ORIGINAL ARTICLE

Psoriasiform dermatoses: the diagnostic challenges revisited

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Abstract

Background: Psoriasiform dermatoses include a variety of conditions that pose a diagnostic challenge for dermatologists and pathologists. *Aim and Objectives:* To evaluate the histopathological findings in Psoriasiform dermatoses and its importance in the diagnostic accuracy and clinicopathological correlation. *Material and Methods:* Sixty five patients clinically presenting as Psoriasiform dermatoses were analyzed for demographic details, clinical manifestations, detailed histopathological findings and clinicohistopathological correlation. *Results:* Among clinically diagnosed cases of psoriasis, 80% were concordant while 20% were discordant. Sixty five cases presenting clinically as Psoriasiform dermatoses, on histopathological examination revealed that 40 cases of psoriasis, 5 cases of chronic eczematous dermatitis, 6 cases of nonspecific dermatitis, 3 cases each of seborrheic dermatitis and lichen simplex chronicus, 2 cases each of pityriasis rubra pilaris and pityriasis rosea. A constellation of distinctive features helped to differentiate these dermatoses from psoriasis. Munro microabscesses were detected in 18 cases (45%), while spongiform pustules of Kogoj were seen in only 8 cases (20%). *Conclusion:* It is of utmost importance to incorporate the microscopic findings of the skin biopsy so as to arrive at a correct diagnosis, which is often not possible on clinical grounds alone. Hence, clinicopathological correlation has great significance in diagnosing various clinically identical lesions, thereby influencing the management and prognosis.

Keywords: Psoriasis, Psoriasiform dermatoses, Munro microabscesses

Introduction

Skin is a window through which the physician can "see" the entire body. Chronic inflammatory dermatoses are wide, complex variety of conditions whose clinical and pathological diagnosis is great diagnostic challenge for both dermatologists and pathologists. Skin biopsy is used to confirm or aid the establishment of a diagnosis where a clinical diagnosis is not apparent [1]. Histopathological examination of skin biopsy taken from an appropriate lesion gives a unique opportunity for complete unbiased reappraisal of clinical diagnosis and leads to a decision regarding management of the patient. This study evaluates the histopathological findings in Psoriasiform dermatoses and also addresses the importance of diagnostic accuracy and clinicopathological correlation.

Material and Methods

Institute Ethics Committee (IEC) clearance was obtained. Patients were enrolled in the study after obtaining their informed consent. The study was conducted on 65 patients, clinically presenting with Psoriasiform lesions, attending the Out Patient Department (OPD) of Dermatology Department over a period of one year.

After a detailed clinical history, examination and relevant investigations, a punch biopsy was performed on the representative skin lesion in each patient. Tissue obtained was fixed in 10% formalin

solution (10 ml of 40% formaldehyde + 90 ml of water) and sent to the histopathology laboratory, where it was processed and paraffin sections stained by Haematoxylin and Eosin (H&E) stain, along with special stains including Periodic acid-Schiff (PAS) and Van Gieson (VG) stain, wherever required. The 3 to 5 micron thick tissue sections were microscopically examined and assigned diagnosis according to pattern analysis of the epidermis and dermis. The inadequate biopsy specimens were excluded from the study. A detailed history was taken followed by thorough clinical examination. Clinical data and pictures were recorded. Statistical analysis was performed using absolute numbers and percentages.

Results

Sixty five cases presenting clinically as Psoriasiform dermatoses, on histopathological examination, revealed 40 cases of psoriasis; 5 cases of chronic eczematous dermatitis; 3 cases each of seborrheic dermatitis and lichen simplex chronicus; 2 cases each of pityriasis rubra pilaris and pityriasis rosea; and 1 case each of parapsoriasis, pityriasis lichenoides chronica, and inflammatory Linear Verrucous Epidermal Naevus (ILVEN) and Darier disease. Six cases were diagnosed as nonspecific dermatitis.

