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A Study of Clinico Histopathological Correlation of Psoriasis

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Abstract **Original Research Article**

Psoriasis is a chronic recurrent papulosquamous disease characterized by epidermal hyperplasia. It is a multifactorial disorder and has a polygenic inheritance. It is often believed to be initiated or exacerbated by stressful life event and is extremely variable in its duration and course. ***Aims:*** The aim was to correlate the clinical and histopathological features in typical and atypical forms of psoriasis and to establish the role of Age, Sex, Occupation, Environment Factors, Family history and other aggravating factors in causing psoriasis. ***Methods and Material:*** The present study comprises of 50 patients who were diagnosed with psoriasis on outpatient basis and were sent for histopathological examination (skin biopsy) to department of Pathology, Prathima institute of medical sciences, Nagunur, Karimnagar over a period of 2 years. Prior ethical committee clearance was taken. ***Results:*** The incidence of psoriasis in our hospital was 1.3% of total outpatients with a mean age of 33.6 years and males being affected more than females mostly affecting scalp and showing effect of various factors. Not all cases showed characteristic features of psoriasis owing to variable disease activity and stage. ***Conclusions:*** Presence of varied and diverse clinical presentations of psoriasis are observed which are finally diagnosed by histopathological examination (Skin Biopsy). Histopathology also shows many diverse features depending on the stage of disease. This mandates correlation and combination between clinical and histopathological features for proper diagnosis viz-a-viz management of psoriasis while also considering various factors which affect disease progression

Keywords: Psoriasis, skin biopsy, papulosquamous.

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INTRODUCTION

Psoriasis is a chronic recurrent papulosquamous disease characterized by epidermal hyperplasia [1]. It is characterized by well-defined erythematous papules and plaques surmounted by silvery white scales over the elbows, knees, scalp, and extensor surfaces. It is a chronic disease marked by periods of remissions and exacerbations [2]. Two characteristic clinical signs are Auspitz sign i.e. appearance of small bleeding points on an erythematous surface after mechanical removal of the scale. Koebner's phenomenon i.e. development of isomorphic lesions at the sites of local trauma in an uninvolved area of the skin of a psoriatic patient.

The cardinal histopathological features of psoriasis are a combination of the following: uniform parakeratosis, regular acanthosis in the mild intracellular and slight intercellular oedema, scattered mitosis of basal and prickle cells, papillomatosis, dilatation and tortuosity of the loops of capillaries and mild perivascular infiltration with lymphocytes [3]. Migration of leucocytes from capillaries in the tips of papillary bodies, through epidermis occurs to form the so called microabscesses, which is another confirmatory sign [4]. But all the characteristic features may not be present in one section alone. Also, it is important to note that dermis is affected earlier than epidermis in psoriasis. It is a multifactorial disorder and has a polygenic inheritance [5]. It is often believed to be initiated or exacerbated by stressful life event and is extremely variable in its duration and course.

This study is taken up to compare the clinical and histopathological features of psoriasis in Karimnagar, with the work done in other states. This study also establishes the role of various parameters, etiological and environmental factors that aggravate the disease.

AIMS AND METHODS

- To correlate the clinical and histopathological features in typical and atypical forms of psoriasis.

- To establish the role of Age, Sex, Occupation, Environment Factors, Family history and other aggravating factors in causing psoriasis.

The present study comprises of 50 patients who were diagnosed with psoriasis on out patient basis and were sent for histopathological examination (skin biopsy) to department of Pathology, Prathima institute of medical sciences, Nagunur, Karimnagar over a period of 2 years. Prior ethical committee clearance was taken.

METHODS OF SELECTION

Inclusion Criteria

- Psoriasis of less than 2 years duration
- Not received treatment for the past 6 months.

Exclusion Criteria

- Patient receiving immune-suppressive drugs.
- Patients with H.I.V.
- Pregnant and lactating women.
- Children below 12 years of age.

