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LABORATORY SIGNIFICANCE OF CARDIOVACULAR RISKS IN PATIENTS WITH PSORIATIC ARTHRITIS

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Abstract
The study of the role of cardiovascular factors and inflammation in the development of cardiovascular pathology in patients with psoriatic arthritis is an urgent interdisciplinary problem. Of interest is the relationship between the clinical manifestations of psoriatic arthritis, laboratory parameters, inflammation and changes in the cardiovascular system in patients with this arthritis.

Keywords: Psoriatic arthritis, cardiovascular aspect, lipid metabolism, hemocoagulation .

Relevance

Psoriatic arthritis (PsA) is a chronic progressive systemic disease associated with psoriasis, in which the pathological process is predominantly localized in the tissues of the musculoskeletal system and leads to the development of erosive arthritis, bone resorption, multiple enthesitis and spondyloarthritis [1]. In addition to joint and skin manifestations, most patients with PsA have more than one comorbid condition such as cardiometabolic disease including obesity (diabetes, hypertension, hyperlipidemia , hepatic steatosis , cardiovascular outcomes) , inflammatory bowel disease, uveitis , infections, malignancies, and fibromyalgia . All of these factors can play an important role in the choice of therapy. In this regard, there is a need to study the above pathology and its relationship with concomitant pathology [2].

The prevalence of PsA in the general population is estimated at 0.3-1%, and psoriasis (PS) in the world is 2-3%, and the incidence of arthritis in patients with PS ranges from 5 to 42% [3].

PsA has long been considered a disease with a more favorable course and prognosis compared to other arthritis. However, the analysis of a large number of observations shows that PsA not only leads to a pronounced dysfunction of the joints, but also causes early and high mortality in patients [3]. Mortality in patients with PsA exceeds the population by 59% in women and by 65% in men [3,4]. Among the causes of death in patients with PsA , the most common are cardiovascular diseases (CVD), as well as damage to the respiratory system. It is not possible to explain the increase in cardiovascular mortality in PsA patients only from the standpoint of classical cardiovascular risk factors. Among the possible causes of high cardiovascular morbidity and mortality in PsA patients, systemic inflammation should be singled out, the action of which not only exacerbates the influence of traditional cardiovascular risk factors, but also has a direct effect on the vascular wall, contributing to endothelial damage, increased vascular stiffness, and endothelial dysfunction. and atherothrombosis [5].

Per last thing two decades happened significant changes in researchers' views on the pathogenesis of atherosclerosis (AS) and related coronary complications (Ischemic heart disease (IHD), chronic heart failure (CHF)), what in eventually allowed consider AS as "inflammatory" disease human [6,7]. Data, submitted in literature recent years, show what activation immune answer, leading to condition imbalance in cytokine networks (hyperproduction pro-inflammatory cytokines on the background relative insufficiency anti-inflammatory mediators), induces functional changes with sides endothelium [8]. At the same time, it is established the presence of close associative relationships between fatal CCO and the level concentration many

pro-inflammatory mediators, which traditionally applied for estimates activity immunoinflammatory reactions [9]. The list of these pro-inflammatory mediators traditionally includesinclude: C-reactive protein (CRP), pro-inflammatory cytokines, cellular molecules adhesion, neopterin, immune complexes [10].

Many researchers believe that a small increase in the concentration SRP maybe testify about Availability subclinical inflammatory process in the vascular wall associated with atherogenesis [9,10].

Purpose

To study laboratory changes in cardiovascular aspects in patients with psoriatic arthritis.

Material and Research Methods

The study included 62 patients with a confirmed diagnosis of active psoriatic arthritis (main group) and 32 patients with psoriatic arthritis without signs of inflammatory joint damage (comparison group); the control group consisted of 20 healthy people. Activity currents diseases evaluated on CASPAR criteria, 2006.

Everyone patients with PsA included in this study at first admission to clinic and at need, and in outpatient conditions was carried out comprehensive laboratory study. Along with generally accepted methods laboratory diagnostics, comprehensive laboratory study included in myself: biochemical blood test with the study of the main indicators of lipid exchange and hemostasis, amount bilirubin, concentration uric acid, level creatinine, ALT and AST, C-reactive protein, fibrinogen.

