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ANALYSIS OF IMMUNOSUPPRESSION IN PATIENTS WITH ISCHEMIC HEART DISEASE

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Abstract.According to the results, a study of the cytokine profile showed that in patients with ischemic heart disease and arterial hypertension in the healthy group, cytokine hyperexpressance was 21.5% for CRP, 24.7% for IL-6, 58% for TNF-a, and IL-18 was found to have a convincing increase of 40.4% The results of the intergroup comparative analysis showed that in patients with ischemic heart disease and arterial hypertension, the CRP was 33%, IL-6 was 10.3%, TNF-a was 28.6%, and IL-18 was 10.4% compared to patients with ischemic heart disease without arterial hypertension.

Keywords: cytokines, interleukin-6 (IL-6), interleukin-18 (IL-18), tumor necrosis factor-a (TNF-a), c-reactive protein (CRP), phosphotidylserine (FS) ischemic heart disease, arterial hypertension

Relevance: In recent years, the process of immunization plays a key role in the development of atherosclerosis in patients with IHD, an increase in the amount of markers and inflammatory mediators in the blood, the most studied of which is C-reactive protein (CRP). An increase in CRP levels increases the intensity of the inflammatory process and in turn increases the risk of developing coronary vascular complications. The functional activity of the monocyte-macrophage system involved in the inflammatory process is closely related to the activation of CRP synthesis in the liver using the cytokine complex.

Objective: To assess the importance of immunological reactions in patients with ischemic heart disease and arterial hypertension.

Results of the study: The study involved 131 patients with ischemic heart disease aged 38–76 years (mean age 61 ± 1.3). Of these, 106 were patients with ischemic heart disease (IHD) and arterial hypertension (AH) (main group), 25 patients were included in the comparison group (IHD without AH), and 20 people were in the healthy group (those with no cardiovascular complaints). Diagnosis according to the degree of arterial hypertension was made according to the WHO / ISAH (1999) classification, functional class diagnosis of ischemic heart disease stable angina was made on the recommendation of the Canadian Society of Cardiologists. All patients were divided into 2 groups after seeing the random selection method.

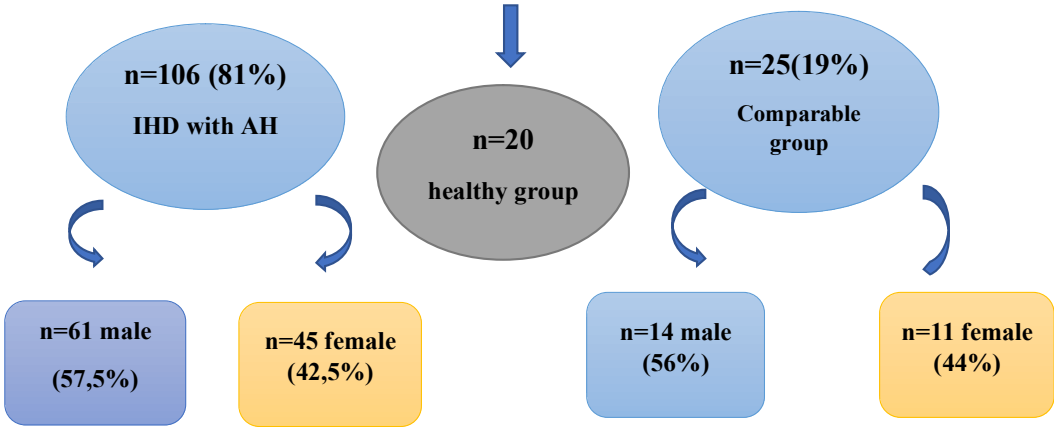

Figure 1. Inspection protocol

The data from a comparative analysis of inflammatory symptoms studied among the groups of patients examined showed a reliable increase in both groups, which in turn indicates that the inflammatory process is involved in the pathogenesis of atherosclerosis.

Table №1.

