

HISTOPATHOLOGICAL SPECTRUM OF HYPERPIGMENTED LESIONS OF SKIN

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ABSTRACT

BACKGROUND

Hyperpigmentation of skin is one of the commonest cosmetic skin complaint encountered in Dermatology Outpatient Clinic. Evidence for a correct diagnosis may be lacking without histopathologic examination of skin biopsies.

METHODS

A total of 85 cases of histologically diagnosed hyperpigmented lesions were included. Clinical features like age, sex, type of pigmentation, location were recorded. Histological features of these were studied.

RESULTS

Out of 85 cases, majority (12.94%) were classical lichen planus. Most of cases were in the age group of 21–30 years and showed female preponderance with extremities as most common site of distribution.

CONCLUSION

In our study, hyperpigmented skin lesions were most common in females with lichen planus as the most common diagnosis. Histopathology is a dependable tool in identifying and differentiating these lesions.

KEYWORDS

Hyperpigmentation, Histopathology, Lichen Planus.

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INTRODUCTION

Hyperpigmentary skin disorders may be defined as increased pigmentation of the skin and/or mucous membranes.¹ Hyperpigmentation may be caused by abnormality in epidermis or dermis. Hyperpigmentary skin disorders may be broadly classified into two groups, epidermal which is characterized by 'Brown hyperpigmentation' and dermal which is known as 'blue hyperpigmentation' or 'Ceruloderma'.¹

Pigmented skin lesions comprise a large component of most histopathologists' workload, and although there is a wide spectrum of histological appearances most can be reported as simple benign naevi.²

Histopathological examination revealed epidermal pigmentation as the commonest finding followed by dermal pigmentation with or without hyperkeratosis. The histology based treatment principles may be helpful for establishing a standardized treatment algorithm for hyperpigmented skin lesions.^{3,4} Disorders of pigmentation can result from migration abnormalities of melanocytes from neural crest to the skin during embryogenesis, impairment of melanosome transfer to

keratinocytes and alteration in melanin synthesis.^{5,6} Hyperpigmentation is not just a cosmetic deformity causing psychological upset due to disfigurement, but can also reflect underlying organ dysfunction.^{7,8}

OBJECTIVES OF THE STUDY

1. To know the clinical and histopathological patterns of hyperpigmented lesions of skin.
2. To determine the age and sex distribution in various hyperpigmented skin diseases.

MATERIALS AND METHODS

Data for the retrospective study was obtained from skin biopsies of hyperpigmented skin lesions received in the Department of Pathology, RRMCH, over a period of three years from May 2010 to May 2013.

Details of patients with hyperpigmented skin lesions were retrieved from the archives of the Department of Pathology. The slides were reviewed and analysed. Histopathological findings were correlated with clinical features.

Histological examination of skin biopsy is done on H and E stain. Detailed histopathological examination of the samples were conducted and correlated with clinical findings and compared with the available literature.

Inclusion Criteria

Skin biopsies of all non-neoplastic and neoplastic hyperpigmented skin lesions of all age groups and both sexes were included.

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Exclusion Criteria

Skin biopsies other than hyperpigmented skin lesions and inadequate biopsy specimen were excluded from the study.

RESULTS

Sl. No.	Lesions	No. of Cases	Percentage %
1	Lichen planus	11	12.94
2	Lichen planus pigmentosus	06	7.05
3	Psoriasis	05	5.88
4	Prurigo nodularis	05	5.88
5	Morphea	04	4.70
6	Non-specific dermatitis	04	4.70
7	Lichen simplex chronicus	04	4.70
8	Lichen striatus	03	3.52
9	Verruca plana	03	3.52
10	Becker naevus	03	3.52
11	Pemphigus foliaceus	02	2.35
12	Macular amyloidosis	02	2.35
13	Linear epidermal nevus	02	2.35
14	Lentigo simplex	02	2.35
15	Lichen sclerosus et atrophicus (LSEA)	02	2.35
16	Lichen amyloidosis	01	1.17
17	Junctional nevus	01	1.17
18	Panniculitis	01	1.17
19	Nevus comedonicus	01	1.17
20	Dermatitis herpetiformis	01	1.17
21	Fixed drug eruption	01	1.17
22	Lichen planopilaris	01	1.17
23	Syringoma	01	1.17
24	Systemic lupus erythematosus	01	1.17
25	Keratosis pilaris	01	1.17
26	Papulonecrotic tuberculid	01	1.17
27	Pityriasis lichenoides chronica	01	1.17
28	Porokeratosis	01	1.17
29	Discoid lupus erythematosus	01	1.17
30	Epidermodysplasia verruciformis	01	1.17
31	Ichthyosis vulgaris	01	1.17
32	Erythema dyschromicum perstans	01	1.17
33	Erythema nodosum	01	1.17
34	Lichen planus atrophicus	01	1.17
35	Kyrle disease	01	1.17
36	Seborrheic keratosis	01	1.17
37	Parapsoriasis	01	1.17
38	Lichen planus actinicus	01	1.17
39	Post inflammatory hyperpigmentation	01	1.17
40	Large plaque parapsoriasis	01	1.17
41	Darier's disease	01	1.17
42	Pigmentary demarcation lines	01	1.17
43	Chronic folliculitis	01	1.17

