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A STUDY OF SPECTRUM OF HISTOPATHOLOGICAL ENTITY IN PATIENTS PRESENTING WITH HYPERPIGMENTED SKIN LESIONS.

Histopathology

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ABSTRACT

Background: Hyperpigmentory skin disorders comprise a group of diseases of the extreme heterogeneity of epidermal and dermal hyperpigmentation subdivided into various types according to etiology, underlying pathology, and the nature of the pigment. Correct diagnosis of some of these skin diseases requires clinicopathological correlation and pathologic examination often serves as a complementary or a confirmative part of the diagnosis. **Aim And Objectives:** The aim was to study the hyperpigmented skin lesions and their histopathological features in patients attending clinical services of SSG hospital, Baroda. **Materials and Methods:** The present study is both a retrospective and prospective study over 1 year. All the skin biopsies performed for hyperpigmented skin lesions. The specimen was fixed in 10% buffered formalin for 12 to 24 hours and then subjected to processing and embedding routinely. Sections of 3 to 4 microns were cut. They were stained with hematoxylin and eosin stain and diagnosis was made by light microscope. Each case of hyperpigmented skin lesions were examined in detail and each histopathological change was noted which was characteristic of that lesion. **Results:** The present study comprised of total 142 cases which are diagnosed histologically as hyperpigmented skin lesions. In the present study Psoriasis was the predominant lesion comprising 48 cases out of 142 cases (33.8%). **Conclusion:** Present study consists of 142 clinically diagnosed hyperpigmented skin lesions. Out of 142 cases, 97.89% cases correlated clinically and histopathologically. So, a good histopathological diagnosis is necessary for the accurate diagnosis and definite treatment of patient with pigmented skin lesion.

KEYWORDS

Hyperpigmented skin lesions, Histopathology, Psoriasis, Malignant Melanoma.

INTRODUCTION

The spectrum of the skin disease, including infectious diseases, neoplasms, a wide range of inflammatory disorders, and rare genetic disorders, is huge, and although in many conditions the histological features are pathognomic of particular skin disorders [1]. Pigmented skin lesions are a very common problem encountered by the dermatologist-while majority are benign, a small percentage of cases are melanomas.[3] Hyperpigmentory skin disorders comprise a group of diseases of the extreme heterogeneity of epidermal and dermal hyperpigmentation subdivided into various types according to etiology, underlying pathology, and the nature of the pigment. [1] A variety of nonmelanocytic lesions have pigmented variants, which cannot be easily recognized clinically and can mimic melanocytic lesions including melanoma.[3] Correct diagnosis of some of these skin diseases requires clinicopathological correlation and pathologic examination often serves as a complementary or a confirmative part of the diagnosis. [1] The present study highlights the incidence of Melanocytic as well as other pigmentary skin lesions in the patient presenting to the Department of Dermatology and Venereology, where the biopsy was taken and sent to the Histopathology section of the Pathology Department, Medical College and SSG Hospital, Baroda. Cutaneous malignant melanoma can occur de novo or in preexisting nevus therefore close examination of all nevi is recommended. [4] Early detection plays a strong role in treating the disease and reducing mortality because only 18% of patients with the metastatic disease survive beyond 5 years. [4] The present study highlights the incidence of Melanocytic as well as other pigmentary skin lesions. Hyperpigmentation of the skin is one of the commonest cosmetic skin complaints encountered in dermatology outpatient clinics. Evidence for a correct diagnosis may be lacking without a histopathologic examination of skin biopsies. [2] Many pigmented lesions are difficult to classify because of the wide spectrum of histopathological appearance and raise the possibility of melanoma. [5] With this study, we intended to evaluate the spectrum of pigmented skin lesions and correlate the clinical diagnosis with the histological diagnosis. [5] A histopathological interpretation by the pathologist is essential to correctly diagnose these lesions in order not to miss a small percentage of malignant tumors and to differentiate melanocytic lesions from their nonmelanocytic mimickers. [5]

Aim And Objectives

- The aim was to study the hyperpigmented skin lesions and their histopathological features in patients attending clinical services of SSG hospital, Baroda.
- To study all cutaneous premalignant and malignant lesions concerning their clinical features and histopathological findings.
- To determine the age and sex distribution of various hyperpigmented skin diseases.

