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HISTOPATHOLOGICAL SPECTRUM OF SKIN LESIONS IN CENTRAL INDIA: INSIGHTS FROM A TERTIARY CARE CENTER

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Abstract

Background:
Skin lesions represent a diverse group of conditions ranging from non-neoplastic to neoplastic disorders. Due to overlapping clinical features, histopathological examination is essential for accurate diagnosis. This study aims to assess the histopathological spectrum of skin lesions in a tertiary care center in Central India.

Materials and Methods: A retrospective, record-based study was conducted in the Department of Pathology at SSIMS, Bhilai, over a three-year period (January 2022 to December 2024). Case records of 149 skin biopsies and excised specimens were reviewed. Hematoxylin and eosin-stained slides were retrieved and relevant demographic details were collected. Data analysis was performed using standard statistical methods

Results:
Out of the 149 cases analyzed, non-neoplastic lesions constituted the majority (57%), while neoplastic lesions accounted for 43%. Among non-neoplastic conditions, infectious dermatoses were most frequent, with Hansen's disease comprising 75.6% of these cases. Benign neoplasms made up 32.9% of all cases, with epidermal/epidermoid cysts being the most common (27 cases). Squamous cell carcinoma emerged as the most frequent malignant lesion (8 out of 15 cases). The majority of cases were seen in the 21–40 years age group, with no significant gender difference observed.

Conclusion:
Non-neoplastic skin lesions, particularly infectious diseases such as leprosy, remain prevalent in Central India. Benign neoplasms were more common than malignancies, with squamous cell carcinoma being the leading skin cancer. Histopathology continues to be a crucial tool for definitive diagnosis, and region-specific studies can aid in early detection and better management of dermatological conditions.

Keywords: Skin lesions, Histopathology, Hansen's disease, Squamous cell carcinoma, Central India.

INTRODUCTION

Skin is the largest and complex organ of our body.[1] It comprises three main anatomical components: the epidermis (along with skin adnexa), the melanocytic system, and the dermis with subcutis.[2] Developing countries often report a higher prevalence of skin diseases among all the age groups with a wide geographical variation.[3] Global burden of disease study 2017 reported that age standardized years lived with disability for skin and subcutaneous diseases in India were 455.06 as compared to 332.96 per 100000 for cardiovascular diseases.[4] Skin lesions encompass a wide range of conditions, from non-neoplastic disorders—including infectious, non-infectious, and vesiculobullous diseases—to various neoplastic lesions.[5] The varied skin disorders show a very restricted clinical presentation and thus require a confirmative histopathological diagnosis.[6] This study aims to evaluate the histopathological spectrum of skin lesions diagnosed at our tertiary care center in Central India, providing insight into the distribution of various cutaneous pathologies in this region.

MATERIAL AND METHODS

This study is a record based retrospective study. Case record of all the skin biopsies and excised skin specimens reported at Department of Pathology, SSIMS, Bhilai from January 2022 to December 2024 was obtained from medical record department (MRD) and electronic HIS of the hospital. A total of 149 cases of skin lesions were obtained, hematoxylin and eosin slides were retrieved from histopathological department and relevant demographic details were collected from MRD. The data was entered in Microsoft excel sheet and statistical analysis was performed.

RESULTS

A total of 149 cases of skin lesions were included in our study. Based on histopathology, the skin lesions were grouped as shown in table 1. The most common skin lesion was benign neoplasm, followed by infectious diseases and non-infectious diseases. The study population ranged from 5 to 77 years. The maximum number of patients belongs to age group 21-40 years with no significant gender wise predilection.

As shown in table 2, the trend for malignant cases increases as the age progresses where in maximum cases i.e. 6 out of 17 (35.2%) were reported in the age group of 61-80 years, while 5/57 cases (8.77%) and 4/63 cases (6.34%) were reported in the age group of 41 -60 and 21-40 years respectively. No cases were reported in the age group 1-20 years. The most reported cases were of Squamous cell carcinoma (8/15) followed by 2 cases of Basal cell carcinoma and Malignant melanoma each.

