

# Clinicopathological Study of Non-Infectious Erythematous Papulosquamous Skin Diseases

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**Introduction:** Papulosquamous diseases are characterized by scaly papules and plaques with similar clinical picture which amounts to confusion and hence, a definitive histopathological diagnosis goes a long way in treatment of such diseases.

**Aim:** The aim of the study was to study the histomorphology of non-infectious, erythematous, papulosquamous lesions of skin with clinicopathological correlation.

**Materials and Methods:** Skin biopsies from 150 clinically diagnosed/suspected non-infectious erythematous, papulosquamous skin diseases were received in the Department of Pathology. The specimens obtained were subjected to formalin fixation and paraffin embedding, stained with haematoxylin and eosin and studied. The lesions were classified as psoriasis,

lichen planus, lichen nitidus, lichen striatus, pityriasis rosea and pityriasis rubra pilaris and clinicopathological correlation was done.

**Results:** Papulosquamous lesions were common in the elderly. Males were commonly affected except in pityriasis rosea. Among the 150 cases studied, 72 cases (48%) were histopathologically confirmed to be papulosquamous lesions. Psoriasis was the most common lesion.

**Conclusion:** Key histopathological features and clinicopathological correlation gives a conclusive diagnosis. The importance of specific histomorphological diagnosis lies in distinguishing these lesions as the treatment and prognosis varies widely.

**Keywords:** Clinical, Correlation, Histopathology, Lichen planus, Psoriasis

## INTRODUCTION

The papulosquamous skin disorders are characterized by scaly papules and plaques [1]. These assume considerable importance because of their frequency of occurrence. As all are characterised by scaly papules confusion may result in their diagnosis. Although histopathological study is considered the gold standard in diagnosing dermatological lesions, it has its limitations and very often a definite 'specific' diagnosis is not possible [2]. The limitations of histopathology in arriving at a specific diagnosis maybe due to treatment effect, non-classical presentation, inappropriate biopsy site or overlapping clinical and histopathological features. Histopathological reporting should be accompanied by clinical history because of the overlapping histopathological features of different clinical conditions [3]. Some papulosquamous conditions like psoriasis present with numerous clinical variants and mimic various dermatological conditions. This leads to a diagnostic dilemma for the clinician. The pathogenesis of conditions like lichen planus is not exactly defined [4]. In case of such diseases, studies are lacking in India. Therefore, a clinicopathological correlation will go a long way in proper treatment of such diseases and can vary the prognosis significantly. Younas and Haque stressed on the importance of definite differentiation in the diagnosis of papulosquamous skin diseases [5]. D'Costa emphasized on clinicopathological correlation in the diagnosis of papulosquamous skin diseases [4]. The present study is an attempt to analyse various histopathological patterns of non-infectious erythematous, papulosquamous lesions of the skin based on the tissue reaction pattern and to assess the concordance of provisional clinical diagnosis and histopathological diagnosis. The study also discusses the reasons for low concordance.

## MATERIALS AND METHODS

The study comprised of 150 clinically diagnosed/suspected and untreated cases of non-infectious erythematous, papulosquamous lesions of the skin attending the Department of Dermatology in a tertiary care hospital between July 2012 and

August 2014. Skin biopsies from 150 clinically diagnosed/suspected cases of non-infectious erythematous, papulosquamous lesions were performed by the dermatologist and sent to the Department of Pathology in 10% formalin. The specimen obtained was subjected to tissue processing after fixation. Tissue sections were prepared from paraffin block and stained with haematoxylin and eosin followed by microscopic examination.

### Inclusion Criteria

Cases included in the study were those with clinical features of non-infectious erythematous, papulosquamous skin disorders.

### Exclusion Criteria

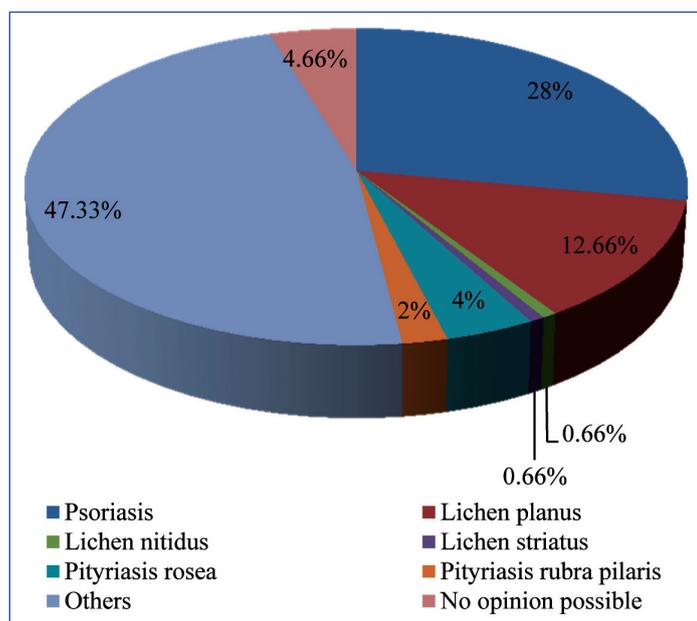
Skin disorders with infective aetiology and other skin lesions which are not papulosquamous disorders were excluded.

