



## A Clinico-histopathologic Study of Non-infectious Papulosquamous Lesions of Skin at Tertiary Care Hospital

Authors

**Gupta Richa<sup>1</sup>, Gupta Karuna<sup>2\*</sup>, Agarwal Swati<sup>3</sup>, Mathur Kusum<sup>4</sup>**

<sup>1</sup>Postgraduate Student, <sup>2</sup>Senior Professor, <sup>3</sup>Assistant Professor, <sup>4</sup>Senior Professor and Head of Department  
Department of Pathology, SMS Medical College, Jaipur, Rajasthan, India

\*Corresponding Author

**Gupta Karuna**

### Abstract

**Introduction:** *The papulosquamous skin disorders are a heterogenous group of disorders, shows overlap in morphology and distribution of lesions that leads to difficulty in diagnosis. Distinct histopathological features and clinical correlation gives a conclusive diagnosis. Histopathology is the gold standard for most dermatological diagnosis and specific histopathological diagnosis is important to distinguish these lesions as the treatment and prognosis varies significantly.*

**Aim:** *To study the histomorphological features of various non-infectious papulosquamous lesions of skin with clinical correlation.*

**Materials and Methods:** *This study included 100 skin punch biopsies of cases clinically diagnosed as non infectious, erythematous papulosquamous skin disorders. Study was done for a period of one year from November 2018 to October 2019. Diagnosis was confirmed by histopathological examination using hematoxylin and eosin stain. Cases were tabulated according to the distribution of age, gender, clinical and histopathological diagnosis.*

**Results:** *Majority of the patients were in the 21–30 years age group (25%) with slight male preponderance (51%). Histopathologically, lichen planus was the most common (29%) followed by psoriatic lesions (25%). Correlation of clinical with histopathological diagnosis was positive in 72% cases and negative in 28% cases.*

**Conclusion:** *Some of the histopathological features are specific and characteristic for each entity while few disorders may show some overlap. In these circumstances an attempt at clinico histopathological correlation serves as an ideal approach. Thus, the Dermatopathology is important for more definite differentiation as separation of each of the papulosquamous lesions important because each entity had a different prognosis and treatment.*

**Keywords:** *Papulosquamous, Histopathology, Lichen planus, Psoriasis, Clinicohistopathological correlation.*

### Introduction

Skin problems are most commonly encountered among the health problems in India.<sup>1</sup> Its prevalence ranges from 6.3-11.16%.<sup>2</sup>

The skin has a limited number of reaction patterns with which it can respond to pathological stimuli. Therefore, clinically different lesions may show similar histological patterns.<sup>3</sup>

Paradoxically, single clinical presentation may show different histopathological findings. So, a detailed histopathological examination along with clinical correlation is recommended.<sup>4</sup>

Papulosquamous disorders are a heterogeneous group of disorders whose etiology primarily is unknown. They consist of a diverse group of inflammatory conditions of the skin characterized by an eruption that exhibit papule and squamous components.<sup>5</sup>

Various other skin lesions like connective tissue disorders, infections, malignancies mimic the non infectious causes of papulosquamous lesions of skin. These lesions which clinically mimic papulosquamous lesions will be ruled out by histopathological examination in our study.

Histopathology is highly specific and sensitive for many lesions and it remains the gold standard for most dermatological diagnosis.<sup>6</sup>

Thus, the present study is an attempt to analyse the histomorphological features of various non-infectious papulosquamous lesions of skin and to assess the correlation of provisional clinical diagnosis and histopathological diagnosis.

Entire purpose of this study is to rule out any infection and malignancy in various clinically diagnosed papulosquamous lesions, thus benefitting the patient by treating infectious etiology and to get relief from mental trauma of malignancy. Thus the study will help the clinician in proper management.

### **Materials and Methods-**

An Laboratory based cross sectional observational study was conducted in a tertiary care center SMS Medical College, Jaipur from November 2018 to October 2019 in the Department of Pathology in collaboration with Department of Dermatology. The work was initiated after obtaining ethical clearance from Institutional Ethical Committee and informed consent from the study population. A total of 100 cases were selected from the patients attending Dermatology outpatient department with a clinical diagnosis of non infectious erythematous papulosquamous lesion

with the exclusion of cases with infectious etiology, malignancy and inadequate skin biopsies. Punch skin biopsy or excision biopsy was done by the clinician as indicated in the selected cases. Biopsy specimen was kept in 10% formalin for 24 hrs for fixation. After fixation, the specimens were processed in an automatic tissue processor. After processing, the paraffin blocks were made and cut on a rotary microtome into 2-3 microns thick sections. Paraffin embedded tissue sections were stained with routine haematoxylin and eosin stain (H&E) and diagnosis was made on the basis of the histopathological findings. Special stain PAS was used as required.

