

Original Research Article

# Histopathologic pattern of skin diseases in tertiary health care centre: A retrospective study of 133 cases

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## Abstract

**Background:** Skin conditions are common health problem in developing country like India. Skin biopsy is most common and critical investigating tool for diagnosing skin disease. The histological diagnosis is used by clinicians to aid in the management of patients and in deciding most appropriate clinical interventions.

**Materials and methods:** The study included a total of 133 patients skin biopsies which were received in the Department of Pathology, GMERS Medical College and Hospital, Sola, Ahmedabad during the period ranging from January 2020 to December 2020.

**Results:** Maximum cases of skin biopsies were received in age group between 21 to 40 years (n=66) Among the non-tumoral lesions, infectious diseases were most common (n=36) followed by keratinization disorder (n=22), eczematous conditions (n=17) and Lichenoid disorders were present in 16 cases. In nine biopsies tumors were reported, of which, four were benign appendigeal tumors and five were of cutaneous deposits.

**Conclusion:** Histopathological examination of skin biopsy remains the gold standard technique for diagnosing a variety of skin lesions and plays a decisive role in patient management. Histopathological examination of the skin biopsy in correlation with, clinical history, aids in the accurate diagnosis of the majority of the skin lesions.

## Key words

Histopathologic pattern, Skin disease, Retrospective study, Tertiary health care centre.

## **Introduction**

The skin is the largest organ of the body, composed of three layers: epidermis, dermis and the subcutaneous adipose tissue. It serves important functions of being a mechanical barrier to environmental influences and it participates in body temperature and electrolyte regulation.

It serves as a mechanical barrier against various external physical, chemical, and biologic noxious substances and to UV rays of sunlight which makes it susceptible to wide spectrum of disorders ranging from inflammatory conditions to neoplastic lesions [2]. In addition, it is a vehicle that expresses clinical features of systemic disorders and tale telling signs of diseases of the internal organs [1].

Though the spectrum of histopathology of skin disorders is varied, clinical presentation is restricted to only a few changes such as hyperpigmentation, hypopigmentation, macules, papules, nodules, etc.

Each clinical presentation is common to different histopathological pictures and the thus diagnosis of skin lesions definitely requires histopathology for their confirmation [3]. Histopathological examination of skin biopsies itself possesses certain challenges, as each skin component has its unique and complex structure and function, with variations according to age, gender, race, and anatomic location.

The present study aims to find out the efficacy of biopsy as a diagnostic tool and to identify role of pathologist in dermatological disorders This study also aims to find out the patterns of skin disease in relation to age and sex and to compare skin disease pattern in western region of India with other studies conducted in other geographical locations.

## **Materials and methods**

The study was done from January 2020 to December 2020 in the Department of Pathology, GMERS Medical College, Sola and Sola civil

hospital, Ahmedabad. This study included a total of 133 patients' skin biopsies received in Department of Pathology.

**Inclusion criteria:** All skin biopsies received in the histopathology section were included in the study. All the lesions related to skin and subcutaneous tissue were included in this study.

**Exclusion criteria:** All biopsies with improper preservation were excluded form study.

Skin biopsies were processed, sectioned and stained with Hematoxylin & eosin and reviewed by Pathologist. Special stains like Ziehl Neelsen (ZN), Periodic Acid Schiff (PAS), Congo red and Fite-Faraco were used whenever required.

Relevant demographic data in terms of age and gender, clinical details and details of other investigations were obtained from requisition form provided with the specimens.

For sake of analysis, patients were divided in age groups of less than 20, 21 to 40 years of young adults, 41 to 60 years group of adults, 60 to 80 years group of elderly persons and group of above 80 years of super senior citizens. We broadly classified diseases into 12 subgroups, after considering both clinical and histopathological features.

## **Results**

A total of 133 cases were included into the study consisting of patients coming to skin outdoor patient department and subjected to skin biopsy when definite clinical diagnosis could not be made.

Out of 133 patients, 82(61.6%) were males and 51(38.3%) females. Age group 21 to 40 comprised maximum number of cases 66(49.6%), followed by age group of 41 to 60 years with 34 cases (25.5%). Only 1 patient in this study was above the age of 80 years (0.75%) as per **Table - 1**.