Table 1: Distribution of cases of Psoriasiform dermatoses according to age (n=65)

Lesion	Age (Years)								Sex	
	Mean age	0-10	11-20	21-30	31-40	41-50	51-60	61-70	Males	Females
Psoriasis	39.3	1	5	6	10	16	1	1	31	9
Chronic eczematous dermatitis	46.4	-	-	-	1	3	-	1	2	3
Seborrheic dermatitis	21.0	-	1	2	-	-	-	-	2	1
Pityriasis rubra pilaris	53.0	-	-	-	-	1	1	-	1	1
Lichen simplex chronicus	42.6	-	-	-	-	3	-	-	1	2
Parapsoriasis	35.0	-	-	-	1	-	-	-	1	-
Pityriasis lichenoides chronica	24.0	-	-	1	-	-	-	-	1	-
ILVEN	23.0	-	-	1	-	-	-	-	1	-
Pityriasis rosea	31.5	-	-	1	1	-	-	-	1	1
Darier disease	14.0	-	1	-	-	-	-	-	1	-
Nonspecific dermatitis	34.3	-	1	2	-	2	1	-	4	2

As shown in Table 1, maximum number of patients (25) were in the age group of 41 to 50 yrs. Only one patient was below the age of 10 years. There were 46 males (70.77%) and 19 females (29.23%), the male to female ratio being 2.42:1. Out of 65 patients, in 22 cases the lesion first appeared on the lower extremity followed by trunk and upper extremity (15 cases each). The head and neck region was the least common site for the initial appearance of lesions (13 cases). In 31 cases, the duration of disease was in the range of 1 to 5 years, in 17 cases it was 6 months to 1 year, while in 8 cases it was 5 to 10 years. However, in 7 cases the duration of disease was less than 6 months. Two patients presented with a long history of 12 years and 17 years respectively.

Table 2 depicts the various clinical features of psoriasis. Multiple pruritic, symmetrical, scaly erythematous plaques over sun exposed areas were the most common findings observed. Out of the 40 cases diagnosed as psoriasis, 34 cases were typed as psoriasis vulgaris; 3 cases as pustular psoriasis and 1 case each was labeled as guttate psoriasis, erythrodermic psoriasis and psoriasiform napkin dermatitis.

Table 3 shows the different histopathological features observed in psoriatic lesions. Acanthosis, regularly elongated rete ridges and tortuously dilated dermal capillaries were identified in all the 40 (100%) cases (Figure 1).

Table 2: Various clinical features observed in psoriasis (n=40)

Clinical features		Cases	Percentage (%)
No of lesions	**Single**	6	15.0
	Multiple	34	85.0
Type of lesion	**Papule**	5	12.5
	Plaque	35	87.5
Site of lesion	**Sun exposed**	24	60.0
	Other	16	40.0
Color	**Erythematous**	23	57.5
	Hyperpigmented	9	22.5
	Whitish	8	20.0
Appearance	**Scaly**	35	87.5
	Non scaly	5	12.5
Auzpitz sign	**Present**	31	77.5
	Absent	9	22.5

Continued...

Clinical features		Cases	Percentage (%)
Itching	**Present**	24	60.0
	Absent	16	40.0
Symmetry	**B/L symmetrical**	31	77.5
	Asymmetrical	9	22.5
Nail involvement	**Present**	12	30.0
	Absent	28	70.0
Associated arthritis	**Present**	2	5.0
	Absent	38	95.0
History of Drug intake	**Present**	3	7.5
	Absent	37	92.5
Seasonal exacerbation	**Winters**	25	62.5
	Summers	15	37.5

Table 3: Different histopathological features observed in psoriatic lesions (n=40)

Histopathological feature	Cases	Percentage (%)
Confluent parakeratosis	39	97.5
Absence of granular layer	36	90.0
Acanthosis	40	100.0
Regularly elongated rete ridges	40	100.0
Club shaped dermal papillae	33	82.5
Thin suprapapillary plate	35	87.5
Munro microabscess	18	45.0
Spongiform pustules of Kogoj	8	20.0
Tortuously dilated dermal capillaries	40	100.0