All the 50 patients who fulfilled all the exclusion and inclusion criteria were selected and were thoroughly examined starting from history occupation, aggravating and relieving factors and past history of medication. All clinical findings were recorded. Skin biopsy was done on all patients after taking written consent both from active and inactive skin lesions. All routine investigations were performed i.e. Hb%, TC, DC, Routine urine, F.B.S. and P.P.B.S. Liver function tests and H.I.V. test was performed in selected patients. All the findings were recorded on proforma and follow up was done every 2 weeks.

RESULTS

The incidence of psoriasis in our hospital was 1.3% of total outpatients. Majority of patients (26%) in this study were in the age group 31-40 years. The eldest and youngest patients included in this study were of 85 years and 12 years respectively. Mean age of the patients was 33.36 years. Male to female patients' ratio in this study was 3:1. It was observed to occur most frequently in unskilled manual labourers (54%) than in other occupations.

Mild to moderate itching was present in 41 patients (82%) (Table-6). It was asymptomatic in 7 patients (14%) It was severe in 2 patients (4%) who progressed to generalised pustular psoriasis. Out of 50 patients, 24 patients (48%) had no influence of season in their progression of disease. 20 patients (40%) had exacerbation of the disease in winter. 5 patients (10%) had exacerbation during summer while 1 patient (2%) had exacerbation during rainy season.

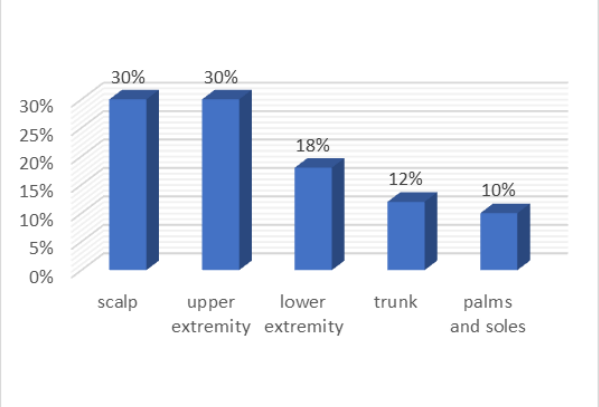

Chart-1: Sites of involvement

Besides the above-mentioned effects of climate, there were other aggravating factors in 6 patients. 2 patients with Guttate psoriasis had sore throat before the onset of lesions and 1 patient with chronic plaque psoriasis had their disease exacerbated by sore throat. 2 patients had exacerbation of disease due to mental stress, i.e. one patient due to his disease itself, and other patient due to expiry of his father. One patient had exacerbation of disease due to withdrawal of oral steroids. Positive family history of the disease was present in 5 out of 50 cases (10%). All of the effected members were first degree relatives.

The lesions were first noted in scalp in 30% of cases, upper and lower extremity in 48% of cases, trunk in 12% of cases and palms and soles in 10% of cases (Chart-1). The lesions were of guttate variety in 3 cases and erythematous sheets studded with pustules in 3 cases. In the remaining 44 cases lesions were of mixed type i.e. guttate, Discoid, and annular lesions. The lesions in palms and soles are of well demarcated hyperkeratotic plaques with fissuring mainly involving thenar, hypothenar eminences and insole and sides of foot.

Mucous membrane was not involved in any of these cases. None of the cases included in this study showed joint involvement. Nails were involved in 66% cases. The nail changes recorded were pitting in 29 patients (58%), subungual hyperkeratosis in 17 patients (34%), discolouration in 13 patients (26%) and onycholysis in 3 patients (6%). *Koebners* phenomenon was noted in 11 cases out of which 3 had guttate psoriasis, 1 patient with unstable psoriasis and remaining 7 were having chronic plaque psoriasis.

For purpose of analysis, the lesions were divided into following groups (Table-1).

