



ASSOCIATION BETWEEN PSORIASIS DISEASE AND METABOLIC SYNDROME

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ABSTRACT

Background: Psoriasis is a disorder characterized by a chronic inflammation of skin, which recently has been demonstrated that was associated with high risk of cardiovascular diseases. Metabolic syndrome is a significant predictor of these events. **Methodology:** A hospital-based case control study performed on 105 candidates (35 patients with plaque type psoriasis, 35 apparently healthy person, and 35 patients with non psoriatic skin diseases) all matched for age and gender. **Results:** Metabolic syndrome was significantly increased in patients with psoriasis (p-value 0.028). The proportions of diabetes, hypertension, dyslipidemia, and waist circumference were insignificantly elevated in psoriatic compared with healthy and non psoriatic skin diseases people (p-value 0.171, 0.172, 0.704, 0.267 and 0.672 respectively). **Conclusion:** The metabolic syndrome was a higher among individual with psoriasis, and strongly correlated with obesity, so patient should be advised to change their life style, and early screening and monitoring of metabolic syndrome and its components may be an important issue to reduce this negative consequences of psoriasis.

KEYWORDS: Psoriasis, metabolic syndrome, cardiovascular disease, comorbidity.

INTRODUCTION

Psoriasis is a disorder characterized by a chronic inflammation of skin that affects about 3% of the population.^[1,2] Pathogenesis of psoriasis is associated with an increased expression of tumor necrosis factor-alpha (TNF- α), which is an important mediator of inflammation.^[2] Recently reported that psoriasis associated with metabolic abnormalities such as obesity, diabetes, hypertension, dyslipidemia and cardiovascular disorders.^[3-6] Moreover, an increased mortality from cardiovascular diseases in patients with severe psoriasis has been documented and psoriasis may act as an independent risk factor of myocardial infarction especially in young patients.^[7,8]

Some factors may worsen the cardiovascular risk in psoriatic patients such as obesity, physical inactivity, cigarette smoking, physiological stress and some systemic therapies for psoriasis.^[9,10]

Metabolic syndrome (MS) is a group of risk factors defined by different criteria and it is strong predictor of cardiovascular disease rather than the individual use of these components.^[11,12]

Metabolic syndrome in his study based on the presence of three or more criteria of the National Cholesterol Education Program's Adult Panel III (ATPIII): waist

circumference (WC) \geq 102 cm (40 inch) in men or $>$ 88 cm (35 inch) in women; triglyceride (TG) \geq 150 mg/dL (1.7 mmol/L) or under treatment; high density lipoprotein cholesterol (HDL-C) \leq 40 mg/dL (1 mmol/L) in men or \leq 50 mg/dL (1.3 mmol/L) in women or under treatment; blood pressure (BP) \geq 135/85 mmHg or on under treatment; fasting blood glucose (FBG) \geq 110mg/dL or under treatment.^[13]

Many studies reported that psoriatic patients have higher frequency of metabolic syndrome compared to healthy individuals.^[14,15]

This study was aimed to investigate the association between psoriasis disease and metabolic syndrome in Sudanese population.

MATERIALS AND METHODS

This study was performed as a hospital-based case control study on 105 candidates divided into 35 plaque type psoriatic patients (as cases), 35 apparently healthy person (control 1) and 35 patients with skin diseases other than psoriasis (control 2). All participants were admitted to Alamal organization for psoriasis and other skin diseases, and Khartoum teaching hospital for dermatological and venereal diseases, at Khartoum state from February to April 2016.

After exclusion of all factors that may affect cardiovascular profile, written informed consents followed by a questionnaire for data collection were obtained from participants.

Body mass index (BMI) was calculated using the formula: weight (Kg)\ height (m²). Waist circumferences in cm were measured by locating a measuring tape horizontally at upper part of hip bone around the abdomen without skin compression.

Venous blood samples were collected properly from all participants after being fasting for 8-10 hours. EDTA was used as blood anticoagulant for analysis of TG using enzymatic (TG lipase) method and for estimation of

HDL-C by cholesterol esterase method after chemical precipitation. Fluoride oxalate anticoagulant was chosen for FBG measurement, which was done by glucose oxidase method. All samples were analyzed immediately for FBG, TG and HDL-C using Biosystem spectrophotometer.

