

Histopathological study of non-infectious papulosquamous lesions of skin



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ABSTRACT

Background: Papulosquamous diseases are characterized by scaly papules and plaques with similar clinical picture which leads to diagnostic confusion. A definitive histopathological diagnosis is required for effective treatment of such diseases. **Aims and Objectives:** The aim of the study was to study the clinicohistopathological correlation of different non-infectious papulosquamous skin lesions. **Materials and Methods:** Skin punch biopsy specimens from 100 clinically diagnosed/suspected non-infectious papulosquamous skin diseases were received in the Department of Pathology at a tertiary care hospital. The specimens obtained were subjected to formalin fixation and paraffin embedding, stained with hematoxylin and eosin and studied. **Results:** A total of 100 cases were studied. The most common lesion was psoriasis (42) followed by lichen planus (40). Maximum numbers of cases were seen in the age group of 31–60 years (61%). Males (54%) were commonly affected. Positive clinicopathological correlation was observed in 85% cases. **Conclusion:** Contribution of histopathology is definitely significant in overcoming clinical diagnostic dilemma in certain papulosquamous disorders.

Key words: Histopathology; Papulosquamous; Psoriasis; Skin

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INTRODUCTION

A detailed clinical history and proper clinical examination are essential for the diagnosis of skin lesions. The diagnosis is made by considering distribution, color, type, and arrangement of lesions. Although the visibility of skin allows a quick and definitive diagnosis in some cases, similar clinical presentation often leads to diagnostic dilemma.¹ Histopathological examination of skin lesion is an important diagnostic ancillary technique for the management of patients with skin disorders. The correlation of clinical diagnosis with the histopathological findings is not only of diagnostic help, but also aids in understanding of the mechanisms of skin diseases. Even in those cases where exact diagnoses cannot be made in histopathology, it can contribute by ruling out certain diagnoses.^{2,3}

Papulosquamous diseases are frequently encountered group of diseases in dermatology and are characterized by scaly papules or plaques. Non-infectious papulosquamous skin lesions constitute about 24–25% of all the nonneoplastic skin lesions.^{4,5} Papulosquamous diseases include common conditions such as psoriasis and Lichen planus and also rare conditions such as parapsoriasis, pityriasis rosea, lichen nitidus, pityriasis rubra pilaris, and lichen striatus. Few of these papulosquamous conditions present with numerous clinical variants and mimic various dermatological conditions. This leads to a diagnostic dilemma for the clinician. Adverse reactions to many drugs may produce papulosquamous eruptions. Hence, many dermatoses need to be included in the differential diagnosis of a papulosquamous eruption. Clinical with histomorphological correlation and a definitive histopathological diagnosis are essential as treatment and

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prognosis varies.⁶⁻⁸ As it is crucial to identify and classify these lesions, the present study was undertaken to study the age, sex distribution and histopathological spectrum of non-infectious, and papulosquamous skin diseases with clinicohistopathological correlation.

Aims and objectives

The objectives of the study are as follows:

1. To study the histopathological features of non-infectious papulosquamous lesions of skin.
2. To study clinicopathological correlation of non-infectious papulosquamous lesions of skin.

MATERIALS AND METHODS

The present study was conducted in Department of Pathology, Shimoga Institute of Medical Sciences, Shivamogga, from September 2017 to May 2019. The study was conducted after approval by Institutional Ethical Committee. One hundred cases of clinically diagnosed or suspected non-infectious papulosquamous skin lesions were identified. Skin punch biopsy was done after taking informed consent, in the Department of Dermatology. Before proceeding with the biopsy, local anesthesia was obtained by infiltration of 2% lignocaine solution under the lesion. The punch was pushed into the skin with a downward twisting movement, and then removed. The tissue specimen was lifted and separated from the underlying tissue, and removed from the biopsy punch. The wound was left to heal without suturing. Biopsy was placed in 10% formalin and labeled. In the pathology department, punch biopsy samples were fixed in 10% formalin. After routine processing and embedding, paraffin blocks were prepared. 4–6 μ thick sections were obtained and stained with hematoxylin and eosin staining. Detailed histopathological examination was done.

RESULTS

In the present study, out of 100 cases 42 cases were diagnosed as psoriasis followed by lichen planus (40 cases), lichen planus pigmentosus (four cases), pityriasis rubra pilaris (three cases), hypertrophic lichen planus (two cases), and one case each of prurigo nodularis, lichen planopilaris, pityriasis rosea, lichen nitidus, PLEVA, pustular psoriasis, and lichenoid drug eruption. Two cases were inconclusive (Table 1). Maximum number of cases (61%) were seen in the age group of 31–60 years. Males (54%) were commonly affected. Positive clinicopathological correlation was observed in 85% cases (Table 2).

