HISTOPATHOLOGICAL SPECTRUM OF PSORIASIFORM SKIN LESIONS- A CENTRE BASED STUDY.

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Abstract

Objective: To study frequencies, morphological patterns, and the spectrum of psoriasiform lesions and to assess diagnostic accuracy of histopathology.

Study design: Cross-sectional.

Place and Duration of Study: This study was conducted from January 2007 to December 2011 at the Department of Histopathology, Basic Medical Science Institute, Jinnah Postgraduate Medical Centre, Karachi.

Materials and Methods: All the biopsies of psoriasiform dermatitis were selected for detailed study. The clinical history and relevant data was recorded from the surgical pathology record registers. Haematoxylin and eosin stained slides were retrieved and special stains were performed where required.

Results: Out of total of 113 cases of psoriasiform dermatitis, 42 were reviewed as psoriasis and the rest of 71 lesions were an array of lesions diagnosed as chronic dermatitis, nodular prurigo, pityriasis rubra pilaris, seborrheic dermatitis, allergic contact dermatitis, atopic dermatitis, lichen simplex chronicus, Mycosis Fungoides, Inflammatory linear verrucous epidermal naevus (ILVEN), leucoclastic vasculitis, post inflammatory hyperpigmentation, PLEVA, and psoriasiform drug reaction.

Conclusion: In a developing country like Pakistan where the tertiary care hospitals do not provide ancillary diagnostic facilities like immunohistochemistry and immunoflourescence, a good and careful viewing of morphological features in collaboration with the dermatology department , makes it possible to reach an authentic diagnosis which in turn proves helpful to the dermatologist in prescribing the correct medications and treatment.

Introduction: Psoriasis is a chronic relapsing immune mediated inflammatory disorder affecting 1.5-3% of the world's population resulting in significant morbidity.1 Psoriasis has different clinical variants that can resemble varied dermatological conditions. The terms psoriasiform dermatoses refers to a group of unrelated disorders which clinically or histologically simulates psoriasis.2 Psoriasis is the prototype of psoriasisform reaction pattern.

Prevalence of psoriasis varies widely depending on ethnicity. It occurs most commonly in Caucasians with an approximate occurrence of 60 cases per 100,000 year in this population. Its prevalence in United States is 2-4% although it is rare or absent in Native American countries. It is much less common in China with an estimated incidence of 0.3%.3 Incidence studies of Psoriasis are rare mainly due to lack of established epidemiological criteria and variable disease course. A population based study done in Minnesota, America over a period of three decades by concluded that the incidence of psoriasis has almost doubled between the 1970s and 2000.4

In a study done in India, It was observed that out of the total biopsies reviewed in two years time period 23.60% were of psoriasiform lesions in which psoriasis vulgaris was the most frequent.5 In the study done by Icen M et al in Minnesota, America which spawned over three decades, the mean age of onset of psoriasis was 43.2±17 years and 51% subjects were males. Mean age of onset of psoriasis seen in Pakistani population was 30.48±14.37 years. Women were likely to have an earlier onset of psoriasis.6 Lesions of psoriasis and psoriasiform dermatitis present as an array of clinical variants therefore the diagnosis gets obscured and warrants a histo-pathological confirmation which is considered a gold standard for the diagnosis of most dermatological conditions including psoriasis and psoriasiform lesions. As there is a paucity of data on these lesions, the present study was conducted to study the morphological patterns of psoriasis and psoriasiform dermatitis and assess the diagnostic accuracy on histopathology.

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Table –I Farmer and Hood Classification of diseases showing psoriasiform epidermal hyperplasia

S. No	As a characteristic feature	As a frequent feature	As an occasional feature
1.	Psoriasis	Contact dermatitis	Dermatophytoses
2.	Reiter's Disease	Nummular dermatitis	Candidiasis
3.	Lichen simplex chronicus	Psoriasiform syphilis	Norwegian scabies
4.	Pityriasis rubra pilaris	Mycosis fungoides	
5.	Pellagra	Pityriasis rosea	
6.	Inflammatory linear verrucous epidermal nevus(ILVEN)		
7.	AIDS		
8.	Necrolytic migratory erythema		

Table –II Psoriasiform epidermal proliferation (Elder et al 2009)