### **Results**

Noninfectious erythematous papulosquamous disorders comprised 1.00% of the total surgical pathology load of the department and 9.80% of the total number of skin biopsies at our institute. A total of 100 biopsies were taken from the study group. Mean age of the study population in this study came out to be 35.18 years, with maximum number of cases in the age group 21-30 years.

Male: Female ratio in the study came out to be 1.04:1, thus showing male predominance.(Figure-1)

Out of 100 patients studied, 38 patients were clinically diagnosed as psoriasis vulgaris with variants of psoriasis, 40 patients as classic lichen planus with clinical subtypes of lichen planus, 4 as pityriasis rosea, 3 cases each as Erythema annulare centrifugum, Parapsoriasis and Pityriasis lichenoides chronica, 2 cases each as Papular urticaria and Prurigo simplex and 1 case each as ILVEN, lichen striatus, polymorphic eruption of pregnancy, pityriasis rubra pilaris and prurigo nodularis. (Figure-2)

After histopathological examination Lichen planus constituted the highest percentage of cases (29%) followed by psoriasis (25%). Other lesions were pityriasis rosea (3%), pityriasis lichenoides chronica (3%), pityriasis rubra pilaris (2%), papular urticaria (2%), parapsoriasis (2%), prurigo simplex (2%), ILVEN (1%), lichen planus

like keratosis(1%), erythema annulare centrifugum (1%), lichen nitidus (1%), lichen striatus (1%), prurigo nodularis (1%) and polymorphic eruption of pregnancy (1%). (Table-1)

### **Lichen Planus**

In the present study 29 cases of lichen planus were calculated. Out of 29 cases of lichen planus, 18 cases were females and 11 were males with male to female ratio of 0.6:1. Lichen planus & its subtypes most commonly seen in the age group of 21-30 years comprising of 13 cases(44.83%).

On histopathological examination epidermis was involved in all the cases(100%). Hyperkeratosis was seen in 82.76% of cases. Hypergranulosis was seen in 75.86% of cases. Vacuolar degeneration of basal cells was seen in 68.97% of cases. Acanthosis was seen in 51.72% of cases. Civatte bodies in epidermis was observed in 48.27% of cases. Saw toothed rete ridges seen in 17.24% of cases. Flattening of epidermis was seen in 3 cases of lichen planus pigmentosus only. Parakeratosis was seen only in 1 case of hypertrophic lichen planus. Max joseph spaces were found in 3.45% of cases. Dermal changes comprised of dermal inflammation in all the cases(100%). Bandlike lymphocytic infiltration in upper dermis were noted in all the cases. Pigment incontinence seen in 68.97% of cases. All the cases of lichen planus pigmentosus (15 cases) showed pigment incontinence. Hypertrophic variant revealed marked acanthosis and hyperkeratosis as compared to classical lichen planus. (Figure-3)

The subtypes of lichen planus seen were 10 cases(34.48%) of classical lichen planus, 15 cases(51.72%) of lichen planus pigmentosus, 2 cases(6.9%) of lichen planus hypertrophicus, 1 case(3.45%) each of actinic lichen planus and palmoplantar lichen planus. Out of 29 cases of lichen planus, predominant subtype seen in our study was lichen planus pigmentosus (15 cases- 51.72%). (Table-2)

### **Psoriasis**

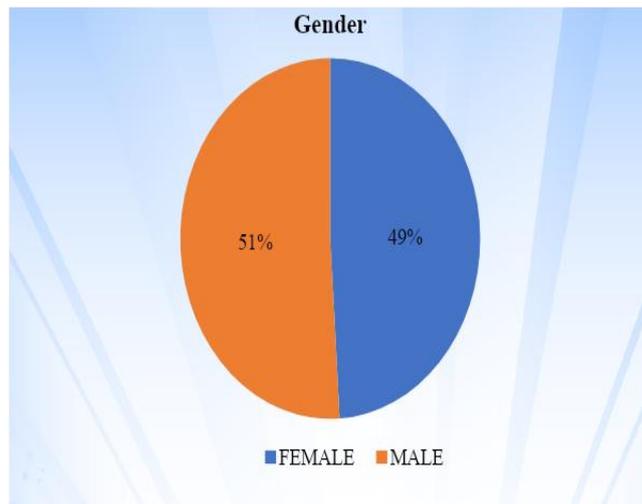
25 cases of psoriasis studied in our study. Out of 25 cases of psoriasis, males (17 cases-68%) were more commonly affected compared to females (8 cases- 32%) with male to female ratio of 2.12:1. Psoriasis was most commonly seen in the age group of 41-50 years comprising of 6 cases(24%). On histopathological examination parakeratosis was seen in all the 25 cases(100%). Hyperkeratosis was seen in 84% of cases in epidermis. 80% of cases showed munro microabscesses and hypogranulosis. Suprapapillary thinning was seen in 68% of cases. Spongiform pustules in epidermis were noted only in 4% of cases. Dermal inflammation and vascular changes(dilated and tortuous blood vessels) were found in 92% and 80% of cases respectively on histopathological examination. Only 4% cases on histopathology revealed erythrocyte extravasation in dermis. (Figure-4)