Table 1: Distribution of Cases

Correlation	No. of Cases	Percentage %
Histopathology confirmed diagnosis	67	78.9%
Diagnosed only on histopathology	18	21.1%

Table 2: Clinical and Histopathology Correlation

Sl. No.	Epidermis	Cases n=85 (%)	Dermis	Cases n=85 (%)
1	Hyperkeratosis	54 (63.6%)	Perivascular lymphocytic infiltrate	34 (40%)
2	Parakeratosis	20 (23.6%)	Periadnexal lymphocytic infiltrate	09 (10.6%)
3	Acanthosis	42 (49.5%)	Band like infiltrate	11 (13%)
4	Atrophy	14 (16.5%)	Pigment incontinence	26 (30.6%)
5	Hypergranulosis	13 (15.3%)	Mono-nuclear cells	66 (77.7%)
6	Spongiosis	03 (3.6%)	Plasma cells	11 (13%)
7	Exocytosis	02 (2.4%)	Eosinophils	05 (5.9%)
8	Follicular plugging	12 (14.2%)	Neutrophils	09 (10.6%)
9	Basal cell degeneration	26 (30.6%)		
10	Hyperpigmentation of basal layer	15 (17.7%)		

Table 3: Spectrum of Histopathological Changes in Epidermis and Dermis

Of the 85 patients, 47 were females and 38 were males. The youngest was an 8-year-old female and the oldest was an 80-year-old male. Females were affected more commonly than males. The maximum number of cases occurred in middle age group of 21 to 30 years. The most common site of distribution of hyperpigmented skin lesions are extremities, that are upper and lower limbs. Other sites include back, face, neck, chest, abdomen and all over the body with multiple sites involvement in most of the cases. Most of the cases showed increased epidermal pigmentation and only one lesion presented with dermal hyperpigmentation that is erythema dyschromicum perstans (Figure 1) in non-neoplastic lesions.

On histopathological examination of 85 cases, 11 were classical Lichen planus and 09 were its morphological variants (Figure 2); 5 cases of Psoriasis, 5 cases of Prurigo nodularis, 4 cases of Morphea (Figure 3), 4 cases of Lichen simplex chronicus, 3 cases of Lichen striatus, 3 cases of Verruca plana, 3 cases of Becker nevus, 2 cases of Pemphigus foliaceus, 2 cases of Linear epidermal nevus (Figure 4), 2 cases of Macular amyloidosis, 2 cases of Lentigo simplex, 2 cases of LSEA and one case each of other lesions as shown in Table 1.

During this study period 85 cases were clinically presented as hyperpigmented lesions, of which 67 (78.9%)

cases were confirmed on histopathology and 18 (21.1%) cases were diagnosed only on histopathology (Table 2).

Spectrum of histopathological changes in epidermis and dermis were also studied (Table 3). On histopathological examination, epidermal changes like hyperkeratosis, acanthosis, basal cell degeneration and dermal changes like perivascular and interstitial mononuclear infiltrate and pigment incontinence were seen in most of the patients.

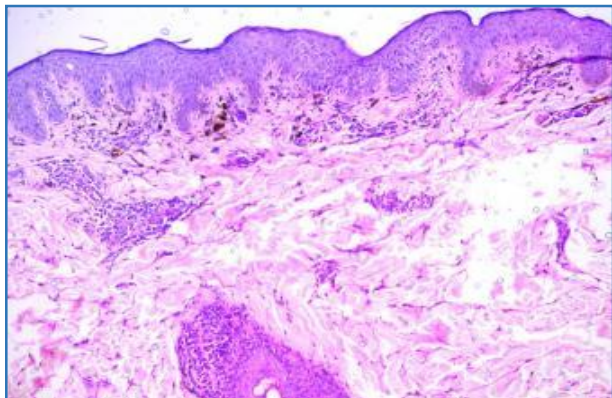


Fig. 1: Erythema Dyschromicum Perstans (H&E 20X) showing Basal Cell Degeneration with Pigment Incontinence in Upper Dermis and Perivascular Lymphohistiocytic Infiltrate with Melanophages

