

BIOCHEMICAL MARKERS TO EVALUATE THE RISK OF DEVELOPMENT CARDIOVASCULAR DISEASE IN PATIENTS WITH PSORIASIS

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Abstract

Psoriasis is common chronic recurrent immune-mediated inflammatory genetically determined disorders in which outcome affected by environmental factors. It is considered as a systemic disease associated with increased cardiovascular abnormalities, hypertension, dyslipidemia, atherosclerosis, diabetes mellitus, obesity, stroke, osteoporosis.

To evaluate the risk factors of cardiovascular disease in patients with psoriasis.

This study is case-controlled was carried out in AL-Imamein AL-Kadhemein Medical City, in outpatient's clinic at Dermatology department, during the period of September 2018 to September 2019.

The study was done on 60 patients of psoriasis who attended Dermatology outpatient's clinic, a control group of healthy persons of 60 age and sex matched.

We need to calculate the body mass index which is the weight in kilograms (kg) which was divided by the square of the height in meters (m²). Psoriasis severity was assessed by psoriatic area and severity index (PASI) score.

Under aseptic precaution; 5ml of fasting blood samples was taken from all subjects and was tested for Fasting blood sugar. High density lipoprotein (HDL); Triglycerides (TG) and serum total cholesterol (TC). Sixty patients were included in this study, 33 (55%) male and 27(45%) female patients. Serum HDL in psoriatic patient was low in compare to controls which is statistically highly significant. Serum TG, LDL levels and serum glucose were high in psoriatic patient in compare to controls which is statistically highly significant.

Psoriasis severity assessed using the Psoriasis Area Severity Index; It was higher in male psoriatic patient (14.97±1.81) than in females (13.61±0.98) which is statistically highly significant. There were statistical differences in TG level and duration of disease which was high in males than in female's psoriatic patients. Between male and female's psoriatic patients; there were no statistical differences concerning age, body mass index, and fasting serum glucose level.

There was positive correlation between the Psoriasis Area Severity Index and age, duration of psoriasis and with serum LDL and serum TG in patients with psoriasis. Negative correlation was between the Psoriasis Area Severity Index with serum HDL level.

We conclude that psoriatic patients considered at high risk for development of cardiovascular disease. Treatment of Dyslipidemias and dietary antioxidants supplementation should be considered in the management of psoriasis to reduce the morbidity from cardiovascular events.

Keywords: Psoriasis, Cardiovascular Diseases, Risk Factors

Introduction

Psoriasis is one of the most common chronic recurrent genetically determined, immune-mediated inflammatory disorders in which environmental factors affecting its outcome (1). Clinically; it varies from a few scaly plaques at extensor sites, scalp and nail involvement, Psoriasis vulgaris most common type affects 85 to 90% of all patients (2).

Psoriasis is considered as a systemic disease associated with increased cardiovascular abnormalities, hypertension, dyslipidemia, atherosclerosis, diabetes mellitus, obesity, stroke, osteoporosis, cancer and depression which suggest that systemic inflammation reflects a causal relationship (3). Systemic treatment for psoriasis with methotrexate, cyclosporine, acitretin, and biological drugs increase the cardiovascular disease (CVD) risks as hypertension, dyslipidemia (4).

oxidative stress and abnormal lipid metabolism were proposed the suitable explanation for increasing risk of cardiovascular disease (5). Pathogenesis of psoriasis is thought to be due to deficient antioxidant system and increased reactive oxygen species (ROS) (6), increasing the atherosclerotic risk with subsequent cardiovascular events (7).

Adipose tissue overproduces multiple pro-inflammatory cytokines in response to obesity. Tumor necrosis factor (TNF- α), interleukin (IL)-6, IL-8 and reactive C protein involve in pathogenesis of psoriasis (8). This study aims to assess of risk factors of cardiovascular disease in patients with psoriasis.

Methods

This study is case-controlled was carried out in AL-Imamein AL-Kadhemein Medical City, in outpatient's clinic at Dermatology department, during the period of September 2018 to September 2019.

The study was done on 60 patients of psoriasis who attended Dermatology outpatient's clinic, a control group of healthy persons of 60 age and sex matched.