Most common variant seen in our study was psoriasis vulgaris (19 cases-76%). (Table-3)

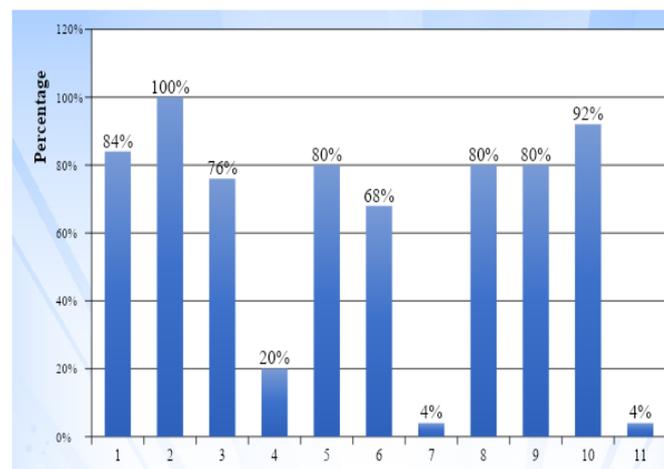
Clinico-histopathological correlation among lichen planus cases was 72.5%. Clinico histopathological correlation 65.79% noted among psoriasis cases. Most common diagnosis among discordant cases came out to be spongiotic dermatitis with psoriasiform hyperplasia after histopathological examination.

100% clinico histopathological correlation seen in Pityriasis lichenoides chronica, ILVEN, Pityriasis rubra pilaris, Papular urticaria, prurigo simplex, prurigo nodularis, lichen striatus and polymorphic eruption of pregnancy. (Table-4)

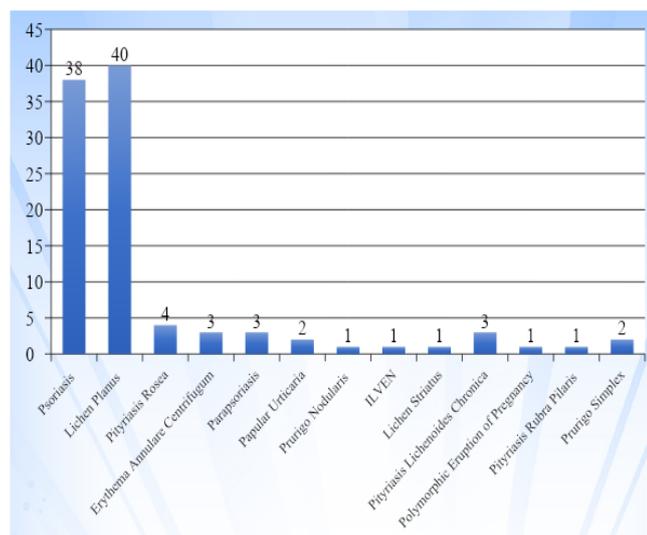
In the present study of 100 cases clinical diagnosis correlated with the histopathological diagnosis in 72% of cases. Rest 28% clinically diagnosed non infectious papulosquamous lesions showed different diagnosis on histopathological examination. (Figure-5)



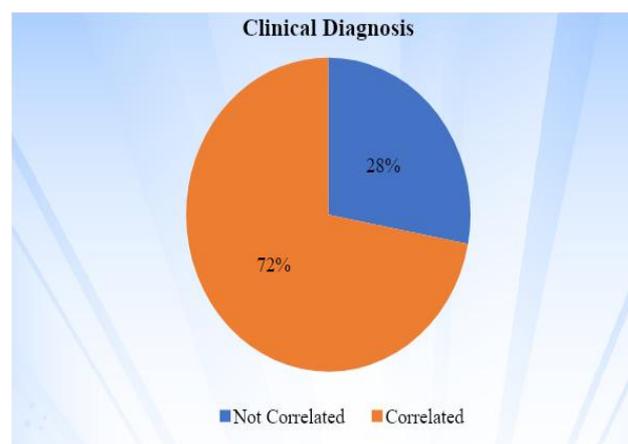
**Figure-1:** Distribution of the lesions based on Gender



