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Original Article

Pathology Section

Clinico-histopathological Association in Lichenoid Dermatitis Patients: A Cross-sectional Study

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ABSTRACT

Introduction: Lichenoid dermatitis is a frequently encountered histological pattern in dermatological lesions. It includes various diagnostic entities characterised by basal cell damage or lichenoid infiltrates. However, they have some histological features that point to a definite diagnosis. Accurate diagnosis is essential for proper treatment and in determining prognosis. The present study evaluates the clinicopathological association in patients with lichenoid dermatitis and also contributes to better understanding of interface dermatitis.

Aim: To study the histopathological spectrum of the conditions with lichenoid tissue reaction pattern and to find clinicopathological association.

Materials and Methods: The current cross-sectional study was conducted on patients clinically diagnosed with lichenoid dermatitis attending the Dermatology Outpatient Department (OPD) in a tertiary care centre at Ernakulam, Kerala, India from January 2023 to January 2026. Representative punch biopsies were processed and evaluated histopathologically using Haematoxylin and Eosin (H&E) staining. Clinical and histopathological findings were compared to assess clinicopathological association. Clinico-histopathological association was assessed using percentage concordance and statistical analysis using chi-square test where applicable.

Results: Most patients were aged 61-70 years (12,24%), with a female predominance (27,54%). Clinico-histopathological concordance was noted in 92% (46) of cases. Lichen planus was the most common subtype (29, 58%), with basal cell degeneration (49, 98%) and band-like lymphocytic infiltrate (48, 96%) as predominant features. Pigment incontinence (39,78%) was frequent, particularly in lichen planus pigmentosus and older lesions. Parakeratosis was observed with both cases of pityriasis lichenoides, and increased basal pigmentation in the single case of pityriasis rotunda. These histopathological features may serve as a useful diagnostic clue. However, due to the small sample size of these cases, no statistical inference could be made.

Conclusion: A high clinicopathological concordance underscores the diagnostic value of histopathology in lichenoid dermatoses. Biopsy confirmation remains essential in clinically ambiguous cases, and long-standing lesions warrant monitoring for potential malignant transformation.

Keywords: Histopathology, Lichen planus, Lymphocytic infiltrate

INTRODUCTION

Lichenoid dermatitis is one of the frequently encountered histological pattern in dermatological lesions. They are characterised by inflammation centred on dermo-epidermal junction with characteristic changes such as band like lymphocytic infiltrate in the superficial dermis and basal vacuolar degeneration [1]. Other features include presence of civatte bodies which are necrotic keratinocytes coated with immunoglobulins, pigment incontinence which is the presence of pigment laden macrophages in the superficial dermis [2]. Lichenoid pattern of inflammation includes a wide spectrum of dermatological conditions such as Lichen planus, Lichenoid keratoses, Lichenoid drug eruption, Lichen nitidus, Lichen striatus, Lichenoid purpura, Pityriasis lichenoides, Lupus erythematosus, Erythema multiforme and fixed drug eruption.

Lichen planus is the prototype of lichenoid dermatitis characterised by compact orthokeratosis, wedge shaped hypergranulosis, saw toothing of rete ridges in addition to the common findings such as basal vacuolar degeneration and lichenoid infiltrate. The approach in general to various lichenoid dermatitis includes assessing the pattern of inflammation, inflammatory cell type and epidermal changes [3]. Despite their shared histopathologic features, these entities can present with varied clinical appearances making the diagnosis difficult.

