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A clinicopathologic investigation study of lichen planus

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Abstract: Aim: A clinicopathologic investigation study of lichen planus.
Methods: This prospective and observational study was carried out in the Department of Oral Pathology & Microbiology, S.B.Patil Dental College & Hospital, Bidar, Karnataka for a period of 1 year. 90 cases of Lichen Planus (LP) were included in this study. A complete clinical history was obtained, including duration, place of start, symptoms, medication history, and family history. A thorough general checkup, systemic examination, and dermatological examination were performed. The form and location of skin lesions, as well as the existence of any other related disorders, were all documented. Mucosa, hair, nails, palms, soles, and extremities involvement were all noted as concomitantly affected. To assess the histological diagnosis, haematoxylin and eosin stained sections of lesional tissue biopsies were generated. Once the histopathology slide was complete, each slide was attentively examined, and the findings were thoroughly analyzed and appraised.
Results: Out of 90 patients 55(61.11%) were male and 35(38.89%) were female and male to female ration were 1:1.57. Most of the patients belong to 30-40 years of age group (38.89%), followed by 20-30 years (26.67%), below 20 years (22.22%) and 12.22% above 40 years. 45 individuals had LP for less than 5 months before presenting to our out-patient service. The length varied from 5 to 11 months in 22 cases. The duration was longer than 24 months in 15 individuals. The length varied from 11 to 17 months in 5 individuals and from 17 to 24 months in the remaining 3. The classical type was encountered in 51 (56.67 percent) of the 90 Lichen Planus(LP) patients, followed by the hypertrophic type in 23 (25.56 percent) patients, linear LP and lichen planopilaris (LPP) in 4 (4.44 percent) patients each, oral and annular 2(2.22 percent) patients each, and follicular, bullous LP and LP pigmentosus in 1 (1.11 percent) patients each. Of the 90 patients in our research, 40 showed oral signs of LP, and four of them were diagnosed with just oral LP devoid of cutaneous indications of LP. Buccal mucosa was usually implicated in the oral cavity in 30 (75%) patients, lips in 10 (25%) individuals, and tongue in 7 (17.5%) patients. In our study, only two clinical kinds of oral LP were identified: the reticulate type in 35 (87.5 percent) of the subjects and the erosive variation in the other 5 people (12.5 percent).
Conclusion: The current study sheds light on the clinicopathological behaviour of lichen planus patients according on their gender. Further research in this area will aid in the exploration of this uncharted territory, allowing for faster diagnosis and better treatment. LP was usually noticed in people in their forties and fifties. In our analysis, classical lesions were the most prevalent, followed by hypertrophic and linear types.

Keywords: Lichen planus; Cutaneous lichen planus; Oral lichen planus; Dysplastic changes.

1. Introduction

Lichen Planus(LP) is a chronic inflammatory and immune-mediated illness that affects the skin, nails, hair, and mucous membranes [1]. In middle-aged individuals, cutaneous lichen planus (CLP) often affects the flexor surfaces and manifests as small itchy violaceous papules. Along with cutaneous surfaces, it has also been observed to impact the oral mucosa, vaginal mucosa, scalp, and nails [2]. The diversity in the LP

population is heavily influenced by individual physiological circumstances and genetic make-up [3]. Clinical studies revealed that the occurrence of Lichen planus ranges from 0.1 percent to 3 percent depending on the population; a primarily high incidence rate has been seen in the Indian subcontinent [4].

This increased incidence of lichen planus in the Indian population might be attributed to genetic differences. Positive family history is more common in paediatric cases than in adult lichen planus cases and familial instances are known to have an early beginning of illness [5].

Although the actual incidence and prevalence of LP are unclear, the overall prevalence is thought to be less than 2% of the general population [6]. LP most typically affects middle-aged individuals, however it can afflict people of any age. Approximately two-thirds of occurrences occur between the ages of 30 and 60 [2]. It has been noted that there is a female predominance. Males have a younger onset (4th decade) than females (5th decade). There is no evidence of racial bias. The precise aetiology is unknown. It is thought to be caused by a cell-mediated immune response to an epidermal antigen in those who are genetically susceptible to it [7].