Biomarker indicators of inflammation of the control group (M ± m)

№	The indicators studied	IHD+AH (n=106)	IHD (n=25)	Healthy group (n=20)
1.	CRP g/l	4,0±0,67***	3,0±0,33***	0,86±0,03
2.	IL-6, pg/ml	15,0±2,38***	13,6±1,85***	3,7±0,26
3.	TNF-a, pg/ml	9,0±1,77*	7,0±1,4	5,2±0,4
4.	IL-18, pg/ml	150,2±7,1***	144,5±2,75***	107,4±3,1

*Application: *** p <0.0001 for a healthy group, the intergroup analysis is unreliable*

In recent years, a large list of inflammatory blood biomarkers in IHD and coronary atherosclerosis is being actively studied: CRP, IL-6, IL-8, IL-1-b, TNF-a, matrix metal prosthesis-3 (MMP-3) and matrix metal prosthesis-9. (MMP-9).

The level of cytokine concentration in blood serum or blood plasma reflects the current state of the immune system, however, the ability of blood cells to secrete cytokines should be assessed in situations involving a lack or imbalance of regulatory factors. However, the spontaneous production of cytokines indicates how many blood cells are activated in vivo, allowing cell producers to secrete cytokines under the influence of mitogen.

In general, the mean IL-18 level in the group of patients with IHD + AH was 150.2 ± 7.1 pg / ml, and in the group of patients IHD without AH was 144.5 ± 2.75 pg / ml. High levels of IL-6 were detected in both groups. The mean value in the IHD + AH group of patients was correspondingly IHD + AH 15 ± 2.38 pg / ml, in patients IHD without AH was 13.6 ± 1.85 pg / ml. However, an increase in TNF-α was observed, with an average value of 9.0 ± 1.77 pg / ml in patients with IHD + AH and in patients IHD without AH 7.0 ± 1.4 pg / ml.

Thus, the study of the cytokine profile showed that in patients with IHD + AH compared with the healthy group, cytokine hyperexression increased by 21.5% ($p < 0.0001$), IL-6 by 24.7% ($p < 0.0001$), TNF-a increased by 58% ($p < 0.05$), and IL-18 by 40.4% ($p < 0.0001$). The results of the intergroup comparison showed that in patients with IHD + AH, CRP was 33% higher than in patients IHD without AH, IL-6 was 10.3% higher, TNF-a was 28.6% higher, and IL-18 was 10.4% higher.

Next, we analyzed the correlation between the phospholipid fractions in the platelet cortex and the indicators of immune inflammation.

The results of the correlation analysis showed that all phospholipid fractions in the platelet shell had a correlation between immune inflammatory indicators, but it should be noted that most of these correlations were expressed in a "negative" form, i.e. a "positive" correlation was only reliable between FS-IL-6 ($r = 0, 39$; $r < 0.001$) had an indicator.

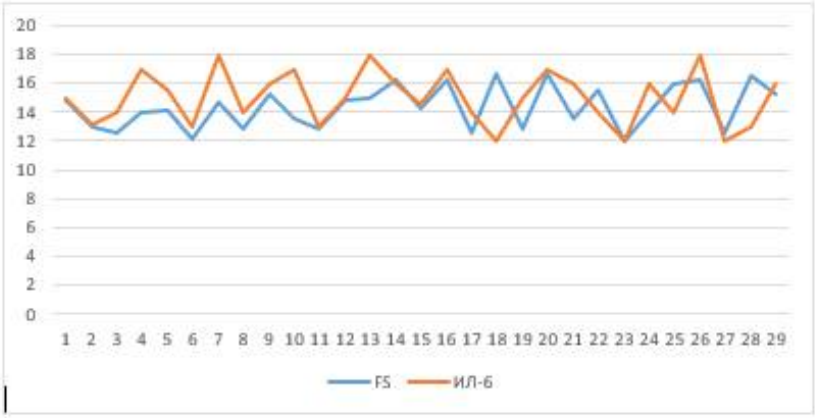

Figure 2. Correlation between the studied indicators (FS-IL-6)

Conclusion:

1.The results showed that the state of immune inflammation plays a direct role in the exacerbation of ischemic heart disease and arterial hypertension.

2.Correlation analyzes showed that there was a reliable correlation between the FS fraction in the platelet cortex and IL-6, one of the indicators of immune inflammation.

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