

## Papulosquamous Lesions; Psoriasis vs Lichenoid Dermatitis: A Histomorphological Analysis

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### Abstract

*Background:* Papulosquamous skin diseases are amongst the most important dermatological lesions because of their high prevalence. Clinical and histopathological distinction of each of them is of paramount importance because of different treatment modalities and prognosis. *Aim:* To analyse and classify the cases with non-infectious erythematous papulosquamous lesions; psoriasiform and lichenoid dermatitis based on histomorphological characteristics. *Materials and Methods:* In present study 100 cases of non-infectious erythematous papulosquamous skin disorders were histopathologically examined to analyse the characteristic features in psoriasis and lichenoid dermatitis. Study was done for a period of one and a half year from March 2015 to July 2016. *Results:* Out of 100 cases of papulosquamous lesions, we encountered 80 cases with histomorphological features consistent with Lichen planus (44%) and psoriasis (36%). These features were analysed and correlated with the clinical diagnosis. *Conclusion:* Psoriasis and Lichen planus comprise the bulk of papulosquamous skin disorders (80/100 cases). The age group of 21-40 years was most frequently involved with both the disease showing male preponderance. The present study signifies the advantage of coherent use of clinical examination and histopathological study in making an accurate diagnosis.

**Keywords:** Papulosquamous; Erythematous; Lichen Planus; Psoriasis; Histopathology.

### Introduction

The papulosquamous skin disorders are heterogeneous group of disorders which comprise one of the largest groups of diseases seen by the Dermatopathologist. The classification of these disorders is based on a descriptive morphology of clinical lesions characterized by scaly plaques and papules [1].

The prevalence of skin diseases in any region depends on various factors, such as genetic make up, race, hygiene and social standards, nutritional status and climatic conditions. Eczema and dermatitis are the most common skin disorders reported from developed countries, whereas skin infections are predominant in developing Asian and African

countries. In addition, the diagnostic competence of doctors, expertise of treating doctor and availability of the latest diagnostic modalities play a vital role [2].

Seasonal variations in certain skin disorders are a well-known phenomenon that has been observed for decades. Low temperature and humidity can have a detrimental effect on the epidermal barrier [3]. The prevalence of actinic keratosis is quite high in spring season, while acne and folliculitis are significantly more prevalent in winter. Seasonal variation in cases of Psoriasis, seborrheic keratosis, seborrheic dermatitis, and dyschromia is also seen.

Dermatopathologists base their diagnostic approach on the tissue reaction patterns. Clinically different diseases may show similar histological patterns. Therefore, to obtain the precise diagnosis of the skin biopsy, detailed clinical work should be done. Interpretation of skin biopsies require the identification and integration of two different morphological entities the tissue reaction pattern and the pattern of inflammation [4].

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The papulosquamous lesions are complex to diagnose as they are difficult to identify and resemble each other clinically. Hence these disorders are commonly misdiagnosed [5].

Histomorphological diagnosis is important for separation of these disorders because the management for each tends to be disease specific.

**Materials and Methods**

The present study was an observational study, undertaken to study clinical and histopathological parameters in patients with papulosquamous disorders of skin.

A total of 100 cases with untreated papulosquamous diseases , who attended the Out Patient Department of Skin and VD in Index Hospital attached to Index Medical College, Khudel, Indore over a period from March 2015 to July 2016 constituted the subject material for the present study. These patients belong to Indore and its adjoining districts.

All cases with clinical features suggestive of non-infectious, erythematous, papulosquamous skin disorders like psoriasis, lichen planus, pityriasis rubra pilaris, parapsoriasis, pityriasis rosea, lichen nitidus, prurigo nodularis etc. were included. Prediagnosed cases already on treatment were excluded.

**Method**

1. The patients were subjected to detailed history and thorough clinical examination according to the working proforma.
2. Cases were subjected to histopathological examination. A 3mm skin biopsy punch was taken from the active lesion in each patient under local anaesthesia with 2% xylocaine.
3. The histopathological sections were stained with Hematoxylin and Eosin and examined for epidermal and dermal changes.
4. The clinical and histopathological diagnosis were correlated and compared with previous studies.

**Results**

A study of 100 cases with a clinical diagnosis of papulosquamous skin disorders was undertaken.

- Papulosquamous diseases were more commonly seen in males (67%) than in females (33%)..
- Lichen planus (44%) was the commonest papulosquamous lesion followed by psoriasis (36%).[Table.1]
- Psoriasis was predominant in 3rd to 5th decade, lichen planus was predominantly seen in 2nd and 3rd decade of life.[Table 1]
- Male predominance was seen in the cases of lichen planus and psoriasis.