Results of Our Own Research and their Discussion

When studying the state of lipid metabolism in patients with psoriatic arthritis, it was noted that the severity of dyslipidemia has a close association with the activity of the inflammatory process and the presence of visceral manifestations of the disease and is minimal in patients with low activity of psoriatic arthritis.

The results obtained were used to study the relationship between the main indicators of lipid metabolism and the intensity of the inflammatory process. It was found that in patients with low-grade psoriatic arthritis, a minimal increase in blood lipid composition was observed, compared with the control group ($p>0.05$). Patients with moderate psoriatic arthritis had a lower content of blood lipid parameters, in contrast to the control group ($p<0.05$-0.01).

When analyzing and evaluating the nature of dyslipidemia in patients with psoriatic arthritis with high degree activity, a statistically significant increase in total

cholesterol (GC), triglycerides (TG), cholesterol (CH), low density lipoproteins (LDL) and a decrease in cholesterol and high density lipoproteins (HDL) (p<0.01-0.001) was found.

At the same time, in patients with PsA, both in our work and in research others authors, pathological shifts all studied parameters, reflective condition lipid profile blood (GS, TG, CSLDL, HDL cholesterol, AI), were more pronounced and generally demonstrated significance of differences (p<0.05-0.001) when compared with those in persons control group (Table 1).

Table 1 - Parameters of blood lipid spectrum in patients with PsA (main group and comparison group) compared with group control.

Index	PsA (major group) (n=62)	PsA (comparison group) (n=32)	Controlgroup (n= 20)	H- criterion Kraskela - Wallis
GS, mmol /l	6,4±1,2	6,1±1,3p1>0,05	4,52±0,2 p1<0,01p2<0,05	<0,05
TG, mmol /l	1,16±0,04	0,98±0,06p1<0,001	0,48±0,03 p1<0,001p2<0,001	<0,001
CS LDL mmol /l	3,8±0,02	3,4±0,04p1<0,001	2,1±0,02 p1<0,001p2<0,001	<0,001
CS HDL, mmol /l	1,12±0,03	1,23±0,04p1<0,001	1,51±0,04 p1<0,001p2<0,001	<0,001
Atherogenicity index	4,7±0,08	3,9±0,06p1<0,001	3,1±0,02 p1<0,001p2<0,001	<0,001

Note: p1 - statistical significance of the difference in indicators compared with those in the main group; p2 - statistical significance of the difference in indicators compared with group comparisons (according to U-criterion of Mann-Whitney).

Determined that in patients With I degree of activity PsA was observed increase indicators lipid composition in blood, at this differences indicators in this group in relation to the control were statistically insignificant (p>0.05).

At sick co Grade II PsA had a higher content indicators of the blood lipid spectrum, the average level of which, with the exception of ia, statistically significant different from such indicators in controlgroup (p<0.05-0.01). When analyzing and assessing the nature of dyslipidemia in patients PsA With III degree activity It was revealed statistically a significant increase in the concentration of total cholesterol, TG, LDL cholesterol and a decrease in the content of HDL cholesterol(p<0.01-0.001) (Table 2).

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Table 2 - Analysis and grade states lipid spectrum blood at patients with PsA, depending on the degree of disease activity (I, II, III), according to comparison with control (n=62)

Index	Control (n=20)	Patients With PsA (n= 62)		
		I (n=8)	II (n=2 1)	III (n=33)
GS, mmol /l	4.52±0.2	5.1±0.2	6.3±0.2	7.2±0.2
TG, mmol /l	0.48±0.03	0.57±0.03	1.18±0.04	1.46±0.06
CS LDL mmol /l	2.1±0.02	2.2±0.08	3.8±0.04	4.1±0.06
CS HDL, mmol /l	1.51±0.04	1.36±0.09	0.78±0.02	0.62±0.02

In order to more correctly assess the possibility of an associative relationshipbetween degree activity PsA and parameters, reflective condition lipid metabolism, all patients with PsA were divided into two groups in dependencies from the level of C-reactive protein and erythrocyte sedimentation rate (ESR) (Table 3).

