DISEASE CONCOMITANCE IN PSORIASIS- A CLINICAL STUDY

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ABSTRACT

BACKGROUND

Psoriasis is associated with a variety of comorbidities like diabetes, cardiovascular diseases, variations in lipid metabolism, liver impairment, gout, intestinal disease and malabsorption. A number of skin diseases are also reported to occur concomitantly in patients with psoriasis like vitiligo, lichen simplex chronicus, lichen planus, etc. We wanted to study the frequency of cutaneous and systemic diseases concomitantly seen in patients with psoriasis as observed in patients attending South Central Railway Hospital and to assess the significance by comparing them with controls.

METHODS

100 patients with psoriasis attending the department of Dermatology and Venereology, South Central Railway Hospital were studied in detail. Special attention was given to the concomitant cutaneous and systemic diseases. The psoriatic patients were compared with equal number of age and sex matched controls. The concomitant cutaneous and systemic conditions in psoriasis patients were compared with those in the controls and the statistical significance was assessed using Chi-square test and Z value for two proportions.

RESULTS

We have compared the associated cutaneous and systemic disorders in psoriasis patients with controls. The various cutaneous diseases seen in our psoriatic patients are melasma (3%), PMLE (1%), acrochordons (5%), alopecia areata (1%), drug rash (2%), cellulitis (1%), DPN (3)%, FDE (1%), vitiligo (3%), tinea cruris/corporis (2%), lipomas (1%), ecchymoses (2%), candidal intertrigo (1%), lymphedema (1%), lichen planus (1%). The various systemic disorders associated were diabetes (26%), hypertension (30%), coronary artery disease (5%), elevated lipid profile (5%) cerebrovascular accidents (1%), bronchial asthma (2%), depression (2%), anaemia (5%) etc. There was a statistically significant difference in the number of cases with liver impairment (5%) and hyperuricemia (5%) when compared to controls. The percentage of patients who were overweight (30%) and had addictions like alcohol intake (29%) and smoking (15%) was also significantly higher among psoriatics.

CONCLUSIONS

In the present study, psoriasis in associated with various cutaneous and systemic disorders, some showing statistically significant difference when compared to controls.

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BACKGROUND

Psoriasis is an immune mediated, multifactorial disease characterized by phenotypic diversity and genetic heterogeneity. It is a proliferative and inflammatory disease of the skin which affects people who are genetically predisposed. The incidence of Psoriasis in India ranges from 0.8% to 5.6%.[1,2] Plaque type of Psoriasis is the commonest with the scalp and extremities being the common sites involved. The primary lesions are well defined scaly plaques and papules covered by silvery scales.

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Psoriasis is associated with a variety of comorbidities and adverse health behaviours such as smoking and alcohol abuse. Psoriasis may be an independent risk factor for diabetes, atherosclerosis and subsequent MI. Variations in lipid metabolism, renal failure and malignancies may be associated with psoriasis. Psoriasis is also found associated with gout, hypocalcaemia, intestinal disease and malabsorption. The cumulative impact of severe chronic psoriasis and its associated comorbidities is demonstrated by recent data showing the severe psoriasis is associated with a 50% increased risk of all-cause mortality and that these patients die approximately 3 to 4 years younger than patients without psoriasis.

A number of skin diseases are reported to occur concomitantly in patients with psoriasis and psoriasis may develop in association with pre-existing skin diseases. For example, lichen simplex chronicus may take on psoriatic characteristics and vice versa and lichen planus alternates in a manner suggestive of a reciprocal Koebner phenomenon, often over a period of months or years. Anatomical cohabitation of Psoriasis and vitiligo has been reported.

In view of the different cutaneous and systemic associations reported in patients with psoriasis, we took up a study in railway population to assess various comorbidities and their strength of association in psoriasis patients attending department of Dermatology, South Central Railway Hospital. Also, an effort was made to compare the same in patients without psoriasis.

METHODS

Study Subjects
One hundred patients with psoriasis attending the Department of Dermatology and Venereology, South Central Railway Hospital, Secunderabad, during the period from Feb. 2018 to Feb. 2019 were selected for the study.

