Original Article

Prevalence of Metabolic Syndrome in Patients with Psoriasis

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DOI: https://doi.org/10.3329/jafmc.v17i2.58374

Abstract

Introduction: Psoriasis is a multifactorial inflammatory disease of chronicity characterized by well-defined erythematous plaques covered with silvery white scales present particularly over extensor surfaces of extrimities, trunk and scalp associated with a higher cardiovascular risk. Metabolic syndrome is one of the significant predictor of cardiovascular events.

Objective: To determine the prevalence of metabolic syndrome in patients with psoriasis.

Materials and Methods: This cross-sectional study was conducted in Department of Dermatology & Venereology, Combined Military Hospital (CMH), Dhaka from 01 May 2014 to 30 October 2014. One hundred four confirmed psoriasis patients were selected for this study. Complete history, thorough clinical examination including height, weight, Blood pressure (BP), waist circumference (WC) and relevant investigations were done in all patients.

Results: Out of 104 patients of psoriasis, 32(30.8%) patients had metabolic syndrome and 72(69.2%) patients were without metabolic syndrome. In group I (with metabolic syndrome) majority 16(50.0%) patients belonged to age 51-60 years and in group II (without metabolic syndrome) 25(34.7%) patients belonged to age 21-30 years and the difference was significant statistically ($p<0.05$) between two groups. Among the co-morbidities, DM and HTN were found 26(81.3%) & 24(75%) in group I and 4(16.7%) & 18(25%) in group II respectively which was significant statistically ($p<0.05$) between two groups.

Conclusion: Psoriatic patients have a higher prevalence of metabolic syndrome, which can favour cardiovascular events. The dermatologists should be very keen to find out the elements of metabolic syndrome and suggests appropriate measures to reduce cardiovascular morbidity in addition to optimal dermatologic treatment of psoriasis.

Key-words: Metabolic syndrome, Waist circumference (WC), Fasting Blood Sugar (FBS), Psoriasis, Blood pressure (BP), Hypertriglyceridemia, HDL Cholesterol.

Introduction

Psoriasis is a multifactorial inflammatory disease of chronicity of the skin, in which has genetic and environmental influences. The characteristic lesions consist of erythematous sharply defined indurated plaques, present particularly over extensor surfaces and scalp[1]. The eruption is usually symmetrical. It affects between 1-2% of the population[2]. It has two peaks ages of onset that may correspond to distinct forms of the disease[3].

Operational definitions: The metabolic syndrome will be diagnosed in the presence of three or more criteria of the National Cholesterol Education Program's Adult Panel lll (NCEP ATP lll): waist circumference >102 cm in men or > 88 cm in women; hypertriglyceridemia >150mg/dL; HDL cholesterol <40mg/dL in men or <50mg/dL in women; blood pressure >135/85 mmHg; fasting blood sugar >110mg/dL. Venous samples will be taken at enrolment visit after the subjects had fasted overnight (at least 8 hours).

The pathophysiology of Metabolic Syndrome is attributed to insulin resistance mediated by cytokines, specially leptin, adiponectin and tumor necrosis factor (TNF)-α. The syndrome is associated with cardiovascular disease, type-2 diabetes mellitus (DM) and underlying risk factor is visceral adiposity[4]. The scientific literature relating psoriasis to metabolic syndrome as well as atherosclerosis and myocardial infarction has gradually expanded significantly[5-14].

Materials and Methods

This cross-sectional study was conducted in Department of Dermatology & Venereology, Combined Military Hospital (CMH), Dhaka from 01May 2014 to 30 October 2014. One hundred and four patients with confirmed case of psoriasis (Clinical and/or histopathological) attending in the department were selected as sample of the study. Pregnant, lactating mothers and those receiving any systemic drugs including acitretin, methotrexate, phototherapy, biologic agents for at least 1 month before enrolment were excluded from the study. The samples were selected consecutively using a structured questionnaire

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containing all the variables of interests. Data analysis was performed by Statistical Package for Social Science (SPSS), version-12. Data was edited, coded and entered into the computer. Level of significance (p value) was set at 0.05 and confidence interval at 95%. Results were presented as text and Tables.