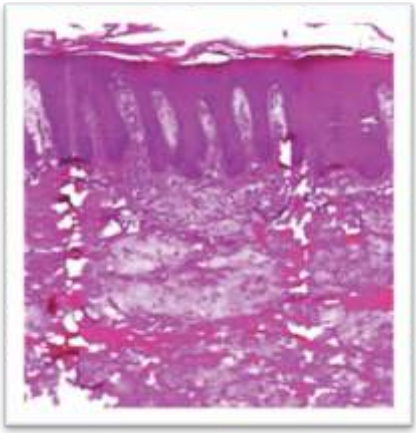

Figure 1(a): Psoriasis: regularly enlarged rete ridges with clubbing at their lower ends (H & E × 40)

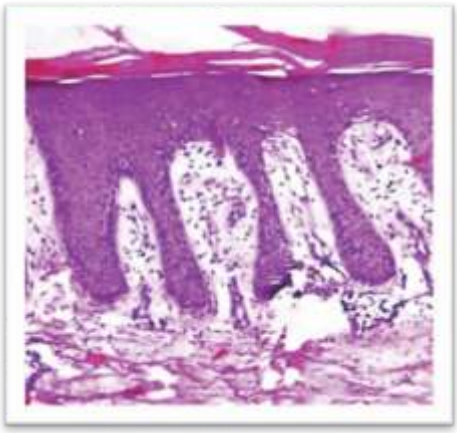

Figure 1(b): Psoriasis: Tortuously dilated capillaries in dermal papillae (H & E × 100)

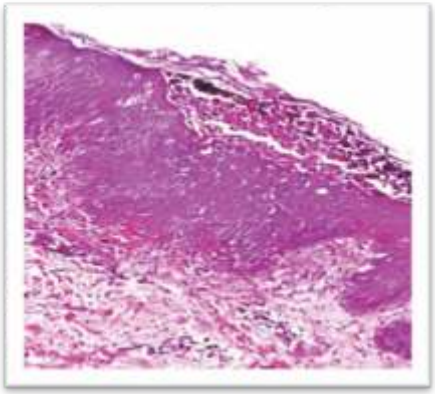

Figure 1(c): Psoriasis: Munro microabscess in the stratum corneum (H &E × 100)

Histopathological examination was able to correctly diagnose many disorders in cases of clinical doubt or misdiagnosis. Out of the 46 cases clinically diagnosed as psoriasis, 37 were concordant while 9 discordant cases. Clinicopathological correlation for psoriasiform disorders is depicted in Table 4.

Table 4: Clinicopathological correlation of various Psoriasiform dermatoses (n=65)

Disease	Clinical diagnosis		Histopathological diagnosis	
	Cases	Percentage (%)	Cases*	Percentage (%)
Psoriasis	46	70.77	40[(46-9)+3]	61.54
Chronic eczematous dermatitis	6	9.23	5[(6-2)+1]	7.69
Seborrheic dermatitis	4	6.15	3[(4-2)+1]	4.62
Pityriasis rubra pilaris	1	1.54	2[(1)+1]	3.08
Lichen simplex chronicus	2	3.08	3[(2)+1]	4.62
Parapsoriasis	1	1.54	1	1.54
Pityriasis lichenoides chronica	1	1.54	1	1.54
ILVEN	-	-	1	1.54
Pityriasis rosea	3	4.62	2[(3-1)]	3.08
Darier disease	1	1.54	1	1.54
Nonspecific dermatitis	-	-	6	9.23
Total	65	100.0	65	100.0

Notable histopathological observations in individual psoriasiform disorders were:

Psoriasis: All the cases showed acanthosis, regularly elongated rete pegs and tortuously dilated superficial dermal capillaries. Confluent parakeratosis was noted in 39 cases and supra-papillary thinning in 35 cases. Granular layer was absent in 36 cases and club shaped dermal papillae were seen in 33 cases. Munro micro abscesses were detected in 18 cases and only 8 cases showed spongiform pustules of Kogoj.

