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Original Research Article

CLINICOPATHOLOGICAL CORRELATION OF INFLAMMATORY DERMATOSES IN A TERTIARY CARE HOSPITAL

Dr Farha Naaz[1], Dr Naushaba Tazeen[2*], Dr M. Mustafa Khan[2], Dr. Idress Akhter Afroze[4*], Dr. Khatija Shameem[4], Dr. Atiya Begum[4], Dr. Asiya Tabassum[3], Dr. Sobia Afreen[3]

1. Postgraduate Final year, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India.
2. Associate Professor, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India.

2*. Assistant Professor, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India

3. Associate Professor, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India.
3. Assistant Professor, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India

4. Professor, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India.

4*. Professor and HOD, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India.

***Corresponding Author:**
Dr Naushaba Tazeen
Assistant Professor, Department of Pathology,
Deccan College of Medical Sciences, Hyderabad, Telangana, India
E.mail: tazeen247@gmail.com

ABSTRACT

Inflammatory dermatoses encompass a variety of histologic patterns that affect different segments of the skin. Skin is a complex organ having many functions. Epidermis with melanocytic system, dermis with adnexa and subcutis are its main components. Skin diseases are highly prevalent in developing countries, occur commonly amongst all age groups and range from simple inflammatory lesions to fatal neoplasms. As clinical presentation can be similar for various skin lesions, histopathological examination remains the gold standard for accurate diagnosis and serves as a guide to clinician for appropriate management. The objective of this study is to observe and analyze the spectrum of inflammatory dermatological lesions through Histopathological examination. Through this we try to find out the common skin lesions in an urban population, evaluate its correlation with age and gender, and correlate the clinical diagnosis and histopathological examination. Out of 50 skin biopsies studied, 31 were female and 19 were male. Age of the patients range from 11 to 70 years in which peak age was 21-30 years. Leprosy is the most common lesion in our study accounting for 16 out of 50 cases studied. Next common lesion was Psoriasis, accounting for 10 out of 50 cases studied. Out of these 50 cases, 44 cases correlated with clinical diagnosis and the rest of cases did not correlate with given clinical diagnosis. The present study emphasizes the role of histopathological examination as a valuable diagnostic tool to understand the pathology of inflammatory

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

dermatoses and provides a significant insight into trend of inflammatory skin lesions in the specific sub-population of Hyderabad, Telangana, India.

Key Words: Histopathological study, Inflammatory dermatoses, Skin biopsies, Clinicopathological correlations

1. INTRODUCTION:

Inflammatory dermatoses are a group of skin diseases characterized by abnormal immune responses in the skin. These diseases can present with a wide range of clinical features, including erythema, edema, scaling, papules, pustules, vesicles, bullae, and ulcers [1]. Histopathological examination of skin biopsies is an essential tool for the diagnosis and classification of inflammatory dermatoses. It involves careful examination of the skin tissue under a microscope to look for specific changes in the epidermis, dermis, and blood vessels [2][3].

The majority of inflammatory dermatoses can be grouped according to six specific tissue reactive patterns: lichenoid/interface dermatitis, psoriasiform dermatitis, spongiotic dermatitis, vesicobullous lesions, and granulomatous dermatitis.

Skin diseases are common in developing countries, but their spectrum varies widely. Despite being very common, skin diseases are not counted as a significant problem because of the attitude that they are benign and not life threatening. Skin biopsy is of utmost importance to confirm clinical suspicion by histopathological examination because treatment and prognosis depends on specific diagnosis.

Skin diseases are mostly diagnosed by history and clinical presentation which range from macules, papules, nodules, hyperpigmentation, and hypopigmentation. A few cases have similar clinical features with different histopathological patterns. Several studies have been conducted to assess the histopathological spectrum of inflammatory dermatoses in India [4][5][6]. These studies have shown that the most common inflammatory dermatoses in India include psoriasis, eczema, lichen planus.

