



## Original Research Article

# CLINICOPATHOLOGICAL SPECTRUM OF SKIN LESIONS IN A TERTIARY CARE DERMATOPATHOLOGY SETTING: A RETROSPECTIVE DESCRIPTIVE STUDY

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## ABSTRACT

**Background:** Skin biopsy is an important diagnostic tool for evaluating diverse dermatological lesions.

**Objective:** To assess the clinicopathological spectrum of histopathologically diagnosed skin lesions, with emphasis on leprosy-spectrum cases.

**Materials and Methods:** This retrospective descriptive study included 256 skin biopsy cases diagnosed from 2019 to 2025. Demographic data, anatomic site, histopathological diagnosis, final lesion category, broad diagnostic group, and leprosy-related AFB stain and bacillary index findings were analyzed.

**Results:** The mean age was  $38.8 \pm 16.4$  years, and males comprised 56.2% of cases. Non-neoplastic lesions predominated 198/256, 77.3%, followed by benign 19.5% and malignant lesions 3.1%. Leprosy/Hansen disease spectrum was the most common broad diagnostic group 81/256, 31.6%, followed by cystic lesions 12.9% and psoriasis spectrum 12.5%. Psoriasis/psoriasis vulgaris was the most frequent individual diagnosis 11.7%. Among leprosy-spectrum cases, lepromatous leprosy was the commonest subtype 34.6%. AFB positivity was seen in 67.9%, and BI  $\geq 3$  in 56.8%. Diagnostic group showed significant association with age, but not sex.

**Conclusion:** Non-neoplastic lesions formed the major dermatopathology burden, with leprosy-spectrum disorders as the leading diagnostic group. Histopathology with special stains remains essential for accurate classification, particularly in multibacillary leprosy.

**Keywords:** Dermatopathology; Skin biopsy; Leprosy; Histopathology; Bacillary index.

## INTRODUCTION

Skin diseases are among the most frequently encountered conditions in routine clinical practice and include a wide range of inflammatory, infective, autoimmune, cystic, benign, and malignant lesions. In many cases, the diagnosis can be made clinically; however, several skin disorders show overlapping appearances, atypical morphology, or partially treated presentations that may make clinical diagnosis difficult. In such situations, skin biopsy becomes an important diagnostic aid, as it provides tissue-based confirmation and helps the clinician reach a more accurate diagnosis.<sup>[1]</sup>

Dermatopathology is an important discipline that bridges the gap between clinical dermatology and microscopic diagnosis. Histopathological examination is useful for confirming the clinical impression, for more precise classification of lesions, for evaluation of disease activity or chronicity, and for the detection of unsuspected infections or neoplastic changes. It can be very helpful in papulosquamous disorders, granulomatous diseases, vesiculobullous diseases, connective tissue diseases and cutaneous tumours where the clinical features are not always specific. Clinico-pathological correlation has been demonstrated to be useful in the diagnosis and is important in the daily dermatology practice.<sup>[2,3]</sup>

The distribution of skin lesions in a dermatopathology practice can differ from area to area. This variation could be due to local disease prevalence, patient demographics, referral patterns, biopsy practices and specialist dermatology care. Thus, biopsy studies can be helpful to know the most common pathological diagnosis in a specific institution or geographic region. They also aid in the identification of locally important groups of diseases and serve as a baseline for future comparison. A few tertiary-care based studies have reported that non-neoplastic lesions constitute the bulk of skin biopsy diagnoses, with variable proportions of papulosquamous disorders, granulomatous lesions, cystic lesions, benign tumours and malignant tumours.<sup>[4,5]</sup>

Leprosy continues to be a significant dermatological and public health problem in endemic areas. Multidrug therapy and national control programs have greatly diminished the burden of disease, but new cases still do occur. If not diagnosed and treated promptly, it can result in nerve damage, deformity, disability and social stigma. Therefore, early detection and proper diagnosis of leprosy is still clinically relevant. Leprosy remains a relevant disease in many parts of the world and the World Health Organization (WHO) continues to monitor the global situation with annual updates.<sup>[6]</sup>

