12 (6.67%) were linear, 11 (6.11%) were follicular, 22 (12.22%) were annular, 07 (3.89%) were actinic and 19 (10.56%) were lichen planus pigmentosus variety.

Clinical symptoms at presentation

Pruritus was the most common clinical complain in 170 (94.44%) cases followed by papules/plaque 165(91.67%), scaling 40 (22.22%).

Out of 180 patients, 170 (94.44%) cases complained of pruritus, 165 (91.67%) papules/plaques, 40 (22.22%) scaling.

Age of onset of Lichen planus

Age of onset of Lichen planus ranged from 3 to 91 years. In our study, 21.67% (n=39) of Lichen planus cases had onset in the second decade followed by 18.89% (n= 34) in the third decade and then 17.22% (n=31) in the fourth decade.

Out of 180 patients 27 (15.00%) patients had onset of disease in 1stdecade of life, 39 (21.67%) patients in 2nddecade, 34 (18.89%) patients in 3rddecade, 31 (17.22%) patients in 4thdecade, 28 (15.55%) patients in 5thdecade, 10 (5.56%) patients in 6thdecade, 11 (6.11%) patients in 7thdecade.

Duration of the disease

Out of 180 patients, 37(20.55%) cases had duration <2 years, 93 (51.67%) cases had duration 2-5 years, 39(21.67%) cases had duration 6-10 years, 11 (6.11%) cases had duration >10years. Lichen planus Lesions may be perpetuated by scratching and persist for month or years, averaging about 8 years.^[18]

Site of involvement

The site most commonly involved was upper limb seen in 103(57.22%) cases. Other site commonly involved were lower limb 87 (48.33%), trunk 80 (44.44%), genitalia 23 (12.72%), face 15 (8.33%), scalp 11(6.11%), flexural 11(6.11%), 07 (3.89%) palm and soles.

In a clinico-etiological study from India that included 375 patient, 3.5% had palmar involvement and 4.5% had planter involvement by.^[19]The male genitalia are involved in 25% of male patient with cutaneous lichen planus and in 3.7% of patients with oral Lichen planus. Between 20 to 25% of women with oral Lichen planus also have vulvovaginal Lichen planus.^[20]

Annular lichen planus Lesions occur more commonly on the penis, lips, mucosae, scrotum or vulva but also have a predilection for intertriginous areas such as the axillae and the groin folds.^[21] Out of 180 cases, 11 (6.11%) cases had lesions on scalp, 80 (44.44%) on trunk, 103(57.22%) on upper limb, 87(48.33%) on lower limb, 07 (3.89%) On palm and soles, 15 (8.33%) on face, 11 (6.11%) On flexural, 23 (12.78%) on genitalia.

Family history

In the present study only13 (7.22%) patient reported positive family history and the remaining 167 (92.77%) patient had no family history. Estimates of prevalence of familial lichen

planus vary widely, from 1.5% to around 10% by Kofoed ML and Wantzin GL.^[22]Less than 100 cases of familial lichen planus has been reported by Copeman PWM, Tan RSH and Timlin D et al and Grunnet N & Schmidt H et al.^[23,24]Out of 180 patients, 13 (7.22%) cases gave positive family history.

Addiction habits

In our study history of tobacco chewing was present in 41 (22.78%) cases of Lichen planus followed by smoking 33(18.33%) and then alcohol 17(9.44%). 33 (18.33%) patients had a history of smoking, 17 (9.44%) cases had a history of alcohol intake, 41 (22.78%) cases had tobacco intake

Aggravating factors

Trauma was the most common aggravating factor in 23 (12.78%) cases followed by infection 13 (7.22%), climate 10 (5.56%), drugs 07 (3.89%), stress 5(2.78%), pregnancy 2 (1.11%). Numata et al. reported the occurrence of linear Lichen planus along Blaschos lines following intramuscular injection of triamcinolone for alopecia areata.^[25]Trauma was the most common aggravating factor in 23 (12.78%) cases followed by infection 13 (7.22%), climate 10 (5.56%), stress 5(2.78%), pregnancy 2 (1.11%).

Seasonal variation

Out of 180 patients, 48 (26.67%) cases experienced winter exacerbation, 7 (3.89%) summer exacerbation, 15 (8.33%) monsoon exacerbation, and 110 (61.11%) cases did not experience seasonal variation.

However, one study from middle- east reported a higher incidence from February to September.^[26] Thus the result of present study are comparable to other studies mentioned above.

Lichen planus and nail changes

Out of 180 patients, 53 (29.44%) cases had nail changes. 17 (9.44%) cases had nail Pterygium. Other changes were subungual hyperkeratosis (5.56%, n=10), thickening of nail plate (6.11%, n=11), onycholysis (3.89%, n=7), twenty nail dystrophy (4.44%, n=8), discoloration of nail plate (7.22% n=13), longitudinal ridges (6.67%, n=12).

Piraccini BM et al observed Oral Lichen planus appears to be more commonly associated with nail Lichen planus than any other subtype of Lichen planus.^[27]

Samman PS et al reported the nail involvement in 15% of cases.^[28]

Lichen planus and diabetes

Out of 180 patients, 5(2.78%) cases had diabetes mellitus and 175 (97.22%) cases did not have diabetes. Hornstein OP et al noted a possible association of diabetes with Lichen planus mainly oral lichen planus.^[29]It is currently believed that there is no strong evidence of increased prevalence of glucose intolerance in patients with Lichen planus.

Lichen planus and co-morbidities

Out of 180 patients, 11 (6.11%) had chronic liver disease hepatitis B and C infection, 10(5.56%) cases had hypertension, 07 (3.89%) cases had cardiovascular disease, 41 (22.78%) cases had psychosocial co-morbidities, 07 (3.89%) cases metabolic syndrome. Reborá et al 1984 reported Lichen planus to be major factor for liver cirrhosis. Out of 180 patients, 10(5.56%) cases had hypertension, 07 (3.89%) cases had cardiovascular disease, 11 (6.11%) had chronic liver disease hepatitis B and C infection, 41 (22.78%) cases had psychosocial comorbidities, 07 (3.89%) cases metabolic syndrome.^[30]

Lichen planus and psychosocial co-morbidity

Out of 180 patients 41 (22.78%) cases had some or other Psychosocial co-morbidity in the form of anxiety, depression, stress, poor self esteem, subjective distress and disturbed social function was the most common known co-morbidity. Mental disorders have been recorded 10-49% patients with oral Lichen planus.^[31] In a controlled study, Shah B et al documented an increase salivary cortisol level and a significantly higher depression, anxiety, and stress score in patients with Oral Lichen planus irrespective of their gender; there was a positive correlation between these two factors.^[32]

Oral Lichen planus

Out of 180 patients, 95 (52.78%) cases had oral lichen planus. 79 (43.89%) cases had reticular type. Other types of Lichen planus, 9 (5%) erosive /ulcerative type, 4 (2.2%) atrophic type, 3 (1.67%) plaque type. Erosive/ulcerative, the second most common form of oral lichen planus.^[33]

Presence of associated disorder

Out of 180 cases, 3 (1.67%) cases were associated with seborrheic dermatitis, 5 (2.78%) cases with alopecia areata, 8 (4.44%) cases with Vitiligo, 6 (3.34%) cases with atopic dermatitis and 4 (2.22%) cases were associated with DLE. Co-localization of Lichen planus with another autoimmune dermatosis, Vitiligo, has been reported.^[34]

Conclusion

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