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Pathology Section

# Morphological Patterns of Cutaneous Papulosquamous Lesions- A Diagnostic Dilemma

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## ABSTRACT

**Introduction:** Papulosquamous skin lesions are characterised by a unique morphologic feature called as superficial cutaneous reactive unit with the basic patterns of predominantly lichenoid and psoriasiform dermatitis. It constitutes largest conglomerate of skin diseases posing diagnostic dilemma to both dermatologist and pathologist. Although characterised by typical scaly papules, a lot of similarity in both clinical presentation and distribution of papulosquamous skin disorders makes clinical diagnosis more difficult. The diagnostic specificity with overlapping features will be achieved by correlating the gold standard histopathological findings with clinical details.

**Aim:** To study the morphological patterns of non-infectious erythematous papulosquamous lesions of skin with clinical diagnosis.

**Materials and Methods:** This was a cross-sectional observational study in all the prediagnosed cases of non-infectious erythematous papulosquamous lesions by the dermatologist in BGS Global Institute of Medical Sciences, Bengaluru from July 2016 to December 2018. Demographic profiles including the clinical and histopathological details were reviewed by consensus opinion by the pathologists. The results were tabulated and analysed using SPSS 22 software version.

**Results:** Out of 90 cases of papulosquamous lesion, lichenoid pattern of reaction 51 (56.66%) was commonest followed by psoriasiform pattern of reaction 39 cases (43.34%). Lichen planus 34 cases (37.8%) was the common diagnosis among the lichenoid pattern of lesion followed by psoriasis 27 cases (30.1%) in psoriasiform pattern of lesions. Histopathological features commonly seen were hyperkeratosis and parakeratosis in both lichen planus and psoriasis. Positive clinicopathological correlation was highest in lichen planus and psoriasis.

**Conclusion:** A broader morphological spectrum of papulosquamous lesions exist. The combined clinical approach with histopathological findings helps in accurate diagnosis of papulosquamous lesions.

**Keywords:** Clinical correlation, Dermatitis, Histopathological findings, Lichen planus, Morphological patterns, Psoriasis, Spectrum

## INTRODUCTION

The prevalence of skin problems range from 6.3-11.16% and vary amid different parts of the country [1]. Papulosquamous skin diseases comprise the largest conglomerate of diseases seen in the dermatology clinics [2,3]. In India, the prevalence of psoriasis ranges from 0.44-2.8% [4] while lichen planus is found in 0.5-2.6% of general population [5]. Inflammatory dermatoses are morphologically categorised into lichenoid, psoriasiform, spongiotic, vesiculobullous, granulomatous and vasculopathic reaction pattern [6]. Clinically, this group of papulosquamous disorders presents as an erythematous papule, commonly with scaling on the surface of lesion and include spectrum of lesions namely psoriasis, lichen planus, parapsoriasis, lichen nitidus, lichen planus pigmentosus, prurigo nodularis and many more [7-9].

The medical specialities of dermatology and dermatopathology rely on careful observation and pattern recognition in the treatment of skin diseases. The clinical examination is regarded as akin to gross examination of biopsy specimens and most of these lesions share similar morphological features. Hence, biopsy of skin is a readily accessible diagnostic test carried out in day to day practice for histopathologic analysis. Some of the histopathological features are disease specific and few of the lesions like pityriasis rosea, parapsoriasis and lichen striatus overlap [10,11]. Similarly, histopathological features of lichen simplex chronicus overlap with prurigo nodularis. Clinicopathological correlation helps in arriving at an accurate diagnosis in clinically overlapping diseases such as psoriasis and lichen planus and also helps dermatologist in providing appropriate treatment. So an ideal approach for conclusive diagnosis lies in integration of tissue reaction pattern and pattern of inflammation with the clinical findings [6,12,13]. This study attempts to estimate the frequency and to analyse the morphological tissue reaction patterns of non-infectious erythematous papulosquamous lesions in context to clinical diagnosis which will help in better diagnosis and treatment.