A diverse range of microscopic appearances characterize inflammatory skin diseases, each targeting specific regions of the skin. In spongiotic, psoriasiform, lichenoid, pityriasiform and blistering disorders these are predominantly epidermal and junctional activities with variable superficial dermal inflammation. Hypersensitivity can show either epidermal or dermal changes depending on the exposure of allergen through external or internal route. In toxic epidermal necrolysis/Stevens Johnson syndrome changes are confined to epidermis and dermoepidermal junction. Auto-immune disorders are unique in that lesions typically incorporate a mixture of epidermal and dermal inflammatory pattern with periadnexal inflammation.

Histopathological examination of skin biopsies is essential for the accurate diagnosis of inflammatory dermatoses. It can also be helpful in determining the severity of the disease and predicting the response to treatment [7]. It is important to correlate the histopathological findings with the clinical presentation of the patient. This can help to narrow down the differential diagnosis and make an accurate diagnosis.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

This study was thus undertaken at the Department of Pathology, Deccan College of Medical sciences, Hyderabad with the aim of obtaining data and trends related to inflammatory dermatoses in the sub-population of this tertiary care hospital.

2. OBJECTIVES OF THE STUDY:

To observe and analyze the spectrum of inflammatory dermatological lesions through Histopathological examination. To find out the common skin lesions in urban population. To evaluate its correlation with age and gender. To correlate the clinical diagnosis and histopathological examination.

3. MATERIALS AND METHODS:

The present study was conducted for a period of 6 months from January-2023 to June-2023. This is a retrospective observational hospital-based study of inflammatory dermatoses specimens received at the Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India. A total of 50 skin punch biopsies each measuring 4mm were studied, a provisional diagnosis was given in the laboratory requisition forms provided with the skin specimens. All the skin biopsies received were fixed in 10% formalin. After fixation for 8-24 hours biopsy specimens were processed in an automatic tissue processor.

Specimens were edge embedded with epidermis upwards in the still liquid paraffin which was allowed to harden. Sections of skin biopsies were stained with hematoxylin and eosin, and histopathological diagnosis was correlated with clinical diagnosis. Skin lesions were classified under inflammatory dermatoses according to morphology of the lesions.

Inclusion criteria:

All skin biopsies (both punch and excision biopsies) of suspected inflammatory dermatoses. Skin biopsies of both paediatric and adult age. Skin biopsies in both sexes. Skin biopsies measuring $\geq 4mm^3$. Skin biopsies sent in 10% buffered Formalin solution.

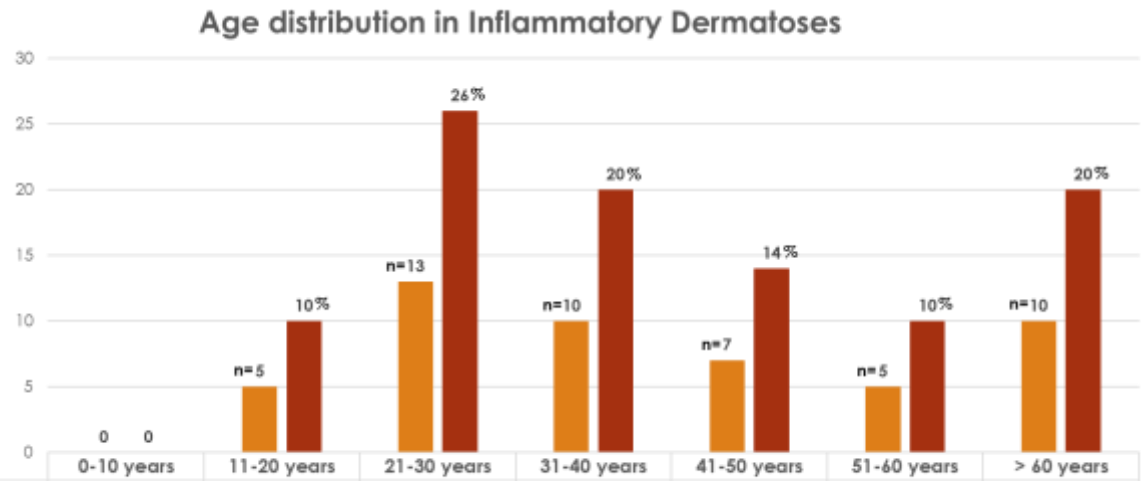
Exclusion criteria:

Skin biopsies of suspected benign/malignant, skin/adnexal tumours. Skin biopsies of size $< 4mm^3$ (inadequate skin biopsies). Skin biopsies received in other fluids (normal saline, water, etc.).