Even though clinical evaluation is relevant, histopathological examination remains the gold standard of diagnosis in cases of interphase dermatitis. However, there is a discrepancy in certain cases between the clinical diagnosis and histological findings. Even though they share some common features, some histological findings may point to a definitive diagnosis [4]. For example, lichen striatus has characteristic lymphohistiocytic infiltrate with perieccrine distribution. Lichenoid drug eruptions are characterised by deep perivascular infiltrate and presence of eosinophils in the infiltrates [5]. Discoid lupus is characterised by interface dermatitis, superficial and deep perivascular and peri appendageal lymphocytic infiltrate and mucin in the reticular dermis [6]. Pityriasis lichenoides is associated with parakeratosis, neutrophilic crust and lichenoid reaction. Mast cells can be increased in oral lichen planus [7,8]. Entities such as blaschkitis and lichen striatus clinically resemble to some extent but histologically differ from each other. A definite diagnosis is required for proper treatment and prognosis. Some lesions can be associated with malignancies or have potential for malignant transformation [9].

Squamous cell carcinoma can rarely develop in long standing cases of hypertrophic lichen planus [9]. Lichen planus pigmentosus has been reported to be associated with head and neck malignancy and with concurrent acrokeratosis paraneoplastica [10]. Lichenoid dermatitis can also develop as a result of various drugs. Identifying and discontinuing the use of the causative drug maybe sufficient enough for treatment of such lichenoid drug eruptions [11]. The prognosis is different in each case of lichenoid dermatitis. Therefore, definite diagnosis is required for proper management.

The present study aims to evaluate the clinicopathological association in patients with Lichenoid dermatitis over a defined retrospective

period by analysing clinical records alongside histopathological slides. The study enhances the understanding of this complex group of dermatoses. The current study aimed to evaluate the clinicopathological association in patients with Lichenoid dermatitis, with objective:

- To analyse the clinical spectrum of lichenoid dermatoses with respect to age, sex, and presenting features.
- To evaluate the histopathological patterns observed in lichenoid dermatitis using routine H&E staining.
- To determine the frequency of various histopathological features such as basal cell degeneration, band-like lymphocytic infiltrate, pigment incontinence, and others.
- To assess the association between specific histopathological features and individual diagnostic entities.
- To evaluate the degree of clinicopathological concordance between clinical diagnosis and histopathological findings.
- To identify cases with discordance and analyse possible reasons for variation between clinical and histopathological diagnosis.
- To highlight the role of histopathology in confirming diagnosis in clinically ambiguous or overlapping cases of lichenoid dermatitis.

MATERIALS AND METHODS

The present cross-sectional study of patients with a clinical diagnosis of one of the lichenoid dermatitis reporting to the Dermatology OPD of Sree Narayana Institute of Medical Sciences, a tertiary care centre at Ernakulam, Kerala, India, from January 2023 to January 2026,was done. The study was conducted after obtaining approval from the Institutional Ethics Committee of Sree Narayana Institute of Medical Sciences (Approval No: APPL/IEC/132/104 dated 31.12.2025). The institution is registered under CDSCO (ECR/661/Inst/KL/2014/RR-21).

Inclusion and Exclusion criteria: All skin biopsy cases diagnosed clinically and or histologically as any of the lichenoid lesions during the time period of the study were included under the study hence no formal sample size calculation was performed. Cases with insufficient biopsy and clinical details, autolysed and inadequate specimens were excluded from the study.

Study Procedure

The representative skin punch biopsy samples were fixed in 10% formalin and were sent to the histopathology laboratory. The gross morphology was recorded. Blocks were prepared. The tissue bits were processed in automatic tissue processor and paraffin blocks were prepared. A 4-5 µm thick sections were cut on a Leica microtome. Routine H&E staining was done on all biopsies. Slides were evaluated by primary investigator a pathologist, and were categorised into different types of lichenoid dermatitis based on intensity of inflammation, cell type in the infiltrate and epidermal changes [5]. Data was also collected retrospectively from clinical records and histopathology reports. Clinical diagnosis and histopathological features were compared and associations were made. In case slides are faded, fresh slides were prepared from the blocks stored. Each case was anonymised and coded. Data cleaning and cross-verification was done to ensure accuracy.