*Lichen Planus*

Papules and patch/macule were the commonest type of clinical patterns seen in lichen planus.[Fig 1][Table-2]

*Histologically*

The common features were hyperkeratosis, irregular acanthosis and saw toothed rete ridges, hypergranulosis, vacuolar degeneration of basal cells, dermal band like infiltrate [Figure 2] while few of the cases showed pigmentary incontinence [Figure 3, Table3].

Classical Lichen planus(40.90%) was the commonest subtype of lichen planus [Table 4].

*Psoriasis*

Scaly plaques and papules with scales was the commonest clinical pattern in psoriasis [Figure 4, Table 5].

*Histologically*

The common features were hyperkeratosis, parakeratosis, acanthosis, suprapapillary thinning, hypogranulosis and dermal inflammation with few cases showing spongiform pustules, munro’s microabscess [Figure 5,Table 6].

**Table 1:** Age distribution in lesions of Lichen Planus and Psoriasis

Disease	Age Group (Years)						Total	
	0-10	11-20	21-30	31-40	41-50	51-60		>60
Psoriasis	0	2	10	13	5	6	0	36
Lichen planus	4	10	15	7	4	2	2	44

**Table 2:** Clinical presentations- Lichen planus

S. No	Clinical features	Cases	Percentage (%)
1	Papule	16	36.3
2	Scaly plaque	10	22.7
3	Flat topped papule/ plaque	08	18.1
4	Scaly patches/ macule	14	31.8
5	Verrucous nodule/ plaque	06	13.6

**Table 3:** Histomorphological changes in Lichen planus

Epidermal Changes	Cases	Percentage (%)
Hyperkeratosis	28	63.6
Focal parakeratosis	12	27.2
Irregular acanthosis	16	36.3
Saw toothed rete ridges	10	22.7
Hypergranulosis	12	27.2
Vacuolar degeneration of basal cells	36	81.8
Max Joseph spaces	00	00
Civatte bodies	06	13.6
Dermal changes		
Dermal inflammatory infiltrate	44	100
Cell type of infiltrate - Mononuclear	44	100
- Epithelioid		-
Pigment incontinence	18	40.9

**Table 4:** Subtypes of lichen planus

Subtypes	Cases	Present Study (%)
Classical Lichen planus	18	40.90
Hypertrophic Lichen planus	12	27.27
Follicular Lichen planus	04	09.09
Pigmented Lichen planus	10	22.74
Total	44	100

**Table 5:** Clinical presentations-Psoriasis

S. No	Clinical Feature	Cases	Percentage (%)
1	Papule	12	33.3
2	Scaly Plaque	20	55.5
3	Thin scales	16	44.4
4	Macule/Scaly patch	04	11.1
5	Flat topped papules/Plaque	02	5.5
6	Verrucous Nodules/Plaque	00	00

**Table 6:** Histopathological changes in lichen planus

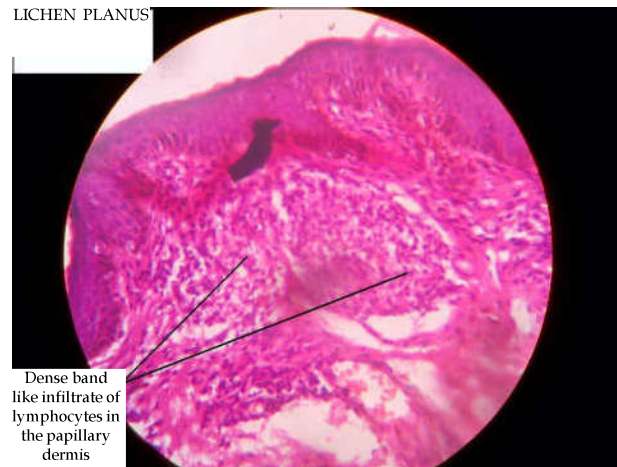
Histological changes	Cases	Percentage (%)
<b>Epidermal changes</b>		
Hyperkeratosis	12	33.3
Parakeratosis	32	88.8
Acanthosis	32	88.8
Hypogranulosis	22	61.1
Spongiosis	04	38.8
Suprapapillary thinning	30	83.3
Munro microabscesses	24	66.6
<b>Dermal changes</b>		
Papillary edema	02	5.5
Dermal inflammation	36	100

