

## ORIGINAL RESEARCH

## Histopathological Study of Skin Lesions in a Tertiary Care Hospital, Rajkot, Gujarat: A Descriptive Cross-sectional Study

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Received Date: 22/01/2022

Acceptance Date: 10/03/2023

### ABSTRACT

**Introduction:** Skin is the largest sensory organ of the body and acts as a barrier against various harmful environmental agents. Dermatologic disorders are common in all countries but the spectrum varies greatly. The spectrum varies according to geographic distribution, gender, age, and coexisting disorder. We conducted this study to find out prevalence of various skin diseases, site of distribution, frequency of various skin diseases and gender preponderance of diseases. **Material and Method:** A descriptive retrospective, cross-sectional study was done in the Pathology Department of PDU Medical College, Rajkot, Gujarat, from December 2021 to November 2022 (1 year). The biopsies taken were fixed in 10% formalin and then processed and stained with Haematoxylin and Eosin stain (H&E). A convenience sampling method was used. Data was collected, point estimate at 95% Confidence Interval was calculated along with frequency and proportion for binary data and systemic random sampling was used to achieve sample size. **Results:** In our one-year study, total 130 biopsies were studied. Males were more affected than females. Most common affected age group was 31-40 years of age. Out of 130 skin biopsies, 117 (90%) were non-neoplastic and 10 (7.8%) were pre-malignant and neoplastic. Histopathological diagnosis was inconclusive in 3 (2.31%) cases. The most common non-neoplastic histopathological pattern observed in our study was infectious diseases comprising of 46 (35.4%) cases. In Infectious diseases Leprosy was leading cause especially Lepromatous Leprosy. Trunk and abdomen (40.80%) were most common site of involvement in skin lesions. **Conclusions:** Infectious diseases especially Leprosy is still a common cause of skin diseases in developing country like India and strong intervention should be taken for its prevention. Histopathological examination is the gold standard for the proper diagnosis as histomorphological features distinguish various skin lesions which are having overlapping clinical features.

**Keywords:** Skin lesions, Infectious Diseases, Leprosy.

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### INTRODUCTION

Skin is the largest sensory organ of the body and acts as a barrier against various harmful environmental agents.<sup>1</sup> Dermatologic disorders are common in all countries but the spectrum

varies greatly. In Dermatology, 2000 different skin diseases are well known.<sup>2</sup> The pattern of skin disease varies from country to country and region to region within the same country. Various factors are responsible for skin disease such as racial, environmental and social customs.<sup>3</sup>

The prevalence of skin lesions has increased over the few decades, and they contribute to a significant burden on health-care systems.<sup>4</sup> Skin biopsies are frequently performed as many of the skin diseases have clinical overlaps which range from simple acne to serious disorder like toxic epidermal necrolysis.<sup>2,5</sup> It is imperative that clinical differential diagnosis be correlated with the gross and microscopic observations to render a clinically meaningful diagnosis.<sup>6</sup>

This study was done to find out the prevalence of various skin diseases, site of distribution, frequency of various skin diseases and gender preponderance of diseases.

## METHODS

This descriptive retrospective, cross-sectional study was conducted in the Histopathology laboratory at Department of Pathology, PDU Medical College, Rajkot, Gujarat from December 2021 to November 2022. Data was collected from the biopsies of skin lesions received from Department of Dermatology. All the patients whose skin biopsy were taken from the Department of Dermatology were included in this study. Skin biopsies that didn't show any specific pathology are excluded from this study. The biopsies taken were fixed in 10% formalin and then processed and stained with Haematoxylin and Eosin stain (H&E). Special stains like Periodic Acid Schiff (PAS), Fite-Faraco and Ziehl-Neelsen (ZN) were used whenever required. Convenient sampling was done and sample size was calculated using the following formula and descriptive statistical analysis was done.

$$n = Z^2 \times p \times q / e^2 = (1.96)^2 \times (0.093) \times (1-0.093) / (0.05)^2 = 130$$