1. Early lesions: Macules or papules without scaling or mild scaling of less than 30 days duration. The histopathological features are described in Table-2.
2. Late lesions: Lesions of more than 30 days duration and showing bright red erythema,

several layers of silvery scales and positive ausptiz sign. The histopathological features are described in Table-3.

3. Lesions showing sterile pustules i.e., Generalised pustular psoriasis and localized Pustular psoriasis. The histopathological features are described in Table-4.
4. Psoriatic erythroderma i.e. diffuse erythema and scaling involving more than 90% of body surface. One patient was included in this study. Histopathology showed hyperkeratosis, parakeratosis, irregular acanthosis, supra papillary thinning and munro micro abscess. Dermis showed perivascular chronic inflammatory infiltrate.

Table-1: Distribution of types of lesions

Type of lesion	No. of cases	Percentage
Early lesions	05	10%
Late lesions	41	82%
Pustular psoriasis	03	6%
Psoriatic erythroderma	01	2%

Table-2: Features of Early lesion

Histopathological features	Number	Percentage
Parakeratosis		
• Uniform	0	0%
• Patchy	5	100%
Acanthosis		
• Mild	1	20%
• Moderate	4	80%
Thinning of supra papillary plate	4	80%
Thinning of stratum granulosum	1	20%
Munro - Micro abscess	2	40%
Spongiosis	2	40%
Dilated Capillaries	5	100%
Cellular infiltrate	5	100%

Table-3: Features in late lesion

Histopathological features	Number	Percentage
Parakeratosis		
• Uniform	18	43.9%
• Patchy	19	46.3%
Acanthosis		
• Mild	30	7.3%
• Moderate	08	19.5%
• Marked	03	73.1%
Thinning of supra papillary plate	30	73.1%
Thinning of stratum granulosum	26	63.4%
Munro - Micro abscess	22	53.6%
Spongiosis	8	19.5%
Spongiform pustule of Kogoj	0	0
Dilated Capillaries	41	100%
Cellular infiltrate	41	100%

Table-4: Features of Pustular Psoriasis

Histopathological features	Number	Percentage
Parakeratosis		
• Uniform	00	0%
• Patchy	03	100%
Acanthosis		
• Moderate	01	33.3%
• Marked	02	66.6%
Thinning of supra papillary plate	01	33.3%
Thinning of stratum granulosum	02	66.6%
Munro - Micro abscess	03	100%
Spongiosis	03	100%
Spongiform pustule of Kogoj	02	66.6%
Dilated Capillaries	03	100%
Cellular infiltrate	41	100%

DISCUSSION

Psoriasis is a disease that is known to occur worldwide but the factors responsible, the severity of the disease and its associated findings vary from one place to another. A cold climate has been claimed to be an aggravating factor for psoriasis and winter exacerbations are a well-known feature of this disease. The age distribution and sex ratio of psoriasis patients obtained in the present study confirms to what has been reported in different studies.

Genetic and environmental factors greatly influence the clinical development of psoriasis. This results in wide differences in the prevalence of the disease among different ethnic groups and in different parts of the world. Further, patients with minimal clinical manifestations often do not seek medical attention. Most studies on prevalence are based on information from clinical examinations, interviews, census studies, and mailed questionnaires. Estimates of occurrence of psoriasis in different parts of the world vary from 0.3 to up to more than 2%.[6,7]

A few studies that have been performed in India to determine the incidence of psoriasis have been on patients attending the clinics and hospitals [8, 9]. Hence, these findings do not reflect the true incidence of psoriasis in the general population.

In our study, psoriasis accounted for 1.3% of the total dermatology out-patients, which is almost similar to observations made by Mehta *et al*., Sardari Lai, Okhander *et al.,* .[10-12]. They observed an incidence of psoriasis as 1.5%, 1.25% and of 1.02% respectively.

