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Histomorphological spectrum of non-infectious papulosquamous skin lesions:A retrospective study at a tertiary care institute

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ABSTRACT
Background: Papulosquamous skin lesions are a heterogeneous group of disorders of unknown primary etiology. These lesions have certain common clinical presentations, often causing clinical diagnosis difficult. Histopathological examination is considered as gold standard in the diagnosis in various dermatological disorders. However, clinical details are also important for a plausible diagnosis.
Aims and objectives: 1.To study the histopathological patterns of non-infectious erythematous papulosquamous lesions.
2.To estimate the age and sex distribution and frequency of various types of such lesions with respect to each other among skin biopsies.
Material and Methods: It is a retrospective study consisting of 125 clinically diagnosed/suspected non-infectious, erythematous papulosquamous skin lesions. Paraffin embedded tissue blocks and clinical details from requisition forms are retrieved. Sections are cut, stained with haematoxylene and eosin followed by microscopic examination.
Results: Non-infectious papulosquamous lesion accounts for 40.7% of all skin biopsies during the study period in our institute. Psoriasis (42.4%) was the most common histopathological diagnosis followed by lichen planus (37.6%). Females (64.8%) are more affected than males. Extremities are the most commonly involved site (61.6%). Clinicopathological correlation was positive in 80.8%.
Conclusions: Correlating histopathological diagnosis with the clinical details will provide a conclusive diagnosis in various dermatological disorders. Specific diagnosis is important as the treatment and prognosis of each entity tends to be disease specific.

Keywords: Papulosquamous lesions, Psoriasis, Lichen planus, clinicopathological correlation

I. INTRODUCTION-

Skin is the largest organ of the body which constitutes about 15% of the total body weight of an adult human.[1] Skin diseases are one of the most commonly encountered health problems in india.[2,3] Its prevalence ranges from 6.3-11.6%.[2,4] Like other organ system, diagnosis of skin disease needs history and examination. The visibility of skin can make an instant diagnosis in some cases.[5] Papulaosquamous disorders are heterogenous group of disorders whose primary etiology is unknown and comprise the largest group of disease encountered by dermatologist.[5,6] These group consists of a diverse group of inflammatory conditions of the skin characterised by scaly papules and plagues.[7,8] The papulosquamous lesions include a complex spectrum of conditions like psoriasis, lichen planus along with rare conditions like pityriasis rosea, parasoriasis, pityriasis rubra pilaris, prurigo nodularis, and lichen simplex chronicus.[9,10] As this group of disorders are all characterised by scaly papules, confusion may result in the clinical diagnosis.[7,11] Some papulosquamous conditions like psoriasis present with numerous clinical variants and can mimic other dermatological conditions.[9,10] Histopathological examination is considered as gold standard in diagnosing dermatological lesions but it has its limitations.[7,11] Limitations of histopathology may be due to overlapping of clinical and histopathological features. Therefore histopathological reporting should be done after taking clinical history.[8,12] Definitive and specific histopatholigical diagnosis is important as treatment and prognosis varies respectively.[9,13]

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Aims and objectives-

1.To study the histopathological patterns of non-infectious erythematous papulosquamous lesions.

2.To estimate the age and sex distribution and frequency of various types of such lesions with respect to each other among skin biopsies.

II. MATERIALS AND METHODS :

It is a retrospective study comprised of skin biopsies from 125 clinically diagnosed or suspected non-infectious, erythematous papulosquamous skin lesions which was received in the department of pathology, Jawaharlal Nehru institute of medical sciences, Imphal between 1st January 2019 to 1st January 2020. Paraffin embedded tissue blocks and clinical details from requisition forms were retrieved. Sections are cut, stained with haematoxylene and eosin followed by microscopic examination.

Inclusion criteria-

Cases included in the study were those with clinical features of non-infectious erythematous papulosquamous skin disorders.

Exclusion critera-

Inadequate skin biopsies, skin disorders with infective etiology and other skin lesions which are not papulosquamous disorder were excluded.

III. RESULTS-

Non-infectious erythematous papulosquamous skin lesions comprised of 40.7% of all skin biopsies during the study period in our institute. Majority of the cases were in the age group of 21 to 30 years (24 cases-19.2%) followed by 51 to 60 (23 cases-18.4%) and lowest were in the age group of 71 to 80 years(6 cases-4.8%)
(table 1).