## MATERIALS AND METHODS

This was an institutional cross-sectional observational study which included all the biopsy specimens of clinically diagnosed/suspected cases of erythematous, papulosquamous skin lesions received in the Department of Pathology, BGS Global Institute of Medical Sciences, Bengaluru, Karnataka from July 2016 to December 2018 over a period of two and a half years. Ninety cases with clinical diagnosis of papulosquamous skin disorders with sharply demarcated thickened scaly erythematous papules and plaques were selected from the patients attending Dermatology Outpatient Department in this study period. Census method of sampling was used for the selection of cases. An Institutional Ethical Clearance was obtained for the study (IEC: 2018-19/30). A detailed clinical examination with provisional clinical diagnosis were entered in a structured proforma and transferred to excel sheet with subsequent histopathological findings.

Punch biopsy specimens of skin obtained were fixed in 10% neutral buffered formalin, tissue processed and stained with haematoxylin and eosin and studied under light microscope. Serial sections and reverse embedding of paraffin sections were considered for the complete diagnosis of these lesions wherever necessary.

Histopathological findings were interpreted with respect to clinical details by two pathologists to know the interobserver variability. The results of the histopathological opinion were same in 91.1% cases and different in 3.3% and 5.6% cases with respect to first and second pathologist respectively. Fisher-exact test showed p-value >0.05 which was not significant. Hence, the histopathological opinion between two pathologists didn't differ statistically.

**Exclusion criteria:** Skin disorders with infective, neoplastic etiology, melanocytic lesions and other inadequate skin biopsies which were not papulosquamous disorders were excluded from the present study.

## STATISTICAL ANALYSIS

The data collected were entered in MS Excel software and analysed using SPSS 22.0 software version for determining the statistical significance. Results are expressed in proportions and descriptive statistics. The p-value of <0.05 was considered to be statistically significant.

## RESULTS

A total of 90 non-infectious erythematous papulosquamous lesions constituted 20.4% of the 440 total skin biopsies studied during the study period. Out of 90 cases of papulosquamous disorders of the skin included in the study, 60 were females and 30 were males with female to male ratio of 2:1. The cases ranged from 9-72 years, most commonly affecting 5th decade accounting for 21 cases (23.3%) followed by 4th decade accounting for 16 cases (17.8%). Age and sex-wise distributions of these cases are depicted in [Table/Fig-1]. Distribution of papulosquamous disorders of skin is shown in [Table/Fig-2]. The anatomical sites involved by these lesions include lower extremities 40 cases (44.6%) followed by upper extremities 35 cases (38.9%) as shown in [Table/Fig-3]. The lichenoid pattern of reaction 51 (56.66%) was frequently observed and psoriasiform pattern of reaction accounted for 39 (43.34%) of the 90 cases.

| Age (Years) | Sex | | Percentage (%) |
|---|---|---|---|
| | Female | Male | |
| 0-10 | 02 | 03 | 5.5 |
| 11-20 | 10 | 05 | 16.7 |
| 21-30 | 09 | 04 | 14.5 |
| 31-40 | 10 | 06 | 17.8 |
| 41-50 | 17 | 04 | 23.3 |
| 51-60 | 08 | 04 | 13.3 |
| 61-70 | 03 | 04 | 7.8 |
| 71-80 | 01 | 00 | 1.1 |
| Total=90 | 60 | 30 | 100 |

**[Table/Fig-1]:** Age and sex distribution of papulosquamous lesions.

In the lichenoid pattern of reaction, lichen planus was the commonest lesion observed in 34 (37.8%) cases followed by 5 (5.6%) cases of lichen planus pigmentosus (Erythema Dyschronicum Perstans), 4 (4.5%) cases of pityriasis lichenoides, 3 (3.3%) cases of lichen nitidus, 2 (2.2%) cases of erythema multiforme, one each case of lichen striatus, lichen planopilaris and lichen planus like keratosis were observed. The histopathological findings and microscopic images of the lichenoid patterns of lesions are depicted in the [Table/Fig-4-6].