Case
Patient of psoriasis of any age and sex excluding erythrodermic psoriasis

Control
Age and sex matched controls attending skin OPD not suffering from any kind of psoriasis

Inclusion Criteria for Cases
All forms of psoriasis in all ages of both sexes after confirming the diagnosis clinically were included in the study.

Exclusion Criteria for Cases
- Patients suffering from erythrodermic psoriasis were excluded.
- The psoriatic patients were compared with equal number of age and sex matched controls.

Inclusion Criteria for Controls: Age and sex matched patients attending the skin OPD and not suffering from any form of psoriasis excluded clinically.

Participants
Purposive Sampling from Dermatology OPD.

Sample Size
Sample size is empirically taken based on inflow of patients because there are multiple parameters studying power of the study can't be calculated.

Study Design
Cross sectional study. Detailed history and clinical examination were carried out in psoriatic patients as per the proforma. Special attention was given to the concomitant cutaneous and systemic diseases. BMI was calculated in all patients. ICD-10 criteria were applied to diagnose cases of depression.

Required investigations were done in all the patients which included complete urine analysis, complete blood picture, ESR, Fasting and Postprandial blood sugars, Fasting lipid profile, Liver function tests, Blood urea, Serum creatinine, Serum uric levels, ultrasound abdomen. Skin biopsy and histopathological examination were done in few cases to confirm psoriasis or to diagnose other associated skin conditions. In suspected cases of fungal infections, scrapings from the lesions were examined in 10% KOH for fungal elements and spores. Patients with joint symptoms were investigated by X-Rays of the joints and tested for Rheumatoid factor and HLA-B27.

Statistical analysis was done using chi-square test for two proportions. The concomitant cutaneous and systemic conditions in psoriasis patients were compared with those in the controls and the statistical significance is assessed by calculating X2 and p-value for two proportions.

RESULTS
Out of 100 psoriatic patients studied, 72 (72%) were males and 28(28%) were females. Among the 100 psoriatic patients, male:female ratio was 2.6:1. The maximum incidence of psoriasis, was in the age group of 40-49 years. The oldest patient in the series was 80 yrs. and the youngest, 14 yrs. (Table-1).Duration of the disease among 100 patients showed a maximum in the range of <1 yr. (35%) and 1-5 yrs. (35%), followed by 6-10 yrs. (14%). The maximum duration of disease seen in our cases is 30 yrs. (Table-2). Comparison of history of atopy in cases and controls is shown in Table-3. There was statistically significant difference of addictions like alcohol intake and smoking (p-value 0.0006 and 0.003 respectively) among psoriatics and controls (Table-4). Among the different clinical types of psoriasis, psoriasis vulgaris cases showed highest systemic association (Table-5). There was statistically significant difference of percentage of over-weight patients among cases and controls (p-value: 0.030) (Table-6). A number of cutaneous diseases were seen associated with psoriasis which are given in Table-7. The several systemic disorders seen associated with psoriasis is shown in Table-8. There was statistically significant difference in the number of cases with liver impairment and hyperuricemia when compared to controls.

Age in Years	Males	Percentage	Females	Percentage
10-19	1	1%	1	1%
20-29	1	1%	0	0%
30-39	8	8%	3	3%
40-49	21	21%	7	7%
50-59	18	18%	9	9%
60-69	15	15%	6	6%
70-79	8	8%	2	2%
80-89	0	0%	0	0%
Total	**72**	**72%**	**28**	**28%**

Table 1. Age and Sex Distribution

Duration in Years	No. of Cases	Percentage
<1 yr.	35	35%
1-5 yrs.	35	35%
6-10 yrs.	14	14%
11-15 yrs.	8	8%
16-20 yrs.	3	3%
21-25 yrs.	3	3%
26-30 yrs.	2	2%
Total	**100**	**100%**

Table 2. Duration of Disease

History of Atopy	Cases	Percentage	Controls	Percentage	X2	p-Value
Yes	7	7%	6	6%	0.082	0.77(insignificant)
No	93	93%	94	94%		
Total	**100**		**100**			

Table 3. History of Atopy

Addictions	Cases	%	Controls	%	X2	p-Value
Alcohol	29 Reg: 20 Occ: 9	29%	10 Reg: 8 Occ: 2	10%	11.49	0.0006
Smoking	15 Reg: 13 Occ: 2	15%	3	3%	8.79	0.003
Tobacco chewing	2	2%	1	1%	0.34	0.56
Pan chewing	3	3%	0	0%	3.04	0.08