In the present study majority of the patients (26%) belonged to the age group 31-40 years, followed by the age group 41-50 years (24%), thus the overall age group between 31-50 years accounted for most of the cases i.e. 50% of patients. About 24% of patients were in the age group 11-20 years. Mehta *et al.,* Verma *et al.,* found the highest incidence in the age group of 21-30 years, whereas Sardari Lai found highest

number of patients in 11-20 years of age group [10, 13, 12, 14].

In the present study out of 50 patients there were 38 males and 12 females thus the male to female ratio was approximately 3:1. Lower incidence in females as observed may be due to their being less attentive to health, and as psoriasis many a times occur primarily on the waist, buttocks and extensor aspect of extremities, without causing troublesome symptoms. Females would probably like to keep it hidden rather than seek medical advice. It seems to be doubtful, if sex as such would influence the incidence of the disease.

In the present study unskilled manual labourers constituted the majority of patients (54%) followed by students (20%). Sardari lai [11] found higher incidence among house wives (24%) and Sharma *et al*.**,** [15] found higher incidence among farmers. The higher incidence in our present study among labourers could be explained by the fact that PIMS Hospital is attended mainly by patients belonging to low income group and also higher occurrence in this study would appear to reflect only the higher proportion of farmers in the population in this part.

In the present study age of onset was highest in the age group 31-40 years (26%). The observations made in our study are in concurrence with observation made by Griffith *et al.*, [14], Herrier *et al*., [16]. It was not in concurrence with the observations made by Mehta *et al*., [10] and Sardari Lai [11] who observed the age of onset more in second decade of life.

In the present study a positive family history of the disease was present in 10% of patients, all of them being first degree relatives. One of the most compelling ways to implicate genetics in disease is to establish an increased disease concordance between monozygotic twins when compared with dizygotic twins. Indeed, this is the case in psoriasis, where there is a threefold increased risk of psoriasis in monozygotic twins compared to fraternal twins.

The present study 48% had no influence of season on their disease. 40% had exacerbation of their disease in winter, 10% during summer and 2% in rainy season (Table-5).

Table-5: Frequency of winter exacerbation in various studies

Study	Winter exacerbation
Wu Yan *et al.*, (2010) [17]	21.6%
Verma *et al.*, (1979) [13]	55%
Farber & co-workers (1968) [18]	88%
Present study	40%

In the present study mild to moderate itching was present in 82% of patients. It was severe in 4% of patients. It was asymptomatic in 14% of patients. Though in older literature psoriasis is referred to as an asymptomatic disease, according to the recent literature available, the percentages of asymptomatic cases are very low.

Table-6: Frequency of pruritis as chief complaint in various studies

Study	**Frequency**
Okhandiar *et al*., [12]	95%
Bedi [19]	81%
Kaur *et al*., [20]	65%
Present study	82%

Lesions were first noted in scalp in 30% of patients and upper and lower extremities in 48% of cases in the present study whereas Sharma *et al*., [15] observed scalp as the initial site of onset in 70% of cases and upper and lower extremity in 17% of patients (Chart-1). Scalp psoriasis is very common. In fact, at least half of all people who have psoriasis have it on their scalp. Scalp psoriasis can range from slight, fine scaling to thick, crusted plaques covering the entire scalp. It can extend beyond the hairline onto the forehead, the back of the neck and around

In the present study nails were involved in 66% of cases, pitting was the commonest change in 58% of cases, subungual hyperkeratosis in 34% of patients, discolouration in 26% of patients and onycholysis in 6% of patients. Inderjeet *et al*., [21] observed nail involvement in 62.2% of cases, majority of them showing pitting. Ghosal *et al*., [22] studied nail involvement in 100 psoriasis patients.

None of the cases included in the present study showed joint involvement. This was in concurrence with the observation made by Sardari Lai [11]. While Mehta *et al*., [10] observed joint involvement in 1.67%, Verma *et al*., found in 11.8% pain in the joint without evidence of arthritis [10, 13]. Where as Inderjeet *et al.*, [21] found joint involvement in 10.24% of cases again with no evidence of arthritis.