In the category of psoriasiform pattern of reaction, psoriasis vulgaris was the commonest lesion observed in 27 (30.1%) cases. Other lesions were 3 (3.3%) cases each of parapsoriasis and prurigo nodularis with 2 (2.2%) cases of pityriasis rosea. We also observed one each case of inflammatory linear verrucous epidermal nevus, urticaria, pityriasis rubra pilaris and lichen simplex chronicus. The histopathological findings of psoriasis and microscopic images of these psoriasiform patterns of lesions are depicted in the [Table/Fig-7-9].

| Histopathological diagnosis | Number | Percentage |
|---|---|---|
| Lichen planus | 34 | 37.8 |
| Psoriasis<br>Pustular psoriasis<br>Guttate psoriasis | 23<br>3<br>1 | 25.7<br>3.3<br>1.1 |
| Lichen planus pigmentosus | 05 | 5.6 |
| Pityriasis lichenoides | 04 | 4.5 |
| Parasoriasis | 03 | 3.3 |
| Prurigo nodularis | 03 | 3.3 |
| Lichen nitidus | 03 | 3.3 |
| Pityriasis rosea | 02 | 2.2 |
| Erythema multiforme | 02 | 2.2 |
| Lichen striatus | 01 | 1.1 |
| Lichen planopilaris | 01 | 1.1 |
| Lichen planus like keratosis | 01 | 1.1 |
| Lichen simplex chronicus | 01 | 1.1 |
| Pityriasis rubrapilaris | 01 | 1.1 |
| Urticaria | 01 | 1.1 |
| Inflammatory Linear Verrucous Epidermal Nevus (ILVEN) | 01 | 1.1 |

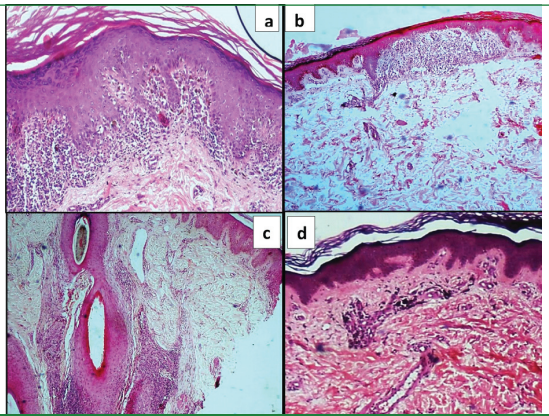
**[Table/Fig-2]:** Distribution of non-infectious, erythematous papulosquamous lesions.

| Site | Number | Percentage (%) |
|---|---|---|
| Lower extremities | 40 | 44.6 |
| Upper extremities | 35 | 38.9 |
| Back | 06 | 6.6 |
| Abdomen | 05 | 5.5 |
| Head and neck | 02 | 2.2 |
| Chest | 02 | 2.2 |
| Total | 90 | 100 |

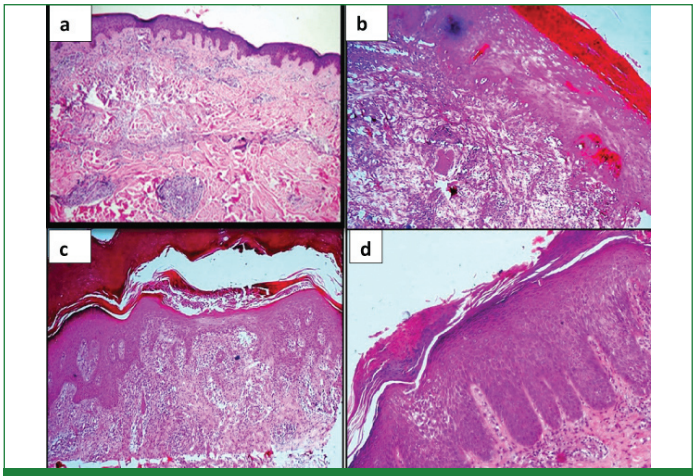
**[Table/Fig-3]:** Anatomical distribution of papulosquamous lesions.

| Epidermal changes | |
|---|---|
| Hyperkeratosis | 27 (79.41%) |
| Parakeratosis | 7 (20.58%) |
| Irregular acanthosis with saw-toothed rete ridges | 25 (73.52%) |
| Hypergranulosis | 16 (47.05%) |
| Basal cell vacuolar degeneration | 30 (88.23%) |
| Max Joseph space | 08 (23.52%) |
| Civatte bodies | 10 (29.41%) |
| **Dermal changes** | |
| Dermal infiltrate | 27 (79.41%) |
| Pigment incontinence | 18 (52.94%) |