S.No	Lymphocytes predominant	Lymphocytes with plasma cells	Lymphocytes with eosinophils	Neutrophils predominant	With epidermal pallor or necrosis
1.	Chronic spongiotic dermatitis	Arthropod bite reactions	Chronic spongiotic dermatitis	Psoriasis vulgaris	Necrolytic migratory erythema
2.	Atopic dermatitis	Secondary syphilis	Chronic allergic dermatitis	Pustular psoriasis	Necrolytic acral erythema
3.	Seborrheic dermatitis	Mycosis fungoides	Chronic atopic dermatitis	Reiter's syndrome	Acrodermatitis enteropathica
4.	Nummular dermatitis	Prurigo nodularis	Exfoliative dermatitis	Pustular drug eruption	Pellagra
5.	Lichen simplex chronicus		Cutaneous T cell lymphoma	Acute generalized pustulosis	
6.	Prurigo nodularis		Incontinentia pigment verrucous stage	Candidiasis	
7.	Psoriasis			Pustular secondary syphilis	
8.	Psoriasiform drug reactions			Dermatophytosis	
9.	Pityriasis rubra pilaris				
10.	Pityriasis rosea				
11.	Exfoliative dermatitis				
12.	Parapsoriasis				
13.	Verrucous hyperkeratotic mycosis fungoides				
14	ILVEN				
15.	Pellagra				
16.	Necrolytic migratory erythema				
17.	Acrodermatitis enteropathica				
18.	Kwashiorkor				
19.	Reticulated hyperpigmentation				

Material and Methods:

This was a retrospective study conducted in the Department of Pathology, Basic Medical Sciences Institute (BMSI), Jinnah Postgraduate Medical Centre (JPMC), Karachi.

All the skin biopsies of psoriasis and psoriasiform dermatitis received in the Department of Pathology BMSI, JPMC, over a period of 5 years (i.e. from 1st January 2007 to 31st December 2011) were included in the study. The paraffin embedded blocks were retrieved from records of Pathology Department, BMSI. The blocks were cut at four um thickness and stained with routine Haematoxylin and Eosin stain. Special stains (e.g. PAS, Giemsa, Masson's Trichrome, and Reticulin) were performed when needed. The clinical history and relevant data regarding age, gender and light microscopic histological features were noted on a proforma. The data was analyzed on SPSS using 13.0. The quality variable age (years) was presented by the mean ±SD values and grouped into decades of the ages presented by the frequencies. The qualitative value like gender and diagnosis was presented by frequencies along with percentages. The results were considered significant at $p<0.05$.

Results:

A total of 1346 skin biopsies were received during the study period. Out of this,406 (30.16%) were neoplastic lesions, 824 (61.21%) were non-neoplastic non psoriasiform lesions and 113 (8.39%) cases were diagnosed as psoriasis and psoriasiform lesions. (Figure-1)Out of total of 113 cases of psoriasis and psoriasiform lesions, psoriasis was 42(37.1%)and psoriasiform lesions were 71(62.8%) in number.

The commonest psoriasiform lesions were chronic nonspecific dermatitis 16(14.1%), nodular prurigo and pityriasis rubra pilaris 10 each (8.8%) and seborrheic dermatitis 06(5.3%) cases followed by allergic contact dermatitis, atopic dermatitis, lichen simplex chronicus, pityriasis lichenoides chronicus with 5 cases each(4.4%). The rest of the lesions diagnosed are listed in the Table-III.

TABLE – III. Final Distribution of Total Cases of Psoriasis and Psoriasiform Dermatitis (n = 113)

S.No.	Final diagnosis	No. of cases	Percentage
1.	Psoriasis	42	37.1%
2.	Chronic dermatitis	16	14.15%
3.	Nodular prurigo	10	8.84%
4.	Pityriasis rubra pilaris	10	8.84%
5.	Seborrheic Dermatitis	06	5.30%
6.	Allergic contact dermatitis	05	4.42%
7.	Atopic dermatitis	05	4.42%
8.	Lichen simplex chronicus	05	4.42%
9	Pityriasis lichenoides chronica	05	4.42%
10.	Mycosis Fungoides	03	2.65%
11.	Inflammatory linear verrucous epidermal naevus (ILVEN)	02	1.76%
12.	Hypertrophic lichen planus	02	1.76%
13.	Chronic discoid lupus erythmatosus	01	0.88%
14.	Leucocytoclastic vasculitis	01	0.88%
15.	Post inflammatory hyperpigmentation	01	0.88%
16.	Pityriasis lichenoides et varioliformis acuta (PLEVA)	01	0.88%
17.	Psoriasiform drug reaction	01	0.88%
	Total	**113**	

Discussion:

Skin has a varied numbers of reaction patterns. Our study includes the psoriatic and psoriasiform reaction patterns which is a commonly encountered group of diseases with unrelated disorders.