Information includes demographics, medical history, lifestyle habits, drugs use and laboratory findings.

The inclusion criteria: Patients with severe plaque psoriasis of 1-year duration, PASI of more than 10, no history for at least 6 months prior to recruitment of any systemic anti-psoriatic therapy.

The exclusion criteria: significant cardiovascular disease, diabetics, hypertension, dyslipidemia, and any patients with other types of psoriasis.

The severity of psoriasis was assessed by PASI score (8). Scoring of the clinical signs in each area are summed and are finally weighted according to the area's proportion of the body, which ranged from 0 to a theoretical maximum of 72.

- Patients with a PASI > 12 have severe psoriasis.
- Clinically significant plaques covering less than 10% of the integument is moderate plaque psoriasis and result in a PASI = 7.
- If a patient with PASI < 7 as mild chronic plaque-type psoriasis (9, 10,11).

We need to calculate the body mass index which is the weight in kilograms (kg) which was divided by the square of the height in meters (m²). Psoriasis severity was assessed by PASI score (12).

Under aseptic precaution; 5ml of fasting blood samples was taken from all subjects and was tested for Fasting blood sugar. High density lipoprotein (HDL); Triglycerides (TG) and serum total cholesterol (TC).

Statistical Analysis:

Statistical analysis was done using unpaired student "t" test and probability value (p) of <0.05 was considered as statistically significant.

Results

Sixty patients were included in this study, 33 (55%) male and 27(45%) female patients. Age were ranged from 30 – 60 years with 43.58 ± 10.13 , Psoriasis duration ranged from 2 – 25years with mean 8.78 ± 6.58 , Mean Body mass index was 28.29 ± 3.78 statistically significant in psoriatic patients in comparison to controls (26.4 ± 4.83). Serum HDL in psoriatic patient was low in compare to controls which is statistically highly significant, Serum TG was high in psoriatic patient in compare to controls which is statistically highly significant, Serum LDL was high in psoriatic patient in compare to controls which is statistically highly significant, Serum glucose level was was high in psoriatic patient in compare to controls which is statistically highly significant as in table (1).

Severity of psoriasis assessed using the Psoriasis Area Severity Index; in male psoriatic patient was 14.97 ± 1.81 higher than in females was 13.61 ± 0.98 which is statistically highly significant. There were statistical differences in TG level and duration of disease which was high in males than in females. There were no statistical differences between male and female's psoriatic patients concerning age, body mass index, and fasting serum glucose level as in table (2).

There was positive correlation between the Psoriasis Area Severity Index with age, duration and with serum LDL and serum TG in patients with psoriasis. Correlation was negative between the Psoriasis Area Severity Index with serum HDL level as in table (3).

Correlation was positive between the duration of psoriasis and age, the Psoriasis Area Severity Index, serum TG, serum LDL, and negative correlation between the duration of disease with serum HDL level as in table (4).

There were 20 (33.3) psoriatic patients with hypertension show highly significant statistical differences to those who were non hypertensive psoriatic patients in age, serum TG level, serum LDL level, duration of disease and in the Psoriasis Area Severity Index as in table (5,6)

Discussion

Psoriasis is common chronic inflammatory skin disorders. Many organs not only the skin affected by the inflammatory process including the cardiovascular system⁽⁴⁾. Psoriatic disease has clear association with obesity and its related metabolic abnormalities. Clinical cardiovascular events provoked by dyslipidaemia, glucose intolerance and hypertension⁽¹³⁾. In our study, I evaluate obesity by using BMI which was significantly increased in patients with psoriasis in comparison with controls. Abnormal lipid profile is a well-known cardiovascular risk factor. In our study I found highly significant elevated triglycerides and highly significant lower HDL levels which is inconsistent with other study which found increased serum HDL⁽¹⁴⁾. Decreased antioxidant activity with the process of chronic inflammation resulting from elevated cholesterol level. All these together with effects of drugs used in the treatment of psoriasis as cyclosporine and acitretin.

