ORIGINAL RESEARCH PAPER

Hemato-Pathology

# HISTOPATHOLOGICAL FINDINGS OF ALL SKIN LESION BIOPSIES AND ITS CLINICAL CORRELATION, RECEIVED AT TERTIARY CARE HOSPITAL – PROSPECTIVE, OBSERVATIONAL STUDY

**KEY WORDS:**
Papulosquamous, leprosy, histopathology

**Dr. Ritu Radheyshyam Singh***
Senior Resident, Department of Pathology, GMERS Medical College and Hospital, Gotri, Vadodara, Gujarat, India. Pin. 390021 *Corresponding Author

**Dr. Aditi Dharmesh Dholakia**
Assistant professor HG, Pathology department and GMERS Medical college and hospital, Gotri, Vadodara, Gujarat, India. Pin. 390021

**Dr. Riya Satishbhai Visavadiya**
Senior Resident, Department of Pathology, GMERS Medical College and Hospital, Gotri, Vadodara, Gujarat, India. Pin. 390021

**ABSTRACT**

**Background:** Skin is the largest sensory organ in the human body that has complex architecture with 3 anatomic structures: epidermis with skin adnexa and melanocytic system, dermis and subcutaneous tissue. The occurrence of skin lesions is influenced by various factors such as age, sex, environment, economy, literacy, region, ethnic groups, genetic factors and social customs. Histopathological examination of Skin biopsy is proved to be most reliable diagnostic tool for obtaining accurate diagnosis of most of the skin lesions and considered as 'gold standard' method for diagnosis. **Material and methods:** The present study is prospective observational study which was carried out in the department of Pathology, GMERS Medical College and Hospital, Gotri, Vadodara. A total of 168 cases were studied during the one year duration study. Data thus collected were analyzed and compared with other study findings. **Results:** A total of 168 skin lesion biopsies are studied during the selected time duration in the present study out of which, 90 cases of skin lesions were presented in males while 78 cases in females in the present study. Maximum number of patients presented with skin lesions were in the age group of 21-30 years (20.83%) followed by age group of 31-40 years (19.04%) and 51-60 years (17.85%). **Conclusion:** Many skin lesions may present with various yet overlapping clinical symptoms, thus the histopathological examination is required for its proper diagnosis. The patient presented with skin lesions ranged from 5 years to 88 years of age. Among all the categories of the skin lesions (including non-neoplastic and neoplastic), papulosquamous lesions were the most commonly encountered skin lesions.

## INTRODUCTION

Skin is the largest sensory organ in the human body that has complex architecture with 3 anatomic structures: epidermis with skin adnexa and melanocytic system, dermis and subcutaneous tissue.

It acts as a barrier against various harmful environmental agents and is involved in a wide spectrum of disorders ranging from inflammatory conditions to neoplastic lesions.[1]

Skin lesions are very common in developing countries and around 2000 skin diseases are known until now with prevalence among all age groups.[2] Prevalence of skin lesions ranges from 6.3 to 11.6% among Indian population.[3] The occurrence of skin lesions is influenced by various factors such as age, sex, environment, economy, literacy, region, ethnic groups, genetic factors and social customs.[4]

Different skin lesions may present with various yet overlapping clinical features like itching, ulceration, macules, nodules, papules, plaques, hyperpigmentation, hypopigmentation etc.[5]

A significant number of skin lesions are diagnosed clinically through patient history and physical examination. But certain cases require additional diagnostic methods or tests to obtain further information for a definitive diagnosis and its proper management.[1] However, all these tests cannot be applicable to all the categories of skin lesions, thus it is necessary to find a most reliable diagnostic tool.

Histopathological examination of Skin biopsy is proved to be most reliable diagnostic tool for obtaining accurate diagnosis of most of the skin lesions and considered as 'gold standard' method for diagnosis.[6,7]

Various skin biopsy techniques are punch biopsy, shave biopsy, excision biopsy, scalpel biopsy, curettage biopsy and incisional biopsy etc.[1] Most of these biopsy can be taken on OPD basis with good patient compliance.[8]

Accuracy of diagnosis depends on the pathologist performing the microscopic examination of skin biopsy but in certain conditions, histopathological findings alone may not be entirely informative. In such cases, correlation of clinical details and communication with clinician will increase diagnostic yield of this technology.[9]

In the present study, we evaluated the utility of histopathological examination of skin biopsy by analyzing histopathological findings and their correlation with clinical diagnosis. We also evaluated biopsy findings in context with age and gender wise distribution, anatomic distribution and frequency of occurrence of various skin lesions.

## MATERIALS AND METHODS

The present study is prospective observational study which was carried out in the department of Pathology, GMERS Medical College and Hospital, Gotri, Vadodara. The study includes all skin biopsies received from February 2023 to January 2024.

