Section: Pathology

Original Research Article

THE CLINICOPATHOLOGICAL STUDY OF LICHENOID SKIN LESIONS IN A TERTIARY CARE CENTRE

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Abstract

Background: Lichenoid lesions are one among the common skin lesions in India. Discriminating different lichenoid eruptions/lesions is difficult for practicing dermatologist, as it comprises of diverse group of skin diseases with similar clinical presentation in several aspects. It is important to differentiate various lichenoid lesions, as the clinical progression and treatment modalities are different for different lesions. The present study was done to characterize the histopathological spectrum of lichenoid skin lesions and also to determine the concordance and disparity between the clinical and histopathological diagnosis of the same. **Materials and Methods:** This was a 2year prospective study conducted in the Department of Pathology, Government Medical College, Ernakulam from March 2017 to March2019. Skin biopsies of 125 patients of either sex who had visited the Dermatology outpatient department with a clinical diagnosis or suspected cases of lichenoid skin lesions were included in the present study. The biopsy samples received were routine formalin fixed, paraffin processed and Hematoxylin & Eosin stained to assess the histopathological features. **Result:** Out of 125 cases of lichenoid skin lesions studied, 94cases (75.2%) were histopathologically diagnosed as lichenoid lesions whereas 31cases (24.8%) as nonlichenoid lesions. Out of 94 cases, 63.8% were of Lichen planus and its morphological variants, 36.2% were of other lichenoid lesions. Most common clinical presentation was pruritic eruption/plaque (53%). Lichenoid lesions can occur in all age groups with a male predominance. **Conclusion:** The clinicopathological correlation is essential for a precise diagnosis in lichenoid skin lesions. Lichenoid eruption is a broad nonspecific clinical diagnosis because of overlapping clinical features. Histopathological examination is a cheap and dependable tool for early diagnosis, so that specific treatment can be implemented to obtain a better outcome in patients with lichenoid skin lesions.

INTRODUCTION

Lichenoid eruption/ lesions refers to a heterogenous group of skin diseases that have similar clinical appearance to idiopathic lichen planus and demonstrate lichenoid tissue reaction on histopathological examination.[1] Lichenoid tissue reactions (LTRs) are among the most commonly experienced clinical and histopathological conditions in dermatology and pathology. It is characterised by an epidermal basal cell damage that is associated with a dense infiltration of T cells in the papillary dermis, closely abutting the dermoepidermal junction.[2] The term interface dermatitis, refers to histological finding of inflammatory infiltrate that hugs the dermoepidermal junction.[3]

A wide range of clinical diseases are related to the lichenoid tissue reaction, but the prototype is Lichen planus (LP).[1] Based on the degree of interface inflammation LTR can be subdivided into cell rich and cell poor types. Cell rich LTRs include lichen planus with its variants. The prototype of cell poor type is erythema multiforme.[4,5]

However lichen planus being the prototype, the spectrum of diseases related to lichenoid tissue reaction also encompasses lichen planus like keratosis, lichen nitidus, lichen amyloidosis, lichenoid drug eruptions, discoid lupus erythematosus (DLE), erythema multiforme, graft versus host disease, lichen striatus, keratosis lichenoides chronica and pityriasis lichenoides etc.[6]

Since the lichenoid lesions comprises diverse group of skin diseases with varying clinical pattern, clinical evaluation alone is not helpful in many

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cases. Concomitant histopathological evaluation aids in making precise diagnosis early, so that the patient gets more accurate treatment and that prevent wide spread involvement. The clinicopathological correlation is necessary for diagnosis of atypical variants also. In some cases, additional technique like immunofluorescence can be useful in making precise diagnosis.[7] The present study highlights the importance of histopathological evaluation in lichenoid lesions before starting treatment for better patient compliance and outcome.

The aim of the present study is to characterize the histopathological spectrum of lichenoid skin lesions in South India and to study the clinicopathological correlation in various lichenoid lesions.