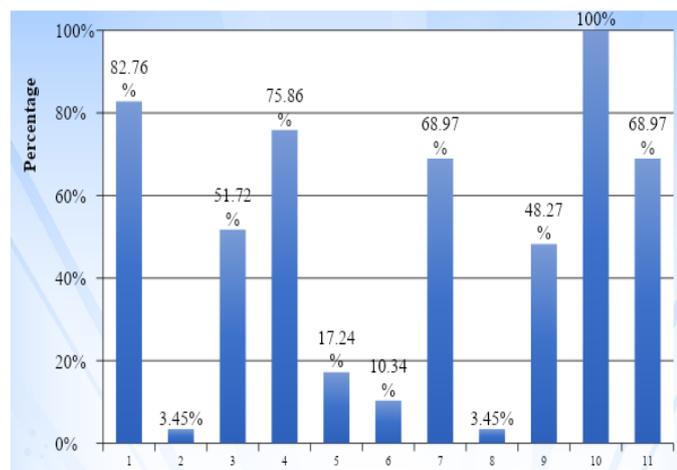
**Figure-4:** Histopathological changes in Psoriasis



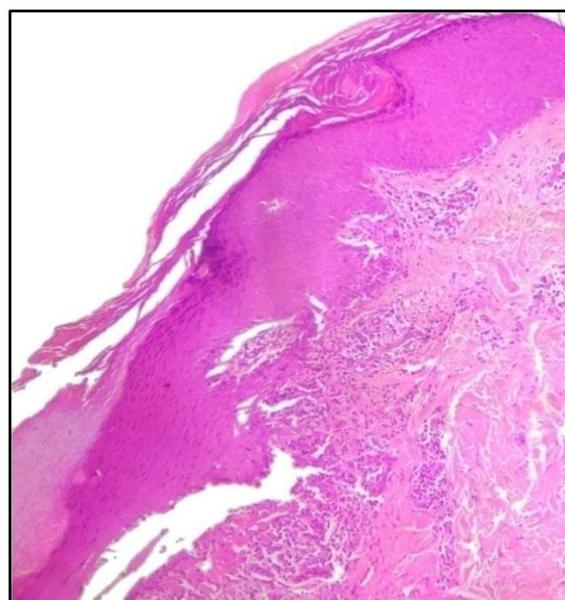
**Figure-2:** Distribution of clinically diagnosed non infectious papulosquamous lesions



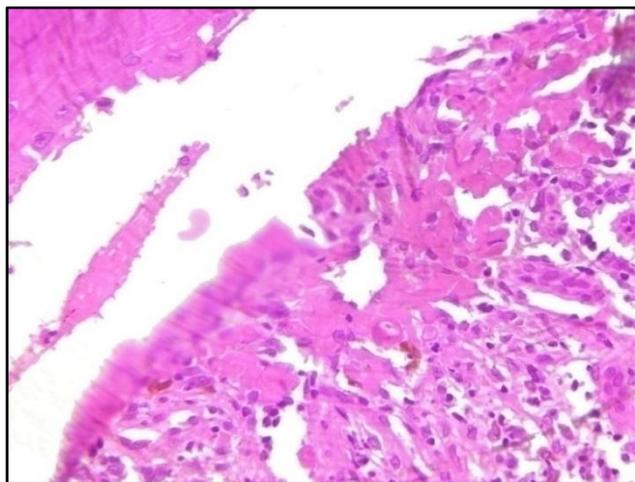
**Figure-5:** Correlation between clinical findings and histopathological findings



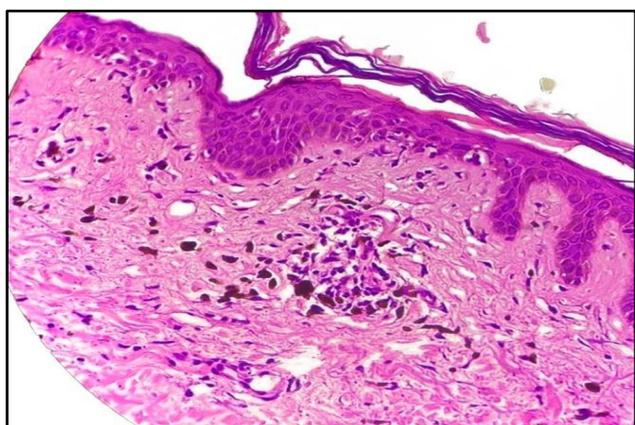
**Figure-3:** Histopathological changes in Lichen planus



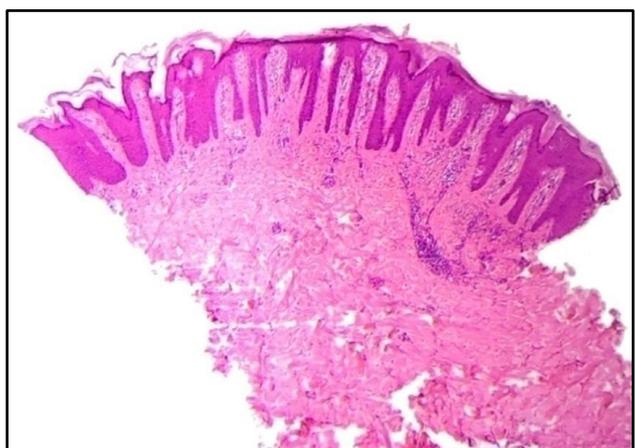
**Figure-6:** Classical Lichen planus showing hyperkeratosis and hypergranulosis in epidermis. [100x, H&E]