4. RESULTS:

Out of 50 skin biopsies studied, 31 were female and 19 were male. The patients' ages spanned a wide range, from 11 to 70 years old, with a clear peak in the young adult range of 21-30 years. Leprosy is the most common lesion in our study accounting for 16 out of 50 cases studied. Next common lesion was Psoriasis, accounting for 10 out of 50 cases studied.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023



	0-10 years	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	> 60 years
No. of cases	0	5	13	10	7	5	10
Percentage	0	10	26	20	14	10	20

Table 1: Correlation and prevalence of Inflammatory Dermatoses in relation to Age

The age group of 21-30 years constituted the maximum 26% of the total cases (Table 1). While the next highest (20%) number of cases were in the two age groups: 31-40 years and > 60 years.

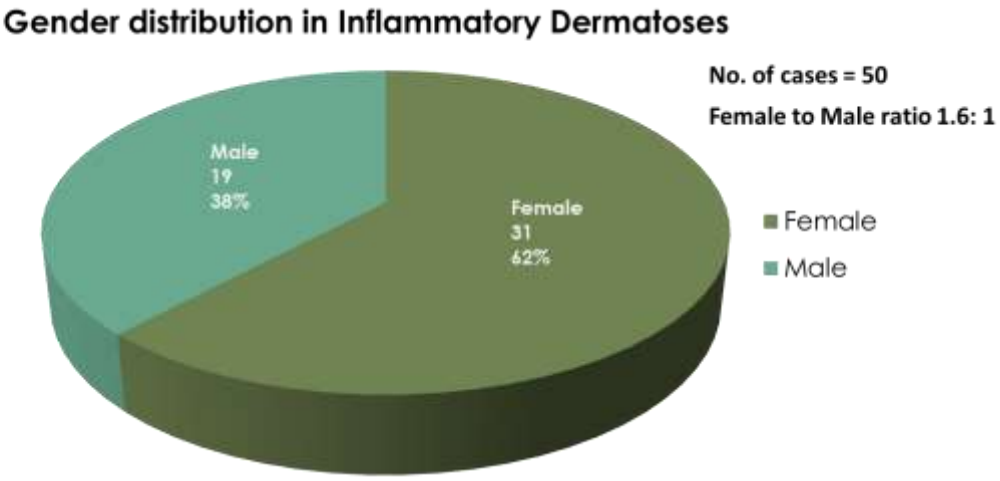


Table 2: Correlation and prevalence of Inflammatory Dermatoses in relation to Gender

Study population constituted 62% females and 38% males, with a ratio of 1.6:1 (Table 2). In the present study, Leprosy was found to be most common accounting for 32% and Psoriasis next commonly occurs accounting for 20% of the studied cases (Table 3).

