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ORIGINAL ARTICLE

Association of Metabolic Syndrome and Psoriasis

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ABSTRACT

Objective: The objective of this study was to determine the association of metabolic syndrome and psoriasis
Study Design: Case control study
Settings: This study was conducted in Department of Dermatology in collaboration with Department of Chemical Pathology, PNS Shifa, Karachi.
Duration of Study: Conducted for the duration of Six months from 1st July, 2020 to 30th December, 2020.
Results: In our study, 67.39%(n=31) in cases and 76.09%(n=35) in Controls were between 20-35 years of age while 32.61%(n=15) in cases and 23.91%(n=11) in controls were between 36-50 years of age, mean+sd was calculated as 31.87+6.71 and 30.0+6.29 years respectively, 63.04%(n=29) in cases and 67.39%(n=31) in controls were male while 36.96%(n=17) in cases and 32.61%(n=15) in controls were females, frequency of association of metabolic syndrome and psoriasis was recorded as 56.52%(n=26) in cases and 32.61%(n=15) in controls had metabolic syndrome while 43.48%(n=20) in cases and 67.39%(n=31) in controls had no findings of metabolic syndrome, p value was calculated as 0.02 showing a significant difference.
Conclusion: We concluded that the frequency of metabolic syndrome is higher among psoriasis cases when compared to the control cases. However, our significant results suggested that the physicians should periodically screen psoriatic patients for MetS and timely suggest medication or changes in lifestyle.
Keywords: Psoriasis, Metabolic syndrome, Frequency

INTRODUCTION

S Psoriasis is a common chronic, inflammatory skin disease characterized by scaly plaques over the extensor surfaces of body and scalp. It affects 2 % of the population worldwide.[1] It is considered as a systemic disease causing various complications and comorbidities which has a significant impact on patient's health and quality of life.[2]

Metabolic syndrome (Mets) is a disorder of energy utilization and storage, diagnosed by a co-occurrence of three out of five of the following medical conditions: abdominal (central) obesity, elevated blood pressure, elevated fasting plasma glucose, high serum triglycerides, and low high density cholesterol (HDL) levels. All components of MetS are associated with higher incidence of coronary artery disease and may play an important role in the occurrence of myocardial infarction and other cardiovascular morbidities.[3] Early cardiovascular deaths have been reported more frequently in psoriatic patients as compared to general population.[4,5] This may be related to the fact that the risk factors of cardiovascular disease in isolation or as MetS appear to be more common in patients with psoriasis as compared with the general population.[6,7]

The prevalence of MetS in Pakistan is reported to be from 18% to 46%.[8] Increasing epidemiological evidence suggests associations between psoriasis and MetS.[9,10,11] In a study in Turkey comparison between patients of psoriasis and controls revealed a significantly higher prevalence of MetS in the patient group (50%) compared with the control group (25%).[12] The rationale of the study is that the sample size was not scientifically calculated, furthermore the result differ from an older study[13] in which prevalence of metabolic syndrome was 25% in psoriasis patients. The rationale of our study is that it will utilize a scientifically calculated sample size to generate useful data with an aim to settle the discrepancy of result in the above mentioned studies. Significant results will suggest the physicians to periodically screen psoriatic patients for MetS and timely suggest medication or changes in lifestyle.

MATERIALS AND METHODS

This case control study was conducted in Department of Dermatology in collaboration with Department of Chemical Pathology, PNS Shifa, Karachi, for the duration from 1st July, 2020 to 30th December, 2020. A total of 46 patients and 46 controls were recruited through a consecutive non-probability sampling. Name, age, sex, serial number, medical record number, address and phone number of each individual were noted. History regarding duration of disease and use of medication for hypertension or hyperglycemia was recorded. On examination severity of psoriasis was determined by the surface area of body involved, waist circumference (just above the iliac crest) and blood pressure was recorded (in sitting posture after a rest of 10 minutes). After overnight fasting of 14 hours, 5 ml of venous blood was drawn by a sterile syringe, 3 ml transferred to the plain gel tube and 2 ml to sodium fluoride tube and submitted to the hospital laboratory for serum triglycerides, HDL and FBG. Plasma fasting venous blood glucose and serum triglycerides were done using coupled enzymatic and point method on full automated chemistry analyzer, modulator P800, Hitachi Roche. HDL was done by CHOD-PAP, coupled enzymatic end point method and FB was ascertained by hexokinase end point method. For all of these tests Roshe standards and controls were used. On the basis of laboratory reports the triglycerides, HDL and BGF status was recorded on a pre-designed proforma.