Infections, medications, dental amalgam materials, and stress are all recognized triggers. The characteristic cutaneous LP lesions are violaceous, polygonal flat-topped papules and plaques with acute itching. Predilection locations include the flexor surface of the wrists, the trunk, and the thighs. Lesions can form around trauma sites.

2. Material and methods

This prospective and observational study was done in the Department of Oral Pathology & Microbiology, S.B.Patil Dental College & Hospital, Bidar, Karnataka for a period of 1 year. 90 diagnosed patients of LP were included in this study.

A complete history was obtained, including duration, place of start, symptoms, medication history, and family history. A thorough general checkup, systemic examination, and dermatological examination were performed. The form and location of skin lesions, as well as the existence of any other related disorders, were all documented. Mucosa, hair, nails, palms, soles involvement were all noted as concomitantly affected. Baseline investigations were carried out followed by a cutaneous biopsy or an oral biopsy, depending on the clinical presentation of LP.

To assess the histological diagnosis, haematoxylin and eosin stained sections of biopsies were generated. Once the histopathology slide was complete, each slide was attentively examined, and the findings were thoroughly analyzed and appraised.

3. Results

Of 90 patients 55(61.11%) were male and 35(38.89%) were female and male to female ration were 1:1.57. Most of the patients belong to 30-40 years of age group (38.89%), followed by 20-30 years (26.67%), below 20 years (22.22%) and 12.22% above 40 years, see Table 1.

Table 1. Age and Gender distribution of patients

Gender	Number of patients	Percentage
Female	35	38.89
Male	55	61.11
Age		
Below 20	20	22.22
20-30	24	26.67
30-40	35	38.89
Above 40	11	12.22

The 45 individuals had LP for less than 5 months before presenting to our out-patient service. The length varied from 5 to 11 months in 22 cases. The duration was longer than 24 months in 15 individuals. The length varied from 11 to 17 months in 5 individuals and from 17 to 24 months in the remaining 3, see Table 2.

Table 2. Duration of the diseases

Duration of the diseases	Number	Percentage
Less than 5 months	45	50
5-11 months	22	24.44
11 17 months	5	5.56
17-24 months	3	3.33
More than 2 years	15	16.67

The classical type was encountered in 51 (56.67 percent) followed by the hypertrophic type in 23 (25.56 percent) patients, linear LP and lichen planopilaris (LPP) in 4 (4.44 percent) patients each, oral and annular 2(2.22 percent) patients each, and follicular, bullous LP, and LP pigmentosus in 1 (1.11 percent) patients each, see Table 3.

Table 3. Clinical types of LP

Clinical types of LP	Number of patients	
Classical	51	56.67
Hypertrophic	23	25.56
Linear	4	4.44
lichen planopilaris	4	4.44
Oral	2	2.22
Annular	2	2.22
Follicular	1	1.11
Bullous LP	1	1.11
LP pigmentosus	1	1.11

Of the 90 patients in our research, 40 showed oral signs of LP, and four of them were diagnosed with just oral LP devoid of cutaneous indications of LP. Buccal mucosa was usually implicated in the oral cavity in 30 (75%) patients, lips in 10 (25%) individuals, and tongue in 7 (17.5%) patients. In our study, only two clinical kinds of oral LP were identified: the reticulate type in 35 (87.5 percent) of the subjects and the erosive variation in the other 5 people (12.5 percent).

The wrist, sacral area, region around the malleoli, face, both extremities, trunk, scalp, palms soles & nails were all common locations engaged in our participants. The values for the same have been show in Table 4.