Where,

- n = sample size
- p = prevalence of 9.3%
- q = 1-p (1-0.093)
- e = margin of error (5%)
- Z = 1.96 at 95% CI

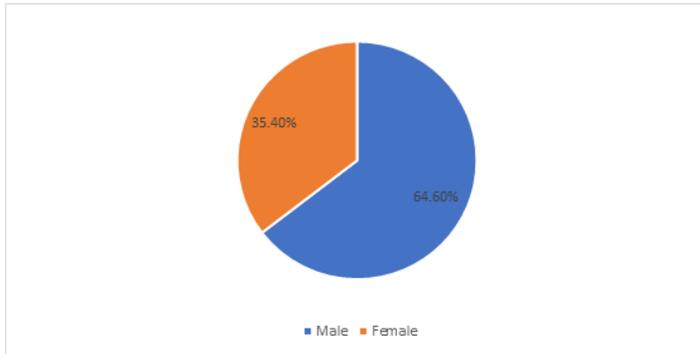
In this, 12 months duration of our study total 341 skin biopsies were received. So, we used systemic random sampling to get our sample size as per calculation.

## RESULTS

Total 130 skin biopsies were studied. Males were affected more 84(64.6%) than females 46(35.4%). Out of 130 skin biopsies, 117 (90%) were non-neoplastic and 10 (7.8%) were pre-malignant and neoplastic. Histopathological diagnosis was inconclusive in 3 (2.31%) cases.

**Table 1: Types of skin lesions based on histopathology.**

S.N.	Skin lesion	n (%)
1.	Non-neoplastic	117 (90)
2.	Pre-Malignant & Neoplastic	10 (7.69)
3.	Inconclusive	03 (2.31)
	<b>Total</b>	<b>130 (100)</b>



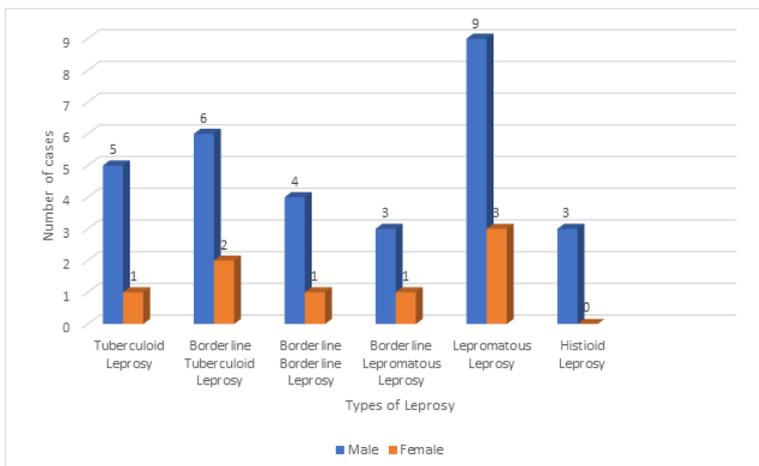
**Chart 1: Distribution of cases according to sex**

The most common non-neoplastic histopathological pattern observed in our study was infectious diseases comprising of 46 (35.4%) cases followed by Inflammatory diseases 30 (23.1%). Vesiculobullous and pustular diseases were holding third position with 25 (19.2%) cases. Autoimmune comprising 13(10.0%) and others which includes genetic diseases, birth mark, idiopathic and inconclusive comprising 06 (4.6%) cases.

The most common infectious disease was leprosy comprising 26 (86.7%) cases. Most common inflammatory disease in our study was psoriasis (33.3%). Most common vesiculobullous disorder observed in our study were pemphigus (56.0%) cases followed by bullous pemphigoid (28%). Discoid lupus erythematosus (53.8%) was most common autoimmune disorder observed in our study.