**[Table/Fig-4]:** Histopathological changes observed in lichen planus (n=34).



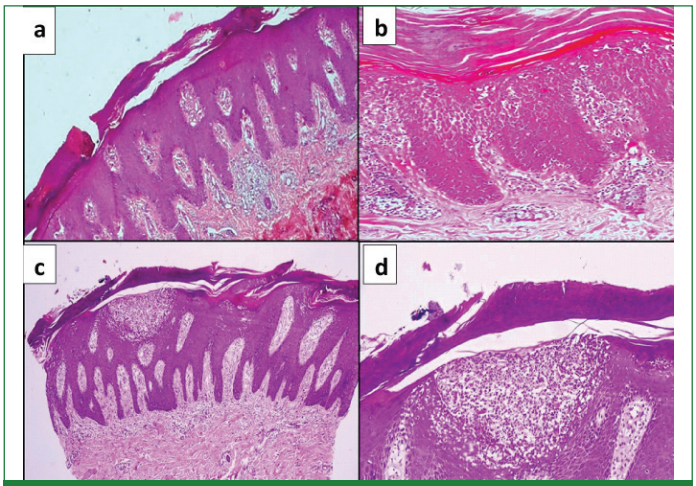

**[Table/Fig-5]:** Lichen planus and its variants: (a) Lichen planus: band-like lymphocytic infiltrate at dermoepidermal junction (H&E X40); (b) Lichen nitidus: claw-like down growth of rete ridges within the widened dermal papillae (H&E X40); (c) Lichen planopilaris: lichenoid infiltrate limited to the perifollicular location (H&E X40); (d) Lichen planus pigmentosus: marked melanin incontinence in the papillary dermis (H&E X40).




**[Table/Fig-6]:** (a) Pityriasis lichenoides chronica: Superficial perivascular and lichenoid infiltrate (H&E X40). (b) Pityriasis lichenoidesetvaroliformisacuta: lichenoid inflammatory infiltrate with irregular acanthosis, pallor of upper layer of epidermis, spongiosis, apoptotic keratinocytes, and confluent mounds of keratosis (H&E X40). (c) Erythema Multiforme: Necrotic keratinocytes at basal layer, basal vacuolar degeneration, lymphocytic infiltrate at dermo epidermal junction (H&E X40). (d) Inflammatory linear verrucous epidermal nevus: psoriasiform hyperplasia with alternating elevated foci of parakeratosis with absent granular layer and depressed foci of orthokeratosis with preserved granular layer (H&E X40).

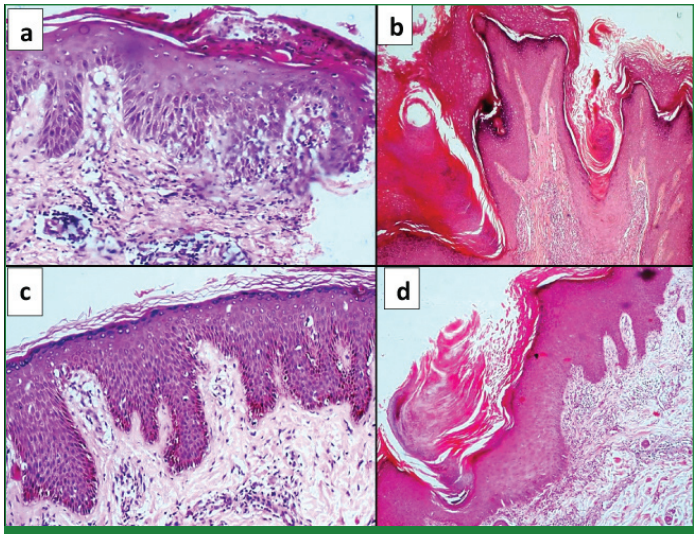
| Epidermal changes | |
|---|---|
| Hyperkeratosis | 18 (66.66%) |
| Parakeratosis | 20 (74.07%) |
| Irregular acanthosis | 20 (74.07%) |
| Hypogranulosis | 10 (37.03%) |
| Suprapapillary thinning | 15 (55.55%) |
| Spongiform pustule | 20 (74.07%) |
| Munro microabscesses | 22 (81.48%) |
| **Dermal changes** | |
| Papillary oedema | 05 (18.51%) |
| Vascular changes | 15 (55.55%) |
| perivascular inflammation | 18 (66.66%) |

