Journal of Population Therapeutics & Clinical Pharmacology

**RESEARCH ARTICLE**
**DOI: 10.53555/8w9zwa51**

# SPECTRUM OF HYPERPIGMENTED LESIONS OF SKIN IN A TERTIARY CARE HOSPITAL (GMC JAMMU)

**Dr. Rahat Un Nisa[1*], Dr. Sindhu Sharma[2]**

[1*]Postgraduate Scholar, Department of Pathology, Government Medical College, Jammu, India
[2]Professor, Department of Pathology, Government Medical College, Jammu, India

***Corresponding Author:** Dr. Rahat Un Nisa
*Postgraduate Scholar, Department of Pathology, Government Medical College Jammu, India
Mail id: unnisarahat123@gmail.com

**Abstract**

**Background:** Hyperpigmented skin lesions encompass a wide spectrum of conditions, ranging from benign to malignant. Histopathological evaluation is essential for confirming diagnoses, differentiating between melanocytic and non-melanocytic lesions, and ruling out malignancies.
**Aim:** To study the spectrum of hyperpigmented skin lesions in a tertiary care hospital and establish a correlation between clinical presentations and histopathological findings.
**Methods:** This retrospective cross-sectional study was conducted in the Department of Pathology, Government Medical College, Jammu, from January 2023 to June 2023. A total of 50 skin biopsy samples of hyperpigmented lesions, irrespective of age and sex, were included. Tissue samples were processed, stained with hematoxylin and eosin, and examined histopathologically. Data were analyzed and tabulated.
**Results:** Out of the 50 cases studied, 42 (84%) were non-neoplastic, and 7 (14%) were neoplastic. The most commonly affected age group was individuals over 60 years, with a male preponderance. Among non-neoplastic lesions, lichen planus was the most frequent (24%), followed by discoid lupus erythematosus and morphea (16% each). Among neoplastic lesions, basal cell carcinoma was the most common (8%), followed by melanoma (6%).
**Conclusion:** Both melanocytic and non-melanocytic lesions can present as Pigmented Skin Lesions among any age group. Histopathological confirmation is imperative whenever a pigmented lesion clinically mimicking melanoma is encountered as many of these may turn out to be non-melanocytic and other benign melanocytic lesions on biopsy giving reassurance to the patient. A complete clinical diagnosis assists the histopathologist to give an accurate report.

**Keywords:** Hyperpigmented skin lesions, histopathology, lichen planus, basal cell carcinoma, melanoma, prevalence

## Introduction

Hyperpigmented skin lesions refer to areas of the skin or mucous membranes with increased pigmentation, often prompting medical consultation due to cosmetic or health concerns. These lesions arise from a variety of causes, including genetic predisposition, environmental factors, infections, systemic diseases, and even malignant transformations. Their clinical presentations frequently overlap, making an accurate diagnosis challenging without histopathological evaluation [1, 2].

In developing countries, skin diseases are among the most common reasons for dermatological visits, affecting individuals across all age groups. Hyperpigmented lesions, which encompass a spectrum from benign conditions like lichen planus to potentially life-threatening malignancies like melanoma, are no exception. Of the over 2000 known skin diseases, a significant portion involves pigmentation disorders. Accurate diagnosis and timely intervention are essential, as many hyperpigmented lesions mimic melanocytic lesions, including melanoma, which requires prompt treatment [3, 4].

Non-neoplastic hyperpigmented lesions, such as lichen planus, discoid lupus erythematosus, and morphea, are among the most common presentations. These conditions often result from chronic inflammation or autoimmune processes and can significantly impact the quality of life due to their chronicity and visibility. In contrast, neoplastic lesions like basal cell carcinoma and melanoma represent a smaller but critical subset, requiring histopathological confirmation to differentiate them from benign conditions and rule out malignancy [5, 6].

Histopathological examination remains the cornerstone of diagnosing hyperpigmented lesions. It not only aids in confirming clinical suspicions but also helps rule out malignancies in clinically ambiguous cases. This is particularly critical in cases mimicking melanoma, as the accurate differentiation between melanocytic and non-melanocytic lesions can have profound implications for management and prognosis [7, 8].