Results

Out of 104 patients of psoriasis, 32(30.8%) patients had metabolic syndrome and 72(69.2%) patients were without metabolic syndrome (Figure-1). Different characteristics of the study patients were plotted into two groups (Table-I). It was observed that DM and HTN were found 26(81.3.0%) and 24(75%) in group I and 4(16.7%) & 18(25%) in group II respectively (Figure-2). Six (18.7%) patients in group I and 64(88.9%) patients in group II had FBS≤110 mg/dL and 26(81.3%) patients in group I and 8(11.1%) patients in group II had FBS>110 mg/dL (Table-II). Majority 26(81.3%) patients in group I and 41(56.9%) patients in group II had hypertriglyceridemia and their mean triglyceride was found 188.1±46.5 mg/dL in group I and 168.0±44.1 mg/dL in group II (Table-III). HDL cholesterol < 40 mg/dL in male was found 10(31.3%) in group I and 15(20.8%) in group II. Mean male HDL cholesterol was found 44.7±14.7 mg/dL in group I and 50.6±31.3 mg/dL in group II. In female HDL cholesterol < 50 mg/dL was found 6(100%) in group I and 6(75%) in group II. Female mean HDL was found 44.7±5.0 mg/dL in group I and 42.3±2.6 mg/dL in group II. Female mean HDL was statistically significant (p<0.05) between two groups (Table-IV). WC of male patients ≤102 cm was found in 26(81.3%) in group I and in 64(88.9%) in group II and their mean WC was found 64.8±28.3 cm in group I and 55.2±26.8 cm in group II. In female patients higher (>88 cm) WC was found 2(6.3%) in group I and 2(2.8%) in group II. Mean WC was found 59.3±35.2 cm in group I and 71.5±24.1 cm in group II (Figure-3).

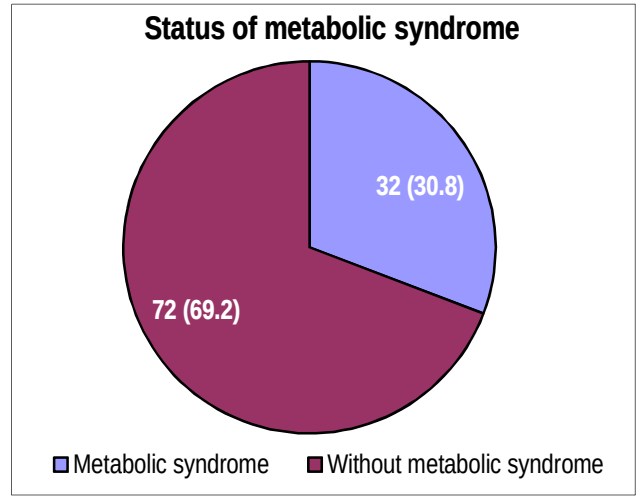

Figure-1: Status of metabolic syndrome in psoriasis.

Table-I: Distribution of the study population by different characteristics (n=104)

Variable	Group I (n=32)		Group II (n=72)		P-value
Age (mean)	52.3	±9.5	38.9	±12.9	0.001
Male/ female	26	/6	64	/8	0.292
Age of onset (mean)	36.3	±9.7	29.3	±7.2	0.001
Duration of illness (mean)	15.2	±11.8	11.8	±14.7	0.417
BSA (mean)	24.3	±24.7	18.4	±17.3	0.321
FBS (mean)	107.7	±25.7	112.4	±34.6	0.493
Triglyceride (mean)	188.1	±46.5	168.0	±44.1	0.140
HDL male (mean)	44.7	±14.7	50.6	±31.3	0.475
HDL female (mean)	44.7	±5.03	42.3	±2.6	0.025
WC male (mean)	64.8	±28.3	55.2	±26.8	0.246
WC female (mean)	59.3	±35.2	71.5	±24.1	0.150
Diastolic (mean)	84.6	±9.4	79	±5.7	0.010
Systolic (mean)	117.1	±30.6	119.3	±16.8	0.737
PASI (≥10)	16		30		0.583