MATERIALS AND METHODS

This was a prospective descriptive study conducted in the Department of Pathology Government Medical College, Ernakulam. Study period was 2years from March 2017 to March 2019. All skin biopsy specimens received in the department of pathology from patients of either sex who visited the Dermatology outpatient department with a clinical diagnosis or suspected cases of lichenoid skin lesions were included in the present study. Inadequate skin biopsy specimens received were excluded from the study. Approval from Institutional Ethical committee was obtained (No.IEC/14/17).

Sample size

According to study conducted by Neetu Goyal et al.[8] lichenoid lesions were 9% of the total non neoplastic skin lesions. Based on this data and the formula $4pq/d^2$, sample size for the present study was calculated as 125.

A total of 125 cases of lichenoid skin lesions of all age groups were included. The samples were sent in 10%formalin as fixative. After grossing, the biopsy samples were processed and paraffin embedded. Tissue sections were taken at 3-5microns thickness and stained with haematoxylin and eosin for histopathological examination. Special stains like congored were also done in indicated cases to confirm the diagnosis.

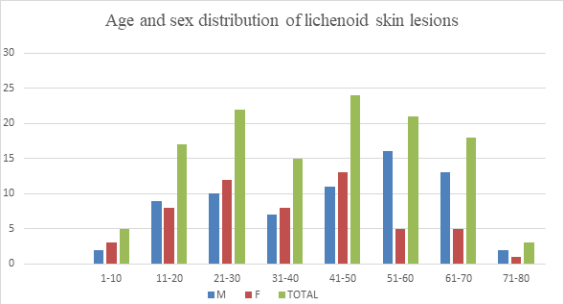
The sections were assessed by two senior pathologists for epidermal changes like hyperkeratosis, acanthosis, atrophy, saw toothed rete ridges, hypergranulosis and basal cell death or vacuolar changes. Dermal changes were also assessed, that includes interface dermatitis with composition of cell type, pigment incontinence etc, and made a final diagnosis. The data obtained was numerically coded and entered in Microsoft excel spread sheet. Statistically analysis was done using Microsoft Excel 365.

RESULTS

A total of 125 cases clinically diagnosed as lichenoid lesions were included in the study. Out of 125cases, 94cases (75.2%) were histopathologically diagnosed as lichenoid lesions, where as 31 cases(24.8%) were histopathologically diagnosed as nonlichenoid lesions.The overall clinicopathological correlation is given in [Table 1].

Out of these 125 cases,70cases (56%) were males and 55cases (44%) were females. The present study showed a wide age range from 5 years to 78 years, with median of 42years. Majority of these cases were in 41-50age group. Only 5 cases were there in less than 10years and 3 cases in more than 70 years age group. Out of 125 cases, 17(13.6%)cases were in pediatric age group (≤18 years).

The age and sex distribution of lichenoid skin lesions is given in [Graph 1&Table 2].



Graph 1: Age and sex distribution of lichenoid skin lesions

Out of 94 cases histopathologically diagnosed as lichenoid lesions, 60cases (63.8%) were of Lichen planus (LP) [Figure 1] and its morphological variants like hypertrophic LP (HLP), atrophic LP, LP pigmentoses, LP actinicus, follicular LP, bullous LP. 34cases (36.2%) were of other lichenoid lesions that include 5 cases of discoid lupus erythematosus (DLE), 3 cases of lichen nitidus [Figure 2], 2 cases of lichen amyloidosis [Figure 3], 9 cases of lichen sclerosus et atrophicus,4cases of lichen planus like keratosis, 2 cases of lichenoid drug eruption, one case of erythema multiforme and 8 cases of pityriasis lichenoides acuta and chronica. In Lichen amyloidosis special staining with congored was done to highlight the amyloid deposits [Figure 4]. The histopathological spectrum of lichenoid skin lesions is given in [Table 3].