A total of 168 cases were studied during the one year duration study. Due importance was paid to clinical history with respect to patient's age and sex, type of lesions and its presentation. The skin biopsies were fixed in 10% formalin and then they were subjected to processing in automated tissue processor followed by embedding and section cutting for preparation of slides.

The slides were stained with Hematoxylin and Eosin stain. The slides were studied under light microscopy and the findings were correlated with the clinical details and the diagnosis

retrieved from the department of Dermatology.

**ETHICS:**

This was a prospective observational study, and intervention was not done. The study was undertaken after the Institutional Ethics Committee gave its approval.

**RESULTS**

A total of 168 skin lesion biopsies are studied during the selected time duration in the present study.

Out of 168 cases, 90 cases of skin lesions are presented in males while 78 cases in females in the present study. In the present study, the youngest and oldest patient presented with skin lesions are 5 years and 88 years respectively.

In the present study, maximum number of patients presented with skin lesions are in the age group of 21-30 years (20.83%) followed by age group of 31-40 years (19.04%) and 51-60 years (17.85%).

In the old age group of beyond 70 years, 10.12% of patients are affected with the skin lesions.

In the present study, maximum cases are seen in the papulo-squamous group of diseases (50 cases) followed by spectrum of leprosy cases (35 cases).

Among the papulo-squamous group of lesions, Lichen planus (7.14%) are the most common followed by Psoriasis (6.54%), Granuloma annulare (3.57%) and Dermatitis (2.97%). Among the leprosy cases, lepromatous leprosy cases (9.5%) show the dominance

**TABLE NO 1: DISTRIBUTION OF VARIOUS SKIN LESION CATEGORISES**

| Diseases | No. of cases | Percentage (%) |
|---|---|---|
| Papulo-squamous diseases | 50 | 29.76 |
| Vesico-bullous diseases | 11 | 6.54 |
| Leprosy | 35 | 20.83 |
| Vascular tumors | 6 | 3.57 |
| Tumors and tumor-like conditions | 32 | 19.04 |
| Others | 34 | 20.23 |
| Total | 168 | 100 |

over Borderline tuberculoid leprosy (4.16%) and Indeterminate leprosy cases (2.97%).

In our study, only two types of vesico-bullous lesions are encountered, Pemphigus vulgaris (5.3%) being the most common followed by Bullous pemphigoid (1.19%).

Among the malignant skin conditions, Squamous cell carcinoma (6.54%) is the most common followed by Basal cell carcinoma (1.78%) and Verrucous carcinoma (1.19%). Not a single case of malignant melanoma is seen in the present study.

Non-neoplastic and inflammatory conditions not fitting in any category are kept in a different category, which includes epidermal cyst, trichilemmal cyst, keloid and mucocele. In this catergory, epidermal cyst (10.11%) is the most common skin lesion followed by keloid (5.35%) and trichilemmal cyst (2.97%).

It is observed in the present study that lichen planus shows a female preponderance while psoriasis shows a male preponderance.

Among Granuloma annulare lesion, maximum cases are seen in the age group of 41-60 years with more cases (22.22%) in females.

Most common clinical presentation among papulo-squamous lesions are erythematous papules followed by plaques and patch.

**TABLE 2: SITEWISE DISTRIBUTION OF SKIN LESIONS**

| Site | No. of cases | % |
|---|---|---|
| Face and neck | 16 | 9.52 |
| Scalp | 15 | 8.92 |
| Ear | 12 | 7.14 |
| Chest and trunk | 04 | 2.38 |
| Extremities | 60 | 35.71 |
| Abdomen | 10 | 5.95 |
| Back | 40 | 23.8 |
| Buttock | 03 | 1.78 |
| Generalised | 08 | 4.76 |
| Total | 168 | 100 |