**Table 2: Distribution of cases according to histopathological patterns**

S.N.	Skin lesions	n (%)
1.	Pre-Cancerous and Neoplastic	10 (7.7)
2.	Vesiculobullous and Pustular diseases	25 (19.2)
3.	Inflammatory diseases	30 (23.1)
4.	Infectious diseases	46(35.4)
5.	Autoimmune diseases	13 (10.0)
6.	Others	06 (4.6)
	<b>Total</b>	<b>130 (100)</b>



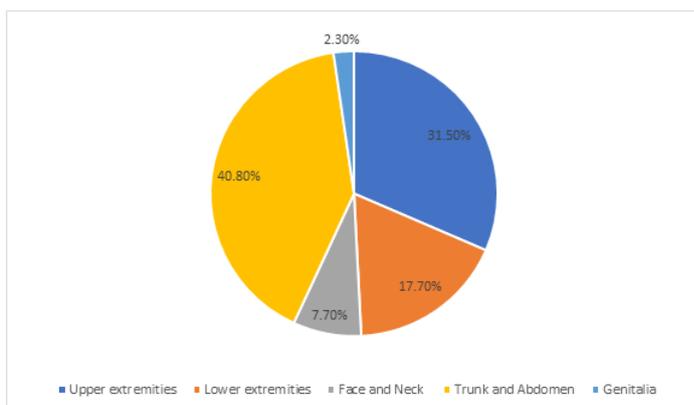
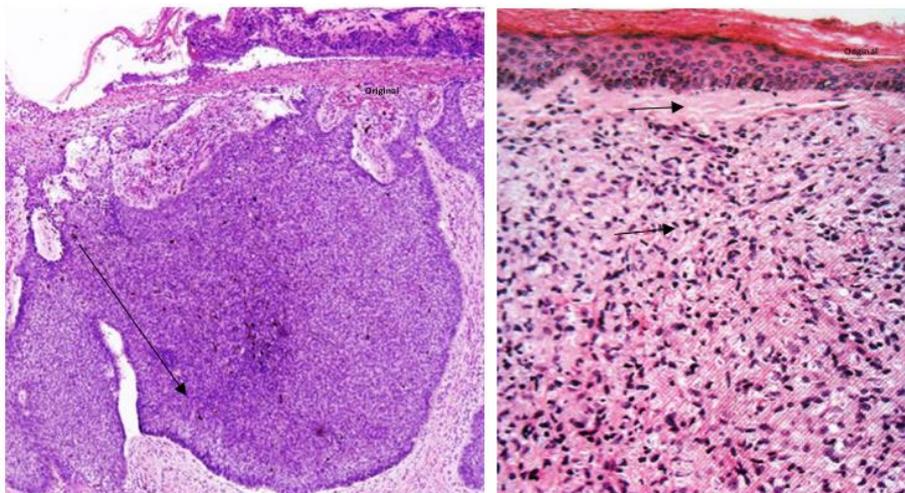
**Chart 2: Distribution according to types of Leprosy**

Most common age group affected in our study were 31-40 years comprising 33 (25.4%) cases followed by 51- 60 years comprising 25 (19.2%).

**Table 3: Distribution according to Age group and Sex**

S.N.	Age (years)	Male	Female	n(%)
1.	0-10	03	04	07 (5.4)
2.	11-20	14	04	18 (13.8)
3.	21-30	13	06	19 (14.6)
4.	31-40	21	12	33(25.4)
5.	41-50	14	02	16 (12.3)
6.	51-60	12	13	25 (19.2)
7	>60	07	05	12 (9.3)
	<b>Total</b>	<b>84</b>	<b>46</b>	<b>130 (100)</b>