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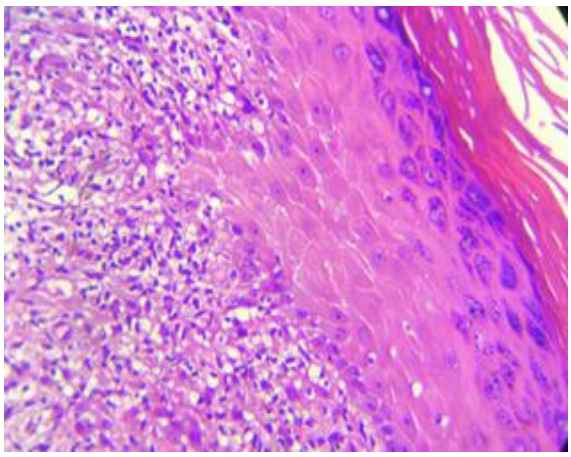


Figure 1: Hypergranulosis and band like lymphohistiocytic infiltrate at dermoepidermal junction in Lichen planus. H&E X 400

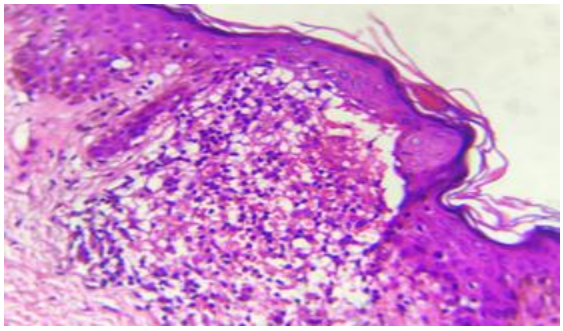


Figure 2: Lymphohistiocytic infiltrate in the upper dermis with downward extension of rete ridges at lateral margins of infiltrate which produces a typical claw like configuration in Lichen nitidus.H&E X 400

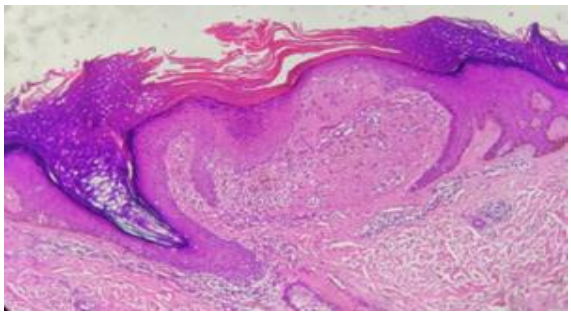


Figure 3. Globular eosinophilic deposits in papillary dermis in Lichen Amyloidosis. H&E stain X100

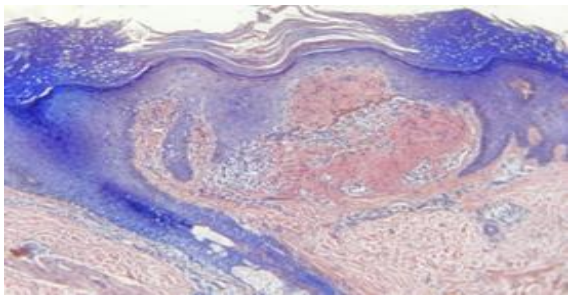
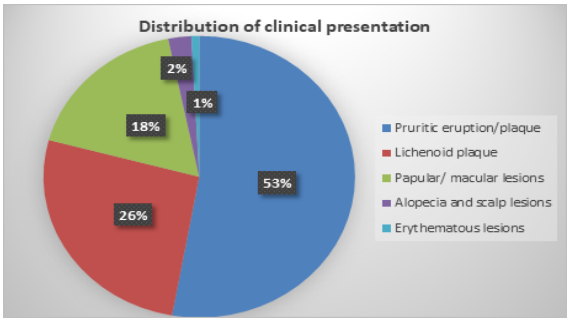


Figure 4. Congo red stain highlighting the globular amyloid deposit as orange red colour in Lichen amyloidosis. X 100

Among 125 cases, most common clinical presentation was pruritic eruption/plaque 66cases (53%), followed by lichenoid plaque lesion 33cases (26%) and papular and macular lesions 22 cases (18%). The distribution of clinical presentation in lichenoid skin lesions is given in [Graph 2].