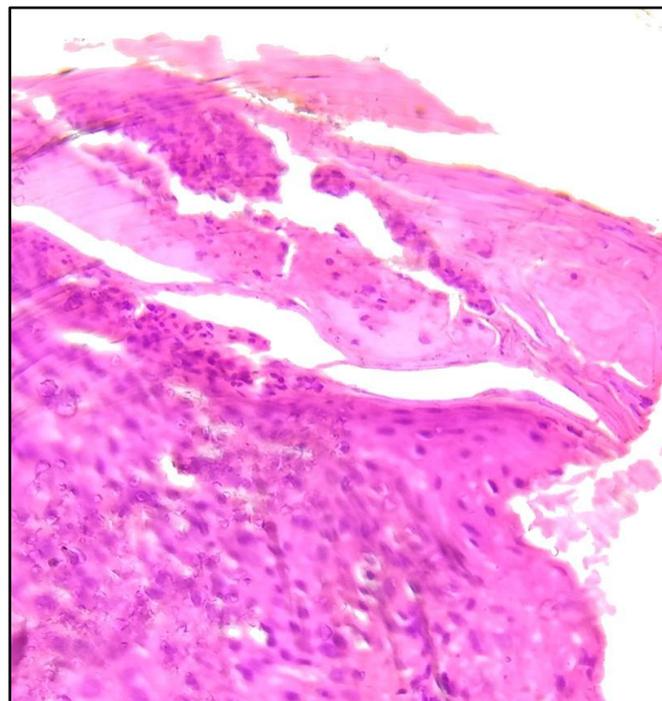
**Figure-7:** Classical lichen planus showing numerous Civatte bodies with lichenoid infiltrate. [400X, H&E]



**Figure-8:** Lichen planus pigmentosus showing atrophy of epidermis, pigment incontinence and inflammatory infiltrate at dermoepidermal junction. [100x, H&E]



**Figure-9:** Psoriasis showing hyperkeratosis, focal parakeratosis, regular acanthosis, thinning of suprapapillary plate and dilated blood vessels in papillary dermis. [100x, H&E]



**Figure-10:** Psoriasis showing characteristic micro abscess. [400x, H&E]

**Table 1:** The Spectrum of Diseases after Histopathological Examination

Histopathological Diagnosis	TOTAL
Psoriasis	25
Lichen Planus	29
Inflammatory Linear Verrucous Epidermal Nevus (ILVEN)	1
Lichen Planus Like Keratosis	1
Papular Urticaria	2
Erythema Annulare Centrifugum	1
Lichen Nitidus	1
Lichen Striatus	1
Parapsoriasis	2
Prurigo Simplex	2
Prurigo Nodularis	1
Pityriasis Rosea	3
Pityriasis Rubra Pilaris	2
Pityriasis Lichenoides Chronica	3
Polymorphic Eruption of Pregnancy	1
Spongiotic Dermatitis	7
Chronic Actinic Dermatitis	1
Epidermal Naevus	1
Fungal Infection	1
Neutrophilic Dermatitis	1
Lupus Vulgaris	1
Pemphigus Foliaceus	1
Drug Reaction	2
Lichen Sclerosus et Atrophicus	1
Lichen Simplex Chronicus	2
Lichenoid Polymorphous Light Eruption	1
Palmoplantar Keratoderma	1
Inconclusive	5
<b>Total</b>	<b>100</b>

**Table 2:** Subtypes of Lichen Planus

Type of Lichen Planus	Total Number of Cases
Classical Lichen Planus	10(34.48%)
Lichen Planus Pigmentosus	15(51.72%)
Actinic Lichen Planus	1(3.45%)
Lichen Planus Hypertrophicus	2(6.9%)
Palmoplantar Lichen Planus	1(3.45%)
<b>Total</b>	<b>29(100%)</b>

**Table 3:** Psoriasis Variants

Type of Psoriasis	TOTAL
Psoriasis Vulgaris	19(76%)
Guttate Psoriasis	3(12%)
Palmoplantar Psoriasis	2(8%)
Pustular Psoriasis	1(4%)
<b>Total</b>	<b>25(100%)</b>

