ISSN : (Online): 1898-7249
Abbreviation: J Derm Cse Rep

Journal of Dermatological Case Reports

Histomorphological pattern of interface dermatitis – a diagnostic dilemma, record based study in a tertiary care hospital

Dr M R Manjunatha[1], Dr Suhasini S Kumar[2]

[1]Associate Professor, Department of Pathology, Mandya Institute of Medical Sciences, Mandya, Karnataka, India
[2]Post-graduate, Department of Pathology, Mandya Institute of Medical Sciences, Mandya, Karnataka, India.

Corresponding Author

Dr Suhasini S Kumar

Post-graduate, Department of Pathology, Mandya Institute of Medical Sciences, Mandya, Karnataka, India.

suhasini048@gmail.com

Keywords:

Interface Dermatitis, Lichen Planus, Histopathology

Abstract:

Background: Diagnosis of skin disorders that exhibit interface dermatitis is challenging. Clinical examination per se can help reach in differential diagnosis but not a specific diagnosis. Histopathology is the gold standard but many lesions might have overlapping features. Clinicopathological correlation is preferred to arrive at a definitive diagnosis.
Objectives: The aim is to describe the histopathological patterns seen in cases of interface dermatitis.
Materials and methods: A retrospective histopathological study of 360 skin biopsies with interface dermatitis was done in the Department of Pathology, Mandya Institute of Medical Sciences, Mandya, Karnataka by collecting the data from May 2015 to July 2023.
Results: In the present study, the age of the patient with interface dermatitis ranged from 10 – 75 years and majority of the cases are in the age group of 35-52 years with a female predominance (52.33%). The most common cause of interface dermatitis in the present study was classic lichen planus 41%(150 cases) and its variants accounted to 33.9%.The predominant histologic feature was basal vacuolar degeneration and band like inflammatory infiltrates of lymphocytes at the dermoepidermal junction. The characteristic Civatte bodies were found in only 10.5% of the cases.

Introduction

The skin is the largest organ of the body, with a surface area of 2 m^2 and accounting for 16-20% of the total body weight. The dermo epidermal junction is one of the largest epithelial-mesenchymal junctions in the body, which forms an extensive interface between the dermis and epidermis.[1] Interface include the basal layer of the epidermis, the dermo-epidermal junction the papillary dermis and the adventitial dermis around the adnexal structures.[3]

Dermatopathology requires years of training and practice to attain an acceptable level of diagnostic skill. The interpretation of many skin biopsies requires the identification and integration of two morphological features- tissue reaction and pattern of inflammation.[2]

Interface dermatitis is defined as dermatosis in which the infiltrate (usually composed mostly of lymphocytes) appear to obscure the junction when sections are observed at scanning magnification. Interface reactions are so named because they are cell-mediated immunologic reactions whose targets are basal keratinocytes that reside above the dermoepidermal junction.[2]

This study focuses on the recognition of the histological pattern seen in interface dermatitis to arrive at a more specific diagnosis by light microscopy.

Materials and methods

Source of Data
Present study is a retrospective study, done in a tertiary care hospital. A total of 360 cases of interface dermatitis diagnosed from May 2015 to July 2023 was taken from the histopathology register in the Department of Pathology, Mandya Institute of Medical Sciences, Mandya . Haematoxylin and eosin slides were reviewed.

Inclusion criteria
The skin biopsies showing the dermoepidermal inflammatory infiltrate.

Histological Examination
Each skin biopsy was subjected to systematic, critical assessment in sequence of epidermal changes such as basal cell death or vacuolar change and varying thickness of different layers of the epidermis.
Dermal changes such as inflammatory infiltrates, pigment incontinence along with appendiceal involvement were noted.

Results

The age of the patient with interface dermatitis ranged from 10 – 75 years and majority of the cases are in the age group of 35-52 years. The present study showed a female predominance that is 52.33%.

