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Clinicomorphological correlation of psoriasis and psoriasiform dermatitis

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Abstract
Introduction: Psoriasis is a chronic inflammatory skin disorder. Psoriasiform dermatitis on other hand is a frequently encountered terminology in a variety of inflammatory dermatoses. It often poses challenges to both dermatologists and pathologists alike. Clinical features when considered alone may not be reliable to differentiate psoriasis from psoriasiform dermatitis.
Aims: (a)To correlate the clinicomorphological features of psoriasis and psoriasiform dermatitis. (b)To identify determinants that may contribute to the diagnosis of psoriasis and psoriasiform dermatitis.
Methods: This is a prospective study of 40 cases. Cases clinically diagnosed as psoriasis and psoriasiform dermatitis were screened microscopically and as per morphological criterias 20 cases from each entity were selected and included in the study. Detailed histopathological analysis and correlation was done.
Results: The clinical features of typical scales (p= 0.0012) and Auspitz's sign (p = 0.058) morphological evidence of regular acanthosis (p= 0.0005), absent granular layer (p = 0.0001) and presence of micromunros abscess (p=0.0001) were found to be statistically highly significant contributors to the diagnosis of psoriasis in comparison to psoriasiform hyperplasia. Other morphological features like suprapapillary thinning (p= 0.051) was also found to be morphologically significant. Vertical orientation of collagen bundles (p = 0.002) was found to be significantly associated with diagnosis of psoriasiform hyperplasia when compared to psoriasis.
Conclusion: The present study reconfirms the diagnostic accuracy of scales, Auspitz's sign as clinically reliable signs of psoriasis. However, in their absence, morphological presence of regular acanthosis, absent granular layer and Munro microabscess may contribute to the diagnosis of psoriasis. Similarly, vertical orientation of collagen bundles points toward a diagnosis of psoriasiform dermatitis. This may help clinicians not to miss the diagnosis of clinically insignificant psoriasis in order to start early treatment and prevent the poor prognosis in these patients.

Keywords: Psoriasis, psoriasiform hyperplasia, austpitzsign, scales

1. Introduction

Psoriasis is a persistent inflammatory cutaneous disease which influences about 1.3%-2.2% of the total world population. Various elements are included in its etiology which includes genetic, immunological and environmental influences. The most frequently involved sites are elbows, scalp, knees and pre-sacral region [1]. Psoriasis is characterized by increased proliferation of epidermis along with abnormal differentiation and inflammation involving epidermis and dermis [2]. Clinically the disease has well established erythematous plaques covered with silvery white scales [3].

On the other hand, as that of psoriasis similar histological as well as clinical features has been possessed by the psoriasiform lesions. The various examples of psoriasiform lesions are Lichen simplex chronicus, pityriasis rosea, Pityriasis rubra pilaris, Atopic dermatitis, seborrhoeic dermatitis, as well as allergic contact dermatitis [4].

Thus, clinical and Histopathological similarities between psoriasis and psoriasiform lesions results in the diagnostic difficulties in achieving a final diagnosis. The main aim of this study is the evaluation as well as comparison of clinical and histopathological features of psoriasis and psoriasisform dermatitis to get early confirmed diagnosis and help patients to get early treatment of psoriasis in turn preventing the poor outcome in patients.

1.1. Aims and objectives

1. Histological analysis of clinically diagnosed psoriasis and psoriasiform dermatitis
2. To compare clinical and histopathological features of psoriasis and psoriasiform dermatitis.

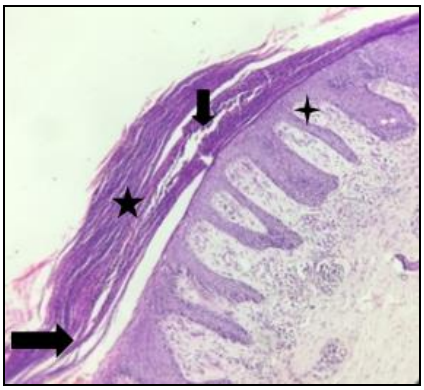
2. Materials and methods

- **Study design:** Cross sectional
- **Study time:** June 2017 to June 2018
- **Sample size:** 20 cases each of psoriasis and psoriasiform hyperplasia
- A total of 40 cases, which were confirmed by histopathological examination as Psoriasis and Psoriasiform dermatitis in the Department of Pathology, SRM Medical College Hospital and Research Centre, Kattankulathur from June 2017 to June 2018, were included screened, examined and recruited in the study. A detailed clinical history was obtained from patients case sheets. 20 cases were selected as under each category as psoriasis and psoriasiform dermatitis.20 cases of psoriasiform dermatitis were subclassified into lichen simplex chronius, pityriasis rubra pilaris, prurigo nodularis, inflammatory linear verrucous epidermal nevus, unclassified.