**LICHEN PLANUS**



Multiple well Defined hyperpigmented flat topped papules over inner and anterior aspect of right leg with follicular association  
Fig. 1: Lichen Planus

**LICHEN PLANUS**



Dense band like infiltrate of lymphocytes in the papillary dermis

Fig. 2: Microphotograph showing histopathological section with Lichen Planus ( H & E Stain at 400X)

**LICHEN PLANUS  
PIGMENTOSUS**

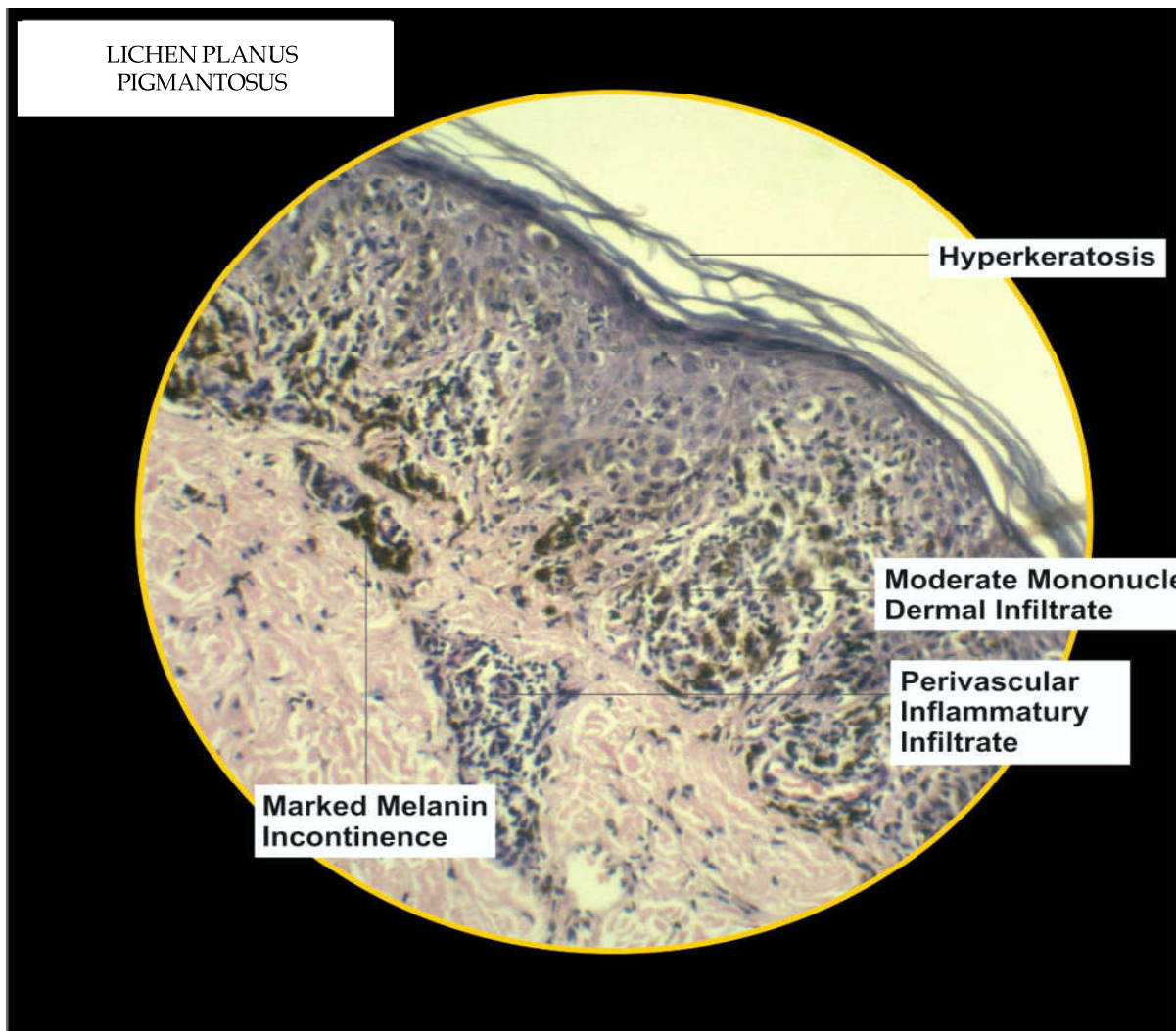


Fig. 3: Microphotograph showing histopathological section with Lichen Planus Pigmentosus ( H & E Stain at 100X)

