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Original Research Article

Study of clinico-histopathological correlation of papulosquamous disorders at tertiary care hospital

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ABSTRACT

Introduction: The papulosquamous skin disorders are a diverse set of conditions that constitute the most common diseases seen by dermatologists. There is a lot of overlap in the appearance and distribution of lesions, which makes diagnosis challenging. The skin, the body's largest organ, responds to pathogenic stimuli in a restricted number of ways. As a result, histological patterns in clinically distinct lesions may be similar. A thorough histological evaluation is considered the gold standard in diagnosing skin disorders, but it has limits, and without clinical information, a definitive specific diagnosis is often impossible. In many circumstances, a diagnosis might be made by comparing histopathological and clinical findings.

Materials and Methods: A Prospective study was carried out in the Department of Dermatology from September 2019 to September 2021. Patients presenting with clinically papulosquamous disorder were photographed and a presumptive clinical diagnosis was made based on clinical features; which was confirmed by histopathological examination and correlation between clinical and histopathological findings was studied.

Results: The study included 202 patients in which clinico-histopathological correlation was done. In 88.11% cases a positive correlation was established whereas a negative correlation was obtained in 11.89%cases. Psoriasis constituted the highest cases 64(31.68%) followed by lichen planus 52(25.74%).

Conclusion: Majority of the papulosquamous disorders have an overlapping clinical presentation as skin reacts in a limited pattern towards any pathologic stimuli. There is a need for clear clinical information and a description of the lesion to assist the histopathologist in arriving at a conclusive diagnosis, which is the gold standard, to overcome the associated complexity in diagnosing and commencing the right treatment. For a more accurate differentiation of various papulosquamous disorders, histopathology is very crucial for appropriate medical management. This is clearly seen and supported by the present study.

1. Introduction

The papulosquamous skin disorders are a diverse set of conditions that constitute the most common diseases seen by dermatologists. These disorders are diagnosed using a descriptive morphology of clinical lesions characterized by scaly papules and plaques. There is a lot of overlap in the appearance and distribution of lesions, which makes diagnosis challenging. Because of the difficulty in identifying papulosquamous disorders, they are difficult to diagnose and may resemble another disorder in the group. The skin, the body's largest organ, responds to pathogenic stimuli in a restricted number of ways. As a result, histological patterns in clinically distinct lesions may be similar. A thorough histological evaluation is considered the gold standard in diagnosing skin disorders, but it has limits, and without clinical information, a definitive specific diagnosis is often impossible. In many circumstances, a

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diagnosis might be made by comparing histopathological and clinical findings. Distinct histopathological features and clinical correlation gives a conclusive diagnosis. Specific histopathological diagnosis is important to distinguish these lesions as the treatment and prognosis varies significantly. Psoriasis, lichen planus, pityriasis rosea, pityriasis rubra pilaris, parapsoriasis, pityriasis lichenoides et varioliformis acuta, pityriasis lichenoides chronica, lichen striatus, seborrheic dermatitis, psoriasiform eczema, subacute cutaneous lupus erythematosus, dermatophyte infection, drug reaction, secondary syphilis, Reiter's disease, etc. are included as papulosquamous disorders.

2. Aim

To examine the extent of clinical and histopathological correlation in the diagnosis of papulosquamous disorder of skin.

3. Objective

3.1. Primary Objective

1. Assess the level of accuracy of clinical diagnosis of papulosquamous disorder.
2. Determine percentage of clinical diagnosis confirmed by histopathology.
3. Determine the level of correlation in different disorders.

3.2. Secondary objective

1. To study the histopathological pattern in papulosquamous disorder of skin.
2. To identify different histopathological features in identical skin disorders and in the same disorder in various stages of evolution.

4. Materials and Methods

4.1. Study type

Prospective study.

4.2. Study setting

Department of Dermatology in a tertiary care teaching hospital in Gujarat.

4.3. Study method

A Prospective study was carried out in the department of Dermatology from September 2019 to September 2021. Patients presenting with clinically papulosquamous disorder were photographed and a presumptive clinical diagnosis was made based on clinical features; which was confirmed by histopathological examination and correlation between clinical and histopathological findings were studied.

4.4. Study population

Patients presenting with features suggestive of papulosquamous disorders.

4.5. Inclusion criteria

1. Patient clinically diagnosed with papulosquamous disorder.
2. Patient or relative/ guardian (in case of minor) giving consent for biopsy.

4.6. Exclusion criteria

Patient or relatives not giving consent for Biopsy.

5. Results

In the present study 202 cases of papulosquamous disorder were included. 116(57.4%) were Male while 82(42.6%) patients were female. Mean age of the study population was 36.87 ± 18.34 years.