MATERIALS AND METHODS

Study Design:

The present study is both a retrospective and prospective study over 1 year (from October 2021 to October 2022) in the Department of Pathology S.S.G. Hospital, Baroda.

Procedure:

- Data was collected retrospectively between October 2021 to June 2022 from records in the histopathology section of the pathology department of SSG hospital, Baroda. During this period slides were retrieved and reviewed.
- The prospective study consisted of the period from July 2021 to October 2022. (Ethical committee clearance was obtained on July 2022). During that period all the skin biopsies performed for hyperpigmented skin lesions in the Department of Dermatology and Venereology, SSG hospital, Baroda was received in the histopathology section of the pathology department of SSG hospital, Baroda. The specimen was fixed in 10% buffered formalin for 12 to 24 hours and then subjected to processing and embedding routinely. Skin biopsy was oriented perpendicular to the cutting surface so that all the layers of the skin are visualized. Sections of 3 to 4 microns were cut. They were stained with hematoxylin and eosin stain and diagnosis was made by light microscope. Each case of hyperpigmented skin lesions was examined in detail and each histopathological change was noted which was characteristic of that lesion. Detailed histopathological examination of the samples was conducted and correlated with clinical findings and compared with the available literature.

Inclusion Criteria:

Skin biopsy of all clinically diagnosed skin disease cases presented with hyperpigmented skin lesions of all age groups and both sexes were included.

Exclusion Criteria:

- Skin biopsies other than hyperpigmented skin lesions.
- Inadequate biopsies were excluded from the study.

RESULTS AND ANALYSIS

The present study comprised of total 142 cases which are diagnosed histologically as hyperpigmented skin lesions and the distribution pattern of it is according to Table -1.

Table 1 Spectrum of distribution of disease

Histopathological Diagnosis	Total No. Of Cases	Percentage Of Cases
Acquired Melanocytic Nevus	4	2.8
Basal Cell Carcinoma	5	3.5
Becker's Nevus	1	0.7
Benign Melanocytic Lesion	2	1.4
Common Blue Nevus	1	0.7
Compound Melanocytic Nevus	1	0.7
Congenital Melanocytic Lesion	5	3.5
Discoid Lupus Erythematosus	11	7.7
Epidermal Nevus	1	0.7
Epidermolytic Hyperkeratosis	1	0.7
Lichen Planus	25	17.61
Intradermal Nevus	8	5.63
Keratosis Pilaris	2	1.4
Amyloidosis	2	1.4
Lipodermatosclerosis	7	4.9
Melanoma	2	1.4
Morphea	4	2.8
Nevus Lipomatosis Superficialis	1	0.7
Nevus Sebaceous of Jadassohn	4	2.8
Psoriasis	48	33.8
Pigmented Purpuric Dermatosis	4	2.18
Porokeratosis	1	0.7
Solar Lentigo	1	0.7
Verrucous Epidermal Nevus	1	0.7
Total	142	100

In the present study Psoriasis was the predominant lesion comprising 48 cases out of 142 cases (33.8%). 2nd most common lesion in this study was Lichen planus comprising 25 cases out of 142 cases (17.61%) followed by discoid lupus erythematosus comprising 11 cases out of 142 cases (7.7%).

Table 2 Age wise Distribution of Total Cases.

Age of patient	Total no. Of cases.	Percentage of cases
<10	2	1.41
11-20	13	9.16
21-30	21	14.79
31-40	29	20.43
41-50	31	21.84
51-60	26	18.31
61-70	16	11.27
>70	4	2.82
Total	142	100

The most common age of presentation was 41 to 50 years comprising a total of 31 cases out of 142 cases (21.84%). It was followed by 31-40 years (20.43%), and 51-60 years (18.31%). Cases were least in the <10 years age group which were 1.41% of overall cases.