**PSORIASIS VULGARIS**

**Well defined erythematous plaque with Scaling over right leg in a linear distribution**

Fig. 4: Psoriasis Vulgaris

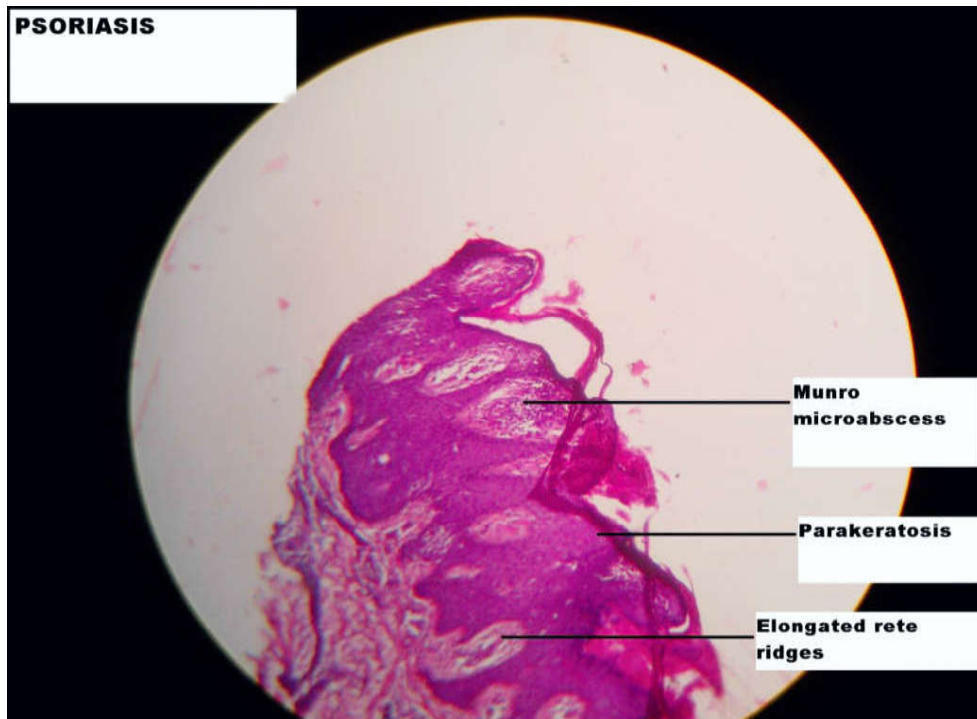


Fig. 5: Microphotograph showing histopathological section with Psoriasis Vulgaris ( H & E Stain at 100X)

**Discussion**

The papulosquamous disorders are a heterogeneous group of the disorders, which are complex to diagnose as they are difficult to identify and may resemble each other clinically. Hence the histomorphological diagnosis becomes very important.

In the present study the most common age group affected is from 21-30 years (29 out of 100 cases i.e 29%) followed by 31-40 years (24 out of 100 cases i.e 24%) therefore, 53% affected individuals lie between 21 and 40 years of age. These findings are in concordance with the study

conducted by Chavan et al (2014) [5] who reported 39% cases in the group of 21-40 years.

In the present study, Lichenoid lesions were the most common with 46 out of 100 cases i.e 46% cases followed by psoriasiform lesions with 36% cases. In the present study lichen planus was most commonly seen in the age group of 21-40 years (22 out of 44 i.e 50% cases). These findings are in concordance with those reported in the study conducted by Grace D Costa et al(2010) [4] and Rahnema et al (2005) [6] showing 20-40 years as the most common age group. Lichen planus has however been reported in the middle aged adults 5th-6th decade. Childhood incidence is unusual except in the familial cases [7].

The next most frequently seen is psoriasis seen in the age group of 21-40 years. Alexander et al (2001) [8] and Agrawal S [9] observed that psoriasis was most commonly found in the age group of 31-50 years while Grace D Costa et al [4] in their study observed maximum cases in the age group of 20-40 years.

Lichen planus showed male preponderance with male female ratio of 1.75 which was similar to the

results reported by Rahnama et al (2005) [6] who observed the male female ratio of 1.13.

Most of the previously conducted studies reported male preponderance in psoriasis. Kaur et al (1986) [10], Alexander et al (2001) [8] and Yang et al (2005) [11] observed male female ratio of 2.3, 7.7 and 4.8 respectively. In the present study 24 out of 36 cases were males with a male female ratio of 2.0 which is in agreement with the other studies.

