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CLINICOPATHOLOGICAL STUDY OF PAPULOSQUAMOUS SKIN LESIONS

Pathology

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ABSTRACT

Background: Papulosquamous lesions, characterized by the presence of both papules and scales, are common in dermatological disorders such as psoriasis, lichen planus, and pityriasis rosea, among others. Due to their overlapping clinical features, accurate diagnosis can be challenging, especially with conditions like psoriasis that present in multiple variants. This study aimed to examine the histopathological patterns of papulosquamous skin disorders and correlate them with clinical findings. **Methods:** This descriptive study, conducted at the Department of Pathology, Mahadevappa Rampure Medical College, Kalaburagi, included 130 subjects selected based on inclusion and exclusion criteria. Data were collected using a structured proforma, and punch biopsies from hyperpigmented skin lesions were processed for histopathological examination, stained with haematoxylin and eosin. Archived histopathology slides were also reviewed for retrospective analysis. Statistical analysis was performed using SPSS software (version 30.0), with a p-value < 0.05 considered significant. Chi-square tests were used for qualitative data, and sensitivity, specificity, and accuracy were calculated. **Results:** In this study of 130 papulosquamous skin lesion cases, the most common was Lichen Planus (62 cases), papulosquamous lesions were in the age range of 8 – 80 years dominant in the age group of 31-40 years (27.7%)). Male patients were highest (56.15%). An analysis of the clinical with histopathological diagnosis of these papulosquamous skin lesions revealed highest sensitivity, specificity and accuracy of 100% each in clinically diagnosing/suspecting Lichen striatus, and Lichen simplex. Interpretation & **Conclusion:** Papulosquamous skin disorders are diverse, with distinct histological features and varied clinical presentations, making diagnosis challenging. Histopathological analysis is the key for accurate identification and differentiation, ensuring appropriate treatment.

KEYWORDS

Papulosquamous Lesion; Psoriasis; Lichen Planus; Pityriasis Rosea; Pityriasis Rubra Pilaris;

INTRODUCTION

Papulosquamous lesions represent a group of dermatologic conditions that manifest as raised, scaly, and often inflamed patches or plaques on the skin. These lesions are of significant interest in dermatological practice due to their complex nature, overlapping clinical features, and varied etiology.[1] **Papulosquamous lesions** are characterized by the simultaneous presence of both papules (small, raised bumps) and scales (dried or flaky skin). They are seen in a range of dermatological disorders, with the most common being **psoriasis**, **lichen planus**, and **pityriasis rosea**, though several other conditions can present with similar findings. As a result, accurate diagnosis and effective management are of utmost importance for improving patient outcomes.[2] A significant challenge in the management of papulosquamous skin conditions lies in the overlap of their clinical features. For instance, psoriasis and lichen planus may both present with erythematous, scaly plaques, yet they are distinct conditions with different underlying mechanisms and treatment protocols. This overlap in presentation underscores the need for a comprehensive diagnostic approach, which combines **clinical evaluation** with **histopathological examination**. By examining biopsy specimens under the microscope, pathologists can identify the characteristic changes in the skin, such as epidermal hyperplasia, inflammation, and cellular infiltration, which help in differentiating between various papulosquamous conditions.[3] The prevalence of papulosquamous lesions is substantial, with conditions like psoriasis affecting around 2-3% of the global population.[4] These conditions are associated with significant morbidity and can have a profound impact on the quality of life of affected individuals. Psoriasis, for example, is often chronic, relapsing, and associated with comorbidities like **psoriatic arthritis**, **cardiovascular disease**, and **metabolic syndrome**.[5] Similarly, **lichen planus**, another common papulosquamous condition, can cause persistent itching, skin thickening, and pigmentation changes, leading to psychological distress and impaired quality of life.[6] Despite the advancements in dermatological diagnostics and therapies, there is still a lack of clarity in understanding the exact pathophysiology of papulosquamous lesions. Various factors, including **genetics**, **immune system dysfunction**, **environmental triggers**, and **infections**, contribute to the development of these conditions. In contrast, lichen planus is believed to be an immune-mediated condition that targets the basal layer of the skin, leading to the characteristic flat-topped papules and violaceous coloration.[7] Moreover, the role of **immunohistochemical markers** in distinguishing between these conditions has gained increasing attention in recent years. Various markers, including **CD4+ T-cells**, **IL-17**, and **TNF-α**, have been implicated in the pathogenesis of papulosquamous lesions, and their expression levels may correlate with disease severity and response to therapy.[8] Despite this, there is a lack of consensus on the most reliable biomarkers for differentiating between psoriasis, lichen planus, and other similar conditions.[9] Some papulosquamous conditions like psoriasis present with numerous clinical variants and mimic various dermatological conditions.[10] Therefore these papulosquamous skin lesions have similar clinical presentation, hence present study was conducted to study histopathological patterns of papulosquamous skin lesions.