Chronic eczematous dermatitis: All the cases revealed irregular acanthosis, marked spongiosis and a preserved granular cell layer (Figure 2). In three cases, neutrophils were absent from the inflammatory infiltrate. Crusting was seen in one case.

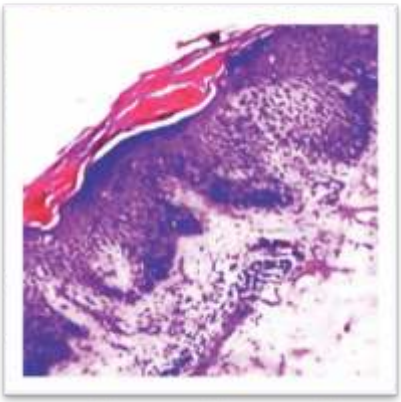

Figure 2: Chronic eczematous dermatitis- irregular acanthosis, preserved granular cell layer, marked spongiosis but absence of neutrophils (H & E × 100)

Lichen simplex chronicus: All the three cases showed psoriasiform elongation of rete ridges, acanthosis, and hyperkeratosis but the most important finding was the presence of fibrosis and collagen bundles in dermis which had aligned themselves vertically in dermal papillae, parallel to the rete ridges (Figure 3). These collagen bundles were also visualized by Van Gieson stain.

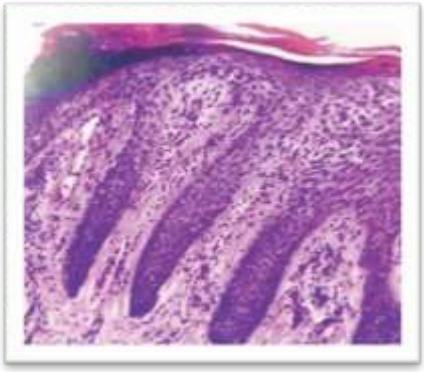

Figure 3: Lichen simplex chronicus - vertical streaking of collagen bundles in the dermal papillae, parallel to the rete ridges (H & E × 100)

Seborrhoic dermatitis: In all three cases, although there was acanthosis but regular elongation of rete pegs was absent. Rather they were irregularly elongated. Shoulder parakeratosis (focal parakeratosis at the site of follicular ostia) was observed in all the cases. There was spongiosis in the epidermis as well, thus differentiating this entity from psoriasis.

Pityriasis rubra pilaris: A checkerboard pattern of hyperkeratosis that is, alternating parakeratosis and orthokeratosis was observed in both the cases. One case showed prominent granular layer and thick suprapapillary plates while associated follicular plugging was seen in the other. There was no epidermal pustulation or dilated dermal capillaries.

Pityriasis rosea: Irregular acanthosis, focal parakeratosis and spongiosis were observed in both the cases. Also, a superficial perivascular infiltrate, composed of lymphocytes and extravasated red blood cells in dermis was the diagnostic feature.

Parapsoriasis: Irregular acanthosis and hyperkeratosis, along with focal parakeratosis and superficial perivascular lymphocytic infiltrate at the dermoepidermal junction were noted. But spongiosis was not very prominent. However, the absence of regular acanthosis, confluent parakeratosis and neutrophilic infiltrate, differentiated it from psoriasis.

Pityriasis lichenoides chronica: The lesion showed focal parakeratosis, focal disappearance of dermoepidermal interface, perivascular inflammation, spongiosis and preserved granular layer. All these features are not found in psoriasis, thus, leading to the diagnosis of pityriasis lichenoides chronica.

ILVEN: There was irregular acanthosis, slight spongiosis and alternating parakeratosis and orthokeratosis. However, the absence of regular acanthosis, confluent parakeratosis and neutrophilic infiltrate were the features that distinguished it from psoriasis (Figure 4).