**[Table/Fig-7]:** Histopathological changes observed in Psoriasis (n=27).




**[Table/Fig-8]:** Psoriasis (a) H&E: X40); and (b) H&E: X100): Epidermal acanthosis, parakeratosis, munromicroabscess, elongation of rete ridge, spongiform pustule of kagoj, dilated blood vessels in dermis. Pustular psoriasis; (c) H&E: X40); and (d) H&E:X100): Pronounced psoriasiform hyperplasia and spongiform pustulation of the epidermis.

In the present study, lichen planus were reported in wide age group of 11-70 years with female preponderance. Lesions were frequently reported in lower extremities (20 cases). Other than classical lichen planus, 7 cases of hypertrophic lichen planus were noted. One each case of atrophic lichen planus, linear lichen planus and lupus erythematoses-lichen planus overlap syndrome was noted. This overlap syndrome was seen in a 17-year-old female with a plaque like lesion in the back with overlapping histological features.




**[Table/Fig-9]:** Pityriasis Rosea: Irregular acanthosis, mounds of parakeratosis and focal spongiosis(H&E X40). (b) Pityriasis rubra pilaris: Psoriasiform hyperplasia with keratotic follicular plugging and thick shoulder parakeratosis (H&E X40). (c) Prurigo nodularis: Psoriasiform hyperplasia with vertical streaking of collagen in the upper dermis (H&E X40). (d) Parapsoriasis: Mild psoriasiform hyperplasia, thick suprapapillary plate of epidermis, focal parakeratosis with scale crust with mild lymphohistiocytic perivascular infiltrate in the papillary dermis (H&E X40).

Out of 27 cases of psoriasis vulgaris, 3 cases of pustular psoriasis and one each case of guttate psoriasis and nail psoriasis was noted. Females (16 cases) were more commonly affected compared to males (11 cases). Psoriasis was most commonly seen in the age group of 41-50 years. Lower extremities were most commonly (15 cases) involved. Nail involvement was reported in a 22-year-old male in the big toe with the classical histological features as described in the literature.

In this study, overall positive degree of clinicopathological correlation of papulosquamous disorder was 87.78% (79 cases) with 100% clinicopathological correlation noted in parapsoriasis, lichen simplex chronicus, lichen nitidus, lichen planopilaris, urticaria, pityriasis rubra pilaris, pityriasis rosea and inflammatory linear verrucous epidermal nevus. [Table/Fig-10] show the list of disconcordant cases in this study of papulosquamous lesions.

| Histopathological diagnosis | Total no of noncorrelated cases | Clinical diagnosis |
|---|---|---|
| Psoriasis | 3 | Lichen simplex chronicus<br>Tinea corporis<br>Eczema |
| Lichen planus | 3 | 2 cases of post-inflammatory pigmentation.<br>1 case of lichen planus pigmentosus |
| Pityriasis lichenoides | 2 | 2 cases of Lichen simplex |
| Lichen planus pigmentosus | 2 | Chronic actinic dermatitis<br>Disseminated superficial actinic porokeratosis |
| Lichen planus like keratosis | 1 | Erythema multiforme |

**[Table/Fig-10]:** List of disconcordant clinicopathologic papulosquamous lesions.

## DISCUSSION

Papulosquamous skin diseases are a heterogeneous, complex group of disorders with a unique morphologic feature called as superficial cutaneous reactive unit characterised by basic patterns of predominantly lichenoid and psoriasiform dermatitis [7]. Integration of morphological tissue reaction pattern and pattern of inflammation is an essential feature in interpretation of skin biopsies [6,14]. Tissue reaction pattern in papulosquamous skin diseases are a result of various responses to pathological stimuli [12,13]. Overlapping clinical and morphological findings are due to limited number of reaction patterns [10,13]. Some of the histopathological features are disease specific and a few of the lesions like pityriasis rosea, parapsoriasis

and lichen striatus overlap [10,11]. Histopathological features of lichen simplex chronicus overlaps with prurigo nodularis and hence proper clinical observation with critical review of histopathological features are essential for the appropriate diagnosis [8,15,16]. Accurate diagnosis of psoriasis is of paramount importance as it is associated with recurrent nature and is to be separated from psoriasiform dermatitis [15]. In this regard, categorisation of these lesions becomes important as treatment and prognosis tend to be disease specific [9,11,15].