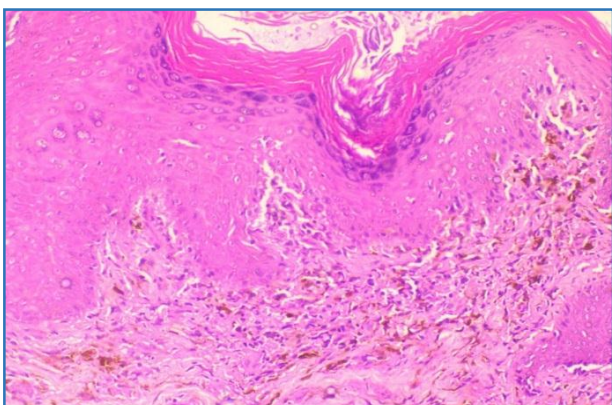


Fig. 2: Lichen Planus Pigmentosus (H&E 20X) shows Basal Cell Vacuolation, Pigment Incontinence with Dense Band Like Mononuclear Infiltrate in the Upper Dermis

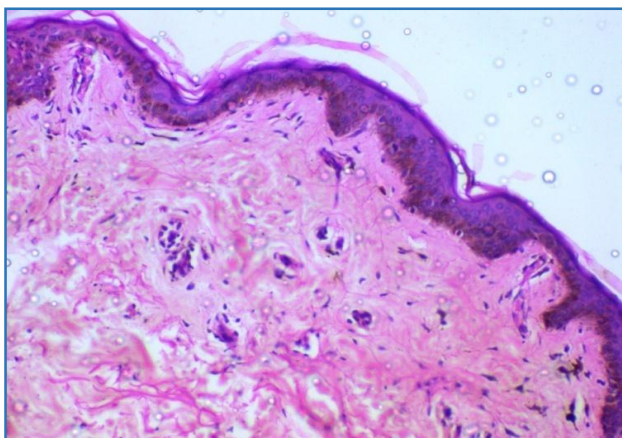


Fig. 3: Morphea (H&E 20X) showing Focal Thinning of Epidermis, Increased Basal Melanocytes, Thickened Reticular Dermis with Increased Collagen and Atrophic Adnexae

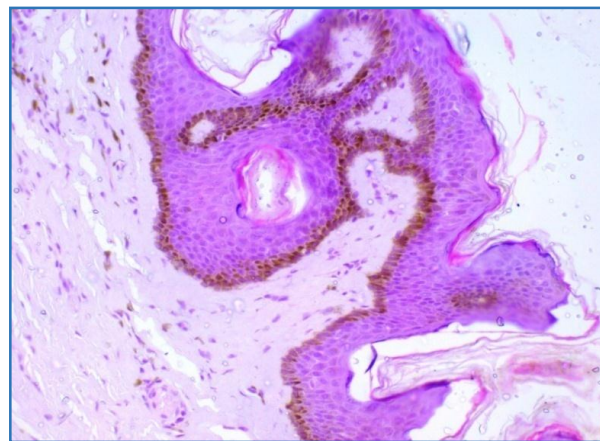


Fig. 4: Linear Epidermal Nevus (H&E 20X) showing Papillomatosis, Hyperkeratosis Acanthosis and Increased Number of Melanocytes along the Basal Layer

DISCUSSION

In our study, we observed that classical lichen planus was most common constituting 12.94% of total cases followed by lichen planus pigmentosus (7.05%). A similar dominance of classical lichen planus over other variants were observed by other authors (Priyadarshini D, et al).⁹

The maximum number of patients were seen in the age group of 21-30 yrs. The youngest was an 8- year-old female and oldest was an 80-year-old male. In our study of the 85 patients, 38 were males and 47 females with a male/female ratio of 0.80, which was in concordance with the findings of study by Mahesh Kumar U et al.¹⁰

Lichen planus is an idiopathic subacute or chronic inflammatory disease of skin, mucous membranes and nails. Exact pathogenesis of lichen planus is still unclear. Cutaneous lichen planus is characterized by polygonal, flat-topped, violaceous papules and plaques. The lesions may result in long standing hyperpigmentation, especially in dark skinned patients. Lichen planus has characteristic histopathological features, which make the diagnosis relatively easy.¹¹ Lichen Planus Pigmentosus (LPP) is a macular variant of Lichen planus reported most commonly from the Indian subcontinent and the Middle-East. The histopathology of LPP is in general subtle with sparse inflammation, requiring thorough evaluation of the biopsy. Therefore, diagnosis of these is based on clinicopathological correlation.¹²

It is essential to distinguish Lichen planus from other lesions on microscopy, as they have got different treatment modalities and prognosis too differs.

CONCLUSION

To summarize, Lichen planus and its variants were the most common hyperpigmented skin lesions encountered in our study. Most of the lesions were of epidermal type and only one dermal type of hyperpigmentation was noted. It is important to distinguish between epidermal and dermal hyperpigmented lesions; because epidermal pigmentation responds better to treatment than dermal pigmentation which is resistant to treatment. The differential diagnosis can be narrowed down by focusing on the key histopathological features of various lesions. Specific diagnosis of hyperpigmented lesions is based on possible histopathologic findings and interpretation in context of its clinical presentation.

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