Data feeding and analysis was done on computer using SPSS (Statistical package for social sciences) version 20.0. A descriptive statistical analysis of quantitative and qualitative variables was performed. Data on quantitative variables including age and duration of disease was presented as Mean + S.D. data on qualitative variables include sex, waist circumference, BP, triglycerides, HDL, BGF and Metabolic syndrome was presented in numbers and percentages and further described by bar charts.

Chi square test was applied to see the significance of difference. In all statistical analysis only P-value <0.05 was considered as significant. Odd ratios were calculated. Post stratification chi-square test was applied.

RESULTS

A total of 92 cases (46 in each group) fulfilling the inclusion/exclusion criteria were enrolled to determine the association of metabolic syndrome and psoriasis.

Age distribution of the patients was done showing that 67.39%(n=31) in cases and 76.09%(n=35) in Controls were between 20-35 years of age while 32.61%(n=15) in cases and 23.91%(n=11) in controls were between 36-50 years of age, mean+sd was calculated as 31.87+6.71 and 30.0+6.29 years respectively. (Table No. 1)

Patients were distributed according to gender showing that 63.04%(n=29) in cases and 67.39%(n=31) in controls were male while 36.96%(n=17) in cases and 32.61%(n=15) in controls were females. (Table No. 2)

Duration of disease was recorded as 41.30%(n=19) in cases and 69.57%(n=32) in controls were between 1-3 years while 58.70%(n=27) in cases and 30.43%(n=14) in controls had >3 years of duration of disease. (Table No. 3)

Mean of quantitative variables were calculated as 210.11±9.11 in cases and 169.21±11.21 for Cholesterol (mg/dl), 169.20 ± 34.16 in cases and 141.17±22.75 in controls for Triglyceride (mg/dl), 36.02±9.45 in cases and 40.43±8.54 in controls for HDL-C (mg/dl) while 136.24±12.54 in cases and 106.24±14.70 in controls for LDL-C (mg/dl). (Table No. 4)

Frequency of association of metabolic syndrome and psoriasis was recorded as 56.52%(n=26) in cases and 32.61%(n=15) in controls had metabolic syndrome while 43.48%(n=20) in cases and 67.39%(n=31) in controls had no findings of metabolic syndrome, p value was calculated as 0.02,

Table: 1: Age Distribution (n=92)

Age(in years)	Cases (n=46)		Controls (n=46)	
	No. of patients	%	No. of patients	%
20-35	31	67.39	35	76.09
36-50	15	32.61	11	23.91
Total	46	100	46	100
mean+sd	31.87+6.71		30.0+6.29	

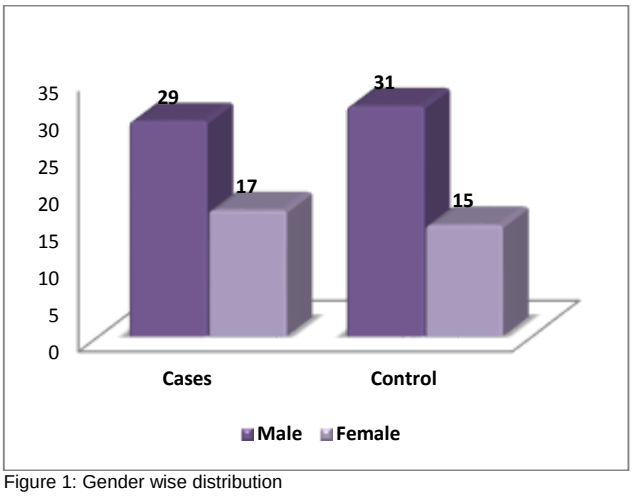

Figure 1: Gender wise distribution

Table 2: Duration of Disease (n=160)

Duration (in years)	Cases (n=46)		Controls (n=46)	
	No. of patients	%	No. of patients	%
1-3	19	41.30	32	69.57
>3	27	58.70	14	30.43
Total	46	100	46	100

Table 3: Mean of Quantitative Variables (n=160)

Variables	Cases (n=46)	Controls (n=46)
	Mean and sd	Mean and sd
Cholesterol (mg/dl)	210.11 ± 9.11	169.21 ± 11.21
Triglyceride (mg/dl)	169.20 ± 34.16	141.17 ± 22.75
HDL-C (mg/dl)	36.02 ± 9.45	40.43 ± 8.54
LDL-C (mg/dl)	136.24 ± 12.54	106.24 ± 14.70

Table 5: Frequency of Association of Metabolic Syndrome and Psoriasis (n=160)

Metabolic syndrome	Cases (n=46)		Controls (n=46)	
	No. of patients	%	No. of patients	%
Yes	26	56.52	15	32.61
No	20	43.48	31	67.39
Total	46	100	46	100

P value=0.02
Odds ratio=2.68

DISCUSSION

The metabolic syndrome is a combination of diabetes mellitus, hypertension, obesity and hyperlipidaemia. The pathophysiology of the metabolic syndrome is complex and has been only partially elucidated. Previous reports have shown a possible association between psoriasis and obesity, ischaemic heart disease, hypertension or diabetes mellitus. The reason behind this study was that previously studies are showing a significant variation regarding frequency of metabolic syndrome in patients with psoriasis.

