National Board of Examinations - Journal of Medical Sciences
Volume 3, Issue 9, Pages 1036–1045, September 2025
DOI 10.61770/NBEJMS.2025.v03.i09.003

ORIGINAL ARTICLE

Study of Clinical Variants of Lichen Planus and Its Association with Histopathological Findings in a Tertiary Care Centre

Shivangi Saith,[1,*] Kapil Arora,[1] Tarang Goyal[1] and Shweta Grover[2]

[1]*Department of Dermatology, Venereology & Leprology, Muzaffarnagar Medical College & Hospital, Muzaffarnagar, U. P., India*
[2]*Department of Pathology, Muzaffarnagar Medical College & Hospital, Muzaffarnagar, U.P., India*

Accepted: 9-July-2025 / Published Online: 9-September-2025

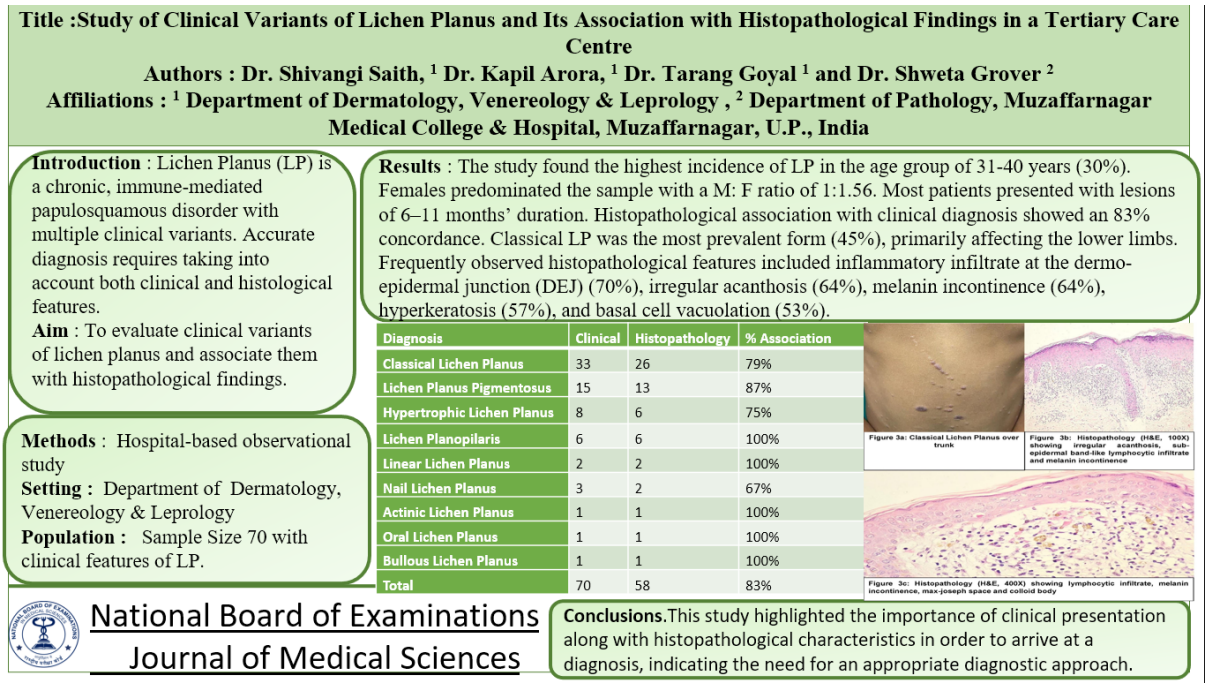
Abstract

Background: Lichen Planus (LP) is a chronic, immune-mediated papulosquamous disorder with multiple clinical variants. Accurate diagnosis requires taking into account both clinical and histological features and acquire an association between them. **Objective:** To evaluate clinical variants of lichen planus and associate them with histopathological findings. **Methods:** A hospital-based observational study was conducted over 18 months at a tertiary care centre. A total of 70 patients with clinically diagnosed lichen planus were included. Clinical examination and lesional biopsies were performed. Histopathological findings were recorded and compared with clinical diagnoses. **Results:** The study found the highest incidence of LP in the age group of 31-40 years (30%). Females predominated the sample with a male to female ratio of 1:1.56. Most patients presented with lesions of 6–11 months' duration. Histopathological association with clinical diagnosis showed an 83% concordance. Classical LP was the most prevalent form (45%), primarily affecting the lower limbs. Frequently observed histopathological features included inflammatory infiltrate at the dermo-epidermal junction (DEJ) (70%), irregular acanthosis (64%), melanin incontinence (64%), hyperkeratosis (57%), and basal cell vacuolation (53%). **Conclusion:** LP exhibits a varied age-related prevalence with a complex clinical spectrum. This study highlighted the importance of clinical presentation along with histopathological characteristics in order to arrive at a diagnosis, indicating the need for an appropriate diagnostic approach, so as to effectively understand the aspects of LP.