METHODOLOGY

A Descriptive study was conducted in Department of Pathology, Mahadevappa Rampure Medical College, Kalaburagi; attached with Basweshwar Teaching and General Hospital, Kalaburagi. Sample size was 130. Study subject were selected after applying inclusion and exclusion criteria. Information was collected through prepared Performa from each patient. Punch biopsy was obtained from hyperpigmented skin lesions. The biopsy samples obtained were submitted in the pathology laboratory, fixed in 10% formalin and sections stained with haematoxylin and eosin stains. For retrospective study haematoxylin and eosin-stained histopathology slides of all the skin biopsies were retrieved from the archives of pathology department and reviewed. Duration of study was 4 years. Written and informed consent of patient was taken from the patients in their own vernacular language. Identity of the patient was kept confidential.

Inclusion criteria:
1. All newly diagnosed patients with papulosquamous lesions of skin attending the OPD.
2. The patients were selected irrespective of age, sex, socioeconomic status and site of lesions.

Exclusion criteria:
1. Papulosquamous lesions with infective etiology will be excluded.
2. Scar lesions like keloid will be excluded.
3. Patients on treatment.

Study method: Descriptive study was carried out on haematoxylin and eosinstained slides to study the histopathological patterns of papulosquamous disorders of skin.

Statistical Analysis:
The data collected was analyzed statistically using SPSS software version 30.0, *P*-value less than 0.05 was considered significant. Test of significance (Chi square test) was used for qualitative analysis. Percentage of involvement was calculated manually. Graphs and charts were generated to represent the data using Microsoft office-365.

Sensitivity, Specificity, and Accuracy were calculate using the statistical software SPSS.

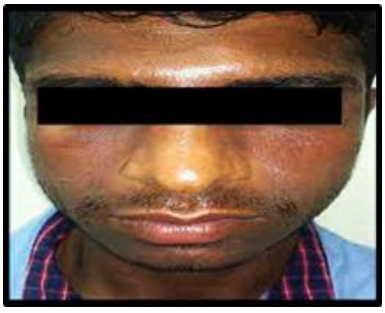

Figure 1a: Lichen Planus Pigmentosis :Pigmented plaques seen on cheeks.

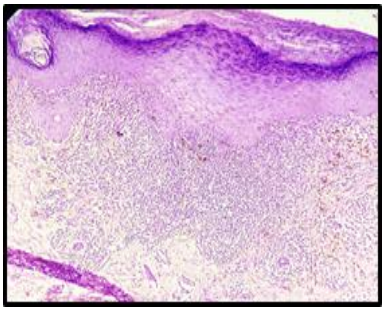

Figure 2 b.Lichen planus Pigmentosus: Microphotograph showing Hyperkeratosis , parakeratosis and elongation of reterigdes and lichenoid interface reaction[H&E, 40X]

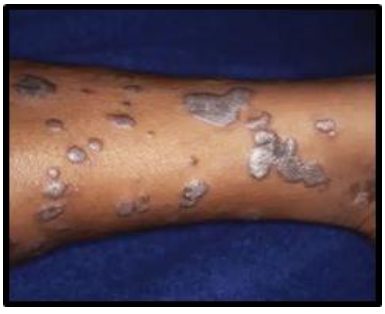

Figure 2a: Lichen Planus. Multiple violaceous papule to plaque like lesions on leg

