



MEDICAL CO-MORBID CONDITIONS ASSOCIATED WITH PSORIASIS; PSORIASIS BEYOND SKIN.

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ABSTRACT... Objectives: Patients with psoriasis have higher prevalence of associated medical disorders including psoriatic arthritis, obesity, diabetes, dyslipidemia, thyroid abnormalities and cardiovascular disease. The rationale of current study was to determine prevalence of associated medical co-morbid conditions in psoriasis cases. **Study Design:** Descriptive cross sectional study. **Setting:** Dermatology Clinic, Bahawalpur Victoria Hospital. **Period:** January to July 2015. **Material & Methods:** Informed consent was obtained from 117 adult patients (>18 years) of both the genders diagnosed with psoriasis for >3 months. Patients with chronic renal failure, chronic liver disease, erythroderma, chromosomal abnormality syndromes and pregnant females were excluded. Blood pressure and body mass index; i.e. BMI=weight (kg)/ height (m²) were documented. Fasting blood sugars, HbA1c, lipid profile and electrocardiogram was done. **Results:** Mean age was 41.94±11.60 years. Among 117 cases, 66(56.41%) were males and 51(43.59%) were females; male to female ratio was 1.3:1. Diabetes mellitus was found in 53(45.30%), hypertension in 21(17.95%), obesity in 29(24.79%), ischemic heart disease in 62(52.99%) and dyslipidemia in 22(18.80%) patients. **Conclusion:** Current study concludes that patients with psoriasis have higher prevalence of ischemic heart disease and diabetes mellitus followed by obesity, dyslipidemia and hypertension. It is suggested that psoriasis cases presenting to dermatology department should be assessed for these co-morbid conditions for early diagnosis and management of these conditions.

Key words: Diabetes Mellitus, Dyslipidemia, Hypertension, Obesity, Psoriasis.

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INTRODUCTION

Psoriasis is a chronic inflammatory condition of skin that involves immune mechanism. It is characterized by red, scaly patches, papules or plaques, which present with the complaint of itching.¹ The severity of the skin lesions in psoriasis may manifest as minor localized patches to extensive psoriasis with involvement of almost complete body.^{2,3} Psoriasis has been reported to affect approx. 2% of world's population.⁴ The five main types of psoriasis are plaque, guttate, inverse, pustular and erythrodermic psoriasis. The most common form is Plaque psoriasis characterized by sharply demarcated and erythematous areas covered with silvery white scales.⁵ Psoriasis is a systemic illness and manifestations of psoriasis extend beyond the skin.⁶ Epidemiological studies have reported psoriasis is frequently associated with systemic disorders. In addition to psoriatic

arthritis, the frequently seen medical conditions are obesity, diabetes, dyslipidemia, thyroid abnormalities and cardiovascular disease.⁷ The causal relationship between psoriasis and the medical co-morbid conditions hasn't been proved, however it has been suggested that chronic inflammation and pro-inflammatory cytokines are the contributory factors. Along with the increase in age, these factors are also considered to rise. Approx. 2/3rd of psoriasis patients have two or more co-morbid conditions, this has significant impact on mortality, morbidity and the health care dependency in psoriasis cases.^{8,9}

In order to improve the quality of life of psoriasis patients, physicians should be aware of the associations of psoriasis to provide extensive medical care to psoriasis patients. There should be an integrated approach in treating psoriasis

and associated co-morbid. The rationale of current study was to determine the prevalence of medical co-morbid conditions in patients with psoriasis in regional population. The results of this study will be helpful to reduce the morbidity in psoriasis patients by recommending the practical implications for proper screening and management of medical co-morbid conditions in psoriasis cases.

MATERIALS AND METHODS

This descriptive, cross sectional study was conducted at dermatology outdoor clinic, Bahawalpur Victoria Hospital after approval by ethical review board of hospital from January to July 2015. Total 117 adult patients (>18 years) of both the genders with diagnosis of psoriasis for >3 months duration meeting the inclusion criteria were selected by non-probability consecutive sampling after informed consent. The sample size of 117 cases was calculated with 95% confidence level, 6% margin of error and expected frequency of medical co-morbid conditions in psoriasis as 12.5%.¹⁰

Patients with chronic renal failure, chronic liver disease, erythroderma, chromosomal abnormality syndromes and pregnancy were excluded.

