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Research Article

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Histopathological Study of Skin Lesions in a Tertiary Care Hospital at GMERS Medical College Gandhinagar

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ABSTRACT

Background: First of all, Skin conditions are far more prevalent in underdeveloped nations. Simple skin ailments like acne and scabies can progress to more serious conditions like toxic epidermal necrolysis & deadly neoplastic conditions. This study was carried out to assess the incidence and distribution site of various skin lesions as well as their prevalence.

Methods: The study was conducted at the pathology department of the GMERS Medical College in Gandhinagar, Gujarat, between January 2022 and March 2024. After being prepared, sectioned, and stained with hematoxylin and eosin, skin biopsies were evaluated.

Results: Among 125 skin biopsies examined. Microbial illness was the most often seen non-neoplastic histopathological pattern 31(26.05%) followed by noninfectious vesicobullous and vesicopustular disease and 24(20.17%) instances of non-infectious Erythematosus papular & squamous illness. Out of 24 cases (24.40%), leprosy was the most frequent microbiological illness seen. Pemphigus diseases, accounting for 11.76% of cases, was the most prevalent vesicopustular illness, followed by subcutaneous bullous disease, which affected 5 cases (4.20%). Psoriasis was the most prevalent non-infectious Erythematosus papular & squamous illness, accounting for 10 (8.40%) cases, followed by lichen planus in 8 (6.72%) instances. Squamous Cell Carcinoma became the most often seen neoplastic skin lesion, occurring in 3 (2.52%) instances.

Conclusions: The investigation verified that leprosy was more common and that microbial diseases predominated. The most common non-infectious vesicobullous & vesicopustular diseases are pemphigus. As different skin lesions may be distinguished by their histomorphological traits, histopathological testing is the norm for accurate diagnosis.

Key-words: Skin disease, Microbial disease, Vesicopustular disease, Squamous cell carcinoma

INTRODUCTION

The skin is a multifaceted organ including three anatomical components: the melanocytic system, the dermis and subcutis, and the epidermis with skin adnexa. [1,2]. It is the biggest organ in the human body, and it controls many important reactions to our surroundings through intricately controlled cellular and molecular interactions. The skin's histology is extraordinarily intricate. The epidermis and dermis, the skin's two ostensibly independent but mutually reliant layers, are made up of cells that perform a variety of tasks, including healing, immunosurveillance, nutrition metabolism, and mechanical and photoprotection. The subcutaneous fat, which is the third layer, is not truly a part of the skin, but because of its close anatomic relationship and its tendency to respond together with the skin in many pathologic processes [3].

Skin conditions are quite common in underdeveloped nations. Dermatology treats at least 2000 distinct skin conditions that impact people of all ages [4]. These

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illnesses span the gamut from straightforward scabies and acne to several dangerous problems such as deadly neoplastic conditions and toxic epidermal necrolysis [5]. Skin disease patterns range between nations and even within a single country's regions because of ecological differences, genetics, sanitary norms, and social practices [6]. The majority of skin lesions are identified based on clinical appearance and history, and not all of them require skin biopsies. Clinicians utilize histological diagnosis to help with patient care and the selection of the best treatment therapies. The clinical appearance of skin illnesses is limited to a few alterations, such as hyper- or hypopigmentation, macules, papules, nodules, etc., despite the wide range of histology associated with these conditions. Since each clinical presentation frequently has a unique histological image, histopathology is unquestionably necessary for their validation [7].

The purpose of this research is to determine the frequency, age, sex, and distribution site of different skin lesions that are common in this nation, as well as their histological diagnosis.

MATERIALS AND METHODS

Place of study- The study was conducted at the pathology department of the GMERS Medical College in Gandhinagar, Gujarat, between January 2022 and March 2024.

Methodology- A pathologist analyzed 119 skin samples that were processed, sectioned, & stained with hematoxylin and eosin for this investigation. When necessary, special stains like Fite-Faraco, Periodic Acid Schiff (PAS), and Ziehl-Neelsen (ZN) were utilized. Relevant demographic information was acquired from the request that came with the specimens. Sections were cut & stained using the H and E stain procedure following standard paraffin processing.

