

**CLINICOPATHOLOGICAL FEATURES OF EPIDERMAL AND DERMAL
MORPHOLOGICAL CHANGES IN DIFFERENT CLINICAL FORMS OF PSORIASIS**

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Abstract

Psoriasis is a chronic, immune-mediated inflammatory skin disease characterized by distinct epidermal and dermal alterations, the severity and pattern of which vary among different clinical forms. The present study aimed to investigate the morphological changes of the epidermis and dermis in various clinical forms of psoriasis and to determine their clinicopathological correlations. Skin biopsy specimens obtained from patients with different clinical types of psoriasis were analyzed using routine histopathological methods. Epidermal changes such as hyperkeratosis, parakeratosis, acanthosis, elongation of rete ridges, and thinning of the suprapapillary plates were evaluated, along with dermal features including vascular dilation, inflammatory cell infiltration, and edema. The results demonstrated that the extent and combination of epidermal and dermal morphological alterations differed significantly depending on the clinical form of psoriasis. Plaque psoriasis showed pronounced epidermal hyperproliferation and inflammatory infiltration, whereas other clinical variants exhibited distinct histomorphological patterns. These findings highlight the importance of comprehensive morphological assessment in understanding the pathogenesis of psoriasis and may contribute to improved diagnostic accuracy and personalized therapeutic approaches.

Keywords

Psoriasis; Epidermis; Dermis; Morphological changes; Histopathology; Clinical forms.

Introduction

Psoriasis is a chronic, recurrent, immune-mediated inflammatory skin disorder that affects approximately 2–3% of the global population and significantly impairs patients' quality of life. The disease is characterized by abnormal keratinocyte proliferation, dysregulated immune responses, and persistent inflammation involving both the epidermis and dermis. Clinically, psoriasis presents with a wide spectrum of manifestations, including plaque, guttate, pustular, erythrodermic, and inverse forms, each exhibiting distinct morphological and clinical features.

Histopathologically, psoriasis is marked by a combination of epidermal and dermal alterations, such as hyperkeratosis, parakeratosis, acanthosis, elongation of rete ridges, thinning of the suprapapillary plates, dilated dermal capillaries, and inflammatory cell infiltration. However, the expression and severity of these morphological changes may vary depending on the clinical form and stage of the disease. Understanding these variations is essential for accurate diagnosis, differential diagnosis from other inflammatory dermatoses, and evaluation of disease activity.

Despite extensive research on the immunopathogenesis of psoriasis, the relationship between specific clinical forms and their corresponding epidermal and dermal morphological characteristics remains insufficiently explored. A detailed clinicopathological analysis may provide deeper insight into disease heterogeneity and contribute to improved diagnostic precision and individualized therapeutic strategies. Therefore, the present study aims to investigate the epidermal and dermal morphological changes in different clinical forms of psoriasis and to assess their clinicopathological correlations.

Materials and Methods

Study Design and Patients

This descriptive, cross-sectional study was conducted on patients clinically diagnosed with psoriasis who were referred to the dermatology department during the study period. Patients were classified into different clinical forms of psoriasis, including plaque, guttate, pustular, erythrodermic, and inverse types, based on established clinical criteria. Inclusion criteria comprised adult patients with confirmed clinical diagnosis of psoriasis who had not received systemic or topical treatment for at least two weeks prior to biopsy. Patients with other inflammatory or autoimmune skin diseases were excluded from the study.

Skin Biopsy and Histopathological Examination

Punch biopsy specimens (4–5 mm) were obtained from active psoriatic lesions under local anesthesia. The samples were fixed in 10% neutral buffered formalin, routinely processed, and embedded in paraffin. Serial sections of 4–5 μm thickness were prepared and stained with hematoxylin and eosin (H&E) for histopathological evaluation.

Morphological Assessment

Histological examination focused on evaluating epidermal and dermal morphological changes. Epidermal parameters included hyperkeratosis, parakeratosis, acanthosis, elongation of rete ridges, thinning of suprapapillary plates, presence of Munro's microabscesses, and spongiform pustules of Kogoj. Dermal features assessed were capillary dilation, endothelial proliferation, papillary dermal edema, and the degree and distribution of inflammatory cell infiltration. Morphological changes were graded semi-quantitatively as mild, moderate, or severe.

Statistical Analysis

Data were analyzed using standard statistical software. Descriptive statistics were applied to summarize morphological findings across different clinical forms of psoriasis. Comparative analysis was performed to assess differences in epidermal and dermal features among clinical variants. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all participants prior to inclusion in the study, and the research protocol was approved by the local institutional ethics committee.

Results

Histopathological examination revealed distinct epidermal and dermal morphological changes across different clinical forms of psoriasis. Although several features were common to all variants, the degree and combination of these changes varied depending on the clinical presentation.

Epidermal Morphological Changes

Epidermal alterations were observed in all examined specimens. Hyperkeratosis and parakeratosis were the most frequent findings and were predominantly pronounced in plaque psoriasis. Marked acanthosis with regular elongation of rete ridges was characteristic of chronic plaque-type lesions. Thinning of the suprapapillary plates was commonly observed, particularly in areas overlying dilated dermal capillaries. Munro's microabscesses and spongiform pustules of Kogoj were detected mainly in pustular and active plaque forms, reflecting increased neutrophilic activity.

In guttate psoriasis, epidermal hyperplasia was relatively mild, with focal parakeratosis and less prominent rete ridge elongation. In contrast, erythrodermic psoriasis demonstrated diffuse epidermal involvement with extensive parakeratosis and irregular acanthosis, indicating severe and widespread epidermal disruption.

Dermal Morphological Changes

Dermal alterations were mainly localized to the papillary dermis and varied in intensity among clinical forms. Dilatation and congestion of superficial capillaries were consistently observed, most prominently in plaque and erythrodermic psoriasis. Papillary dermal edema was a frequent finding and was associated with increased vascular permeability.

Inflammatory cell infiltration composed predominantly of lymphocytes, macrophages, and occasional neutrophils was present in all cases. The density of inflammatory infiltrates was highest in plaque and pustular psoriasis, whereas guttate psoriasis showed relatively mild perivascular inflammation. Endothelial proliferation and vascular remodeling were more evident in chronic lesions, suggesting ongoing angiogenic activity.

Clinicopathological Correlations

Comparative analysis demonstrated a clear correlation between clinical forms of psoriasis and their corresponding morphological features. Plaque psoriasis was associated with pronounced epidermal hyperproliferation and dense dermal inflammation, while other clinical variants exhibited distinct histomorphological patterns. These findings emphasize that epidermal and dermal changes are not uniform across all forms of psoriasis but reflect the clinical heterogeneity of the disease.

Conclusion

The present study demonstrates that psoriasis exhibits distinct epidermal and dermal morphological changes that vary according to its clinical form. Plaque psoriasis is characterized by pronounced epidermal hyperproliferation, elongation of rete ridges, and dense dermal inflammatory infiltration, whereas guttate, pustular, and erythrodermic forms show specific histomorphological patterns reflecting differences in disease activity and severity. These findings highlight the importance of detailed clinicopathological evaluation in understanding the heterogeneity of psoriasis, improving diagnostic accuracy, and guiding personalized therapeutic strategies. Comprehensive assessment of both epidermal and dermal alterations may provide valuable insights into the pathogenesis and progression of this chronic inflammatory skin disorder.

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