Histopathological Study of Psoriasis: A Retrospective Study at a Rural Tertiary Care Centre in Faridabad

Ketan Krishnan[1], Sanyam Seth[2], Adaa Bhat[3], Rabi Shaan Saifi[4], Dr. Keshav Anand[5], Bhavya Pasricha[6], Ansari Juveriya[7], Taskeen[8], Dr. Syed Sumaiya Aamira[9], Dr. Malika M. Aggarwal[10]

[1,2,3,4,6,8] *2nd Year MBBS Student, Al Falah School of Medical Sciences and Research Centre, Dhauj, Faridabad (121004)*

[5,9] *Intern, Al Falah School of Medical Sciences and Research Centre, Dhauj, Faridabad (121004)*

[7] *4th Year MBBS Student Al Falah School of Medical Sciences and Research Centre, Dhauj, Faridabad (121004)*

[10] *Guide, Assistant Professor, Al Falah School of Medical Sciences and Research Centre, Dhauj, Faridabad (121004)*

***Abstract*—Psoriasis is a chronic inflammatory skin disease with diverse clinical and histopathological manifestations. This study aimed to assess the Clinicohistopathological correlation in 42 psoriasis patients. The most consistent histopathological features identified were parakeratosis (100%), acanthosis (92.9%), dermal infiltration (92.9%), and elongation of rete ridges (90.5%). Additional features included dilated capillaries (69.0%), agranulosis (76.2%), hyperkeratosis (52.4%), Munro micro abscesses (47.6%), suprapapillary thinning (42.9%), and spongiosis (14.3%). These findings align with existing literature, highlighting the diagnostic relevance of these markers. Variability in secondary features may reflect differences in disease chronicity and patient demographics. This study reinforces the importance of histopathological analysis in accurately diagnosing psoriasis and emphasizes the need for further research to validate these findings across diverse populations.**

I. INTRODUCTION

Psoriasis is a common, chronic, and recurrent inflammatory disorder of the skin characterized by well-defined erythematous papules and plaques surmounted by silvery- white scales over the extensor surfaces. Psoriasis is a dermatological disease associated with significant morbidity. It is extremely variable even in its duration and course. Clinically the presence of well-defined silvery white scales is characteristic of psoriasis. These scales reveal underlying smooth red membrane with bleeding points on removal of suprapapillary epithelium, which is called Auspitz sign [1]. In the classical form of psoriasis, the disease is usually easy to diagnose on clinical features alone, which spares the use of skin biopsy for histopathological examination. Conversely, microscopic analysis of skin biopsy specimens is done to confirm the diagnosis in classic and clinically atypical variants and to compare the clinical signs and symptoms with histopathological changes [2].

Histopathological picture of psoriasis varies significantly with the stage of the lesion and has a diagnostic value only in early scaling papules or near the margin of advancing plaques [3]. The cardinal histomorphological features of psoriasis are a combination of the following: - acanthosis, mounds of parakeratosis in an orthokeratotic cornified layer, suprapapillary thinning, papillomatosis, inter-cellular oedema, scattered mitosis of basal and prickle cells and diminished or absent granular layer, tortuous capillaries in papillary dermis and perivascular infiltration of lymphocytes. The most important diagnostic features of psoriasis are presence of micro-Munro abscesses and neutrophilic aggregates in the uppermost portion of the spinous layer to form spongiform pustules of Kogoj [4]. Psoriasis has different clinical subtypes which may simulate various other dermatological disorders [5], e.g. – neutrophils in the keratotic layers and spongiosis can be seen in infectious conditions, namely dermatophytosis and candida infections. Irregular hyperplasia, lymphocytic exocytosis and spongiosis along with vertical orientation of dermal collagen are seen in psoriasiform dermatitis [6].

In Indian population, the prevalence of individual histopathological features in clinically diagnosed cases has not been extensively investigated. Therefore, this study was conducted to analyse the correlation between clinical and histopathological characteristics of psoriasis.

Keywords- Psoriasis, Biopsy, Silvery - White Scales, Papules, Plaques, Suprapapillary, Spongiosis, Histopathology, Dermatitis, Hyperplasia

Aims and Objectives-

1. To study the clinical and histomorphological variants of psoriasis.
2. To study the incidence of age and sex distribution in various types of psoriasis.