In the present study of papulosquamous disorders, age of the patient ranged from 9-72 years, most commonly affecting 5th decade accounting for 23.3% followed by 4th decade 17.78% of cases. Reddy RB et al., reported maximum number of cases in the 4th decade and Tayal A et al., reported maximum number of cases in 3rd decade [9,17]. This study showed lower extremities 40 (44.6%) were commonest site of involvement followed by upper extremities 35 (38.9%). Barman DD et al., Narayankar SL and Pandit GA, and Tayal A et al., also reported similar findings in their study [2,6,17].

In the present study, 56.66% of cases showed lichenoid reaction pattern and psoriasiform reaction pattern accounted for 43.34%. Similar study by Reddy RB and Krishna N, and D'Costa G and Bharambe BM, showed lichenoid group of lesions accounting for 46.57% and 46.58% respectively along with psoriasiform pattern accounting for 23.60% and 23.06% in both the studies, respectively [9,14].

In this study of 90 cases of papulosquamous lesions, lichen planus accounted for highest number of 34 cases (37.8%) followed by psoriasis 27 cases (30.1%). This was concordant with the study by Richa G et al., Barman DD et al., Chavhan SD et al., and Tayal A et al., [1,2,11,17]. Younas M et al., Agrawal S et al., and Saritha C et al., observed psoriasis as the commonest papulosquamous lesion in their study [18-20]. In the present study, sample size variability, climate and attrition of cases has resulted in wide variation in the cases [17].

Among 34 cases of lichen planus, 18 (52.94%) were females and 16 (47.06%) were males with high prevalence in the age group of 20-40 years. Male preponderance was noted by Karumbaiah KP et al., and Reddy RB and Krishna N, [8,9]. However, the literature studies show a female predominance in middle age adults [21]. Present study comprised of typical clinical features of pruritic, papular, violaceous lesions on flexural surface of extremities as classically described in the literature [7,22].

Histopathological features of lichen planus with basal cell vacuolar degeneration (88.23%), hyperkeratosis (79.41%), irregular acanthosis with saw-toothed rete ridges (73.52%) and dermal band like mononuclear cell infiltrate (79.41%) were comparable to the study by Barman DD et al., and Chavhan SD et al., [2,11]. Civatte bodies accounted for 29.41% of cases which were in discordance with the study by Karumbaiah KP et al., and Chavhan SD et al., [8,11]. Hypertrophic lichen planus histologically showed marked acanthosis and hyperkeratosis as compared to classical lichen planus which is similar to Narayankar SL and Pandit GA, [12]. Younas M and Haque A, reported 58.3% Max joseph spaces at the dermo-epidermal junction in contrast to 23.52% in the present study [18]. Detailed comparative histopathological findings of lichen planus in different studies are shown in [Table/Fig-11] [1-3,9,11,12,23].

Psoriasis commonly affects young adults in the age group of 25-35 years [24]. Younas M and Haque A, reported highest incidence in the age group of 21-30 years [18]. A study by D'Costa G and Bharambe BM, reported maximum number of cases in the age group of 30-40 [14]. In the present study, psoriasis commonly affected 41-50 years of age group with female predominance (59.2%). Saritha C et al., stated that psoriasis presented with sharply demarcated erythematous scaly plaques which appeared on the trunk and back followed by extremities with female predominance [20]. In the present study, the most common site of lesion was seen on the extremities.