## RESULTS

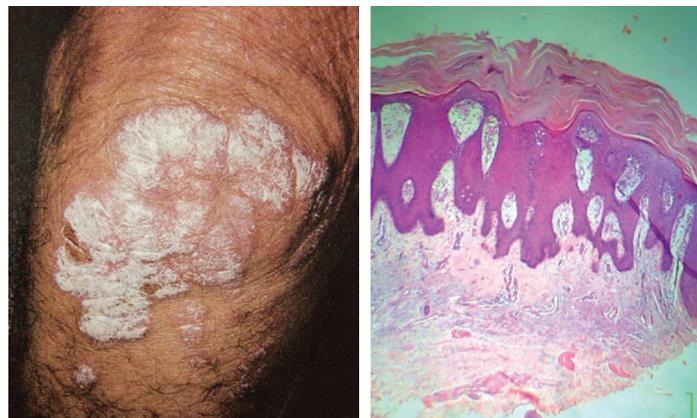
The present study comprised of 150 cases. Males (67%) were more commonly affected with a male to female ratio of 2:1. The age distribution pattern revealed that the maximum cases (24.66%) were in the age range of >60 years and the least number (0.66%) were in the youngest age range of 0-10 years.

An analysis of the broad categories revealed that out of the 150 cases, 72 cases (48%) were histopathologically classified as non-infectious erythematous, papulosquamous skin diseases. The most frequently encountered lesion was psoriasis (42 cases, 28%), followed by lichen planus (19 cases, 12.66%) and biopsy was inconclusive in 4.66% of the cases (7 cases). The remaining 47.33% (71 cases) clinically suspected as papulosquamous conditions were categorised histopathologically as other conditions which were not included under papulosquamous skin diseases [Table/Fig-1]. The most frequently encountered tissue reaction pattern was the psoriasiform reaction pattern, among which psoriasis constituted the highest percentage of cases i.e., 28% of the total cases.

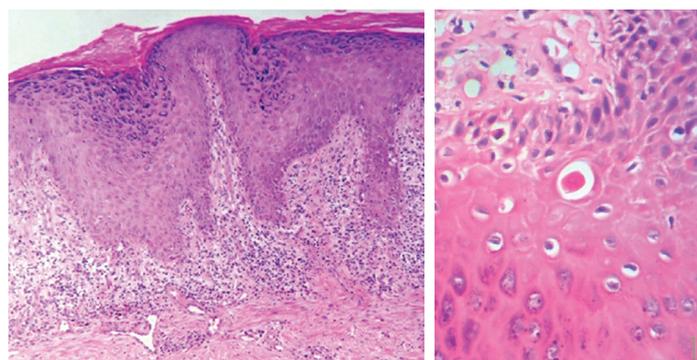
The most common histopathological findings in the epidermis in case of psoriasis were psoriasiform hyperplasia with acanthosis (90.47%) [Table/Fig-2,3]. In lichen planus, majority of them showed basal cell degeneration, hypergranulosis and diffuse inflammatory infiltrate in the dermis [Table/Fig-4,5]. One case of lichen nitidus showed elongated rete ridges with claw clutching ball appearance with hyperkeratosis, parakeratosis and dermal perivascular lymphocytic infiltrate. One case of lichen striatus diagnosed histopathologically showed parakeratosis and patchy papillary dermal lymphocytic infiltrate. All the six cases



[Table/Fig-1]: Incidence of skin lesions (n=150).



[Table/Fig-2]: Clinical presentation of psoriasis showing plaque on elbow with characteristic silvery-white powdery scaling. [Table/Fig-3]: Photomicrograph of a case of psoriasis showing hyperkeratosis, parakeratosis, psoriasiform hyperplasia and fused rete ridges (H&E; 100X)



[Table/Fig-4]: Photomicrograph of a case of lichen planus showing hyperkeratosis, hypergranulosis and band like inflammatory infiltrate (H&E; 40x).