Fixation was achieved through two adjustments using 10% buffered neutral formalin. The dehydration process involved three adjustments with graded alcohol and two adjustments with acetone. Cleaning, impregnation with paraffin, and embedding in paraffin wax followed. Blocks were then created and labelled after removing excess paraffin. Sections were cut using a microtome set at 4 microns and kept at 60°C in a water bath. Sections were fixed on a slide using a very thin coating of glycerol egg albumin as an adhesive. The slide was then maintained on a hot plate at 50°C to melt the wax before being taken for staining.

Inclusion and exclusion criteria- Patients of age 2-80 years old both male and female, presented with skin lesions were incorporated into the research. The study comprised the patients who gave their informed permission and were willing to participate. The patients, who declined to take part in the research were excluded.

Statistical analysis- ANOVA statistical software was used for both data input and statistical analysis. The mean numbers, deviations from the mean, student's t-test, & Chi-square were used to make the appropriate percentage comparisons across the different groups. Data was considered significant when the P value was 0.05.

Ethical approval- The study was approved by the Ethical Committee of MERS Medical College and Hospital, Gandhinagar, Gujarat, India.

RESULTS

The investigation comprised specimens with 125 skin lesions in total. The age range of the study population's patients was 2 to 80. The age range of 21 to 30 comprised the bulk of the patients. The two-year-old youngest patient and the 78-year-old oldest were both patients.111 (88.8%) cases were non-neoplastic, while 8(6.4%) cases were neoplastic. Six patients (4.8%) had an inconclusive histopathological diagnosis (Fig. 1).

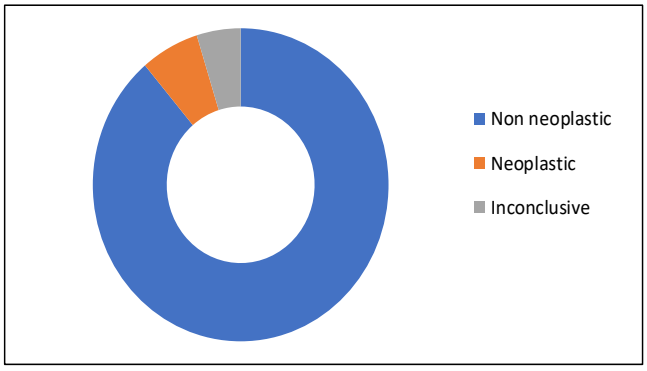

Fig. 1: Distribution of skin lesions based on histopathology

The most prevalent histological pattern that was found to be non-neoplastic was Microbial disease 31(26.05%) followed by noninfectious vesicobullous and

vesicopustular disease and not contagious Squamous and papular erythematosus diseases comprising 24(20.17%) cases. Infectious diseases were the least frequent in 5 situations (4.20%). Leprosy was the most common microbial disease seen in 24 (24.40%) instances. Pemphigus disorders, which accounted for (14) 11.76% of all vesicopustular diseases, was the most prevalent kind, followed by Sub epidermal bullous disease seen in 5 instances (4.20%). Psoriasis was the most prevalent non-infectious Erythematosus papular & squamous illness, accounting for 10 (8.40%) cases, followed by lichen planus in 8 (6.72%) instances. Various lesions have been viewed in 7 (5.88%) cases (Table 1). Squamous cell carcinoma accounted for 3 (2.52%) of all neoplastic skin lesions, with 2 (1.68 %) occurrences of basal cell carcinoma.