The SPSS program was used for data analysis. P-value of ≤ 0.05 was considered as statistically significant.

RESULTS

The included population was 105 people with mean (\pm SD) age of 35.38 (\pm 17.23), BMI of 24.96 (\pm 2.4) and gender of 42 % male and 58% female.

Table 1: shows the descriptive characteristics of study population.

		Cases No (35)	Control (1) No (35)	Control (2) No (35)	P-value
Gender	Male	15(42.9%)	14(40%)	15(42.9%)	0.097*
	Female	20(57.1%)	21(60%)	20(57.1%)	
Age	Mean	34.2	34.6	35.8	0.762**
	SD	16.6	16.8	17	
BMI	Mean	25.3	24.6	25	0.224**
	SD	2.7	2.3	2.2	

*=analyzed by chi-squared test, **= analyzed by ANOVA test.

Table 2: shows the Proportions of metabolic syndrome and its components in patients with psoriasis and control groups

	Cases No (35)	Control (1) No (35)	Control (2) No (35)	P-value
MS	9(25.7%)	3(8.6%)	2(5.7%)	0.028*
FBG	6(17.1%)	2(5.7%)	2(5.7%)	0.171*
TG	6(17.1%)	2(5.7%)	3(8.6%)	0.267*
BP	5(14.3%)	1(2.9%)	2(5.7%)	0.172*
HDL-C	12(34.3%)	9(25.7%)	12(34.3%)	0.704*
WC	32(91.4%)	30(85.7%)	30(85.7%)	0.672*

* = analyzed by chi-squared test.

Table 3: shows Correlations between Metabolic syndrome with BMI, age, gender and duration of psoriasis.

MS		BMI	age	gender	Duration
	R	0.502*	0.147*	0.038*	0.125*
	P-value	<0.001**	0.136**	0.701***	0.475**

R = (Pearson correlation).*= analyzed by logistic regression and **= analyzed by t-test and ***= analyzed by chi-squared test.

DISCUSSION

Recently discovered that psoriasis like some dermatological diseases such as systemic lupus erythematosus and rheumatoid arthritis not affect skin only, but other organs such as cardiovascular system can be included. Accordingly, metabolic syndrome has been used to predict the cardiovascular consequences of psoriasis.

This study showed that no statistical different regarding age, gender and BMI between different study groups (p-value 0.762, 0.097 and 0.224 respectively).

Also in our study we reported that patients with psoriasis have significant higher incidence of metabolic syndrome compared with healthy and other skin diseases populations (p-value 0.028), this finding supported by Brand Drop et al^[15] and Cohen ED et al.^[16] While some study concluded that metabolic syndrome associated with psoriasis after age 40.^[16-18]

Also we observed that there was insignificant elevation of FBG, TG, HDL-C, BP, and WC in psoriatic patients (p-value 0.171, 0.267, 0.704, 0.172 and 0.672 respectively), this agreed with the result reported by

Arnon et al^[19] and disagreed with Cohen ED et al, which found that metabolic syndrome components were increased in patients with psoriasis.^[16]

Also we found that there was association between metabolic syndrome and obesity (defined by BMI) in psoriatic patients (p-value < 0.001). Obesity is life style dependent, so its modification may reduce their bad influences.

Metabolic syndrome was not significantly different between male and female, age and duration of psoriasis (p-value 0.701, 0.136 and 0.475 respectively).

Metabolic syndrome in this study was statistically increased in psoriatic patients inspite of its components, which were insignificantly elevated, this explained by: our participants have high proportion of WC and HDL-C, the presence of at least one of other factors was fulfill the criteria.

The prevalence of metabolic syndrome and its components was vary between published observations, this may return to differences in study populations such as genetic-background, ages, diet and life style behaviors, levels of psychological stress and physical activity, and other environmental factors. Also sample size, study design and different metabolic syndrome criteria may contribute in this variation. All above, make the comparison between these publications to some degree was difficult.

CONCLUSION

The metabolic syndrome was higher among individual with psoriasis, and strongly correlated with obesity, so patient should be advised to change their life style, and early screening and monitoring of metabolic syndrome and its components may be an important issue to reduce this bad consequences of psoriasis.

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