STATISTICAL ANALYSIS

The collected data were entered into Microsoft Excel and analysed using appropriate statistical software. Descriptive statistics were used to summarise the data, with categorical variables such as age group, sex, clinical diagnosis, and histopathological features expressed as frequencies and percentages. The association between clinical diagnoses and histopathological findings was evaluated using inferential statistical methods. The Chi-square (χ^2) test was applied to assess associations between categorical variables when the expected cell counts were adequate. In cases where the expected frequency in any cell was less than 5, Fisher's exact test was used as an alternative. The degree of agreement between clinical and histopathological diagnoses was assessed using Cohen's kappa (κ) statistic to determine clinicopathological concordance beyond chance. A p-value of <0.05 was considered statistically significant for all analyses.

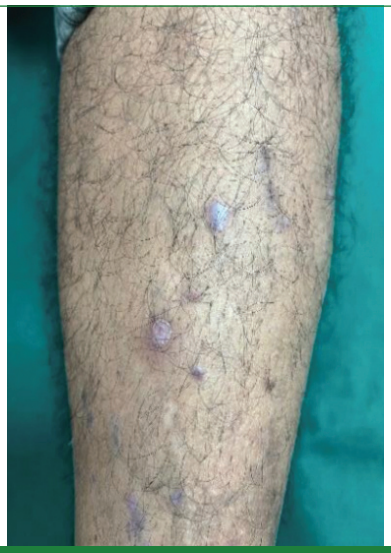
RESULTS

A total of 50 cases were studied. Out of 50 cases, 27 were females (54%). The age distribution showed the majority of patients in the 61-70 years group 12 cases (24%), followed by 41-50 years 9 cases (18%) and 51-60 years 6 cases (12%). The youngest age group (1-10 years) accounted for 4 cases (8%) and the oldest (81-90 years) for 1 case (2%) [Table/Fig-1]. In the present study, lichenoid disorders are more frequent in middle-aged to elderly adults.

Age group (years)	n (%)
1-10	4 (8)
11-20	3 (6)
21-30	5 (10)
31-40	5 (10)
41-50	9 (18)
51-60	6 (12)
61-70	12 (24)
71-80	5 (10)
81-90	1 (2)

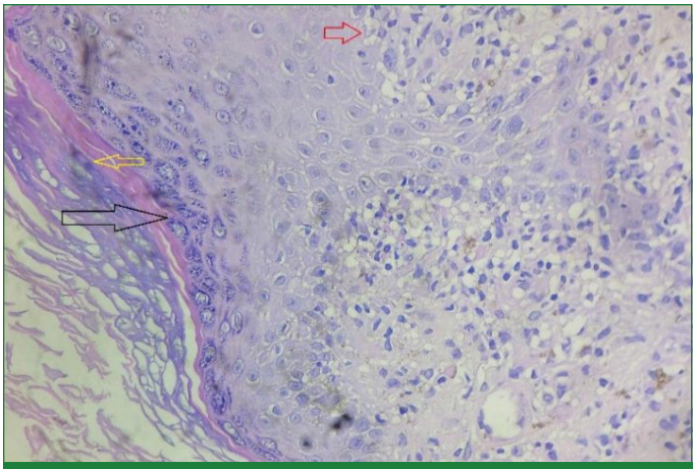
[Table/Fig-1]: Age group distribution among study participants.

The most common clinical diagnosis was Lichen planus 29 cases (58%) [Table/Fig-2,3]. followed by Lichenoid dermatitis 6 cases (12%). Other diagnoses included Lichen planus pigmentosus -3 (6%) [Table/Fig-4], Lichen nitidus -2 (4%), Lichen sclerosus -2 (4%), Pityriasis lichenoides -2 (4%) [Table/Fig-5], Lichen striatus -1 (2%), Lichen planopilaris -1 (2%), Pityriasis rotunda -1 (2%) [Table/Fig-6,7], Erythema multiforme -1 (2%), and Lichenoid drug eruption -1 (2%). One case showed full-thickness dysplasia, indicating lichenoid reaction overlapping with premalignant change [Table/Fig-8,9].

