

Understanding the Histomorphological Spectrum of Psoriasiform Dermatitis

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Abstract

Background: Psoriasiform dermatitis is a term that refers to a group of disorders which histologically and/or clinically mimic psoriasis. It often poses diagnostic dilemma to both pathologists and dermatologists. It is essential to follow a systematic approach and use appropriate clinicopathological correlation to arrive at a diagnosis. Histopathological material constitutes definite hard evidence, which can be preserved and will continue to be available for future review. The objective of this study is to understand the histopathological features of psoriasiform disorders and to highlight the characteristic microscopic difference between them for better approach of the diagnosis.

Methods: This was a retrospective cross-sectional study conducted at tertiary care hospital in Bangalore. All cases diagnosed as psoriasis or mentioned as one of the differential diagnoses were included in the study. The material included 25 skin biopsies.

Results: Most of the cases were noted in the age group of 21-30 years. The sex distribution pattern revealed male predominance with male to female ratio of 1.7:1. Psoriasis was the most common lesion noted followed by Pityriasis rosea and Pityriasis rubra pilaris. Parakeratosis and acanthosis were the most common histological features observed in cases of psoriasis. Dermal infiltrate and acanthosis were the common feature which was seen in almost all biopsy samples.

Conclusion: Clinically, psoriasiform lesions appear as classical psoriasis, however microscopically there are different classifications of psoriasiform disorders. Since satisfactory management of these conditions require both symptomatic and specific therapy, it is essential to reach a definitive diagnosis. Histopathology is the gold standard for diagnosis. Clinicopathological correlation is must for correct diagnosis and appropriate treatment.

Keywords: Psoriasiform dermatitis; Psoriasis; Histomorphological spectrum; Dermatitis

Introduction

Psoriasis, the prototype of PD, is a genetically determined, inflammatory and proliferative disease of the skin characterized by dull red, sharply demarcated scaly plaques. The term psoriasiform implies that the lesion either clinically or histopathologically mimics psoriasis. This group includes: psoriasis, seborrheic dermatitis, pityriasis rubra pilaris, allergic dermatitis, atopic dermatitis, nummular dermatitis, lichen simplex chronicus, prurigo nodularis, pityriasis rosea, inflammatory linear verrucous epidermal nevus and mycosis fungoides [1]. This presents a diagnostic challenge for the clinician and histopathological confirmation becomes mandatory. The histologic diagnosis depends upon an aggregate of histologic criteria, some characteristic of psoriasis and others shared with other dermatoses. The microscopic picture of psoriasis varies with the evolutionary stage of psoriatic lesion.

Objectives

Objective of the present study was to understand the histopathological features of psoriasiform disorders and to emphasize the characteristic microscopic difference between them for better approach of the diagnosis.

Materials methods

This was a cross-sectional study conducted in a tertiary care center in Bangalore. All skin biopsy diagnosed as psoriasis or mentioned as one of the differential diagnoses were included in the study. The material included 25 skin biopsies. Biopsies with confirmed diagnosis of other dermatoses that mimic psoriasiform patterns were excluded from the study. The specimens were stained with routine hematoxylin and eosin stain. The important histopathological features observed were subsequently collected and entered in Microsoft Excel. The different microscopic features such as Hyperkeratosis, Parakeratosis, Hypergranulosis & Hypogranulosis, Acanthosis, Thinning of suprapapillary plate, Epidermal & Dermal infiltrate, Spongiosis, Munro's abscess, Elongation of rete ridges, Basal cell vacuolar degeneration, Basal cell pigmentation, Extravasation of RBCs and Narrow dermal papillae were compared between the cases.

Results

A total of 25 skin biopsy samples were examined for the histological features of psoriasis. Age distribution of the study group is given in Figure 1. Most of the cases were noted in the age group of 21-30 years (36%) and the least number of cases were in the youngest age range of < 10 years (4%). The sex distribution pattern revealed male predominance with male to female ratio of 1.7:1.

Psoriasis was the most common lesion noted (32%) followed by Pityriasis rosea (24%) and Pityriasis rubra pilaris (16%) in the present study. Verrucous epidermal nevus and parapsoriasis was the least (4%) common clinical type.

