DOI: https://doi.org/10.53350/pjmhs20221612256

ORIGINAL ARTICLE

Frequency of Metabolic Syndrome in Patients with Chronic Plaque Psoriasis

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ABSTRACT

Objective: To know the frequency of occurrence of metabolic syndrome in patients suffering from chronic plaque psoriasis.

Methods: This cross-sectional study was done in dermatology outpatient clinic of tertiary care hospital Faisalabad. Sample size of the study was 125 patients from population of Faisalabad. For enrolling patients in our study consecutive sampling method was used. After seeking approval from ethical hospital committee and completing inclusion and exclusion criteria, a total 125 patients of both gender having plaque psoriasis (between ages of 20-60 years) were taken in this study. Demographic details were noted. A fasting venous blood sample was taken and delivered to hospital laboratory for accessing triglycerides, HDL and fasting blood glucose levels. Waist circumference and blood pressure reading was taken by staff nurse. All the data was recorded on self-made performa.

Results: Out of 125 patients, 71(56.8%) were male and 54(43.2%) were females; 31 (24.8%) were in the range of 20-30 years of age whereas 94(75.2%) were in the range of 31-60 years. Mean +Standard Deviation was measured as 37.96+8.05 years. Out of 125 psoriatic patients, the frequency of metabolic syndrome was seen in 37 (29.6%) of cases.

Practical Implication: The connections between MS and psoriasis provide psoriasis patients with early possibilities for MS diagnosis and treatment, which could result in a significant decrease in morbidity and mortality. Different geographic regions and ethnic groups show significant differences in the symptoms of psoriasis and metabolic disorders. It can aid in the prevention and treatment of metabolic syndrome-related complications.

Conclusion: Because of significant relationship of metabolic syndrome with chronic plaque psoriasis, all psoriatic patients must be tested for metabolic syndrome and thus managed according to fasting lipid profile levels to decrease the incidence of cardiovascular morbidity and mortality

Keywords: chronic plaque psoriasis, metabolic syndrome, dermatology, triglycerides, waist circumference

INTRODUCTION

Chronic plaque psoriasis is a T-cell mediated chronic skin condition[1]. Worldwide 120 -180 million people are suffering from this condition [1]. The documented prevalence of this disease ranges between 0% - 11.8% [1]. Skin, nails, eyes and joints are main body parts affected by plaque psoriasis.it clinically presents as erythematous scaly and mildly itchy plaques mainly affecting extensor aspects of limbs and scalp. Many immune-related mechanisms are involved in the causation of chronic plaque psoriasis, so it is considered as disease with systemic involvement.[2] This disease has a major effect on the DLQI (disease life quality index) of the patient because it has associations with several co-morbidities.[3] There are many studies carried out over the past decade to get an evidence of increased risk of cardiovascular diseases and metabolic syndrome in psoriatic patients.[4]

The major components of metabolic syndrome include increased BMI, dyslipidemia, hypertension and hyperglycemia. This syndrome is a very strong risk factor for cardiovascular morbidity and as a whole it confers more risk of cardiovascular disease as compared to its individual components.[5] Recent epidemiological studies suggest a significant relationship of metabolic syndrome with chronic plaque psoriasis. It is considered that pathophysiological pathways of both psoriasis and metabolic syndrome are same. [6] Recent studies shows a higher levels of cytokines (e.g. TNF-α) and other immune related molecules like ICAM and E-selectin and vascular Endothelial Growth Factors in all conditions including chronic plaque psoriasis, morbid obesity and coronary disease.[7]

Main pathophysiological mechanisms of psoriasis includes innate and adaptive immunity activation, auto-amplification loop, chronic inflammation, angiogenesis and epidermal hyper-proliferation and these mechanisms have role in the pathogenesis of diabetes, atherosclerosis and thrombosis. In the same way the inflammatory markers involved in central or apple type obesity, glucose intolerance or insulin resistance and hyperlipidemia have role in the causation of psoriasis. In an Indian study, the frequency of metabolic syndrome was found in 60% chronic plaque psoriatic patients[2] and in a study conducted in China it was found in 14.3% patients.[8]

In another Indian study it was present in 28.8% psoriatic patients.[3] The diagnosis of psoriasis is clinical. This criteria is met by presence of more than 3 of following clinical features: (i) Erythematous and scaly patches and plaques of skin. Scales are thick and silvery, (ii) Xerotic, cracked and excoriated skin that may show bleeding points, (iii) Itch or burning, (iv) Dystrophic/thickened, pitted and ridged nails (v) Swelling and tightness of joints.