**Table 4:** List of Cases Showing Clinico-Histopathological Disconcordance

S. No.	Histopathologically Diagnosed Cases	Total No. of Cases Clinically Diagnosed	No. of Cases Showing Clinico-Pathological Correlation	No. of Cases Showing Disconcordance with Histopathological Diagnosis
1	Psoriasis	38	25(65.79%)	13(34.21%)
2	Lichen Planus	40	29(72.5%)	11(27.5%)
3	ILVEN (Inflammatory Linear Verrucous Epidermal Naevus)	1	1(100%)	0
4	Erythema Annulare Centrifugum	3	1(33.33%)	2(66.67%)
5	Pityriasis Rosea	4	3(75%)	1(25%)
6	Pityriasis Rubra Pilaris	1	1(100%)	0
7	Papular Urticaria	2	2(100%)	0
8	Parapsoriasis	3	2(66.67%)	1(33.33%)
9	Prurigo Simplex	2	2(100%)	0
10	Prurigo Nodularis	1	1(100%)	0
11	Lichen Striatus	1	1(100%)	0
12	Polymorphic Eruption of Pregnancy	1	1(100%)	0
13	Pityriasis Lichenoides Chronica	3	3(100%)	0
	<b>Total</b>	<b>100</b>	<b>72</b>	<b>28</b>

## Discussion

Specific histopathological diagnosis is important for distinguishing non infectious papulosquamous skin lesions into different entities as the treatment and prognosis varies widely and is disease-specific. Most of these papulosquamous skin lesions have a similar clinical presentation, hence histopathology is considered as the gold standard for the evaluation of these lesion.<sup>7</sup>

Non- infectious, erythematous, papulosquamous disorders comprised 1.00% of the total surgical pathology load of the department and 9.80% of the total number of skin biopsies at our institute. Similar study conducted by D' Costa et al found it to constitute 15.8% of the total surgical pathology load and 30.99% of the total number of skin biopsies at their institute.<sup>8</sup> Another study conducted by Barman et al found these lesions to constitute 0.8% of total surgical pathology load and 6.9% of the total number of skin biopsies at their institute.<sup>9</sup>

In the present study, males were more commonly affected with a male to female ratio of 1.04:1 which was similar to D'Costa et al<sup>8</sup> and Reddy et al<sup>10</sup> study which had male preponderance whereas studies by chowdari et al<sup>7</sup> showed female preponderance.

The age distribution pattern in the present study showed that majority of the cases were in the 21-30 years age group. Younas et al<sup>4</sup>, Karumbaiah et al<sup>11</sup>, Chichani et al<sup>12</sup> and Kaur et al<sup>13</sup> also showed that majority of cases in the age group of 21-30 years.

Lichen planus and psoriasis were the most common histopathological diagnosis reported in our study, lichen planus along with its subtypes constituted the highest percentage of cases (29%) followed by psoriasis with its variants (25%). A recent study by Barman et al<sup>9</sup> also found similar results, according to them lichen planus constituted the highest percentage of cases (52%) followed by psoriatic lesions (18%). The study of

Younas *et al*<sup>4</sup> showed that the most common lesions were psoriasis (36.8%) and lichen planus (31.5%) and these findings were comparable to the present study. (Table-5)

In present study majority of cases of Lichen planus showed hyperkeratosis, hypergranulosis and vacuolar degeneration of basal cells in epidermis and dermal inflammation. Similar histopathological findings also observed in majority of cases in studies done by Younas *et al*<sup>4</sup>, Karumbaiah *et al*<sup>11</sup> and Patel *et al*<sup>14</sup> in various proportions. In present study Civatte bodies were observed in 48.27% of cases. Younas *et al*<sup>4</sup> observed civatte bodies in majority of cases in their studies. Max Joseph spaces in epidermis were seen in very few cases in our study while Younas *et al*<sup>4</sup> observed these feature in most of the cases. Saw toothed rete ridges in epidermis seen in majority of cases in studies done by Reddy *et al*<sup>10</sup> and Patel *et al*<sup>14</sup> while in our study this finding seen in only 17.24% of cases. This could be explained by the fact that many cases in present study were of lichen planus pigmentosus in which this finding is not common.

In present study pigment incontinence in dermis seen in 68.97% of cases. This finding also noted in majority of cases in the studies conducted by Younas *et al*<sup>4</sup> and Reddy *et al*<sup>10</sup>.

Most common subtype observed in our study was lichen planus pigmentosus. While studies done by Bhattacharya *et al*<sup>15</sup>, Reddy *et al*<sup>10</sup>, Chowdari *et al*<sup>7</sup> and Patel *et al*<sup>14</sup> found classical lichen planus as the most common subtype in their study.

In present study hyperkeratosis, parakeratosis, acanthosis, suprapapillary thinning and Munro microabscesses in epidermis seen in majority of Psoriasis cases. Similar findings were reported in Younas *et al*<sup>4</sup> study also. Hypogranulosis in epidermis observed in majority of cases in studies done by Younas *et al*<sup>4</sup> and Narayankar *et al*<sup>3</sup> In present study it was seen in 80% of cases. Spongiform pustule seen in 55% of cases in Chavhan *et al*<sup>16</sup> study while in our study it was only 4%.

