



A STUDY OF HISTOMORPHOLOGICAL SPECTRUM OF HYPERPIGMENTED SKIN LESIONS IN ADULTS

<b>Shubhangi V. Agale</b>	Professor Academics, Department of Pathology, GGMC & Sir J.J. Group of Hospitals, Mumbai.
<b>Swati Narute</b>	Senior Resident, Department of Pathology, GGMC & Sir J.J. Group of Hospitals, Mumbai.
<b>Akshata Dhakhre</b>	Junior Resident 3, Department of Pathology, GGMC & Sir J.J. Group of Hospitals, Mumbai.
<b>Indira Gore*</b>	Junior resident 3, Department of Pathology, GGMC & Sir J.J. Group of Hospitals, Mumbai. *Corresponding Author
<b>Buddheshwar N. Hiwale</b>	Professor & Head of Department, Department of Pathology, GGMC & Sir J.J. Group of Hospitals, Mumbai.

**ABSTRACT**

**Background:** Hyperpigmentary skin disorders may be defined as increased pigmentation of the skin and/or mucus membranes. 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. Pathologic examination often serves as a complementary or a confirmative part of the diagnosis. The histology-based treatment principles may be helpful for establishing a standardized treatment algorithm for hyperpigmented skin lesions. **Methods:** A prospective study was conducted to assess histomorphological features of hyperpigmented skin lesions. The study included 60 patients for a duration of 2 years. Clinical history like age, sex, site, duration of the lesion, size of the lesion, significant medical history, and clinical diagnosis were noted. **Result:** Out of 60 cases, majority (40 %) were classical lichen planus and its variants. Most of cases were in the age group of 21-30 years and showed male preponderance with both upper and lower limbs as the most common site of distribution. **Conclusion:** In present study, hyperpigmented skin lesions were most common in males with lichen planus as the most common histopathological diagnosis. The histopathologic examination serves as a complementary or a confirmative part of diagnosis, which helps in management of these patients.

**KEYWORDS :** Hyperpigmentation, Histopathology, Lichen Planus, naevi.

**INTRODUCTION**

The hyperpigmentary skin disorders are defined as increased pigmentation of the skin and are one of the most common cause for dermatological consultation[1-2]. Hyperpigmented skin lesions can be melanocytic or non-melanocytic lesions and are black, brown or blue in colour [3-4]. The disorders of pigmentation usually result from A] Migration abnormalities of melanocytes from neural crest to the skin during embryogenesis, B] Impairment of melanosome transfer to keratinocytes and C] alteration in melanin synthesis [4].

The Histopathologic examination often serves as a complementary or a confirmative part of the diagnosis. The histology-based treatment principles may be helpful for establishing a standardized treatment algorithm for hyperpigmented skin lesions.

**MATERIALS AND METHODS**

A prospective study was conducted to assess histomorphological features of hyperpigmented skin lesions. The study included 60 patients for a duration of 2 years. In a period of 2 years of the study total 1278 skin biopsy specimen were received of which 60 were hyperpigmented skin lesions.

The detailed clinical history like age, sex, site, duration of the lesion, size of the lesion, significant medical history, and clinical diagnosis were noted from histopathology requisition forms and medical records. The detailed histopathological examination of the samples was conducted and correlated with clinical findings. The histological examination of skin biopsy was done on H and E stains. The study had inclusion and exclusion criteria as follows- Inclusion criteria- skin biopsies of all non-neoplastic and neoplastic hyperpigmented skin lesions of age more than 18 years and both sexes were included. Exclusion criteria - skin biopsies other than hyperpigmented skin lesions, age of less than 18 years and

inadequate biopsy specimens were excluded. All procedures performed in the current study were approved by Institutional ethics committee (Reference no.- IEC/PG/250/Dec/2019, Date-31/12/2019). Informed consent was obtained from all individual participants included in the study.

**RESULTS**

A total of 60 cases were considered in the present study. The maximum number of cases were observed in the age group of 21-30 years (16 cases, 26.6%), whereas the least number of cases were seen above 70 years of age (2 cases, 3.33%) (Table 1).

Considering the gender-wise distribution, a male preponderance was noted. Out of the 60 cases, 37 cases (61.6%) were males and 23 cases (38.3%) were females with male : female ratio of 1.6:1. (Table 2).