Histopathology plays a particularly significant role in leprosy, as the clinical picture can be subtle, atypical or overlap along the spectrum of the disease. The Ridley–Jopling classification, based on clinical, histological, bacteriological and immunological characteristics, is still widely used to classify leprosy from the tuberculoid to the lepromatous pole.<sup>[7]</sup> Special stains for acid fast bacilli and bacillary index give further information on bacillary load and are especially useful for the diagnosis of multibacillary disease. Previous clinicopathological investigations have demonstrated that there is not a complete agreement between the clinical and histopathological classification of leprosy, and the evaluation of the biopsy and bacteriological correlation remain relevant.<sup>[8]</sup>

In this context, a retrospective study of dermatopathology biopsy records can be helpful to give an insight into the spectrum of skin lesions diagnosed in a tertiary care setting. These studies are especially valuable if they also provide data on the demographic profile, anatomic distribution, final lesion category, broad diagnostic grouping, and focused analysis of common or locally important conditions like leprosy. The present study was conducted to assess the clinicopathological spectrum of histopathologically diagnosed skin lesions, categorize them as non-neoplastic, benign and malignant, and to analyze the leprosy-spectrum cases based on the distribution of leprosy types, acid fast bacilli staining and bacillary index findings.

## MATERIALS AND METHODS

### Study design and objectives

This retrospective descriptive study was carried out in the Index Medical College Hospital and Research Centre to assess the clinicopathological spectrum of histopathologically diagnosed skin lesions. The study included evaluation of patient demographics, year-wise distribution of cases, final lesion category, and broad diagnostic groups. Lesions were categorized as non-neoplastic, benign, or malignant, and their distribution was analyzed according to age group, sex, and anatomic region. Because leprosy-spectrum disorders formed an important component of the biopsy load, these cases were further evaluated for histopathological subtype, acid-fast bacilli staining status, and bacillary index profile.

### Study period and case selection

Histopathology records of skin biopsy specimens diagnosed between 2019 and 2025 were reviewed retrospectively. All eligible dermatopathology cases during this period were retrieved from departmental biopsy records, histopathology registers, and available pathology reports. After applying the eligibility criteria, a total of 256 cases were included in the final analysis.

### Inclusion Criteria

All skin biopsy specimens received for histopathological examination during the study period were considered for inclusion. Cases were included if they had adequate clinical and demographic details, including age and sex, and if a final histopathological diagnosis was available. Both non-neoplastic and neoplastic lesions were included. Inflammatory, infective, autoimmune, cystic, benign neoplastic, and malignant lesions of the skin were included in the study. Leprosy-spectrum cases were included when the histopathological diagnosis or subtype was documented, with or without available special stain findings.

### Exclusion Criteria

Cases were excluded if the biopsy material was inadequate, autolyzed, poorly preserved, or insufficient for histopathological interpretation. Repeat biopsies from the same patient for the same lesion were excluded when duplication could be identified. Cases with incomplete essential demographic or diagnostic information were also excluded. Non-cutaneous specimens and mucosal biopsies not primarily submitted as skin lesions were excluded. Cases in which a definitive histopathological diagnosis could not be assigned were not included in the final analysis.

### Data collection

Structured data extraction format was used to collect data. Variables recorded were age, sex, year of diagnosis, anatomic site of lesion, final histopathological diagnosis, final lesion category and broad diagnostic group. In leprosy-spectrum cases, further information was gathered on the

histopathological subtype, acid-fast bacilli stain result, and bacillary index, if available.

Age was examined as a continuous variable and in age categories that were predetermined. Anatomic sites were classified as head and neck, trunk, upper limb, lower limb, and other or unspecified sites. Final lesion classification was either non-neoplastic, benign, or malignant. Broad diagnostic groups were leprosy/Hansen disease spectrum, cystic lesions, psoriasis spectrum, lichen/lichenoid disorders, infective/inflammatory lesions, dermatitis/eczematous lesions, acne, keloid/scar, vesiculobullous/autoimmune lesions, benign tumour/polyp/keratosis, malignant epithelial/melanocytic tumours, autoimmune/connective tissue disorders, granulomatous disorders, inflammatory non-specific lesions, and other miscellaneous lesions.