The psychosocial impact of hyperpigmented skin lesions cannot be understated, particularly when these lesions affect visible areas of the body. Patients often experience significant psychological distress, underscoring the need for accurate diagnoses and effective management. Furthermore, the use of histopathology to identify the etiology and nature of these lesions provides clinicians with valuable insights for patient counseling and treatment planning [9, 10].

This study aims to explore the clinical-pathological spectrum of hyperpigmented skin lesions in a tertiary care setting. By correlating histopathological findings with clinical presentations, it seeks to provide a comprehensive understanding of these lesions and their management, contributing to better diagnostic accuracy and patient care.

## Materials and Methods

### Study Design

This was a cross-sectional, retrospective study conducted at the Department of Pathology, Government Medical College, Jammu. It involved all skin biopsies submitted for histopathological evaluation during the study period, irrespective of patient age, sex, and clinical diagnosis.

### Study Duration

The study was carried out over a six-month period from January 2023 to June 2023.

### Sample Collection and Processing

1. All skin biopsy samples received during the study period were fixed in 10% neutral buffered formalin.
2. Tissue samples were processed using standard paraffin wax embedding techniques.
3. Thin sections of 5 micrometers were cut using a microtome and mounted on glass slides.
4. Routine hematoxylin and eosin (H&E) staining was performed on all sections for histopathological examination.
5. Special stains, such as Masson’s trichrome and periodic acid-Schiff (PAS), were applied when necessary to aid in the diagnosis.

### Inclusion Criteria

- All adequately fixed and processed hyperpigmented skin biopsies received during the study period.
- Cases irrespective of age, sex, and clinical diagnosis.

**Exclusion Criteria**
- Inadequate or poorly fixed biopsy samples.
- Cases with a history of chemotherapy or radiotherapy.
- Autolysed tissue samples.

**Data Collection**
All relevant clinical and demographic information, including patient age, sex, lesion site, and clinical diagnosis, was collected from patient records. This data was correlated with histopathological findings to ensure comprehensive evaluation.

**Data Analysis**
The collected data were recorded and tabulated. Statistical analyses were performed to identify the frequency and distribution of various hyperpigmented skin lesions. Results were categorized into non-neoplastic and neoplastic lesions, with subgroup analysis based on age, sex, and histopathological diagnosis.

**Results**
The most commonly affected age group was 60 years and above (40%). Male predominance was observed, with a male-to-female ratio of 1.4:1 [Table 1].

**Table 1: Demographic characteristic of the study population**

| Age Group (Years) | Number of Cases | Percentage |
|---|---|---|
| <20 | 4 | 8% |
| 20-40 | 12 | 24% |
| 40-60 | 14 | 28% |
| >60 | 20 | 40% |

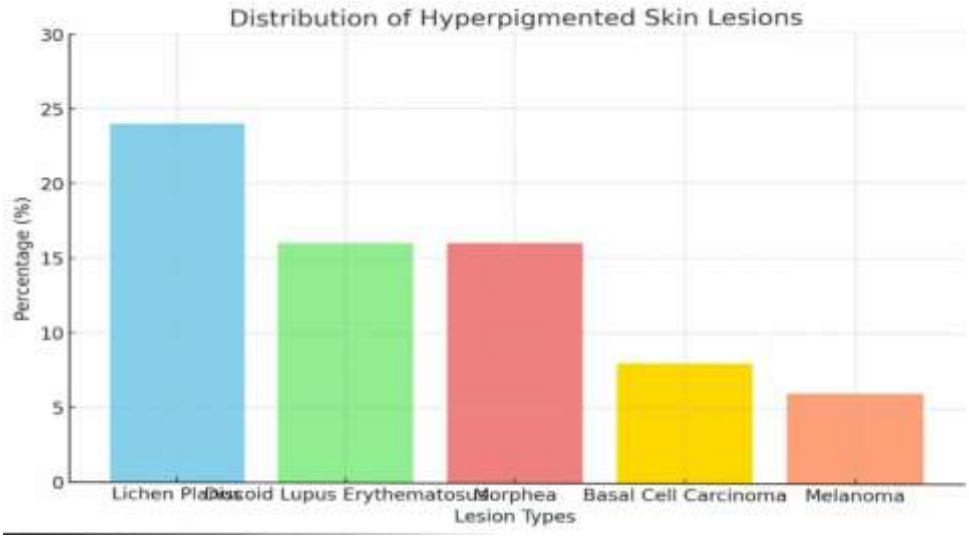
Out of 50 cases 42 (84%) cases were non-neoplastic ,7 (14%) cases were neoplastic [Table 2].

