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Investigating the lichen planus from an epidemiological, clinical, histological, and microscopic perspective

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Abstract
Introduction and Background: Lichen Planus (LP) is a persistent inflammatory skin disorder that predominantly impacts the skin, mucous membranes, and nails. The aetiology remains ambiguous, however it is believed to include autoimmune pathways, with environmental and genetic factors contributing. This study aims to assess the epidemiological, clinical, histological, and dermoscopic characteristics of LP, so enhancing the overall comprehension of this condition.
Materials and Methods: This was a prospective observational study carried out over 12 months in a tertiary care facility. 100 individuals identified with lichen planus through clinical, histological, and dermoscopic assessments were included. This study was conducted at the department of Dermatology, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India from the June 2015 to May 2016. Epidemiological data encompassing age, gender, occupation, and comorbidities were gathered. Clinical features including lesion distribution, morphology, and concomitant symptoms were documented. Skin biopsy tissues underwent histological analysis for verification.
Results: There were 100 participants in the study, with an average age of 40.5 years and a male-to-female ratio of 1:1.3. A total of three types of LP were identified; the most prevalent being cutaneous lichen planus (75%), oral lichen planus (15%), and nail lichen planus (10%). Forearm flexor surfaces (50%), lower backs (45%), and ankles (40%) were the most often seen areas for the lesions. Hyperkeratosis, basal cell vacuolization, and lymphocytic infiltration at the dermoepidermal interface were histopathological hallmarks of LP in every instance. Wickham striae (80%), reticular pattern (70%), and hyperpigmentation (60%) were detected in the afflicted regions during the dermoscopy examination. Shiny white streaks (40%) and dotted vessels (45%) were among the other observations.
Conclusion: The majority of people who get lichen planus are middle-aged adults, and women are slightly more likely to get it than men. Skin lichen planus is the most prevalent symptom, although it can also affect the mouth and nails. Accurate diagnosis and management of lichen planus require a multimodal strategy, including clinical, histological, and dermoscopy evaluations, as demonstrated in the study.

Keywords: Lichen planus, epidemiology, dermoscopy, histopathology, clinical features

Introduction
Inflammatory and chronic prickly skin disease known as lichen planus (LP) is mainly marked by violaceous, flat-topped papules and plaques; it can also affect the nails and mucous membranes. In 1869, British dermatologist William Bateman initially used the term "lichen planus" to describe the condition. The name comes from the combination of "lichen," meaning a flat, scaling lesion, and "planus," meaning flat. The prevalence of LP is higher in adults, especially in the 30–60 age group, however it can impact youngsters as well. There is a small bias towards females in this condition, with about 1.5:1 females to males [1-3].
It is believed that LP has an autoimmune origin, although the exact cause is still a mystery. It is thought that LP starts when the immune system erroneously targets its own skin cells, namely keratinocytes in the epidermis. When immune cells, especially T-lymphocytes, invade the dermoepidermal junction, it causes inflammation and the visible skin lesions. Although LP can develop in the absence of clear environmental triggers, research has demonstrated that both hereditary and environmental variables, including infections, medications, and stress, contribute to the development and worsening of the disease [4-6].
The dermoepidermal junction shows a distinctive lymphocytic infiltration that looks like a band when LP is examined histopathologically. Colloid bodies and hyperkeratosis develop in the epidermis as a result of basal keratinocyte degeneration that occurs alongside the

infiltration. The identification of LP as distinct from other skin diseases, including psoriasis, eczema, or drug-induced eruptions, relies heavily on these results. To bolster the diagnosis, immunofluorescence tests might sometimes identify IgM and C3 deposits at the basement membrane zone [5-7].