The Hyperpigmented skin lesions can be categorized into neoplastic and non-neoplastic. Out of 60 skin biopsies analysed, 57 cases (95 %) were non-neoplastic lesions and 3 cases (5%) were neoplastic (Table 3).

**Table 1: Age Wise Distribution**

Age Group	Number of Cases (n=60)	Percentage (%)
11-20	9	15
21-30	16	26.6
31-40	11	18.3
41-50	11	18.3
51-60	7	11.6
61-70	4	6.6
>70	2	3.3
TOTAL	60	100

**Table 2: Sex Wise Distribution Of Cases**

Gender	Number of patients	Percentage
Male	37	61.66

Female	23	38.33
--------	----	-------

**Table 3: The Basic Distribution Of Hyperpigmented Skin Lesions**

Type of lesions	No. of patients	Percentages
Non-neoplastic	57	95
Neoplastic	3	5
Total	60	100

Among the non-neoplastic lesions, most common finding was classical lichen planus (Figure 1a, 1b) and its variants such as hypertrophic lichen planus (Figure-2), lichen planus pigmentosus (Figure 3a, 3b), lichen amyloidosis (Figure 4a, 4b) (24 cases, 40%), followed by (13 cases, 21.66%) of different types of melanocytic nevi such as compound melanocytic nevi (Figure 5a, 5b), dermal melanocytic nevi (Figure 6a, 6b), epidermal nevus (Figure 7a, 7b), becker's nevus (Figure 8a, 8b) 3 cases (5%) of post inflammatory hyperpigmentation, 2 cases (3.33%) each of polymorphous light eruption, prurigo nodularis (Figure 9a, 9b), psoriasis (Figure 10a, 10b) 1 case (1.6%) each of DLE, lichen simplex chronicus, morphea, acne, pellagra, pityriasis versicolor, chronic dermatitis and drug induced dermatitis. Among neoplastic lesions more common were basal cell carcinoma (Figure 11a, 11b) (5%) and its variant basosquamous carcinoma (Figure 12a, 12b).

The most common sites were the extremities, both upper limbs and lower limbs were included in 37 cases (61.66%). Other sites were the trunk and abdomen (5 cases, 8.3%), all over the body (4 cases, 6.66%), scalp (3 cases, 5%), back (3 cases, 5%), neck (2 cases, 3.33%) and face (2 cases, 3.33%) (Table 4).

56.66 % patients presented with multiple lesions, while 43.33 % presented with single lesion. In maximum number of cases, (29 cases, 48.33%) duration of lesion was between 5-8 months in followed by 1-4 months in (26 cases , 43.33%) and 9-12 months in (5 cases, 8.33%) (Table 5).

