

Analysis of Papulosquamous Skin Disorders in Skin Biopsies: A Clinico Histopathological Study

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Abstract

Background: Papulosquamous disorders assume considerable importance because of their frequency of occurrence. As all the lesions are characterized by scaling papules and plaques, clinical confusion may occur in their diagnosis and hence these lesions are commonly misdiagnosed. Separation of each of these lesions becomes important because, for each disease, the treatment and prognosis is disease specific. **Aim:** To analyse various papulosquamous disorders of skin, to study the histopathological features and also to know the correlation between clinical and histopathological diagnosis. **Materials and Methods:** This study was done in the Department of Pathology, Narayana medical college and hospital, Nellore, Andhrapradesh, India for a period of 1 year from June 2016 to June 2017. Total 108 cases of papulosquamous skin disorders were studied. **Results:** Psoriasis was the commonest lesion (53.70%), followed by Lichen planus (29.63%), Pityriasis rubra pilaris (7.41%), Lichen nitidus (5.55%) and Parapsoriasis (3.70%). Papulosquamous skin lesions were common in 21-40 years age group (38.9%). Papulosquamous skin lesions were more common in males, than females with a male:female ratio of 1.7:1. Both age and sex distribution of cases showed significant p value < 0.001. In our study, histopathology confirmed the clinical diagnosis in 42.6% of cases. Histopathology gave the diagnosis when differential diagnosis were there in 51.85% of cases and in 5.55% of cases, histopathological diagnosis was different from clinical diagnosis. **Conclusion:** Our study concludes that histopathology is the gold standard investigation for diagnosis, categorization and clinicopathological correlation of papulosquamous skin disorders.

Keywords: Histopathology; Lichenplanus; Papulosquamous Disorders; Psoriasis; Skin.

Introduction

Papulosquamous disorders are the largest conglomerate group of skin diseases seen by the Dermatologist. They are characterized by scaling papules or plaques [1]. The diseases which are included under these papulosquamous disorders are Psoriasis, Parapsoriasis, Lichen planus, Pityriasis rubrapilaris, Lichen nitidus, Lichen striatus, Pityriasis rosea and Gianotti-crosti syndrome [2]. Papulosquamous disorders assume considerable importance because of their frequency of occurrence [1]. There is an overlap in morphology and distribution of these lesions and may resemble a similar disorder

of the group leading to difficulty in their diagnosis. Hence these lesions are commonly misdiagnosed [3]. It is also important to correlate with history and clinical findings for conclusive diagnosis and this helps the clinicians for definitive treatment. This study was done to analyse various papulosquamous disorders of skin and to study the histopathological features of papulosquamous skin lesions and also to know the correlation between clinical and histopathological diagnosis of papulosquamous skin lesions.

Materials and Methods

This study was done in the Department of Pathology, Narayana medical college and hospital, Nellore, Andhra Pradesh, India. It was a prospective study, done for a period of one year, from June 2016 to June 2017. Total 108 cases of papulosquamous skin

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disorders were studied. Cases which were clinically suspected as papulosquamous skin disorders were taken into consideration. Cases were taken up for study after appropriate consent. A brief history and dermatological examination was carried out. Skin punch biopsies were taken and fixed in 10% formalin, followed by processing and embedding. Paraffin embedded blocks were cut into 4 microns thin sections and stained with Haematoxylin and Eosin. In addition, special stains were done where ever necessary. Microscopic evaluation and histopathology reporting was done by two pathologists, individually to reduce observer bias. Statistical analysis for calculating the p value was done by chi square test and fisher's exact test.

Results

Out of 108 cases of Papulosquamous skin lesions, Psoriasis was the commonest, diagnosed in 58 cases (53.70%), followed by Lichen planus 32 cases (29.63%), Pityriasis rubra pilaris 8 cases (7.41%), Lichen nitidus 6 cases (5.55 %), Parapsoriasis 4 cases (3.70 %) and none of the cases were diagnosed as Pityriasis rosea, Lichen striatus and Gianotti - Crosti syndrome. Incidence and Sex Distribution of Papulosquamous skin lesions was assessed (Table 1). Statistically significant difference is there in the disease pattern between males and females with a p value of < 0.001.