Keywords: Lichen Planus, Autoimmune Disorders, Clinical Variants, Histopathology

*Corresponding Author: Shivangi Saith
Email: saithshivangi@gmail.com

Graphical Abstract



Introduction

LP is a chronic immune-mediated papulosquamous disorder affecting skin, nails, hair, and mucous membranes. It involves a complex interaction between immune system anomalies, environmental stressors, and genetic predisposition [1]. Polygonal, pruritic, violaceous papules are clinical characteristics of classical LP [2]. Other clinical variants include hypertrophic, lichen planus pigmentosus, actinic, linear, follicular, bullous, and mucosal forms [3]. Histologically, Lichen planus is the prototype of lichenoid interface dermatitis, which is defined by a lymphocytic inflammatory infiltrate at the dermo-epidermal junction [4].

Despite well-defined features, LP often mimics other dermatoses, complicating its diagnosis. Histopathology provides diagnostic confirmation, however there are certain similar microscopic patterns that exist among various skin conditions. This study aims to establish a connection between clinical observations and pathological findings to overcome this challenge and achieve an accurate diagnosis. The majority of literature focuses on individual variants with minimal data on clinico-histopathological association across the full spectrum. This study aims to bridge that gap as well.

Materials and Methods

A Hospital-based observational study involving 70 patients with clinical features of LP was conducted in the Department of Dermatology, Venereology, and Leprology at a Tertiary Care Centre for a period of 18 months. Patients of all ages and sexes, presenting with clinical features of lichen planus, who consented to clinical evaluation and provided written informed consent for biopsy, were enrolled in the study. Pregnant or lactating women and those with a history of hypertrophic scarring or keloid formation were excluded.

Study procedure included a detailed history and clinical examination which was followed by a 3–4 mm punch biopsy from

lesional skin following consent from all participants. Samples were fixed in 10% formalin and stained with H&E. Findings were documented and correlated with clinical diagnoses.

Statistical Analysis

This study was a descriptive observational study. As it did not involve hypothesis testing, intervention, or comparative arms, no inferential statistical analysis was performed. The data were summarized using frequency and percentage distributions.

Results

The study comprised of 70 clinically diagnosed cases of LP. Of these, 43 patients (61%) were females and 27 (39%) were males, with a male-to-female ratio of 1:1.56. The most commonly affected age group was 31-40 years, accounting for 21 patients (30%), followed by 11-20 years (n=19, 27%) and 21-30 years (n=15, 21%) (Figure 1). In terms of disease duration, 29 patients (41%) had symptoms lasting for 6-11 months, while 28 patients (40%) presented within 6 months of onset.

Classical LP was the most prevalent variant, occurring in 45% (n=26) of patients, followed by lichen planus pigmentosus (LPP) (n=13, 22%), hypertrophic LP (n=6, 10%), and lichen planopilaris (LPPi) (n=6, 10%). Linear, nail, oral, bullous, and actinic LP were among the less common forms (Figure 2). In terms of site distribution, 70% (n=49) of patients had cutaneous lesions only, while 14% (n=10) had both cutaneous and mucosal involvement. The lower limbs were the most commonly affected anatomical site, accounting for 23% (n=15) of cases.

A clinico-pathological association was assessed for each clinical variant and it was found that among the 33 cases clinically diagnosed of classical lichen planus, 26 (79%) had consistent histopathological features. Of the 15 cases of lichen planus pigmentosus (LPP), 13 (87%) showed histological confirmation. Hypertrophic LP exhibited an association in 6 of 8 cases (75%), and lichen planopilaris (LPPi) demonstrated histological confirmation in all 6 cases (100%). Nail LP showed association in 2 of 3 cases (67%). Furthermore, all cases of linear LP, oral LP, bullous LP, and actinic LP were clinically and histopathologically consistent. Overall, 83% of the patients showed clinico-histopathological concordance (Table 1).

Histopathological examination revealed various epidermal and dermal changes. The most frequently observed epidermal findings were irregular acanthosis (n=45, 64%), followed by hyperkeratosis (n=40, 57%) and hypergranulosis (n=28, 40%). Dermal findings included a band-like inflammatory infiltrate at the DEJ in 49 cases (70%), melanin incontinence in 45 patients (64%), basal cell vacuolation in 37 (53%), and perivascular/peri-adnexal inflammatory infiltrates in 30 cases (42%). Colloid bodies were observed in 14 patients (20%) (Table 2).

