

Role of skin biopsy in papulosquamous lesions—a comparative study

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Abstract Dermatologists make their clinical diagnosis mostly through skin reaction patterns. This study was done to assess the correlation between the clinical diagnoses of papulosquamous lesions made at dermatological clinics and the diagnosis of these lesions at biopsy. Our study lends insight into the list of most common to least common lesions of papulosquamous lesions. This is a cross-sectional study conducted at a dermatological clinic, on those patients who consulted to a dermatologist. This presumptive investigation on papulosquamous lesion was implied on 83 patients as lichen planus, lichen nitidus, lichen striata, lichenoides dermatitis, psoriasis, pityriasis rubra pilaris, pityriasis rosea, pityriasis lichenoides, pityriasis lichenoides et varioliformis acuta (PLEVA) and Reiter's disease and then the biopsy was performed on these patients for the confirmation of the clinical diagnosis to assess that diagnosis given by biopsy in these patients matched to the clinical diagnosis and whether it showed any deviation from the clinical diagnosis made by dermatologist. The histopathology report confirmed the clinical diagnosis in 67.5 % and gave the diagnosis in 32.5 % of the total number of cases, which means that 32.5 % cases were those in which the diagnosis provided by the biopsy did not match the diagnosis provided by the clinical diagnosis. The total number of cases was 83: lichen planus occurred most frequently, i.e. 32.5 %, biopsy confirmed diagnosis in 21 patients and gave correct diagnosis in six patients, followed by

psoriasis 24.1 %. In the case of psoriasis, seven patients were misdiagnosed at clinics, and in these patients, biopsy gave the correct diagnosis of psoriasis. The frequency of pityriasis rubra pilaris and lichenoides dermatitis was the same, 14.5 %. About six patients with pityriasis rubra pilaris and six cases with lichenoides dermatitis were given wrong diagnosis at clinics, and the correct diagnosis was provided at biopsy; PLEVA was diagnosed in 6 % of the cases and pityriasis rosea in 3.6 %. Reiter's disease occurred in about 2.4 % of the cases and lichen nitidus and lichen striata in 1.2 % of the cases. Biopsy gave the correct diagnosis of one patient with pityriasis rubra pilaris, one with Reiter's disease and one with PLEVA. This research investigation, postulated and enquired on the basis of histopathology reports, confirmed the clinical hypothesis in 67.5 % of cases and gave the diagnosis in 32.5 % of the total number of cases. These results verified the aforementioned hypothesis that the patients who are diagnosed with the papulosquamous lesion must undergo biopsy for the confirmation of the disease.

Keywords Histopathology · Papulosquamous lesions · Lichen planus · Lichen nitidus · Psoriasis · Pityriasis rubra pilaris · PLEVA · Reiter's disease

Introduction

Papulosquamous diseases are a heterogeneous group of dermatological disorders clinically characterized by scaly papules and plaques, the etiology of which is unknown. This group of lesions is one of the limited reaction patterns with which the skin responds to various pathological stimuli (D' Costa and Bharambe 2010). Owing to their similar clinical presentations, which often lead to misdiagnosis due to perplexity, the dermatologists perform a biopsy to aid in diagnosing the disease. In majority of the cases, these biopsies provide the correct diagnosis to the clinician. Major epicenter of our study

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incorporates a correlation of presumptive clinical diagnosis and histopathological study of papulosquamous lesions, either confirming or providing another provisional diagnosis for various lesions such as lichen planus, lichen nitidus, lichen striata, lichenoides dermatosis, psoriasis, pityriasis rubra pilaris, pityriasis rosea, lichenoides chronica, PLEVA and Reiter's disease.

A research article, published in Indian journal of dermatology in 2010, articulates that lichen planus is the most common skin lesion and psoriasis is the second common lesion. Analysis revealed that biopsy ratified diagnosis in most of the cases and in some of the cases, it inculcated a concrete diagnosis which was found implausible in differential diagnosis (D' Costa and Bharambe 2010).

The objective of our study is to histologically evaluate the equivocal papulosquamous lesions with the overlapping clinical features and to prove the significance of histopathological diagnosis because these lesions may not correlate with the clinical diagnosis and histopathological investigation; recently published article reinforces the importance of biopsy, because in various cases, diagnosis confirmed through biopsy was not mentioned in differential diagnosis (Dai et al. 2014). The total number of suggested diagnoses did not correlate with overall diagnostic accuracy (Dai et al. 2014), may show rare diseases such as Reiter's disease and lichen striata.

Material and methods

This is a cross-sectional study, which was conducted at the Institute of Skin Diseases (ISD), Sindh, Karachi, and the Department of Histopathology, Dr. Essa's Laboratory & Diagnostic Centre, Karachi. This is a prospective study; study duration was about 6 months, from June to December 2013. The study sample for our study was 83, collected through non-convenient random sampling, where we included all patients who presented at OPD with the equivocal papulosquamous lesions that were biopsied, whereas all were clinically proven papulosquamous lesions. All consecutive cases of equivocal papulosquamous lesions in the out patient clinics at ISD and relevant data regarding age, gender and differential diagnosis were recorded on a Performa; biopsies were processed at Dr. Essa's Laboratory & Diagnostic Centre, Karachi. After fixation and processing, about 4- μ m thin sections were stained with Hematoxylin & Eosin stains; special stains were also used when and where required. We used SPSS 17 software for analysis.