Graph 2: Distribution of clinical presentation in lichenoid skin lesions

Out of 125 cases, most common clinical diagnosis made was lichen planus ,49 cases (39%) followed by lichenoid eruption 36cases (29%). Other major clinical diagnosis made were hypertrophic LP, discoid lupus erythematosus, lichen nitidus, lichen amyloidosis, atrophic LP, lichen sclerosus et atrophicus, pityriasis lichenoides varioliformis acuta and pityriasis lichenoides chronica. The distribution of clinical diagnosis is given in [Table 4].

Out of 36 cases (29%) of clinically diagnosed lichenoid eruption, histopathologically 4 cases turned out to be classical LP, 22cases were turned out to be nonlichenoid lesions, 3 cases as HLP and LP like keratosis, 2 cases as lichenoid drug eruption, one case of atrophic LP and LP actinicus. Out of these 49clinically diagnosed LP cases, histopathologically 32cases were classical LP, 8 cases were LP variants, one case of Lichen planus like keratosis,and 8 cases were diagnosed as nonlichenoid lesions. The histopathological distribution of clinical diagnosis of lichen planus and lichenoid eruption is given in [Table 5].

The clinicopathological correlation of lichen planus and its variants is given in [Table 6]

Out of 125cases,17(13.6%)cases were in pediatric age group(≤18years). The mean age was 13years. In pediatric age group also the most common diagnosis made was LP (29.4%). Out of 17, 6cases (35.3%) were histopathologically diagnosed as nonlichenoid lesions.

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Table 1: Overall clinicopathological correlation

Correlation	Cases	Percentage
Histopathologically lichenoid lesions	94	75.2%
Histopathologically Nonlichenoid lesions	31	24.8%
Total	125	100%

Table 2: Age and sex distribution of lichenoid skin lesions

Age	Male	Female	Total cases	Percentage
1-10	2	3	5	4%
11-20	9	8	17	14%
21-30	10	12	22	18%
31-40	7	8	15	12%
41-50	11	13	24	19%
51-60	16	5	21	17%
61-70	13	5	18	14%
71-80	2	1	3	2%
TOTAL	70	55	125	100%

Table 3: The histopathological spectrum of lichenoid skin lesions

Histopathologic diagnosis	No. Of cases	Percentage
Lichen Planus		
Classical Lichen planus(LP)	36	38%
Hypertrophic LP(HLP)	9	10%
Atrophic LP(ALP)	5	5%
Folllicular LP(FLP)	1	1%
LP Pigmentosus(LPP)	5	5%
Bullous LP(BLP)	1	1%
LP actinicus(LAA)	3	3%
Lichenoid lesions		
Lichenoid drug eruption (LDE)	2	2%
Lichen nitidus(LN)	3	3%
Discoid Lupus Erythematosus(DLE)	5	5%
Pityriasis lichenoides et varioliformis acuta(PLEVA)	3	3%
Lichen sclerosus et atrophicus(LSA)	9	10%
Lichen amyloidosis(LA)	2	2%
Pityriasis lichenoides chronic(PLC)	5	5%
Erythema multiforme(EM)	1	1%
Lichen planus like keratosis(LPK)	4	4%
Total	94	100%

Table 4: Distribution of clinical diagnosis of lichenoid skin lesions

	Clinical Diagnosis	No.of cases	Percentage
1	Lichen planus(LP)	49	39%
2	Hypertrophic LP(HLP)	4	3%
3	Lichenoid eruption	36	29%
4	Lichen nitidus(LN)	3	2%
5	Discoid Lupus Erythematosus(DLE)	5	4%
6	Pityriasis lichenoides et varioliformis acuta(PLEVA)	2	2%
7	Lichen sclerosus et atrophicus(LSA)	9	7%
8	Atrophic LP(ALP)	3	2%
9	Lichen amyloidosis(LA)	2	2%
10	Pityriasis lichenoides chronic(PLC)	6	5%
11	Erythema multiforme(EM)	1	1%
12	Folllicular LP(FLP)	1	1%
13	LP Pigmentosus(LPP)	3	2%
14	Bullous LP(BLP)	1	1%
	Total	125	100%

