Predicting The Risk Of Cardiovascular Complications In Patients With Psoriatic Arthritis

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ABSTRACT

According to modern researchers, one of the most common comorbid diseases in patients with psoriatic arthritis (PsA) is cardiovascular pathology (CVP). The trend frequency of cardiovascular pathology (CVP) has a high probability of developing cardiovascular complications (CVC), which leads to early disability in PsA patients. This is the reason for in-depth analysis of risk factors and predicting the risk of cardiovascular complications (CVC) in PsA patients.

Keywords: Psoriatic arthritis, cardiovascular complications (CVC), cardiovascular pathology (CVP).

Introduction. Chronic systemic inflammation plays a key role in the pathogenesis of PsA, leading to the production of pro-inflammatory cytokines (interleukin-6, tumor necrosis factor-alpha) and acute phase reactants (C-reactive protein). These molecules contribute to endothelial dysfunction, oxidative stress, and the development of atherosclerotic plaques. In addition, the common genetic predisposition of PsA to cardiovascular disease, as well as a higher prevalence of traditional cardiovascular risk factors, contribute to the increased vulnerability of PsA patients to the development of cardiovascular disease. Lifestyle factors such as sedentary lifestyle, smoking and a diet that promotes inflammation often accompany PsA and also increase the risk of cardiovascular complications in these individuals. All of the above determines the relevance of this problem.

Purpose: To predict cardiovascular complications in patients with psoriatic arthritis.

Material and methods of the study. The study involved 125 individuals who signed informed written consent. All patients depending on the presence of cardiovascular diseases (CVD) and PsA were randomized into three groups. Group I combined 62 patients with PsA complicated by CVD, group II included 32 patients with psoriatic arthritis (PsA) who did not have concomitant CVD. As an additional comparative (III) group, we included patients with clear signs of CVD without PsA.

All patients in all studied groups underwent clinical, laboratory and instrumental methods of investigation. In all patients risk factors of cardiovascular pathology were determined and the risk of cardiovascular complications was predicted using SCORE, Framingham and QRISK3 scales.

Study Results. We used the SCORE, Framingham and QRISK3 scales to predict and further prevent patients with cardiovascular disease.

The SCORE system scale is a way of assessing traditional risk factors for the development of CVC. The scale takes into account AH, obesity

according to BMI, smoking, presence of CVD among close relatives, diabetes, lipid metabolism disorders, increase in OXC over 5.0 mmol/L, LDL over 3.0 mmol/L, TG over 1.7 mmol/L, decrease in HDL below 1.0 mmol/L in patients.

Based on the above information, the 10-year risk of developing CVC is calculated. The risk of fatal complications according to the SCORE scale is considered low if it is less than 5%, high with a value between 5% and 10%, and very high if it exceeds 10% (Table 1).

Table 1

SCORE scale evaluation in I, II and III (n=125) study groups

10-year risk of developing CVC	I group n=62		II group n=32		III group n=31		Total n=125	
	n	%	n	%	n	%	n	%
Low risk ≤5%	6	9,7	23	71,9	3	9,6	32	30,5
High risk from 5% to 10%	35	56,5	9	28,1	17	53,1	61	58,1
Very high risk ≥10%	21	33,8	-	-	11	34,4	32	30,5

In study group I, 6 (9.7%) patients had low risk, 35 (56.5%) patients had high risk and 21 (33.8%) patients had very high risk of cardiovascular complications. In study group II, 23 (71.9%) patients had low risk, 9 (28.1%) patients had high risk of cardiovascular complications. No patients with very high risk of cardiovascular complications were observed in study group II. In study group III, 3 (9.6%) patients had low risk, 17 (53.1%) patients had high risk and 11 (34.4%) patients had very high risk of cardiovascular complications. Based on these observations, it can be seen that more often patients with high and very high risk were found in study groups I and III, in contrast to study group II, where patients with low risk were more often observed (coefficient of differences for all indicators $p<0.05$).

The Framingham Scale was used to assess the risk of individuals without clinical manifestations of cardiovascular complications. The scale was also used for primary prevention. Like SCORE, this system provides a 10-year prognosis. Total risk according to the Framingham scale: low (risk below 10%), medium (risk from 10 to 20%), high (risk above 20 to 30%). A value greater than 30% indicates a very high risk of cardiovascular complications. The scale takes into account gender, age, systolic blood pressure, total cholesterol, HDL, intake of hypertension medication (taking or not), smoking and presence of diabetes mellitus (Table 2).