Table 4. Addictions/Habits

Clinical Type	No. of Cases with Systemic Association	%	No Systemic Association	%
Psoriasis vulgaris	47	47%	32	32%
Guttate psoriasis	0	0%	2	2%
Palmoplantar psoriasis	5	5%	5	5%
Inverse psoriasis	1	1%	0	0%
Gen. pustular psoriasis	1	1%	0	0%
Scalp psoriasis	3	3%	4	4%
Total	57	57%	43	43%

Table 5. Clinical Types of Psoriasis and Systemic Association

Body Mass Index	Cases	%	Controls	%	X2	p-Value
Underweight	4	4%	8	8%	1.418	0.233
Normal weight	62	62%	73	73%	2.75	0.096
Over weight	30	30%	17	17%	4.70	0.030
Obesity	4	4%	2	2%	0.68	0.407
Extreme obesity	0	0%	0	0%	-	-

Table 6. Body Mass Index

Cutaneous Diseases	Cases	%	Controls	%	X2	p-Value
Melasma	3	3%	4	4%	0.148	0.700
PMLE	1	1%	1	1%	0	1
Acrochordons	5	5%	7	7%	0.354	0.551
Alopecia areata	1	1%	1	1%	0	1
Drug rash	2	2%	1	1%	0.338	0.56
Cellulitis	1	1%	0	0%	1.005	0.312
DPNs	3	3%	5	5%	0.520	0.47
FDE	1	1%	1	1%	0	1
Vitiligo	3	3%	3	3%	0	1
Tinea cruris/corporis	2	2%	6	6%	2.08	0.148
Lipomas	1	1%	0	0%	1.005	0.316
Ecchymoses	2	2%	1	1%	0.338	0.56
Candidal intertrigo	1	1%	3	3%	1.020	0.312
Lymphoedema	1	1%	0	0%	1.005	0.316
Lichen planus	1	1%	0	0%	1.005	0.316

Table 7. Concomitant Cutaneous Diseases

Systemic Diseases	Cases	%	Controls	%	X2	p-Value
Diabetes	26	26%	19	19%	1.405	0.235
Hypertension	30	30%	38	38%	1.426	0.232
Coronary artery disease	5	5%	5	5%	0	1
Rheumatic heart disease	1	1%	1	1%	0	1
Elevated lipid profile	5	5%	4	4%	0.116	0.733
Chronic venous insufficiency	2	2%	1	1%	0.33	0.56
Cerebro vascular accidents	1	1%	2	2%	0.56	0.33
Acid peptic disease	2	2%	0	0%	2.02	0.15
Fatty liver	5	5%	0	0%	5.128	0.02
Bronchial asthma	2	2%	4	4%	0.68	0.407
Chronic kidney disease	0	0%	2	2%	2.02	0.155
Rheumatoid arthritis	1	1%	0	0%	1.005	0.316
Cervical spondylosis	1	1%	0	0%	1.005	0.316
Ankylosing spondylosis	1	1%	0	0%	1.005	0.316
Hyperuricemia	5	5%	0	0%	5.128	0.02
Depression	2	2%	0	0%	2.02	0.155
Anaemia	5	5%	1	1%	2.749	0.097
Epilepsy	0	0%	1	1%	1.005	0.316
COPD	0	0%	1	1%	1.005	0.316
Hypothyroidism	4	4%	0	0%	4.08	0.04

Table 8. Concomitant Systemic Diseases

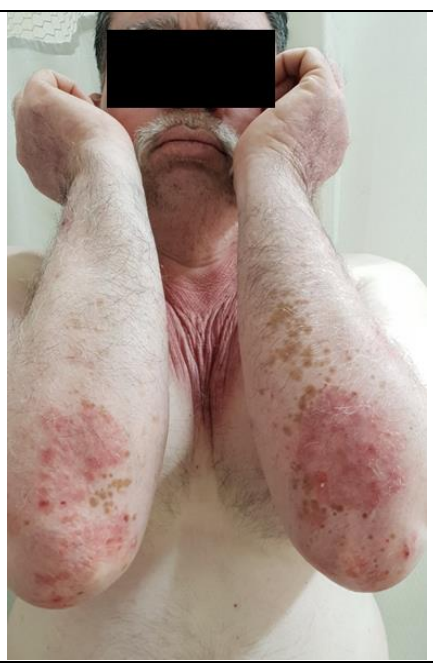

Figure 1. Vitiligo with Psoriasis

Figure 2. Psoriasis with Cellulitis

DISCUSSION

A number of Cutaneous and Systemic diseases are reported to occur in patients with psoriasis.