Table 5: The histopathological distribution of clinical diagnosis of lichen planus and lichenoid eruption

Histopathological Diagnosis	LP	H LP	Lichenoid drug eruption	Atrophic LP	LP actinics	Lichen planus like keratosis	LPP	Non lichenoid	TOTAL
Clinical Diagnosis									
Lichen planus (49)	32	2	0	2	2	1	2	8	49
Lichenoid eruption (36)	4	3	2	1	1	3	0	22	36

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Table 6: The clinicopathological correlation of lichen planus and its variants

Clinical Diagnosis	No.of cases	Histopathological Diagnosis										
		LP	HLP	ALP	LP A	LP K	FLP	LPP	Non lichenoid	BLP	Concordance	Discordance
LP	49	32	2	2	2	1	0	2	8	0	65%	35%
HLP	4	0	4	0	0	0	0	0	0	0	100%	
Atrophic LP	3	0	0	2	0	0	0	0	1	0	67%	33%
Folllicular LP	1	0	0	0	0	0	1	0	0	0	100%	
LP Pigmentosus	3	0	0	0	0	0	0	3	0	0	100%	
Bullous LP	1	0	0	0	0	0	0	0	0	1	100%	
TOTAL	61	32	6	4	2	1	1	5	9	1	70%	30%

Table 7: The histopathological spectrum in pediatric age group

Histopathologic diagnosis	No of cases	Percentage
Lichen planus	5	29.4%
Bullous LP	1	5.9%
Hypertrophic LP	2	11.7%
Lichen nitidus	1	5.9%
Pityriasis lichenoides chronica	1	5.9%
Lichen sclerosus	1	5.9%
Non lichenoid lesions	6	35.2%
Total	17	100%

Table 8: The clinical and histopathological concordance

Clinical diagnosis	No: of cases	Histopathological diagnosis			
		Concordance	Percentage	Discordance	Percentage
Lichen planus (LP)	49	32	65%	17	35%
Hypertrophic LP	4	4	100%	-	0%
Atrophic LP	3	2	67%	1	33%
Folllicular LP	1	1	100%	-	0%
LP Pigmentosus	3	3	100%	-	0%
Bullous LP	1	1	100%	-	0%
Lichen nitidus	3	3	100%	-	0%
DLE	5	5	100%	-	0%
Pityriasis lichenoides varioliformis acuta	2	1	50%	1	50%
Lichen sclerosus et atrophicus	9	9	100%	-	0%
Lichen amyloidosis	2	2	100%	-	0%
Pityriasis lichenoides chronic	6	5	83%	1	17%
Erythema multiforme	1	1	100%	-	0%
Total	89	69	77.5%	20	22.5%

The histopathological spectrum in pediatric age group is given in [Table 7].

Histopathologically the most common diagnosis made was classical LP, which accounts for 36 (29%) cases [Table 3]. The overall clinicopathological concordance was 77.5%. The clinical and histopathological concordance is given in [Table 8].

Since the majority of cases (61%) clinically diagnosed as lichenoid eruption turned out to be non lichenoid on histopathology[Table 5], the lichenoid eruption was excluded from calculating the clinical and histopathological concordance.

Out of these 125 cases, 31cases (24.8%%) were diagnosed histopathologically as non lichenoid lesions. Out of 31 cases, 22(71%) cases were diagnosed clinically as lichenoid eruptions and 8cases (26%) as LP[Table 5]. Only one case(3%) of atrophic LP turned out to be nonlichenoid histopathologically. The spectrum of nonlichenoid lesions diagnosed in this study on histopathology was wider and consists of psoriasiform dermatitis, chronic dermatitis, superficial perivascular dermatitis, prurigo nodularis and actinic prurigo, parapsoriasis, spongiotic dermatitis, chronic eczematous dermatitis, atopic dermatitis and seborrheic keratosis.