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

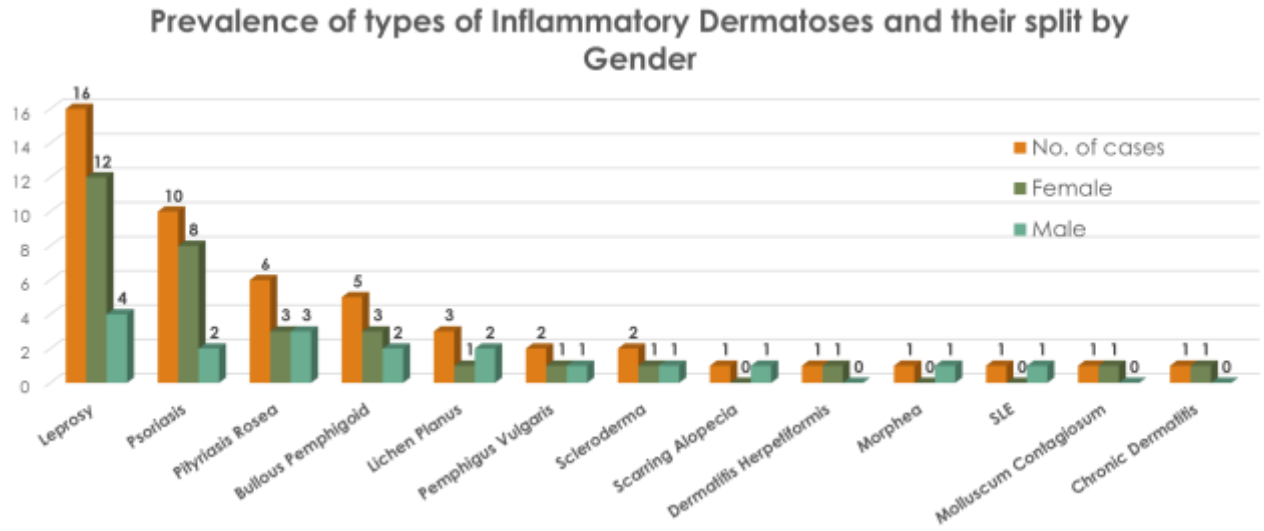


Table 3: Prevalence of types of Inflammatory Dermatoses and their split by gender

Table 4 shows the different histological lesions identified in this study (15 different skin conditions found in the 50 patients) and their correlation with the clinical diagnosis. The non-correlated cases along with their initial clinical diagnosis are listed in Table 5, which can be further analyzed for providing insights into potential misdiagnoses and overlapping clinical presentations.

Histopathological Diagnosis	**No. of cases**	**Clinical Diagnosis Correlated**	**Clinical Diagnosis Non-Correlated**
Leprosy	16	14	2
Psoriasis	10	9	1
Pityriasis Rosea	6	5	1
Bullous Pemphigoid	5	4	1
Lichen Planus	3	3	0
Pemphigus Vulgaris	2	2	0
Scleroderma	2	1	1
Scarring Alopecia	1	1	0
Dermatitis Herpetiformis	1	1	0
Morphea	1	1	0
SLE	1	1	0
Molluscum Contagiosum	1	1	0
Chronic Dermatitis	1	1	0

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Table 4: Correlation of Histopathological diagnosis with clinical diagnosis.

Histological Lesion	**No. of cases not correlated**	**Clinical Dx of non-correlated cases**
Leprosy	2	Psoriasis Sarcoidosis
Psoriasis	1	Tinea corporis Pityriasis rosea
Pityriasis Rosea	1	Guttate psoriasis Nummular Eczema
Bullous Pemphigoid	1	P. Foliaceus urticaria
Scleroderma	1	Panniculitis

Table 5: Non-correlated cases showing the identified histological lesion against their initial clinical diagnosis.

In Figures 1-3, the microphotographs of the three common skin lesions in this study: Leprosy, Psoriasis, and Pityriasis rosea, are shown at 10x and 40x magnifications. The tissue reactive patterns and diagnostic features observed in these images to identify the lesion are described.