Histopathological Correlation

Early Lesions

Macules and Papules without scaling or mild scaling of less than 30 days duration were selected for the study. 5 patients (Table-2) were selected for the study all of which (100%). showed patchy parakeratosis and Mild to moderate Acanthosis, which was in concurrence with the results of Sardari Lal *et al*., [11]. Thinning of Supra papillary plates was present in 4 patients (80%) which was in concurrence with the

results of Sardari Lal, Munro Micro abscess was present in 2 patients (40%), which was slightly higher than the results of Sardari Lal *et al*., who observed Munro - Micro abscess in 20% of early lesion [11]. This could be explained by the fact that Sardari Lal *et al.*, selected very early lesions (2 to 4 days in duration) for their study. All the patients showed dermal capillary dilation and peri vascular lymphocytic infiltrate. This was in concurrence with the results of Braun- Flaco *et al*., and Ragaz *et al*., who noticed preponderance of dermal changes in early lesions [23, 24]. 2 patients (40%) showed spongiosis which again is a feature of early lesion of psoriasis. Hence all lesions correlated with clinical findings also with discordance compared to other studies.

Late/ Well Developed Lesion

41 patients were studied out of which 100% showed parakeratosis and acanthosis, 73% showed thinning of supra papillary plate, 63.4% showed thinning or absence of stratum granulosum, 54% showed munro micro abscess which were almost in concurrence with the results of Sardari Lai [11]. There is a disparity between findings of our study and recognised histopathological features of a well-developed lesion of psoriasis. Some specimens in our study showed absence of uniform parakeratosis (4 patients), presence of normal stratum granulosum (25 patients), and normal thickness of supra papillary plates (11 patients). 5 patients in this study showed histopathological features of psoriasiform dermatitis and one patient showed histopathological features of spongiotic dermatitis. There is a disparity between findings of our study and recognised histopathological features of a well-developed lesion of psoriasis (Table-3). Since all the characteristic histological features are not seen in all the cases but one or other feature is observed to diagnose them as chronic psoriasis.

As we can see not all early lesions and late lesions showed typical Histopathological features. But the diagnosis of psoriasis could be established based on other features owing to diversity of histological features of psoriasis.

Pustular Psoriasis

All lesions correlated with clinical diagnosis. All of the cases showed diagnostic micro munro abscess and 2 cases showed Spongiform pustule of Kogoj.

Psoriatic erythroderma (Early lesion) in one patient was included in this study, which showed parakeratosis, thinning of stratum granulosum, acanthosis, supra papillary thinning, spongiosis with few neutrophils, dilated capillaries and perivascular chronic inflammatory infiltrate. These finding were in consistent with the results of Abrahams *et al.***,** who observed characteristic features in some instances but frequently histological appearance indistinguishable from chronic eczematous dermatitis [25]. Histopathological features of pustular and erythrodermic psoriasis were consistent with the clinical features.

The histopathological findings in the present study showed features consistent with psoriasis, but there was disparity between findings of other studies. This can be explained on the basis of varying degrees of activity of the disease. It is clear that there is a wide spectrum of histologic change recognizable in psoriatic plaques, even when they have not been subjected to specific treatment and also when the clinical appearance does not deviate from the usual.

CONCLUSION

Psoriasis is a chronic dermatological disorder with chronic remissions and exacerbations. The disease course being affected by various factors as mentioned in the study. The well-developed lesions of psoriasis did not show all the characteristic histological features of psoriasis in all cases. Cutaneous lesions consisted of well-defined erythematous papules and plaques covered with scales. Hypopigmented halo, Koebner phenomenon, and Auspitz sign were the associated features. Hence varied and diverse clinical presentations of psoriasis are observed which are finally diagnosed by histopathological examination (Skin Biopsy). Histopathology also shows many diverse features depending on stage of disease. This mandates correlation and combination between clinical and histopathological features for proper diagnosis viz-a-viz management of psoriasis while also considering various factors which affect disease progression.

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