[Table/Fig-5]: Photomicrograph showing Civatte body (H&E; 400X)

Clinical diagnosis n= 150	Number of cases	Histopathological diagnosis					
		Correlation		No correlation		Inconclusive	
		No.	%	No.	%	No.	%
Psoriasis	88	40	45.45	44	50	4	4.54
Lichen planus	39	19	48.71	18	46.15	2	5.13
Lichen nitidus	3	1	33.33	1	33.33	1	33.33
Lichen striatus	5	1	20	4	80	-	-
Parapsoriasis	1	0	0	1	100	-	-
Pityriasis rosea	9	6	66.67	3	33.33	-	-
Pityriasis rubra pilaris	5	3	60	2	40	-	-
Total	150	70		73		7	

[Table/Fig-6]: Correlation of clinical diagnosis with histopathological diagnosis

Clinical correlation	Number of biopsies	Percentage (%)
Positive	70	46.67
Negative	80	53.33
Total	150	100

[Table/Fig-7]: Overall correlation of clinical diagnosis with histopathological diagnosis.

(100%) of pityriasis rosea showed spongiosis. Out of the three cases diagnosed as pityriasis rubra pilaris histopathologically, two cases (66.66%) showed follicular plugging, follicular and perifollicular parakeratosis, acanthosis and perivascular inflammation.

Of the 150 cases, 88 cases were clinically suspected to be psoriasis of which 40 cases (45.45%) were confirmed histopathologically. Out of 39 cases clinically suspected to be lichen planus, only 19 cases (48.71%) turned out to be lichen planus histopathologically. Of the three cases of lichen nitidus suspected clinically, 1 case (33.33%) was histopathologically confirmed. Five cases were diagnosed clinically as lichen striatus of which 1 case (20%) had positive correlation. One case of clinically suspected parapsoriasis turned out to be subacute spongiotic dermatitis histopathologically. Six cases (66.67%) out of 9 cases clinically suspected to be pityriasis rosea were confirmed histopathologically. Out of 5 cases of pityriasis rubra pilaris suspected clinically, 3 cases (60%) were histopathologically confirmed [Table/Fig-6]. A concordance between clinical diagnosis and histopathological diagnosis was observed in 46.67% of the cases and a discordance of 53.33% was analysed [Table/Fig-7].

Histopathological changes*	Puri et al., [6] (2012) (%) n=16	Karumbaiah et al., [7] (2014) (%) n=22	Present study (2014) (%) n=42
<b>Epidermis</b>			
Hyperkeratosis	56.25	77.27	28.57
Parakeratosis	87.5	72.72	61.90
Psoriasiform hyperplasia with acanthosis	81.25	72.72	90.47
Suprapapillary plate thinning	25	40.90	35.71
Munro microabscess	43.75	22.72	26.19
Spongiform pustule of Kogoj	-	4.54	11.90
Hypogranulosis	25	22.72	19.04
<b>Dermis</b>			
Papillary oedema	-	27.27	19.04
Vascular changes	50	86.36	14.28
Dermal infiltrate	37.59	81.81	66.66

[Table/Fig-8]: Comparison of histopathological changes in psoriasis  
\*Includes multiple findings for each case.

## DISCUSSION

### Psoriasis

Out of a total of 88 cases clinically suspected as psoriasis, 40 cases (45.45%) were confirmed histopathologically, 44 cases (50%) were diagnosed as some other condition and the diagnosis was inconclusive in 4 cases (4.54%). The most frequent histopathological findings in the present study were psoriasiform hyperplasia with acanthosis, parakeratosis and dermal infiltrate. When the present study was compared to a study by Puri et al., it was found that the difference between the two studies, with respect to psoriasiform hyperplasia with acanthosis, was non-significant ( $p=0.354$ , i.e.;  $>0.05$ ) [6]. Therefore, this study was comparable to the study by Puri et al., [6] [Table/Fig-8]. On comparing the present study with a study by Karumbaiah et al., it was found that there was statistically no significant difference between the two studies with respect to parakeratosis ( $p=0.3816$ ) [7] [Table/Fig-8]. The clinical manifestations are misleading in many of these conditions. Some cases are clinically suspicious whereas others may present differently [7]. Problems due to overlap were noted in the present study. Five cases clinically suspected to be psoriasis were diagnosed as seborrhoeic dermatitis histopathologically. Fourteen cases which were clinically suspected to be psoriasis were diagnosed as spongiotic dermatitis histopathologically.