Table 4. Involvement of site

Site of involvement	Number	Percentage
Scalp	4	4.44
Palms and soles	12	13.33
Nail	15	16.67
Flexures	5	5.56
Trunk	32	35.56
Lower extremities	71	78.89
Classical	51	56.67
Face	8	8.89
Upper extremities	70	77.78

Longitudinal ridging 8(53.33 percent) was the most frequent nail finding seen, followed by pitting 4(26.67 percent), trachyonychia 2(13.33 percent), pterygium unguium 22(13.33 percent), subungual hyperkeratosis 2(13.33 percent), and longitudinal melanonychia 1(6.67 percent) (6.67 percent).

The microscopic examination of 90 individuals with cutaneous LP revealed the following results, which are reported in Table 5.

Table 5. Histological findings in of cutaneous LP

Parameter	Number	Percentage
Civatte bodies	44	48.89
Papillomatosis	5	5.56
Acanthosis	65	72.22
Saw toothing of rete ridges	52	57.78
Pigmentary incontinence	83	92.22
Basal cell degeneration	83	92.22
Subepidermal band like infiltrate	82	91.11
Hyperkeratosis	82	91.11
Spotty hypergranulosis	90	100

After carefully scrutinising the slides under microscope on the 40 patients with oral LP, the following data were obtained and are reported in Table 6.

Table 6. Histological findings in our patients of oral LP

Parameter	Number	Percentage
Basal cell degeneration	35	87.5
Subepithelial band like infiltrate	40	100
Acanthosis	34	85
Saw toothing of rete ridges	21	52.5
Dysplastic changes	21	52.5
Parakeratosis	40	100

4. Discussion

Many morphological varieties of lichen planus have been documented, which may lead to diagnostic confusion. Histopathology is essential for diagnostic confirmation. Clinical characteristics alone may not be accurate since they vary with illness duration and therapy.

According to Bhattacharya *et al.,* [2], the majority of patients (38.89 percent) are between the ages of 30 and 40, with the remainder falling between the ages of 20 and 30 (26.67 percent), below 20 (22.22 percent), and over 40 (12.22 percent).

Similarly, in investigations conducted by Kachhawa *et al.,* [8] and Ireddy and Udbalkar [9], 45.7 and 46.9 percent of individuals aged 20 to 39 years were impacted. In another study [10], 60 percent of the patients in Samman's series were between the ages of 21 and 50. This was nearly consistent with our findings, which showed that this group included 87.78 percent of the patients.

Indian studies by Kanwar *et al.,* [11] Sharma and Maheshwari [12], Handa and Sahoo [13], and Nanda *et al.,* [14]. The existence of an unexplained environmental component responsible for the same needs to be investigated further.

According to previous research, LP affecting the elderly is less common. Our survey found that 12.22 percent of our participants were above the age of 40. This was slightly lower than the results reported from Samman [10], where 12 percent of the patients were between the ages of 60 and 70. Although we discovered that children are also commonly affected with lichen planus in Indian populations than in Western populations, there was no statistically significant correlation between any age group and the occurrence of lichen planus in Indian populations, as disease was found to be present in all age groups in Indian populations.

Of the 90 patients, 55 (61.11%) were male and 35 (38.89%) were female, with a male to female ratio of 1.57. This conclusion was consistent with the findings of Singh and Kanwar [15], who also found a male to female ratio of 3:2. Similarly, Samman [10] found a greater male predominance in his study. Kanwar and De [16] and Handa and Sahoo [13] found a male preponderance of 61 and 52.9 percent, respectively, in two other Indian studies addressing the paediatric age group.

However, in two additional Indian investigations, one from Delhi [17] and the other from Hyderabad [9], a greater incidence of the condition among females was seen, with male to female ratios of 0.8:1 and 1:1.42, respectively. However, Bhattacharya *et al.,* [2] found that the condition was equally prevalent in males and

females in their sample. Though there have been discrepancies in most research regarding gender participation for LP, it has been observed that Asian males have a statistically significant higher frequency of getting LP than Caucasian counterparts [18].