### Histopathological evaluation

Routine histopathological processing was done for all biopsy specimens. Hematoxylin and eosin stained formalin fixed paraffin embedded tissue sections were examined under microscope for diagnosis. Diagnoses were assigned based on standard histomorphological criteria and clinicopathological information available in the records.

Special stains were checked if they were done. For leprosy-spectrum cases, the acid-fast bacilli staining was documented as positive or negative. Bacillary index was grouped for analysis as BI 0, BI 1-2 and BI  $\geq 3$ .

### Statistical analysis

Data were entered into a spreadsheet and analyzed using appropriate statistical methods. Categorical variables were summarized as frequencies and percentages. Continuous variables, including age,

were expressed as mean  $\pm$  standard deviation, median with interquartile range, and range.

Associations between broad diagnostic groups and categorical variables such as age group and sex were assessed using the chi-square test. Age distribution across major diagnostic groups was compared using the Kruskal–Wallis test. Among leprosy-spectrum cases, acid-fast bacilli positivity was compared across subtypes using the chi-square test, while bacillary index distribution was analyzed as an ordinal variable using the Kruskal–Wallis test. Rare diagnostic groups were combined as “Other groups” for inferential analysis where appropriate. A p value of  $<0.05$  was considered statistically significant.

### Ethical considerations

As this was a retrospective record-based study, there was no direct patient contact or intervention. Patient identity and confidentiality were maintained throughout the study, and data were anonymized before analysis. Institutional ethics committee approval was obtained or waived according to institutional policy.

## RESULTS

### Demographic and temporal profile

A total of 256 dermatopathology records were included in the final analysis. The mean age was  $38.8 \pm 16.4$  years, with a median age of 35 years and an age range of 9–85 years. The largest age representation was seen in the 21–30 years and 31–40 years groups, which together accounted for 120 (46.9%) cases. Males comprised 144 (56.2%) and females comprised 112 (43.8%). The highest annual case load was recorded in 2024 with 64 (25.0%) cases, followed by 2023 with 62 (24.2%) cases. [Table 1]

**Table 1: Demographic and temporal profile of cases, N = 256**

Age, years	Value	Age group, years	n (%)	Sex	n (%)	Year	n (%)
Mean $\pm$ SD	38.8 $\pm$ 16.4	0–10	1 (0.4)	Male	144 (56.2)	2019	38 (14.8)
Median (IQR)	35 (26–50)	11–20	36 (14.1)	Female	112 (43.8)	2020	18 (7.0)
Range	9–85	21–30	61 (23.8)			2021	32 (12.5)
		31–40	59 (23.0)			2022	20 (7.8)
		41–50	40 (15.6)			2023	62 (24.2)
		51–60	30 (11.7)			2024	64 (25.0)
		61–70	22 (8.6)			2025	22 (8.6)
		71–80	5 (2.0)				
		$\geq 81$	2 (0.8)				

**Note:** Data are presented as n (%) unless otherwise specified. Age is additionally summarized as mean  $\pm$  SD, median (IQR), and range.

### Overall diagnostic spectrum

Non-neoplastic lesions formed the largest final diagnostic category, accounting for 198 (77.3%) cases. Benign lesions accounted for 50 (19.5%)

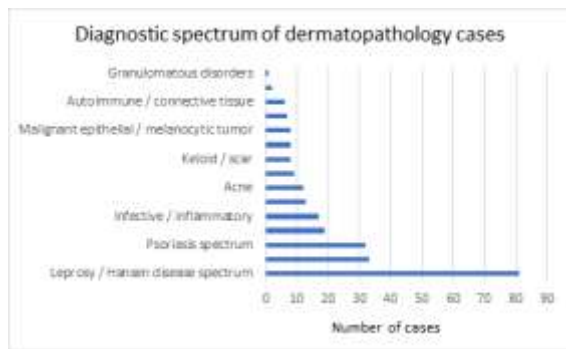
cases, while malignant lesions accounted for 8 (3.1%) cases. Among broad diagnostic groups, leprosy/Hansen disease spectrum was the most common group with 81 (31.6%) cases, followed by cystic lesions with 33 (12.9%) cases and psoriasis spectrum with 32 (12.5%) cases. [Table 2 and Figure 1]