Among all histologic features observed, dermal infiltrate (92%) and acanthosis (84%) was the common feature which was seen in almost all biopsy samples. Parakeratosis (8 cases) and acanthosis (7 cases) was the most common histological features observed in cases of psoriasis, whereas spongiosis and elongation of rete ridges being the least common feature.

Out of total 25 biopsy samples, extravasation of RBC's was the least (4%) common feature observed and it was seen only in one case of pityriasis rosea. Histologic features such as Munro's abscess (2 cases) and hypogranulosis (3 cases) were observed solely in cases of psoriasis (n=8).

Basal cell vacuolar degeneration was observed exclusively in cases of pityriasis rosea, present in 3 out of 6 cases (50%). Narrow dermal papillae were only seen in cases (3 cases) of pityriasis rubra pilaris.

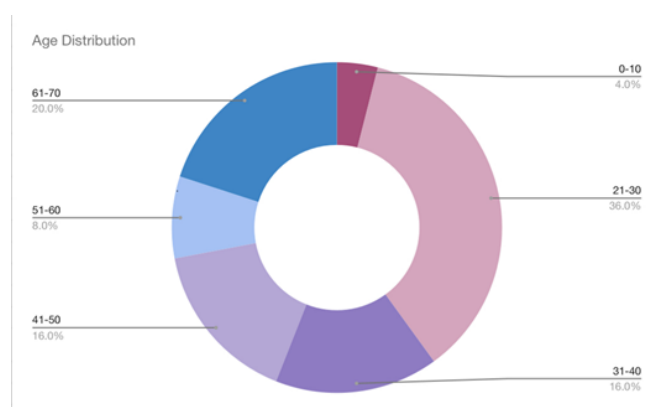


Figure 1: Age distribution

Discussion

Psoriasis is a common relapsing chronic inflammatory dermatological disease associated with significant morbidity. Psoriasis has many different clinical variants and resembles clinically other diseases such as parapsoriasis, pityriasis rosea, seborrheic dermatitis and psoriasiform drug rash, all these conditions known as psoriasiform disorders. In its classic presentation, the disease comprises of well circumscribed reddish scaly papules and plaques typically on the elbow, knee and scalp, in addition to other cutaneous sites. In this typical form, the diagnosis is straightforward based on clinical features alone and skin biopsy for histopathological examination is seldom required. However, histologic analysis of skin biopsies can be helpful to confirm the diagnosis of psoriasis in its classic form and clinically atypical variants.