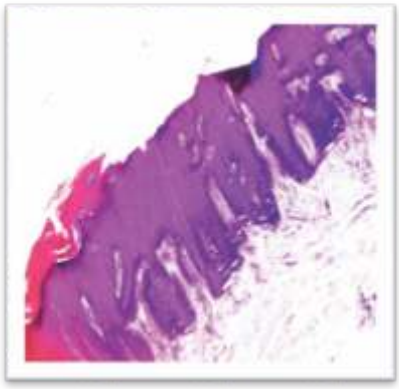

Figure 4: ILVEN - irregular acanthosis and slight spongiosis in epidermis (H & E × 40)

Darier disease: There was presence of suprabasal cleft in the acanthotic epidermis and few keratinocytes appeared dyskeratotic (corps ronds), thus confirming the clinical diagnosis.

Non-specific dermatitis: Only a diffuse inflammatory infiltrate composed of neutrophils and lymphocytes was observed in the dermis. However, specific features indicating any of the psoriasiform lesions were absent.

Discussion

In the present study, psoriasis was found to occur mostly from 31 to 50 years, with a mean age of 39.3 years. Our observations are in accordance with the findings of Sharma *et al.*, who stated that this disease is most frequent between the ages of 15 to 45 years, with two peak rises at puberty and at climacteric years [2].

Similar to our findings, Verma *et al*. observed a male to female ratio of 4:1 and Bedi *et al.* also reported a male predominance [3-4].

In majority of the cases, the lesions first appear on the extensor surface of lower extremity, followed by the upper extremities. Swanbeck *et al.* and Christophers *et al.* observed similar presentation of the disease [5-6].

Majority of the cases in our study presented as multiple, bilaterally symmetrical, erythematous, scaly plaques associated with itching and positive Auzpitz sign. This has also been reported by Bedi *et al*., who found similar complaints in 80.0% cases and Christophers *et al*., who reported these signs in 85.0% cases [4, 6]. Camp *et al* observed involvement of nails in 25 to 50 % of cases [7]. However, Bedi *et al*. have reported a higher incidence (54%) of nail involvement. Our findings of psoriasis associated arthritis is in accordance with the findings of McCall *et al*., who estimated the prevalence of arthritis among psoriatics in 2.6 to 7 % cases [8]. Occasionally, oral lesions of coexisting dermatoses may be present along with psoriatic plaques on the skin. Shivakumar *et al*. reported 9.9% of psoriasis patients who had oral lesions [9]. In such cases, separate biopsy sections from skin and oral mucosa should be obtained for diagnosis. ß-blockers, angiotensin converting enzyme inhibitors and lithium are common drugs implicated in causation of psoriasis. Similar drug histories were reported by Gold *et al*. and Wolf *et al*. in their studies [10-11].

Psoriasis vulgaris, pustular psoriasis, guttate psoriasis, erythrodermic psoriasis and psoriasiform napkin dermatitis are the commonly seen morphological variants of psoriasis. Pinkus *et al*. have stated that the most common clinical variant of psoriasis is psoriasis vulgaris or plaque psoriasis [12]. Also, Chrisophers *et al*. have observed that 80% of the cases of psoriasis belonged to the plaque variant [6]. More than two third of the cases were identified as psoriasis vulgaris in our study.

Acanthosis, regularly elongated rete ridges and tortuously dilated dermal capillaries were identified in histopathology of all the cases in this study. This is in agreement with Ragaz *et al*., who observed that dilatation and tortousity of capillaries were the first features to appear and the last to disappear in the lesions of psoriasis [13]. While 97.5% cases showed confluent parakeratosis, the granular cell layer was absent in 90% cases and suprapapillary thinning was evident in 87.5% cases. Also, club shaped dermal papillae were seen in 82.5% cases. Cox *et al*. have stated that an entirely typical histologic picture as

described in the standard textbooks is not always found, even if the biopsy specimens are taken from clinically typical lesions of psoriasis [14]. Our findings are in concordance with the findings of Lai *et al*., Beek *et al*., Ackerman *et al*. and Mobini *et al*. [15-18]. However, in the present study, Munro micro abscesses were detected in almost half of the cases, while spongiform pustules of Kogoj were seen in only few cases. Similar observations were recorded by Burks *et al*. who had noted that although Munro microabscesses were easily detected in early lesions but were either few in number or absent in long standing cases of psoriasis [19].