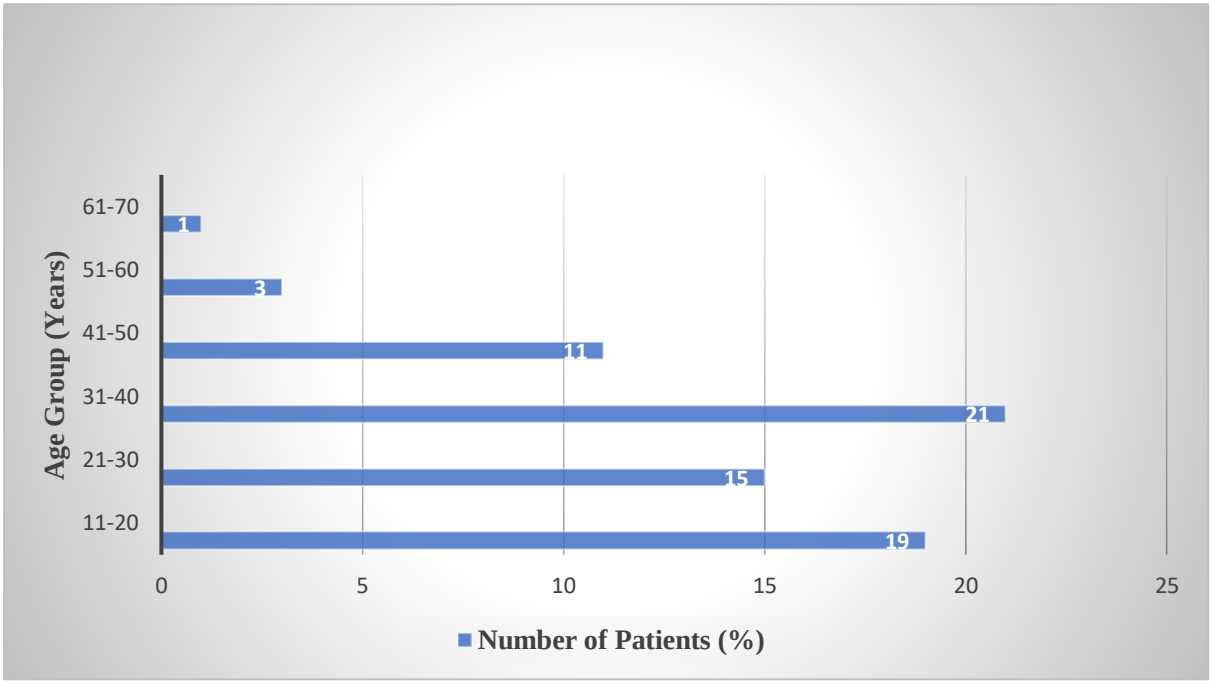


Figure 1. Age wise distribution of Lichen Planus patients

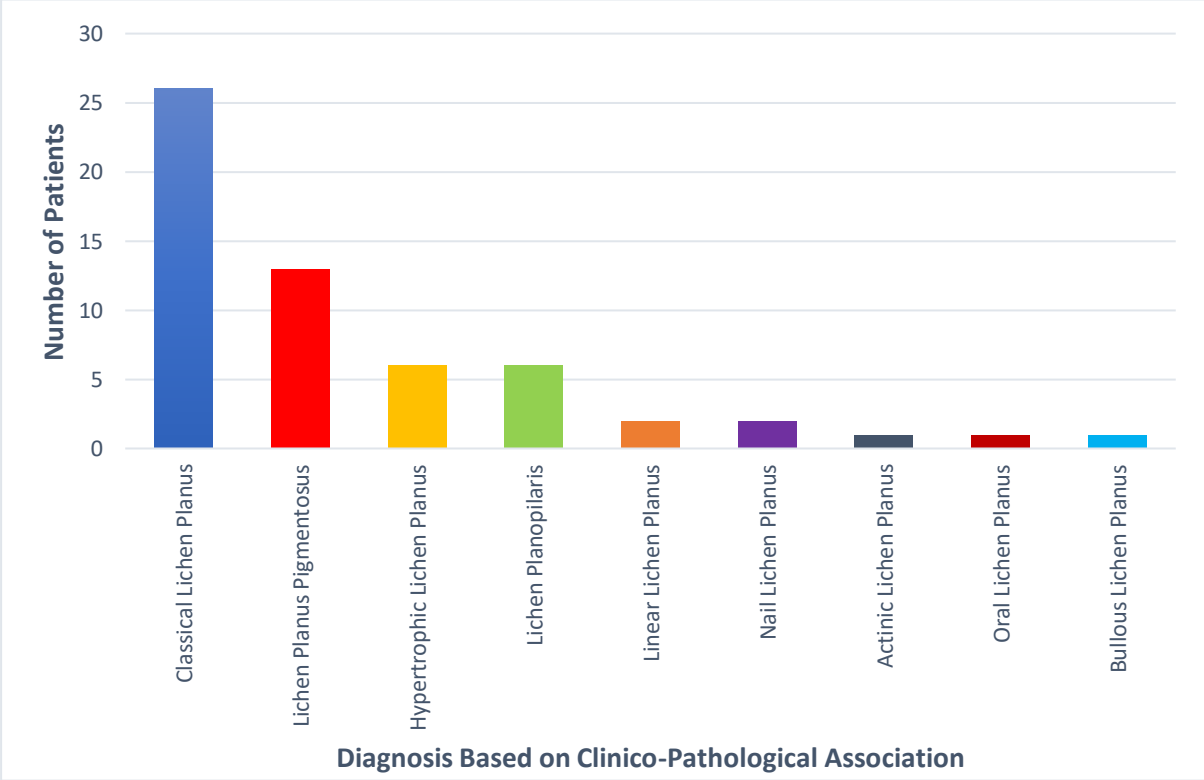


Figure 2. Based on Clinico-Pathological Association

Table 1. Association between Clinical and Histopathological Diagnosis of Lichen Planus

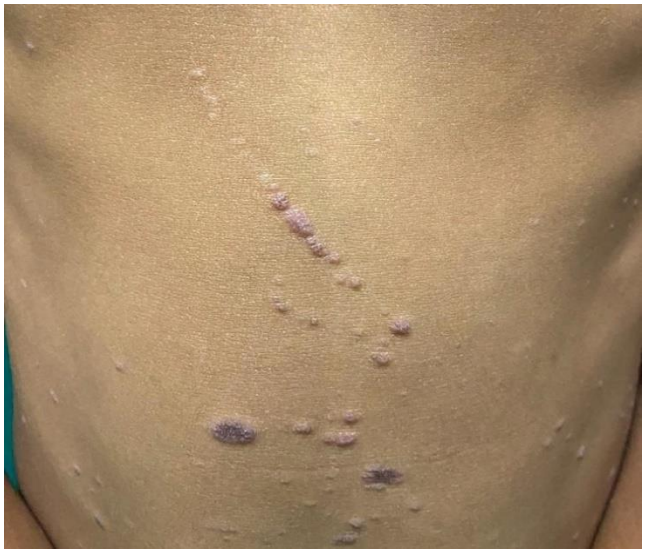
Diagnosis	**Clinical**	**Histopathology**	**% Association**
Classical Lichen Planus	33	26	79%
Lichen Planus Pigmentosus	15	13	87%
Hypertrophic Lichen Planus	8	6	75%
Lichen Planopilaris	6	6	100%
Linear Lichen Planus	2	2	100%
Nail Lichen Planus	3	2	67%