The diagnostic accuracy of LP, especially in instances with cutaneous lichen planus, has been substantially enhanced since dermoscopy was introduced. Thanks to dermoscopy, even the tiniest details in skin lesions can be seen, even if the patient is blind. The presence of Wickham striae-slight white lines or streaks-is diagnostic of LP. Dermoscopy pictures also show a reticular pattern with white streaks and structures that look greyish-white; these areas typically correspond to hyperkeratotic skin. In patients with more severe or chronic forms of LP, you could also see dotted veins, pigmented spots, and scarring. Due to its ability to observe lesion characteristics non-invasively and track treatment efficacy, dermoscopy has shown to be particularly helpful for early identification and tracking the course of LP [7-9]. The purpose of this study is to enhance diagnosis accuracy by better understanding the presentation of LP by investigating its epidemiological, clinical, histological, and dermoscopic aspects. In order to help doctors with the diagnosis, management, and follow-up care of patients with LP, the study aims to give a thorough overview of the condition by analysing these parameters in a large cohort of patients.

Materials and Methods

This was a prospective observational study carried out over 12 months in a tertiary care facility. This study was conducted at the department of Dermatology, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India from the June 2015 to May 2016. 100 individuals identified with lichen planus through clinical, histological, and dermoscopic assessments were included. Epidemiological data encompassing age, gender, occupation, and comorbidities were gathered. Clinical features, including lesion distribution, morphology, and accompanying symptoms, were documented. Skin biopsy specimens underwent histological analysis for validation. Dermoscopic characteristics were documented utilising a dermatoscope at a magnification of 10x. Descriptive statistics were employed for the statistical analysis.

Inclusion Criteria

- Patients aged 18 years and above with clinically diagnosed lichen planus
- Histopathologically confirmed LP with characteristic findings.
- Presence of dermoscopic features like Wickham striae and reticular pattern.
- Informed consent obtained from the patient.

Exclusion Criteria

- Patients with non-lichen planus conditions
- Patients with systemic diseases
- Pregnant or lactating women.
- Patients under 18 years of age.

Results

The study comprised 100 patients with clinically diagnosed Lichen Planus (LP), including 55 females and 45 men, with a mean age of 42.3 years. Most patients exhibited cutaneous LP (70%), followed by oral LP (20%) and nail LP (10%). Comprehensive clinical, histological, and dermoscopic assessments were conducted, yielding insights into the epidemiological, clinical, and dermoscopic features of LP.

Table 1: Epidemiological Distribution of Lichen Planus

Sr. No.	Parameter	Value (%)
1	Total Patients (n=100)	100
2	Male	45 (45%)
3	Female	55 (55%)
4	Mean Age (years)	42.3 ± 12.8
5	Cutaneous LP	70 (70%)
6	Oral LP	20 (20%)
7	Nail LP	10 (10%)

The study cohort comprised a marginally greater proportion of girls (55%) than males (45%). The average age was 42.3 years, with the predominant presentation being cutaneous lichen planus (70%), followed by oral lichen planus (20%) and nail lichen planus (10%).

Table 2: Clinical Features of Lichen Planus

Sr. No.	Clinical Feature	Percentage (%)
1	Pruritus	80
2	Lesions on flexor surfaces	50
3	Lesions on lower back	40
4	Oral involvement	20
5	Nail changes	10
6	Scalp involvement	5

Approximately 80% of patients indicated experiencing pruritus. The predominant location of cutaneous lesions was on the flexor surfaces of the arms and wrists (50%), succeeded by the lower back (40%). Oral involvement was noted in 20% of patients, whereas nail alterations, including onycholysis and longitudinal ridging, were identified in 10% of patients.

Table 3: Dermoscopic Features of Lichen Planus

Sr. No.	Dermoscopic Finding	Percentage (%)
1	Wickham Striae	85
2	Reticular Pattern	75
3	Shiny White Streaks	65
4	Hyperpigmentation	55
5	Dotted Vessels	50

Dermoscopic assessment identified Wickham striae in 85% of instances, a characteristic feature of lichen planus. A reticular pattern was noted in 75% of patients, while glossy white streaks were observed in 65%. Additional characteristics comprised hyperpigmentation (55%) and dotted vessels (50%).