Vascular changes with telangiectatic blood vessels and inflammation in dermis seen in maximum cases in our study which is quite similar with the studies done by Younas *et al*<sup>4</sup>, Karumbaiah *et al*<sup>11</sup>, Narayankar *et al*<sup>3</sup> and Barman *et al*<sup>9</sup>.

Most common variant of psoriasis found in our study was psoriasis vulgaris (76%). Studies done by Puri *et al*<sup>17</sup>, Barman *et al*<sup>9</sup> and Arora *et al*<sup>18</sup> found the same psoriasis vulgaris predominance in their respective studies.

A clinico-histopathological concordance was observed in 72% (72 out of 100 cases) which was similar to study by Younas *et al*<sup>4</sup> and Kaur *et al*<sup>13</sup>, 76.30% and 74% respectively. (Table-6)

In this study it is noted that majority of histologically diagnosed cases of spongiotic dermatitis with psoriasiform hyperplasia clinically presented with features mimicking psoriasis. This emphasize the need for histopathologic evaluation of all clinically suspected cases of psoriasis to rule out psoriasiform dermatitis since the treatment for both varies.

In this study it is observed that some clinically suspected non infectious papulosquamous diseases, after histopathological examination turned out to be infectious. One case of clinically diagnosed psoriasis came out to be superficial fungal infection on special stain (PAS). Hence it is recommended that skin biopsies with clinical diagnosis of papulosquamous disease should be evaluated with PAS stain.

Some entities also after histopathological examination represented in the other group of non infectious skin disorders such as vesico bullous lesions, connective tissue disorder, photosensitivity disorder and drug reactions. Some histopathological diagnosis came out to be from the same group of non infectious papulosquamous disorder but different from the clinical diagnosis due to overlapping of clinical features.

The reason for the low concordance in the present study that there was a considerable overlap in the clinical presentation, due to which many cases clinically suspected as papulosquamous skin

lesions turned out to be other conditions. So histopathology is gold standard for precise diagnosis.

Another reason could be that if a biopsy is taken at an early stage or from inappropriate site, there is likely to be discordance between clinical and histopathological observations.<sup>7</sup>

**Table 5:** Comparison of Distribution of Cases in Various Studies

Lesion	Younas et al <sup>4</sup> (2004) n=38	Karumbaiah et al <sup>11</sup> (2017) n=50	Narayankar et al <sup>3</sup> (2018) n=60	Chowdari et al <sup>7</sup> (2018) n=108	Barman et al <sup>9</sup> (2019) n=50	Present study n=100
Psoriasis	14 (36.8%)	22(44%)	42(70%)	34(31.48%)	9(18%)	25(25%)
Lichen planus	12(31.5%)	17(34%)	12(20%)	51(47.22%)	26(52%)	29(29%)
PN	2(5.3%)	-	-	1(0.92%)	-	1(1%)
PR	3(7.9%)	5(10%)	2(3.33%)	5(4.62%)	2(4%)	3(3%)
Parapsoriasis	-	3(6%)	-	5(4.62%)	-	2(2%)
PRP	2(5.3%)	2(4%)	2(3.33%)	2(1.85%)	3(6%)	2(2%)
PLC	-	-	-	4(3.70%)	-	3(3%)
EAC	-	-	-	-	-	1(1%)
ILVEN	-	-	-	-	-	1(1%)
LPLK	-	-	-	-	-	1(1%)
PU	-	-	-	1(0.92%)	-	2(2%)
Lichen Nitidus	1(2.6%)	1(2%)	-	-	1(2%)	1(1%)
Lichen Striatus	-	-	2(3.33%)	-	-	1(1%)
Prurigo Simplex	-	-	-	-	2(4%)	2(2%)
PUPPP	-	-	-	-	-	1(1%)

**Table 6:** Comparison of correlation between clinical and histological diagnosis in the present study with other studies

Study	Correlation
Younas et al <sup>4</sup> (2004)	76.30%
Reddy et al <sup>6</sup> (2014)	86.5%
Chaudhary et al <sup>19</sup> (2015)	68.72%
Hosamane et al <sup>20</sup> (2016)	46.67%
Chichani et al <sup>12</sup> (2016)	57%
Chowdari et al <sup>7</sup> (2018)	62.96%
Narayankar et al <sup>3</sup> (2018)	90%
Kaur et al <sup>13</sup> (2019)	74%
Present study	72%

## Conclusion

Due to overlapping of both clinical pattern and distribution of papulosquamous skin disorders, clinical diagnosis becomes difficult. To overcome the clinical confusion, recognition of these commonly encountered cutaneous problems, familiarity of clinical presentation and the diagnosis confirmed with the histopathology which is the gold standard are important. Some of the histopathological features are specific and characteristic for each entity while few disorders

may show some overlap. In these circumstances an attempt at clinico histopathological correlation serves as an ideal approach. Thus, the most accurate diagnosis is one that most closely correlates with clinical outcome and helps to direct the most appropriate clinical intervention. Dermatopathology is important for more definite differentiation as separation of each of the papulosquamous lesions important because each entity had a different prognosis and treatment. It is important to perform the skin biopsy at appropriate phase of the disease, from proper site, of proper thickness for precise histopathological diagnosis and eventually for proper management.