Actinic Lichen Planus	1	1	100%
Oral Lichen Planus	1	1	100%
Bullous Lichen Planus	1	1	100%
Total	**70**	**58**	**83%**

Table 2. Histopathological Findings in all LP patients

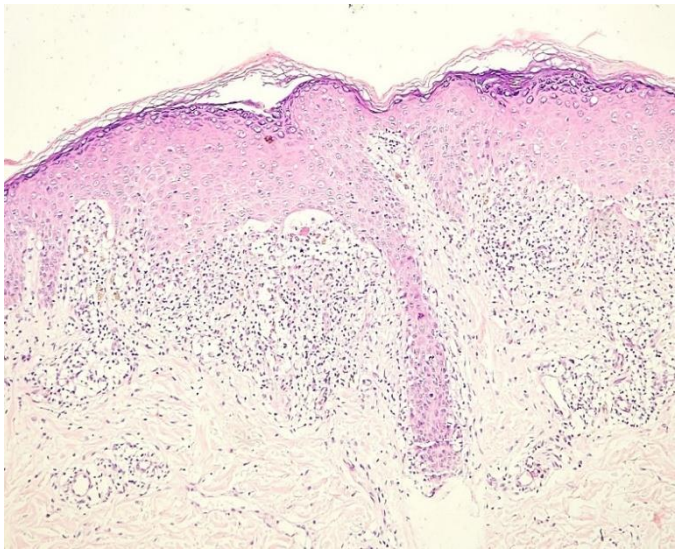
	Histopathological Findings	No. of Patients
Epidermal Findings	Hyperkeratosis	40
	Atrophy	4
	Parakeratosis	16
	Hypergranulosis	28
	Irregular Acanthosis	45
	Spongiosis	8
	Saw Tooth Rete Ridges	7
Dermal Findings	Basal cell Vacuolation	37
	Inflammatory Infiltrate at DEJ	49
	Colloid Bodies	14
	Melanin Incontinence	45
	Perivascular and Peri adnexal infiltrate	30
	Peri-follicular fibrosis	6