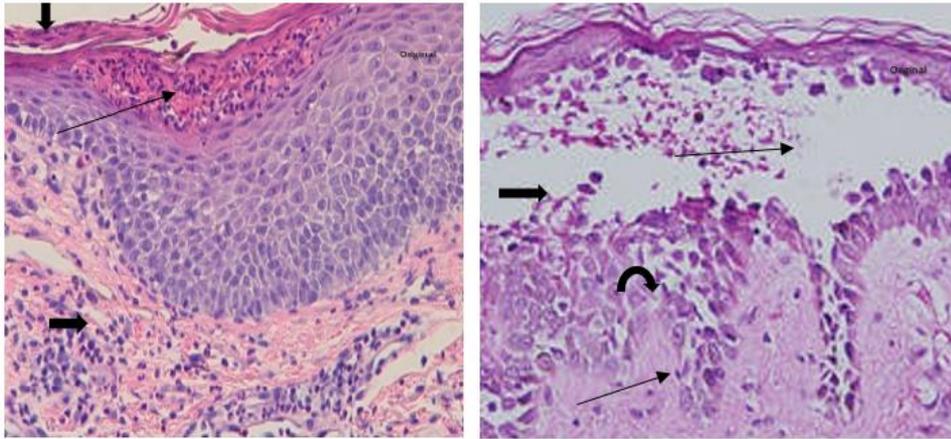
Trunk and abdomen were the commonest site of involvement seen in 53 (40.8%) cases followed by upper extremities 30 (31.5%), lower extremities 23(17.7%), face and neck 10 (7.7%) and genitalia (2.3%) cases.

**Chart 3: (Distribution according to site of involvement)****IMAGES****Image 1: Basal Cell Carcinoma- 10x view (H & E Stain)**

Arrow showing basaloid lobule with peripheral palisading

**Image 2: Lepromatous leprosy- High power view (H & E Stain)**

Upper arrow showing Grenz zone and Lower arrow showing Lepra cells

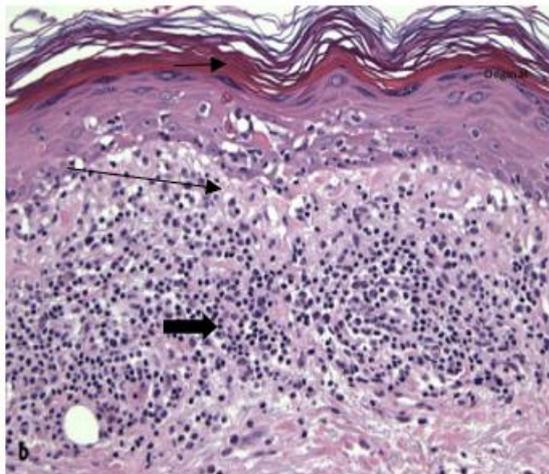


**Image 3: Psoriasis- High power view (H & E Stain)**

Upper thick arrow showing parakeratosis, middle thin arrow showing ‘Munro microabscesses’ and lower thick arrow showing lymphocytic infiltration in Dermis.

**Image 4: Pemphigus Vulgaris- High power view (H & E Stain)**

Upper thin arrow showing supra-basal bullae.  
Thick arrow showing acantholysis and spongiosis.  
Lower thin arrow showing tombstone appearance



**Image 5: Discoid Lupus Erythematosus- High power view (H & E Stain)**

Upper small arrow showing hyperkeratosis, large arrow showing attenuation of rete ridges and thick arrow showing Lichenoid infiltrate.

**DISCUSSION**

This study was a retrospective cross-sectional study includes biopsy that were received from Dermatology Department for the period of one year.

This study observed that highest frequency of skin lesions were among 31-40 years of age group that is 33 (25.4%). Sanat et al.<sup>7</sup> found that 41-50 years of age group were having highest frequency of skin lesions while Goswami et al.<sup>9</sup> found that > 60 years having highest frequency. Adhikari et al.<sup>8</sup> found highest frequency in 31-40 years of age group that was similar to our study. Gabriel et. al.<sup>13</sup> from Nigeria found that 20-29 years of age group was having highest skin lesions. Yalla et. al.<sup>11</sup> was also found that 31-40 years of age group having highest frequency of skin lesions. Albasri et. al.<sup>12</sup> found that 20-49 years of age having highest frequency.