The study included 202 patients in which clinico-histopathological correlation was done. In 88.11% cases (178 cases) positive correlation was established whereas a negative correlation was obtained in 11.89% cases (24 cases).[Table 1]

Out of the 202 patients, 64(31.68%) patients were clinically diagnosed with Psoriasis, 52(25.74%) were diagnosed with lichen planus and 27(13.36%) were diagnosed with Pityriasis rosea. 9(4.45%) patients had presented with erythroderma. Other patients were clinically diagnosed as PLEVA (1.98%), PLC (2.47%), Dermatophytosis (3.46%), SCLE (3.96%), Lichen simplex chronicus (2.47%), Prurigo (1.98%), lichenoid drug eruption (1.49%), parapsoriasis (1%), lichen nitidus (1%) and few other miscellaneous conditions (3.46%). Table 2 depicts the clinicopathological correlation of each papulosquamous disorder with demographic data of each condition.

About 93.75% correlation was established between clinical and histopathological diagnosis in Psoriasis whereas 92.31% correlation was established between clinical and histopathological diagnosis in case of Lichen Planus. Subacute Cutaneous Lupus erythematosus, Pityriasis Lichenoides Chronica, Lichen simplex chronicus, Prurigo, Lichenoid drug eruption, parapsoriasis and Lichen nitidus showed 100% clinical-histopathological correlation.

64 patients had Psoriasis as its clinical diagnosis of which 60 (93.75%) were proven histopathologically. Different presentations included Chronic plaque psoriasis, Guttate psoriasis, Pustular psoriasis, and Psoriasis-Lichen planus overlap [Table 3].

Around 12 patients presented with erythrodermic presentation with papulosquamous presentation. A positive clinicopathological correlation was established in 75% of

Table 1: - Correlation of clinical diagnosis withhistopathological diagnosis

	Number of Biopsy	Percentage (%)
Positive	178	88.11%
Negative	24	11.89%
Total	202	

Table 2: Clinico pathological correlation in each papulos quamous disorder.

	Mean age	Male / Female	Clinical Diagnosis	Histopathological diagnosis	CPC (%)
Psoriasis	38.05 ± 16.41	75 % / 25 %	64	60	93.75%
Lichen Planus	33.67 ± 18.07	40.38 % / 59.62%	52	48	92.31%
Pityriasis Rosea	33.30 ± 19.21	59.25 % / 40.75%	27	19	70.37%
Erythroderma	55.42 ± 20.63	100 % / 0 %	12	09	75%
PLEVA	28.5 ± 6.86	75 % / 25 %	4	3	75%
PLC	21.2 ± 15.96	80 % / 20 %	5	5	100%
Dermatophytosis	51.57 ± 18.20	71.4 % / 28.6 %	7	5	71.43%
Subacute Cutaneous Lupus Erythematosus	33.25 ± 9.81	0 % / 100 %	8	8	100%
Lichen Simplex Chronicus	49.6 ± 13.16	0 % / 100 %	5	5	100%
Prurigo	38.75 ± 22.11	25 % / 75 %	4	4	100%
Lichenoid Drug Eruption	52.67 ± 22.68	0 % / 100 %	3	3	100%
Parapsoriasis	25.50 ± 21.92	50 % / 50 %	2	2	100%
Lichen Nitidus	15.50 ± 6.36	0 % / 100 %	2	2	100%
Miscellaneous*	29.71 ± 10.24	71.42 % / 28.6 %	7	5	71.43%
Total	36.87 ± 18.34	57.4 % / 42.6 %	202	178	88.11%

* Miscellaneous conditions were Adult blaschkitis(1), Darrier's disease (1), Necrolytic migratory erythema(1), Secondary syphilis (2), Reiter's disease (1), Lupus vulgaris(1).

Table 3: Clinico Histopathological correlation in Psoriasis and its variants

	Clinical diagnosis	Histopathology diagnosis	CPC correlation
Chronic plaque psoriasis	44	40	90.90%
Guttate psoriasis	10	10	100%
Pustular psoriasis	08	08	100%
Psoriasis - Lichen Planus overlap	02	02	100%
Total	64	60	93.75%

Table 4: Clinicopathological correlation in underlying cause for erythroderma.

	Clinical diagnosis	Histopathology diagnosis	CPC correlation
Psoriasis	05	04	80%
Dermatophytosis	02	02	100%
disseminated eczema	02	01	50%
Pityriasis rosea	01	01	100%
Ichthyosiform erythroderma*	01	00	0%
Sezary syndrome	01	01	100%
Total	12	09	75%

* Ichthyosiform erythroderma histopathology showed signs of lichen simplex chronicus with PAS positivity showing fungal hyphaes.