On variant-wise histopathological evaluation, classical LP predominantly exhibited irregular acanthosis, hyperkeratosis, and interface dermatitis with dense inflammatory infiltrate at the DEJ. LPP showed prominent melanin incontinence and basal cell vacuolation. LPPi was characterized by perifollicular fibrosis and peri-adnexal inflammatory infiltration. Hypertrophic LP commonly displayed hypergranulosis and irregular acanthosis as key histological features (Figures 3 and 4).

(A)



(B)



(C)

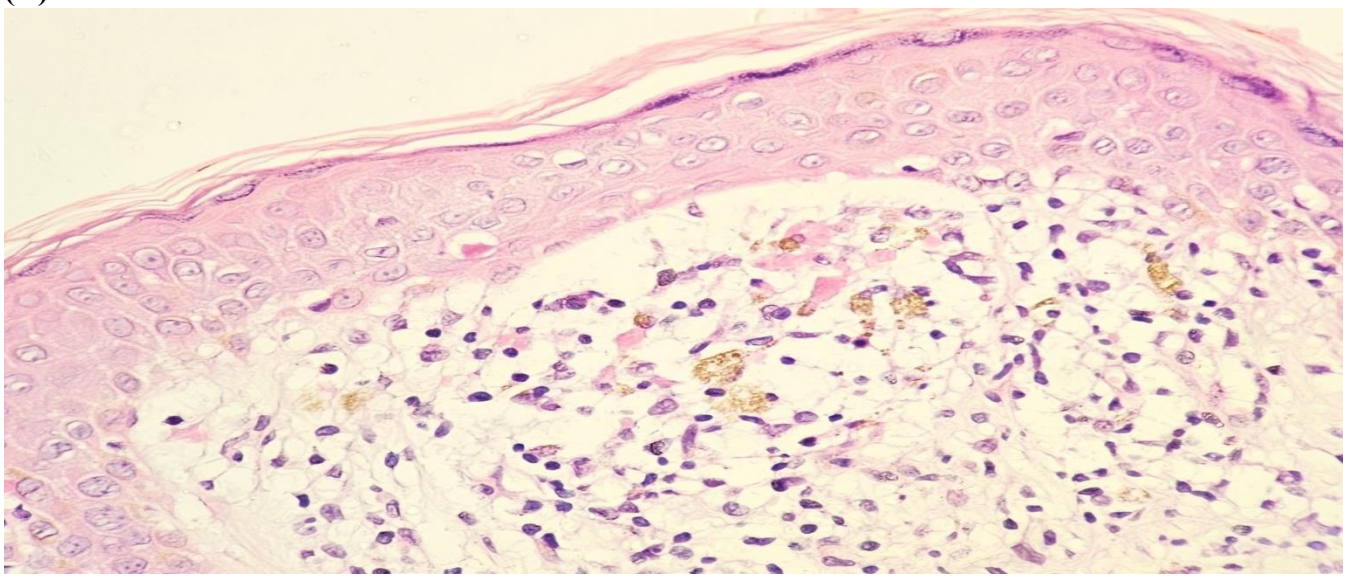
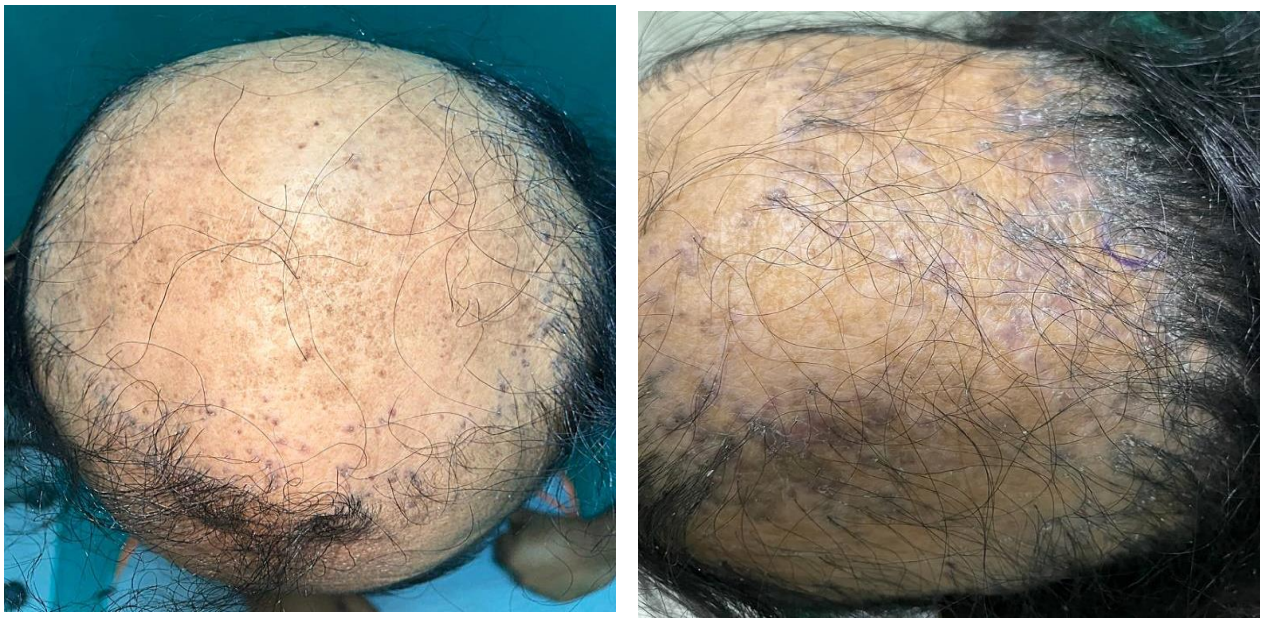