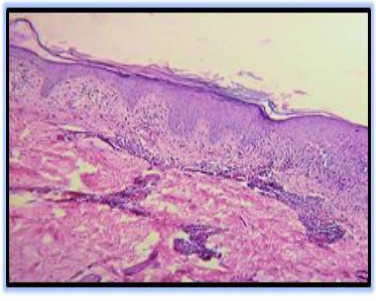

Figure 2b: Lichen Planus: Photomicrograph shows Hyper-keratosis, acanthosis, wedge shaped hypergranulosis, saw toothing of rete ridges, band-like lymphohistiocytic infiltrate obscuring the dermoepidermal junction.H&E(10x)

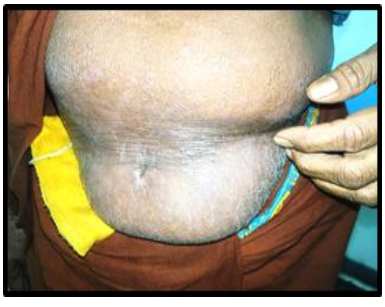

Fig 3 :Psoriasis Vulgaris : Scaly Lesions over lower abdomen.

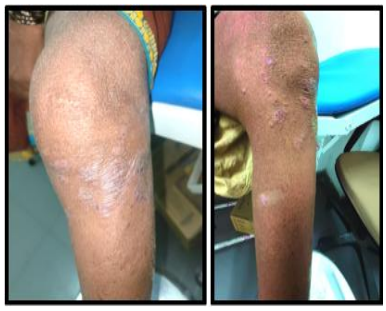

Fig 4 :Psoriasis Vulgaris :Silvery scaly Lesions over Bilateral knee

RESULTS

In the present study of 130 cases of papulosquamous skin lesions, Lichen Planus (62 cases) was the commonest, followed by Psoriasis (49 cases), Prurigo simplex (07 cases), Pityriasis rosea (06cases), Pityriasis rubra pilaris (02 cases), Lichen simplex Chronicus (02cases), Lichen striatus (01 case) and Lichen nitidus (01 case). In the present study, majority of the patients were diagnosed with lichen planus i.e. 62 cases (47.69%), followed by psoriasis i.e. 49 cases (37.70%), as represented in table-1. The diagnosed types of papulosquamous disorders were further distributed based on the patient's gender, and chi-square test was applied. This revealed insignificant results at $p < 0.05$.

TABLE-1: Gender wise distribution of Papulosquamous Skin Lesions

Papulosquamous disorder	Female n (%)	Male n (%)	Total n (%)
Psoriasis	18 (13.85%)	31 (23.85%)	49 (37.70%)
Pityriasis rosea	04 (03.08%)	02(00.77%)	06(04.61%)
Lichen planus	28 (21.54%)	34 (26.15%)	62 (47.69%)
Lichen striatus	01 (00.77%)	00 (00.00%)	01 (00.77%)
Lichen simplex	01 (00.77%)	01 (00.77%)	02 (01.54%)
Prurigo simplex	05 (03.85%)	02 (01.54%)	07 (05.38%)
Pityriasis rubra pilaris	00 (00.00%)	02 (01.54%)	02 (01.54%)
Lichen nitidus	00 (00.00%)	01 (00.77%)	01 (00.77%)
Total	57 (43.85%)	73 (56.15%)	130 (100%)

130 patients with predominantly diagnosed papulosquamous lesions (viz Psoriasis, Lichen planus, Pityriasis rosea, and Prurigo simplex) were further distributed in various age groups as shown in Table-2.

TABLE-2: Age wise distribution of patients diagnosed with Psoriasis, Lichen Planus, Pityriasis rosea & Prurigo simplex

Age group (years)	Psoriasis n (%)	Lichen planus n (%)	Pityriasis rosea n (%)	Prurigo simplex n (%)
< 20	06 (04.61%)	15 (11.54%)	01 (00.77%)	03 (02.31%)
21-30	09 (06.92%)	14 (10.77%)	01 (00.77%)	02 (01.54%)
31-40	14 (10.77%)	18 (13.85%)	03 (02.31%)	00 (00.00%)
41-50	12 (09.23%)	05 (03.85%)	00 (00.00%)	01 (00.77%)
51-60	06 (04.61%)	06 (04.61%)	01 (00.77%)	00 (00.00%)
> 60	02 (01.54%)	04 (03.08%)	00 (00.00%)	01 (00.77%)
Total	49 (37.70%)	62 (47.69%)	06 (04.62%)	07 (05.38%)
	2 X = 16.02 P value: 0.38 P value > 0.05 (not significant)			