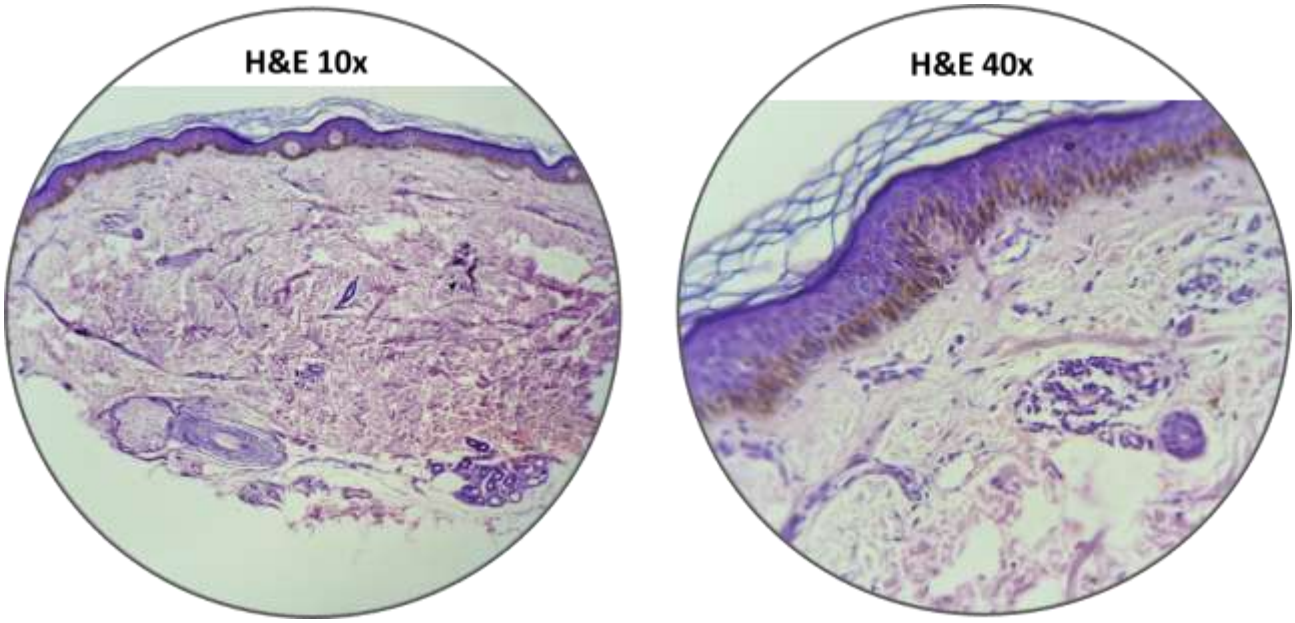


Figure 1: Microphotograph of Leprosy. Images showing thinned out epidermis, focal grenz zone, chronic lymphocytic and histiocytic infiltration surrounding adnexae, vessels and nerves.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

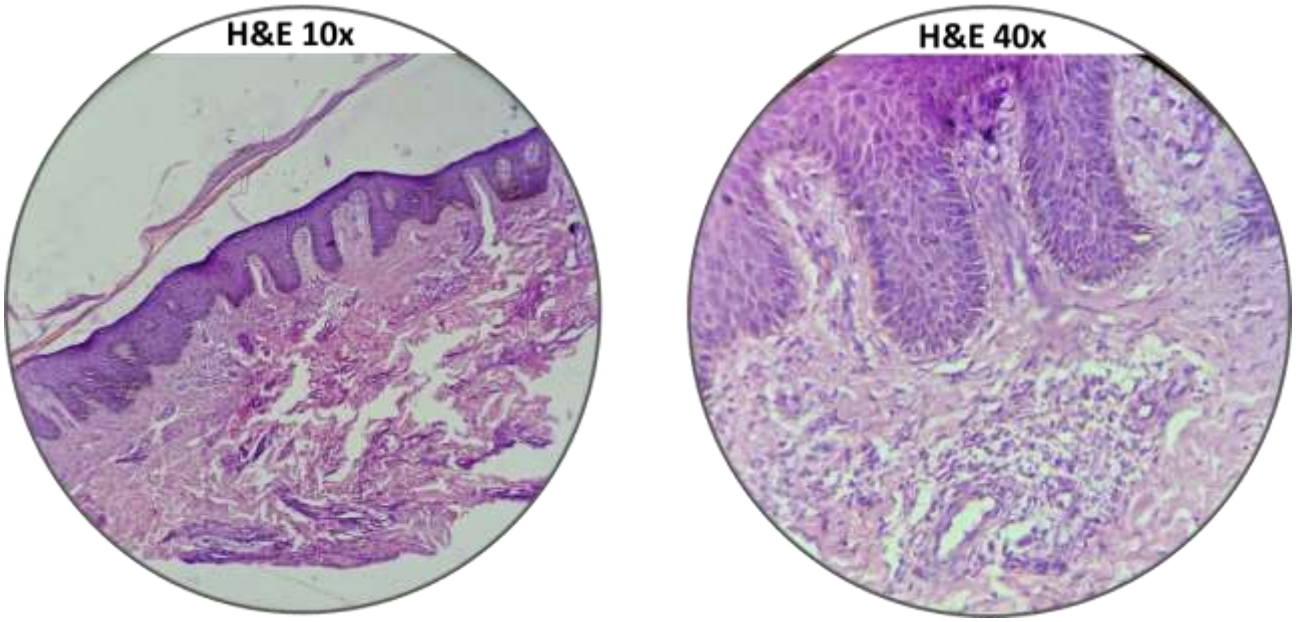


Figure 2: Microphotograph of Psoriasis. Images showing hyperkeratosis, parakeratosis, acanthosis, elongated reteridges, alternating zones of hypergranulosis, thinning of suprapappillary plate, perivascular lymphocytic infiltrate in dermis, capillary dilatation in papillary dermis.