Table 3 Distribution of Melanocytic and Non Melanocytic Lesion.

	Total No. of cases	Percentage of cases
Non melanocytic	117	82.40
Melanocytic	25	17.60
Total	142	100

In the present study, Out of 142 cases 25(17.60%) were Melanocytic lesion and 117(82.40%) were Non Melanocytic lesion.

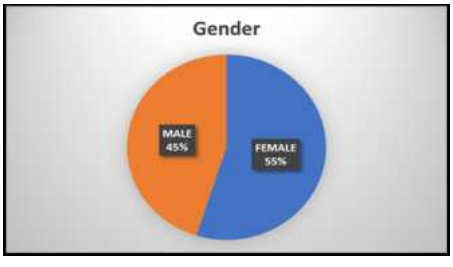
Table 4 Site wise Distribution of Lesions

Site	Total no of cases	Percentage of cases
Abdomen	2	1.41
Back	9	6.34
Buttock	1	0.71
Cheek	7	4.93
Chest	3	2.12
Chin	3	2.12
Face	7	4.93
Flank	2	1.41
Forehead	4	2.82
Inframammary Fold	1	0.71
Infraorbital	1	0.71
Lip	1	0.71
Lower Limb	42	29.59
Neck	2	1.41
Nose	2	1.41
Pinna	1	0.71
Preauricular	1	0.71
Retroauricular	1	0.71
Scalp	5	3.53
Suprapubic Region	1	0.71
Upper Limb	45	31.71
Upper Limb,Lower Limb	1	0.71
Total	142	100.00

In the present study, the most common involving site was the upper limb comprising 45 (31.71%) cases followed by the lower limb comprising 42 cases (29.59%).

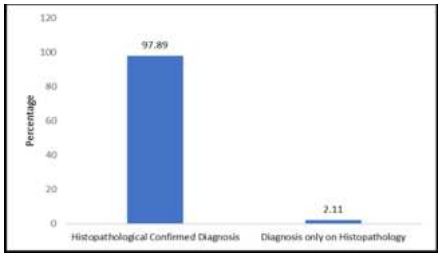
Graph 1 Distribution of the lesion according to benign and malignant category

In the present study of 142 cases, benign lesion constitutes 135(95.07%) cases followed by malignant lesion comprising 7(4.93%) cases.



Graph 2 Gender wise Distribution of Total Cases.

In the present study, Female predominance was seen. There was a total of 78 cases of female (54.93%) and 64 cases of male (45.07%) and thus, M: F ratio was 0.82:1.

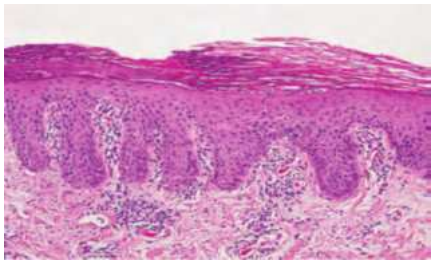


Graph 3 Correlation between Clinical and Histopathology diagnosis

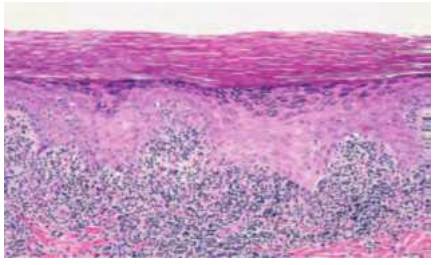
During this study period, 142 cases were clinically presented as hyperpigmented skin lesions of which 139 (97.89%) cases were

confirmed on histology and 3 cases (2.11%) were diagnosed only on histopathology.