Inclusion Criteria -

1. Clinically diagnosed cases of psoriasis
2. Patients of all age groups and both genders were included in this study.

Exclusion Criteria -

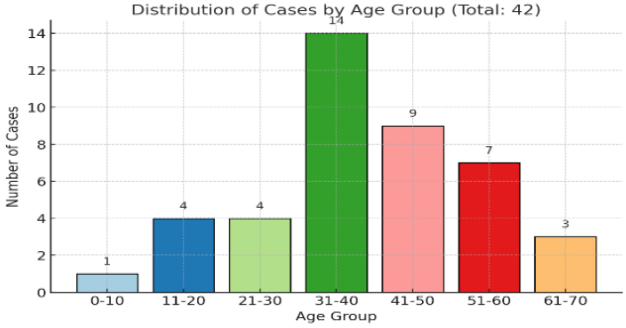
1. Inadequate biopsy samples (biopsies showing only dermis or epidermis on histologic examination)
2. Skin biopsies done for cases other than psoriasis.

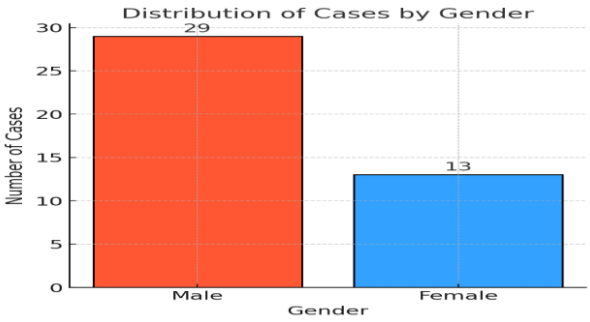
Materials and Methods -A retrospective study was undertaken in the department of pathology in a rural tertiary care hospital in Faridabad on 42 cases of clinically diagnosed psoriasis patients, for a period of 1 year from January 2024 to December 2024. A biopsy was taken from the lesion, in the department of dermatology of the same hospital. All biopsies were fixed in formalin and then processed in histopathology section of the Central Laboratory. The sections were stained with routine haematoxylin and eosin stain. The statistical analysis was done by comparing the percentages of various histopathological parameters taken into consideration and their consistency and reliability for diagnosis of psoriasis was observed.

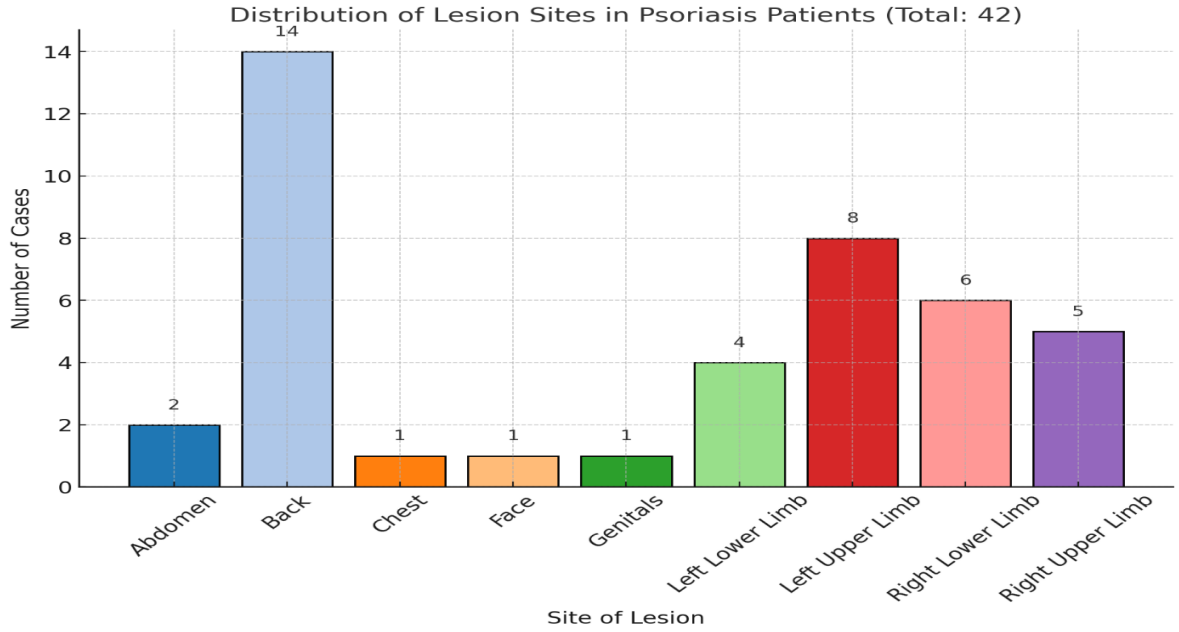
Place of Study – Department of Pathology, Al Falah School of Medical Sciences and Research Centre, Dhauj, Faridabad (121004)