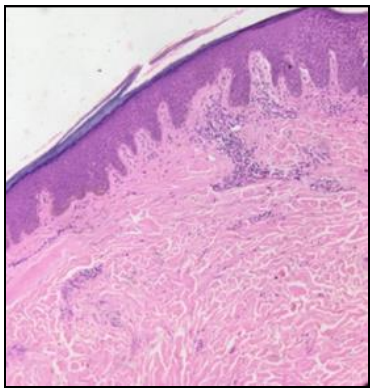
2.1. Results

In psoriasis group 12 cases and in psoriasiform dermatitis 7 cases were under age group of less than 30 years and 6 cases and 12 cases in psoriasis and psoriasiform dermatitis respectively fell under age group of 30-50 years**.** Rest all cases were under the age group of 50-70 years. Age distribution in various subtypes of psoriasiform dermatitis was as follows, lichen simplex chronicus most common age group was 30-50 years (4 cases) followed byless than 30 years (1 case) and between 50-70 years (1 case). Prurigonodularis only 2 cases in total 1 case in each age group of less than 30 years and 30-50years respectively. Pityriasis rubra pilaris 1 case in less than 30 years age group and 2 cases fell under the age group of 30-50 years. Inflammatory linear verrucous epidermal nevus all the 3 cases fell under the age group of less than 30 years. In unclassified variant 3 cases fell under age group of less than 30 years, 2 cases under 30-50 years and 1 case in age group of 50-70 years. Male predominance is seen in psoriasis, out of 20 cases 11 were male patients and 9 were females and in case of psoriasiform dermatitis equal gender distribution was noted.

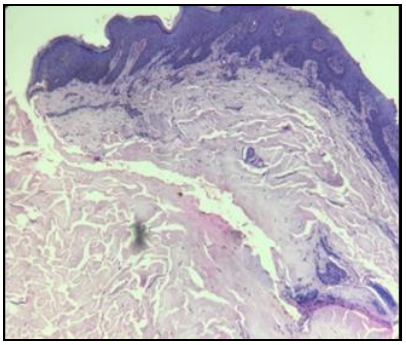
Distribution of scaly lesions and hyperpigmented patches, auspitz sign, acanthosis, suprapapillay thinning, granular layer, micro munros abscess and vertically oriented collagen bundles are shown in table no.1,2,3,4,5,6 and 7 respectively. Thus scaly lesion auspitz sign, regular acanthosis, hypogranulosis or absent granular layer, suprapapillary thinning and micromunros abscess was highly significant for psoriasis vulgaris and irregular acanthosis, normal granular layer or hypergranulosis, suprapapillary thickening and vertically oriented collagen bundles were highly significant in cases of psoriasiform dermatitis in our study.



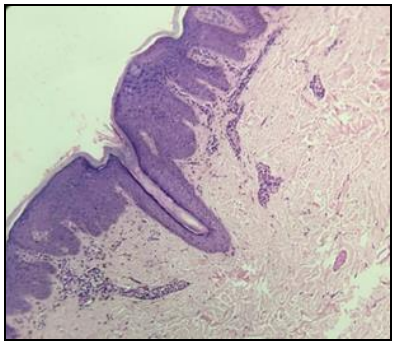
Psoriasis vulgaris- ➧ Hyperkeratosis, ★parakeratosis, hypogranulosis ✦ suprapapillary thinning, ⬇ micormunros abscess HPE-H&E x100



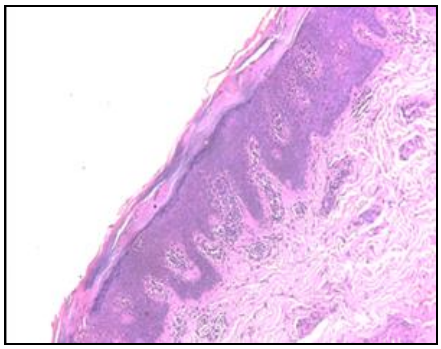
Lichen simplex chronicus Irregular acanthosis, suprapapillary thickening, hypergranulosis HPE-H&E x100