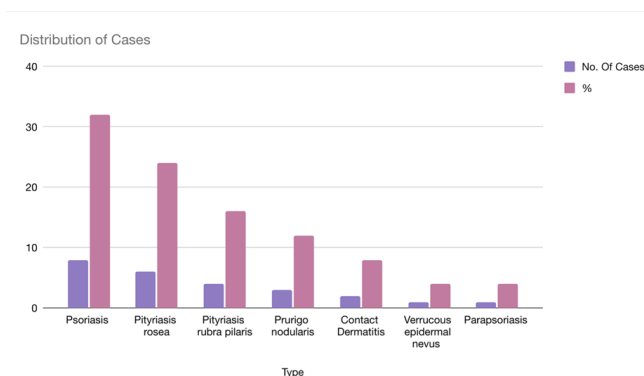


Figure 2: Distribution of cases

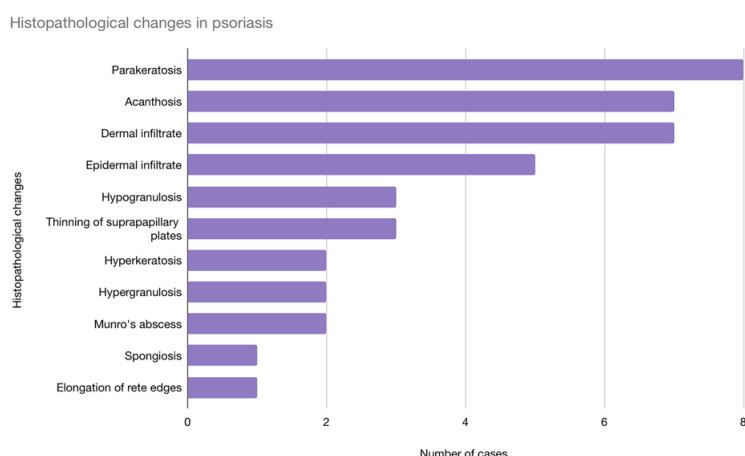


Figure 3: Histopathological changes in Psoriasis

Changes seen in various psoriasisiform disorders								
Histopathological changes	Psoriasis	Pityriasis Rosea	Pityriasis rubra pilaris	Prurigo nodularis	Contact dermatitis	Epidermal verrucous nevus	Parapsoriasis	Total (%)
Hyperkeratosis	2	4	-	2	2	1	-	44%
Parakeratosis	8	4	1	2	2	-	1	72%
Hypergranulosis	2	-	1	1	-	-	-	16%
Acanthosis	7	6	2	2	2	1	1	84%
Thinning of suprapapillary plates	3	-	1	-	-	-	-	16%
Epidermal infiltrate	5	3	-	-	-	-	-	32%
Dermal infiltrate	7	5	4	3	2	1	1	92%
Spongiosis	1	4	1	2	2	-	-	40%
Munro's abscess	2	-	-	-	-	-	-	8%
Elongation of rete edges	1	-	2	1	-	-	-	24%
Hypogranulosis	3	-	-	-	-	-	-	12%
Basal cell vacuolar degeneration	-	3	-	-	-	-	-	12%
Extravasating of RBCs	-	1	-	-	-	-	-	4%
Basal cell pigmentation	-	-	2	-	-	1	-	12%
Narrow dermal papillae	-	-	3	-	-	-	-	12%

Figure 4: Microscopy of Psoriasis at 40x

Since satisfactory management of the condition requires both symptomatic and specific therapy, it is essential to reach a definitive diagnosis. Histopathology of psoriatic plaques though show some consistent features but will always exhibit heterogeneity and microscopic features will vary according to the stage of the disease. Histopathology is the gold standard for diagnosis [1, 2].

In the present study 25 skin biopsy samples of psoriatic patients were systematically evaluated on histopathology for establishing the morphological features of psoriasis. Most of the cases were noted in the age group of 21-30 years (36%) and the least number of cases were in the youngest age range of < 10 years (4%). The sex distribution pattern revealed male predominance with male to female ratio of 1.7:1. In a study conducted by Alexander et al [3], who reported psoriasis being common in age group of 41-50 years. Kumari Kalpana et al [2], Kaur et al [4] and Yang et al [5] also noted high prevalence in males.

In our study Psoriasis was the most common lesion noted (32%) followed by Pityriasis rosea (24%) and Pityriasis rubra

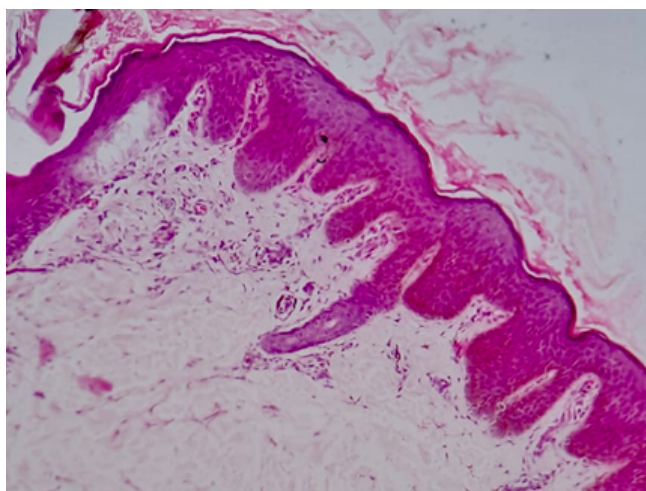


Figure 5: Microscopy of Pityriasis Rubra Pilaris at 10x

Table 1: Histopathological features in various disorders

Histopathological features	Psoriasis (n=8)	Pityriasis Rosea (n=6)	Pityriasis Rubra Pilaris (n=4)	Parapsoriasis (n=1)	Verrucous Epidermal Nevus (n=1)
Hyperkeratosis	6	4	2	1	1
Parakeratosis	8	5	3	1	0
Hypergranulosis	0	1	2	0	0
Hypogranulosis	3	0	0	0	0
Acanthosis	7	5	3	1	1
Thinning of suprapapillary plate	3	0	1	0	0
Epidermal infiltrate	6	4	3	1	0
Dermal infiltrate	7	6	4	1	1
Spongiosis	2	4	1	1	0
Munro's abscess	2	0	0	0	0
Elongation of rete ridges	2	1	2	0	1
Basal cell vacuolar degeneration	0	3	0	0	0
Basal cell pigmentation	0	0	0	0	0
Extravasation of RBCs	0	1	0	0	0
Narrow dermal papillae	0	0	3	0	0

pilaris (16%). Arora D et al [6], Thomas J et al [7] and Puri N et al [8] also observed psoriasis vulgaris as the most common type. Verrucous epidermal nevus and parapsoriasis was the least (4%) common clinical type observed in the present study.