The current study showed male preponderance which was similar to the study done by Goswami et al.<sup>9</sup>, Rakesh et al.<sup>10</sup>, Albasri et. al.<sup>12</sup> and Yalla et. al.<sup>11</sup> while Sanat et al.<sup>7</sup> found

female preponderance in their study. Gabriel et. al.<sup>13</sup> and Adhikari et al<sup>8</sup> found no sex preponderance in their study.

Our study showed 35.4% of infectious diseases with leprosy was the leading cause. Similarly, Rakesh et al.<sup>10</sup> also observed in their study that 41.96% cases were infectious diseases with leprosy was the leading cause among infectious diseases. Sanat et al.<sup>7</sup> and Goswami et al.<sup>9</sup> found that vesiculobullous and pustular diseases were more common that were 46.6% and 33.3% respectively. Gabriel et. al.<sup>13</sup> found dermatitis as a leading skin lesion in their study. Yalla et al<sup>11</sup> found similar result as our study that is Hansen's disease as a leading skin lesion. Adhikari et. al<sup>8</sup> found Vesiculobullous disorder as a leading cause. Albasri et. al.<sup>12</sup> from Saudi Arabia found that skin appendageal disorders were leading cause of skin lesions.

**TABLE 4: Comparison between different studies**

	<b>Our study (Dec 2021-Nov 2022) (PDU MC-Rajkot, Gujarat, India)</b>	<b>Sanat et al (June-Nov 2019) (Sinamangal, Kathmandu-Nepal)</b>	<b>Gabriel et. al (Jan 2006-Dec 2010) (Ibadan-Nigeria)</b>	<b>Goswami et al (Jan 2017-Jan 2020) (Bhavnagar-Gujarat, India)</b>	<b>Adhikari et al (Jan2016-Dec 2018) (Kathmandu-Nepal)</b>	<b>Rakesh et al (2009-May 2014) (MGM MC - Indore, India)</b>	<b>Yalla et al (June 2017-May 2019) (SMC-Vijaywada, India)</b>	<b>Albasri et al (Jan 2006-Dec 2017) (Madinah-Saudi Arabia)</b>
<b>Total cases</b>	130	133	209	610	1040	112	150	1125
<b>Period</b>	1 year	6 months	5 years	3 years	2 years	5 years	2 years	11 years
<b>M: F</b>	1.8 :1	M<F	1:1	M>F	1.08:1	1.3:1	M>F	1.1:1
<b>Age group</b>	31- 40 years	41-50 years	20-29 years	>60 years	31-40 years	11-30 years	31-40 years	20-49 years
<b>Most common Skin lesions</b>	Infectious	Vesiculobullous	Dermatitis	Vesiculobullous	Vesiculobullous	Leprosy	Hansen's disease	Skin appendage disorders

We observed that most common site of involvement were trunk and abdomen that is 40.8%. Sanat et al.<sup>7</sup> also observed that trunk and abdomen were most common site of involvement. While Goswami et al.<sup>9</sup> and Adhikari et. al.<sup>8</sup> found that upper extremities were most common site of involvement.

## CONCLUSIONS

We observed wide spectrum of skin lesions in our study from dermatitis to malignant neoplasm. Skin lesions are due to imbalance in homeostasis that results in conditions as diverse as wrinkles and hair loss, rashes and blisters and life-threatening cancers.<sup>14</sup> A skin

biopsy may not be required in all the skin lesions but for the proper diagnosis and identification of etiological agents, dermatologist used to do it.<sup>15</sup>

In our one-year study, total 130 biopsies were studied. Males were more affected than females. Most common affected age group was 31-40 years of age. Infectious diseases were leading cause especially Leprosy. In leprosy, Lepromatous Leprosy was leading cause of skin lesions. Trunk and abdomen were most common site of involvement in skin lesions.

As clinically many skin diseases overlap, so diagnosis of the particular disease is very difficult. At that point, histopathological study plays a major role in final diagnosis of the disease and proper management of the patient.

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