The Age Distribution of Papulosquamous skin lesions was studied (Table 2). Of all the groups, maximum number of cases (42 cases, 38.9%) were in 21-40 years age group. There is significant difference statistically in the disease pattern among different age groups with a p value of <0.001.

Out of 58 diagnosed cases of Psoriasis, 48 cases were subtyped as Psoriasis vulgaris. 4 cases were Erythrodermic psoriasis, 4 cases were Palmoplantar psoriasis and 2 cases were Eruptive psoriasis.

Sub typing was done among the 32 diagnosed cases of Lichen planus, in which 18 cases were Classical Lichen planus, 4 cases were Hypertrophic Lichen planus, 6 cases were Follicular Lichen planus, 2 cases were Atrophic Lichen planus and 2 cases were Actinic Lichen planus.

Sites involved by Papulosquamous skin lesions was studied. Commonest site for Psoriasis was extensor aspect of lower limbs (58.62%), followed by extensor aspect of upper limbs (34.48%), trunk (10.34%), nails, scalp, palms, soles (6.89% each), head and neck (3.44%). Commonest site for Lichen planus was flexor aspect of upper limbs (50%), followed by flexor aspect

of lower limbs (37.5%). Scalp, trunk, extensor aspect of upper limbs (12.5% each). Head and neck, genitalia and extensor aspect of lower limbs (6.25% each). Both extensor aspect (75%) and flexor aspect of lower limbs (25%) were involved in Pityriasis rubra pilaris. In Lichen nitidus, extensor aspect of upper limbs (50%) and extensor aspect of lower limbs were involved (50%). Trunk (75%) and extensor aspect of lower limbs (25%) were involved in Parapsoriasis.

Symptomatology was studied in Papulosquamous skin lesions. Out of 108 cases, 26 (24%) cases were asymptomatic and 82 (76%) cases were symptomatic. The commonest symptom in Psoriasis was itching (82.75%), followed by oozing (13.79%), burning sensation (10.34%) and pain (6.89%). Seasonal variation was seen in 24.13% of cases, in which there was increased exacerbation of symptoms in winter and asymptomatic (13.79%). The commonest symptom in Lichen planus was itching (62.5%), followed by pain (12.5%), oozing (6.25%) and asymptomatic (25%). In Pityriasis rubra pilaris, symptoms were itching (50%), oozing (25%) and other 25% of cases were asymptomatic. In Lichen nitidus, majority were asymptomatic (83.3%) and itching seen in 16.6% of cases and in Parapsoriasis, symptoms were itching (75%) and asymptomatic (25%).

Correlation between histopathological diagnosis of papulosquamous skin disorders and its clinical diagnosis was studied (Table 3). Out of 58 cases of Psoriasis, 30 cases had same clinical and histopathological diagnosis (51.72%). Histopathology gave diagnosis of psoriasis in 26 cases (44.84%), when differential diagnosis of 2 or more diseases were kept by clinicians. In 2 cases (3.44%), histopathological diagnosis and its clinical diagnosis was different.

Out of 32 cases diagnosed as Lichen planus, only 12 cases (37.5%) had same clinical and histopathological diagnosis. Histopathology gave diagnosis of Lichen planus in 20 cases (62.5%), when differential diagnosis of 2 or more diseases were kept.

Out of 8 diagnosed cases of Pityriasis rubra pilaris, only 2 cases (25%) had same clinical and histopathological diagnosis. Histopathology gave diagnosis of pityriasis rubrapilaris in 6 cases (75%), when two differential diagnosis were kept.

Out of 6 cases diagnosed as Lichen nitidus, 2 cases (33.3%) had same clinical and histopathological diagnosis. Histopathology gave diagnosis when two differential diagnosis were there in 2 cases (33.3%) and in 2 cases (33.3%) histopathological diagnosis was different from clinical diagnosis.