Age in years	numbers	Percentage
0-10	7	5.6
11-20	14	11.2
21-30	24	19.2
31-40	16	12.8
41-50	22	17.6
51-60	23	18.4
61-70	13	10.4
71-80	6	4.8
Total	125	100

Table 1. Age distribution in papulosquamous lesions

Females were more commonly affected with 81 cases (64.8%) compared to males with 44 cases (35.2%) with male to female ratio of 1:1.8. Extremities are the most commonly involved site with 77 cases (61.6%), followed by 30 cases with lesions in the head, neck and face (24%), 14 cases with trunk lesions (11.2%), 2 cases with genital lesions (1.6%) and 1 case each with lesions in the buccal mucosa and lesions involving multiple sites (0.8% each). Out of the 125 skin biopsies in the present study, psoriasis was the most common histopathological diagnosis with 53 cases (42.4%), followed by 47 cases of lichen planus (37.6%). Majority of the skin lesions occur in females (table 2).

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Table 2. Sex distribution in papulosquamous lesions

Histopathological diagnosis	Number of cases	Percentage (total)	male	percentage	female	percentage
Psoriasis	53	42.4	24	45.28	29	54.7
Lichen planus	47	37.6	12	25.5	35	74.5
Lichen simplex chronicus	5	3.75	0	0	5	100
Psoriasiform dermatitis/small plague parapsoriasis	4	3.0	1	25	3	75
Pityriasis lichenoides chronica	3	2.2	1	33.3	2	66.67
Lichen striatus	2	1.50	0	0	2	100
Seborriec dermatitis	2	1.50	0	0	2	100
Lichen nitidus	1	0.75	1	100	0	0
Ashy dermatitis	1	0.75	0	0	1	100
sebopsoriasis	1	0.75	1	100	0	0
Fungal lesion plantar	1	0.75	0	0	1	100
Lymphocytic vasculitis	1	0.75	1	100	0	0
pmle	1	0.75	1	100	0	0
Atopic dermatitis with hyperpigmentation	1	0.75	1	100	0	0
Onychomychosis	1	0.75	0	0	1	100
Prurigo nodularis	1	0.75	1	100	0	0
Total	125		44(35.2%)		81(64.8%)	

Out of the 125 cases in the present study, clinicopathological correlation was positive in 101 cases (80.8%) whereas 24 cases (19.2%) show no correlation . Out of 52 cases of psoriasis clinical and pathological correlation was in seen in 45 cases (86.5%) whereas among 46 cases of clinically suspected lichen planus 42(91.3%) cases show clinicopathological correlation which was statistically significant (p=0.00007) (table 3 and 4).

Clinical diagnosis	Number of cases	Histopathological diagnosis			
		Correlation		No correlation	
		number	percentage	number	percentage
Psoriasis	52	45	86.5	7	13.5
Lichen planus	46	42	91.3	4	8.7
Small plague parapsoriasis/psoriasifom Dermatitis	1	0	0	1	100
Lichen simplex chronicus	4	4	100	0	0
Pityriasis lichenoides chronica	3	3	100	0	0

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Lichen striatus	2	2	100	0	0
Lichen nitidus	1	1	100	0	
Seborrhiec dermatitis	2	1	50	1	50
Ashy dermatitis	1	1	100	0	0
Chronic eczema	3	0	0	3	100
Lichen planus et atrophicus	2	0	0	2	100
Prurigo nodularis	1	1	100	0	0
Mastocytosis	1	0	0	1	100
Sebopsoriasis	1	1	100	0	0
DLE	1	0	0	1	100
Subacute prurigo	1	0	0	1	100
Papular urticaria	1	0	0	1	100
Pityriasis rubra pilaris	1	0	0	1	100
Lichenoid drug reaction	1	0	0	1	100
Total	125	101(80.8%)		24(19.2%)	

Table 3. Correlation of clinical diagnosis with histopathological diagnosis

clinical diagnosis	Histopathological correlation (%)	No Histopathplogical correlation(%)	Chi-square test
Psoriasis	45 (86.5%)	7 (13.5%)	Value=18.96
Lichen planus	42 (91.3%)	4 (8.7%)	
Others	14 (51.9%)	13(48.1%)	df=2
			P=0.00007

Table 4. Correlation between histopathological and clinical diagnosis

Of these 7 cases of clinically diagnosed psoriasis, a histopathological diagnosis of small plaque parapsoriasis(4 cases), lymphocytic vasculitis(1 case) and fungal lesion (2 case) was made. 3 cases each of clinically diagnosed lichen planus and eczema turned out to be psoriasis histologically. 2 cases of lichen planus were also histologically proven as 1 case each of small plaque parapsoriasis and polymorphous light eruption(PMLE). 2 cases of lichen sclerosis et atrophicus, 1 case each of pityriasis rubra pillaris, urticaria, subacute prurigo were histologically found to be lichen simplex chronicus, atopic dermatitis, lichen planus pigmentosus and guttate psoriasis respectively. Lichen planus was histologically diagnosed in 1 case each of lichenoid drug reaction, discoid lupus erythematosus, mastocytosis and seborrheic dermatitis.