Out of 360 cases,41.9% (151 cases) are lichen planus , 13% (48 cases) are hypertrophic lichen planus, 8.8%(32 cases) are discoid lupus erythematosus , 8.05%(29 cases) are lichenoid drug eruptions,5.5%(20 cases) are lichen simplex chronicus,4% (15 cases) are lichen planus pigmentosus,3.6%(13 cases) are lichen sclerosus et atrophicus,3.3% (12 cases) are pityriasis lichenoides,2.2% (8 cases) are lichen nitidus, 1.9% (7 cases) are linear lichen planus , 1.9% (7 cases) are systemic lupus erythematosus ,1.6% (6 cases) are lichen planopilaris,1.1% (4 cases) are lichen striatum,1.1% (4 cases) are poikiloderma,0.5% (2 cases) are annular lichen planus and 0.5% (2 cases) of lichen flavus [Table 1].

A detailed histopathological examination of epidermal changes in cases with interface dermatitis was studied. The epidermal changes observed were hyperkeratosis (HK), parakeratosis (PK), acanthosis, hypergranulosis (HG), follicular plugging (FP), atrophy, basal cell vacuolation, saw toothed rete ridges, civatte bodies and band like inflammatory infiltrates of lymphocytes in the dermoepidermal junction.[Table2]

All the cases of LP showed HK, irregular acanthosis, HG and basal cell vacuolation. Civatte bodies was seen in 10.5% of the cases. The variants of LP also seen showed HK, acanthosis and basal cell vacuolation. Twelve cases (3.3%) of pityriasis lichenoides reported showed HK in all. All lesions of Lichen sclerosus et atrophicus showed flat rete ridges, atrophy of stratum malphigii and focal basal cell vacuolation. Cases of discoid lupus erythematosus showed HK, FP and basal cell vacuolar degeneration. All the cases of LP showed moderate to severe band like lymphohistiocytic infiltrate in the papillary dermis along with perivascular and peri appendageal inflammatory infiltrates. Melanin incontinence was mainly seen in discoid lupus erythematosus, lichenoid drug eruptions, lichen planus pigmentosus, poikiloderma and lichen flavus.The variants of LP showed mild to moderate inflammatory infiltrate in the papillary dermis. All cases of lichen sclerosus et atrophicus showed dermal edema and homogenisation of collagen bundles. Mild to moderate inflammatory infiltrate in the dermis was seen in all case of pityriasis lichenoids. Superficial perivascular lymphohistiocytic infiltrate and extravasation of RBCs was also noted.

Table 1: *Distribution of various conditions with interface dermatitis*

Diagnoses	Number of cases	Percentage
Lichen Planus	151	41.9%
Hypertrophic lichen planus	48	13%
Discoid lupus erythematosus	32	8.8%
Lichenoid drug eruptions	29	8.05%
Lichen simplex chronicus	20	5.5%
Lichen planus pigmentosus	15	4%
Lichen sclerosis et atrophicus	13	3.6%
Pitryiasis lichenoides	12	3.3%
Lichen nitidus	8	2.2%
Linear lichen planus	7	1.9%
Systemic lupus erythematosus	7	1.9%
Lichen planopilaris	6	1.6%
Lichen striatum	4	1.1%
Poikiloderma	4	1.1%
Annular lichen planus	2	0.5%
Lichen flavus	2	0.5%

Table 2 : *Distribution of histopathologic features*

Histopathologic features	Number of cases
Hyperkeratosis	86
Parakeratosis	59
Acanthosis	171
Hypergranulosis	15
Atrophy	21
Flat rete ridges	13
Saw toothed rete ridges	48
Civatte bodies	38
Basal vacuolar degeneration	231
Max joseph space	2
Follicular plugging	32