II. RESULTS

42 cases were diagnosed to have psoriasis in the study period. Maximum number of cases were in the age group of 31–40 years i.e. 14 cases (33.33%). Least affected was the age group of 0–10 years that is 1 case (2.38%). 29 (69.04%) males and 13 (30.95%) females were diagnosed to have psoriasis with the male to female ratio being 2.23:1.In this study, the distribution of lesion sites among the 42 psoriasis patients was analysed. The most affected site was the Back, accounting for 33.3% (14 cases) of the total. This was followed by the Left Upper Limb, which had 19.0% (8 cases). The Right Lower Limb and Right Upper Limb were affected in 14.3% (6 cases) and 11.9% (5 cases) of the patients, respectively. The Left Lower Limb accounted for 9.5% (4 cases) of the lesions. The Abdomen was involved in 4.8% (2 cases), while the Chest, Face, and Genitals were each affected in 2.4% (1 case) of the patients. These findings indicate that the Back and Upper Limbs are the most frequently affected sites, highlighting the tendency of psoriasis lesions to predominantly occur on the trunk and limbs. Out of the total 42 cases of psoriasis, 35 (83%) cases were diagnosed to be psoriasis vulgaris, 3 (7%) cases were pustular psoriasis, 2 (5%) cases were guttate psoriasis and 2 (5%) cases were inverse psoriasis. On examination, the lesions were circular, well circumscribed, red papules or plaques with grey or silvery-white, dry scales distributed symmetrically.