Figure 3: **A** Classical Lichen Planus over trunk; **B** Histopathology (H&E, 100X) showing irregular acanthosis, sub-epidermal band-like lymphocytic infiltrate and melanin incontinence; **C** Histopathology (H&E, 400X) showing lymphocytic infiltrate, melanin incontinence, max-joseph space and colloid body

(A)



(B)

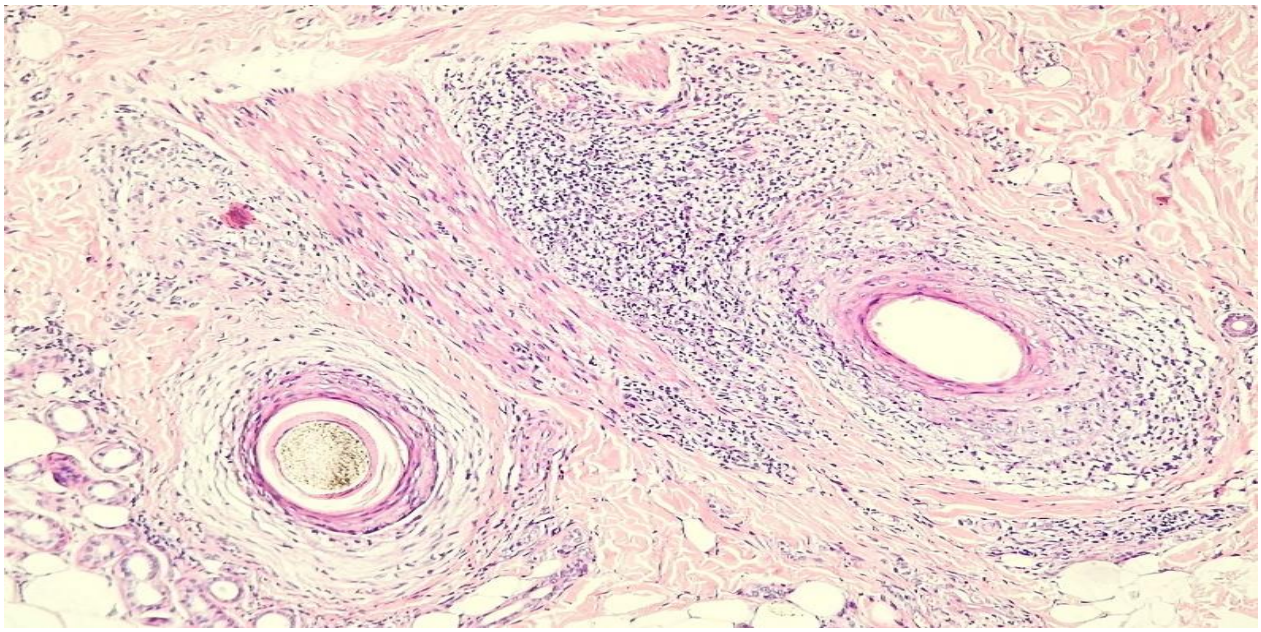


Figure 4. **A** Lichen Planopilaris over scalp; **B** Histopathology (H&E,100X) showing dense perifollicular lymphocytic inflammation and perifollicular concentric fibrosis

Discussion

This study provided a comprehensive evaluation of the clinico-histopathological association across multiple clinical variants of LP which sets it apart from most previous literature, where specific variants were evaluated and reported separately. Our findings not only highlighted LP distribution patterns in Indian population, but also emphasized on the diagnostic importance of combining clinical observations with histopathological

study to improve diagnostic accuracy and treatment outcome.