Group I: Metabolic syndrome, Group II: Without metabolic syndrome

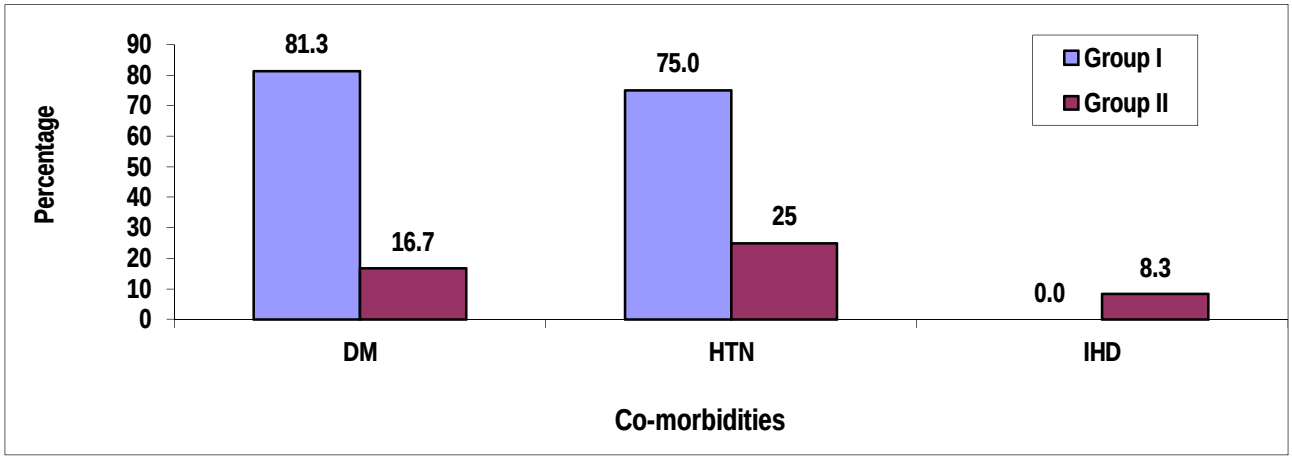

Figure-2: Distribution of the study population by co-morbidities(n=104)

Table-II: Distribution of the study samples by fasting blood sugar (n=104)

FBS (mg/dL)	Group I (n=32)		Group II (n=72)		P-value
	n	%	n	%	
≤110	6	18.7%	64	88.9%	
>110	26	81.3%	8	11.1%	
Mean±SD	107.7	±25.7	112.4	±34.6	0.493
Range (min-max)	(81	-169.2)	(72	-259)	

Table-III: Distribution of the study patients by triglyceride (n=104)

Triglyceride (TG)	Group I (n=32)		Group II (n=72)	
	n	%	n	%
≤150 mg/dL	6	18.8	31	43.1
>150 mg/dL	26	81.3	41	56.9
Mean±SD	188.1	±46.5	168.0	±44.1
Range (min-max)	1(05	-297.0)	(92	-351.0)

Table-IV: HDL Cholesterol level in the sample (n=104)

HDL (mg/dL)	Group I (n=32)		Group II (n=72)		P-value
	n	**%**	**n**	**%**	
Male					
<40	10	31.3	15	20.8	
≥40	16	50.0	49	68.1	
Mean±SD	44.7	±14.7	50.6	±31.3	0.475
Range (min-max)	30	-88	29	-202	
Female					
<50	6	100.0	6	75.0	
≥50	0	0.0	2	25.0	
Mean±SD	44.7	±5.0	42.3	±2.6	0.025
Range (min-max)	40	-50	40	-45	