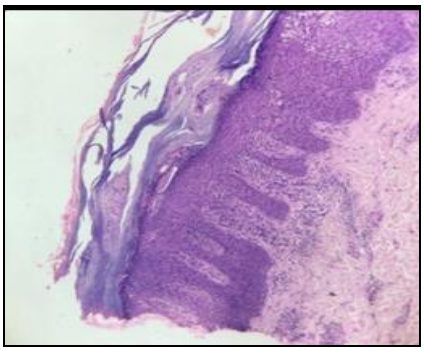
Lichen simplex chronicus–Vertically oriented collagen bundles HPE-H&E x100



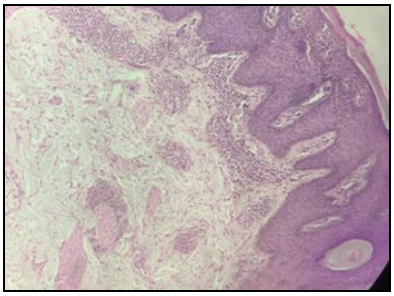
Pityriasis rubra pilaris Irregular acanthosis, Follicular plugging, alternate parakeratosis and orthokeratosis HPE-



Prurigonodularis Compact orthokeratosis, parakeratosis, irregular acanthosis, hypergranulosis HPE-H&E x100



ILVEN –Alternating preserved granular layer and absent granular layer, Focal munromicroabscess



Unclassified, Uneven psoriasiform hyperplasia, suprapapillary thickening, HPE- H&E x100

Table 1: Distribution of scales

Scales	HPE		Chi square test	P value
	Psoriasis vulgaris	Psoriasiform dermatitis		
Scaly lesions	13	03	10.417	0.0012
Hyperpigmented lesions	07	17		

Table 2: Distribution of auspitz sign

Auspitz sign	HPE		Chi square test	P value
	Psoriasis vulgaris	Psoriasiform dermatitis		
Present	13	07	3.6	0.058
Absent	07	13		

Table 3: Distribution of acanthosis

Acanthosis	HPE		Chi square test	P value
	Psoriasis vulgaris	**Psoriasiform dermatitis**		
Irregular acanthosis	04	05	12.13	0.0005
Regular acanthosis	16	15		

Table 4: Distribution of suprapapillary thinning

Suprapapillary plates	HPE		Chi square test	P value
	Psoriasis vulgaris	**Psoriasiform dermatitis**		
No suprapapillary thinning	09	08		
Suprapapillary thinning	11	07	5.948	0.051
Suprapapillary thickening	00	05		

Table 5: Distribution of granular layer

Granular layer	HPE		Chi square test	P value
	Psoriasis vulgaris	**Psoriasiform dermatitis**		
Absent	13	02	18.13	0.0001
Hypogranular	07	08		
Hypergranulosis	00	10		

Table 6: Distribution of micromunros abscess

Micromunros abscess	HPE		Chi square test	P value
	Psoriasis vulgaris	Psoriasiform dermatitis		
Absent	00	17	29.565	0.0001
Present	20	03		

Table 7: Distribution of vertically oriented collagen bundles

Vertically oriented collagen bundles	HPE		Chi square test	P value
	Psoriasis vulgaris	Psoriasiform dermatitis		
Absent	20	12	10.000	0.002
Present	00	08		

2.1.2. Discussion

Psoriasis is anti-inflammatory cutaneous disease with an incidence of about 1.3%-2.2% of the total world population. The exact incidence of psoriasiform dermatitis is not known per say. The incidence of various subtypes of psoriasiform dermatitis is as follows: Pityriasisrubrapilaris 1 in 5000 worldwide and about 1 in 50,000 in India [5], no data is available about incidence of inflammatory linear verrucous epidermal nevus, incidence of lichen simplex chronicus is 4.04% according to the study by Khaitan *et al.* [6]. Number of cases reviewed in our study was 100 out of which 60 cases were excluded because of inadequate tissue and 40 cases were selected, 20 each psoriasis and psoriasiform dermatitis. Number of cases of psoriasis vulgaris studied by Lal *et al*. was 25, by Gordon and Johnson was 100 and and by Mehta et al was 58 [7-9]