Among all histologic features observed, dermal infiltrate (92%) and acanthosis (84%) was the common feature which was seen in almost all biopsy samples. Parakeratosis (8 cases) and acanthosis (7 cases) was the most common histological features observed in cases of psoriasis. Other authors in their respective studies have also described parakeratosis as the most consistent histopathological feature of psoriasis [9]. However, Mehta S et al [10] and Puri N et al [8] found parakeratosis in 52% and 56% cases respectively. In this study spongiosis and elongation of rete ridges being the least common histopathological feature observed in cases of psoriasis. In a study conducted by Chandanwale SS et al [11] they reported that slender long rete pegs favor the histopathological diagnosis of psoriasis which was not a consistent finding in our study. Ghasmeni et al [12] showed thinning of suprapapillary plate to be significantly more common in psoriasis. In our study 3 cases of psoriasis showed suprapapillary thinning. The suprapapillary epidermal thinning is a relative observation on comparison with markedly elongated rete ridges and therefore may not be observed in all cases of psoriasis.

Lever et al [13] and Irena et al state that elongated mounds of parakeratosis with collection of plasma above a basket weave cornified layer is a characteristic finding apart from spongiosis, acanthosis and exocytosis of lymphocytes and parakeratosis.

Histologic features such as Munro's abscess (2 cases) and hypogranulosis (3 cases) were observed only in cases of psoriasis (n=8). The cause for absent granular layer or decreased/hypo granular layer is not known. However, it seems that this is probably related to epidermal hyperproliferation in earlier stage of disease, as later lesions of psoriasis may show intact granular layer. It was found that though Munro microabscess and Kogoj spongiform pustules are important diagnostic features of psoriasis, they are not always present on histopathology [14, 15]. Mehta et al [10] stated that, suprapapillary thinning and the absence of granular cell layer could be added to the list of essential histopathological criteria for psoriasis,

in addition to Munro microabscess and Kogoj's abscess.

In our study out of seven psoriasis cases, six cases were clinically diagnosed as Psoriasis and one case which was clinically suspected as lichen planus was diagnosed as psoriasis.

Dermal infiltrate (92%) and acanthosis (84%) was the common histological feature which was seen in almost all biopsy samples. Out of total 25 biopsy samples, extravasation of RBC's was the least (4%) common feature observed and it was seen only in one case of pityriasis rosea.

Five cases (20%) showed features of Pityriasis rosea (PR) with hyperkeratosis, parakeratosis, acanthosis, spongiosis, basal vacuolar degeneration, dermal and epidermal infiltrate and extravasation of RBCs. Prasad et al [16] studied 50 biopsies showed absence or decrease of the granular cell layer, extravasation of red blood cells in papillary dermis, partly into the epidermis, dyskeratosis, liquefaction of basal cells, homogenization of papillary collagen, intraepidermal vesicle and the authors observed minor differences from the biopsies of herald patch.

Conclusion

The major psoriasiform dermatoses represent complex inflammatory skin diseases, which share most of their histopathological features, thus representing a challenge in histopathology. Therefore, a meticulous evaluation of key histological parameters including epidermal changes, pattern of inflammatory infiltrate and dermal alterations is essential. The prototype, psoriasis on histopathology shows features such as acanthosis, parakeratosis, hypogranulosis, suprapapillary thinning and dermal inflammatory infiltrate. Accurate histopathological interpretation, when integrated with clinical correlation significantly enhances diagnostic precision which in turn guides appropriate therapeutic strategies and avoids potential mismanagement. As many psoriasiform conditions have differing prognoses and treatment responses, diagnostic accuracy is not merely academic but directly impacts patient outcomes. Continued awareness of the histomorphological spectrum and a systematic approach to biopsy interpretation are crucial for both pathologists and clinicians.

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