All patients were evaluated for presence of any medical comorbid conditions. Blood sample was sent for fasting blood sugar, Glycosylated hemoglobin (HbA1c) and lipid profile for presence or absence of diabetes mellitus and dyslipidemia respectively. Blood pressure was checked by the researcher themselves at two different occasions for presence of hypertension. BMI was calculated by following formula; $BMI = \text{weight (kg)} / \text{height (m}^2\text{)}$ and obesity was noted as present or absent. Electrocardiography and cardiac evaluation was done for ischemic heart disease.

Statistical analysis was performed using SPSS version 20. Results were presented as mean and standard deviation for quantitative variables (i.e. age and duration of disease). For qualitative variables frequency and percentages were calculated. Effect modifiers like age, gender, duration of disease and family history of psoriasis

(yes/no) were controlled through stratifications. Post-stratification chi square was applied to see the effect of these on frequency of co-morbid conditions and $p\text{-value} \leq 0.05$ was taken as statistically significant.

RESULTS

Among 117 cases, mean age was 41.94 ± 11.60 years with a range of 20-60 years. Majority of the patients presenting with psoriasis, i.e. 64(54.70%) were < 40 years age and 53(45.30%) were above 40 years age. The age group above 40 years was found to be significantly associated with presence of ischemic heart disease ($p < 0.0001$) and dyslipidemia ($p = 0.018$); however diabetes mellitus, hypertension and obesity was not found to be associated with age above 40 years in psoriasis cases ($p > 0.05$, Table-I).

There were 66(56.41%) males and 51(43.59%) females with male to female ratio of 1.3:1. Gender was not found to be associated with diabetes, hypertension, obesity or dyslipidemia in psoriasis cases ($p > 0.05$); however male patients presenting with psoriasis had significantly high frequency of ischemic heart disease i.e. 43(65.15%) among males vs. 19(37.25%) among female psoriasis cases ($p = 0.003$; Table-I).

Mean duration of the disease was 6.30 ± 3.09 months. There were 76(64.96%) cases with duration of psoriasis < 6 months and 41(35.04%) with duration > 6 months. Duration of psoriasis was not found to be associated with any of the studied medical co-morbid conditions ($p > 0.05$; Table-I)

The family history of psoriasis was positive in 69(58.97%) psoriasis cases. Family history of psoriasis was not found to be associated with presence of the studied medical co-morbid conditions ($p > 0.05$; Table-I).

Diabetes mellitus was found in 53(45.30%), hypertension in 21(17.95%), obesity in 29 (24.79%), ischemic heart disease in 62 (52.99%) and dyslipidemia in 22 (18.80%) patients (Figure-1).

	Among all (n=117)	Diabetes Mellitus (n=53)	Hypertension (n=21)	Obesity (n=39)	Ihd (n=62)	Dys-lipidemia (n=22)
Age						
<40 years	64(54.70%)	25(39.06%)	10(15.63%)	17(26.56%)	21(32.81%)	17(11.39%)
>40 years	53(45.29%)	28(52.83%)	11(20.75%)	12(22.64%)	41(77.36%)	05(26.56%)
		**p=0.136	**p=0.472	**p=0.635	**p= <0.0001	**p=0.018
Gender						
Male	66(56.41%)	30(45.45%)	14(21.21%)	17(27.27%)	43(65.15%)	16(24.24%)
Female	51(43.58%)	23(45.10%)	07(13.73%)	11(21.57%)	19(37.25%)	06(11.76%)
		*p=0.969	*p=0.295	*p=0.479	*p=0.003	*p=0.087
Duration						
<6 months	76(64.95%)	38(50.00%)	11(14.47%)	19(25.00%)	37(48.68%)	14(18.42%)
>6 months	41(35.04%)	15(36.59%)	10(24.39%)	10(24.39%)	25(60.98%)	08(19.51%)
		**p=0.164	**p=0.182	**p=0.942	**p=0.204	**p=0.885
Family history						
Yes	69(58.97%)	28(40.58%)	13(18.84%)	18(26.09%)	38(55.07%)	10(14.49%)
No	48(41.02%)	25(52.08%)	08(16.67%)	11(22.92%)	24(50.00%)	12(25.00%)
		*p=0.219	*p=0.763	*p=0.696	*p=0.589	*p=0.153

Table-I. (test of significance=8Chi-square test; ** student t-test; significant p<0.05).