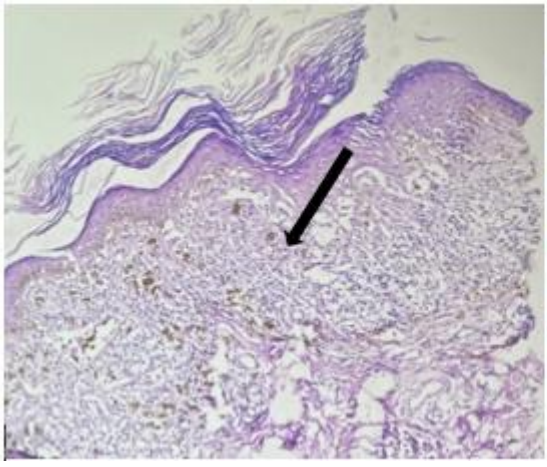

Image 1

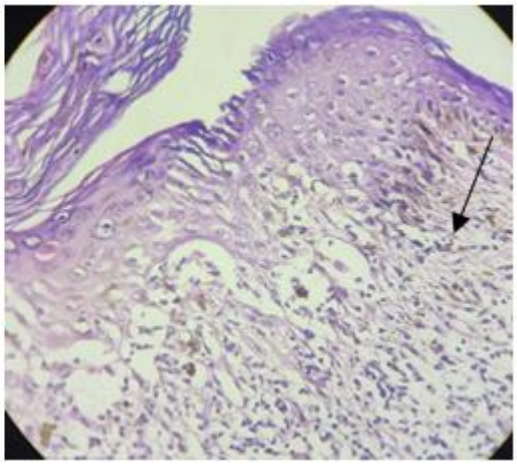

Image 2

Image 1: *(H&E) Band like lymphohistiocytic Inflammatory infiltrate at the dermoepidermal*
Image 2: *(H&E) Basal cell vacuolation with civatte bodies,40x*

Discussion

Interface reactions are so named because they are cell-mediated immunologic reaction, whose targets are basal keratinocytes that reside above the dermoepidermal junction. An attempt has been made in this study to diagnose the various lesions of interface dermatitis by a pattern based histopathologic appearance.

A total of 360 cases of interface dermatitis were diagnosed in the Department of Pathology, Mandya Institute of Medical Science. The age of incidence of interface dermatitis was more common in the 35-52 years age group. The present study showed a female preponderance (52.33%).

All cases of Lichen Planus histopathologically showed hyperkeratosis, irregular acanthosis and basal vacuolar degeneration. Civatte bodies were seen in 10.5% (38 cases). A moderate to severe band like lymphohistiocytic infiltrate with basal cell vacuolation was seen in all the cases. 0.5% (2 cases) showed max joseph space. A similar findings have been recorded by a study conducted by Katharina Boch *et al.*[4]

All the cases of hypertrophic lichen planus showed hyperplasia of the epidermis with saw toothing of the rete ridges. Dermis showed band of inflammatory infiltrates of lymphocytes and vertically oriented collagen fibers. Similar findings have been recorded by similar study conducted by Carli P Whittington *et al.*[5]

All the cases of Discoid Lupus Erythematosus histopathologically showed hyperkeratosis, follicular plugging, variable degeneration of basal cells and dermis showed pigment incontinence, perivascular and perifollicular inflammatory infiltrates of lymphocytes. A study conducted by Vaishnavi *et al.* showed similar findings.[6]

All cases of lichenoid drug eruptions showed parakeratosis, hyperkeratosis, basal vacuolar degeneration and dermis shows inflammatory infiltrates of lymphocytes and melanin incontinence. Similar findings have been reported by Virendra N Seghal *et al.*[7]

All cases of lichen simplex chronicus shows parakeratosis, acanthosis, elongation of rete ridges, lymphocytic exocytosis and dermis shows vertically oriented collagen bundles and perivascular inflammatory infiltrates of lymphocytes. This conforms well with observations of study conducted by Torello Lotti *et al.*[8]

Lichen planus pigmentosus showed hypergranulosis, basal layer orthokeratosis, increased basal pigmentation and dermal inflammatory infiltrates of lymphocytes and melanophages. Similar findings have been reported by Irene Mathews *et al.*[9]

All cases of lichen sclerosis et atrophicus showed flat rete ridges, atrophy of stratum malphigii, focal basal vacuolar degeneration in the epidermis. Dermis shows homogenised collagen bundles, perivascular inflammatory infiltrates of lymphocytes and edema. These findings compare well with observation of Varendra Kulkarni *et al.*[10]

All cases of pitryiasis lichenoides showed hyperkeratosis, parakeratosis in 5% cases, focal spongiosis and basal cell vacuolation. Dermis showed mild to moderate inflammation. Similar findings have been reported in study conducted by B G Malathi *et al.*[11]

All cases of lichen nitidus showed hyperkeratosis, parakeratosis, thinning of stratum malphigii and well circumscribed subepidermal infiltrates of lymphocytes. A similar finding is seen in study conducted by Virendra Seghal *et al.*[7]