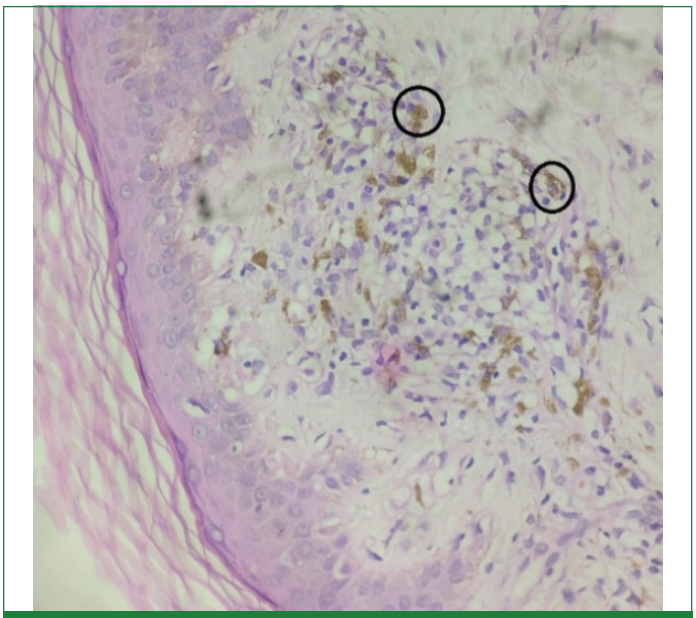


[Table/Fig-2]: Clinical picture showing violaceous papules of lichen planus.

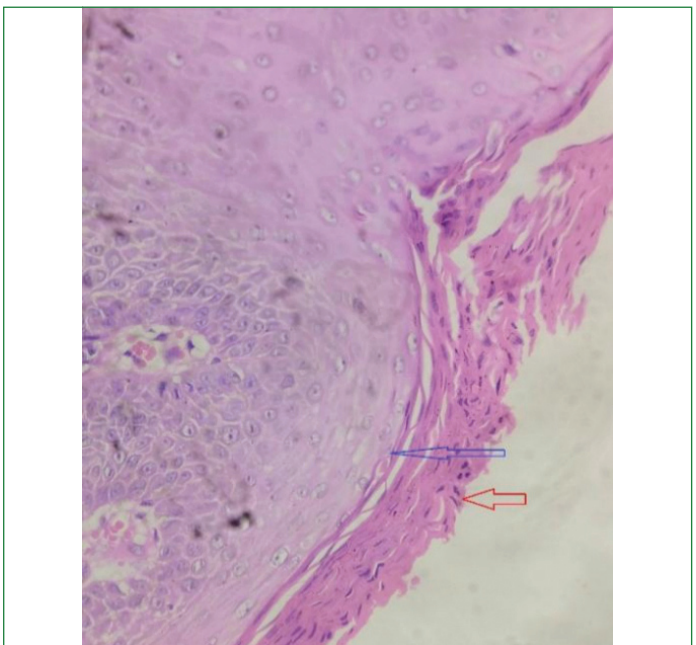
The most frequent epidermal changes were basal degeneration (98%), hyperkeratosis (80%) and hypergranulosis (68%). Parakeratosis was seen in 14% and acanthosis in 42%. Civatte bodies were present in 40% of cases and exocytosis in 10%. In the dermis, a band-like lymphocytic infiltrate was observed in 96% of cases and pigment incontinence in 78% [Table/Fig-10]. There were two diagnosed cases of pityriasis lichenoides. In addition to lichenoid infiltrate and



[Table/Fig-3]: Histopathology of lichen planus Black arrow shows wedge shaped hypergranulosis. Yellow arrow shows hyperkeratosis. Red arrow shows basal vacuolar degeneration (H&E 40x).