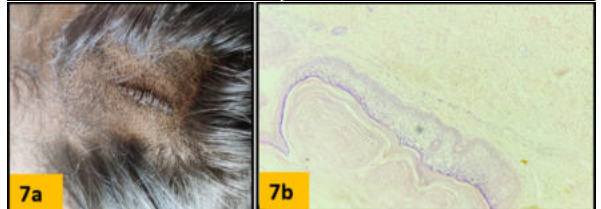
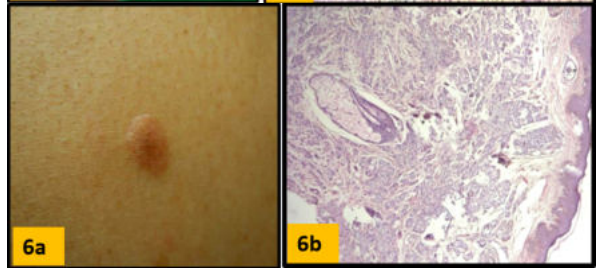
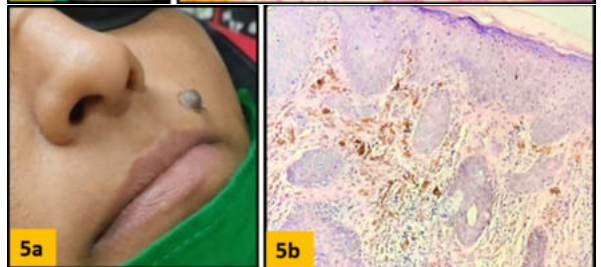
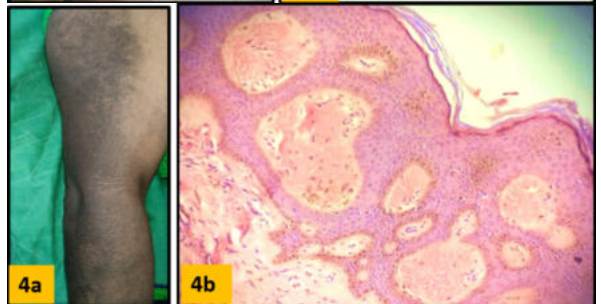
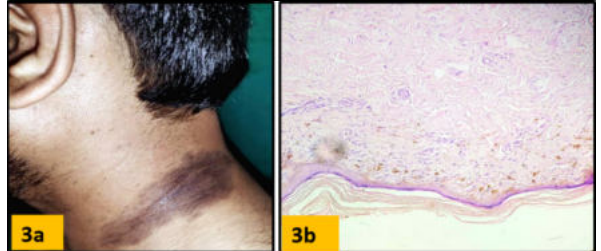
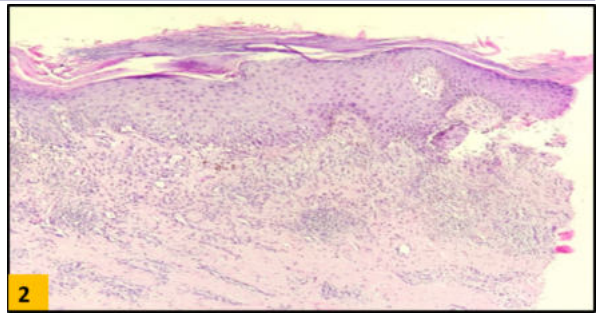
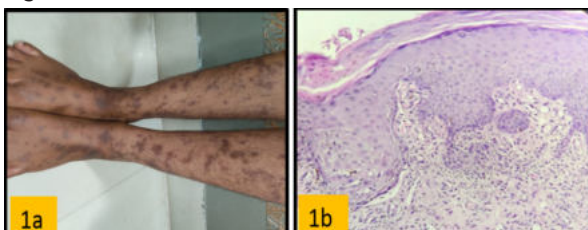
**Table 4: Site Wise Distribution Of Hyperpigmented Skin Lesions**

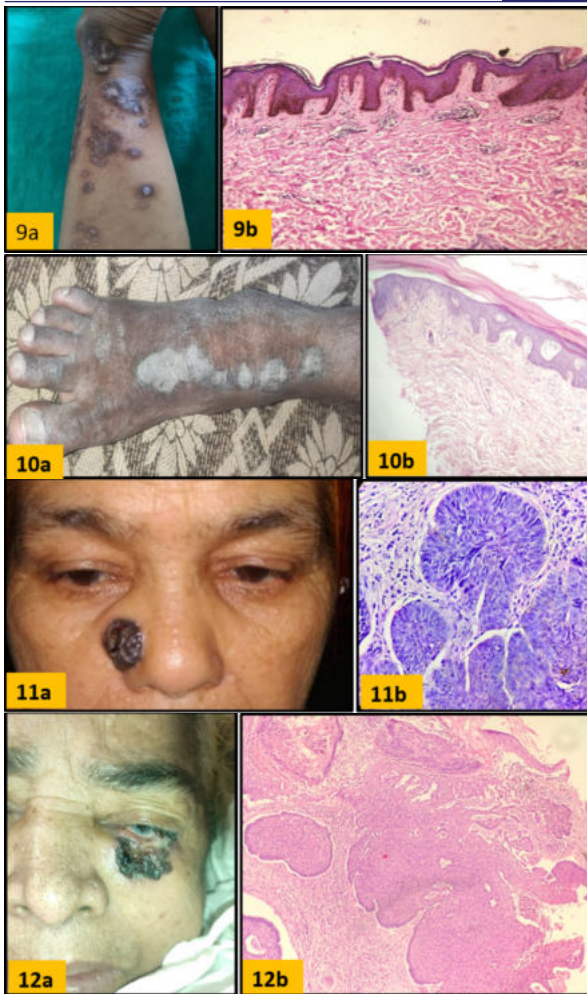
Site of Lesion	No. of Cases (n=60)	Percentage (%)
Upper limb	12	20
Lower limb	10	16.66
Both upper limb and lower limb	15	25
Upper limb, lower limb and back	4	6.66
Back	3	5
Neck	2	3.33
Face	2	3.33
Trunk	3	5
Scalp	3	5
Abdomen	2	3.33
All over body	4	6.66
Total(n=60)	60	100