Sex Ratio

In the present study of hundred patients 72% were males and 28% were females (male: female-2.6:1) which is in agreement with the male preponderance noted in earlier studies.[3,4,5]

Duration

The duration of the disease at the time of examination varied from 15 days to 30 years. The chronicity of the disease is evident by the highest proportion of patients (75%) having the disease for more than one year. This is in agreement with a study which reported that 86.66% of patients had the disease for more than one year.[3]

Disease Concomitance

In the present study we compared the simultaneous occurrence of skin and systemic diseases in patients with psoriasis and in control patients without psoriasis.

Several epidemiological surveys have been conducted, on disease association in psoriasis. Lindegard studied psoriasis associated diseases in a general population of nearly 160000 urban dwellers in Sweden and found excessive rates of viral infections, urticaria, alcoholism, hypertension, pneumonia, hepatic cirrhosis and rheumatoid arthritis.[6] Psoriasis seems to be more often associated with diabetes, obesity, myocardial infarction and asthma in women than in men. Alexander et al in their study of 61 patients with psoriasis found a distinct pattern of associated diseases in patients with psoriasis, compared to controls like lichen simplex chronicus, verruca vulgaris and melasma.[7]

In the present study we found various cutaneous diseases associated in psoriasis patients and controls. But in none of the cases the difference was statistically significant.

The various cutaneous diseases seen in our psoriatic patients are melisma (3%), PMLE (1 %), acrochordons (5%), alopecia areata (1%), drug rash (2%), cellulitis (1%), DPNs (3%), FDE (1%), vitiligo (3%), Tinea-cruris/corporis (2%), lipomas (1%), ecchymoses (2%), candidal intertrigo (1%), lymphedema (1 %), lichen planus (1%).

Several common skin disorders were less frequent in patients with psoriasis than expected, such as dermatoses with an immunopathology like eczemas, allergic contact dermatitis, urticaria and atopic dermatitis and viral, bacterial and fungal infections. This is in agreement with the study done by Henseler and Christopher.[8] Their data provide evidence that in psoriasis, a genetically determined resistance to infections is linked with CW6 associated haplotype. According to Richard Weller,[9] the decreased incidence of skin infections caused by dermatophytes and particularly by bacteria and viruses is due to enhanced production of nitric oxide in psoriatic skin. In our study, dermatophyte infections were seen in 2% of cases, compared to 6% in controls.

Epstein and Maibach found that cutaneous responses to common contact allergens were depressed in patients with psoriasis. Thus, literature supports the finding in the present study not showing any type of eczema associated with psoriasis.[10]

Vitiligo with psoriasis was seen in 3% of the cases in the present study. One of the patients had developed psoriatic plaques over vitiligo patches. Koransky and Roenigk described cases of 7 patients with vitiligo and psoriasis.[11]

There are a few case reports of the coexistence of lichen planus and psoriasis in a single patient. In Our study, we noticed a single patient having lichen planus and psoriasis simultaneously at different sites.

In the present study we did not find any associated cutaneous malignancies. This is comparable to the report by Koscard (1976) that psoriasis is practically non-existent in patients with cutaneous malignancies. This evidence suggests that there is indeed a negative association between psoriasis and cancer of the skin, but some antipsoriatic agents might act as carcinogens or tumour promoters.[12]

Of the systemic disorders, observed in our patients, concomitant diabetes was seen in 26% of our cases (psoriatics), compared to 19% of controls. The study done by Bedi[13] and Sundharam[14] showed a relationship between abnormal glucose tolerance and psoriasis. They pointed out that nutritional factors related hypercaloric dietary habits could play a significant role. Similarly, associated hypertension may also be related to dietary habits. In our study concomitant hypertension was noticed in 30% of cases (psoriatics) and 38% of controls. Coronary artery disease was seen in 5% of the cases. Epidemiologic studies in Sweden, Germany, and the Unites States have demonstrated an association between psoriasis and cardiovascular disease

(CVD).[15,16] The probable reason for almost equal incidence of Diabetes and Hypertension in the controls of our study, is the better income, comparatively better standards of living and more urbanization of the Railway population. Further we have taken Fasting and postprandial blood sugars to detect Diabetes. Instead Impaired Glucose Tolerance could have detected a greater number of cases.