Discussion: Scaling papules and plaques are the characteristics of papulosquamous disorders. Many of such skin lesions have similar clinical presentation. Some of the different entities may also share similar histopathological features. Therefore, specific diagnosis of papulosquamous lesions by correlating the histopathological findings with detailed clinical history is highly essential as the treatment and prognosis varies widely and is disease specific.[2,9] Worldwide, histopathological diagnosis is considered to be the gold standard for diagnosis of skin lesions. However , the diagnostic specificity is greatly improved by correlating histopathological and clinical findings.[14,15]

Non-infectious papulosquamous skin disorders comprised 40.7% of the total number of skin biopsies at our institute during the study period which is concordant with studies conducted by D'costa et al.[10] However, lower incidence was observed by other authers.[16,17] Such variation may be due to variation in sample size, social and geographic factors.

In the present study, overall, the females are more affected than males with a male to female ratio of 1:1.8. Except one case each of lichen nitidus, lymphocytic vasculitis and polymorphous light eruption (PMLE) which occur in males, the rest of the specific entities belonging to the papulosquamous lesions occur in females. Similar findings were observed in other studies[1,14,16]

International Journal Dental and Medical Sciences Research
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whereas male preponderance was reported by Hosamane etal[7], D'costa G et al[10] and Kaur G et al.[18] Majority of the cases are seen in the 21-30 years age group which is compatible with studies conducted by other workers.[14,2,6] However, some other authors reported maximum number of cases as the 30-40 yrs age group.[5,10]

Maximum number of the patients had lesions in the extremities (61.6%) followed by lesions in the face, head and neck regions (24%). D'costa G et al[10] also found maximum lesions in the extremities but the second most common site was trunk.

Psoriasis was the most common histopathological diagnosis (42.4%) in the present study which is followed by lichen planus (37.6%) which is agreeable to other studies.[5,13,18] However, these studies reported male predominance unlike the present study where more females are affected. Out of the 53 cases of psoriasis except 2 cases of pustular psoriasis and 1 case of guttate psoriasis, all cases are psoriasis vulgaris.

Psoriasis vulgaris histologically show hyperkeratosis, parakeratosis, attenuated granular layer, acanthosis with regular elongation of rete ridges, suprapapillary thinning, Munro's microabscess, spongioform pustule of kogoj, perivascular and periadnexal mononuclear inflammatory cell infiltrates (Fig 1 A and B). Similar findings are also observed by D'costa G et al.[10]

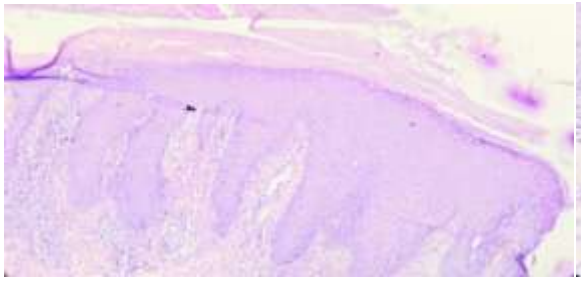

Fig.1(A) Psoriasis showing hyperkeratosis, acanthosis with regular elongation rete-ridges, H&E, 10X

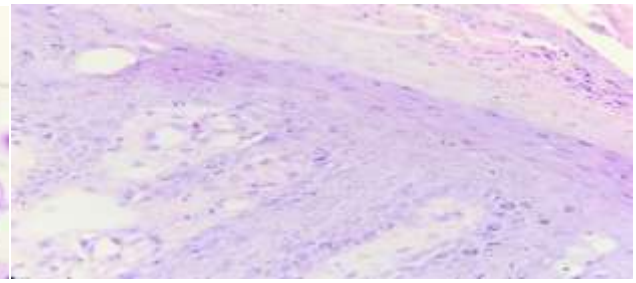

Fig.1(B) Psoriasis showing Monro's microabscess and dilated vessels in the dermal papillae,H&E, 40X

Classical lichen planus (34 cases) which from the majority of the lichenoid lesions in our study show hyperkeratosis, hypergranulosis, irregular acanthosis, vascuolar alteration of the basal layer with band like mononuclear cell infiltrate in the upper dermis though the amount of cellular infiltrate vary , depending upon the age of the lesion (Fig. 2 A and B).