**Table – 1:** Age distribution.

Age (year)	Male	Female	Total
<=20	12	05	17(12.7%)
21-40	45	21	66(49.6%)
41-60	16	18	34(25.6%)
61-80	09	06	15(11.3%)
>=81	00	01	01(0.8%)
TOTAL	82	51	133(100%)

**Table – 2:** Biopsy results analysis.

Broad classification	Numbers	Percentage%
Infectious diseases	36	28.57%
Eczema	17	13.49%
Lichenoid diseases	16	12.70%
Disorder of keratinization	22	17.46%
Vascular diseases	07	5.55%
Non-infective granuloma	03	2.38%
Tumors(Benign/Malignant)	09	7.14%
Disorder of development	03	2.38%
Connective tissue disorder	02	1.59%
Bullous disorder	02	1.59%
Appendageal tumors	04	3.17%
Cutaneous deposits	05	3.97%
TOTAL	126	100%

In majority of the cases, 126 out of 133 cases, the final diagnosis was achieved by help of histological interpretation of the biopsy. In only 7(5.3%) cases the biopsy evaluation was not conclusive and diagnosis could not be made.

After biopsy result analysis of 126 cases, maximum number of cases (n= 36; 28.57%) belonged to infectious group of diseases (**Table – 2**) which included mycobacterial and viral diseases. Most common being viral (n=18) and mycobacterial infection (n=18).

In viral infections 12 cases were of Verrucous lesions, 1 case of Molluscum contagiosum and 5 cases were of Pityriasis Rosea. In Mycobacterial diseases 17 cases of leprosy and 1 case of Lupus vulgaris were confirmed after biopsy.

Disorders of keratinization were found in 22 (17.46%) cases, Psoriasis was the most common diagnosis in this group.

Eczema group consisted of 17 (13.49%) cases of which most common were non-specific dermatitis and chronic dermatitis.

Lichenoid disorders were found in 16 biopsy samples (12.70%). This group includes Lichen planus, Ashy dermatosis, Follicular lichen planus, Lichenoid dermatitis, pityriasis lichenoid chronica and hypertrophic lichen planus.

Histopathology specimens of 7(5.55%) patients had the confirmed diagnosis of vascular disorder. These disorders include 3 cases of pyogenic granuloma, 2 cases each of hemangioma, erythema annulare centrifugum and sweet syndrome.

Non infective granuloma were found in 3 (2.38%) cases consisted of each case of acute on chronic granulomatous inflammation, non-granulomatous tattoo reaction and foreign body granulomatous reaction.

Benign and malignant tumors consisted of 9 (7.14%) cases of biopsy samples. Histopathological examination confirmed the diagnosis of squamous cell carcinoma in 3 cases, acrochordon in 2 cases, and there were one case each of trichofolliculoma, dermatofibroma, pilometricoma, eccrine syringofibroadenoma.

Diagnosis of developmental disorders were confirmed in 3 cases (2.38%) which included Nevus sebaceous of Jadassohn, linear epidermal nevus and parakeratosis eccrine ostial and dermal duct nevus.

Histopathological specimen of 2 cases (1.59%) diagnosis of connective tissue disorders including Disseminated Lupus Erythematosus (DLE) and linear morphea was confirmed.

Bullous disorders were found in 2 cases (1.59%) showing features of pemphigus foliaceus and dermatitis herpetiformis. Appendageal tumors consisted of 3 cases (3.17%) which include 2 cases of keratinous cyst, and one case of hair matrix cyst.

Histopathology of cutaneous deposits was found in 5 (3.97%) cases which included calcinosis cutis, lichen amyloidosis, collagenoma and 2 cases of keloid.

## Discussion

Our study was conducted between January 2020 to December 2020 consisted of 133 cases of patient skin biopsies, the majority of the patients were in the age group of 21-40 yrs. The age group of 21-40 years presented the highest frequency of skin diseases in studies reported by Bezbaruah R, et al. [5] and Abubaker SD, et al. [6]. Of the total 133 cases of our study there was a male preponderance, this finding was in congruence with Rao, et al. [7] and Dayal, et al. [8]. Thus young male adults are more vulnerable to skin lesions probably because they have a higher share of outdoor responsibilities and are more exposed to environmental influences.

The pathologist classify the disease according to cell types and histopathological abnormalities, but the dermatologist and dermatopathologists classify the diseases according to clinical features and histopathological findings.

In a study by Sanjeev Narang and Ravi Jain [4] they had classified diseases as follows:

Group I. Disorders mostly limited to the epidermis and stratum corneum

Group II. Localized superficial epidermal or melanocytic proliferations

Group III. Disorders of the superficial cutaneous reactive unit.

Group IV. Acantholytic, vesicular, and pustular disorders

Group V. Perivascular, diffuse, and granulomatous infiltrates of the reticular dermis

Group VI. Tumors and cysts of the dermis and subcutis

Group VII. Inflammatory disorders of skin appendages

Group VIII. Disorders of the subcutis.

In another study by Gaikwad Sheela L, et al. [2], they classified diseases as neoplastic and non-neoplastic. Non-neoplastic was further divided into 3 sub-groups inflammatory, Infectious and others. In this study we classified diseases according to the classification proposed by Rajesh, et al. [10] in which they have divided skin lesions in 15 sub-groups.