Of the 42 cases histopathologically diagnosed cases of psoriasis (Figures 1 and 2), 40 cases (95.23%) were

Table 1: Distribution of papulosquamous skin lesions

Disease	Cases (n)	Percentage
Psoriasis	42	42
Pustular psoriasis	01	1
Lichen planus	40	40
Lichen planus pigmentosus	04	04
Hypertrophic lichen planus	02	02
Lichen planopilaris	01	01
Pityriasis rubra pilaris	03	03
Prurigo nodularis	01	01
Pityriasis rosea	01	01
Lichen nitidus	01	01
PLEVA	01	01
Lichenoid drug eruption	01	01
Inconclusive	02	02
Total	100	100

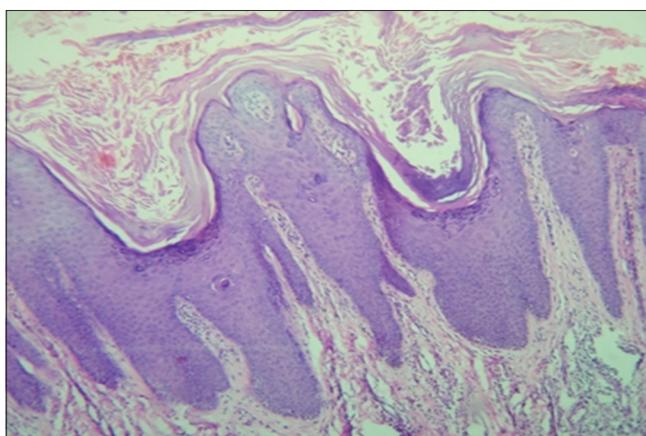


Figure 1: Psoriasis showing hyperkeratosis and elongated rete ridges (H&E, $\times 100$)

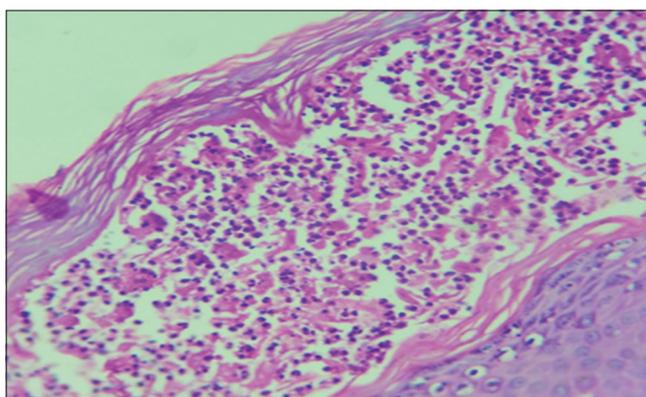


Figure 2: Pustular psoriasis with macroabscess (H&E, $\times 100$)

clinically suspected/diagnosed as psoriasis and were concordant. Two cases (4.8%) presented clinically as phytophotodermatitis. One case of histopathologically diagnosed pustular psoriasis was concordant (100%) with clinical diagnosis.

Forty cases were histopathologically diagnosed as lichen planus (Figure 3), of which 34 cases (85%) were clinically

Table 2: Correlation of clinical and histopathological diagnosis

Disease (n)	Clinical diagnosis	Concordance with histopathological diagnosis	Discordance with histopathological diagnosis
Psoriasis (42)	40	40 (95.23%)	02 (4.8%)
Pustular psoriasis (1)	01	01 (100%)	00%
Lichen planus (40)	34	34 (85%)	06 (15%)
Lichen planus pigmentosus (4)	04	04 (100%)	00%
Hypertrophic lichen planus (2)	01	01 (50%)	01 (50%)
Lichen planopilaris (1)	00	00%	01 (100%)
Pityriasis rubra pilaris (3)	01	01 (33.3%)	02 (66.6%)
Prurigo nodularis (1)	01	01 (100%)	00%
Pityriasis rosea (1)	01	01 (100%)	00%
Lichen nitidus (1)	00	00%	01 (100%)
PLEVA (1)	01	01 (100%)	00%
Lichenoid drug eruption (1)	01	01 (100%)	00%
Inconclusive (2)	-	-	-
Total (100)	85	85 (85%)	13 (13%)

suspected/diagnosed and were concordant and six cases (15%) of them had different clinical diagnosis.