Out of 4 cases diagnosed as Parapsoriasis, 2 cases (50%) had different histopathological and clinical

diagnosis and histopathology gave diagnosis of parapsoriasis in 2 cases (50%) when two differential diagnosis were there.

Histopathological features of Psoriasis were studied among the 58 diagnosed cases. In our study, all the cases showed acanthosis, hyperkeratosis, elongated rete ridges (Fig.1) and perivascular inflammatory infiltrate (100%). Majority of the cases had parakeratosis (89.65%), microabscess (65.5%), dilated and tortuous capillaries (72.41%). Half of cases had suprapapillary thinning (55.17%), hypogranulosis (48.27%) and spongiosis (41.37%). Few cases had spongiiform pustule (34.48%), exocytosis (27.58%), fused rete ridges (24.13%), edema in papillary dermis (20.68%) and hemorrhages in the reticular dermis (13.79%).

Histopathological features of Lichen planus were studied among the 32 diagnosed cases. In our study, all the cases had band like lymphocytic inflammatory infiltrate in dermis (Fig. 2) and vacuolar degeneration of basal layer (100%). Majority of the cases had hypergranulosis (81.25%) and perivascular inflammatory infiltrate in dermis (81.25%). 50% of cases had hyperkeratosis, saw tooth rete ridges, dermal melanophages and Civatte bodies. Few cases had parakeratosis (18.75%), acanthosis (13.79%), epidermal atrophy (13.79%), Max Joseph spaces (12.5%), papillomatosis (6.25%), perifollicular chronic inflammatory infiltrate (18.75%), perifollicular fibrosis (12.5%) and congested blood vessels (13.79%). Mild

dysplasia was also noted in 12.5% of cases in our study.

Histopathological features of Pityriasis rubra pilaris were studied among the 8 diagnosed cases. Orthokeratosis, acanthosis, broadened rete ridges, follicular plugging, perifollicular parakeratosis, perivascular and perifollicular inflammation were seen in 6 cases. Parakeratosis, mild spongiosis and hypogranulosis were seen in 2 cases.

Histopathological features of Lichen nitidus were studied among the 6 diagnosed cases. Parakeratosis, elongated rete ridges, widened dermal papillae, granulomas containing lymphohistiocytic infiltrate and giant cells, perivascular inflammatory infiltrate were seen in 5 cases. Hyperkeratosis, vacuolar alteration of basal layer were seen in 1 case.

Histopathological features were studied in 4 diagnosed cases of Small plaque parapsoriasis. All the cases showed acanthosis, parakeratosis, spongiosis, exocytosis of lymphocytes and perivascular lymphohistiocytic infiltrate. Correlation between clinical and histopathological diagnosis of papulosquamous skin lesions were studied. Out of 108 cases of papulosquamous skin lesions, 46 cases (42.6%) had same clinical and histopathological diagnosis. In 56 cases (51.85%), histopathology gave diagnosis, when two or more differential diagnosis were there. In 6 cases (5.55%), histopathological diagnosis was different from clinical diagnosis.

Table 1: Incidence and sex distribution of Papulosquamous skin lesions

Sex	Psoriasis	Lichen planus	Pityriasis rubra pilaris	Lichen nitidus	Parapsoriasis	Total cases	Percentage
Male	38(65.52%)	18 (56.25%)	6 (75%)	4 (66.66%)	2(50%)	68	63%
Female	20 (34.48%)	14 (43.75%)	2(25%)	2 (33.33%)	2(50%)	40	37%
Total	58	32	8	6	4	108	100%
M:F ratio	1.9:1	1.2:1	3:1	2:1	1:1	1.7:1	
	Chi square test p value		-	< 0.001 significant			