A total of 49 cases of benign neoplasms were reported comprising 27/49 cases (51.1%) of Epidermal/epidermoid cysts followed by 5 cases of Trichilemmal cysts, 4 cases of benign squamous papilloma, 3 cases of Pilomatricoma, 2 cases of Melanocytic lesion and single cases of Seborrheic keratosis, Apocrine hidrocystoma, Syringocystadenoma papilliferum, Clear cell hidradenoma, Dermatofibroma, Fibrokeratoma, Keratotic plaque and Granular cell tumor.

Among the infectious diseases, 31/41 cases (75.6%) were reported as Hansens's disease. The histopathology spectrum of Hansen's disease is depicted in table 3. Only 2 cases of connective tissue disease were reported, both were of Discoid Lupus Erythematosus. Chronic dermatitis (5/14) was the most recurring diagnosis in inflammatory conditions.

In total of 7 cases reported as Vesiculobullous diseases, most common lesion being Pemphigus vulgaris (3/7) followed by Bullous pemphigoid (2/7), Epidermolysis bullosa (1/7) and Pemphigus foliaceous (1/7) were reported. Lichen planus (3/21) and Psoriasis (3/21) were the most commonly reported among the non-infectious category.

Table 1: Histopathological spectrum of skin lesions

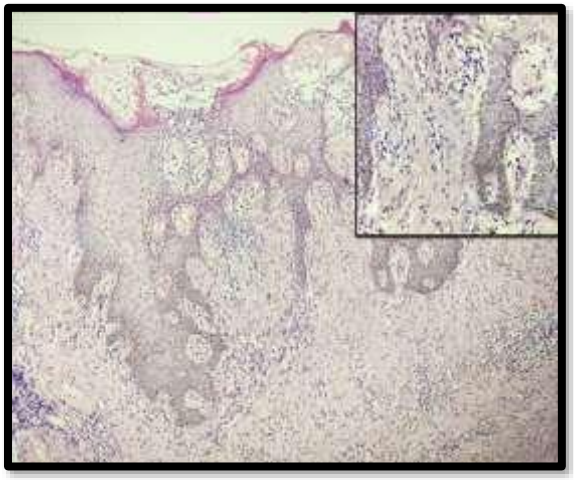
Spectrum of skin lesions	Number of cases (N=149)	Percentage (%)
Connective tissue disorder	02	1.34
Inflammatory& reactive changes	14	9.39
Vesiculobullous diseases	07	4.69
Non-infectious lesions	21	14.09
Infectious lesions	41	27.51
Benign neoplasm	49	32.88
Malignant neoplasm	15	10.00

Table 2: Age wise distribution of cases

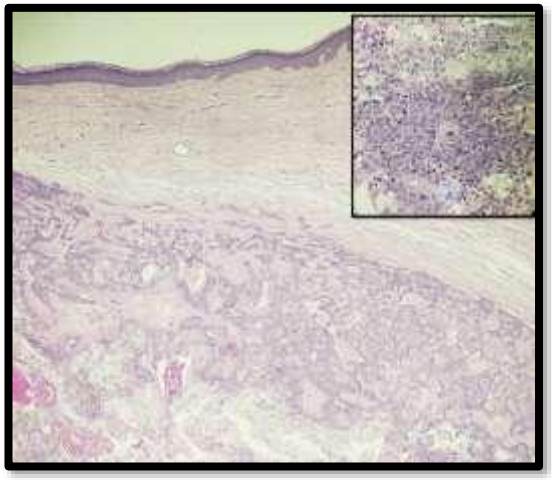
Age	Connective tissue disorder	Inflammatory & reactive changes	Vesicobullous diseases	Non-infectious lesions	Infectious lesions	Benign neoplasm	Malignant neoplasm	Total
1-20	00	01	01	02	02	06	00	12
21-40	**01**	**06**	**01**	**11**	**21**	**19**	**04**	**63**
41-60	01	07	04	07	13	20	05	57
61-80	00	00	01	01	05	04	06	17
Total	02	14	07	21	41	49	15	149