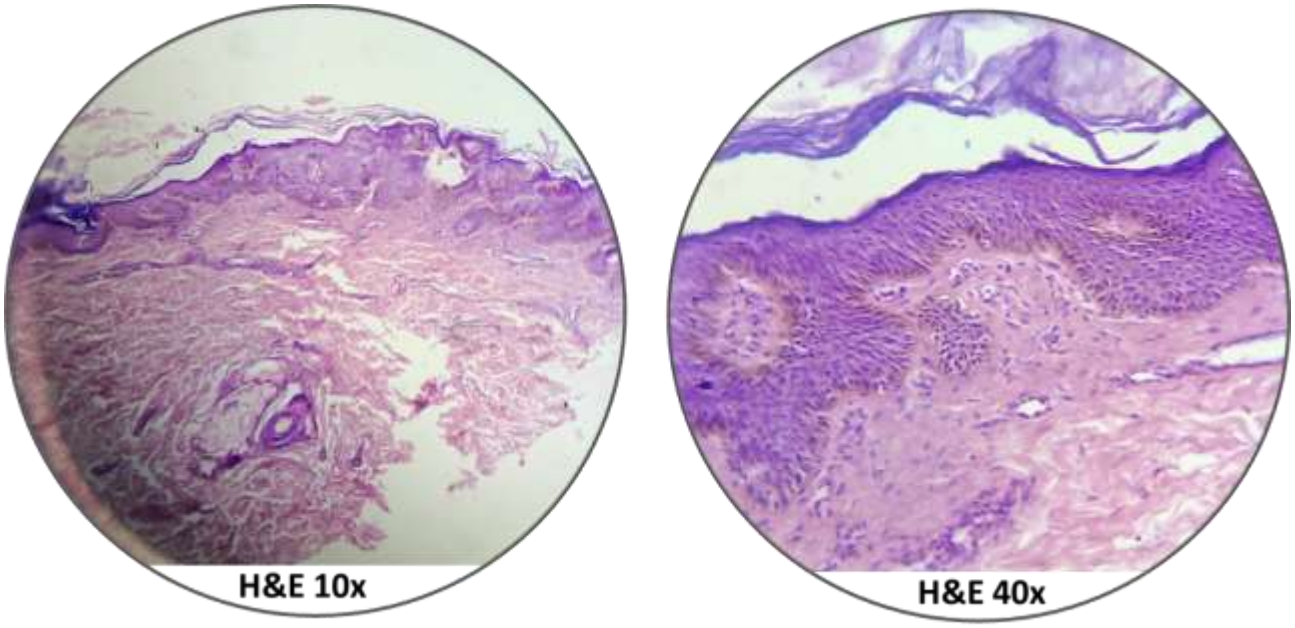


Figure 3: Microphotograph of Pityriasis rosea. Images showing parakeratosis, acanthosis of epidermis, diminished granular area, spongiotic dermatitis with perivascular lymphocytic infiltrate.

5. DISCUSSION:

A total of 50 clinically suspected Inflammatory dermatoses attending our hospital were studied for clinical histopathological correlation. In the present study out of 50 skin biopsies, 16 cases were of Leprosy followed by 10 cases of Psoriasis, 6 cases of Pityriasis rosea, 5 Bullous pemphigoids, 3 Lichen planus. In our study maximum number of cases belonged to 21-30 years age group which is similarly found in the study conducted by Mittal et al [10]. Out of 50 cases,

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

31 are female and 19 are male. The current study thus shows female predominance which is similar to the study conducted by Vijayasankar et al [8] and Jha et al [9].

Of the 50 cases, 16 cases were diagnosed as infectious granulomatous diseases of which Leprosy is more common, similar to the study conducted by Jha et al [9], Mittal et al [10] and Mehar et al [11]. The presentation of large number of patients with infectious granulomatous reaction pattern may be attributed to socio economic status, overcrowding, improper hygiene in under-developed areas. Psoriasis with 10 cases was found to be the second most common inflammatory dermatosis in this study. Tables 6 and 7 provide the overall comparison, and disease-wise comparison respectively with other Dermatopathology studies.