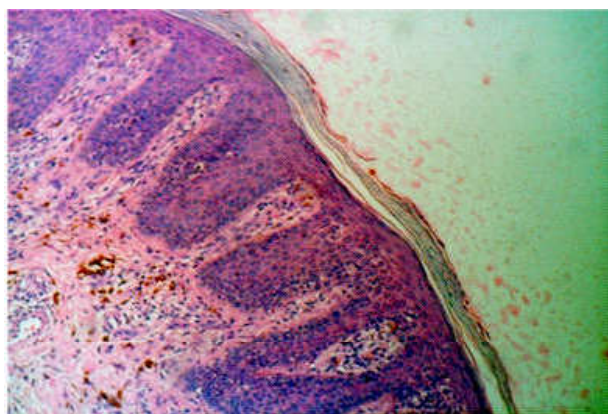


Fig. 1: Elongated rete ridges in Psoriasis vulgaris (Haematoxylin and eosin, x 100)

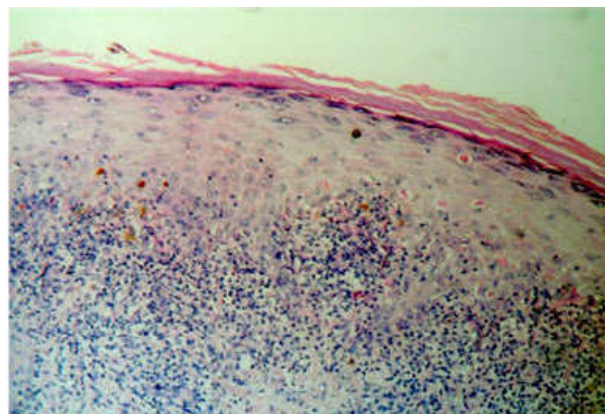


Fig. 2: Band like lymphocytic infiltrate in Lichen planus (Haematoxylin and eosin, x 100)

Table 2: Age Distribution of Papulosquamous skin Lesions

Age group	Psoriasis		Lichen planus		Pityriasis rubra pilaris		Lichen nitidus		Parapsoriasis		Total cases	%
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%		
1-20	8	13.8	4	12.5	-	-	6	100	4	100	22	20.4
21-40	20	34.5	16	50	6	75	-	-	-	-	42	38.9
41-60	18	31	12	37.5	2	25	-	-	-	-	32	29.6
> 60	12	20.6	-	-	-	-	-	-	-	-	12	11.1
Total	58		32		8		6		4		108	100
Fisher's Exact test p value - < 0.001 significant												

Table 3: Correlation between histopathological diagnosis of Papulosquamous skin disorders and its clinical diagnosis

Clinical Diagnosis	Histopathological diagnosis	No. of cases
Psoriasis		
Psoriasis vulgaris	Psoriasis vulgaris	30
Psoriasis / Eczema	Psoriasis vulgaris	8
Lichen planus / Pityriasis rosea	Eruptive psoriasis	2
Hypertrophic lichen planus / Psoriasis	Psoriasis vulgaris	10
Erythrodermic psoriasis / Airborne contact dermatitis	Erythrodermic psoriasis	2
Erythroderma/Erythrodermic psoriasis	Erythrodermic psoriasis	2
Palmoplantar psoriasis / chronic eczema / Hypertrophic lichen planus	Palmoplantar psoriasis	2
Palmoplantar psoriasis / Palmoplantar keratoderma / Tinea manum and pedis	Palmoplantar psoriasis	2
Lichenplanus		
Lichen planus	Lichen planus	10
Lichen planus / Lichen amyloidosis	Lichen planus	4
Lichen Amyloidosis / Actinic Lichenplanus	Actinic Lichen planus	2
Lichen planus / Lichen nitidus	Lichen planus	2
Prurigonodularis / Lichen Amyloidosis/ Hypertrophic lichen planus	Hypertrophic Lichen planus	2
Hypertrophic lichen planus / Psoriasis	Hypertrophic Lichen planus	2
Lichen planopilaris / Fibrosing alopecia	Lichen plano pilaris	2
Lichen planopilaris / keratosis pilaris / Lichen spinulosis	Lichen plano pilaris	4
Lichen planus /Discoid lupus erythematosus/ Lichenoid drug Eruption	Lichen planus	2
Atrophic lichen planus	Atrophic lichen planus	2
Pityriasis Rubra Pilaris		
Pityriasis rubra pilaris	Pityriasis rubra pilaris	2
Pityriasis rubrapilaris / Psoriasis	Pityriasis rubrapilaris	2
Pityriasis rubrapilaris / Lichen plano pilaris	Pityriasis rubrapilaris	4
Lichen Nitidus		
Lichen nitidus	Lichen nitidus	2
Lichen nitidus / Lichen planus	Lichen nitidus	1
Lichen nitidus / Psoriasis	Lichen nitidus	1
Lichen planus	Lichen nitidus	2
Para Psoriasis		
Pityriasis lichenoides chronica / Parapsoriasis	Parapsoriasis	2
Pityriasis rosea	Parapsoriasis	2
Total number of cases		108