In this study, LP was found to be most prevalent among individuals aged 31–40 years, accounting for 30% of the total cases, followed by those aged 11–20 years (27%) and 21–30 years (21%). This suggests that LP is commonly seen in younger to middle-aged adults. These results are consistent with findings from studies by Wankhade et al. [5] where the commonly affected group was 30–39 years, and Parihar et al. [6] which also reported the 20–40 years age group as most commonly affected.

The gender distribution revealed a female predominance, with 61% of cases being female and 39% male, resulting in a male-to-female ratio of 1:1.56. This trend was similarly reported by Vani et al. [1] Parihar et al. [6] and Bhagwat et al. [7] showing higher prevalence among females. Disease duration data revealed that 81% of patients had lesions lasting less than one year, with 40% presenting with symptoms for less than 6 months and 41% reporting a duration between 6 and 11 months. Similar findings were reported by Wankhade et al. [5] and Bhattacharya et al. [8] showing that a significant proportion of patients had disease durations of less than one year.

Classical LP was the most common type, accounting for 45% of cases with histopathological confirmation in 79% of cases. Lichen Planus Pigmentosus (LPP) was the second most common variant (22%), with a greater histopathological association of 87%. Hypertrophic LP and Lichen Planopilaris (LPPi) accounted for 10% of patients, with 75% and 100% histological confirmation, respectively. Nail LP had a 67% concordance rate, and all cases of linear, oral, bullous, and actinic LP were confirmed histologically. Overall, clinico-histopathological concordance was found in 83% of cases, which was consistent with the findings of Agarwala et al. [9] and Srivani et al. [10] who reported concordance rates of 85% and 81.6%, respectively.

Cutaneous involvement alone was observed in 70% of patients, while 14% had both cutaneous and mucosal manifestations. These findings were comparable to those of Singh et al. [11] who reported cutaneous-only involvement in 69.6% of cases and combined cutaneous and mucosal presentations in 22.9%. Lower limbs were the most common site of involvement, affecting 23% of patients. This is most likely related to the Koebner phenomenon, which states that trauma-prone areas, such as the lower limbs, are more likely to acquire lesions. Kachhawa et al. [12] (62%) and Parihar et al. [6] (77.2%) reported similar findings.

Histopathological examination showed that among epidermal changes, irregular acanthosis was the most frequently observed feature (45 patients), followed by hyperkeratosis (40 patients), hypergranulosis (28 patients). Saw-toothed rete ridges and epidermal atrophy were less common. Among dermal changes, inflammatory infiltration at the DEJ was most common (49 patients), followed by melanin incontinence (45 patients), basal cell vacuolation (37 patients), perivascular and peri-adnexal infiltrates (30 patients) and colloid bodies (14 patients). Agarwala et al. [9] reported similar findings, noting hypergranulosis and band-like inflammatory infiltrate at the DEJ as key features.

Variant-wise analysis revealed distinct histopathological patterns. In Classical LP, inflammatory infiltrate at the DEJ was observed in all patients (100%),

followed by irregular acanthosis (88%) and hyperkeratosis (81%). These results are in line with those of Parihar et al. [6], who reported high frequencies of orthokeratosis, pigment incontinence, wedge-shaped hypergranulosis, and band-like infiltrate. In LPP, melanin incontinence was the hallmark feature (100%), followed by basal cell vacuolation (85%) and inflammatory infiltrate at the DEJ (62%), indicating an inflammatory process underlying the pigmentation. These findings correspond well with those of Parihar et al. [6] and Wankhade et al. [5]

Lichen Planopilaris (LPPi) demonstrated peri-follicular fibrosis in all patients (100%), with 83% showing perivascular and peri-adnexal infiltrates and 50% showing inflammatory infiltrate at the DEJ. Hypertrophic LP displayed a characteristic triad of inflammatory infiltrate at the DEJ, irregular acanthosis, and hypergranulosis in all patients (100%). Wankhade et al. [5] similarly reported hyperkeratosis, hypergranulosis, and lymphocytic infiltration in most cases.

Histopathological examination of Bullous Lichen Planus demonstrated subepidermal blister formation accompanied by a dense, band-like infiltrate of lymphocytes and histiocytes at the dermo-epidermal junction. These findings align with those reported by Tripathy et al. [13], who also observed subepidermal clefting and interface dermatitis as characteristic features of Bullous LP.