Chronic eczematous dermatitis: Of the 6 cases clinically diagnosed as chronic eczematous dermatitis, 4 cases were confirmed, while one case was reported as psoriasis after histopathological examination. Further, one case clinically diagnosed as psoriasis was later labelled as chronic eczematous dermatitis on microscopic examination. Histopathological examination of all these cases revealed irregular acanthosis, marked spongiosis and a preserved granular cell layer but neutrophilic infiltrate was absent, as also recorded by Simpson *et al*. [20].

Lichen simplex chronicus: Out of the three cases, two cases diagnosed clinically as lichen simplex chronicus were confirmed, while one case provisionally diagnosed as psoriasis clinically, later turned out to be lichen simplex chronicus on histopathology. All the three cases, on microscopic examination, revealed Psoriasiform elongation of rete ridges, acanthosis, and hyperkeratosis, but, the most important finding was the presence of fibrosis and collagen bundles in dermis, which had aligned themselves vertically indermal papillae, parallel to rete ridges. These collagen bundles could also be identified by VG stain and were the most distinguishing feature, differentiating this lesion from psoriasis and other Psoriasiform disorders. These vertical collagen bundles had also been observed by Barr *et al*. [21].

Seborrheic dermatitis: Out of the four clinically labelled cases, two were confirmed by histopathology. However, out of the remaining two cases, one case was diagnosed as psoriasis and other as nonspecific dermatitis on histopathological examination. One case provisionally diagnosed as psoriasis, was finally reported as seborrheic dermatitis. Histopathologically, in all the three cases, although there was acanthosis but the regular elongation of rete pegs was absent. Rather they were irregularly elongated. Shoulder parakeratosis (focal parakeratosis at the site of follicular ostia) was observed in all the cases. Our observation is in agreement with Wu *et al*., who also reported shoulder parakeratosis in this entity [22]. There was spongiosis in the epidermis as well, thus differentiating this lesion from psoriasis, which has also been reported by Pinkus *et al*. and Schwartz *et al*. [12, 23].

Pityriasis rubra pilaris: One case clinically presenting as pityriasis rubra pilaris was diagnosed the same on histopathology, while the other case labelled as psoriasis on clinical grounds, later proved to be pityriasis rubra pilaris on microscopic examination. On histopathological examination, a checkerboard pattern of hyperkeratosis, that is, alternating parakeratosis and orthokeratosis was observed in both the cases, which is in concordance with the finding of Soeprono [24]. While

one case showed prominent granular layer and thick suprapapillary plates, associated follicular plugging was seen in other. There was no epidermal pustulation or dilated dermal capillaries. These findings have also been reported by Magro *et al*. [25].

Pityriasis rosea: Out of the three cases clinically reported as pityriasis rosea, two cases were histopathologically confirmed, while one case was finally diagnosed as psoriasis. Histopathological examination revealed irregular acanthosis, focal parakeratosis and spongiosis in both the cases. A superficial perivascular infiltrate, composed of lymphocytes along with extravasated red blood cells in the dermis was an important diagnostic feature. This is in agreement with the observations of Mobini *et al*. [18]. This feature and the absence of confluent parakeratosis and regular acanthosis, helped to differentiate this disease from psoriasis.

Parapsoriasis: The single case was clinically diagnosed and histopathologically confirmed as parapsoriasis. Microscopic examination revealed irregular acanthosis and hyperkeratosis, along with focal parakeratosis and superficial perivascular lymphocytic infiltrate at the dermoepidermal junction, but no spongiosis. Similar findings have also been reported by Hu *et al*. [26]. However, the absence of regular acanthosis, confluent parakeratosis and neutrophilic infiltrate, differentiated this lesion from psoriasis.