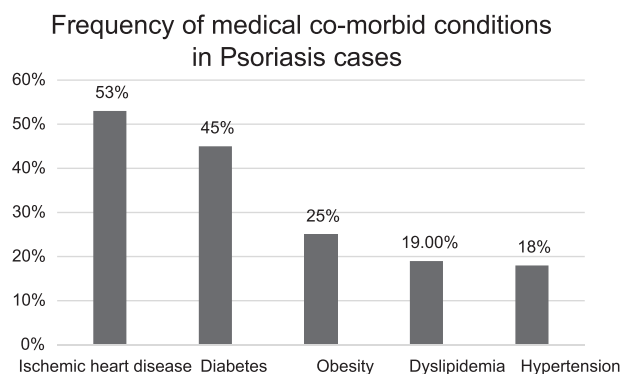


Figure-1. Bar graph presentation of medical co-morbid conditions in Psoriasis cases (n=117).

Table-I. Stratification of Diabetes, hypertension, obesity, dyslipidemia and ischemic heart disease (IHD) in psoriasis cases with respect to age, gender, duration and family history of psoriasis.

DISCUSSION

Psoriasis has been found to be associated with high percentage of co-morbid conditions i.e. diabetes mellitus, stroke and cardiovascular disease in several observational studies. The psoriasis cases receiving systemic treatment or phototherapy have higher prevalence of these medical co-morbid conditions and this association is independent of the conventional risk factors for these outcomes. Associations with other comorbid diseases, such as metabolic syndrome, chronic obstructive pulmonary disease, asthma, acid peptic disease, liver disease, renal failure, and rheumatoid arthritis, have also been reported

by certain studies.¹¹ Hence, current study was conducted to determine the prevalence of medical co-morbid conditions in patients with psoriasis.

The mean age of patients in this study was 41.94 ± 11.60 years with more than half of the cases (54.7%) were between 20-40 years age. Lin TY et al¹² and Al-Abdulrazzaq A et al¹³ in their studies have found mean age of 42 years which is very much comparable to our study. Contrary to this, Austin M et al¹⁴ in his study have found higher mean age of 50 years as compared to our study. Also, Shahin A et al¹⁵ has shown comparatively lower mean age of 34 years. In current study, out of 117 patients, 56.41% were males and 43.59% were females with male to female ratio of 1.3:1. Many previous studies have also shown male predominance as observed in our study.¹²⁻¹⁵

A Swedish study conducted by David Hagg¹⁶ from Umea University addressed the association of gender with biologics treatment in psoriasis. It was observed that males are more likely to be prescribed biologics possibly because of increased severity of psoriasis in males as compared to females. The other reason could be the discriminatory approach in for male versus female cases rather than the severity of psoriasis itself. This study raised a question that whether or not men were more likely to receive high priced biologics than women because more than half (i.e.59%) of the registered patients were men.

In our study, prevalence of diabetes mellitus was found in approx. half of the cases, i.e. 45.3%. Hypertension was found in 17.95%, obesity in 24.79%, ischemic heart disease in 53% and dyslipidemia in 19% of psoriasis cases. In the study conducted by Thomas J et al, 55.8% patients had some comorbid condition associated.¹⁷ An Indian study conducted by the same authors¹⁸ showed that total 52% of patients had some associated comorbidity in their study. Both of these Indian studies were hospital based and the dyslipidemia sample included both male and female patients. In a study conducted by Kumar P et al¹⁹, 200 patients of psoriasis were studied and a total of 88.5% patients had one or more comorbid conditions i.e. obesity in 22.5%, diabetes in 49%, in 14.5%, hypertension in 12.5%. Psoriasis is also found to be associated with an increased risk of cardiovascular disease and 56% increase in ischemic heart disease.²⁰

