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Histopathological Comparison Of Psoriasis And Non-Psoriatic Psoriasiform Dermatoses: A Cross-Sectional Study.

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Abstract

Background: Psoriasis and non-psoriatic psoriasiform dermatoses may show overlapping clinical and microscopic features, creating diagnostic difficulty. ***Objective:*** To evaluate and compare the histopathological features of psoriasis and non-psoriatic psoriasiform dermatoses in skin biopsy specimens. ***Materials and Methods:*** A cross-sectional observational study was conducted on 60 biopsy specimens, comprising 30 cases each of psoriasis and non-psoriatic psoriasiform dermatoses (NPPD). Routine hematoxylin and eosin-stained sections were examined for characteristic epidermal and dermal changes. ***Results:*** Psoriasis most frequently demonstrated elongated rete ridges, parakeratosis and suprapapillary thinning, whereas NPPD showed predominantly hyperkeratosis, spongiosis, parakeratosis and acanthosis. Several characteristic psoriatic features were absent in NPPD. ***Conclusion:*** Distinct histopathological patterns may assist in differentiating psoriasis from non-psoriatic psoriasiform dermatoses.

Keywords: Psoriasis; Psoriasiform dermatoses; Histopathology; Skin biopsy; Parakeratosis; Suprapapillary thinning.

INTRODUCTION

Psoriasis is a chronic inflammatory skin disorder characterized by a range of epidermal and dermal alterations. Although typical lesions can often be recognized clinically, histopathological examination remains valuable in atypical or diagnostically uncertain cases [1]. The microscopic appearance may vary according to the clinical subtype, stage of the lesion and biopsy site, and some cases may demonstrate features overlapping with other psoriasiform disorders [2].

Non-psoriatic psoriasiform dermatoses comprise a heterogeneous group of conditions that can resemble psoriasis both clinically and microscopically. Hyperkeratosis, parakeratosis, acanthosis and psoriasiform epidermal hyperplasia may occur in several disorders, making recognition of more characteristic architectural and inflammatory changes important [3,4].

Features such as elongated rete ridges, suprapapillary thinning, vascular alterations and neutrophilic collections may provide useful clues toward psoriasis, whereas spongiosis and other reactive changes may favour some psoriasiform mimickers [5].

Histopathological differentiation can nevertheless be difficult because individual features may be absent or variably expressed in different biopsy specimens. A comprehensive assessment of the epidermal architecture together with vascular and inflammatory changes is therefore more useful than relying on a single microscopic finding. Comparative evaluation of these features may help improve recognition of psoriasis among clinically and histologically overlapping dermatoses.

The present study was undertaken to evaluate and compare the histopathological features of psoriasis and non-psoriatic psoriasiform dermatoses in skin biopsy specimens.

MATERIALS AND METHODS

Study Design, Setting and Duration

This cross-sectional observational study was conducted in the Department of Pathology, Gandhi Medical College and associated Hamidia Hospital, Bhopal, Madhya Pradesh. The study was carried out over 1.5 years, from May 2024 to October 2025. The study population comprised outpatient and inpatient cases clinically suspected of psoriasis or non-psoriatic psoriasiform dermatoses whose skin biopsy specimens were received in the Department of Pathology for histopathological evaluation.

Sample Size and Sampling

The calculated sample size was 61 at a 95% confidence interval with an allowable error of 10% and was approximated to 60 cases. Consecutive sampling was used, and eligible cases were included until the required sample size was achieved. The final study population consisted of 30 psoriasis and 30 NPPD cases.

Inclusion Criteria

- Clinically and histopathologically confirmed cases of psoriasis and non-psoriatic psoriasiform dermatoses.
- Cases received in the Department of Pathology during the study period.
- Biopsy specimens with adequate and well-preserved tissue suitable for histopathological evaluation.

Exclusion Criteria

- Biopsy specimens showing poor fixation, inadequate tissue, extensive necrosis or artifacts interfering with interpretation.
- Pregnant and lactating women.
- Patients receiving steroids or anti-inflammatory drugs for the skin lesions.
- Patients with healed lesions.
- Cases with co-existing dermatological disorders.

Histopathological Examination

Biopsy specimens were received in 10% neutral buffered formalin, processed routinely and embedded in paraffin wax. Sections measuring approximately 3–5 µm were prepared and stained with hematoxylin and eosin. The sections were examined under light microscopy for characteristic epidermal and dermal changes. The evaluated features included hyperkeratosis, parakeratosis, acanthosis, elongation of rete ridges, suprapapillary thinning, vascular alterations, inflammatory changes, Munro microabscesses, Kogoj pustules, subcorneal pustules and spongiosis.

Statistical Analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS). Continuous variables were expressed as mean and standard deviation, while categorical variables were summarized as frequencies and percentages. Appropriate statistical tests were applied according to the nature of the variables for comparison between the psoriasis and NPPD groups. A p-value <0.05 was considered statistically significant.

Ethical Approval

Prior approval was obtained from the Institutional Ethics Committee of Gandhi Medical College, Bhopal, and written informed consent was obtained from all participants.