Histopathological findings observed in 27 cases of psoriasis consisted predominantly of acanthosis (74.07%), parakeratosis (74.07%), spongiform pustule of kagoj (74.07%), munro microabscess (81.48%). Similar histopathological findings were observed by Karumbaiah KP et al., and Reddy RB and Krishna N, [8,9]. A recent study by Barman DD et al., also confirms these findings [2]. Hypogranulosis was noted in 37.03% of cases which was similar to the study by Karumbaiah KP et al., and Younas M and Haque A, [8,18]. Hypogranulosis of these lesion correlates well with stage of the disease as well as on clinical presentation of diseased patient on treatment [8,16]. Detailed comparative histopathological findings of psoriasis in different studies are shown in [Table/Fig-12] [1-3,8,9,11,12,23].

Out of 30 clinically diagnosed cases of psoriasis, 27 (90%) cases were confirmed on histopathology. Similar concordance rate was observed by Reddy RB et al., and Chavhan SD et al., [9,11]. Clinicopathological concordance in psoriasis is very important in decision making regarding long term management of the disease. Furthermore, the recurrent nature and prognosis of psoriasis differs from that of psoriasiform dermatitis and hence the need for correct diagnosis [15].

The other papulosquamous diseases encountered in this study were 5cases (5.6%) of lichen planus pigmentosus, 4 cases (4.5%) of pityriasis lichenoid chronicus, 3 cases (3.3%) each of prurigo nodularis, parapsoriasis and lichen nitidus were observed. We also observed 2 cases (2.2%) of erythema multiforme and pityriasis rosea.

| Histopathological features | Reddy RB and Krishna N, 2014 [9] (%) N=24 | Chavhan SD et al., 2014 [11] (%) N=35 | Hosamane S et al., 2016 [3] (%) N=19 | Karumbaiah KP et al., 2017 [8] (%) N=17 | Narayankar SL et al., 2018 [12] (%) N=12 | Barman DD et al., 2018 [2] (%) N=24 | Richa G et al., 2020 [1] (%) N=29 | Ukonu BA et al., 2020 [23] (%) N=26 | Present study 2020 (%) N=34 |
|---|---|---|---|---|---|---|---|---|---|
| Hyperkeratosis | 100 | 29 | 31.57 | 100 | 91.66 | 70.83 | 82.76 | 30.8 | 79.41 |
| Parakeratosis | 100 | 6 | 15.78 | 11.76 | 8.33 | 8.33 | 3.44 | 3.8 | 20.58 |
| Irregular acanthosis withSaw tooth rete ridges | 100 | 66 | 42.1 | 76.47 | 83.33 | 70.83 | 51.72 | 88.5 | 73.52 |
| Hypergranulosis | 66.6 | 89 | 52.63 | 76.47 | 100 | 58.33 | 75.86 | 3.8 | 47.05 |
| Basal cell degeneration | 79.1 | 83 | 57.89 | 100 | 100 | 81.33 | 68.97 | - | 88.23 |
| Max joseph space | - | 6 | 10.52 | 23.52 | 16.66 | 4.16 | 3.45 | - | 23.52 |
| Civattebodies | 20.8 | 6 | 21.05 | 11.76 | 25 | - | 48.27 | - | 29.41 |
| Band-like mononuclear cell infiltrate | 75 | 89 | 42.10 | 76.47 | 100 | 91.6 | 100 | 15.4 | 79.41 |
| Pigment incontinence | 87.5 | 49 | - | | 91.66 | 54.16 | 68.97 | 65.4 | 52.94 |