DISCUSSION

The term lichen refers to a group of skin diseases characterised by eruptive skin lesions which are grouped together, because of its resemblance to the algae lichen which grows on rocks.[9] The term lichenoid refers to the papular lesions of certain skin diseases, of which LP is the prototype.[10] The papules are shiny, flat topped, polygonal, of different sizes and seen in clusters.[11] Lichen planus and lichenoid skin lesions are clinically very similar, but they differs in their clinical progression and treatment modalities. Lichenoid tissue reactions are characterised by epidermal basal cell damage with liquefactive degeneration or cell death associated with epidermal and dermal changes.[12]

Lichen planus is a chronic dermatoses, hallmarked by the involvement of skin, mucous membrane, hair follicles and nails. Recent evidence suggest that LP

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is an immunological disease with lesions develop due to recruitment of activated T lymphocytes to dermoepidermal junction and induce apoptosis in basal keratinocytes, though the definitive etiological triggers are still unknown.[13]

Studies have shown association between LP and various conditions like chronic liver diseases (such as chronic hepatitis C and primary biliary cirrhosis); complication of hepatitis B vaccination; viral and bacterial antigens; tattoos; metal ions; medications; and a variety of autoimmune diseases such as autoimmune thyroiditis, myasthenia gravis, alopecia areata, vitiligo and thymoma.[14]

Lichen nitidus is an uncommon inflammatory skin disease with unknown aetiology, usually affects children and young adults. The lesions are skin coloured pinhead sized papules usually arranged in groups.[15]

Lichen amyloidosis is a rare skin disease, occurs as a result of chronic scratching, that lead to apoptosis of keratinocytes and subsequent deposition of amyloid. It is usually seen as papular lesions, but some cases appear as plaque like lesions on legs which may mistaken for hypertrophic LP or lichen simplex chronicus. Histopathological evaluation with congored staining helps in making diagnosis.[16]

The present study showed a wide age range with majority of cases in 41-50 age group which is in concordance with study conducted by Hedge et al.[11] The youngest case was 5year old and oldest case was 78 years. 13.6% cases were obtained in pediatric age group also. Thus lichenoid skin lesions can be seen in patients of all age groups. A male predominance with male to female ratio of 1.3:1 was observed in this study, which is similar to studies conducted by Dixit D et al,[6] and Chauhan et al.[5] A high predilection for males may be due to some geographical variations.[6]

In concordance with the study conducted by Muralidhar A et al,[17] present study also showed pruritic eruption/plaque as the most common clinical presentation (53%). Most common clinical diagnosis made was LP (39%) which is similar to study conducted by Kumar U M et al.[1] Another common clinical diagnosis made was lichenoid eruption (29%), but most of the cases turned out to be non lichenoid lesions on histopathology. This may be due to the overlapping or nonspecific clinical features that makes specific clinical diagnosis difficult for the dermatologist, so all those cases comes in a broad category as lichenoid eruptions.

Clinically diagnosed 3 cases of lichenoid eruption and two cases of LP turned out to be Hypertrophic LP. There is therapeutic and prognostic significance in differentiating HLP from other lesions, since it has got higher risk of malignant transformation. Squamous cell carcinoma can develop in lesions of long standing HLP.[18] So this study highlights the importance of histopathological evaluation to differentiate various lichenoid eruptions.

2 cases of lichenoid eruption, histopathologically diagnosed as lichenoid drug eruption. Both were elderly male patients on long term oral hypoglycemic drugs. In a study conducted by H. Ahadian et al,[19] clearly described the link between oral hypoglycemic agents and lichenoid drug eruption.

4 case of lichenoid eruption turned out to be Lichen planus, that may be due to clinical presentation with absence of pruritus or with atypical features.