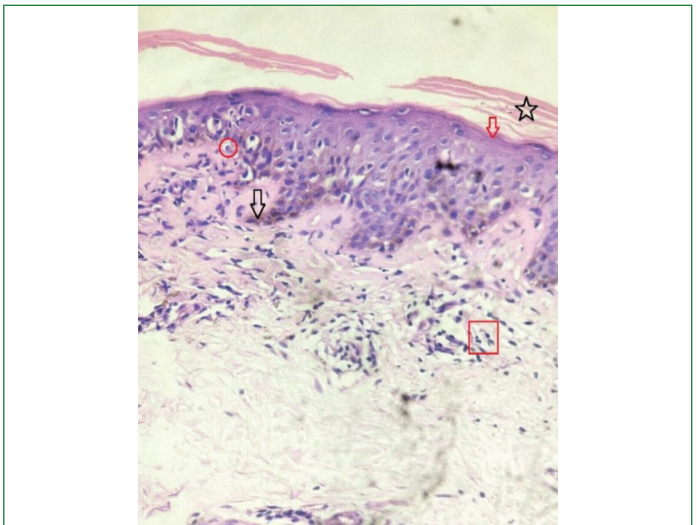
[Table/Fig-4]: Histopathology of lichen planus pigmentosus Dark circles showing melanophages in the dermis (H&E 40x).



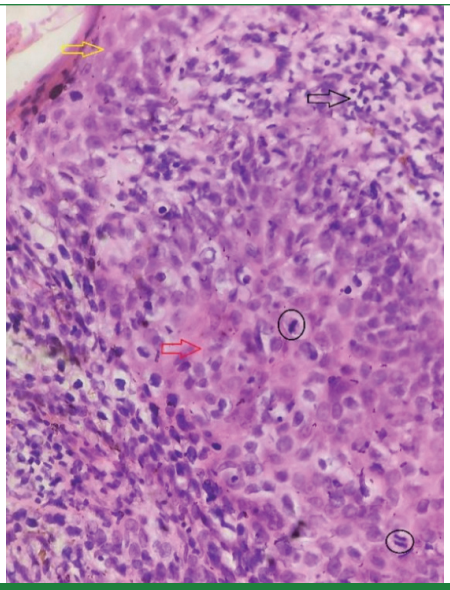
[Table/Fig-5]: Histopathology of pityriasis lichenoides: Red arrow shows parakeratosis. Blue arrow shows diminished granular layer (H&E 40X).

basal vacuolar alteration characteristic of interface dermatitis, these cases showed parakeratosis with neutrophilic crest in the stratum corneum and diminished granular layer. Pityriasis rotunda showed additional findings such as mild spongiosis, diminished granular layer and increased basal pigmentation in addition to characteristic interface changes. Lichen striatus showed lymphohistiocytic infiltrate and peri eccrine infiltrate. Additional finding in lichen nitidus was histocytes in the infiltrate along with clawing of rete ridges. Presence of eosinophils in the infiltrates in erythema multiforme and lichenoid drug eruption points towards a possible drug aetiology. Overall clinico-histopathological concordance was 92% (46 out 50 cases). Discordance was seen in four cases (8%). In one case, the clinical diagnosis was lichen simplex chronicus, but turned out to be lichenoid dermatitis on histopathology. Another case clinically labelled as acquired perforating dermatosis was also re-diagnosed as lichenoid dermatitis based on histopathological changes. Similarly, after histopathological examination, a case of clinically diagnosed lichen planus was found to be lichen sclerosus, and a case of seborrhoeic keratosis was re-diagnosed as pityriasis lichenoides [Table/Fig-11]. To assess the level of agreement between clinical and histopathological diagnoses, Cohen's kappa (κ) statistic was applied. In the present study, an overall concordance of 92% was observed, and the calculated kappa value of approximately 0.84 indicated almost perfect agreement beyond chance, thereby demonstrating a high degree of reliability of clinical diagnosis when correlated with histopathology.