### Lichen Planus

When the present study was compared to a study by Younas and Haque [5], it was found that with respect to irregular acanthosis with saw tooth rete ridges, the two studies were comparable ( $p=0.1929$ ) [Table/Fig-9]. On comparing the present study with a study by Parihar et al., it was found that with respect to basal cell degeneration, there was significant difference between the two studies ( $p<0.0001$ ) [8]. This could be attributed to the small sample size in the present study ( $n=19$ ) in comparison with Parihar et al., ( $n=145$ ) [8] [Table/Fig-9]. The findings of the present study were consistent with the classical description of lichen planus by Mobini et al., [9].

Histopathological changes*	Younas and Haque [5] (2004) (%) n=12	Parihar et al., [8] (2015) (%) n=145	Present study (2016) (%) n=19
<b>Epidermis</b>			
Hyperkeratosis	+	-	31.57
Focal parakeratosis	-	-	15.78
Irregular acanthosis Saw tooth rete ridges	66.6	94 76	42.10
Hypergranulosis	83.3	96.5	52.63
Basal cell degeneration	100	99	57.89
Max Joseph space	58.3	29.5	10.52
Civatte bodies	+	82	21.05
Orthokeratosis	-	100	21.05
<b>Dermis</b>			
Band like inflammatory infiltrate	100	94	42.10
Diffuse inflammatory infiltrate	-	-	57.89

[Table/Fig-9]: Comparison of histopathological changes in lichen planus.

\* This table includes multiple findings for each case

+ Finding seen in majority of the cases

### Lichen Nitidus

Lichen nitidus commonly occurs in young adults and children particularly in males [10]. Mehta and Balachandran reported no obvious racial or gender predilection [11]; however, majority of the cases were found in children and young adults. Lichen nitidus can be confused with and can coexist with lichen planus clinically.

### Lichen Striatus

Lichen striatus is known to mimic linear verrucous epidermal nevus [12]. One case of lichen striatus which was diagnosed histopathologically, in the present study, showed parakeratosis and patchy papillary dermal lymphocytic infiltrate. These findings were consistent with the study by Zhang and McNutt [13].

### Pityriasis Rosea

Both genders were equally susceptible according to some authors, while others quoted a female preponderance [14]. In our study, a female predominance was observed. The findings of the present study were comparable to the study by Prasad et al., [15]. However, hyperkeratosis, which was a predominant finding in the study by Prasad et al., was not observed in the present study [15].

### Pityriasis Rubra Pilaris

In the present study, follicular plugging, follicular and perifollicular parakeratosis, acanthosis and dermal perivascular inflammation were the predominant findings which were similar to the findings in a study by White [16].

The predominant reaction patterns which were noted in the present study were psoriasiform and lichenoid reaction patterns. However, an attempt to categorise the lesions based on the tissue reaction patterns was not successful due to the considerable overlap in the histopathological features and absence of classical features in many cases. In a study by Costa et al., and Younas and Haque clinicopathological correlation carried out showed compatible clinical as well as histopathological diagnosis in 76.30% of the cases as against the present study [4,5]. In the present study, a total of 150 cases were analysed to assess the correlation between clinical and histopathological diagnoses. A concordance was observed in 46.67% (70 cases) and discordance in remaining 53.33% (80 cases) [Table/Fig-7].

The reason for the low concordance may be the following: In cases like psoriasis and lichen planus, where the tissue reaction patterns were classical, histopathological diagnoses confirmed the clinical diagnoses. But other conditions without classical patterns were ambiguous histopathologically, or diagnosed otherwise. There is a considerable overlap in the clinical presentation, due to which many cases clinically suspected as papulosquamous skin lesions turned out to be other conditions. In some early cases, clinical signs and symptoms may precede the presently known characteristic tissue changes, or vice versa. If a biopsy is taken at an early stage or from inappropriate site, there is likely to be discordance between clinical and histopathological observations. Selecting representative lesion is essential in establishing histopathological diagnosis. Although these cases were reported as untreated, the chances that some of these cases had taken treatment cannot be ruled out. The results may be affected partially by the effect of treatment.

## CONCLUSION

Papulosquamous skin diseases show considerable overlap in clinical and histopathological features. Knowledge of the key histopathological features and a clinicopathological correlation will aid in making a specific diagnosis. In the present study, the age distribution pattern indicated the maximum cases in the age range of  $>60$  years. Gender distribution pattern showed a male preponderance. The most frequently encountered lesion was psoriasis followed by lichen planus. In psoriasis the clinical presentations are misleading because of the varied clinical presentations. Psoriasis also presents with the problem of overlap. Histopathology serves as a tool and rules out the lesions that mimic psoriasis. Clinicopathological correlation helped most in psoriasis as against other non-infectious erythematous papulosquamous skin diseases. This study showed a low concordance (46.6%) between clinical and histopathological diagnosis which throws

light on the overlapping histopathological features and difficulties in arriving at a specific diagnosis.

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