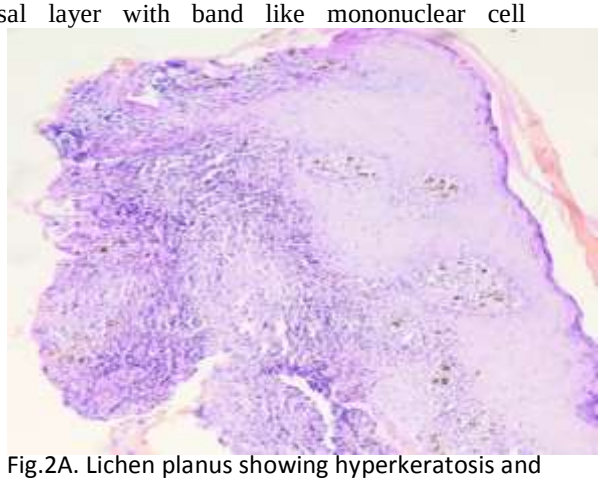

Fig.2A. Lichen planus showing hyperkeratosis and dense band of lymphocytic infiltrations in the superficial dermis, H &E, X10

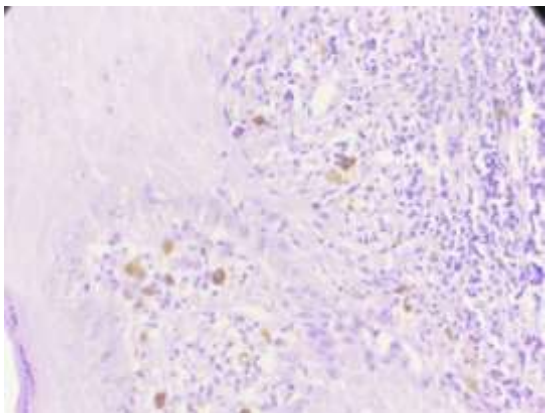

Fig.2B. Lichen planus showing melanophages, pigment particles in upper dermis,H&E,X40

Our findings correlates with other studies described in literature.[2,13,20] Max joseph spaces and civatte bodies are also seen in 5 cases of lichen planus which is concordant with other studies.[9,19]

Lichen simplex chronicus; observed in 5 cases, show hyperkeratosis, foci of parakeratosis, acanthosis with irregular elongation of rete ridges, hypergranulosis, papillary dermal fibrosis with perivascular and interstitial inflammatory cell infiltration. Such observation are also made by Gurpal Kaur etal.[18]

Small plaque parapsoriasis was also seen in 4 cases (3.2%). Such findings are also reported by other workers.[9,13,14] However, Gupta Richa et al[2] found lower incidence in their study. Epidermal atrophy, focal parakeratosis, perivascular dermal mononuclear inflammatory cell infiltrate with exocytosis in the epidermis are typical histological findings.

Pityriasis lichenoid chronica, which has male predilection was also observed in 3 cases (2 males, 1 female) consisting of 2.4% of total cases. Our findings correlate with that of other studies.[2,14] Cigiri Saritha et al[1] observed higher incidence (6.97%) in their study. Histologically, focal parakeratosis, vacuolar interface changes, wedge shaped pattern of dermal lymphocytic infiltration with exocytosis and lymphocytes in the parakeratotic layer are seen.

Two cases of lichen striatus (1.6%) with histological findings of acanthosis, focal parakeratosis, spongiosis and exocytosis of lymphocytes are included in the present study. Our findings are compatible with that of Richa et al.[2] Higher incidence 8.3% were reported by Barman DD et al.[16]

Seborrheic dermatitis was seen in 2 cases (1.6%) with histological features like superficial perivascular and perifollicular inflammatory cell infiltrate, psoriasiform epidermal hyperplasia and parakeratosis around the follicular opening. Higher incidence (4%) was observed by Agrawal S et al.[5]

1 case (0.8%) each of lichen nitidus, prurigo nodularis, Erythema dyschronicum perstans (Ashy dermatitis), sebopsoriasis, lymphocytic vasculitis, PMLE, atopic dermatitis and 2 fungal lesions were also observed in the present study. 2.6% incidence of lichen nitidus was observed by other workers.[2,20] Higher incidence of prurigo nodularis was also reported by Cigiri Saritha et al[1] and Md Younas et al.[20] Barman DD et al[16] observed 2% incidence of ashy dermatitis in their studies.

A positive clinicopathological concordance was observed in 101 cases (80.8%) which correlates with other studies described in literature.[12,20] D'costa G et al observed 97.50% clinicopathological correlation whereas 46.67%, 68.72% and 62.96% correlation were observed by Hosmanane et al[7], Balagi C et al[9] and Chawdari etal.[14] No clinicopathological discordance was observed in 24 cases (19.2%) in the present study. The clinicopathological discordance may be due to overlapping of clinical features, biopsy taken at early stage of the disease and treatment received prior to biopsy.

IV. CONCLUSION:

Overlapping of clinical pattern and distribution of papulosquamous disorders often makes clinical diagnosis difficult. Similarly, many of the papulosquamous lesions share similar histopathological features. Correlating histopathological diagnosis with the clinical details will provide a conclusive diagnosis. Specific diagnosis is important as the treatment and prognosis of each entity tends to be disease specific.

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