**Table 2: Distribution of lesions among the study population**

| Lesions | Frequency | % |
|---|---|---|
| Non-Neoplastic Lesions | 42 | 84% |
| Lichen Planus | 12 | 24% |
| Discoid Lupus Erythematosus | 08 | 16% |
| Morphea | 08 | 16% |
| Seborrhoic Keratosis | 07 | 14% |
| Hemangioma | 07 | 14% |
| Neoplastic Lesions | 08 | 16% |
| Basel Cell Carcinoma | 05 | 10% |
| Malignant Melanoma | 03 | 06% |

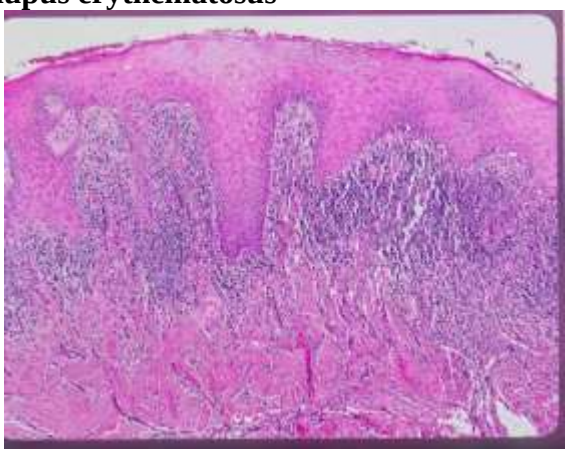
**Table 3 : Clinical and Histopathological Correlation of Pigmented Skin Lesions**

| Lesions | Consistent with Clinical Diagnosis | Inconsistent with Clinical Diagnosis |
|---|---|---|
| Basal Cell Carcinoma (n=5) | 3 (60%) | 2 (40%) Nevus |
| Malignant Melanoma (n= 3) | 1 (33.33%) | 1 (33.33%) BCC<br>1 (33.33%) Nevi |
| Lichen Planus (n=12) | 8 (66.66%) | 2 (16.66%) DLE<br>2 (16.66%) Ptyriasis Rosea |
| Seborrhoic Keratosis (n=7) | 5 (71.4%) | 1(14.3%) Nevi<br>1(14.3%) Melanoma |
| DLE (N=8) | 5 (62.5%) | 2(25%) Lichen Planus<br>1 (12.5 %) Rosacea |
| Hemangioma (n=7) | 7 (100 %) | |
| Morphea (n=8) | 4 (50%) | 3 (37.5%) Scleroderma<br>1 (12.5 %) Lichen Sclerosis Atrophicus |