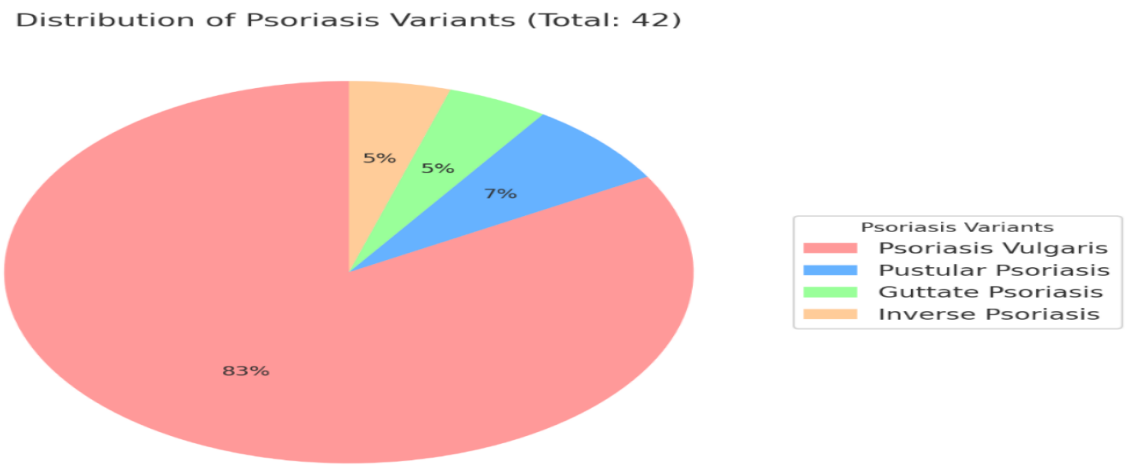


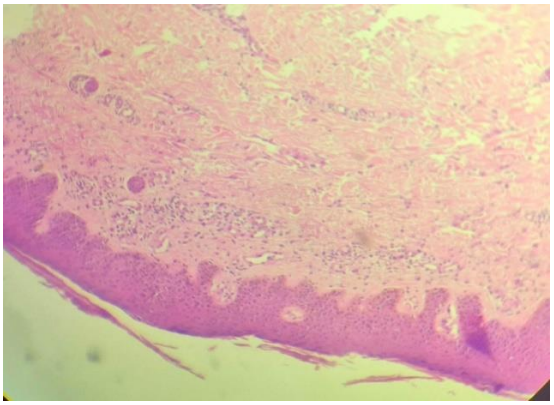


The histopathological examination of the 42 psoriasis cases revealed a range of characteristic microscopic features. The most frequently observed finding was Parakeratosis, which was present in 100% (42 cases) of the samples, highlighting it as a universal histological marker in psoriasis. Acanthosis and Dermal Infiltration were also highly prevalent, observed in 92.9% (39 cases) each, indicating consistent epidermal hyperplasia and inflammatory cell infiltration in the dermis. Similarly, Elongation of Rete Ridges was seen in 90.5% (38 cases), demonstrating the typical downward proliferation of the epidermis. Dilated Capillaries were noted in 69.0% (29 cases), reflecting increased vascularity in the dermal papillae. Agranulosis was found in 76.2% (32 cases), consistent with the loss of the granular cell layer commonly seen in psoriatic lesions. Hyperkeratosis was present in 52.4% (22 cases), indicating thickening of the stratum corneum. Munro Micro abscesses were observed in 47.6% (20 cases), which are collections of neutrophils within the stratum corneum, a hallmark of psoriasis. Suprapapillary Thinning, an important diagnostic feature, was identified in 42.9% (18 cases), while Spongiosis, indicative of intercellular oedema, was seen in 14.3% (6 cases). In summary, the most consistent histopathological features identified were Parakeratosis, Acanthosis, Elongation of Rete Ridges, and Dermal Infiltration, highlighting the key pathological changes in psoriasis.

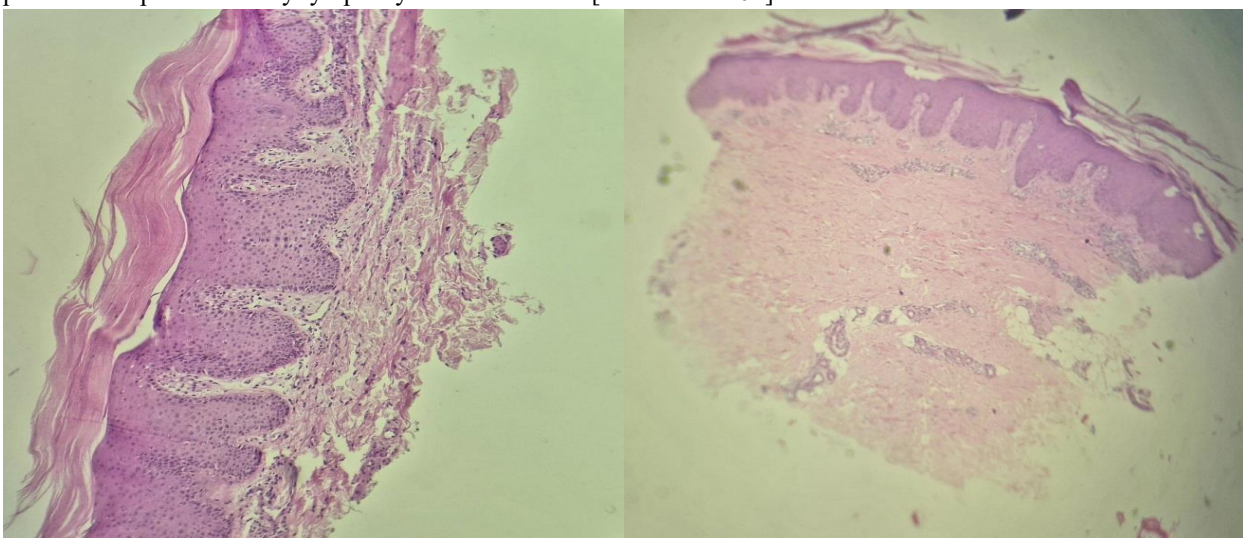
Histopathological Findings in Psoriasis Patients (n=42)

Histopathological Finding	Number of Cases (n=42)	Percentage (%)
Parakeratosis	42	100.0
Acanthosis	39	92.9
Dermal Infiltration	39	92.9
Elongation of Rete Ridges	38	90.5
Dilated Capillaries	29	69.0
Agranulosis	32	76.2
Hyperkeratosis	22	52.4
Munro Microabscess	20	47.6
Suprapapillary Thinning	18	42.9
Spongiosis	6	14.3