**Table 2: Final lesion category and broad diagnostic spectrum of cases, N = 256**

Final lesion category	n (%)	Broad diagnostic group	n (%)
Non-neoplastic	198 (77.3)	Leprosy / Hansen disease spectrum	81 (31.6)
Benign	50 (19.5)	Cystic lesions	33 (12.9)
Malignant	8 (3.1)	Psoriasis spectrum	32 (12.5)

	Lichen / lichenoid disorders	19 (7.4)
	Infective / inflammatory	17 (6.6)
	Dermatitis / eczematous	13 (5.1)
	Acne	12 (4.7)
	Other / miscellaneous	9 (3.5)
	Keloid / scar	8 (3.1)
	Vesiculobullous / autoimmune	8 (3.1)
	Malignant epithelial / melanocytic tumour	8 (3.1)
	Benign tumour / polyp / keratosis	7 (2.7)
	Autoimmune / connective tissue	6 (2.3)
	Inflammatory, non-specific	2 (0.8)
	Granulomatous disorders	1 (0.4)

**Footnote:** Values are presented as n (%). Percentages were calculated using the total number of cases, N = 256.



**Figure 1: Diagnostic spectrum of skin lesions**

**Most common standardized diagnoses**

At the level of individual standardized diagnoses, psoriasis/psoriasis vulgaris was the most frequent diagnosis with 30 (11.7%) cases. The next most frequent diagnoses were lepromatous leprosy with 28 (10.9%) cases, borderline tuberculoid leprosy with 21 (8.2%) cases, epidermal inclusion cyst with 19 (7.4%) cases, and borderline lepromatous leprosy with 18 (7.0%) cases. [Table 3]

**Table 3: Most common standardized diagnoses**

Rank	Standardized diagnosis	n (%)
1	Psoriasis / psoriasis vulgaris	30 (11.7)
2	LL / Lepromatous leprosy	28 (10.9)
3	BTL / Borderline tuberculoid leprosy	21 (8.2)
4	EIC / Epidermal inclusion cyst	19 (7.4)
5	BLL / Borderline lepromatous leprosy	18 (7.0)
6	Acne vulgaris / truncal acne	12 (4.7)
7	Lichen planus	8 (3.1)
8	Chronic dermatitis	7 (2.7)
9	Keloid	7 (2.7)
10	Pemphigus vulgaris	6 (2.3)
11	Lichen simplex chronicus	5 (2.0)
12	Tuberculoid leprosy	5 (2.0)
13	Keratin cyst	4 (1.6)
14	Sebaceous cyst	4 (1.6)
15	Chronic infective lesion	3 (1.2)

**Clinicopathological distribution by lesion category**

The distribution of final lesion category across age, sex, and anatomic region is shown in Table 4. Non-

neoplastic lesions predominated across all age bands and both sexes. Malignant lesions were uncommon overall and represented a small proportion across demographic and anatomic categories.

**Table 4: Clinicopathological distribution according to final lesion category, N = 256**

Parameter	Subgroup	Non-neoplastic, n (%)	Benign, n (%)	Malignant, n (%)
Age group, years	≤20	27 (73.0)	10 (27.0)	0 (0.0)
	21–40	95 (79.2)	22 (18.3)	3 (2.5)
	41–60	53 (75.7)	14 (20.0)	3 (4.3)
	≥61	23 (79.3)	4 (13.8)	2 (6.9)
Sex	Male	112 (77.8)	25 (17.4)	7 (4.9)
	Female	86 (76.8)	25 (22.3)	1 (0.9)
Anatomic region	Head and neck	55 (70.5)	20 (25.6)	3 (3.8)
	Trunk	42 (72.4)	16 (27.6)	0 (0.0)
	Upper limb	55 (96.5)	2 (3.5)	0 (0.0)
	Lower limb	43 (84.3)	5 (9.8)	3 (5.9)
	Other/unspecified	3 (25.0)	7 (58.3)	2 (16.7)

Percentages are calculated row-wise within each subgroup.