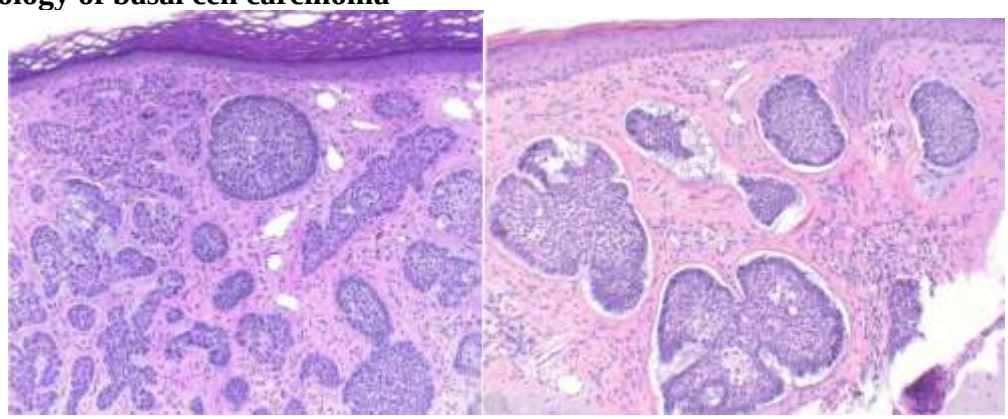



The bar graph illustrating the distribution of hyperpigmented skin lesions . It shows the percentages of non-neoplastic and neoplastic lesions, with Lichen Planus, Discoid Lupus Erythematosus, and Morphea being the most common non-neoplastic lesions, while Basal Cell Carcinoma and Melanoma represent the most common neoplastic lesions.

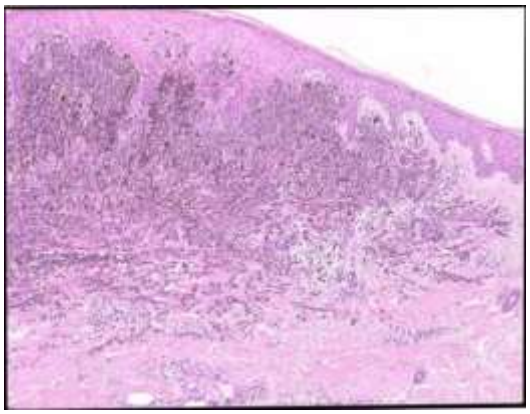
**Histopathology of discoid lupus erythematosus**



**Histopathology of basal cell carcinoma**



**Histopathology of malignant melanoma**



## Discussion

Hyperpigmented skin lesions encompass a diverse range of conditions arising from varied etiological factors, including inflammatory, autoimmune, infectious, and neoplastic causes. These lesions are challenging to diagnose due to overlapping clinical features, necessitating histopathological examination for precise differentiation and management [11].

The majority of cases (84%) in this study were non-neoplastic, with lichen planus being the most frequent diagnosis (24%). This is consistent with previous studies that highlight lichen planus as a common cause of hyperpigmentation, particularly in older individuals [12]. Discoid lupus erythematosus (16%) and morphea (16%) were the next most common non-neoplastic conditions. Both conditions exhibit pigmentation changes due to chronic inflammation and dermal alterations [13].

Among the neoplastic lesions (14%), basal cell carcinoma (BCC)accounted for 8%, making it the most common malignancy observed in the study, followed by melanoma (6%). These findings align with studies emphasizing that BCC, though usually non-lethal, is prevalent in sun-exposed areas and can cause significant local damage [14]. Melanoma, though less common, poses a significant threat due to its aggressive behavior. Its clinical resemblance to benign lesions underscores the critical need for histopathological confirmation [15].

The predominance of hyperpigmented lesions in individuals aged 60 years and above (40%) reflects the cumulative impact of environmental exposure and intrinsic aging factors. Male preponderance (male-to-female ratio of 1.4:1) may be attributed to occupational sun exposure, behavioral patterns, and genetic susceptibility [16].

Histopathological evaluation was crucial for confirming diagnoses in all cases. Routine hematoxylin and eosin staining sufficed for most lesions, while 30% required special stains to differentiate melanocytic from non-melanocytic lesions. This is particularly vital for melanoma cases, where accurate diagnosis has significant prognostic and therapeutic implications [17].

Our findings are consistent with previous studies conducted at other tertiary care centers, which report a higher prevalence of non-neoplastic lesions compared to neoplastic ones [18]. However, the proportion of melanoma cases in our study was slightly elevated, potentially reflecting regional differences in genetic and environmental risk factors, including UV exposure [19].

The study underscores the importance of histopathological examination in guiding clinical management. A multidisciplinary approach involving dermatologists, pathologists, and oncologists is essential for accurate diagnosis and appropriate treatment. Benign conditions mimicking malignancies often lead to unnecessary patient anxiety, which can be alleviated through precise histopathological confirmation [20].