Presence of Any three or more of above factors confirms presence of metabolic syndrome. Due to variation in results in neighboring countries current study was designed to assess the exact burden of metabolic syndrome in patients with psoriasis in our population so that metabolic syndrome should be appropriately addressed in patients of psoriasis

MATERIALS AND METHODS

After obtaining approval from ethical review committee of hospital , a cross sectional study was conducted in Department of Dermatology, District Head Quarters, Faisalabad, Pakistan (15 October 2019 to 14 March 2020) . After obtaining informed consent a total of 125 psoriatic patients (based on operational definition of psoriasis) of both gender having the ages of 20-60 years were enrolled in the study. Patients were selected via non-probability consecutive sampling and estimations were done using WHO sample size calculator as, percentage of efficacy as 28.8%, confidence level 95% and absolute precision required 8%. Psoriatic patients treated with systemic drugs including methotrexate, acitretin, cyclosporine, phototherapy or biological agents during the preceding 1 month were excluded.

Demographic details were noted. A fasting venous blood sample was taken and sent to hospital laboratory for assessment of triglycerides, HDL and fasting blood glucose level. Waist circumference and blood pressure were noted by staff nurse.

Metabolic syndrome was assessed on the basis of operational definition. All the information was collected on self-made performa.

Description and inferential statistics on data were analyzed using SPSS Version 21. For age and duration of disease descriptive statistics like Mean ± Standard Deviation was calculated. Frequency and percentages were calculated for categorical variables of patients. Effect modifiers were stratified and post-stratification chi-square test was applied. A p-value ≤ 0.05 was considered significant.

RESULTS

A total of 125 psoriatic cases were enrolled. Out of these 125 cases, 31 (24.8%) were between 20-30 years of age whereas 94 (75.2%) were between 31-60 years of age, mean+sd was calculated as 37.96+8.05 years. Gender distribution shows that 71 (56.8%) were male and 54 (43.2%) were females. Mean duration of disease was calculated as 9.51+2.97 months. Frequency of criteria for metabolic syndrome shows that 49(39.2%) had increased waist circumference, 42 (33.6%) had increased triglyceride levels, 60 (48%) had decreased HDL levels, 65 (52%) had raised blood pressure and 37 (29.6%) had increased fasting blood sugar levels (Figure 4). Metabolic syndrome in psoriatic patients was recorded in 37 (29.6%) whereas 88(70.4%) had no findings of the morbidity as shown in table 1.

Effect modifiers like duration of disease, age and gender were stratified, and post-stratification chi-square test was applied. A p value ≤ 0.05 was considered significant. No statistically significant relationship was observed between age grouping, duration of disease and incidence of metabolic syndrome. However, there was a significant relation between gender distribution and occurrence of metabolic syndrome as shown in table 2.

Table 1: Distribution of patients according to age, gender and presence of metabolic syndrome.

Variables	Characterstics	Percentage %
Age	20-30 years	31(24.8%)
	31-60 years	94(75.2%)
	Mean±SD	37.96±8.05
Gender	Male	71(56.8%)
	Female	54(43.2%)
Metabolic syndrome	Present	37(29.6%)
	Absent	88(70.4%)
Criteria for metabolic syndrome	Increased waist circumference	49(39.2%)
	Increased triglyceride level	42(33.6%)
	Decreased HDL level	60(48%)
	Raised blood pressure	65(52%)
	Increased fasting blood sugar level	37(29.6%)

Table 2: Stratification for frequency of metabolic syndrome in patients having psoriasis with regards to age, gender and duration of disease

Variables	Characterstics	MS		P value
		Present	Absent	
Age	20-30 years	6%	25%	0.14
	31-60 years	31%	63%	
Gender	Male	16%	55%	0.05
	Female	21%	33%	
Duration of disease	Last 6 months	17%	29%	0.17
	>6 months	20%	59%	

Table 3: Characterstics of psoriasis patients

Characteristics	Frequency	Percentages %	p- value
Hypothyroidism	36	(38.8%)	0.33
Alcoholics	41	(32.8%)	0.46
Smokers	66	(52.8%)	0.11
Hypertension	54	(43.2%)	0.16
Fasting TG>150	35	133.1±53.06	0.00
Diabetes FBS>100	43	108.23±32.23	0.00
Fasting HDL<40	28	27 (39.45±4.85)	0.31

Table 3 showed the values of hypothyroidism 36(38.8%), alcoholics 41(32.8%), smokers 66 (52.8%), hypertension 54 (43.2%), fasting TG>150 was (133.1±53.06), diabetes FBS>100 (108.23±32.23) and fasting HDL<40, (39.45±4.85). Table 4 represents the laboratory values VLDL (23.01±3.72), LDL (107.9±32.12), HDL (51.44±14.43), triglycerides (148.11±73.41), fasting blood sugar (89.2±19.77), systolic blood pressure (122.7±12.11), diastolic blood pressure (79.11±9.20), waist circumference (81.88±14.06).