Table 1: Types of lesions and its number of cases

Type of lesion	No. of cases	Percentage (%)
Non-infectious vesicobullous and vesicopustular lesion-24 (20.17%)		
Spongiotic dermatitis	1	0.80
Lichen simplex chronicus	1	0.80
Pemphigus	14	11.2
Subepidermal bullous disease	5	4
Dariers disease	2	1.6
Hailey hailey disease	1	0.80
Erythematous papular & squamous non-infectious illness 24(20.17%)		
Erythema multiforme	1	0.80
Lichen planus	8	6.4
Psoriasis	10	8
Ptyriasis rubra pilaris	1	0.80
Lichen planus pigmentosus	1	0.80
Ichythosis	1	0.80
Cutaneous horn	1	0.80
Lupus erythematosis	1	0.80
Microbial disease 31(26.06%)		
Leprosy	29	23.2
Dermatophytosis	1	0.80
Lupus vulgaris	1	0.80
Connective Tissue Disease-13(10.92%)		
Lichen Sclerosis Et Atrophicus	1	0.80
Discoid Lupus Erythematosis	5	4
Scleroderma/morphea	7	5.60
Granulomatoes Skin Lesion 7 (5.88%)		
Granuloma annulare	7	5.60
Infectious 5(4.20%)		
Pityrosporum folliculitis	2	1.60
Epidermodysplasia verrucoformis	1	0.80
Mollacium contagiosum	1	0.80
dermatitis	1	0.80
Neoplastic 8(6.72%)		
Pilomatricoma	1	0.80
Squamous Cell Carcinoma	3	2.40
Seborrhic keratosis	1	0.80
Pseudoepithelomatous hyperplasia	1	0.80
Basal Cell Carcinoma	2	1.60
Miscellenous 7 (5.88%)		
Post-inflammatory hyper pigmentation	1	0.80
Pyoderma gangrenosum	2	1.60
vitiligo	1	0.80
Xanthoma	2	1.60
Small Vessel Vasculitis	1	0.80
Inconclusive	6	4.80
Total cases	125	100

Among 125 cases, 72 (57.60%) were found in males, while 53 (42.40%) were found in females. The ratio of men to women is 1.38:1. The most prevalent age range was 21–30, comprising 30 (24.0%) cases in both males and females. The age range that was most frequently seen in males was 21–30 years old, comprising 21(16.8%) cases, and in females, 11-20 years, comprising 13(10.4%) cases. Among 125 cases most common site observed was in the Upper extremities comprising 33(27.73%) cases and the least common site was the penis consists 2(1.68%) cases (Table 2).

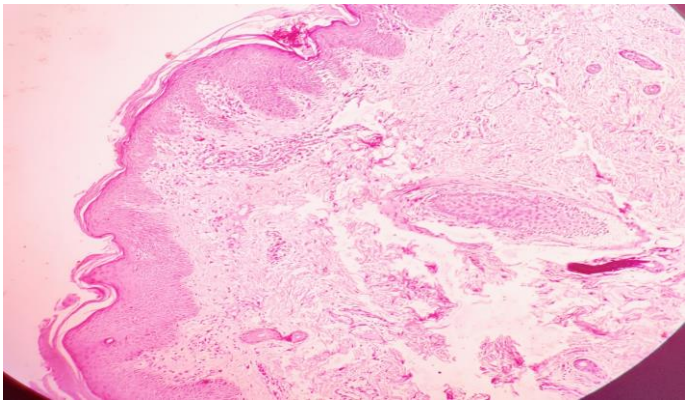

Fig. 2: Punch biopsy of psoriasis from trunk showing regular acanthosis with subcorneal pustules, and dilated capillaries in the papillary dermis

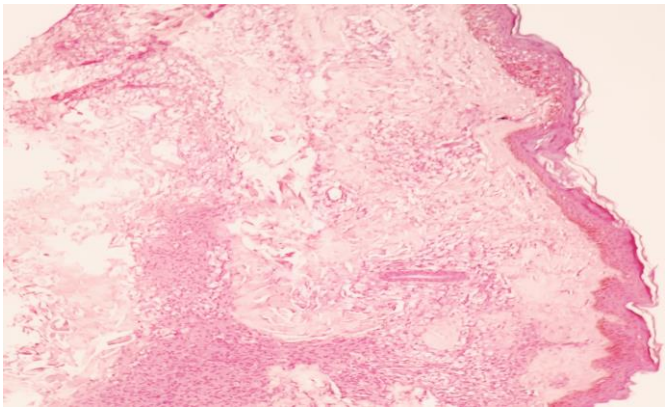

Fig. 3: Punch biopsy of leprosy shows foamy macrophages in the dermis and grenz zone