Pityriasis lichenoides chronica: This single case was clinically as well as histopathologically diagnosed as pityriasis lichenoides chronica. On histopathological examination, it shows focal parakeratosis, disappearance of dermoepidermal interface, perivascular inflammation, spongiosis and preserved granular cell layer which is in concordance with the observations of Khachemoune *et al*. [27].

ILVEN: This single case was initially clinically diagnosed as psoriasis. However, histopathological study of the lesions showed features of ILVEN. Irregular acanthosis, mild spongiosis with alternating parakeratosis and orthokeratosis, were observed on histopathological examination. However, absence of regular acanthosis, confluent parakeratosis and neutrophilic infiltrate were the features which differentiated it from psoriasis. Similar observations have also been described by Miteva *et al*. [28].

Darier disease: The important diagnostic histopathological features were the presence of suprabasal cleft in the acanthotic epidermis and that a few keratinocytes appeared dyskeratotic (corps ronds), thus confirming the clinical diagnosis, and differentiating it from other psoriasiform lesions. Sehgal *et al*. have described the same histological features of Darier disease [29].

Nonspecific dermatitis: The final diagnosis of nonspecific dermatitis was rendered in 6 cases which were clinically reported as psoriasis. Only a diffuse inflammatory infiltrate composed of neutrophils and lymphocytes was seen in the dermis on histopathological examination.

In the present study, detailed clinical and subsequent histopathological examinations were performed and an attempt was made to correlate the clinical diagnosis with the histopathological diagnosis, in cases of Psoriasiform dermatoses.

Psoriasis is associated with components of metabolic syndrome like insulin resistance and atherogenic dyslipidemia which are considered to

be predisposing factors for diabetes mellitus and cardiovascular diseases [30]. Hence, early and accurate diagnosis has clinical and prognostic implications in course of the disease. In all those cases where the clinicians were in doubt, or had misdiagnosed the lesions, or in cases where clinically only a differential diagnosis could be reached, histopathology proved to be a useful tool as it was possible to diagnose majority of these lesions correctly after histopathological examination. Moreover, on histopathological examination, some of the lesions clinically thought to be psoriasis turned out to be some other disorder.

Out of the 46 cases clinically diagnosed as psoriasis, 37 were concordant while 9 discordant cases were finally diagnosed to be as 4 cases of nonspecific dermatitis, 1 case each of chronic eczematous dermatitis, seborrheic dermatitis, pityriasis rubra pilaris, lichen simplex chronicus and ILVEN, respectively. Also, the final diagnosis of psoriasis was rendered in one case each provisionally diagnosed as chronic eczematous dermatitis, seborrheic dermatitis and pityriasis rosea. On the other hand, out of the 6 cases clinically labelled as chronic eczematous dermatitis, 4 were confirmed on histopathology while out of the remaining 2 cases, one case was diagnosed as psoriasis and the other as non-specific dermatitis.

Accuracy was observed in 2 cases of seborrheic dermatitis out of the 4 cases clinically diagnosed, while one case each was labelled as psoriasis and nonspecific dermatitis on microscopy. Similarly two cases of lichen simplex chronicus and one case of Pityriasis rubra pilaris were confirmed by histopathology. Two out of three provisionally diagnosed cases of pityriasis rosea were confirmed, whereas the third case was recorded as psoriasis on histopathological examination. One case each of parapsoriasis, pityriasis lichenoides chronica and Darier disease diagnosed clinically, were confirmed to be the same on microscopic examination.

In our study we noted that the clinical presentation of the various Psoriasiform diseases was more or less similar. Therefore, a final conclusive diagnosis was possible only after a detailed clinical examination followed by histopathological study of the biopsy specimen from representative lesion. This study was able to diagnose the various chronic inflammatory skin diseases and could establish a clinicopathological correlation in the same. Also, in this study, we were able to analyze the different variants of psoriasis and also discuss their natural history and distribution of their lesions in detail.

Conclusion

Clinicopathological correlation helps to accurately diagnose several clinically identical lesions and therefore guides the clinicians to treat the patients correctly, thereby influencing the prognosis of the patient.

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