Table 3: Morphological types of Hansen's disease

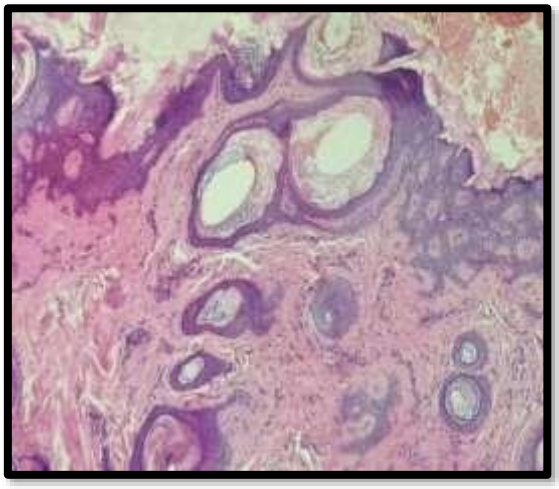
Morphological types	Number of cases
Tuberculoid leprosy	10
Borderline tuberculoid	07
Indeterminate leprosy	02
Borderline lepromatous	02
Lepromatous leprosy	08
Histoid leprosy	02
Total	**31**



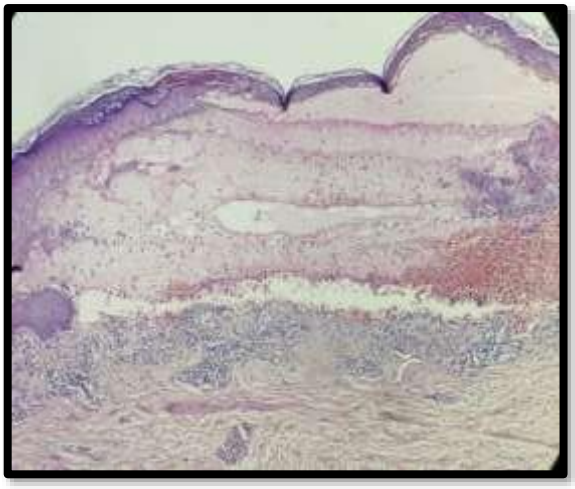
Photomicrograph 1 - **Clear cell hidradenoma**
H&E stained section studied show variable sized nests of cells in the dermis with round to polygonal cells with vesicular nuclei and eosinophillic to clear cytoplasm at places. (40x;Inset:400x)



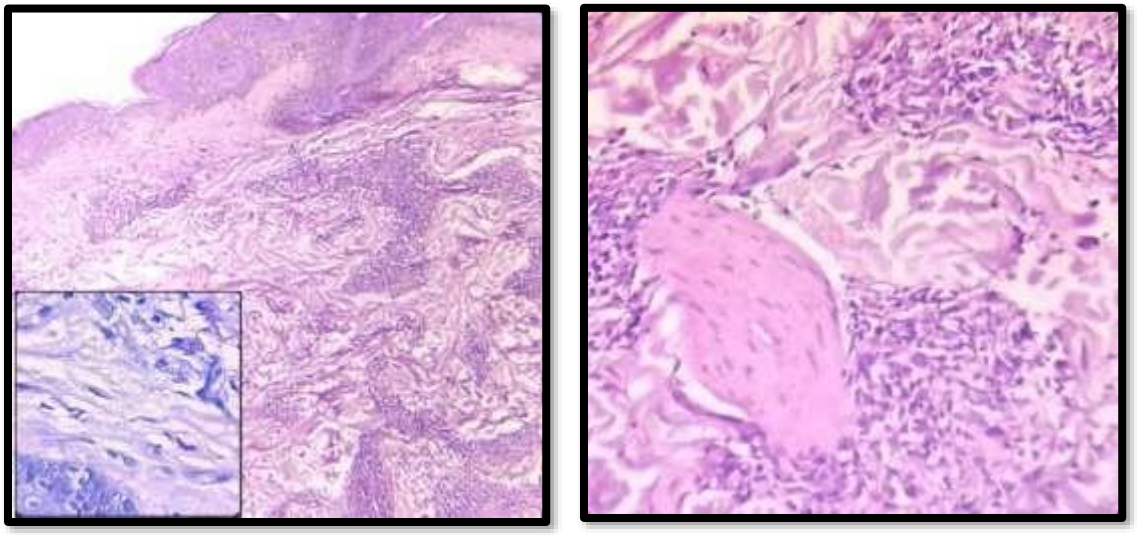
Photomicrograph 2 - **Granular cell tumor**
H&E stained section studied from dermis show cords, nests and sheets of polygonal cells separated by fibrous tissue with cells having hyperchromatic nuclei and abundant granular eosinophilic cytoplasm. (40x;Inset:400x)