**Table 5: Distribution Of Cases Based On Duration Of Lesions**

Duration	Number of cases	Percentage (%)
1-4 Month	26	43.33
5-8 months	29	48.33
9-12 months	5	8.33
Total	60	100

Figures:





## DISCUSSION

Hyperpigmented skin lesions are one of the most frequent causes for dermatologic consultation all over the world. In India, they are a major concern with great psychological impact on quality of life and socially. [5]

In diagnostic evaluation of hyperpigmentary lesions further characterization of morphology, distribution, pattern and extent of the lesion are helpful to make an accurate initial clinical diagnosis and skin biopsy is needed to confirm the diagnosis.

Pigmented skin lesions comprise a large component of most histopathologists' workload, and there is a wide spectrum of histological appearances thus it carries great importance from dermatopathologist point of view. The histology-based treatment principles may be helpful for establishing a standardized treatment algorithm for hyperpigmented skin lesion.

In this study we studied the spectrum of pigmented skin lesions. There was 98% correlation between clinical diagnosis and histopathological diagnosis whereas in 2% cases there was no correlation, thus emphasizing the importance and utility of histopathology in arriving at a conclusive diagnosis.

The current study showed a maximum number of cases in the age group of 21-30 years. This was comparable with studies conducted by Lotti T et al [6] in which maximum cases were observed in the age group of 21-30 years, Sehgal VN et al [7] in which maximum number of cases were in the age group of 11-40 years and Lee RM et al [8] in which maximum number of cases were in age group of 20-65 years.

In our study, least number of cases (2 cases, 3%) were seen above 70 years of age. This was comparable with the studies done by Sontheimer RD et al [9] and Shenoi SD et al [10]

In our study, there was male preponderance. Out of 60 cases, 37 (61.66%) were males and 23 (38.33%) were females with male: female ratio of 1.6:1, which was seen in the study done by Ellis FA et al (M:F- 1.7:1) [11].

In contrast, the studies done by Shenoi SD et al [9] and Stulberg DL et al [12] showed female preponderance with male to female ratio of 0.7:1 and 0.8:1 respectively.

In the present study, the predominant site of involvement was both upper limb and lower limb (61.66%). Similar findings were seen with studies done by Pareek A et al (32%) [13], Sharma L et al (34%) [14], Dhar S et al (30%) [15] and Seetharam KA et al (35%) [16].

In this study non-neoplastic lesions (95%) were much more common than neoplastic lesions (5%) and similar findings were seen in studies done by Lotti T et al (80.81%) [6], Lee RM et al (90.9%) [8], Garg G et al (53%) [17], Sontheimer RD et al (88.92%) [9] and Shenoi SD et al (75.6%) [10]. However studies done by Mohan S et al [18] (52.3%) lesion were non-neoplastic and remaining were neoplastic and Stulberg DL et al (53%) [12] showed maximum number of neoplastic lesions.

In maximum number of cases (29 cases, 48.33%), duration of lesions was between 5-8 months, followed by 1-4 months in 26 cases (43.33%) and 9-12 months in 5 cases (8.33%).

## CONCLUSION

The histopathological examination of skin biopsies plays a valuable role in the diagnosis of hyperpigmented skin lesions, highlighting the importance of non-neoplastic lesions.

It is imperative to distinguish between epidermal and dermal hyperpigmented lesions; because epidermal pigmentation responds better to treatment than dermal pigmentation which is resistant to treatment. The specific diagnosis of hyperpigmented lesions is based on histopathologic findings and interpretation in context of clinical presentation. The early detection and treatment of lesions is crucial to decrease functional and cosmetic morbidity.