While histopathology serves as a key diagnostic tool, many dermatoses within the spectrum of interface reactions share basal cell damage as a fundamental feature. Distinction relies on thorough analysis of key histological features of each entity along with recognition of pattern of inflammation. Additionally, since clinical features of Lichen Planus may be influenced by prior topical or systemic treatments, it is important to take a detailed treatment history and select the most recent, non-ulcerated lesion for biopsy. Hence, histopathological findings must be interpreted in conjunction with comprehensive clinical evaluation to ensure diagnostic accuracy and guide appropriate management

Limitations

These include a relatively small sample size and a single-centred design, affecting its generalizability. This study may have selection bias due to its dependence on voluntary participation and biopsy consent, possibly excluding less willing candidates.

Conclusion

Lichen Planus presents with diverse morphological patterns. Among the clinical variants, Classical LP was the most prevalent, followed by Lichen Planus Pigmentosus, Hypertrophic LP, and Lichen Planopilaris. Histopathological examination demonstrated an overall clinico-pathological concordance of 83%, highlighting the role of biopsy in diagnostic confirmation.

While histopathology is essential for diagnosing Lichen Planus and distinguishing it from other lichenoid dermatoses through subtle yet definitive microscopic differences, accurate interpretation requires integration with detailed clinical evaluation. A thorough treatment history and biopsy from a recent, untreated lesion are essential to ensure appropriate patient management. This study adds to existing literature by offering a consolidated analysis of individual LP

variants withing a single study. By highlighting the association between clinical and pathological findings, we emphasize the need for a comprehensive approach to diagnosis and treatment.

Conflict of Interest

The authors declare no conflicts of interest.

Ethical Approval

The study was approved by the Institutional Ethics Committee.

Funding

No funding was received for conducting this study.

References

1. Vani, T., Kumar, T. S. P., & Suma, M. (2024). Lichen planus and its clinical variants: a retrospective study in a tertiary care centre. International Journal of Community Medicine and Public Health, 11(2), 936–941.
2. Boyd AS, Neldner KH. Lichen planus. J Am Acad Dermatol. 1991 Oct;25(4):593-619.
3. Daoud MS, Pittellkow MR. Lichen planus. In: FreedbergIM, Eisen AZ, Wolff K, eds. Fitzpatrick's Dermatology in General Medicine. 8th ed. New York: McGraw-Hill; 2011.
4. Maisnam, DR & Kumar, BJ. (2018). Lichen Planus – A clinical and histopathological correlation. Tropical Journal of Pathology and Microbiology. 4. 408-414.
5. Wankhade, Suvidhi; Dosi, Shilpi; Bansal, Shruti; Varma, Amit. Clinical and histopathological study of cutaneous lichen planus in a tertiary care center of central India. MGM Journal of Medical Sciences 10(4):p 630-637, October-December 2023.
6. Parihar, A., Sharma, S., Bhattacharya, S. N., & Singh, U. R. (2015). A clinicopathological study of cutaneous lichen planus. Journal of Dermatology & Dermatologic Surgery, 19(1), 21–26.
7. Bhagwat A, et al. Clinico-pathological study on lichen planus in a tertiary care hospital in North Karnataka. Indian J Dermatol. 2018;63(4):59.
8. Bhattacharya M, Kaur I, Kumar B. Lichen planus: a clinical and epidemiological study. J Dermatol. 2000;27(9):576-582.
9. Agarwala, M. K., Agarwala, P., &Chandrakar, K. (2019). Lichen Planus - A Clinicopathological Correlation from a Tertiary Care Institute in Chhattisagrh. International Journal of Innovative Research in Medical Science, 4(08), 497 to 503.
10. N. Srivani, B.V.N. Sravani, Shyamala Srujana, O. Shravan Kumar. A study of clinical and histopathological correlation of lichen planus. IAIM, 2017; 4(9): 136-144.
11. Singh OP, Kanwar AJ. Lichen planus in India: an appraisal of 441 cases. Int J Dermatol. 1976;15:752-756.
12. Kachhawa D, Kachhawa V, Kalla G, Gupta LP. A clinico-aetiological profile of 375 cases of lichen planus. Indian J Dermatol Venereo Leprol. 1995;61(5):276-279.
13. Tripathy, Durga M.; Vashisht, Deepak; Rathore, Gyanesh; Sengupta, Prashant1. Bullous Lichen Planus vs Lichen Planus Pemphigoides: A Diagnostic Dilemma. Indian Dermatology Online Journal 13(2):p 282-284, Mar–Apr 2022.