| Diseases | No. of case | Percentage (%) |
|---|---|---|
| Papulo-squamous Diseases | | |
| Lichen Planus | 12 | 7.14 |
| Psoriasis | 11 | 6.54 |
| Granuloma Annulare | 6 | 3.57 |
| Dermatitis | 5 | 2.97 |
| Discoid lupus erythematous | 4 | 2.38 |
| SLE | 3 | 1.78 |
| Fixed drug eruption | 2 | 1.19 |
| Prurigo nodularis | 2 | 1.19 |
| PLEVA* | 2 | 1.19 |
| Lichenoid eruption | 1 | 0.59 |
| Morphea | 1 | 0.59 |
| Darrier's disease | 1 | 0.59 |
| Vesiculo-bullous diseases | | |
| Phemphigus vulgaris | 9 | 5.3 |
| Bullous pemphigoid | 2 | 1.19 |
| Leprosy | | |
| Lepromatous Leprosy | 16 | 9.5 |
| Tuberculoid Leprosy | 3 | 1.78 |
| Histoid leprosy | 2 | 1.19 |
| Borderline Tuberculoid leprosy | 7 | 4.16 |
| Borderline leprosy | 2 | 1.19 |
| Indeterminate leprosy | 5 | 2.97 |
| Vascular tumors | | |
| Capillary hemangioma | 3 | 1.78 |
| Cavernous hemangioma | 2 | 1.19 |
| Cherry angioma | 1 | 0.59 |
| Tumors and tumor like conditions | | |
| Seborrheic keratosis | 6 | 3.57 |
| Wart | 6 | 3.57 |
| Pilomatricoma | 1 | 0.59 |
| Trichilemmoma | 1 | 0.59 |
| Squamous papilloma | 2 | 1.19 |
| Squamous cell carcinoma | 11 | 6.54 |
| Basal cell carcinoma | 3 | 1.78 |
| Verrucous squamous carcinoma | 2 | 1.19 |
| Others | | |
| Epidermal cyst | 17 | 10.11 |
| Keloid | 9 | 5.35 |
| Trichelemmal cyst | 5 | 2.97 |
| Mucocele | 3 | 1.78 |

***PLEVA:** Pityriasis lichenoids et varioloformis acuta

Majority of sites involved by skin lesions are extremities (35.71%), followed by back (23.8%) and face and neck (9.52%). The least involved sites are buttock (1.78%) and chest and trunk (2.38%).

A total of 35 leprosy cases are studied in the present study. Among them, highest number of cases are of lepromatous leprosy (45.71%) with 2 cases of Histoid leprosy (5.71%), a

variant of Lepromatous leprosy followed by Borderline tuberculoid leprosy (20%) and Indeterminate leprosy (14.28%). Borderline leprosy (5.71%) cases show the least incidence in the present study.

Among lepromatous lesions, most common clinical presenting features are hypopigmented patches, macules, nodules followed by sensory deficit in lower extremities.

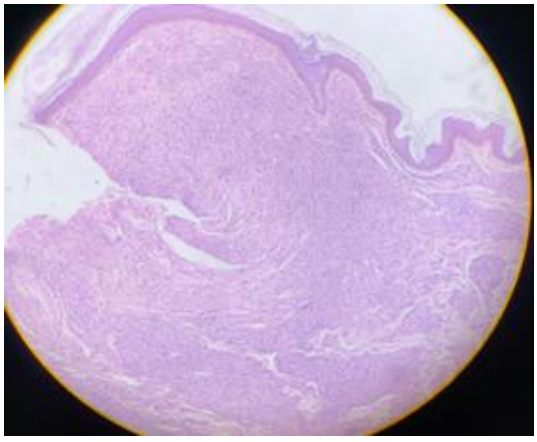

**FIGURE NO1: LEPROMATOUS LEPROSY**

In the present study, non-neoplastic skin lesions (77.38%) outnumbered the neoplastic lesions (22.62%).

In the present study, histopathological diagnosis of all skin lesions are correlated with their clinical findings. The positive and negative correlation between histopathological diagnosis and clinical findings are given in the following tables.

Among 168 skin lesion cases, 97% cases show concordance with the clinical diagnosis in the present study.

Among the papulosquamous skin lesions, 49 cases show concordance with the provided clinical diagnosis, while a single case which was clinically diagnosed as prurigo nodularis came out to be a case of lichen planus on histopathological finding. This discordance was properly communicated to the clinician so that the patient's management could be changed accordingly, if needed.

Among the leprosy cases, 34 cases show concordance with the clinical diagnosis while a single which was clinically given as sezary syndrome came out to be a case of lepromaotus leprosy on histopathological finding. Communication regarding the correction of diagnosis and change in treatment plan was executed.

## DISCUSSION

In the present study, the incidence of skin lesions is slightly higher in males (53.57%) which is in concordance with the studies conducted by Deepthi et al.[10] and Chinnathambi P S et al.[11]

Studies by Sheela L Gaikwad et al.,[12] and Dawande et al.[13] showed a much higher incidence of skin lesions in males (68.14% and 78% respectively) as compared to the present study (53.57%).

The age range of patients included in the present study is from 5 to 88 years, with majority cases falling in the age group of 21-30 years (20.83%) followed by 31-40 years (19.04%). This pattern is in concordance with the Dawande et al.[13] study which showed highest number of skin lesions in the age group of 21-30 years (32%) followed by 31-40 years (20%).

On comparing the percentage wise occurrence of skin lesions among different age groups, Dawande et al.[13] study shows a slightly higher incidence of skin lesions among 21-30 years (32%) than in the present study (20.83%). While there is very slight difference of skin lesions occurrence among 31-40 years age group in Dawande et al.[13] study (20%) and present study (19.04%).