## References

1. Narang S, Jain R. An evaluation of histopathological findings of skin biopsies in various skin disorders. APALM. 2015 Jan-Mar;2(1):A42-6.
2. Gaikwad SL, Kumawat UD, Sakhare NA, D'costa GF. Histopathological Spectrum of Skin Lesions- Experience at Rural Based

- Hospital. *Int J cur Res.* 2016 Aug;8(8): 36223-7.
3. Narayankar SL, Pandit GA. Papulosquamous: clinicopathological. *Int J Res Med Sci.* 2018 Jan;6(1):309-16.
  4. Younas M, Haque A. Spectrum of histopathological features in non-infectious erythematous and papulosquamous diseases. *Int J Pathol.* 2004;2(1):24-30.
  5. Fox BJ, Odom RB. Papulosquamous diseases: a review. *J Am Acad Dermatol* 1985 Apr;12(4):597-624.
  6. Reddy BR, Krishna MN. Histopathological spectrum of non-infectious erythematous, papulo-squamous lesions. *Asian Pac. J Health Sci.* 2014; 1(4S):28-34.
  7. Chowdari B, Metta P, Seeram SK, Gunta DL, Latchupatula L, Mantripragada V et al. Clinicopathological study of papulosquamous skin lesions. *J. Evid. Based Med. Healthc.* 2018 Feb; 5(8):699 -704.
  8. D' Costa G, Bharambe BM. Spectrum of non-infectious erythematous, papular and squamous lesions of the skin. *Indian J Dermatol.* 2010 Jul-Sep;55(3):225-8.
  9. Barman DD, Bhattacharyya P, Ray PS, Sarkar S, Sarkar R, Roy AK. Clinicopathological correlation of non-infectious erythematous papulosquamous cutaneous lesions in a tertiary care hospital. *Indian J Dermatopathol Diagn Dermatol.* 2018 Jul-Dec;5(2):101-5.
  10. Reddy BR, Krishna N. Histopathological spectrum of non-infectious erythematous, papulo-squamous lesions. *Asian Pac J Health Sci.* 2014;1(4S):28-34.
  11. Karumbaiah KP, Arshiya A, Mallikarjun M. A Histopathologic Study of Papulosquamous Lesions of Skin. *Indian J Pathol.: Research and Practice.* 2017 Apr-Jun;6(2):403-9.
  12. Chichani S, Negi SR, Kalla AR, Gaur S. Study of histopathology of papulosquamous lesion of skin a prospective and retrospective study. *IJAR.* 2016;2(7):115-7.
  13. Kaur G, Chahal KS, Malhotra SK. Clinicopathological Correlation of Non Infectious Erythematous Papulosquamous Lesions of Skin. *J Adv Med Dent Scie Res.* 2019 Feb;7(2):131-135.
  14. Patel B, Chandraker KS. A study of pathological and clinical parameters of non-infectious erythematous papulosquamous disorders of skin in a tertiary care hospital in central India. *Medpulse Int J of pathology.* 2019 Aug;11(2): 99-104.
  15. Bhattacharya M, Kaur I, Kumar B. Lichen planus: a clinical and epidemiological study. *J Dermatol.* 2000;27(9):576-82. 2000;27(9):576-82.
  16. Chavhan SD, Mahajan SV, Vankudre AJ. A Descriptive Study on Patients of Papulosquamous Lesion at Tertiary Care Institute. *MVP J Med Sci.* 2014 Jan;1(1):30-5.
  17. Puri N, Mahajan BB, Kaur S. Clinicohistopathological Correlation of Psoriasis in Acute Exacerbation. *Sci Rep.* 2012;1(9):455.
  18. Arora D, Mittal A, Ahmad F, Dutta S, Awasthi S. The spectrum of histomorphological features in psoriasis: a three years study. *Trop J Path Micro.* 2019 Feb;5(2):58-62.
  19. Chaudhary RG, Chauhan AP, Makwana VR, Modi KR. Study of Clinico-histopathological Correlation of Papulosquamous Disorders at Tertiary Care Hospital. *Sch J App Med Sci.* 2015; 3(3B):1154-8.
  20. Hosamane S, Pai M, Philipose TR, Nayarmoole U. Clinicopathological Study of Non-Infectious Erythematous Papulosquamous Skin Diseases. *JCDR.* 2016 Jun;10(6):EC19-22.