[Table/Fig-6]: Clinical picture of pityriasis rotunda showing a well-defined annular plaque with dry polygonal scales on the posterior aspect of left lower leg.



[Table/Fig-7]: Histopathology of pityriasis rotunda showing hyperkeratosis (black star), diminished granular layer (red arrow), basal cell vacuolar degeneration (red circle), increased basal cell pigmentation (black arrow) & perivascular lymphocytic infiltrate (red square) (H&E 10x).



[Table/Fig-8]: Histopathology of lichenoid reaction with full thickness dysplasia: Yellow arrow corresponds to normal epithelium. Red arrow shows dysplastic epithelium with black circles enclosing mitotic figures. Black arrow shows lichenoid infiltrates (H&E 40x).

Diagnosis	n (%)
Lichen planus	29 (58%)
Lichenoid dermatitis	6 (12%)
Lichen planus pigmentosus	3 (6%)
Lichen nitidus	2 (4%)
Lichen sclerosus	2 (4%)
Pityriasis lichenoides	2 (4%)
Lichen striatus	1 (2%)
Lichen planopilaris	1 (2%)
Pityriasis rotunda	1 (2%)
Lichenoid reaction with full thickness dysplasia	1 (2%)
Erythema multiforme	1 (2%)
Lichenoid drug eruption	1 (2%)

[Table/Fig-9]: Histopathological diagnosis of study samples.

Histological features	n (%)
Epidermal changes	
Hyperkeratosis	40 (80%)
Parakeratosis	7 (14%)
Hypergranulosis	34 (68%)
Acanthosis	21 (42%)
Basal degeneration	49 (98%)
Civatte bodies	20 (40%)
Exocytosis	5 (10%)
Dermal changes	
Band-like lymphocytic infiltrate	48 (96%)
Pigment incontinence	39 (78%)

[Table/Fig-10]: Various histological changes noted.

S. no.	Clinical diagnosis	Histopathological diagnosis
1.	Lichen simplex chronicus	Lichenoid dermatitis
2.	Acquired perforating dermatosis	Lichenoid dermatitis
3.	Lichen planus	Lichen sclerosus
4.	Seborrhoeic keratosis	Pityriasis lichenoides

[Table/Fig-11]: Clinico-histopathological discordance in lichenoid dermatitis.

Inferential statistical tests were planned to assess the association between specific histopathological features and individual diagnostic entities. The Chi-square (χ^2) test was used for categorical variables with adequate sample size, while Fisher's-exact test was applied when expected frequencies were less than 5. However, for less common conditions such as pityriasis lichenoides and pityriasis rotunda, the sample size was insufficient to derive statistically meaningful inferences. Therefore, observations related to these entities have been presented descriptively as observed trends without statistical inference. In particular, the presence of parakeratosis was noted with both cases of pityriasis lichenoides, while increased basal pigmentation was noted in the single case of pityriasis rotunda.

A p-value of <0.05 was considered statistically significant for all analyses, supporting the validity of the observed clinicopathological associations in the present study.

DISCUSSION

Lichenoid dermatitis is characterised by distinctive features like band-like lymphocytic infiltrate and basal cell vacuolar degeneration and encompasses a broad umbrella spectrum of conditions like Lichen planus, Lichenoid keratoses, Lichenoid drug eruption and others [2]. They have some common diagnostic histopathologic features, but varied aetiologies and clinical appearances. Histopathological examination is the gold standard for diagnosis, but discrepancies can occur between clinical and histological findings. Diagnostic approach is based on pattern of inflammation, inflammatory cell type, and epidermal changes. Specific histological features can point to definitive diagnoses (e.g., Lichen striatus, Lichenoid drug eruptions, Discoid lupus).