Table 2: Distribution of cases according to age and site

Age group	Gender	
	Male	Female
1-10	3	2
11-20	11	14
21-30	21	9
31-40	12	8
41-50	12	7
51-60	9	4
61-70	4	6
>70	0	3
Total	72 (57.4%)	53 (42.4%)
Site of involvement	No. of cases	Percentage (%)
Scalp	4	3.38
Face	12	10.08
Neck	13	10.92
Trunk abdomen	28	22.4
Upper extremities	36	28.8
Lower extremities	30	25.21
Penis	2	1.68

DISCUSSION

Skin lesions, which include everything from rashes and blisters to potentially fatal malignancies, are caused by an imbalance in homeostasis [8]. Dermatologists used to do skin biopsies, while it may not be necessary for every skin lesion to accurately diagnose and identify the etiological agents [9].

According to this study and studies of Bezbaruah and Baruah [7] & Abubaker *et al.* [9] the age group of 21 to 30 years old had the highest prevalence of skin illness. Compared to the results of the present investigation, Adhikari *et al.* [10] discovered that the highest prevalence of skin illness occurred in those aged 31 to 40, whereas Chalise et al. discovered the highest frequency among the age range of 41-50 years [11]. Similar to the studies of Bezbaruah and Baruah [7]; Adhikari *et al.* [10]; Grover *et al.* [12] and Kumar *et al.* [13]; the current analysis reveals a little male preponderance. Nonetheless, Chalise *et al.* [11] analysis revealed a majority of females.

The percentage of non-neoplastic skin cancers in our study was 93.27%, which was much higher than the percentage of neoplastic skin lesions (6.73%), which was comparable to the findings of the Chalise *et al.* [11] study. Nonetheless, in their investigation, Bezbaruah and Baruah [7]; Agrawal *et al.* [14] and Sushma et al. discovered malignant tumors as a significant entity.

Pemphigus (11.76%) was shown to be the most prevalent vesicobullous illness in our investigation, whereas the most prevalent vesicobullous condition in the study conducted by Chalise *et al.* [11] was spongiotic dermatitis. Psoriasis & lichen planus were identified by Agrawal *et al.* [14] and Reddy *et al.* [15] as the most prevalent papulosquamous diseases, which was similar to our study [16]. Leprosy (24.40%) was the commonest infected cutaneous lesion in our investigation, which was comparable to that of Walker *et al.* [17]. Similarly to the study conducted by Adhikari *et al.* [10] the skin lesions in our investigation were often observed in both upper and lower limbs [18].

The study showed that skin lesions are more common in males (57.4%) than females (42.4%). A study was done by Rauniyar *et al.*[19] to examine the function of histology in skin lesion diagnosis. The researchers found that men had a greater frequency of skin lesions than women did. Males were more likely than females to have skin lesions. Unlike our investigation, in the study conducted In Nepal, the most common infectious skin lesion was dermatophytosis, according to research by Mehar *et al.* [20].

CONCLUSIONS

In our study, there has been a broad range of skin abnormalities seen, from benign tumors to dermatitis. Particular histomorphological characteristics are crucial for differentiating between various skin lesions and are crucial in determining the ultimate diagnosis of these various skin lesions. This emphasizes how important a histological examination is to the appropriate patient care.

The investigation verified that leprosy was more common and that microbial diseases predominated. The most common non-infectious vesicobullous and vesicopustular disorder is pemphigus.

CONTRIBUTION OF AUTHORS

Research Concept- Rahil Amar
Research Design- Brinda Amin, Krutina K Parikh
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