All cases of linear lichen planus showed hyperkeratosis, basal vacuolar degeneration and mild inflammatory infiltrates of lymphocytes in the dermis. A similar finding is seen in study conducted by G R Maheshwari *et al.*[12]

All cases of lichen planopilaris show perifollicular inflammatory infiltrates of lymphocytes and macrophages. A similar finding is seen in study conducted by Manjunatha *et al.*[1,14]

All cases of lichen striatus showed irregular acanthosis, focal spongiosis and shows inflammatory infiltrates composed of lymphocytes in the dermis. A similar finding is seen in study conducted by Vishrabdha Rahul Pawar *et al.*[13]

All cases of poikiloderma showed basal vacuolar degeneration and melanin incontinence in the dermis. A similar finding was seen in a study conducted by Virendra *et al.*[7]

All cases of lichen flavus shows hyperkeratosis, parakeratosis, basal vacuolar degeneration melanin incontinence, inflammatory infiltrates of lymphocytes and congested blood vessels A similar finding is seen in study conducted by Rajiv Joshi.

Conclusion

The interface dermatitis encompasses disease in which there is epidermal basal cell damage, hydropic degeneration of the basal cell, band like or patchy inflammatory infiltrate at the dermoepidermal junction and melanin incontinence. Histopathology is the gold standard for diagnosis but if every specimen submitted for histopathology when accompanied by clinical information and differential diagnosis helps in a better clinicopathological correlation and thus key to the patient care.

References

1. Patterson JW. Weedon's skin pathology E-book. *Elsevier Health Sciences;* 2014 Dec 7;5:50-96.
2. Joshi R. Interface dermatitis. *Indian journal of dermatology, venereology and leprology.* 2013 May 1; 79: 349.4.
3. Boch K, Langan EA, Kridin K, Zillikens D, Ludwig RJ, Bieber K. Lichen planus. *Frontiers in medicine.* 2021 Nov 1;8:737813.
4. Whittington CP, Saleh JS, Bresler SC, Patel RM. Hypertrophic Lichen Planus: An Up-to-Date Review and Differential Diagnosis. *Archives of Pathology & Laboratory Medicine*. 2023 Jun 19.
5. Vaishnavi R. Batchu , Vijaya L. Panthalla, P. V. Kiran Kumar , K. Penchalaiah *A clinicopathological study on interface dermatitis* 2022:8(5):457-65
6. Sehgal VN, Srivastava G, Sharma S, Sehgal S, Verma P. Lichenoid tissue reaction/interface dermatitis: Recognition, classification, etiology, and clinicopathological overtones. *Indian journal of dermatology, venereology and leprology*. 2011 Jul 1;77:418
7. Lotti T, Buggiani G, Prignano F. Prurigo nodularis and lichen simplex chronicus. *Dermatologic therapy*. 2008 Jan;21(1):42-6.
8. MathewsI, Thappa DM, Singh N, Gochhait D. Lichen planus pigmentosus: a short review. *Pigment Int.* 2016 Jan 1;3(1):5.
9. Varendra Kulkarni, Seema Bijjaragi , Prashanth R , Prakash Kumar , Evolution of a pragmatic algorithm based approach for subcategorisation of Interface Dermatitis- *A Clinico Pathological Study* 2016 March ;3(1):60-69
10. Malathi BG, Sandhu K. Interface dermatitis-Clinicopathologic Spectrum. *Archives of Cytology and Histopathology Research*. 2016 Jul;1(2):57-62.
11. Maheshwari GR, Mehta HH, Nikam V. Clinico-histopathological correlation for diagnosis lichenoid interface dermatoses. *Journal of Dermatology & Dermatologic Surgery*. 2016 Jul 1;20(2):115-24.
12. Vishrabdha Rahul Pawar , Vaibhav Panduran Mane , Renuka satish Ashtekar Spectrum of Interface dermatitis :An Observational Study. *Annals of Applied Bio-Sciences.* 2017 April ; 4(2) :104-10
13. Hegde VK, Khadilkar UN. A clinicopathological study of interface dermatitis. *Indian Journal of Pathology and Microbiology.* 2014 Jul 1; 57(3):386.
14. LeBoit PE. Interface dermatitis: how specific are its histopathologic features?. *Archives of dermatology.* 1993 Oct 1;129(10):1324-8.