Results

Out of the total number of 83 cases, the most common was lichen planus (32.5 %), followed by psoriasis 24.1 %.

Table 1 Frequency of papulosquamous skin lesions

Papulosquamous lesions	Total no. of cases	Percentage
Lichen planus	27	32.5
Psoriasis	20	24.1
Lichen nitidus	1	1.2
Lichen striata	1	1.2
Pityriasis rubra pilaris	12	14.5
Pityriasis rosea	3	3.6
Pityriasis lichenoides	0	0
PLEVA	5	6.0
Lichenoides dermatoses	12	14.5
Reiter's disease	2	2.4

Pityriasis rubra pilaris and lichenoides dermatosis were the same, 14.5 %; PLEVA was 6 % of the cases and pityriasis rosea 3.6 %. Reiter's disease (2.4 %), lichen nitidus and lichen striata in 1.2 % of the cases (Table 1). The frequency of papulosquamous lesions was highest in the age group 21–30, it was about 21.7 % followed by the age group 41–50 in which it was 20.5 % (Table 2). Papulosquamous lesions were most commonly seen in males (54.2 %), & females (48.5 %).

The histopathology report confirmed the clinical diagnosis in 67.5 % and gave the diagnosis in 32.5 % of the total number of cases (Table 3). Biopsy confirmed the clinical diagnosis in 21 out of 27 cases of lichen planus, 13 out of 20 cases of psoriasis, 6 out of 12 cases of both lichenoides dermatitis and pityriasis rubra pilaris, 4 out of 5 cases of PLEVA, 2 out of 3 cases of pityriasis rosea and 1 out of 2 cases of Reiter's disease; gave diagnosis in the single case of lichen nitidus and matched the clinical diagnosis in the single case of lichen striata (Table 4). Our study pinpoints to the fact that cases should be confirmed on biopsy by dermatologists (Table 5).

Table 2 Frequency of papulosquamous skin lesions according to gender and age

	Number of cases	Percentage
Gender		
Male	45	54.2
Female	38	45.8
Age		
1–10	2	2.4
11–20	14	16.9
21–30	18	21.7
31–40	11	13.3
41–50	17	20.5
51–60	12	14.5
61–70	7	8.4
71–80	2	2.4

Table 3 Frequency of papulosquamous skin lesions according to gender and age

Papulosquamous lesions		Lichen planus (%)	Psoriasis (%)	Lichen nitidus (%)	Lichen striata (%)	Pityriasis pilaris (%)	Pityriasis rosea (%)	Pityriasis lichenoides (%)	PLEVA (%)	Lichenoides dermatoses (%)	Reiter's disease (%)
Gender	Male	13.2	14.4	0	1.2	10.8	3.6	0	3.6	6	1.2
	Female	19.2	9.6	1.2	0	3.6	0	0	2.4	8.4	1.2
Age	1–10	1.2	0	0	0	1.2	0	0	0	0	0
	11–20	6	3.6	1.2	0	0	0	0	3.6	1.2	0
	21–30	8.4	1.2	0	1.2	6	0	0	1.2	3.6	0
	31–40	2.4	3.6	0	0	0	1.2	0	1.2	3.6	1.2
	41–50	6	9.6	0	0	2.4	1.2	0	0	1.2	0
	51–60	4.8	3.6	0	0	3.6	0	0	0	1.2	1.2
	61–70	2.4	2.4	0	0	1.2	1.2	0	0	2.4	0
	71–80	1.2	0	0	0	0	0	0	0	1.2	0

Table 4 Correlation of clinical diagnosis to histopathology

Clinical diagnosis	Number of cases	Percentage
Matched histopathology	56	67.5
Did not match histopathology	27	32.5
Total	83	100

Discussion

Papulosquamous lesions are a group of dermatological diseases which were presented to the dermatologists with overlapping features; experienced dermatologists postulated their diagnosis mainly on clinical grounds, but these equivocal papulosquamous lesions are sometimes difficult to diagnose, to get a precise diagnosis most of the dermatologist perform biopsy. This study encapsulates the role of biopsy in the diagnosis of papulosquamous lesions with super-imposed features.