In the present series the number of cases of psoriasis was 42 (3.11%) of total skin biopsies and 37.1% of all psoriasis and psoriasiform lesions encountered during the study period. International data shows that the prevalence of psoriasis varies in different parts of the world. Dogra and Yadav in their epidemiological study on prevalence of psoriasis noted an overall incidence of 1.02% with a range of 0.44% to 2.2% in the Indian population.[7] They noted that the variation in range could be due to different environmental conditions, dietary habits and genetic differences. Kumara Singhe reported a frequency of 4.5% of psoriasis in a Sri Lankan setup[8] while Fatani[9] noted a frequency of 5.3% in eastern Saudi Arabia. All these figures are in close proximity to our observation of 3.11% for this disease entity. A study on skin dermatoses by Asad et al from the earthquake affected areas of Pakistan reported that 5% of patients presented with psoriasis.[10] They noted that relatively higher percentage could be the result of underlying psychopathological disorders in these patients. Out of all 113 psoriasiform cases in our series 37.1% was labeled as psoriasis that is in proximity with findings of Younus and Haque who reported 36.8% psoriasis amongst 38 cases of papulosquamous lesions.[11]

The second most common condition in present series was of chronic dermatitis comprising 14.1% of all psoriasiform dermatitis cases. Asad and Bajaj reported the figure as 17% and 17.1% respectively.[10,12] These figures are more or less close to our findings. However, in a study from Sri Lanka, Kumarasinghe noted a change in the pattern of clinic attendance and reported 42.6% of chronic eczema lesions.[8] The difference can be attributed to a larger sample size and different epidemiological and environmental conditions of the two regions. The mean age for chronic dermatitis in our study is 36.5 years and shows a male preponderance with a ratio of 2:1. Bajaj reported the mean age as 31.7 years which is in close proximity to our observations.[12]

Another group of disease entity encountered in our study was of those erythrodermic lesions which showed psoriasiform hyperplasia, such as pityriasis rubra pilaris, nodular prurigo and seborrheic dermatitis. In our series the frequency of occurrence of these lesions out of all psoriasiform lesions in the descending order are 8.84% for both pityriasis rubra pilaris and nodular prurigo and 5.30% for seborrheic dermatitis. The mean ages for PRP and nodular prurigo are 42 and 39.1 years respectively. The frequency in our series is in close proximity to the 5.3% frequency for PRP and nodular prurigo submitted by Younus and Haque.[11] A study in Iran reported 8.0% frequency of PRP in a study of erythrodermic lesions.[13] which is more in accordance with our results. The mean age of 42.2 years in their series matches the mean age for PRP in our study. A somewhat lower frequency was reported in another study who gave the prevalence of PRP as 2% of all erythrodermic lesions; however their mean age of occurrence was 47.8 years which is closer to our study.[14] The decrease in the frequency cited by them could be due to smaller sample size of their study which included only erythrodermic lesions. In a study conducted on diabetic patients to observe the prevalence of skin dermatoses,it was observed that the incidence of nodular prurigo was 9.9% which is a relatively higher but nevertheless a closer figure to our study.[15] The rise in the number of patients suffering from Diabetes Mellitus can be a reason of the higher frequency of Nodular Prurigo in our setup. Nodular prurigo shows an equal male to female ratio in our study in contrast to studies by Samsaz and Younus which show a female preponderance.[12,15]

The occurrence of seborrheic dermatitis out of all psoriasiform dermatitis in our study is 5.30%. Lally state that seborrheic dermatitis is an inflammatory dermatoses with a prevalence of 1-3% in the general population.[16] A study in Iran and Pakistan report a lower frequency of 2% as compared to our observations.[13,14] Again a larger sample size in our study could be attributed to a higher frequency. In another interesting study from Iran, Malassezia yeast has been implicated as one of the causes of seborrheic dermatitis.[17] He noted a female preponderance.

In the present study we encountered 4.42% cases each of both allergic contact dermatitis and atopic dermatitis. The mean ages were 38.2 years for allergic contact dermatitis and 30 years for atopic dermatitis. Males outnumbered the females in a ratio of 3:1. The ages in our study matched with another study in India that reported the mean age as 33.8% years for both dermatoses.[11] A lower frequency of 1.3% was cited for eczematous lesions in two other studies.[8,18] However a figure of 5.17% for atopic dermatitis in a study from Brazil more or less matched our results.[19]

Five cases (4.42%) pityriasis lichenoides chronica and one case of (0.88%) PLEVA initially were diagnosed among all lesions reported as psoriasiform dermatitis. These two are the chronic and acute forms of pityriasis lichenoides. Khachemoune and Blyumin observed a mean age of 40 years which is close to our results.[20] In a study conducted in India reported the incidence of pityriasis lichenoides as 0.34% of all the OPD cases as compared to our data of 0.44% of the disease amongst all skin lesions.[21] The male to female ratio in his study was approximately 1.4:1as compared to our ratio of 1.8:1. Awareness of pityriasis lichenoides is important because of its potential to progress to cutaneous lymphoma or an ulceronecrotic lesion, both of which carry a significant risk of mortality.[20]

Two cases (1.76%) of inflammatory linear verrucous epidermal naevus were identified as one of the 50 cases reported as psoriasiform dermatitis and 0.14% of all skin biopsies received during the study period. Mean age of presentation in our series was 28.5 years and females were the only two patients. Kumar also stated a female

preponderance and M:F ratio as 1:4.[21] The lesions are potentially premalignant with the 15-20% risk of malignant transformation.[21] Thus the early detection and surgical removal proves beneficial.