In this study 20 (33.3%) patients had hypertension which is statistically significant as in other studies⁽¹⁵⁾. There were highly significant statistical differences to those who were non hypertensive psoriatic patients in age, serum TG level, serum LDL level, duration of disease and in the Psoriasis Area Severity Index. Many studies showed that the chronic inflammatory process responsible for hypertension as Huskic et al. found that psoriatic patients had increased concentration of tissue angiotensin-converting enzyme⁽¹⁶⁾.

the Fasting glucose level was elevated and show highly significant differences between psoriatic patient and the control groups but there was negative correlation between the Psoriasis Area Severity Index and serum glucose level.

We conclude that psoriatic patients considered at high risk for development of cardiovascular disease. Treatment of Dyslipidemias and dietary antioxidants supplementation should be considered in the management of psoriasis to reduce the morbidity from cardiovascular events.

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Table (1): Comparison of parameters between patients and controls by unpaired t test

Parameter	Patients N=60 Mean+SD	Controls N=60 Mean+SD	P value
Age (yr)	43.58+10.13	41.52+8.47	0.228
BMI (kg/m ²)	28.29+3.78	26.4+4.83	0.019
HDL (mg/dl)	54.93+5.99	59.17+1.07	<0.001
TG (mg/dl)	146.68+13.91	123.07+6.02	<0.001
LDL (mg/dl)	114.6+27.61	71.35+12.83	<0.001
Glucose (mg/dl)	141.58+43.94	109.17+33.27	<0.001
Duration (yr)	8.78+6.58		
PSAI	14.36+1.63		

Table (2): Comparison of parameters according to gender by unpaired t test

Parameter	Females N=27 Mean+SD	Males N=33 Mean+SD	P value
Age (yr)	41.78+7.39	45.06+11.83	0.195
BMI (kg/m ²)	28.76+3.38	27.91+4.09	0.385
HDL (mg/dl)	56.08+5.6	53.98+6.22	0.180
TG (mg/dl)	142.44+14.23	150.15+12.84	0.031
LDL (mg/dl)	111.34+24.05	117.26+30.32	0.413
Glucose (mg/dl)	142.59+34.93	140.76+50.67	0.874
Duration (yr)	6.93+3.77	10.29+7.94	0.036
PSI	13.61+0.98	14.97+1.81	0.001

Table (3): Correlation of PASI with other parameters within patients group

Parameters	PASI	
	r	P
Age (yr)	0.561	<0.001
Duration (yr)	0.619	<0.001
BMI (kg/m ²)	0.180	0.169
HDL	-0.283	0.029
TG	0.376	0.003
LDL	0.468	<0.001
Glucose	-0.156	0.235

Table (4): Correlation of duration of psoriasis with other parameters within patients group

Parameters	Duration	
	r	P
Age (yr)	0.875	<0.001
PASI	0.619	<0.001
BMI (kg/m ²)	0.162	0.218
HDL	-0.478	<0.001
TG	0.679	<0.001
LDL	0.679	<0.001
Glucose	-0.097	0.460

Table (5): Comparison between patients and controls by Fisher exact test

Parameter		Patients N=60 No. (%)	Controls N=60 No. (%)	P value
Sex	Females	27 (45.0)	32 (53.3)	0.465
	Males	33 (55.0)	28 (46.7)	
Hypertension	No	40 (66.7)	60 (100)	<0.001
	Yes	20 (33.3)	0 (0.0)	

Table (6): Comparison of parameters according to hypertension by unpaired t test

Parameter	Negative N=40 Mean+SD	Positive N=20 Mean+SD	P value
Age (yr)	37.65+6.18	55.45+4.24	<0.001
BMI (kg/m ²)	28.04+3.84	28.8+3.7	0.468
HDL (mg/dl)	56.51+5.57	51.76+5.66	0.003
TG (mg/dl)	139.98+10.7	160.09+9.09	<0.001
LDL (mg/dl)	99.96+20.66	143.87+11.75	<0.001
Glucose (mg/dl)	145.38+46.35	134+38.68	0.349
Duration (yr)	5.21+3.13	15.9+5.85	<0.001
PSI	13.78+1.49	15.52+1.25	<0.001