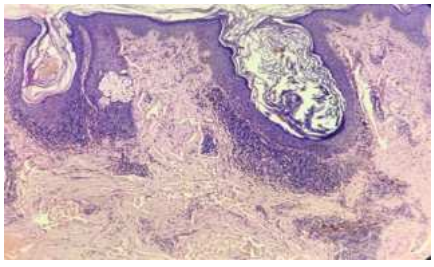
Photographs



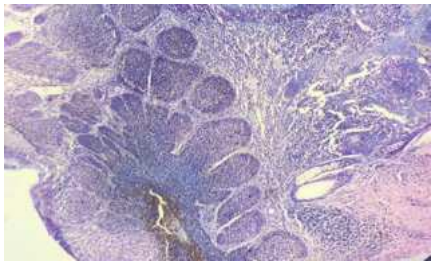
H & E picture showing mounds of parakeratosis with neutrophils, thin granular layer, moderate acanthosis, focal spongiosis, increased mitotic figures, dilated blood vessels at the tip of the dermal papillae, and perivascular infiltrate of lymphocytes and a few neutrophils in case of Psoriasis.(40x)



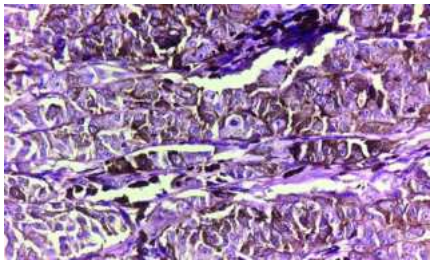
H & E picture showing dense, bandlike infiltrate predominantly of lymphocytes in the papillary dermis that extends to the epidermis, where there is vacuolar alteration of the basal layer, necrotic keratinocytes, irregular acanthosis, wedge-shaped hypergranulosis, and compact orthokeratosis in case of Lichen Planus.(40x)



H & E picture showing thinned out epidermis, loss of rete ridges pattern, follicular plugging along with thickening of basement membrane around ostia, brisk mononuclear inflammatory infiltrates is present near the dermal epidermal junction in case of Discoid Lupus Eerythematosus.(10x)



H & E picture showing large basaloid solid lobules with peripheral nuclear palisading, cleft formation between tumor lobules and stroma in case of Basal Cell Carcinoma.(10x)



H & E picture showing severe nuclear atypia and high mitotic activity(Presence of melanin is an important diagnostic clue) in case of Malignant Melanoma.(40x)

DISCUSSION

The period of study was 1-year duration from October 2021 to October 2022. The total number of skin biopsies received including hyperpigmented skin lesions was 1080.

Among them, the number of patients having hyperpigmented skin lesions was 142 accounting for 13.14% of total skin biopsies.

In the present study incidence of the melanocytic lesion was 25 cases (17.60%) out of a total of 142 cases. This is in accordance with other studies in the Abhishek Singh et al.[5] study the incidence of the melanocytic lesion was 23 cases (30.66%) of 75 cases and in Ishant Anand et al.[3] study the incidence of the melanocytic lesion was 22 cases(31%) of 70 cases.

Most common age group in the present study was the 4th to 6th decade. This was in accordance with Rakesh Saha et al.[7] and Rajendra prasad et al.[6] study. But other studies like Abhishek Singh et al.[5] and Shushan Sweta et al.[2] showed the most common presentation in 3rd decade. The mean age of the present study was 43 years. The youngest age was 9 years and the oldest age was 85 years.

In the present study, there was a Female predominance and M:F ratio was 0.82:1. This is similar to other study like Smitha Mruthyunjayappa et al.[1], Shushan Sweta et al.[2], Abhishek Singh et al.[5] and Rajendra Prasad et al.[6].

In the present study incidence of malignant skin, lesions were observed in 7 cases (4.93%) out of 142 cases. However, other studies showed a slightly more increased incidence of malignant skin lesions. For example, Ishant Anand et al.[3] study showed malignant skin lesions in 20 cases (28.58%) out of the study of 70 cases, Abhishek Singh et al.[5] study showed malignant skin lesions in 17 cases (22.66%) out of 75 cases and Rajendra Prasad et al.[6] study showed malignant skin lesion in 23 cases (26.13%) out of the study of 88 cases.

In the present study, Malignant Melanoma was observed in 2 cases out of 25 cases of melanocytic lesions. In other studies by Ishant Anand et al.[3] Malignant Melanoma was observed in 12 cases out of 22 cases of melanocytic lesions.