Most common histopathological diagnosis made was classical LP and its morphological variants (63.8%), which is in concordance with studies conducted by Dixit D et al,[6] Khaled A et al,[7] and Muralidhar A et al.[17]

100% concordance occurs in bullous LP, follicular LP, and LP pigmentosus, which is similar to study conducted by Dixit d et al,[6] Similar to study conducted by Hedge et al.[11] present study also showed 100% concordance in lichen amyloidosis, erythema multiforme, and lichen sclerosus . Lichen nitidus and DLE also showed 100%concordance in this study, that may be due to less number of cases presenting with typical clinical features that helps the clinician to make specific diagnosis by narrow down the differentials.

8 cases with clinical suspicion of Lichen planus turned out to be non lichenoid histopathologically (discordant), that may be due to absence of typical features or it may be in the evolving phase of some other lesion.

In pediatric age group also classical LP was the most common diagnosis made, which is similar to study conducted by Gautam M et al.[20] Present study also obtained cases of lichen nitidus, lichen sclerosus and pityriasis lichenoides chronica in pediatric age group, which is similar to study conducted by Gautam M et al.[20] Further studies are suggested to determine the clinicopathological correlation and histopathological spectrum in pediatric population , as the sample size of this age group was limited to 17.

The overall clinicopathological concordance of present study was about 77.5%, which is comparable with the study conducted by Kumar U M et al,[1] which showed 78.5% clinicopathological concordance. While study conducted by Maheshwari et al,[21] showed 70.94% concordance.

Eventhough most cases of cutaneous LP resolve spontaneously with in a few years, treatment aims to shorten the time from onset to resolution and also to alleviate symptoms. Patients can be treated with topical corticosteroids, as the first line choice. Treatment modalities for morphological variants of LP also fall in line with classical LP. But phototherapy should be avoided in LP pigmentosus and LP actinicus.[14] Overall prognosis is favourable, but the general well being may be impaired due to severe pruritus.[1]

Lichen nitidus also resolve spontaneously within a few years like classical LP. Usually only

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symptomatic and generalised cases of lichen nitidus require medical management.[22]

Limitations: Being a hospital based study, has its limitations in extrapolating statistics to general population. Still it gives an idea to the clinician and pathologist regarding deficiencies in correlation. Lichenoid eruption is a specific area of clinical diagnosis were there was minimal correlation. Studies are essential in this direction to improve the concordance

CONCLUSION

Lichenoid lesions can occur in all age groups, with a male predominance. Lichen planus and its morphological variants forms the major spectrum of lichenoid skin lesions. The clinicopathological correlation is essential for making a definitive diagnosis. Lichenoid eruption is a broad nonspecific clinical diagnosis that histopathologically encompasses Lichen planus, its variants, other lichenoid skin lesions and also some nonlichenoid lesions, because of overlapping clinical features. Histopathological examination is a cheap and dependable tool for early diagnosis, so that specific treatment can be implemented to obtain a better outcome in patients with lichenoid skin lesions.