Since Psoriasis is a disease of bimodal age group it is mostly seen in age group of less than 30 years, 30-50 years. In our study most common age group was less than 30 years of age in psoriasis, in psoriasiform dermatitis most common age group was 30-50 years and in psoriasis, Khandpur *et al*. [10] reported majority of the cases (66.8%) in the age group of 21-50 years. Psoriasis being a disease of male preponderance in our study also males were mostly commonly affected by psoriasis vulgaris. Dogra and Yadav [11] stated that psoriasis is twice more common in males compared to females same stated by Khandpur *et al* [10].

Auspitz sign was found clinically significant for psoriasis in our study. Auspitz's sign have been described as pathognomonic of psoriasis by Hellgren *et al* [12]. However, this sign is present only in untreated patients this is the reason for which patients on treatment were excluded from the study but in a typical clinical scenario; patients encountered are usually in partial remission, following some treatment.

Scaly plaques were also found clinically significant for psoriasis in our study which was similar to the study by Meier and Seth [13]. Maize *et al* [14] also mentioned that the silvery scale of psoriasis histologically correlates with parakeratosis in the cornified layer of skin. Regular acanthosis was highly significant for psoriasis and irregular acanthosis was found significant for psoriasiform dermatitisin corcondance to the data given in standard histopathology textbooks on dermatopathology [15-17]. In our study all 40 cases showed hyperkeratosis and parakeratosis. Suprapapillary thinning was found significant in psoriasis vulgaris which was similar to the study by Mehta *et al*. [9]. Mehta *et al* stated that suprapapillary thinning to be included in list of essential histopathological criteria for psoriasis vulgaris. On the other hand, thick suprapapillary plates or suprapapillary thickening was more consistent with psoriasiform dermatitis. Absent granular layer or hypogranulosis was significant for psoriasis vulgaris which was similar to the study by Mehta *et al.* [9]. Mehta *et al* stated that absent granular layer or hypogranulosis to be considered as one of the essential histopathological criteras of psoriasis. Hypergranulosis was found to be to be common in psoriasiform dermatitis and more so in cases of lichen simplex chronicus and prurigonodularis. This was similar to the study by Jayalakshmy and Babitha *et al*. [4].

The early psoriatic lesions show elongation and dilatation of blood vessels of the papillary dermis with associated edema and lymphocytic infiltrate around the vessels (perivascular cuffing). Vessels are dilated and tortuous, with some neutrophils in their lumen. Lymphocytes and neutrophils extends to the lower portion of the epidermis, that is where spongiosis develops. That is why spongiosis as one of the important histopathological features in psoriasis vulgaris was stated in the studies done by Gordon and Johnson [8] and Mehta *et al.* [9] and it was also found statistically significant in our study.

All 55 cases of psoriasis showed presence of munromicroabscess (100%). While only 3 cases (9%) out of 20 cases of psoriasiform dermatitis showed munromicroabscess. Munro microabscess was found to be one of the most essential histopathological criteria for diagnosing psoriasis. It is thought that neutrophils are recruited by the neutrophil-attracting chemokine interleukin-8 (CXCL8). IL 8 mRNA is known to be synthesized by the CD 4 subset of T cells [25]. These neutrophils then migrate through the epidermis thus resulting in formation of munro microabscess. Our study showed similar significance to the study by Gordon and Johnson and Mehta *et al*. [8, 9]

Vertically oriented collagen bundleswas significant in our study for psoriasiform dermatitis. Lymphocytic exocytosis was not statistically significant in our study

3. Conclusion

The present study reconfirms the diagnostic accuracy of scales, Auspitz's sign as clinically reliable signs of psoriasis. However, in their absence, morphological presence of regular acanthosis, absent granular layer/ hypogranulosis, suprapapillary thinning, Spongiosis, Munro microabscess may contribute to the diagnosis of psoriasis. Similarly, vertical orientation of collagen bundles, hypergranulosis and suprapapillary thickening points toward a diagnosis of psoriasiform dermatitis.

This may help clinicians not to miss the diagnosis of clinically insignificant psoriasis in order to start early treatment and prevent the poor prognosis in these patients.

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