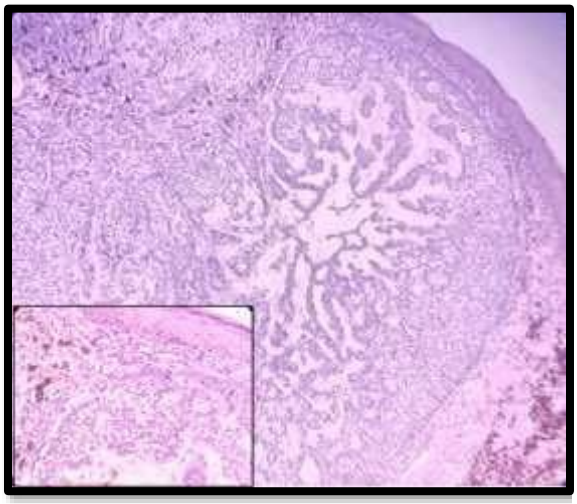
Photomicrograph 3 - **Discoid lupus erythematosus**
H&E stained section studied show follicular plugging with perivascular and periadnexal lymphoplasmacytic infiltrate in the dermis. (100x)



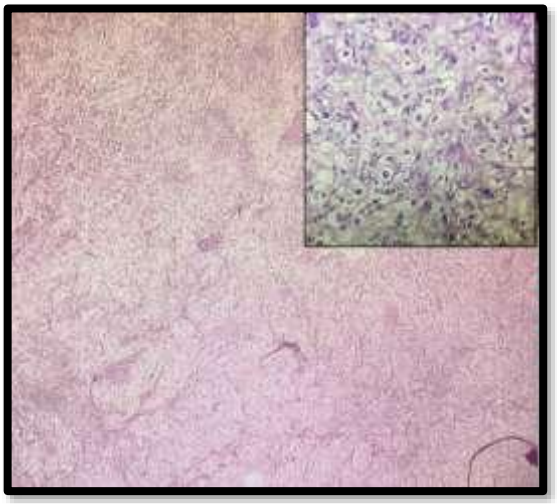
Photomicrograph 4 - **Pemphigus vulgaris**
H&E stained section studied show a suprabasilar intraepidermal bulla comprising of inflammatory cells, acantholytic cells and hemorrhage. (100x)



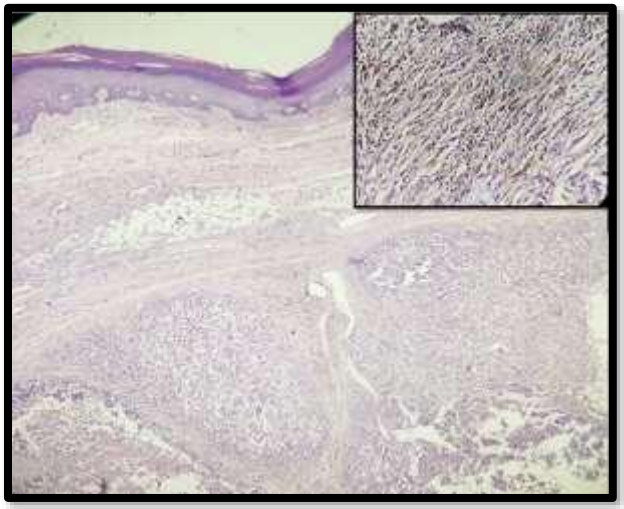
Photomicrograph 5 - **Lepromatous leprosy**
H&E stained section studied show histiocytic infiltrate around nerves and adnexal structures. Grenz zone is seen. (40x) Inset shows bacillary index-5+ (ZN stain;1000x)



Photomicrograph 6 - **Pigmented adenoid basal cell carcinoma**
H&E stained section studied show an infiltrating tumor composed of islands of epithelial cells arranged in geographical pattern with peripheral palisading, adenoid cystic and cribriform pattern separated by fibrous septae having retractions. Melanin incontinence is seen. (40x;Inset:400x)