Table 4: Laboratory and clinical values of enrolled psoriasis patients

Lab. Findings	Mean Values	P-value
VLDL	23.01±3.72	0.709
LDL	107.9±32.12	0.873
HDL	51.44±14.43	0.643
Triglycerides	148.11±73.41	0.654
Fasting blood sugar	89.2±19.77	0.969
Systolic blood pressure	122.7±12.11	0.124
Diastolic blood pressure	79.11±9.20	0.895
Waist circumference	81.88±14.06	0.876

Unit for HDL, VLDL, LDL, Triglycerides is (mg/dl) for Blood pressure(mm Hg) and for waist is (cm).

DISCUSSION

Previous studies in literature both locally and internationally have found a positive relationship between occurrence of psoriasis and metabolic syndrome. Unfortunately, not much data has been published for accessing relationship between occurrence of metabolic syndrome and psoriatic patients in Pakistani population.[14,16,3]

Since there is a bimodal age onset, in our study out of 125 cases 31 (24.8%) were between 20-30 years where as 94 (75.2%) were between 31-60 years . In a study conducted in Western India where 78% of cases were age group 31-60 years and 22% were in age group 20-30 years which is in line with our study. According to present study 6% patients between age 20-30 years and 31% between age 31-60 years have metabolic syndrome which is nearly identical to above mentioned study in which 3% between age 20-30 years and 29% between 31-60 years have metabolic syndrome. There was no statistically significant relationship between age categorization in relation to occurrence of metabolic syndrome in psoriatic patients in both studies .[10]

Previous reports in literature have found a positive relationship between occurrence of psoriasis and metabolic syndrome. Our study results were compared other internationally published researches. The number of males with psoriasis was 71 (56.8%) and female 54 (43.2%) which is parallel to a study published in Journal of Pakistan Association of Dermatology in which 73 males and 27 females have psoriasis. In our study 16% males and 21% female have metabolic syndrome which is statistically significant but it is against this Pakistani study were 41% male and 40.7% female have metabolic syndrome, there was no difference in frequency of metabolic syndrome between male and female. [9] The significance found in our study might be due to small sample size.

The frequency of metabolic syndrome in patients with psoriasis was 29.6% in our study which was in line with an Indian study where it was 28.8% among patients with psoriasis.[3]This similarity may be due to same cultural, geographical, and environmental factors.

In our study patients with disease duration of less then 6 months was 17% and 20% for more than 6 months which is in line to study done by Kololgi et al in which 41% of patients had disease of 1-5 years duration and 14% were having it for less than 1 year duration.[10] Association of psoriasis and individual components of metabolic syndrome has been a focus of many cross-sectional studies in recent past. Among individual components of metabolic syndrome in patients with psoriasis hypertension was present in 65 out of 150 cases (52%) which is similar to another study conducted in Jammu and Kashmir (49.3%) .[11]The strong association of hypertension as one of component of

metabolic syndrome with psoriasis which urges dermatologist to regularly monitor blood pressure in psoriatic patients.

Several studies have demonstrated higher lipid levels in psoriasis. In our study, raised triglyceride levels was found in 42 patients out of 150 (33.6%) which is in line with a study done by Hassan et ul (41.2%).[12]

In our study 60 out of 150 patients (48%) shows decrease HDL levels which is much lower as compared to study published in Journal of Pakistan Association of Dermatology in which it was 76.5%.[12] The difference among the results are due to smaller sample size in this Bangladeshi study .

In a study published in Indian Journal of Dermatology, central obesity was found to be 34.7% which is comparable with our study 39.2%.[13] Research has widely hypothesised that pro-inflammatory mediator emerging from adipocyte may have a big impact on the way psoriasis develops on the body, but the fundamental mechanism regarding this link is still being investigated.[14]

Increased fasting blood sugar levels was found in 37 (29.6%) patients in our study which is comparable to a study conducted in Singapore in which increase blood sugar levels was found in 28.2% patients.[15] It addition to metabolic syndrome depression, unhealthy eating habits, psychosocial inactivity, stress are associated with psoriasis. Therefore, psoriatic patients who have not developed metabolic syndrome yet need behavioral modification and proper management of their psoriasis which may reduce cardiovascular risk.

CONCLUSION

As frequency of metabolic syndrome is higher among cases with psoriasis, patients with psoriasis should be routinely screened for metabolic syndrome and treated accordingly to early detect cardiovascular risk.Limitation, lack of controls in our study.

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