### Leprosy-spectrum cases

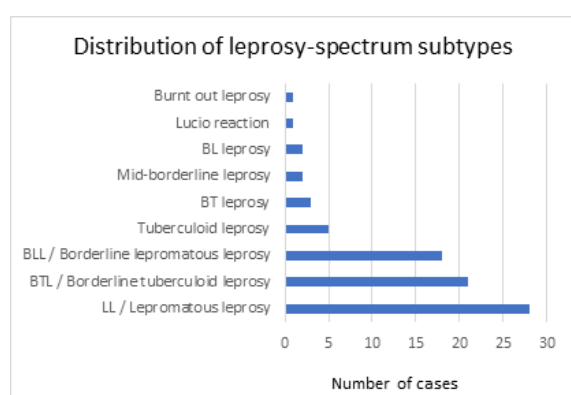
Leprosy/Hansen disease spectrum constituted 81 (31.6%) cases. Lepromatous leprosy was the largest subtype with 28 (34.6%) cases among the leprosy-spectrum group, followed by borderline tuberculoid leprosy with 21 (25.9%) cases and

borderline lepromatous leprosy with 18 (22.2%) cases. AFB positivity was seen in 55 (67.9%) leprosy-spectrum cases, and a high bacillary index category (BI  $\geq 3$ ) was recorded in 46 (56.8%) cases. [Table 5 and Figure 2]

**Table 5: Leprosy-spectrum subtype, AFB stain, and bacillary index profile, n = 81**

Leprosy subtype	n (%)	AFB stain	n (%)	Bacillary index category	n (%)
LL / Lepromatous leprosy	28 (34.6)	AFB positive	55 (67.9)	BI 0	18 (22.2)
BTL / Borderline tuberculoid leprosy	21 (25.9)	AFB negative	26 (32.1)	BI 1-2	17 (21.0)
BLL / Borderline lepromatous leprosy	18 (22.2)			BI $\geq 3$	46 (56.8)
Tuberculoid leprosy	5 (6.2)				
BT leprosy	3 (3.7)				
Mid-borderline leprosy	2 (2.5)				
BL leprosy	2 (2.5)				
Lucio reaction	1 (1.2)				
Burnt-out leprosy	1 (1.2)				

**Footnote:** Values are presented as n (%). Percentages were calculated using the total number of leprosy-spectrum cases, n = 81. AFB, acid-fast bacilli; BI, bacillary index.



**Figure 2: Distribution of leprosy-spectrum subtypes**

### Association of diagnostic group with age and sex

Major broad diagnostic groups showed a statistically significant association with age-group distribution ( $\chi^2=56.09$ ,  $df=33$ ,  $p=0.007$ ), indicating that diagnostic patterns varied across age strata. In contrast, the distribution of major broad diagnostic groups did not differ significantly by sex ( $\chi^2=15.49$ ,  $df=11$ ,  $p=0.161$ ). Acne and keloid/scar lesions were concentrated at younger ages, while vesiculobullous/autoimmune and malignant epithelial/melanocytic tumours showed higher mean ages. [Tables 6 and 7]