## REFERENCES

- Jayker SS, Anantharaj J, Surhonne SP et al. Histopathological spectrum of hyperpigmented lesions of skin. *J. Evolution Med. Dent. Sci.* 2016;5(34):1913-1916. DOI: 10.14260/jemds/2016/453
- Ahmed, S. K. A., Ullah, S. S., Bhuyan, K., Deka, M. K., & Sheikh, S. A. (2021). Spectrum of pigmented lesions of skin: a retrospective study in a tertiary health care of Southern Assam. *International Journal of Research in Medical Sciences*, 9(4), 1117-1121. <https://doi.org/10.18203/2320-6012.ijrms20211361>
- Singh, Abhishek & Sharma, Dr & Kashyap, Dr & Sen, Anjita & Dabas, Dr & Pal, Reetika. (2020). A Clinicopathological Study of Spectrum of Pigmented Skin Lesions in Southern India: A Three Year Experience at a Tertiary Care Centre with Review of Literature. *Saudi Journal of Pathology and Microbiology*. 5. 437-445. 10.36348/sjpm.2020.v05i10.005.
- Bohra, I., Paudyal, P., Pradhan, A., & Khadka, D. K. Clinico-histopathological correlation of pigmented skin lesions: A hospital based study at BPKIHS. *Journal of Pathology of Nepal*, 2019, 9(2), 1550-1554. <https://doi.org/10.3126/jpn.v9i2.24080>
- Mruthyunjayappa S, Mahantappa H, Gopal MG, Venugopal SB. A study of spectrum of histopathological features in patients presenting with hyperpigmented skin lesions. *Archives of Medicine and Health Sciences*. 2016 Jul 1;4(2):189.
- Lotti T, Buggiani G, Prignano F. Prurigo Nodularis and Lichen simplex chronicus. *Dermatology Therapy* 2008; 21: 42-46.
- Sehgal VN, Srivastava G, Sharma S, Sehgal S, Verma P. Lichenoid tissue reaction/interface dermatitis: Recognition, classification, etiology and clinicopathological overtones. *Indian Journal of Dermatol venereol Leprol* 2011; 77(4): 418-430.
- Lee RM, Shumack S. Prurigo Nodularis: A review. *Australian Journal of Dermatology* 2005; 46: 211-220.
- Sontheimer RD. Lichenoid tissue reaction/interface dermatitis: clinical and histological perspectives. *Journal of Investigative Dermatology* 2009; 129: 1088-1089.
- Shenoi SD, Salim T, Balachandran C, Mehta RV. Lichen amyloidosis: A study

- of clinical, histopathologic and immunofluorescence findings in 30 cases. *IJDVL* 2005; 71(3): 166-169.
11. Ellis FA. Histopathology of lichen planus based on analysis of one hundred biopsy specimens. *The Journal of Investigative Dermatology* 1967; 48(2): 143-148.
  12. Stulberg DL, Clark N, Daniel Tovey, et al. Common hyperpigmentation disorder in adults: part II. Melanoma, seborrheic keratosis, acanthosis nigricans, melasma, diabetic dermopathy, tinea versicolor and postinflammatory hyperpigmentation. *Journal of American academy of family physicians* 2003;68(10):1963-9.
  13. Pareek A, Khopkar U, Sacchidanand S, Chandurkar N, Naik GS. Comparative study of efficacy and safety of hydroxychloroquine and chloroquine in polymorphic light eruption: A randomized, double blind, multicentric study. *Indian Journal of Dermatol venereol Leprol* 2008; 74(1): 18-22.
  14. Sharma L, Basnet A. A clinicoepidemiological study of polymorphic light eruption. *Indian Journal of Dermatol venereol Leprol* 2008; 74(1): 15-17.
  15. Dhar S, Jain S. High incidence of Polymorphic light eruption in Kota. *Indian Journal of Dermatol venereol Leprol* 1996; 62(4): 265-266.
  16. Seetharam KA, Sridevi K. Association of Polymorphic light eruption and autoimmune thyroiditis. *Indian Journal of Dermatol venereol Leprol* 2010; 76(6): 704-705.
  17. Garg G, Khopkar U. Ethionamide-induced pellagroid dermatitis resembling lichen simplex chronicus: A report of two cases. *Indian Journal of Dermatol venereol Leprol* 2011; 77(4): 534.
  18. Mohan S, Chang AL. Advanced Basal Cell Carcinoma: Epidemiology and Therapeutic Innovations. *Curr Derm Rep.* 2014;3:40-45.