Photomicrograph 7 - **Clear cell adenocarcinoma**
H&E stained section studied show solid sheets of monomorphic cells with centrally placed nuclei, inconspicuous nucleoli with clear to eosinophilic cytoplasm and hyalinised stroma. (40x;Inset:400x)



Photomicrograph 8 - **Malignant melanoma** H&E stained section studied show irregular nests of pigmented cells showing marked nuclear pleomorphism, coarse irregular chromatin, prominent nucleoli and moderate amount of cytoplasm. Frequent mitotic figures seen. (40x;Inset:400x)

DISCUSSION

In the present study, the highest number of cases was observed in the 21–40 years age group. This finding is consistent with the studies conducted by Kaul U et al [9] and Padvi J et al.[10]. While some studies reported the 31–40 years age group as most affected[7,12]others found the 21–30 years group to be more common, as seen in the works of Chandrakanta et al.[11], Abubakar SD et al.[8], and Bezbaruah R et al.[6].

No significant gender predilection was found in our study, aligning with the findings of Adhikari RC et al.[7]. However, several other studies reported a male predominance[3,8,9,10,11,12]whereas Bezbaruah R et al.[6] noted a female predominance.

In terms of lesion types, non-neoplastic skin lesions comprised the majority (57%; 85/149) compared to neoplastic lesions (42.9%; 64/149). This predominance of non-neoplastic lesions is in agreement with studies by Goswami P et al.[3], Adhikari RC et al.[7], Padvi J et al.[10], Chandrakanta et al.[11], and Patel H et al.[12]. In contrast, studies by Bezbaruah R et al.[6] and Abubakar SD et al.[8] reported a higher proportion of neoplastic lesions.

Among the non-neoplastic lesions identified at our center, infectious dermatoses were the most prevalent (41/85 cases), with leprosy accounting for the majority (31/41 cases; 75%). While some studies have reported a higher incidence of non-infectious vesiculobullous lesions[3,7,11,12] dermatitis was predominant in the study by Padvi J et al.[10]. Kaul et al.[9], in their study of 300 non-neoplastic cases, also reported infectious diseases particularly Hansen's disease as the most common pathology (113/128 cases).

Of the total 149 cases, benign neoplastic lesions were more frequent (49 cases; 32.88%). Among these, epidermal/epidermoid cysts were the most commonly encountered (27/49 cases). These findings correlate well with those of Adhikari RC et al.[7] and Chandrakanta et al.[11], who reported 110/205 and 10/30 cases of epidermal/epidermoid cysts among benign neoplasms, respectively.

Among the 15 malignant lesions diagnosed, squamous cell carcinoma (SCC) was the most common (8/15 cases), followed by basal cell carcinoma (BCC) and malignant melanoma. While some studies[8,10,11] also reported SCC as the most prevalent skin cancer, others[3,7] found BCC to be more common. The higher incidence of SCC in our region could be attributed to increased exposure to ultraviolet (UV) radiation, a well-known risk factor for SCC development.

CONCLUSION

This study highlights the diverse histopathological spectrum of skin lesions encountered at a tertiary care center in Central India. The majority of cases were observed in the 21–40 years age group, with no significant gender predilection. Non-neoplastic lesions, particularly infectious dermatoses such as Hansen's disease, were more prevalent than neoplastic lesions. This likely reflects the impact of socio-environmental factors such as overcrowding, lower socioeconomic status, and persistent gaps in public health awareness. Among benign neoplasms, epidermal/epidermoid cysts were the most common, while squamous cell carcinoma was the most frequently encountered malignancy.

Histopathological examination remains the gold standard for accurate diagnosis of skin lesions, especially when clinical presentation is ambiguous. The findings of this study underscore the importance of early biopsy and microscopic evaluation in guiding timely and appropriate treatment, particularly in regions with high burdens of infectious and neoplastic skin diseases.

Further large-scale, multicentric studies are recommended to assess regional variations and trends, which can contribute to better public health planning and dermatological care

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CONFLICT OF INTEREST: None

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