Discussion

The skin is the largest organ of the body, making up to 15% of our body weight [4]. Incidence of papulosquamous disorders is 6.18% in general population [5]. Papulosquamous disorders are complex to diagnose because the skin has a limited number of reaction patterns with which it can respond

to pathological stimuli [6]. As all the lesions are characterized by scaling papules and plaques, clinical confusion may occur in their diagnosis. Separation of each of these lesions becomes important because, for each disease, the treatment and prognosis is disease specific [1].

In our study, Psoriasis was the commonest lesion (53.70%), followed by Lichen planus (29.63%),

Pityriasis rubra pilaris (7.41%), Lichen nitidus (5.55%) and Parapsoriasis (3.70%). Our study was similar to the study done by Mohammad Younas et al [1] in which Psoriasis was the commonest lesion (36.8%) followed by Lichen planus (31.5%), Pityriasis rubra pilaris (5.3%), Lichen nitidus (2.6%). Grace D costa et al [6] reported Lichen planus as the commonest lesion (48.85%), followed by Psoriasis (23.6%), Pityriasis rubrapilaris (4.34%), Lichen nitidus (2.48%), Parapsoriasis (1.24%).

Over all, Papulo squamous lesions were common in 21-40 years age group (38.9%), in our study. Mohammed Younas et al [1] and Grace D costa et al [6] reported majority of cases in this age group. Psoriasis, Lichen planus and Pityriasis rubra pilaris was common in 21-40 years age group. Lichen nitidus and Parapsoriasis was common in 1-20 years age group.

In our study, males were commonly affected than females. 63% of cases were reported in males and 37% of cases were reported in females and male to female ratio was 1.7:1, which was similar to the studies done by Mohammed younas et al [1] (1.9:1) and Grace D costa et al [6] (1.5:1). Both age and sex distribution of cases showed significant p value < 0.001.

Psoriasis is a common, recurrent, immune mediated, papulosquamous disease of skin. It has a strong genetic component but environmental factors also play an important role in the presentation of disease. Most commonly, Psoriasis presents as chronic, symmetrical, erythematous, scaling papules and plaques [7]. In Psoriasis, plaque type of presentation was the commonest seen in 89.68% of cases in our study. Psoriasis was commonly seen over extensor aspect of upper and lower limbs (93%) which was similar to the study done by Okhandiar et al [8]. In our study, Psoriasis vulgaris was the commonest sub type seen in 82.77% of cases followed by Erythrodermic psoriasis (6.89%), Palmoplantar psoriasis (6.89%) and Eruptive psoriasis (3.45%). Our study was consistent with Alexander et al [9] (91.8%) and Kaur et al [10] (93%), in which Psoriasis vulgaris was the commonest sub type. Commonest symptom in psoriasis was itching (82.75%) and winter exacerbation seen in (24.13%) of cases, which was consistent with the study done by Bedi et al [11] they reported itching (81%) and winter exacerbation (23%) of cases. Histopathological findings of Psoriasis like Hyperkeratosis, Acanthosis, Elongated rete ridges, Perivascular inflammatory infiltrate were seen in 100% of cases in our study. Mohammed younas et al [1] and Shilpa Mehta et al [12] also reported these findings in majority of cases.