Section of tiny tissue bit shows keratinized stratified squamous epithelium showing mild acanthosis, parakeratosis, mild spongiosis, few neutrophils in stratum corneum, dilated and tortuous vessels in dermal papillae and perivascular predominantly lymphocytic infiltrates. [H&E Stain 10x]



Section reveals only a small tissue fragment lined by stratified squamous epithelium exhibiting mild acanthosis and hyperkeratosis. Dermis show focal neutrophilic collections admixed with few lymphocytes and histiocytes. Unremarkable sweat glands can also be seen. [H&E Stain 10x]

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III. Discussion

Psoriasis is a chronic inflammatory skin disorder characterized by a range of histopathological features that reflect its complex pathogenesis. The current study's findings align with existing literature, underscoring the consistency of these histological markers across different patient populations.In our study, parakeratosis was observed in 100% of cases, serving as a hallmark of psoriasis. This is consistent with findings reported in other studies, where parakeratosis was a prevalent feature [7]. Acanthosis was present in 92.9% of our cases, indicative of the epidermal hyperplasia characteristic of psoriatic lesions. Similarly, a study by Lima et al. reported acanthosis in 91.7% of patients, highlighting its diagnostic significance [8]. The elongation of rete ridges was noted in 90.5% of our cases, reflecting the downward proliferation of the epidermis into the dermis. This feature is commonly observed in psoriatic lesions and is considered a diagnostic hallmark. Dilated capillaries were observed in 69.0% of our cases, indicative of increased vascularity in the dermal papillae. This finding is consistent with studies that have reported vascular dilation and capillary proliferation as common histopathological features in psoriasis [9].

Agranulosis, or the absence of the granular cell layer, was present in 76.2% of cases. This feature contributes to the parakeratotic scaling seen clinically in psoriasis. The prevalence of agranulosis in our study is comparable to findings in other studies, which have reported similar observations. Hyperkeratosis was observed in 52.4% of cases, indicating thickening of the stratum corneum. This is in line with studies that have identified hyperkeratosis as a common feature in psoriatic lesions. Munro micro abscesses, collections of neutrophils within the stratum corneum, were present in 47.6% of cases. These micro abscesses are considered a hallmark of psoriasis and were similarly observed in a significant proportion of cases in other studies.

Suprapapillary thinning was noted in 42.9% of cases, reflecting the thinning of the epidermis overlying the dermal papillae. This feature is commonly associated with psoriasis and has been reported in varying frequencies across studies [10]. Spongiosis, indicative of intercellular oedema, was observed in 14.3% of cases. While not a classic feature of psoriasis, spongiosis can be present and may contribute to the clinical variability seen in psoriatic lesions.

Overall, our study's histopathological findings corroborate the established features of psoriasis documented in the literature. The high prevalence of parakeratosis, acanthosis, elongation of rete ridges, and dermal infiltration underscores the diagnostic value of these markers. Variations in the frequency of other features, such as hyperkeratosis and spongiosis, may reflect differences in disease severity, duration, or patient demographics. These findings contribute to a deeper understanding of psoriasis's histopathological spectrum and may inform more accurate diagnoses and targeted therapeutic strategies.

IV. CONCLUSION

Psoriasis is a chronic, multifactorial skin condition characterized by diverse clinical and histopathological manifestations. The present study highlights the Clinicohistopathological correlation in psoriasis, emphasizing the importance of histopathological evaluation for accurate diagnosis and classification. The most consistent histopathological features observed were parakeratosis, acanthosis, dermal infiltration, and elongation of rete ridges, reflecting the hallmark pathological changes associated with psoriasis.

Furthermore, the study's findings align with existing literature, reinforcing the relevance of histopathological analysis in understanding the disease's pathogenesis and clinical presentation. Variability in the presence of secondary features such as hyperkeratosis, suprapapillary thinning, and spongiosis suggests the influence of disease chronicity and individual patient factors.

These findings offer valuable insights into the diagnostic criteria for psoriasis and may guide future research aimed at refining histopathological classification and exploring potential therapeutic targets. Further studies with larger sample sizes and multicentric data are recommended to validate and expand upon these observations.

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Nil.

Conflicts of Interest -
There are no conflicts of interest.

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