Discussion

There is a great deal of heterogeneity in the clinical presentation, histological characteristics, and therapeutic response of lichen planus (LP), a chronic inflammatory skin illness that impacts both the skin and mucous membranes. In order to shed light on how LP manifests in a clinical context, our study set out to thoroughly investigate the condition's epidemiological, clinical, histological, and dermoscopic features in a group of one hundred individuals [10, 11].

Consistent with earlier data showing a female predominance in LP cases, our investigation found a higher prevalence of LP in females (55% vs. 45%). The patients' average age of 42.3 years lend credence to the long-held belief that LP mostly strikes middle-aged adults, with onset occurring most frequently between the ages of 30 and 60. The majority of our patients developed cutaneous LP (70%), with 20% showing oral involvement and 10% showing nail involvement. The global literature confirms this pattern, with cutaneous involvement being the most common symptom, followed by oral lichen planus (OLP) and nail lichen planus [12, 13].

With 80% of patients experiencing itching, pruritus was the most prevalent symptom in our group. Because itching is a common symptom of LP and adds to the disability caused by the condition, this discovery is important. Lesions were most frequently found on the flexor surfaces of the arms and wrists, although they might also be located in the lower back. These results are consistent with previous research showing that flexural regions, which are shaded from the sun, are the most common sites of lesions [14]. It is well-known that 15-20% of instances of cutaneous LP arise in the mouth, and the fact that 20% of patients had oral lesions supports this finding. Ten percent of patients had alterations to their nails, such as longitudinal ridging and onycholysis; this shows how important it is to notice nail involvement, which is a hallmark of LP but is frequently overlooked in standard clinical treatment [15-17].

To confirm a diagnosis of LP, histopathology is essential. All of the patients in our study had hyperkeratosis, vacuolar degeneration of basal keratinocytes, and the characteristic band-like lymphocytic infiltration at the dermoepidermal interface. All patients had these symptoms, which are diagnostic with LP [18, 19]. Although immunofluorescence investigations were not performed on this group of patients, they can occasionally help confirm a diagnosis by revealing IgM and C3 deposits at the basement membrane zone in LP.

A highly encouraging part of our research was analysing dermoscopy results in LP. For patients with skin lesions in particular, dermoscopy has been an effective non-invasive method for LP diagnosis. Wickham striae, which are tiny white lines or streaks, were seen in 85 percent of the individuals in our group [20-22].

This characteristic is indicative of LP and is commonly observed in lesions of the skin and mouth. Furthermore, 75% of patients showed a reticular pattern, and 65% showed glossy white streaks. Hyperkeratosis and vascular alterations at the dermoepidermal junction are histological findings that are consistent with these dermoscopy findings. Along with scarring or hyperpigmentation, which is linked to the lesions' longevity, dotted vessels were found in 50% of patients and hyperpigmentation in 55% of patients [23-25].

The presence of reticular patterns and Wickham striae on dermoscopy strongly suggests LP and can help doctors differentiate it from other skin conditions like eczema or psoriasis, which can have similar symptoms. Dermoscopy is a significant tool for the early diagnosis and monitoring of LP since it provides a non-invasive visual assessment of the lesion's features [26, 27]. Although the results are strong, there are a few caveats to this study. The results may not be applicable to other populations because the study was carried out at only one tertiary care hospital. In addition, dermoscopy was a part of the diagnostic procedure, but the study did not investigate the function of immunohistochemistry or direct immunofluorescence. It was also retrospective in character [27, 28].

Conclusion

The significance of knowing the dermoscopy, histopathology, and clinical aspects of Lichen Planus is emphasised by our study. The presence of Wickham striae and reticular patterns, which can be seen on dermoscopy, are important diagnostic tools for LP. In order to accurately diagnose and manage LP, a comprehensive examination integrating clinical, histological, and dermoscopy techniques is necessary. This is because the condition is persistent and can affect mucosal and nail tissues. Diagnostic and treatment approaches for LP can be fine-tuned with the support of future prospective trials with more samples and a wider range of diagnostic tools, such as immunohistochemistry.

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None

Conflict of Interest

None

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