In our study, 67.39%(n=31) in cases and 76.09%(n=35) in Controls were between 20-35 years of age while 32.61%(n=15) in cases and 23.91%(n=11) in controls were between 36-50 years of age, mean+sd was calculated as 31.87+6.71 and 30.0+6.29 years respectively, 63.04%(n=29) in cases and 67.39%(n=31) in controls were male while 36.96%(n=17) in cases and 32.61%(n=15) in controls were females, frequency of association of metabolic syndrome and psoriasis was recorded as 56.52%(n=26) in cases and 32.61%(n=15) in controls had metabolic syndrome while 43.48%(n=20) in cases and 67.39%(n=31) in controls had no findings of metabolic syndrome, p value was calculated as 0.02 showing a significant difference.

Our results are comparable with a previous study in Turkey where comparison between patients of psoriasis and controls revealed a significantly higher prevalence of MetS in the patient group (50%) compared with the control group (25%).[12]

Another older study[13] differ from an older study[13] in which prevalence of metabolic syndrome was 25% in psoriasis patients, however, the study was limited and did not compared control cases so that we could compare our results regarding comparing any significance between cases and controls.

Cohen AD and others[14] assessed the association between psoriasis and the metabolic syndrome and concluded that their findings demonstrate a possible association between psoriasis and the metabolic syndrome. Appropriate treatment of the metabolic syndrome may be an important part of the management of patients with psoriasis.

Our study supports a previous observation by Henseler & Christophers,[15] Herron et al,[16] Mallbris et al[17] and other uncontrolled reports that have been published previously,[17-18] our findings demonstrate a possible association between psoriasis and the metabolic syndrome.

Gisondi et al[19] found increased prevalence of hypertrygliceridemia and MetS in psoriasis patients compared to controls, but they did not find any difference between psoriasis patients and controls with respect to low levels of HDL, DM, and hypertension. Farshchian et al failed to demonstrate any difference between psoriasis patients and controls with regard to fasting blood glucose, triglyceride, cholesterol, HDL, LDL, and VLDL levels.[20] In our study we observed that psoriasis is associated with DM, hypertension, and MetS. DM and hypertension was accompanying our psoriasis patients along with MetS. These findings confirmed the literature.[21-22]

A study conducted by Hassan BS et al [23] reported that out of 58 patients, 17 (29.3%) patients had metabolic syndrome. The prevalence of metabolic syndrome was higher in psoriatic patients in the 4th decade of life and predominant in male subjects. In psoriatic patients with metabolic syndrome, raised waist circumference >90 cm in men or >80 cm in women was found in 14 (82.3%), HDL cholesterol ≤40 mg/dl in 13 (76.5%), blood

pressure >130/85 mm Hg in 16 (94.1%), and fasting blood sugar >5.6 mmol/L was noticed in 12 (70.6%) patients.

Another study by Ferdinando LB et al [24] demonstrated that, MS prevalence was high and the items that deserve more attention were central obesity, low HDL, hypertension and smoking habits. In the psoriasis group, MS was associated independently with older age and less scalp involvement.

Das S et al [25] reported that abdominal obesity (odds ratio [OR] = 2.6), hypertension (OR = 2.2), hyperglycemia (OR = 2.8), dyslipidemia (OR = 2.9), and metabolic syndrome (OR = 2.6) are associated with psoriasis.

Aruna C et al [26] reported that metabolic syndrome was significantly more common among patients with psoriasis than among controls [42% vs 22%, odds ratio (OR) = 2.5674, P < 0.0028]. Psoriatic patients also had higher prevalence of triglyceridemia (59% vs 35%, P = 0.0008), hypertension (37% vs 12%, P = 0.0001), and impaired blood glucose levels (56% vs 24%, P = 0.0001) compared to controls.

However, in findings of the current study and other studies, the hypothesis that **"there is an association between metabolic syndrome and psoriasis"** is justified. Our significant results suggested the physicians to periodically screen psoriatic patients for MetS and timely suggest medication or changes in lifestyle.

CONCLUSION

We concluded that the frequency of metabolic syndrome is higher among psoriasis cases when compared to the control cases. So, our significant results suggested that the physicians should periodically screen psoriatic patients for MetS and timely suggest medication or changes in lifestyle.

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