Strengths of the study include its systematic histopathological evaluation and detailed analysis of clinical correlations. However, its retrospective nature limits causal inferences. Additionally, the sample size may not adequately capture the broader demographic variability.

## Conclusion

This retrospective study on hyperpigmented skin lesions highlights the diverse range of conditions that can present with pigmentation changes in the skin. The findings emphasize that both melanocytic and non-melanocytic lesions can lead to hyperpigmentation and underscore the importance of histopathological examination for accurate diagnosis. Lichen planus was found to be the most common non-neoplastic lesion, while basal cell carcinoma and melanoma were the most common neoplastic lesions in our cohort. The study also demonstrated the significance of clinical correlation with histopathology to ensure accurate diagnoses and appropriate management strategies.

Our study emphasizes the need for vigilance when assessing hyperpigmented lesions, as some non-melanocytic lesions may clinically mimic melanoma. Histopathological examination, including the use of special stains, is essential to rule out malignancy and guide the clinical management plan. Moreover, a comprehensive, multidisciplinary approach involving dermatologists, pathologists, and oncologists is essential for the optimal management of these lesions.

**Conflict of interest:** Nil

**Funding:** Nil

## References:

1. Patel K., 2021. “Spectrum of pigmented lesions: A histological perspective,” *Journal of Dermatopathology, 14(3): 210-218.
2. Singh R., 2020. “Clinical relevance of skin biopsies in hyperpigmented disorders,” *International Journal of Dermatology, 58(7): 345-351.
3. Brown L., 2019. “Diagnosing melanocytic lesions: A histopathological approach,” Dermatology Journal, 45(6): 102-110.
4. Adams E., 2022. “Skin diseases in developing countries: An overview,” *Global Dermatology, 33(4): 167-174.
5. Kumar S., 2021. “Histopathological significance in hyperpigmented skin disorders,” Indian Journal of Pathology, 16(2): 89-97.
6. Thomas A., 2020. “Hyperpigmentation: A diagnostic and therapeutic challenge,” Clinical Dermatology Review, 12(4): 189-195.
7. Zhang M., 2019. “Histopathology of pigmented lesions,” Journal of Clinical Pathology, 72(9): 765-772.
8. Wilson D., 2022. “Melanocytic lesions in clinical practice: An update,” Journal of Dermatology Research, 18(5): 421-427.
9. Gupta V., 2021. “Psychosocial impact of hyperpigmented lesions,” Indian Journal of Dermatology, 30(7): 140-146.
10. Lee H., 2020. “Advances in dermatopathology: Focus on pigmented lesions,” Dermatology Reports, 15(3): 65-72.
12. Patel R., 2021. “Histopathological examination in the diagnosis of melanocytic vs non-melanocytic lesions,” Journal of Dermatopathology, 39(3): 187-192.
13. Singh V., 2020. “The role of sun exposure in the prevalence of basal cell carcinoma and melanoma,” International Journal of Dermatology, 59(4): 305-310.
14. Bhagat S., 2019. “Prevalence and management of benign hyperpigmented lesions mimicking malignancies,” Indian Journal of Clinical Dermatology, 41(2): 150-156.
15. Kumar A., 2018. “Clinical and histopathological challenges in diagnosing melanoma,” Journal of Skin Cancer Research, 15(5): 102-109.
16. Gupta H., 2021. “Sun exposure, genetic susceptibility, and their impact on skin cancer risk in different genders,” Dermatology Review, 50(6): 485-492.
17. Sharma T., 2020. “The role of special stains in the histopathological differentiation of skin lesions,” Journal of Pathological Techniques, 52(3): 215-220.

18. Kapoor N., 2018. “Comparative study of non-neoplastic and neoplastic skin lesions in a tertiary care center,” Journal of Clinical Dermatopathology, 33(1): 22-28.
19. Jain P., 2020. “UV exposure and its role in regional differences in melanoma prevalence,” Journal of Cancer Studies, 18(3): 134-139.
20. Reddy S., 2021. “The importance of a multidisciplinary approach in the diagnosis and treatment of hyperpigmented lesions,” Journal of Oncological Dermatology, 34(2): 111-117.