Four cases of histopathologically diagnosed lichen planus pigmentosus were concordant (100%) with clinical diagnoses. Two cases were histopathologically diagnosed as hypertrophic lichen planus (Figure 4), of which 1 case (50%) was concordant with clinical diagnosis. The other case clinically presented as psoriasis. One case of histopathologically diagnosed lichen planopilaris (Figure 5) had different clinical diagnosis (100%), which clinically presented as psoriasis. Three cases were histopathologically diagnosed as pityriasis rubra pilaris, of which 1 case (33.3%) was clinically suspected and was concordant and 2 cases (66.6%) clinically presented as psoriasis.

One case each of histopathologically diagnosed prurigo nodularis, pityriasis rosea (Figure 6), PLEVA, and lichenoid drug reaction was concordant with clinical diagnoses. One case of histopathologically diagnosed lichen nitidus had different clinical diagnosis. Two cases were inconclusive.

A concordance between clinical diagnosis and histopathological diagnosis was observed in 85% of the cases and a discordance of 13% was seen. Hence, histopathology confirmed the diagnosis in 85% and it gave the diagnosis in 13% cases.

DISCUSSION

Papulosquamous diseases are usually characterized by scaling papules and plaques. This leads to lot of confusion in clinical diagnosis, and hence, a definitive histopathological diagnosis aids in the treatment of such diseases.^{9,10}

In the present study, psoriasis was the most common disease accounting for 42%. The finding was similar to that

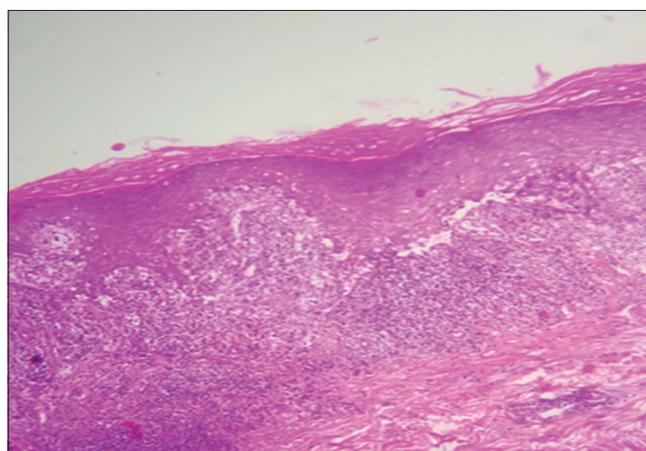


Figure 3: Hyperkeratosis, hypergranulosis, and band like lymphocytic infiltration in lichen planus (H&E, x100)

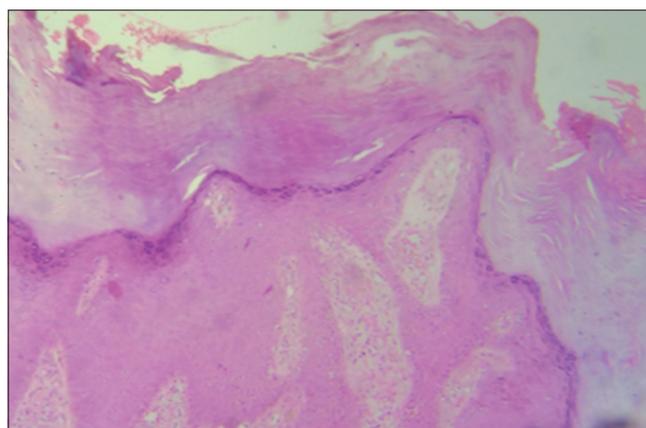


Figure 4: Hypertrophic lichen planus (H&E, x100)

in studies done by Chavhan et al.,¹¹ and Narayankar and Pandit¹² in which psoriasis accounted to 32.7% and 42%, respectively. The highest incidence was seen 5th decade. Kumari,¹³ D'Costa, and Bharambe¹⁴ reported the highest number of cases in 3rd and 4th decade, respectively. In our study, male preponderance (63%) was seen which

were concordant with the studies done by Younas and Haque⁵ (78.57%). and Agrawal et al.,¹ (66.6%).

The characteristic primary lesion of these disorders is a papule, usually erythematous, that has a variable amount of scaling on the surface. Plaques or patches form through coalescence of the primary lesions, which most commonly appear on the elbows, knees, scalp, umbilicus, and lumbar area.^{12,15} In the present study, the most common sites of lesion were all over the body followed by limbs, scalp, and groin.