Table 3 - Analysis and grade states lipid spectrum blood at patients with PsA, depending on the degree of disease activity (I, II, III), according to comparison With control (n=62)

Index	Concentration SRP and level ESR		p
	<18 mg/l (n=29) <30 mm/h	>18 mg/l (n=33) >30 mm/h	
GS, mmol /l	5.1±0.9	7.4±1.2	<0.05
TG, mmol /l	0.92±0.03	1.40±0.06	<0.001
CS LDL mmol /l	2.9±0.03	4.7±0.07	<0.001
CS HDL, mmol /l	1.37±0.03	0.97±0.02	<0.001

The first group included 29 patients with slightly elevated CRP levels (up to 18 mg/l) and ESR (up to 30 mm/h). In the second group were included 33 patients with significant growth these indicators (more 18 mg/l and more thirty mm/h, respectively).

The study revealed statistically significant differences between the main indices of inflammatory process activity (CRP, ESR) and parameters reflecting the state of blood lipid spectrum.

The results showed that with the progression of the inflammatory process in patients with PsA there was an aggravation of atherogenic dyslipidemia. There was also a direct correlation between the levels of C-reactive protein, erythrocyte sedimentation rate and the values of total cholesterol and triglycerides in the group of patients with active PsA.

In addition, it was found that the intensity of immunoinflammatory reaction is reflected in the degree of lipid metabolism disorder.

Table 4 - Parameters coagulating systems blood at sick active PsA (n=62)

Index	PsA (n=62)	Control (n=20)	p
Prothrombin time, sec	11,6±0,5	16,2±1,3	<0,001
ATTB, sec	25,6±1,6	35,4±2,6	<0,001
PTI, %	73,8±5,9	94,6±7,8	<0,001
INR c.u	1,36±0,06	1,52±0,12	<0,05
fibrinogen, g/l	5,4±0,5	3,5±0,5	<0,001

In the examined patients with active psoriatic arthritis, the state of the blood coagulation system was evaluated. Analysis of the results of blood coagulation parameters, which were compared with similar parameters in the control group, revealed a statistically significant ($p<0.05$-0.01) decrease of prothrombin time, activated partial thromboplastin time (ATTB), as well as a marked decrease of prothrombin index (PTI) and international normalized ratio (INR) (Table 4). In addition, there was an increase in the level of fibrinogen and soluble fibrin monomer complexes ($p<0.01$). The main indicator indicating changes in the state of hemostasis in patients with highly active forms of psoriatic arthritis is a significant decrease in the ATTB index. This is due to the fact that the latter indicates impaired function of the main factors of the blood coagulation system, as well as is an indirect sign of procollikrein and high-molecular-weight kininogen deficiency.

According to the results of investigation of the hemocoagulation system in patients with psoriatic arthritis we found an increase, first of all, in the levels of ATTB, INR, soluble fibrin monomer complexes and fibrinogen ($p<0.01$). The observed increase of blood coagulation against the background of exacerbation of the severity of psoriatic arthritis course is certainly indicative of the correlation between these parameters.

The main indicator indicating a change in the state of hemostasis in patients with highly active forms of PsA is a significant decrease in ATTB index. This is explained by the fact that the latter indicates dysfunction of the main factors of the blood coagulation system, as well as is an indirect sign of procollikrein (Fletcher factor) and high-molecular-weight kininogen (Fitzgerald factor) deficiency.

The results of a study of the hemocoagulation system in patients with PsA revealed an increase in the levels of ATTB, INR, soluble fibrin monomer complexes and fibrinogen, first of all.

The observed increase in blood coagulation against the background of worsening severity of PsA, undoubtedly, indicates a correlation between these parameters. In

this regard, it was decided to conduct a correlation analysis between individual parameters of the blood coagulation system and laboratory indices of the intensity of the inflammatory process in PsA.

Conclusions

Comorbidity of active psoriatic arthritis with cardiovascular pathology represents peculiar disorders of lipid spectrum, which is characterized by atherogenic disorders of lipid metabolism (atherogenicity index>3,5). The main factor contributing to the development of dyslipoproteinemia and hypercoagulation has been identified: the activity of the underlying disease.

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