RESULTS

A total of 60 cases were evaluated, including 30 cases each of psoriasis and NPPD. The demographic characteristics, histopathological diagnostic spectrum and comparative microscopic findings are presented in Tables 1–3.

Table 1: Baseline demographic characteristics of patients with psoriasis and non-psoriatic psoriasiform dermatoses

Characteristic	Psoriasis (n=30)	NPPD (n=30)	p-value
Mean Age (years)	38	39.37	0.646
Male	16 (53.3%)	17 (56.7%)	0.795
Female	14 (46.7%)	13 (43.3%)	

The mean age was comparable between the two groups. Both groups showed a slight male predominance, with no statistically significant difference in age or gender distribution.

Table 2: Histopathological diagnostic spectrum of psoriasis and non-psoriatic psoriasiform dermatoses

Histopathological diagnosis		Number	Percentage
Psoriasis group (n=30)	Chronic plaque psoriasis	12	40%
	Guttate psoriasis	7	23.3%
	Pustular psoriasis	7	23.3%
	Erythrodermic psoriasis	2	6.7%
	Palmoplantar psoriasis	1	3.3%
	Inverse psoriasis	1	3.3%
NPPD group (n=30)	Seborrheic keratosis	7	23.3%
	Lichen planus	6	20%
	Pityriasis lichenoides chronicus	6	20%
	Dermatitis	4	13.3%
	Plantar keratosis	3	10%
	Actinic keratosis	2	6.7%
	Granuloma annulare	1	3.3%
	Spongiotic dermatitis	1	3.3%

Chronic plaque psoriasis was the most frequent histopathological subtype among psoriasis cases, whereas seborrheic keratosis was the most common NPPD diagnosis. The NPPD group demonstrated a heterogeneous spectrum of histopathological diagnoses.

Table 3: Comparison of histopathological findings between psoriasis and non-psoriatic psoriasiform dermatoses

Histopathological feature	Psoriasis, n (%)	NPPD, n (%)
Hyperkeratosis	10 (33.3%)	27 (90%)
Parakeratosis	29 (96.7%)	21 (70%)
Acanthosis	14 (46.7%)	20 (66.7%)
Elongated rete ridges	30 (100%)	6 (20%)
Suprapapillary thinning	25 (83.3%)	0 (0%)
Dilated blood vessels	18 (60%)	0 (0%)
Munro microabscesses	15 (50%)	6 (20%)
Kogoj pustules	8 (26.7%)	0 (0%)
Subcorneal pustules	14 (46.7%)	0 (0%)
Dermal perivascular inflammation	10 (33.3%)	9 (30%)
Spongiosis	3 (10%)	22 (73.3%)
Presence of granular layer	9 (30%)	7 (23.3%)
Neutrophil exocytosis	12 (40%)	7 (23.3%)
Pigmented basal layer	0 (0%)	9 (30%)
Sparse necrosed keratinocytes	0 (0%)	1 (3.3%)
Collagen degeneration	0 (0%)	3 (10%)

Psoriasis predominantly demonstrated elongated rete ridges, parakeratosis and suprapapillary thinning, with frequent vascular dilatation and neutrophilic collections. NPPD showed greater frequencies of hyperkeratosis, spongiosis, parakeratosis and acanthosis. Suprapapillary thinning, vascular dilatation, Kogoj pustules and subcorneal pustules were absent in NPPD.

DISCUSSION

The present study demonstrated clear differences in the microscopic patterns of psoriasis and non-psoriatic psoriasiform dermatoses. Histopathological features of psoriasis may vary according to the anatomical site and may not always show the classical pattern, making careful assessment of multiple microscopic features important [6].

In our study, elongated rete ridges were present in all psoriasis cases, while parakeratosis and suprapapillary thinning were also frequent. These findings are consistent with reported histopathological characteristics of psoriasis, including regular rete ridge elongation, suprapapillary thinning, vascular alterations and neutrophilic collections [7]. Studies have also emphasized that classical features may not be uniformly expressed and that histological appearances can vary with anatomical site and lesion characteristics [8].

NPPD showed prominent hyperkeratosis and spongiosis, whereas several characteristic psoriatic findings were absent. This pattern supports the value of evaluating multiple histological parameters when distinguishing psoriasis from psoriasiform

mimickers. Recent comparative work involving psoriasis and psoriasiform dermatitis has similarly identified parakeratosis, Munro microabscesses, suprapapillary thinning and increased dermal vasculature as useful discriminatory features [9].

The broad spectrum of diagnoses within NPPD further emphasizes the need for clinicopathological correlation. Recent studies also indicate that histopathologic psoriasiform dermatitis may ultimately correspond to several different clinical entities, including psoriasis and dermatitis [10].

CONCLUSION

The present study demonstrated distinct histopathological patterns between psoriasis and non-psoriatic psoriasiform dermatoses. Psoriasis was characterized predominantly by elongated rete ridges, parakeratosis, suprapapillary thinning, vascular dilatation and neutrophilic collections, whereas NPPD showed more prominent hyperkeratosis and spongiosis. Careful assessment of the overall epidermal and dermal pattern can therefore assist in distinguishing psoriasis from its histopathological mimickers.

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