**Table 6: Association of broad diagnostic group with age group and sex**

Broad diagnostic group	Total n	$\leq 20$ n (%)	21-40 n (%)	41-60 n (%)	$\geq 61$ n (%)	Male n (%)	Female n (%)	Test statistic	p value
Leprosy / Hansen disease spectrum	81	8 (9.9)	41 (50.6)	24 (29.6)	8 (9.9)	43 (53.1)	38 (46.9)	Age: $\chi^2=56.09$ , $df=33$ ; Sex: $\chi^2=15.49$ , $df=11$	Age $p=0.007$ ; Sex $p=0.161$
Cystic lesions	33	4 (12.1)	15 (45.5)	10 (30.3)	4 (12.1)	20 (60.6)	13 (39.4)		
Psoriasis spectrum	32	5 (15.6)	14 (43.8)	9 (28.1)	4 (12.5)	20 (62.5)	12 (37.5)		
Lichen / lichenoid disorders	19	3 (15.8)	12 (63.2)	3 (15.8)	1 (5.3)	9 (47.4)	10 (52.6)		
Infective / inflammatory	17	1 (5.9)	9 (52.9)	4 (23.5)	3 (17.6)	13 (76.5)	4 (23.5)		
Dermatitis / eczematous	13	1 (7.7)	7 (53.8)	4 (30.8)	1 (7.7)	8 (61.5)	5 (38.5)		
Acne	12	6 (50.0)	6 (50.0)	0 (0.0)	0 (0.0)	7 (58.3)	5 (41.7)		
Other / miscellaneous	9	2 (22.2)	2 (22.2)	3 (33.3)	2 (22.2)	5 (55.6)	4 (44.4)		
Keloid / scar	8	6 (75.0)	1 (12.5)	1 (12.5)	0 (0.0)	1 (12.5)	7 (87.5)		
Vesiculobullous / autoimmune	8	0 (0.0)	3 (37.5)	3 (37.5)	2 (25.0)	3 (37.5)	5 (62.5)		
Malignant epithelial / melanocytic tumor	8	0 (0.0)	3 (37.5)	3 (37.5)	2 (25.0)	7 (87.5)	1 (12.5)		
Other groups	16	1 (6.2)	7 (43.8)	6 (37.5)	2 (12.5)	8 (50.0)	8 (50.0)		

**Note:** Age group association was tested using chi-square test across four age strata. Sex association was tested using chi-square test across male and

female categories. Rare broad diagnostic groups with fewer than eight cases were combined as Other groups for inferential analysis.

**Table 7: Age distribution across major diagnostic groups**

Broad diagnostic group	n	Mean ± SD	Median (IQR)	Range	Test statistic	p value
Leprosy / Hansen disease spectrum	81	39.6 ± 16.0	36 (28–50)	9–81	Kruskal–Wallis H=38.50, df=11	<0.001
Cystic lesions	33	39.5 ± 15.5	37 (29–47)	13–75		
Psoriasis spectrum	32	39.3 ± 18.6	38 (28–46)	12–85		
Lichen / lichenoid disorders	19	34.7 ± 13.8	34 (26–40)	16–65		
Infective / inflammatory	17	41.4 ± 18.0	35 (27–59)	20–70		
Dermatitis / eczematous	13	39.7 ± 15.3	35 (32–50)	16–69		
Acne	12	21.6 ± 4.7	20 (20–22)	16–35		
Other / miscellaneous	9	43.9 ± 18.6	44 (35–58)	18–70		
Keloid / scar	8	21.2 ± 10.3	18 (16–21)	13–45		
Vesiculobullous / autoimmune	8	49.5 ± 14.8	52 (37–58)	28–70		
Malignant epithelial / melanocytic tumour	8	46.4 ± 12.0	45 (37–56)	30–62		
Other groups	16	42.9 ± 14.9	42 (30–54)	20–74		

Age comparison across diagnostic groups was performed using the Kruskal–Wallis test.

**Leprosy subtype, AFB positivity and bacillary index**

AFB positivity differed significantly across leprosy subtypes ( $\chi^2=66.14$ ,  $df=8$ ,  $p<0.001$ ), being highest in multibacillary categories such as lepromatous leprosy and borderline lepromatous leprosy.