The lichen planus is the most common disease diagnosed at our biopsy centre, which is also similar to the study published by Grace D' Costa and Bhavana M Bharambe in 2010. Lichen planus is a disease that occurs in genitals, oral cavity and skin with increased incidence throughout the world and hence, should be diagnosed as early as possible with the help of biopsy, because it produces various complications of which chronic liver disease is proving to be more prevalent (Sigurgeirsson and Lindelof 1991) (Tanei et al. 1995). Lichen planus has variants such as lichen pigmentoses, lichen planopilaris and lichen planus simplex, which points towards the fact that biopsy plays significant role in differentiating these lesions. Lichen planus rarely but also complicates into carcinomas (Ardabili et al. 2003; Castaño et al. 1997). This article throws light towards the fact that early diagnosis and treatment is important for lichen planus, because dissemination, chronic condition or recurrences can occur. Biopsy not

Table 5 Correlation of histopathology to provisional diagnosis

Diseases	Biopsy confirmed presumptive diagnosis	Biopsy gave new diagnosis	p value
Lichen planus	21	6	<0.05
Psoriasis	13	7	<0.05
Lichen nitidus	0	1	>0.05
Lichen striata	1	0	<0.05
Pityriasis rubra pilaris	6	6	>0.05
Pityriasis rosea	2	1	<0.05
Pityriasis lichenoides	0	0	<0.05
PLEVA	4	1	<0.05
Lichenoides dermatoses	6	6	>0.05
Reiter's disease	1	1	>0.05

only establishes diagnosis in the misdiagnosed cases but also prevents complications in those cases where lichen planus has been wrongly diagnosed by dermatologists on the basis of clinical presentation.

The sex distribution pattern revealed that most of the cases of papulosquamous lesions were reported in males; lichen planus had a female preponderance, and the same has been reported in other studies also (Elisa et al. 1992), but cases should be treated aggressively in males too, because researches show a close association between squamous cell carcinoma (SCC) of the penis, following either a verrucous or an in situ type of histological pattern and an inflammatory dermatoses most consistent with lichen planus (Bleicher et al. 1990). In this study, lichen planus was most common in the 3rd decade of life (Table 2). Only a single case of lichen planus was reported in the first decade of life, which the literature also confirms that it is unusual for lichen planus to be present in childhood (Sigurgeirsson and Lindelof 1991). Another study results however show that lichen planus reported in the middle aged adults in the 5th–6th decades (Boyd and Neldner 1991).

Psoriasis was the second most common papulosquamous lesion (24.1 %) another study results show that the prevalence of psoriasis ranges between 0.6 and 4.8 % and therefore biopsy should be done for the confirmation of diagnosis (Naldi 2004). Psoriasis was found to be more common in males in our study; the same result was seen in a study published by Grace D' Costa and Bhavana M Bharambe in 2010. However, Bell et al. found female preponderance in psoriasis (Bell et al. 1991).

Psoriasis was most commonly found in the age group 41–50 in our study; however, Grace D' Costa and Bhavana M Bharambe in 2010 have reported it in the age group 31–40. Further analysis reveals 3.6 % have been found at the age 21–30 and 31–40; there were more cases of lichenoid dermatoses in females as compared to the males; these results are similar to the study published by Bleicher PA, Dover JS, Arndt KA that reveals lichenoid dermatoses incidence more in female (Bleicher et al. 1990). Out of 20 patients having psoriasis, 13 were confirmed on histopathological grounds, and 7 were diagnosed through histopathology alone. It has been shown that psoriasis can produce complications in the future mainly due to the fact that it is a chronic disease, and because there is no cure found yet, the complications could present as arthritis and other joint inflammatory conditions (Naldi 2004). Therefore, psoriasis should be managed at early stages, and dermatologists must order biopsy for confirmation of these lesions before prescribing medicines. Affecting a substantial proportion of patients, there is a frequent association of cardiovascular disease in psoriatic (Liu, Chenghuang et al. 1994). Patients with psoriasis also present with reduction in adequate physical and mental functioning (Stephen R. Rapp, PhD et al. 1999). Inflammatory bowel disease, most notably Crohn's disease, is also found in patients with psoriasis (Persson

et al. 1993). Because of the vast number of complications, a presumptive clinical impression of psoriasis must be confirmed on biopsy before treatment.

Pityriasis rubra pilaris, a disorder of epidermal proliferation and altered keratinization, first appears as a scaly, erythematous patch on the upper portion of the body (Persson et al. 1993). The histological features are not pathognomonic for this disease but biopsy is essential in ruling out other erythematous lesions such as psoriasis since their presentation is very similar to each other regarding the appearance of scaly plaques first. Our study also shows rare diseases such as lichen nitidus, lichen striata, pityriasis rosea, pityriasis lichenoides, PLEVA and Reiter's disease; therefore, dermatologists must order biopsy for confirmation of these lesions before prescribing medicines.

Hence, analysis of clinical diagnosis with histopathological diagnosis revealed a positive correlation in 67.5 % and negative in 32.5 % of the cases. Another study reveals that histopathology confirmed the clinical diagnosis in 92.55 % cases and gave the diagnosis in 4.97 % cases (D' Costa and Bharambe 2010) The biopsy conducted in patients suffering from lichen planus matched the clinical diagnosis in 21 patients out of 27 cases, thus confirming the diagnosis which alone on clinical basis would not have been possible (Naldi 2004).

Conclusion

The undertaken research affirms that biopsy beholds a pivotal role in the diagnosis of clinically challenging papulosquamous lesions with the overlapping clinical features. The fact is augmented in this study and critically evaluated through multiple instigations. Hence, biopsy aids in diagnosis and appropriate management of patients with equivocal papulosquamous lesions.

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