	Our Study (JAN 2023-JUN 2023)	**Vijayshankar et al [8] (JAN 2016-DEC 2018)**	**Jha et al [9] (JUN 2013-MAY 2015)**	**Mittal et al [10] (NOV 2016-NOV 2018)**	**Mehar et al [11] (JAN 2009 – DEC 2014)**	**Albasri et al [12] (JAN 2006 – JAN 2017)**
Total Cases	50	270	85	100	112	1125
Period	6 months	2 Years	2 Years	2 Years	5 Years	11 Years
F:M Ratio	1.6: 1	1.2: 1	1.5: 1	2: 3	1: 2	1.1: 1
Age Group	21-30 years	40-60 years	21-40 years	21-30 years	31-40 years	20-49 years
Most common Skin Lesions	Infectious Granulomatous Disease (Leprosy)	Vesicobullous Lesions	Infectious Granulomatous Disease (Leprosy)	Infectious Granulomatous Disease (Leprosy)	Infectious Granulomatous Disease (Leprosy)	Skin Appendage Diseases (Alopecia)

Table 6: Overall comparison with other Dermatopathology Studies

Disease	**Our Study**	**Kumar et al [13]**	**Yalla et al [14]**
Leprosy	32 %	30.6 %	33.6 %
Psoriasis	20 %	11.2 %	10.68 %
Pityriasis Rosea	12 %	-	-
Bullous Pemphigoid	10 %	12.5 %	8 %
Lichen Planus	6 %	11.2%	10.68 %
Pemphigus Vulgaris	4 %	1.29 %	-
Scleroderma	4 %	0.86 %	2.7 %
Scarring Alopecia	2 %	0.86 %	-
Dermatitis Herpetiformis	2 %	0.86 %	-
Morphea	2 %	-	4.7 %
SLE	2 %	0.86 %	1.33 %
Molluscum Contagiosum	2 %	0.86 %	-
Chronic Dermatitis	2 %	-	0.67 %

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Table 7: Disease-wise comparison with other Dermatopathology Studies

Out of these 50 cases, 44 cases correlated with clinical diagnosis and the rest of cases did not correlate with given clinical diagnosis. Clinicopathological consistency was found to be higher in those patients for whom sufficient clinical description was provided. Studies show a statistically significant rise in diagnostic accuracy when clinicians generate multiple differential diagnoses [15-16].

The diagnosis for the most common lesions is further divided as per the concordance levels and is listed in Table 8. In our study, no partial discordance was observed, which further suggests the need for a differential diagnostic approach by the clinicians.

Diagnosis	**Total Cases**	**Concordant**	**Partially Concordant**	**Discordant**
Leprosy	16	14	-	2
Psoriasis	10	9	-	1
Pityriasis Rosea	6	5	-	1
Bullous Pemphigoid	5	4	-	1
Lichen Planus	3	2	-	1

Table 8: Concordance in Top-5 Histopathological Diagnosis

6. CONCLUSION:

To conclude, 88% of the cases are clinicohistopathologically correlated. Maximum correlation was seen in lichen planus, pemphigus vulgaris, scarring alopecia, dermatitis herpetiformis, molluscum contagiosum. No correlation was observed between clinicopathological consistency and the type of biopsy. Specifying the site of biopsy and location had no effect on clinicopathological relation. A higher number of studies will be needed to obtain a clear trend of the agreement between clinical and histopathological diagnoses.

44 cases were concordant, and 6 cases were discordant in the present study. With appropriate clinical suspicion, the concordance levels can be improved. Discordant diagnoses highlight the importance of a collaborative approach between clinicians and pathologists. Combining clinical expertise with careful histopathological examination can improve diagnostic accuracy.

The present study emphasizes the role of histopathological examination as a valuable diagnostic tool to understand the pathology of inflammatory dermatoses. This study provides a significant insight into inflammatory skin lesions and help in catering to the increased demand of cosmetic dermatopathology.

7. DECLARATION OF INTEREST:

No conflicts of interest.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

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