Bacillary index distribution also differed significantly across leprosy subtypes (Kruskal–Wallis  $H=59.19$ ,  $df=8$ ,  $p<0.001$ ), with  $BI \geq 3$  concentrated predominantly in lepromatous and borderline lepromatous cases. [Table 8]

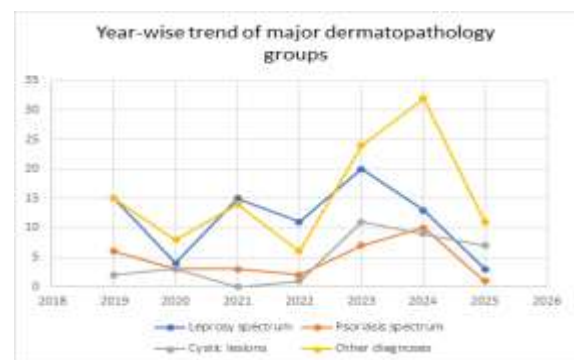
**Table 8: Clinicopathological profile of leprosy-spectrum cases**

Leprosy subtype	n	AFB positive n (%)	BI 0 n (%)	BI 1–2 n (%)	BI ≥3 n (%)	Test statistic	p value
LL / Lepromatous leprosy	28	28 (100.0)	0 (0.0)	2 (7.1)	26 (92.9)	AFB: $\chi^2=66.14$ , $df=8$ ; BI: $H=59.19$ , $df=8$	AFB $p<0.001$ ; BI $p<0.001$
BTL / Borderline tuberculoid leprosy	21	3 (14.3)	11 (52.4)	10 (47.6)	0 (0.0)		
BLL / Borderline lepromatous leprosy	18	18 (100.0)	0 (0.0)	2 (11.1)	16 (88.9)		
Tuberculoid leprosy	5	0 (0.0)	4 (80.0)	1 (20.0)	0 (0.0)		
BT leprosy	3	1 (33.3)	2 (66.7)	1 (33.3)	0 (0.0)		
Mid-borderline leprosy	2	2 (100.0)	0 (0.0)	1 (50.0)	1 (50.0)		
BL leprosy	2	2 (100.0)	0 (0.0)	0 (0.0)	2 (100.0)		
Lucio reaction	1	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)		
Burnt out leprosy	1	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)		

AFB positivity was compared across leprosy subtypes using chi-square test. Bacillary index was analyzed as an ordinal variable using Kruskal–Wallis test.

**Year-wise trend of major dermatopathology groups**

The annual distribution showed fluctuation in case volume over the study period, with the highest case load in 2024 and 2023. Leprosy-spectrum cases remained a major contributor across most years, while cystic lesions showed a relative increase in the later years. The year-wise trend of major dermatopathology groups is shown in Figure 3.



**Figure 3: Year-wise trend of major dermatopathology groups**

**DISCUSSION**

In this retrospective series of 256 dermatopathology cases, non-neoplastic lesions formed the largest

diagnostic category 198 cases, 77.3%, followed by benign 50 cases, 19.5% and malignant lesions 8 cases, 3.1%. The age range of the cohort was young to middle adult with almost half of the cases in the 21-40 age group and a mild male preponderance 144/256, 56.2%. The leprosy/Hansen disease spectrum was the most common broad diagnostic group 81 cases, 31.6%, followed by cystic lesions 12.9% and psoriasis-spectrum disorders 12.5%.

The demographic and diagnostic pattern was similar to other biopsy-based studies, but with some differences. Dawande et al reported that the age group 16-30 years was the most common (35%), there was slight female predominance (54%) and a higher proportion of non-neoplastic lesions (96.2%).<sup>[9]</sup> In contrast, our study revealed a wider peak in the third and fourth decades, a male predominance and a lower non-neoplastic proportion (77.3%), in part due to the separate analysis of benign lesions.

Our series was unique in that the majority of the skin lesions were leprosy-spectrum disorders. In 209 non-neoplastic cases, the most common types of lesions were vesiculobullous (30.14%), infectious (25.84%) and papulosquamous (19.62%) as reported by Chalise et al.<sup>[10]</sup> Amar et al. reported non-neoplastic lesions in 88.8%, neoplastic lesions in 6.4% and microbial diseases as the most common non-neoplastic pattern 26.05%.<sup>[11]</sup> Leprosy/Hansen disease alone, on the other hand, represented 31.6% of all cases in our study, indicating that leprosy is still endemic, that there is referral enrichment or a high biopsy rate for suspected granulomatous and infective dermatoses.