Table 5: Comparison of distribution of cases with various studies.

	Our Study (N=202)	Barman DD et al [1] (N=50)	Bhargava R (N=100) [2]	Younas et al (N=38) [3]	Raju chaudhary(N=179) [4]
Psoriasis	31.68%	20%	60%	36.80%	15.10%
Lichen Planus	25.74%	50%	24%	31.50%	23.50%
Pityriasis Rosea	13.37%	4%	2%	7.90%	3.90%
PLEVA	1.98%	-	-	-	2.80%
PLC	2.48%	4%	-	-	2.80%
Dermatophytosis	3.47%	-	-	-	4.40%
SCLE	3.96%	4%	-	-	5.60%
Lichen Simplex Chronicus (LSC)	2.48%	-	-	-	-
Lichenoid drug eruption	1.49%	-	-	5.30%	1.70%
Prurigo	1.98%	4%	-	5.30%	
Parapsoriasis	0.99%	-	3%		3.40%
Lichen Nitidus	0.99%	2%	-	2.60%	
Pityriasis rubra pilaris	-	-	5%	5.30%	6.10%
Miscellaneous	3.47%	-	-	-	30.72%

Table 6: Comparison of clinicaldiagnosis(Primary) with histopathological diagnosis in various studies.

	Our study	Barman DD et al [1]	Bhargava R [2]	Younas et al [3]	Chaudhary Raju G et al [4]	Poonam sharma et al [5]	Reddy et al [6]
Positive	88.11%	92%	89%	76.30%	68.72%	77.10%	86.5%
Negative	11.89%	8%	11%	23.70%	31.28%	22.90%	13.5%

cases.[Table 4]

Few other miscellaneous conditions which presented with papulosquamous lesions were secondary syphilis, Darier's disease, Adult blaschkitis, lupus vulgaris, Necrolytic migratory erythema and Reiter's disease. Out of the 7 miscellaneous cases 5 cases showed positive clinico histopathological correlation.

6. Discussion

Scaly papules and plaques are common features of papulosquamous disorders. This can lead to a lot of misunderstanding in clinical diagnosis, thus a definitive histopathological diagnosis can help a lot with treatment. For the majority of skin diseases, histopathology remains the gold standard of diagnosis. Skin biopsies can be easily performed under direct visual control and allow precise clinico-histopathological correlation.

In our study psoriasis constituted the highest cases 64(31.68%) followed by lichen planus 52(25.74%). Various studies are available with either Lichen planus or Psoriasis constituting the highest cases.Table 5 Shows comparison between different studies and distribution of cases.

An analysis of the clinical diagnosis with the histopathological diagnosis revealed a positive correlation in 88.11% of cases and a negative correlation in 11.89% of cases, thus emphasizing the importance and utility of histopathology in arriving at a conclusive diagnosis, similar to study results of Barman DD et al [1] (92% positive correlation), Bhargava R,[2] while higher positive correlation was observed compared to Younas et al,[3] Chaudhary Raju G et al [4] and Poonam sharma et al.[5] [Table 6]

6.1. Psoriasis

Multiple clinical variants have been described for psoriasis and it can resemble various skin diseases such as, psoriasiform eczema, seborrheic dermatitis, pityriasis rosea, psoriasiform drug rash, secondary syphilis and parapsoriasis. Besides, the same patient can present at different times with a different clinical presentation or variant.[7–9] Psoriasis differs from psoriasiform dermatitis in terms of recurrence and prognosis, emphasizing the necessity of making an accurate diagnosis.

In our study a total of 64 patients (31.68%) were diagnosed with Psoriasis which was confirmed histopathologically in 60 patients (93.75% correlated). In contrast, 100% correlation(9 patients) was seen in Barman DD et al,[1] 74% (20 out 0f 27) in Chaudhary Raju G et al [4] and 94.1% (32 out of 34 patients) in Reddy et al.[6]

The major pathologies in psoriasis are epidermal hyperproliferation with abnormal differentiation and inflammatory infiltration of epidermis and dermis. Hyperproliferation with abnormal differentiation is due to increased suprabasal mitosis. Despite being repeatedly mentioned in many texts, the significance of this particular finding for diagnostic purposes is not well documented in literature. Suprabasal Mitotic figures were frequently observed during histopathology study of Psoriatic skin lesions.