In the study, the age distribution showed the majority of patients in the 61-70 years group (12 cases, 24%), followed by 41-50 years (9 cases, 18%) and 51-60 years (6 cases, 12%). The youngest age group (1-10 years) accounted for 8% (4 cases) and the oldest (81-90 years) for 2% (1 case). Majority of previous studies showed maximum number of cases around 30-40 years contrary to the present study which has maximum distribution of cases in the age group 60-70 years. Out of 50 cases 27 were females. A female preponderance of cases in the current study as in many other studies including as that of Maheshwari GR et al., [12] (59%), Kumar UM et al., [10] (54%) goes in favour of the autoimmune hypothesis [4]. The most commonly encountered condition in the present study on 50 cases of interface dermatitis was lichen planus (29 cases, 58%). This was similar to that of studies by Muralidhar A et al., [2] (58/150 classic LP, 38.7%), Kumar UM et al., [10] (42/90 histologically diagnosed cases, 46.7%) and Selvam K et al., (27/45, 60%) [4]. Some studies have reported substantially higher LP proportions. This was noted in a study by Dixit D et al., which reported Lichen planus in 91% of confirmed lichenoid cases [3].

A case of Lichenoid reaction with full-thickness dysplasia was noted in the current study. Sehgal VN et al., also described three illustrative cases of occult squamous cell carcinoma in situ masked by areas of lichenoid dermatitis [5]. When a lichenoid reaction is observed adjacent to a dysplastic epithelium or tumour, interpretation can be difficult. This can be due to a tumour-induced immune response resulting in lichenoid reaction or already existing lichenoid disorder that has undergone malignant transformation. Clinicopathological association is required in these cases with proper history. These cases underscore the importance of always considering a malignancy obscured by prominent lichenoid reaction and identifying correct aetiology.

Basal degeneration is the most consistently observed epidermal change (98%) in the present study, closely aligning with study by Kumar UM et al., [10] and Muralidhar A et al., [2] showing 96.67% and 95.16%, respectively. This reinforces the characteristic pathological finding of infiltrate in the dermoepidermal junction predominantly composed of T lymphocytes causing basal cell damage such as basal cell vacuolation and apoptotic keratinocytes. Civatte bodies which are necrotic keratinocytes coated with immunoglobulins are found in 40% cases, almost similar to study by Muralidhar A et al.,

which showed 41.93% [2]. Study by Kumar UM et al., showed civatte bodies in 21.11% which is less compared to the present study [10]. If identified, civatte bodies are a definitive marker of keratinocyte injury. Hyperkeratosis was noted in 80% cases in the present study which is almost similar to study by Muralidhar A et al., (80.64% cases) [2]. Hypergranulosis was the next most frequent epidermal changes (68%) more frequently than study by Muralidhar A et al., [2] (22.58%). Acanthosis was observed in 42% cases, less frequently compared to study by Kumar UM et al., [10] (83.33%), Muralidhar A et al., [2] (56.45%) and Selvam K et al., [4] (64.44%). Parakeratosis was seen in 14% cases, almost similar to study by Muralidhar A et al., [2] (12.9%).Even though not a frequent finding in most lichenoid dermatitis, both cases of pityriasis lichenoides in our study showed parakeratosis with neutrophils in the stratum corneum. So, this could be used as a specific diagnostic clue for pityriasis lichenoides along with other findings, making it a useful histological finding in case of diagnostic dilemma. Band like lymphocytic infiltrate was noted in 48 cases (96%). This was the most frequent dermal change observed. This finding closely aligned with study by Selvam K et al., (88.8%) & Kumar UM et al., (93.3%) [4,10]. Study by Muralidhar A et al., showed dermal lymphocytic infiltrate only in 58.06%, instead their predominant dermal finding was pigment incontinence (93.3%) [2], similar to study by Kumar UM et al., (93.3%) [10]. The present study showed pigment incontinence in 78% cases similar to study by Selvam K et al., [4] (71.1%). So, pigment incontinence was next most reliable feature helpful in the identification of interface dermatitis. This is attributed due to band like infiltrate in the dermoepidermal junction predominantly composed of T-lymphocytes causing basal cell damage. Basal cell damage can lead to melanin incontinence characterised by melanophages in the papillary dermis [2].