REFERENCES

1. Kumar U M, Yelikar BR et al. A clinicopathological study of lichenoid tissue reactions –A tertiary care experience.J Clin Diagn Res. 2013 ;7(2):312-316. DOI:10.7860/JCDR/2013/5110.2755.
2. T. Shiohara, Micukawa Y. The immunological basis of lichenoid tissue reaction. Autoimmunity Rev.2005;4(4)236-241. DOI:10.1016/j.autrev.2004.11.005.
3. Crowson AN, Magro CM, Mihm M Jr. Interface dermatitis. Arch Pathol Lab Med 2008; 132(4): 652–66.https://doi.org/10.5858/2008-132-652-ID.
4. Sontheimer RD. Lichenoid tissue reaction/ Interface dermatitis: Clinical and histological perspectives. J Invest Dermatol 2009; 129(5): 1088-99.DOI:10.1038/sj.jid.2009.42.
5. Chauhan R, Srinath M. K, Ali N M, Bhat RM, Sukumar D. "Clinicopathological Study of Lichenoid Reactions: A Retrospective Analysis". J Evolution Med Dental Sci. 2015; 4(32): 5551-62.DOI:10.14260/jemds/2015/812
6. Dixit D, Vernekar SS, Giriyan SS. A clinico-pathological study of lichenoid tissue reactions/interface dermatitis. Int J Res Med Sci 2019;7(4):1002-8.DOI:http:/dx.doi.org/10.18203/2320-6012.ijrms20191302
7. Khaled A, Banu SG, Kamal M, Manzoor J, Nasir TA. A clinical and histopathological study of lichenoid eruption of skin in two tertiary care hospitals of Dhaka. Pulse. 2011;5(1):12-18.DOI:https://doi.org/10.3329/pulse.v5i1.20184.
8. Goyal N, Jain P, Malik R et al. Spectrum of Non neoplastic skin diseases: A histopathology based clinicopathological correlation study. Sch.J.App.Med.Sci., 2015;3(IF):444-449.
9. Raghunathan A et al.Lichenoid interface dermatitis and oral lichenoid reactions: A review. International Journal Of Scientific Research 2019;8:33-35.DOI:10.36106/ijsr.
10. Sehgal VN, Srivastava G, Sharma S, Sehgal S, Verma P. Lichenoid tissue reaction/interface dermatitis: Recognition, classification, etiology, and clinicopathological overtones. Indian J Dermatol Venereol Leprol 2011;77:418-30.DOI:10.4103/0378-6323.82389.
11. Hegde VK, Khadilkar UN. A clinicopathological study of interface dermatitis. Indian J Pathol Microbiol. 2014;57(3):386-9. DOI:10.4103/0377-4929.138723.
12. Maisnam J et al. Lichen planus –A clinical and histopathological correlation. Trop J Path Micro of pathology & microbiology 2018;4(5):408-411.DOI:10.17511/jopm.2018.i05.07.
13. Lehman JS,Tollefson MM et al. Lichen Planus Review.International Journal of Dermatology ,2009;48:682-694. doi: 10.1111/j.1365-4632.2009.04062.x
14. Weston G,Payette M. Update on lichen planus and its clinical variants . Int J Womens Dermatol.2015;1(3):140-149. doi:10.1016/j.ijwd.2015.04.001.
15. Chu J,Lam JM.Lichen nitidus.CMAJ.2014;186(18):E688. Doi:10.1503/cmaj.140434.
16. Venugopal SB,MuralidharA.Primary localized cutaneous amyloidosis-A clinicopathological study.Arch Med Health Sci 2019;7:38-41.doi:10.4103/amhs_122_18.
17. Muralidhar A, Venugopal SB, Nandhini AS. Clinicopathologic study of lichenoid interface dermatitis. Arch Med Health Sci 2020;8:20-5. DOI:10.4103/amhs_11_20.
18. Kathuria S, Karmakar S, Singh A, Singh SP. Squamous cell carcinoma arising from hypertrophic lichen planus. Indian Dermatol Online J 2017;8(4):288-90.doi:10.4103/2229-5178.209617.
19. H. Ahadian et al. Prevalence of Anti Hyperglycemic Agents - Associated Oral Lichenoid Lesions in Type 2 Diabetes Mellitus Patients. Iranian Journal Of Diabetes And Obesity 2013;2:77-82 .doi:
20. Gautam M, Chaudhari P, Priya S, Singh V, Nadkarni N, Patil S. Lichenoid eruptions in children: A retrospective study. Indian J Paediatr Dermatol 2020;21:294-300.doi:10.4103/ijpd.IJPD_48_19.
21. Maheshwari G R et al. Clinico-histopathological correlation for diagnosis of lichenoid interface dermatoses .J Dermatol Dermatologic Surgery. 2016;20: 115–124.doi:10.1016/j.jdds.2015.11.006.
22. Topal IO, Gokdemir G, Sachin IM.Generalized lichen nitidus: Successful treatment with systemic isotrtinoin. Indian J Dermatol Venerol Leprol 2013;79:554. Doi:10.4103/0378-6323.113108.

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