In the present study involving 130 patients, the statistical outcome was calculated in terms of ***sensitivity*** **(SE)**, ***specificity*** **(SP),** and***accuracy*** of various papulosquamous disorders in relation to their clinical diagnosis correlated with their histopathological findings as shown in table-3. The histopathological diagnosis was considered to be the gold standard (as it provides a confirmatory diagnosis), and clinical diagnosis was compared with respective histopathological diagnosis (gold standard) of individual papulosquamous disorder.

Table-3: Statistical outcome of the clinical diagnosis & histopathological correlation

Papulosquamous disorder	Findings				Statistics		
	TP (a)	FN (b)	FP (c)	TN (d)	SE (%)	SP %	accuracy

Psoriasis	41	08	15	066	83.67 %	81.48 %	82.31 %
Pityriasis rosea	3	3	1	123	50.00 %	99.19 %	96.92 %
Lichen planus	40	22	3	065	64.52 %	95.59 %	80.77 %
Lichen striatus	1	0	0	129	100.00 %	100.0 0%	100.0 0%
Lichen simplex	2	0	0	128	100.00 %	100.0 0%	100.0 0%
Prurigo simplex	6	1	3	120	85.71 %	97.56 %	96.92 %
Pityriasis rubra pilaris	0	2	0	128	00.00 %	100.0 0%	98.46 %
Lichen nitidus	0	1	0	129	00.00 %	100.0 0%	99.23 %

DISCUSSION

In the present study 62 cases (47.69%) were classical Lichen Planus. Majority of the cases showed hyperkeratosis, irregular acanthosis with saw toothed rete ridges, hypergranulosis, vacuolar degeneration of basal cells and dermal band like mononuclear infiltrate and pigment incontinence. These findings are consistent with the classic description of lichen planus given by **Parvatala A et al (2024)**[11]. **K. Chabbi et al (2022)**[13] reported maximum incidence of psoriasis (42) in the age group of 31–60 years (61%). **Shimray R et al. (2021)**[15], reported it to be common in 31–50 years of age group for psoriasis. **J. Gandhi et al. (2021)**[14] The study results revealed that, papulosquamous disorders constituted 2.9% of all paediatric age group (2-14years) psoriasis was the most common disease that was found. **Shimray R et al. (2021)**[17] studied 4 cases of pityriasis rosea, 2 were in 2nd decade, 2 cases were in 3rd decade respectively. This study had 2 males and 2 females. **Sabhlok A. et al. (2024)**[12], had 18 cases of Pityriasis rosea. The most common age group affected was 21-30 years. 13 cases were males and 05 were in female. In the present study 06 cases of Pityriasis rosea were studied and 04 were females and 02 were males. Most common age group was in 31-40 year. **Parvatala A et al. (2024)**[11], studied 02 cases of prurigo simplex, all cases were in 3rd decade of life. This study had male preponderance. **Sabhlok A. et al. (2024)**[12] had 07 cases of Pityriasis Rubra Pilaris. The most common age group affected was 21-30 years. 06 cases were males and 01 case was female. In the present study 02 cases of Pityriasis rubra pilaris were studied and all were females. Most common age group <20 year. In present study one case of Lichen nitidus in 40 years male was encountered. It commonly occurs in in males. Lichen nitidus clinically can be confused and coexist with Lichen planus. Other conditions like sarcoidosis, flat warts, keratosis pilaris and Lichen scrofulosorum can be clinical differential for Lichen nitidus.

CONCLUSION:

Papulosquamous skin disorders are diverse, with distinct histological features and varied clinical presentations, making diagnosis challenging. Histopathological analysis is the key for accurate identification and differentiation, ensuring appropriate treatment. Misdiagnosis can lead to ineffective treatment and worsen outcomes. This study highlights the importance of combining clinical and histological findings to guide tailored, effective treatments, improving patient care.

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