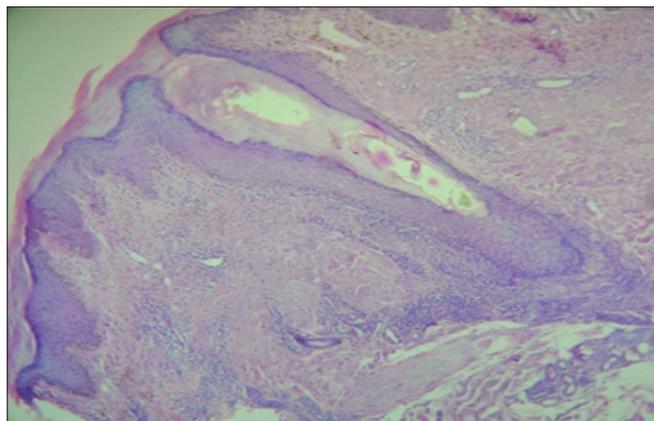


Figure 5: Lichen planopilaris showing perifollicular inflammation (H&E, x100)

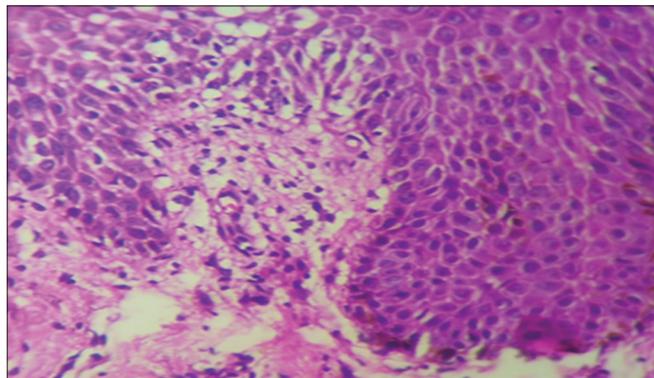


Figure 6: Pityriasis Rosea with lymphocytic exocytosis (H&E, x400)

The most frequent histopathological findings were hyperkeratosis, parakeratosis, acanthosis, suprapapillary thinning, elongation of the rete ridges, Munro's micro abscesses, dermal lymphocytic infiltration, and vascular changes. The studies done by Jayalakshmy et al.,¹⁶ Kumari,¹³ Barman et al.,⁹ and Karumbaiah et al.,¹⁵ showed similar findings with varying percentage (Table 3)

In the present study, one case of pustular psoriasis was seen in a male patient aged 62 years. He presented with scaly lesions and pustules. The study done by Kumari¹³ showed 12% pustular psoriasis.

In the present study, lichen planus was the second most common disease accounting for 40%. Similar findings were observed in studies done by Balaji et al.,⁷ and Saritha et al.,⁶ in which it accounted to 47.2% and 48.84%, respectively. The highest incidence was seen in 4th decade. Lichen planus had equal sex distribution which was concordant with study done by Narayankar and Pandit,¹² Karumbaiah et al.,¹⁵ and Chavhan et al.,¹¹ reported maximum number of cases in males. The most of the patients presented as multiple violaceous and hyperpigmented papules. The common sites of lesion were arms and legs followed by all over the body. In the present study, the histopathology of lichen planus showed hyperkeratosis, focal parakeratosis, hypergranulosis, acanthosis, vacuolar degeneration of basal cell, Max-Joseph space, Civatte body, band like infiltrate, lymphocytic infiltration, and pigment incontinence. These findings were similar to that of studies by Karumbaiah et al.,¹⁵ Chavhan et al.,¹¹ and Barman et al.⁹ Civatte bodies were more frequently observed in the present study (Table 4).

In the present study, lichen planus pigmentosus was the third most common disease accounting for 4% which was similar to studies done by Gurusamy and Selvaraj et al.,¹⁷ and Deepti et al.¹⁸ The most of the cases were between 3rd and 4th decade according to studies done by Kanwar et al.,¹⁹ and Mathews et al.²⁰ In the present study, lichen

Table 3: Comparison of histopathological changes in psoriasis

Histopathological findings	Present study (%)	Jayalakshmy et al. ¹⁶ (%)	Kumari ¹³ (%)	Barman et al. ⁹ (%)	Karumbaiah et al. ¹⁵ (%)
Epidermal changes					
Hyperkeratosis	100	25	82	77	77.27
Parakeratosis	95.24	100	100	88.88	72.72
Hypogranulosis	50	97.5	84	44.44	22.72
Acanthosis	76.19	100	98	88.88	86.36
Elongated rete ridges	69.04	90	96	-	72.72
Munro microabscess	66.67	87.5	44	44.44	22.72
Spongiform pustule of Kogoj	19.04	12.5	20	-	4.54
Suprapapillary thinning	80.95	100	86	66.66	40.90
Dermal changes					
Lymphocytic infiltration	100	100	100	88.88	81.81
Vascular changes	71.43	95	100	88.88	86.36