Two cases were diagnosed as pityriasis lichenoides. In addition to lichenoid infiltrate and basal vacuolar alteration characteristic of interface dermatitis, parakeratosis with neutrophilic crest in the stratum corneum and diminished granular layer seen in both cases. Pityriasis rotunda showed findings such as mild spongiosis, diminished granular layer and increased basal pigmentation in addition to characteristic interface changes. Increased basal pigmentation not seen with other cases of lichenoid dermatitis and has got a significant association with diagnosis of pityriasis rotunda making it as a useful clue to the diagnosis. One case of lichenoid dermatitis showed subepidermal clefting. This can occur sometimes in lichenoid dermatitis due to extensive basal cell degeneration. Lichen striatus showed lymphohistiocytic infiltrate and peri eccrine infiltrate. Lichen nitidus also showed histocytes in the infiltrate along with clawing of rete ridges. Erythema multiforme and lichenoid drug eruption showed eosinophil in the infiltrate reinforcing the fact that drug aetiology should be considered when there is presence of eosinophils in the infiltrate.

Out of 50 biopsied cases, 46 (92 %) showed clinico-histopathological concordance, while 4 (8%) were discordant. This high concordance rate underscores the reliability of the clinical diagnostic process in the current study, though the non-concordant cases highlight the importance of histopathological confirmation. In the current study, the clinicopathologic concordance rate was 92% (46/50 cases), which is remarkably higher than that reported in previous studies of lichenoid and interface dermatitis. Study by Muralidhar A et al., reported a concordance rate of 82.6% [2], whereas study by Selvam K et al., showed 80.85% concordance [4]. Study by Maheshwari GR et al., showed concordance rates around 70.94% [12]. Banushree CS et al., studied 50 cutaneous lichenoid eruption out of which 54% were lichen planus, 12% were lichenoid drug eruption and 10% were lichen planus pigmentosus [13]. Jyothi AR et al., studied 60 biopsy proven cases, out of which 63.3% were lichen planus [14]. Study by Sarin N et al., showed lichen planus in 52% cases and lichenoid drug eruption in 9% cases [15]. Hedge VK and Khadilkar UN studied 80 biopsy proven cases, out of which 48% were lichen planus and lichenoid drug eruption in 8% [16].

These comparisons suggest that the concordance rate notably outperforms the benchmark literature (commonly in the 70-85% range). This indicates strong alignment between clinical impressions and histopathological diagnoses in our study, which may reflect robust clinical assessment, effective biopsy selection, and coordinated clinico-pathology interaction. Investigating the characteristics of our discordant cases may further elucidate potential pitfalls or areas for improvement.

Limitation(s)

Only slides with sufficient quality are included in the study, as many of the slides of lichenoid dermatitis were damaged on prolonged storage. This resulted in reduction in sample size.

CONCLUSION(S)

Lichenoid dermatitis represents a common histological pattern encompassing a wide range of clinical conditions with overlapping features. This study demonstrated a high clinico-histopathological concordance of 92%, with 8% discordance, emphasising the importance of biopsy in ambiguous cases. Lichen planus was the most common diagnosis (58%), consistent with existing literature. Basal cell degeneration (98%) and band-like lymphocytic infiltrate (96%) were the predominant histopathological findings, while pigment incontinence (78%) was frequently observed. Parakeratosis was observed with both cases of pityriasis lichenoides, and increased basal pigmentation in the single case of pityriasis rotunda. These histopathological features may serve as a useful diagnostic clue. However, due to the small sample size of these cases, no statistical inference could be made. The majority of patients belonged to the 61-70 years age group. Overall, the study highlights the crucial role of clinicopathological association in accurate diagnosis and the need for vigilance regarding malignant transformation in chronic lesions.

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- Manual Googling: Apr 09, 2026
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