In the individual diagnosis, psoriasis/psoriasis vulgaris was the most common diagnosis (30 cases, 11.7%), followed by lepromatous leprosy (10.9%), borderline tuberculoid leprosy (8.2%), epidermal inclusion cyst (7.4%) and borderline lepromatous leprosy (7.0%). Therefore, the most common single diagnosis was psoriasis, but the most common disease spectrum was the combination of leprosy subtypes, which justified the presentation of single and grouped diagnostic data.

Malignant lesions were rare (3.1%), but more common in older patients (0% in patients  $\leq 20$  years, 6.9% in patients  $\geq 61$  years). They were also more common in males (4.9%) than females (0.9%). However, the number of malignant cases was low ( $n = 8$ ) and the findings should be interpreted descriptively.

Of the 81 cases of the leprosy spectrum, the most common type was lepromatous leprosy (34.6%), followed by borderline tuberculoid (25.9%) and borderline lepromatous leprosy (22.2%), which represents a significant multibacillary load. Roy et al. reported that 82% of leprosy cases were male, the age group 21-30 years was most commonly affected and Fite positivity was 50% in all cases, 100% in lepromatous and histoid leprosy.<sup>[13]</sup> In 302 cases of leprosy, Sharma et al., reported borderline groups as a major group and clinicopathological concordance

as 78.95%.<sup>[14]</sup> The higher LL/BLL proportion in our cohort could be due to delayed presentation, referral bias, or a higher multibacillary case load when compared with these studies.

AFB positivity was seen in 55/81 leprosy cases, 67.9%, and  $BI \geq 3$  in 46/81 cases, 56.8%, mainly among LL and BLL cases. Anandani et al. reported overall Fite-Faraco positivity of 44.94%, increasing from 2.04% in TT and 10.81% in BT to 91.66% in BL and 96.42% in LL.<sup>[15]</sup> In our study, the AFB positivity was higher because of the larger LL/BLL component and highlights the importance of special stains and bacillary index assessment as a diagnostic tool.

Broad diagnostic groups showed a significant association with age group  $\chi^2 = 56.09$ ,  $df = 33$ ,  $p = 0.007$ , but not with sex  $\chi^2 = 15.49$ ,  $df = 11$ ,  $p = 0.161$ . There were also significant differences in age distribution between the diagnostic groups (Kruskal-Wallis  $H = 38.50$ ,  $df = 11$ ,  $p < 0.001$ ), with acne and keloid/scar lesions being more likely to occur in younger patients, and vesiculobullous/autoimmune lesions and malignant tumours in older patients.

The highest annual case load was recorded in 2024, 64 cases, 25.0%, followed by 2023, 62 cases, 24.2%. This should be interpreted with caution because the number of biopsies performed in hospitals is dependent on referral patterns, availability of services, biopsy practice and record capture, and not necessarily on the actual incidence in the community.

This is a multi-year study with a structured overview of dermatopathology cases and focused leprosy-spectrum analysis based on AFB stain and bacillary index results. Its retrospective single-center design, incomplete clinical data and small malignant subgroup are limitations. In general, non-neoplastic lesions were more common and leprosy/Hansen disease was the most important diagnosis, highlighting the ongoing importance of histopathology, special stains, and clinicopathological correlation.

## CONCLUSION

Non-neoplastic lesions constituted the major dermatopathology burden in this retrospective series, with leprosy/Hansen disease spectrum emerging as the most common broad diagnostic group. The predominance of lepromatous and borderline lepromatous cases, along with high AFB positivity and frequent high bacillary index, highlights the continued relevance of histopathology and special stains in diagnosing and classifying leprosy-spectrum disorders. Age showed a significant association with diagnostic pattern, whereas sex did not. Overall, the findings emphasize the value of structured clinicopathological evaluation in routine dermatopathology practice.

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