**TABLE 4: COMPARISON OF GENDER-WISE DISTRIBUTION OF CASES IN DIFFERENT STUDIES**

| STUDY | MALE (%) | FEMALE (%) | MALE:FEMALE RATIO |
|---|---|---|---|
| Deepthi N. K. et al[10] | 58.4 | 41.6 | 1.4:1 |
| Chinnathambi P S et al[11] | 56 | 44 | 1.27:1 |
| Sheela L Gaikwad et al[12] | 68.14 | 31.86 | 2.13:1 |
| Dawande et al[13] | 78 | 22 | 3.5:1 |
| Present study | 53.57 | 46.42 | 1.15:1 |

In study by Dawande et al.,[13] very few cases are seen in the old age group of more than 50 years (16%). Whereas in our study, slightly higher number of cases are seen in the age group of more than 50 years (36.28%). This difference suggests the possibility of old age people approaching the government set-up for the health ailments.

Studies done by Abubakar et al.[14] and Sanjeev et al.[15] had more than 50% cases between 20-50 years. Similar results are observed in the present study where 56.47% cases are seen in the age group of 20-50 years.

**TABLE 5: COMPARITIVE DISTRIBUTION OF NON-NEOPLASTIC AND NEOPLASTIC SKIN LESIONS**

| Name of the study | Non-neoplastic | Neoplastic |
|---|---|---|
| Chaudhary et al[5] (n=336) | 94.05% | 5.95% |
| Adhikari R C et al[16] (n=1040) | 80.3% | 19.7% |
| Present study (n=168) | 77.38% | 22.62% |

Non-neoplastic skin lesions constituted a major number of cases in the present study (77.38%) which is in concordance with the studies done by Chaudhary et al. (94.05%) and Adhikari R C et al.[16] (80.3%). Whereas in the studies conducted by Bezbaruah R et al.[3] and Abubakar SD et al.,[16] neoplastic skin conditions showed a dominance over non-neoplastic lesions.

In the present study, lichen planus and psoriasis are the most common diagnosis among the erythematous, papulo-squamous skin lesions. Similar findings are encountered in the studies conducted by Barman DD et al.[17] and Chaudhary et al.[5]

Among the vesiculobullous group of lesions, only two type of lesions were encountered in our study. Pemphigus vulgaris was the most common lesion followed by Bullous pemphigoid. This was consistent with the study by Kumar et al.,[18] Dixit et al.[19] and Mithila et al.[20]

Among the malignant skin conditions, squamous cell carcinoma is the most common condition (28.94%) followed by basal cell carcinoma (7.89%) which is in concordance with the study done by Deepthi et al.,[10] and Sushma C et al.[21] Whereas in the study conducted by Adhikari R C et al.,[16] basal cell carcinoma was the most common malignant condition.

In the present study, the common sites for skin lesion presentation are the extremities (35.71%) which is in concordance to the study done by Adhikari R C et al.[16] (41.6%). It is followed by back (23.3%) in the present study, while Adhikari R C et al.[16] study showed trunk and abdomen as the second common site for skin lesions.

Among the leprosy lesions, lepromatous leprosy (45.71%) is the most common lesion which is in concordance to the study done by Patel et al.[23] with maximum number of lepromatous leprosy cases (40%).

Maximum number of skin lesion cases show positive correlation with the provided clinical diagnosis in the present study (97%) which is in concordance with the study done by Venugopal et al.[22] (67.5%).

A detailed history of patients were obtained with their clinical presentation and clinical diagnosis. Combining it with the histopathological findings, a final diagnosis was made and properly communicated to the clinician for the better patient management.

## CONCLUSION

Many skin lesions may present with various yet overlapping clinical symptoms, thus the histopathological examination is required for its proper diagnosis. In the present study, out of 168 skin lesion cases, males were more commonly affected than females with male to female ratio of 1.15:1. Among these, non-neoplastic skin lesions were more common than the neoplastic skin conditions.

Among all the categories of the skin lesions (including non-neoplastic and neoplastic), papulosquamous lesions were the most commonly encountered skin lesions in the study population. After papulosquamous lesions, lepromatous lesions were found to be the second most common skin lesions. In our study, all the skin lesion cases were correlated with the diagnosis or differential diagnoses provided by clinician. Our study demonstrated a 97% concordance between clinical and histopathological diagnoses. This could be achieved by proper communication between clinician and pathologist.

A histopathologist's ability to deliver an accurate diagnosis may be affected by many factors such as size of biopsy, area selected for biopsy, proper fixation of biopsy and transportation of specimen to laboratory within defined period of time. When biopsy specimens are accompanied by clinical information and relevant differential diagnoses, along with a clinicopathological correlation, it helps in timely diagnosis and improves patient care.

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