Pruritus was reported as a significant complaint in 85.56 percent of our participants, which was consistent with the findings of Bhattacharya *et al.,* [2], who found a 79.3 percent prevalence of itching in their series of LP patients. Another research detailed by Ireddy and Udbalkar [9] found that 82.6 percent of patients presented with pruritus, a finding that closely matched ours. Furthermore, the findings of Kachhawa *et al.,* [8] and Abdallat and Maaita [19] in their studies on pruritus agreed with our values, making pruritus a distinguishing characteristic of LP.

Diabetes was shown to be a related finding in 8.89% of our patients. This was consistent with the findings of Vijaysingham *et al.,* [20] who found an 11 percent prevalence of diabetes, and Antonide and Rebora [21], who found diabetes in 8.8 percent of their patients. In our study, the prevalence of HTN was 5.56 percent, which is significantly lower than Eisen's figure of 21 percent. In our study, 22 people had vitiligo, accounting for 5.56 percent of the total. This number was slightly greater than Anstey and Marks [22] findings, who found a 1% more incidence in their dataset.

Recently, there has been a growing body of research linking LP to liver illness. Our series exhibited a 6.67 percent incidence of chronic liver disease, which was intermediate to that of Rebora and Rongioletti [23] who reported an 11.3 percent incidence, and Bhattacharya *et al.,* [2] who reported a 2.2 percent incidence.

In our study, 44.44 percent of patients had both oral and cutaneous LP. This was extremely consistent with the findings of Andreasen [24] and Sehgal and Rege [25].

In our study, 85 percent of the 40 patients with LP oral lesions exhibited reticulate morphology, whereas the remaining 15 percent had erosive pattern. Thorn *et al.,* [26] observed an increase in the prevalence of the reticulate variation of oral LP, followed by the erosive form, in a large case series of 611 individuals, which was similar to our findings. Eisen has underlined the higher prevalence of the reticulate type of oral LP [27].

In our study, the buccal mucosa was predominantly site affected in the oral cavity in 30 (75%) followed by the lip 10 (25%) and the tongue in 7 (17.5%) of the patients. Buccal mucosa was similarly the most commonly affected region in Andreasen [24] investigation. Their numbers revealing participation of the buccal mucosa, on the other hand, were a whopping 100 percent, which is an exceedingly high figure when compared to ours.

Lower limbs (78.89%) were the most commonly affected location by LP in our subjects, followed by upper extremities (77.78 percent). This was consistent with the findings of Ireddy and Udbalkar [9], who discovered that the lower extremities (66.3 percent) were the most affected, followed by the upper extremities (60.9 percent). Similarly, Kachhawa *et al.,* [8], Abdallat and Maaita [19], and Garg *et al.,* [28] have shown that the lower limbs are the most commonly involved region of LP. They portrayed an incidence of 61.9, 45.5, and 38 percent, which is significantly lower than our data. Nail involvement was observed in 16.67% of our cases.

When compared to the findings of Zaias [29], who found nail involvement in 10% of their series, our values were slightly higher. Similarly, Samman [10] found ungual involvement in 15% of his patients. The classical form of cutaneous LP was the most prevalent (56.67 percent), followed by hypertrophic LP (25.56 percent). According to Vijaysingham *et al.,* [20] and Bhattacharya *et al.,* [2], the classical form of LP is the most prevalent kind of LP found in their patients. Familial instances of LP are regarded to be uncommon. Only 1.11 percent of the individuals in our study were able to demonstrate it. Similarly, Altman and Perry [30] identified family history in just 4 of 307 instances, while Samman found it in 3 of 200 cases [10].

5. Conclusion

The shortage of alternatives, along with their unusual performances, makes appropriate diagnosis and organization in the therapeutic setting more challenging. Our findings indicate that the efficacy of therapy regimens is solely reliant on the kind of lichen and that histological examination remains the gold standard in diagnosis and aids in recognising its varieties. The current study sheds light on the clinicopathological behaviour of lichen planus patients according on their gender. Further research in this area will aid in the exploration of this uncharted territory, allowing for faster diagnosis and better treatment. LP was usually noticed in people in their forties and fifties. In our analysis, classical lesions were the most prevalent, followed by hypertrophic and linear types.

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