While analyzing the subtypes of lichen planus in our study, classical was the most common (18 out of 44) subtype. This was followed by hypertrophic subtype (12 out of 44), lichen planus pigmentosus (10 out of 44) and follicular lichen planus (4 out of 44). These findings were in

concordance with studies conducted by Sharma et al, Bhattacharya et al, and Nnoruka et al [12] which reported classical lichen planus and hypertrophic lichen planus as the most common subtypes of lichen planus.

Clinically in our study most common presentation of lichen planus was papular (24 out of 44 i.e 54.54%) followed by macule or patch (14 out of 44 i.e 31.81%) and scaly plaque (10 out of 44 i.e 22.72%). [Figure 1]. Mostly, previous studies reported flat topped papule as the most common clinical presentation. Patients with hypertrophied lichen planus presented as thickened verrucous plaque over the knees and legs predominantly as reported by Boyd et al [13].

L.Y.T Chiam et al [14] in their study observed that plaque psoriasis was the most common type of psoriasis while Morris A et al [15], Nanda et al [16], also had similar results. In the present study, clinically erythematous plaque with thin scales was the most common presentation (20 out of 36) followed by papules (12 out of 36) [Figure 4].

In cases of Lichen planus majority of them showed hyperkeratosis (28 out of 44 cases), irregular acanthosis (16 out of 44 cases) resulting in saw toothed rete ridges. Basal cell layer degeneration (36 out of 44 cases) and dense dermal mononuclear infiltrate were also consistently observed (44 out of 44 cases i.e. 100%) [Figure 2 and 3].

Frequently described Max Joseph space was not seen in any of the cases. These findings are consistent with the classical description of Lichen planus given by Mobini et al [17] and Kumar et al [18]. Cases of pigmented Lichen planus showed similar changes along with marked pigmentary incontinence and less severe inflammatory infiltrate.

In the present study most of the cases of psoriasis histopathological examination showed acanthosis (32

out of 36 cases), parakeratosis (32 out of 36 cases), suprapapillary thinning (30 out of 36 cases), 104 hypogranulosis (22 out of 36 cases) and dermal inflammation (36 out of 36 cases) [Figure 5].

Spongiosis and Munro's micro abscesses were seen in 14 and 24 cases respectively. These histological findings were in concordance with those found in studies by Gorden M [19], Cox AJ [20] and Grover C<sup>21</sup>.

In the present study 44 cases were histologically diagnosed as LP. 34 out of 44 cases were diagnosed clinically as LP and confirmed histologically.

10 out of 44 cases had clinically different diagnosis as 2 cases of Lichen Simplex Chronicus, Pityriasis Rubra Pilaris, Twenty nail dystrophy syndrome, Pityriasis lichenoides chronica and psoriasis respectively.

Out of 36 histologically diagnosed cases of psoriasis, 30 had clinical diagnosis / differential diagnosis of psoriasis. Four cases had differential diagnosis as Lichen Simplex Chronicus and two case had clinical diagnosis of Erythrodermic vasculitis.

On the whole if we analyse the clinico-histopathological correlation we found that only in 64 out of 80 cases of lichen Planus and Psoriasis the clinical diagnosis was matched histopathologically. Whereas in 16 cases we gave a different confirmatory diagnosis based on the specific and characteristic histopathological features.

The association between histopathological findings and positive cases is considered to be highly statistically significant since P value is less than 0.001. The significant difference of P value 0.0002 advocates the need and endorses the utility of histopathology in arriving at the accurate diagnosis, so that the proper and precise treatment can be initiated.

## Conclusion

Analysis of the spectrum of non infectious papulosquamous skin disorders showed male predominance (67%) with predilection in 3<sup>rd</sup> and 4<sup>th</sup> decades of life. The commonest papulosquamous skin disorder was lichen planus (44%) followed by Psoriasis (36%).

There is a considerable overlap in clinical features of papulosquamous skin disorders which often make the diagnosis difficult. Histopathological Examination of the lesions of these clinically resembling entities provide some specific and characteristic features.

Exhaustive and detailed study of the specific histopathological features is extremely useful in

arriving at the precise and prompt diagnosis.

The present study confirms the usefulness of histopathological examination in papulosquamous skin disorders. Coherently clinical and histopathological examination increased the diagnostic ability in contrast to only the clinical diagnosis (P value- 0.0002). Thus making

the histopathological examination in cases of papulosquamous skin lesions an important and necessary procedure which should be more readily carried out.

The present study reveals that the coherent use of clinical examination and histopathological study has an advantage over only clinical examination in making a more accurate diagnosis..

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