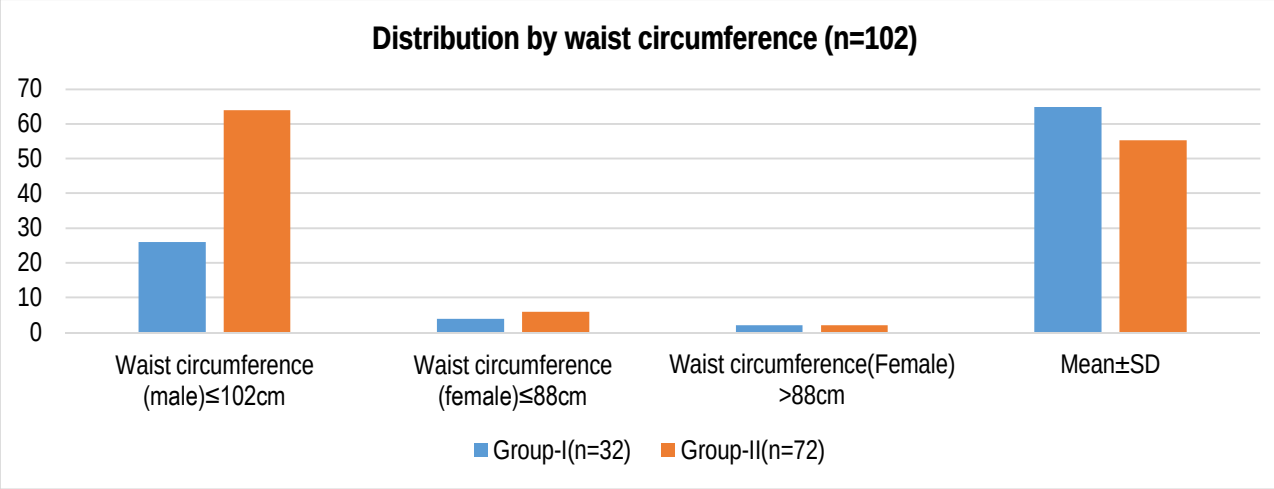

Figure-3: Distribution of the study patients by waist Circumference (n=104)

Discussion

In this study, 104 patients were divided into two groups. Group I: psoriasis with metabolic syndrome and group II: psoriasis without metabolic syndrome. Out of 104 patients, 32(30.8%) patients had metabolic syndrome and 72(69.2%) patients were without metabolic syndrome. Similar result were found in the study conducted by Langan SM et al[8] where showed in their study, metabolic syndrome was identified in 34% of participants with psoriasis compared with 26% of controls. In a study conducted by Nisa N et al[15], showed metabolic syndrome was more common in psoriatic patients than in controls 42(28%) vs 9(6%) that is statistically significant. It signifies that metabolic syndrome is significantly more common in psoriatic patients. In another study conducted by Madanagobalane S et al[16] showed that metabolic syndrome was significantly more common in psoriatic patients than in controls (44.1% vs. 30%, P value = 0.025). In another study conducted by Gisondi et al[5] found a higher prevalence of metabolic syndrome in cases than in controls [30.1% vs. 20.6%, odds ratio (OR) 1.7, 95% CI 1.2–2.4; P = 0.005] after controlling for sex and age.

In this study it was observed that in group I majority 16(50.0%) patients belonged to age 51-60 years and in group II 25(34.7%) patients belonged to age 21-30 years. The mean age was found 52.3±9.5 years in group I and 38.9±12.9 years in group II. The difference was statistically significant (p<0.05) between two groups.

In this study, DM and Hypertension (HTN) were significantly present in group I in comparison to group II which correlates with the study of Madanagobalane S et al[16].

It was observed that majority 26(81.3%) patients in group I and 41(56.9%) patients in group II had hypertriglyceridemia. A study conducted by Nisa N et al[15] showed psoriatic patients had a significantly higher prevalence of hypertriglyceridaemia (73/150 among cases vs 24/150 among controls which correlates my study. This study correlates with the study of Huerta C et al[17] where a population-based cross-sectional study of greater than 130 000 psoriasis patients in the UK demonstrated that although psoriasis is associated with diagnoses of hyperlipidemia, the association diminishes and becomes non-significant when controlling for conditions which influence lipids such as obesity and diabetes.

It was also observed in my study that HDL cholesterol < 40 mg/dL in male was found 10(31.3%) in group I and 15(20.8%) in group II. Mean male HDL cholesterol was found 44.7±14.7 mg/dL in group I and 50.6±31.3 mg/dL in group II. In female HDL cholesterol <50 mg/dL was found 6(100%) in group I and 6(75%) in group II. Female mean HDL was found 44.7±5.0 mg/dL in group I and 42.3±2.6 mg/dL in group II. Female mean HDL was statistically significant (p<0.05) between two groups. But Madanagobalane S et al[16] showed there was no difference in the high density lipoprotein (HDL) levels. Farshchian M et al[18] in a hospital clinic based cross-sectional study in Iran psoriasis patients (mean BSA 42%) were shown to have significantly higher mean levels of triglycerides, total cholesterol, LDL, and VLDL but no alteration in HDL.

Conclusion

The prevalence of the metabolic syndrome is high (30.8%) among individuals with psoriasis. The findings of this study are important to add to the growing evidence that diabetes, hypertension, hyperlipidemia are associated with psoriasis. The most common abnormalities among the components of the metabolic syndrome among patients with psoriasis was fasting plasma glucose (81.3%), hypertriglyceridemia (81. 3%).

Therefore, as part of good medical care, patients with psoriasis should be encouraged to identify and manage their modifiable cardiovascular risk factors.

Limitation of the study

The study population was selected from one selected hospital in Dhaka city and small sample size so that the results of the study may not be reflect the exact picture of the country.

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