Table 4: Comparison of histopathological changes of lichen planus in various studies

Histopathological findings	Present study (%)	Karumbaiah et al. ¹⁵ (%)	Chavhan et al. ¹¹ (%)	Barman et al. ⁹ (%)
Epidermal changes				
Hyperkeratosis	100	100	29	70.83
Hypergranulosis	95	76.47	89	58.33
Acanthosis	92.5	76.47	66	70.83
Vacuolar degeneration of basal cell	100	100	83	81.33
Max-Joseph space	17.5	23.52	6	4.16
Civatte body	27.5	11.76	6	-
Dermal changes				
Band like infiltrate	75	76.47	89	
Lymphocytic infiltration	100	100	100	91.6
Pigment incontinence	20	-	49	54.16

planus pigmentosus showed varied presentation in age group, all the four were females. Similarly, the studies done by Mathews et al.,²⁰ and Bhat et al.,²¹ showed female preponderance.

In the present study, lichen planus pigmentosus presented with hyperpigmented macule/patch predominantly over the face followed by back and thigh. All cases showed epidermal thinning, basal cell degeneration, and pigment incontinence. In the present study, hypertrophic lichen planus accounted for 2%. It was seen in 2nd and 4th decade with equal sex distribution. The studies done by Kaur et al.,¹⁰ Parihar and Sharma,²² Ankad and Beergouder,²³ Raghavendra, and Basha²⁴ showed male preponderance. Histological changes were acanthosis, hypergranulosis, and compact orthokeratosis and most common site was lower limbs.

Pityriasis rubra pilaris accounted for 3% which was similar to studies done by Agrawal et al.,¹ Karumbaiah et al.,¹⁵ and Narayankar and Pandit,¹² in which it accounted to 6%, 4%, and 3%, respectively. In the present study, pityriasis rubra pilaris were seen in males and in 4th and 5th decade. It presented with scaly patches and plaques. Study done by Gerharz et al.,²⁵ showed bimodal age distribution pattern with peak incidences in the 1st and 5th decade. Histological findings were acanthosis with broad and short rete ridges, alternating orthokeratosis and parakeratosis with focal hypergranulosis.

In the present study, one case of pityriasis rosea was seen in a female patient in 3rd decade. She presented with scaly patch and histopathology showed hyperkeratosis, hypogranulosis, acanthosis, spongiosis, parakeratosis, lymphocytic exocytosis, and extravasated erythrocytes in the dermis.

In the present study, one case each of prurigo nodularis, lichen planopilaris, lichen nitidus, lichenoid drug eruptions, and PLEVA was present.

Table 5: Clinical and histopathological correlation in various studies

Study	Correlation
Barman et al. ⁹	92%
Kaur et al. ¹⁰	74%
Raju et al. ²⁶	68.72%
Balaji et al. ⁷	62.96%
Agrawal et al. ¹	58%
Present study	85%

Overall clinicopathological concordance of papulosquamous skin lesions of in our study was 85%. The study done by Barman et al.,⁹ had higher percentage of correlation of 92% whereas Kaur et al.,¹⁰ Raju et al.,²⁶ Balaji et al.,⁷ and Agrawal et al.,¹ had lower clinical and histopathological correlation of 74%, 68.72%, 62.96%, and 58%, respectively (Table 5).

Limitations of the study

It was a single centre study. Multi – centre studies involving wider population need to be conducted to study the wide clinical and histopathological spectrum of papulosquamous skin lesions.

CONCLUSION

The clinical pattern and histological features of papulosquamous skin disorders overlap. In such circumstances attempting a conclusive histopathological diagnosis by clinicopathological correlation serves as an ideal approach. Contribution of histopathology is definitely significant in overcoming clinical diagnostic dilemma in certain cases. As the papulosquamous disorders are commonly encountered dermatological conditions, we emphasize the role of clinicopathological correlation for accurate diagnosis, which aids in appropriate and effective clinical management and better clinical outcome.

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KC- Concept and design of the study, interpretation, reviewed the literature, and manuscript preparation; **SMS**- Concept, design of study, interpretation, preparation, and revision of manuscript; **AYG, DHJ, and RBK**- Concept, coordination, interpretation, and preparation of manuscript.

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