Lichen Planus is a subacute or chronic papulosquamous disorder involving skin, mucous membranes and hair follicles [13]. Lichen planus is characterized by small, flat-topped, shiny, polygonal, violaceous papules that may coalesce into plaques [14]. Papule type of presentation was the commonest, seen in 81.25% of cases and plaque presentation was seen in 12.5% of cases in our study. The disease has a predilection for the flexor surfaces of the forearms and legs [14]. In our study, Commonest symptom in lichen planus was itching (62.5%), Battacharya et al [15] reported itching in 79% of cases. Classical lichen planus was the commonest subtype (56.25%), followed by Follicular lichen planus (18.75%), Hypertrophic lichen planus (12.5%), Actinic lichen planus (6.25%) and Atrophic lichen planus (6.25%). Singh et al [16] and Grace D costa et al [6] reported Classical lichen planus as the commonest subtype. Majority of histopathological features of Lichen planus in the present study were similar to that of studies done by Francis A Ellis [17] and Garg et al [18]. They have also reported vacuolar degeneration of basal layer and band like lymphocytic infiltrate in 100% of cases, similar to our study.

Pityriasis rubra pilaris is a rare chronic papulosquamous disorder characterized by follicular hyperkeratotic papules, widespread orange-red erythema with islands of sparing and palmoplantar keratoderma [19]. In our study, 75% of cases had orthokeratosis, acanthosis, broadened rete ridges, follicular plugging, Perifollicular parakeratosis, perifollicular and perivascular inflammation. 25% of cases had parakeratosis, mild spongiosis and hypogranulosis. Mohammad younas et al [1] and Petrof et al [19] also reported same findings.

Lichen nitidus is an uncommon, usually asymptomatic, chronic papulosquamous eruption, characterized by multiple, 1-2 mm, flesh coloured, shiny dome shaped papules. Majority of cases are present in children and young adults [20]. In our study, 83.3% of cases had parakeratosis, elongated rete ridges like claw clutching a ball, widened dermal papilla, granulomas containing lymphohistiocytic infiltrate, giant cells and perivascular inflammatory infiltrate in dermis. 16.6% of cases had vacuolar alteration of basal layer and hyperkeratosis. Our findings were consistent with the study done by Mohammad Younas et al [1].

Parapsoriasis is a group of uncommon dermatoses. Parapsoriasis is subclassified as Large-plaque parapsoriasis, Small-plaque parapsoriasis and Pityriasis lichenoides [21]. In our study 4 cases of Small plaque Parapsoriasis were diagnosed. All the cases showed acanthosis, parakeratosis, spongiosis,

exocytosis of lymphocytes and perivascular lymphohistiocytic infiltrate.

In our study, majority of lesions were clinically confused with other group of lesions and also they are confused with other lesions with in the same papulosquamous disorder group. The clinical confusion might be because of overlap in the distribution and morphology of these lesions. In a study done by Grace D Costa et al [6] histopathology confirmed the clinical diagnosis in 92.55% of cases. It gave the diagnosis when differential diagnosis were there in 4.97% of cases and in 2.48% of cases, histopathological diagnosis was different from clinical diagnosis. In our study, histopathology confirmed the clinical diagnosis in 42.6% of cases. Histopathology gave the diagnosis when differential diagnosis were there in 51.85% of cases and in 5.55% of cases histopathological diagnosis was different from clinical diagnosis.

Conclusion

Papulosquamous disorders are commonly misdiagnosed clinically because of same clinical presentation as papules and plaques in all the diseases. But each papulosquamous lesion had certain characteristic histopathological features, so histopathology plays an important role in diagnosing these papulosquamous skin lesions. Our study concludes that histopathology is the gold standard investigation for diagnosis, categorization and clinicopathological correlation of papulosquamous skin disorders.

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