The largest group in our study was infective origin (Microbial) group (n 36, 28.57%). This group theoretically includes Bacterial, Viral and Mycobacterial diseases but in our study no case of bacterial disease was recorded. Our study is in congruence with Gupta Priya, et al. [9]. They reported infectious disorders in 34.58% of samples with maximum number of leprosy. Our being a medical college attached hospital and tertiary care centre, most of the bacterial lesions are treated at primary centre and not referred to higher institutes.

In our study 17 cases were of leprosy and other 12 cases were of verrucous lesions. In India this

conditions are common because of developing economy, level of literacy, social backwardness, varied climate, industrialization, access to primary health care.

Second largest group in this study is disorder of keratinization (n 22; 17.46%) which is in concordance with Rajesh, et al. [10] in which the second largest group was keratinization disorders (n 20,13.5%) as psoriasis being commonest lesion as in our study. There are other studies [9, 12] in which psoriasis is commonest disorder of keratinization. Triggering factors for psoriasis is mostly infection, alcohol consumption, obesity and smoking and these factors are common in our country, so psoriasis is quite common in India.

Third largest group in our study is eczematous group of disease (n 17; 13.49) which is largest group in Rajesh, et al. [10] (n 21;14.2%).In a large retrospective study lasting 13 years (1997 to 2010) by Fahad Mohammed al-Saif, et al. [14] on 4268 biopsy reports, had found highest numbers (26.2%) of cases in papulosquamous and eczematous group. "Dermatitis" is a word used to describe a number of skin irritations and rashes caused by genetics, an overactive immune system, infections, allergies, irritating substances and more.

Fourth largest group in our study is lichenoid disorder (n 16, 12.70%). Lichen planus (LP) is the prototype of a group of inflammatory dermatoses, referred to as lichenoid disorders, characterized clinically by small, often pruritic papules. Lichen planus is an autoimmune condition believed to be triggered by Hepatitis C virus infection and by medications consumed for arthritis, high blood pressure and for cardiac diseases.

In our study vascular pathology and or malformation was found in 7 samples (5.55%), this was fairly high as compared to the study by Adhikari RC, et al. [3] which reported (n 2, 1%) of cases only. This could be probably due to higher pediatric patient load at our institute and

vascular malformations are more common in pediatric and young adults.

Tumors (benign and malignant) were found in 9 samples (7.14%). Malignant tumors were reported in only in 3 cases in our study which are of Squamous cell carcinoma (SCC) as skin malignancy is rare in India. A fairly higher incidence of SCC (64.4%) was reported in the study conducted by Chakravarthy, et al. [13]; the geographical area selected by that study belonged to latitude 22.5N, with maximum sun exposure.

Disorders of development were present in 3 cases (2.38%). In the study by Adhikari RC, et al. [3] genodermatosis was present in 1.1% of samples. Connective tissue disorders constituted about 1.59% (n 2) of samples. In the study by Adhikari RC, et al. [3] 2.4 % of sample showed connective tissue pathology.

In this study vesicobullous disorders were found in 2 cases (1.59%), almost similar to study by C Sushma, et al. [12]. They observed vesiculobullous disorders only in 1.28% of samples. Vesicobullous disorders are the autoimmune blistering disorders. The diseases can be split broadly pathologically into intraepidermal (pemphigus) and subepidermal (pemphigoid, dermatitis herpetiformis and others) groups, the former being characterized by pathogenic autoantibodies to desmosome components, and the latter by pathogenic antibodies to proteins of the basement membrane zone adhesion complex that link the epithelium/epidermis to the underlying mesenchyme/ dermis (or genetic mutations of the same proteins).

## Conclusion

Despite the fact that a plethora of modern techniques have been developed and utilized in the diagnosis of skin diseases, dermatologists still rely vastly on biopsy for diagnostic purposes. As discussed in this study, there is a wide range of diseases that allow dermatologists

to select skin biopsy in order to confirm their suspected diagnosis, and the histological perspective proves to be both helpful and reliable in the majority of cases. Histopathological examination of skin biopsy remains the gold standard technique for diagnosing a variety of skin lesions. The histological spectrum of skin lesions is very heterogeneous and diverse as seen in our study. Histopathological examination of the skin biopsy in correlation with clinical history, aids in the accurate diagnosis of the majority of the skin lesions. Even though skin lesions are commonly reported and are widely distributed in both the sexes, majority are found in males. Clinical features alone cannot help in diagnosis of skin lesions. Histopathological evaluation plays a major role and also helps in classification of the lesions.

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