**[Table/Fig-11]:** Comparison of histopathological findings of lichen planus in different studies [1-3,9,11,12,23].

| Histopathological features | Reddy RB et al., 2014 [9] (%) N=34 | Chavhan SD et al., 2014 [11] (%) N=20 | Hosamane S et al., 2016 [3] (%) N=42 | Karumbaiah KP et al., 2017 [8] (%) N=22 | Narayankar SL and Pandit GA, 2018 [12] (%) N=42 | Barman DD et al., 2018 [2]. (%) N=9 | Richa G et al., 2020 [1] (%) N=25 | Ukonu BA et al., 2020 [23] (%) N=19 | Present study-2020 (%) N=27 |
|---|---|---|---|---|---|---|---|---|---|
| Hyperkeratosis | 82.5 | 25 | 28.57 | 77.27 | 23.8 | 77.77 | 84 | 15.8 | 66.66 |
| Parakeratosis | 79.4 | 75 | 61.9 | 72.72 | 100 | 88.88 | 100 | 73.7 | 74.07 |
| Irregular acanthosis | 82.5 | 90 | 90.47 | 86.36 | 97.61 | 88.88 | - | 68.4 | 74.07 |
| Hypogranulosis | 23.5 | 50 | 19.04 | 22.72 | 92.85 | 44.44 | 80 | 3.8 | 37.03 |
| Suprapapillary thinning | 38.23 | 20 | 35.71 | 40.9 | 95.23 | 66.66 | 68 | - | 55.55 |
| Spongiform pustule | ------- | 55 | 11.9 | 4.54 | 11.9 | - | 4 | - | 74.07 |
| Munro microabscess | 29.4 | 75 | 26.19 | 22.72 | 83.33 | 44.44 | 80 | 5.3 | 81.48 |
| Papillary edema | 58.8 | 15 | 19.04 | 27.27 | - | 33.33 | | | 18.51 |
| Vascular changes | 88.2 | 10 | 14.28 | 86.36 | 97.61 | 88.88 | 80 | | 55.55 |
| Perivascular inflammation | 94.1 | 90 | 66.66 | 81.81 | 100 | 88.88 | 92 | 5.3 | 66.66 |

**[Table/Fig-12]:** Comparison of histopathological findings of psoriasis in different studies [1-3,8,9,11,12,23].

One cases (1.1%) each of lichen striatus, lichen simplex chronicus, urticaria, ILVEN, lichen planus like keratosis, pityriasis rubrapilaris and lichen planopilaris was reported in the same period.

An analysis of the clinical diagnosis with the histopathological diagnosis of the papulosquamous disorders of the skin revealed a positive correlation in 87.78% cases and a negative correlation in 12.22% cases in the present study emphasising the utility of histopathology in conclusive diagnosis [14]. Comparative analysis of clinicopathological correlation in different studies is shown in the [Table/Fig-13] [1-3,9,10,12-14,19,23,25,26].

| Reference studies | Positive correlation (%) | Negative correlation (%) |
|---|---|---|
| D' Costa G and Bharambe BM, [14] 2010 | 97.52 | 2.48 |
| Reddy RB and Krishna N, [9] 2014 | 86.5 | 13.75 |
| Chaudhary RG et al., [13] 2015 | 68.72 | 31.28 |
| Chichani S et al., [10] 2016 | 57 | 43 |
| Hosamane S et al., [3] 2016 | 46.67 | 53.33 |
| Agarwal S et al., [19] 2018 | 58 | 42 |
| Narayankar SL and, Pandit GA, [12] 2018 | 90 | 10 |
| Barman DD et al., [2] 2018 | 92 | 08 |
| Chowdari B et al., [25] 2018 | 62.96 | 37.04 |
| Bhargava R et al., [26] 2020 | 89 | 11 |
| Richa G et al., [1] 2020 | 72 | 28 |
| Ukonu BA et al., [23] 2020 | 77.4 | 22.6 |
| Present study-2020 | 87.78 | 12.22 |

**[Table/Fig-13]:** Clinicopathological correlation in various studies [1-3,9,10,12-14, 19,23,25,26].

## Limitation(s)

The major limitations in arriving histopathological diagnosis of papulosquamous lesions may be due to incomplete clinical history, atypical presentation, inappropriate biopsy site or biopsy from an early stage lesion and recurrent lesion with overlapping clinical and histopathological features. History of partial treatment with the medications and crush artifact during biopsy procedures also pose a challenge to the pathologist.

## CONCLUSION(S)

Papulosquamous lesions of skin are a heterogeneous group of complex lesions encountered in day to day practice. Recognition of these commonly encountered cutaneous problems depends upon the familiarity of clinical presentation and overlapping clinical features. Histopathological evaluation is a must to arrive at a specific diagnosis. It is of utmost importance that the communication between the dermatologist and the pathologist is optimised in the pathological diagnosis of morphologically overlapping cases of papulosquamous disorders. Accurate and specific diagnosis correlates with clinical outcome and helps in appropriate clinical intervention. A more detailed prospective and randomised controlled study in specific geographical regions helps to understand the natural course of the disease so that the risk factors are embarked upon and preventive measures are stratified.

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