There is increased the risk of diabetes in psoriasis cases independent of the other risk factors i.e. weight, hypertension and hypercholesterolemia. A psoriasis patient is 59% more likely to be diagnosed with diabetes and a patient with severe psoriasis is even 97% more likely to be diagnosed with diabetes as compared to those without psoriasis which was found out by a study in 2012. There is a marked reduction in the life expectancy of psoriatic individuals diagnosed with diabetes. It has also been estimated that if an individual is diagnosed at an age of 40 years, men will lose 11.6 life-years (18.6 quality-adjusted life-years) and women will lose 14.3 life-years (22.0 quality-adjusted life-years). The association between diabetes mellitus and psoriasis had been suggested well before in year 1908. Qureshi et al²¹ documented, in their prospective study of female nurses, the link between psoriasis and both diabetes mellitus and hypertension. Hence, psoriasis is associated with significant comorbidities that indicate an elevated risk of severe complications, which is quite frequently observed.²²

Palmo-plantar psoriasis was the most common type in an Indian study conducted by Thomas et al., with maximum number of patients in age group

of 41-50 years. More than half of patients had the disease for a period of 1-5 yrs. Diabetes mellitus was seen in 11.6% of patients and hypertension in 14.1%. Both diabetes and hypertension were seen in 12.5% of patients; 6.6% of patients were obese. In 4.1% of patients, lipid profile was found to be deranged.

Obesity and psoriasis have proven association, with their correlation originally proposed more than ten years ago by Henseler and Christophe.²³ This was later reinforced by multiple large clinical trials, reviews, and cohort studies. Obesity is defined as a body mass index (BMI) above 30. A study conducted upon 10,000 patients with moderate-to-severe psoriasis, showed an average BMI of 30.6 kg/m².²⁴ In addition, almost half i.e. 46% of patients with moderate-to-severe psoriasis were obese which was revealed by a study on 3700 etanercept clinical trial patients. Similarly, the Utah Psoriasis Initiative (UPI) study showed a higher prevalence of obesity, i.e almost double in the psoriatic population as compared to general population (34% vs.18%; p=0.001), proving strong association between psoriasis and obesity. A positive correlation between obesity grades and severity of psoriasis also was demonstrated in the UPI study. Whether this association applies to full spectrum of psoriasis patients or only those with more severe psoriasis is still uncertain and needs to be studied further.

Obesity, as measured by waist circumference, is an important component of the metabolic syndrome along with impaired glucose metabolism, raised triglycerides, reduced high-density lipoprotein and hypertension. Metabolic syndrome was significantly common in psoriasis patients than in controls (30.1% Vs. 20.6%) as indicated by a hospital based case-control study.²⁵ As per authors, understanding of the health risks attributed to the metabolic syndrome, these findings indicate that psoriasis is likely to have an impact on cardiovascular morbidity and mortality in psoriasis patients by contributing to greater risk compared with the general population for coronary heart disease, myocardial infarction, stroke, and type 2 diabetes mellitus.²⁶

The psoriasis cases were found to have raised serum lipids; this was initially reported by Lea Cornish and Block.²⁷ Since then, several studies have been conducted on this subject that have reported a raised prevalence of lipid abnormalities in psoriasis.^{28,29} There may be multiple reasons for dyslipidemia in patients with psoriasis. The factors contributing to altered lipid metabolism are structural and functional changes in digestive tract, immune mechanisms involving IL-6/24, tumor necrosis factor, C-reactive proteins and cellular oxidative stress.

The results of current study will be helpful to provide regional data of co-morbidities in psoriasis cases that may be compared to international figures. This will be helpful to assess the co-morbid conditions in our patients with psoriasis. Hence, leading to a more integrated and multi-level approach to address these risk factors' prevention and management for better outcome in psoriasis cases. Results of current study should be interpreted carefully and authors recommend further regional studies with improved sample size and analysis of other possible co-morbidities also.

CONCLUSION

Current study concludes that patients with psoriasis have high frequency of ischemic heart disease and diabetes mellitus followed by obesity, dyslipidemia and hypertension. Authors recommend the screening and evaluation of these co-morbid conditions in patients presenting with psoriasis. The timely diagnosis and appropriate management of these medical comorbid conditions in psoriasis cases may lead to reduced morbidity and improved outcome.



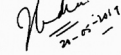

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