1)Psoriasis [8,9,10]

Psoriasis is characterized by chronic recurrent circumscribed erythematous plaques, patients present with scaly plaques of variable size. There is sharply delineated dry skin lesions which are covered by layer of fine silvery scales. Fully developed Psoriasis lesions are characterized by, Hyperkeratosis, parakeratosis, acanthosis and spongiosis, psoriasiform hyperplasia of epidermis, suprapapillary thinning of epidermis, munro's abscess formation, spongiform pustule(Pustule of Kogoj), hypogranulosis, elongated rete ridges, dilated blood vessels, dermal inflammation.

2) Lichen Planus[11,12,13]

There is a predilection for flexor surface of wrists, trunk, thigh and genitalia. Palmoplantar lichen planus and oral lichen planus are also common. Acanthosis in lichen planus is irregular and affect spinous layer and suprapapillary plates. The rete ridges show irregular lengthening, some are pointed at their lower end, giving them "Saw tooth appearance". Hypergranulosis in epidermis is uneven and wedge shaped. Melanophages are seen in upper dermis, often in considerable number, as a result of damage to basal layer and subsequent pigment incontinence. Civatte bodies otherwise known as eosinophilic colloid bodies which are necrotic keratinocytes seen in lower epidermis and papillary dermis. There may be a small cleft between dermis and epidermis noted due to basal cell vacuolation. It is known as Max Joseph spaces.

3) Discoid lupus erethematosus [14,15]

In discoid lupus erythematosus sharply demarcated, erythematous, scaly patches are seen with follicular plugging. Characteristic histological findings of DLE are, hyperkeratosis and follicular plugging, thinning and flattening of stratum spinosum, hydropic degeneration of basal cells, thickening and tortuosity of basement membrane, correlating with deposition of immune reactant which is

demostarted by PAS staining, lymphohistiocytic inflammation arranged along the dermoepidermal junction, around hair follicle and eccrine glands and sometimes interstitial edema and mucin deposition which is demonstrated by Alcian blue staining. Early lesions show plasma cells, neutrophils and nuclear dust in the superficial dermis in active lesion. Plasma cells are prominent in oral lesions.

4) Basal Cell carcinoma [16,17,18,19]

Basal cell carcinomas are seen almost exclusively on hair-bearing skin, especially on the face. Except in the nevoid basal cell carcinoma syndrome, they rarely occur on the palms or on the soles. Basal cell carcinomas tend to share the common features of a predominant basal cell type, peripheral palisading of lesional cell nuclei, a specialized stroma, and clefting artifact between the epithelium and the stroma. In addition, there are variable degrees of cytologic atypia and mitotic activity; some degree of these latter changes is virtually always present.

5) Malignant Melanoma [20]

The clinical lesion is usually an irregularly shaped, asymmetrical lesion with varying colors with a history of recent change in size, shape, color or sensation. Melanoma may arise de novo or within an existing benign or dysplastic nevus. Histologically, melanomas are asymmetrical and poorly circumscribed lesions with architectural disturbance and usually marked cytological atypia. Specific features include consumption of the epidermis, pagetoid spread of melanocytes, nests of melanocytes with variable size and shape (which may be confluent and lack maturation), melanocytes within lymphovascular spaces, deep and atypical mitoses and increased apoptosis. Ulceration, if present, is a poor prognostic factor. Mitotic figures are common.

SUMMARY AND CONCLUSION

Aim of the study was to study the histomorphology of various hyperpigmented skin lesions over one year at Baroda Medical College, Vadodara. The study period was 1 year from October 2021 to October 2022.Present study consists of 142 clinically diagnosed hyperpigmented skin lesions. Among 142 cases, it most common lesion was psoriasis. The most common age group in our study was 41-50 years comprising a total of 21.84% of total cases. Females were mostly affected (54.93%) and the sex ratio was 0.82:1(Male: Female). In the present study among 142 cases, 135 were benign and 7 were malignant. There were 2 cases of malignant melanoma and 5 cases of basal cell carcinoma out of a total of 7 malignant lesions in the present study.

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