Table 2

Framingham total risk score in I, II and III (n=125) study groups

10-year risk of developing CVC	I group n=62		II group n=32		III group n=31		Total n=125	
	n	%	n	%		n	%	n
Low risk ≤10%	5	8,1	18	56,3	2	6,5	25	20
Medium risk from 10% to 20%	6	9,7	12	37,5	4	12,9	22	17,6
High risk from 20% to 30%	39	62,9	2	6,3	18	58,1	59	47,2
Very high risk ≥30%	12	19,4	-	-	7	22,6	19	15,2

In study group I, 5 (8.1%) patients had low risk, 6 (9.7%) patients had intermediate risk, 39 (62.9%) patients had high risk and 12 (19.4%) patients had very high risk of cardiovascular complications. In study group II, 18 (56.3%) patients had low risk, 12 (37.5%) patients had intermediate risk, and 2 (6.3%) patients had high risk of cardiovascular complications. No patients with very high risk of cardiovascular complications were observed

in study group II. In study group III, 2 (6.5%) patients had low risk, 4 (12.9%) patients had intermediate risk, 18 (58.1%) patients had high risk, and 7 (22.6%) patients had very high risk of cardiovascular complications. Based on the observational data, it can be determined that more often patients with high and very high risk were found in study groups I and III, in contrast to study group II, where patients with low and intermediate risk of cardiovascular complications were more often observed (coefficient of differences for all indicators $p<0.05$).

Using the QRISK3 scale, we assessed the risk of cardiovascular complications over the next 10 years, including the risk of myocardial infarction, ischemic heart disease, stroke, and transient cerebral circulation disorder. The QRISK3 scale included data - age, sex, smoking, body mass index, family history of cardiovascular disease, treatment with hypotensive drugs, glucocorticosteroids, atypical neuroleptics, presence of chronic kidney disease, migraine, presence of systemic lupus erythematosus, severe mental illness, erectile dysfunction, and a measure of blood pressure variability. Unlike other scales for determining 10-year risk, QRISK3 can be used to examine patients in the age range of 25 to 84 years: low risk - less than 10%, moderate risk -10-20%, and high risk - more than 20% means (Table 3).

Таблица 3

Оценка шкалы системы QRISK3 в I, II и III (n=125) исследуемых группах

10-year risk of developing CVC	I group n=62		II group n=32		III group n=31		Total n=125	
	n	%	n	%		n	%	n
Low risk ≤10%	7	11,3	20	62,5	5	16,1	32	30,5
Medium risk from 10% to 20%	37	59,6	12	37,5	18	58,1	67	63,8
High risk ≥20%	18	29,1	-	-	8	25,8	26	24,8

In study group I, 7 (11.3%) patients had low risk, 37 (59.6%) patients had moderate risk and 18 (29.1%) patients had high risk of cardiovascular complications. In study group II, 20 (62.5%) patients had low risk, 12 (37.5%) patients had moderate risk of cardiovascular complications. No patients with high risk of cardiovascular complications were observed in study group II. In study group III, 5 (16.1%) patients had low risk, 18 (58.1%) patients had moderate risk and 8 (25.8%) patients had high risk of cardiovascular complications. When analyzing the data, it can be observed that more often patients with moderate and high risk were found in groups I and III of the study, in contrast to group II of the study, where patients with low risk were more often observed (coefficient of differences for all indicators $p<0.05$).

Conclusion. Thus, we used the SCORE, Framingham and QRISK3 scales to predict and further prevent patients with cardiovascular disease. Based on the SCORE scale, the 10-year risk of cardiovascular complications was calculated. The risk of fatal complications according to the SCORE scale was considered low if it was less than 5%, high with a value between 5% and 10%, and very high if it exceeded 10%. Using the SCORE scale, we determined that high- and very high-risk patients were more frequently seen in study groups I and III, in contrast to study group II, where low-risk patients were more frequently seen. Using the Framingham scale, it was determined that more often patients with high and very high risk were found in study groups I and III, in contrast to study group II, where patients with low and intermediate risk of cardiovascular complications were more often observed. Using the QRISK3 scale, we observed that moderate- and high-risk patients were more frequent in study groups I and III, in contrast to study group II, where low-risk patients were more frequent (coefficient of differences for all indices $p<0.05$).

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