In the present study elevated lipid profile was seen in 5% of cases and 4% of the controls. In 2005 Mallbris et al., in their study on psoriasis patients proved significant serum lipid abnormalities in the early course of the disease.[17]

In our study liver involvement was seen in5% of cases in the form of alcoholic hepatitis (1%), alcoholic fatty liver (3%) and non-alcoholic fatty liver (1%) compared to nil involvement in controls. The difference was statistically significant (p-value<0.05) Zachariae and Sogaard (1973) reported that fatty metamorphosis, periportal inflammation and focal necrosis occurred more often in patients with psoriasis than in control population. It has been debated whether increased alcohol intake in psoriatics might be the explanation. In a study by Gisondi et al., Non-alcoholic fatty liver disease (NAFLD) was present in around half of patients with plaque psoriasis.[18] An elaborate study with inclusion of severity indicator like PASI Scoring would throw more light into liver changes like NAFLD.

Elevated uricacid levels in serum were seen in 5% of our cases out of which four were asymptomatic and one had gouty arthritis. There were no cases of hyperuricemia or gout in the controls. The difference was statistically significant (p-value<0.05). The association between psoriasis and gout seems well established (Lundquist et al. 1982).[19] Eisen and Seegmiller (1961) postulated that the rise in serum uric acid levels in patients with psoriasis was due to the increased cell turnover in the skin which in turn increases purine synthesis.[20]

Mild depression was diagnosed in 2% of cases (Controls-nil). Previous studies described a wide range of psychological problems associated with psoriasis such as depression, anxiety, obsessive behaviour, sexual dysfunction, and suicidal ideation.[21-24]

The other systemic associations seen in our cases were, chronic venous insufficiency in 2% cases (Controls-1%), cerebrovascular accidents in 1% cases (Controls-2%), bronchial asthma in 2% cases (Controls-4%), anaemia in 5% cases (Controls-1 %), ankylosing spondylitis in 1% cases. But in our study, there was no significant difference of the associations among cases and controls. An increased incidence of occlusive vascular diseases such as thrombophlebitis, myocardial infarction, pulmonary embolization, and cerebrovascular accident has been reported in psoriatic patients in retrospective studies.[25]

In our study increased incidence of overweight and obesity was seen in 30% and 4% of cases respectively as compared to 17% and 2% in controls. There was a statistically significant difference of percentage of overweight among cases and controls. There has been an increase in publications that suggest the existence of a relationship between psoriasis and a higher body mass index (BMI).[26]

The incidence of alcohol intake and smoking was also higher among cases compared to controls in our study. Alcohol intake was seen in 29% of cases and 10% of controls (statistically significant difference, p-value<0.05). Smoking was seen in 15% of cases and 3% of controls (statistically significant difference, p-value<0.05). In a study by Hayes J, Koo J anxiety, depression, smoking, and alcohol abuse have been found to have a higher prevalence among psoriasis patients than healthy controls.[27]

CONCLUSION

One hundred patients with psoriasis and hundred age and sex matched control patients were studied to determine the frequency of concomitant cutaneous and systemic diseases. Our observations showed that there was significantly increased incidence of certain systemic conditions like liver impairment (hepatitis/fatty liver), hyperuricemia (asymptomatic/gouty arthritis) among psoriatic patients. There was also increased incidence of overweight among psoriatics. Addictions like alcohol intake and smoking were also seen with increased frequency in psoriatic patients. Cutaneous disorders like vitiligo and lichen planus were also seen to be associated with psoriasis.

Larger studies including additional parameters like Diabetes with IGT (Impaired Glucose Tolerance) and HbA1c, PASI scoring and measuring abdominal circumference or visceral adiposity to assess overweight would bring out more subtle associations.

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