In our series we had 3 (2.65%) cases of Mycosis fungoides with a mean age of occurrence as 50.6 years with all the cases in the male population. Two of the initially reported cases of mycosis fungoides were found to be pityriasis lichenoides chronica and the other as leucocytoclastic vasculitis. In their article on this disease entity, Sarveswari and Yasudian emphasise the point that in developing countries with limited diagnostic tools, the diagnosis of Mycosis fungoides should be offered with caution to the patient, as it can lead to unnecessary expensive and aggressive therapy.[23]Akhyani noted the incidence of mycosis fungoides as 8.2% which is higher than the figures noted in our study.[13] Low literacy rate and the late presentation of patients to the clinics can be reason for the decreased frequency in our series.

One case post inflammatory hyperpigmentation was also retrieved in a female patient. There was a history of antifungal drugs intake. According to a study done by Davis and Callender, pigmentary disorders other than vitiligo, were the third most common dermatoses seen in African Americans (9.0%) and seventh most common in Caucasians (1.7%)[24]. Bari and Rahmanin their study on pigmentarydermatoses in the black population of Sierra Leone found that the percentage of patients presenting with pigmentary disorders were quite high (7.6%) with postinflammatory hyperpigmentation as the leading cause[25]. A larger sample size and darker skin tone of the patients in their setting could be the causes for the differences in percentages as compared to ours. Leucotrienes B4, prostaglandins D2 and E2, endothelins, Interleukins 1 and 6 and tumor necrosis factor alpha have been reported to increase melanogenesis.

Conclusion:

The reaction of epidermis to various inflammatory skin diseases can present in a plethora of patterns, one of which is psoriasiform dermatitis. Psoriasis is the prototype of psoriasiform reaction pattern. Lesions of psoriasiform dermatitis can present in an array of clinical variants, therefore the diagnosis can get obscured and warrants a strict clinic- histopathological correlation. The present study was carried out to diagnose those lesions which were initially given the dubious diagnosis of psoriasiform dermatitis. The help of the clinical details proved to be an important aid in reaching a more relevant diagnosis. The study also aimed to evaluate the frequency of occurrence and the age and sex distribution of both psoriasis and other types of psoriasiform lesions. Over our five year study period i-e from January 1 to December 2011, we came across 1349 cases of skin biopsies out of which 406(30.09%) were neoplastic lesions and 827 (61.30%) were non neoplastic lesions. Out of the 827 non neoplastic lesions, 113 cases (8.37%) of psoriasiform lesions were encountered. After a thorough clinical correlation, the psoriasiform lesions were morphologically reviewed. Majority of the psoriasiform lesions were of Psoriasis with 42 cases (37.1%). The apparent magnitude of psoriasis reflects that the disease is quite common in our setup. The other group of psoriasiform lesions most encountered were of Chronic dermatitis with 16 cases (14.1%) followed by Nodular prurigo and Pityriasis rubra pilaris both with 10 cases each (8.84%). It was also concluded that the cases of dermatitis both allergic and atopic and of lichen simplex chronicus as well were quite common with 5 cases each (4.42%). Pityriasis lichenoides chronica and pityriasis lichenoides et varioliformis acuta shows 5 cases (4.42%)and 1 case (0.88%) respectively were also seen among the 113 *et al* (2005) noted the incidence of mycosis fungoides as 8.2% which is higher than the figures noted in our study. Low literacy rate and the late presentation of patients to the clinics can be reason for the decreased frequency in our series.

One case (0.88%) psoriasiform drug reaction was encountered in our series with the mean age as 25 years. In a study done in an African setting by Bari and Khan (2007) to evaluate the pattern of various dermatological disorders in black population, the contribution of drug reaction was 0.8% which is in accordance with our study

Recommendations:

In a developing country like Pakistan where the tertiary care hospitals do not provide ancillary diagnostic facilities like immunohistochemistry and immunofluorescence, a good and careful viewing of morphological features in collaboration with the dermatology department, makes it possible to reach an authentic diagnosis which in turn proves helpful to the dermatologist in prescribing the correct medications and treatment.

As the clinical correlation proves a major aid to the histopathologist, it is recommended that the dermatology proforma should include all the relevant details like age and sex of the patient, site, size and shape of the lesion and the duration of the disease. The pathologist should also be able to observe the lesion himself before carrying out the microscopy and finally submitting the report.

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