Out of 5 patients with clinical diagnosis of psoriatic erythroderma, the histopathologic changes were specific for psoriasis in 04 patients (80%). Similar results were obtained in Tomasini C et al[10] with 88% positive Clinicopathological correlation in histopathological study of 45 cases of psoriatic erythroderma." When features of early lesions of psoriasis are found during the evaluation of a biopsy specimen from a patient with a clinically nonspecific erythroderma, the dermatopathologist should be aware that this patient could have psoriasis and a renewed anamnesis and a close follow-up should be made."[10]

6.2. Lichen planus

Lichen planus presented as flat topped, violaceous to erythematous lesions over the extremities and trunk which is classically described by authors. In our study 92.31% cases of lichen planus had positive clinico pathological correlation with primary diagnosis which was similar to Barman DD et al[1] (92.3%), Chaudhary Raju G et al[4](92.9%), and Reddy et al[6] (87.5%). However, Francis A. Ellis[11] in 1967 studied histopathology of 100 cases of lichen planus based on biopsy specimens and showed 100% clinicopathological correlation.

6.3. Pityriasis rosea

We found 70.37% positive clinico-histopathological correlation in primary clinically diagnosed cases of Pityriasis rosea, while 28.58% had no changes of or suggestive of other diseases. 57.1% positive correlation was seen in study by Chaudhary Raju G et al.,[4] 66.67% positive correlation was seen in study by Hosamane, Sushma et al.[12] The slight difference observed between the positive correlation could be due to slightly higher number of cases (28) studied for histopathology in our study in comparison to (7 cases) Chaudhary Raju G et al.[4]

6.4. Pityriasis lichenoides

In our study, 88.89% positive clinico-histopathology correlation was established in patients diagnosed with Pityriasis lichenoides (PLEVA and PLC). 75% positive histopathological correlation with clinical diagnosis of PLEVA and 100% correlation with primary diagnosis of PLC was obtained in our study, in comparison to PLEVA (60%) and PLC (80%) positive correlation in study by Chaudhary Raju G et al.[4]

6.5. Dermatophytosis

Histopathological analysis is not a routine procedure for diagnosing fungal skin infections. In the histopathological specimens, fungi are visible only when using special stains such as periodic acid-Schiff (PAS). Out of the 7 patients with clinical suspicion of fungal infection, PAS staining was found to be positive for 5 cases (71.43%).

1 patient with primary diagnosis of ichthyosiform erythroderma was found to be PAS positive with positive result on KOH examination and responded to antifungals. Concordance between pre-biopsy and histopathologic diagnosis was noted in 57.28% of cases was seen in Elbendary et al,[13] while out of the total of 361 PAS-stained sections, fungal hyphae were identified in 12(3.3%) specimens. In 5(1.4%) cases, the diagnosis of fungal infection was suspected on clinical grounds, while in 7(1.9%) cases detection of fungi was an unexpected finding in Đorđi Gocev et al.[14] 62.5% positive correlation was noted in Chaudhary Raju G et al.[4]

6.6. Subacute cutaneous lupus erythematosus

100% positive clinico-histopathological correlation was noted with SCLE which was in concordance with Barman DD et al[1] whereas only 60% correlation was noted in study by Chaudhary Raju G et al.[4]

6.7. Lichenoid drug eruption

In our study 100% (3 out of 3) clinicopathological correlation was noted with primary diagnosis of Lichenoid drug reaction, where as 66% (2 out of 3) correlated histopathologically with clinical diagnosis of drug reaction in study by Chaudhary Raju G et al.[4] while 1 patient had lichenoid drug reaction as a differential which was proven histopathologically in our study. All 3 patients diagnosed with lichenoid drug reaction had drug reaction towards category-I anti tuberculosis therapy.

6.8. Prurigo

100% positive clinico-pathological correlation was noted in our study which was similar to Barman DD et al.[1]

6.9. Parapsoriasis

In our study 100% patients correlated pathologically and with IHC study for large plaque parapsoriasis while 50% positive correlation was noted in Chaudhary Raju G et al.[4]

6.10. Lichen nitidus

100% correlation was obtained with diagnosis of lichen nitidus while it was only 33.33% in study by Hosamane, Sushma et al.[12]

Pityriasis rubra pilaris was not diagnosed in any case during our study.

7. Conclusion

Majority of the papulosquamous disorders have an overlapping clinical presentation as skin reacts in a limited pattern towards any pathologic stimuli. There is a need for

clear clinical information and a description of the lesion to assist the histopathologist in arriving at a conclusive diagnosis, which is the gold standard, to overcome the associated complexity in diagnosing and commencing the right treatment.

For a more accurate differentiation of various papulosquamous disorders, histopathology is very crucial for appropriate medical management. This is clearly seen and supported by the present study.

8. Conflicts of Interest

None.

9. Source of Funding

None.

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