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Research Article

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The Role of Cellular Immunity in Formation of Endothelium Disfunction in Patients with Nonspecific Aortoarteriitis

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Abstract The investigation of the cellular immunity disorders and its correlation with endothelial disfunction in the patients with nonspecific aortoarteriitis are discussed in the article. It was found out direct correlation between contanse of the CD4+, CD8+, CD20+, CD25+, CD95+ and HLA-DR, endothelinum-1 and circulating endotheliocites levels and indirect correlation between the cellular immunity changers endothelium dependent vasodilatation of the shoulder artery in the patients with nonspecific aortoarteriitis.

Keywords nonspecific aortoarteriitis, cellular immunity

Introduction

In recent years, patients with NAA and its complications, resulting in the formation of hypertension (AG) and cardiovascular failure, have become more common. The disease is characterized by severe course, reduced quality of life of patients and increased mortality. NAA, despite its low prevalence, is a difficult to diagnose and dangerous disease that deserves close attention of clinicians. The range of clinical signs includes both symptoms caused by systemic inflammation and symptoms of ischemia due to arterial stenosis or occlusion of various arterial basins. According to the World Health Organization, "hypertension is the leading global risk of increased mortality from cardiovascular disease in the world." "Arterial hypertension is one of the non-infectious pandemics in the world, which is diagnosed in 1/3 of the population of our planet and kills almost 7 million people annually. Complications in the form of vascular catastrophes are the main causes of death of young patients (36-40 years) suffering from this systemic vasculitis. In turn, the high mortality rate in hypertension in patients with NAA leads to the development of treatment and prevention measures to prevent its complications. Diagnosis of nonspecific aortic arteritis remains a difficult task due to the primary-chronic course of the disease in more than half of patients and the nonspecificity of many symptoms of the disease, due to the fact that most patients (12%) have a diagnosis of months It has been noted that the 5-year survival rate of Takayasu's artery is 94% [14]. In another study [13], the 20-year survival rate for Takayasu's artery was 86%, but half of the patients developed disabling ischemic complications with involvement of the central system within 15 years of diagnosis. The high frequency of ischemic complications of Takayasu's arteritis in the majority of diagnosed cases is caused by inadequate on intensity and duration of immunosuppressive therapy that is in many respects connected with absence of highly sensitive sensitive and sensitive methods.

According to modern notions, the key role in the dynamics of the state of the vascular wall belongs to the endothelium - the inner layer of blood vessels. The endothelium is the main "target organ" in NAA. Under the influence of damaging factors (hypoxia, inflammation) there is a gradual depletion and perversion of the compensatory (dilating) ability of the endothelium, increased production by the endothelium of vasoconstrictors, growth and proliferation of hunger.

The aim is to study the correlation between cellular immunity and the functional state of the vascular endothelium in patients with nonspecific aortoarteritis, taking into account the role of chronic immune inflammation in the development of endothelial dysfunction of the endothelium.

Materials and methods. The main group consisted of 81 patients with moderate (grade II) NAA activity (according to the INAV scale). Of these, 55 people had type I arterial damage, and 26 - type III (according to the classification of E. Lupi - Herreraetal, 1977). All patients had hypertension (AG) (46 people - stage II, 35 people - stage III).

The control group consisted of 30 healthy donors. The phenotype of lymphocytes was determined by indirect immunoperoxidase method using a panel of monoclonal antibodies (LLP "Sorbent", Moscow) to the structures SD4, CD8, CD20, CD25, CD95, HLA-DR. Characteristics of endothelial function included the determination of desquamated (circulating) endothelial cells (CEC), the content of endothelin-1 (ET-1) in the blood of the examined and the determination of endothelium in the plexus of the left ventricles. The CEC was determined by the method of J. Hladovec (1978). The level of ET-1 was determined using the original kit for enzyme-linked immunosorbent assay (Viomedica). EZVD assessment was conducted according to the methodology of DS Zellermeier (1992). Standard statistical processing and correlation analysis of the obtained data were performed using the "MicrosoftExcel XP" application programs.

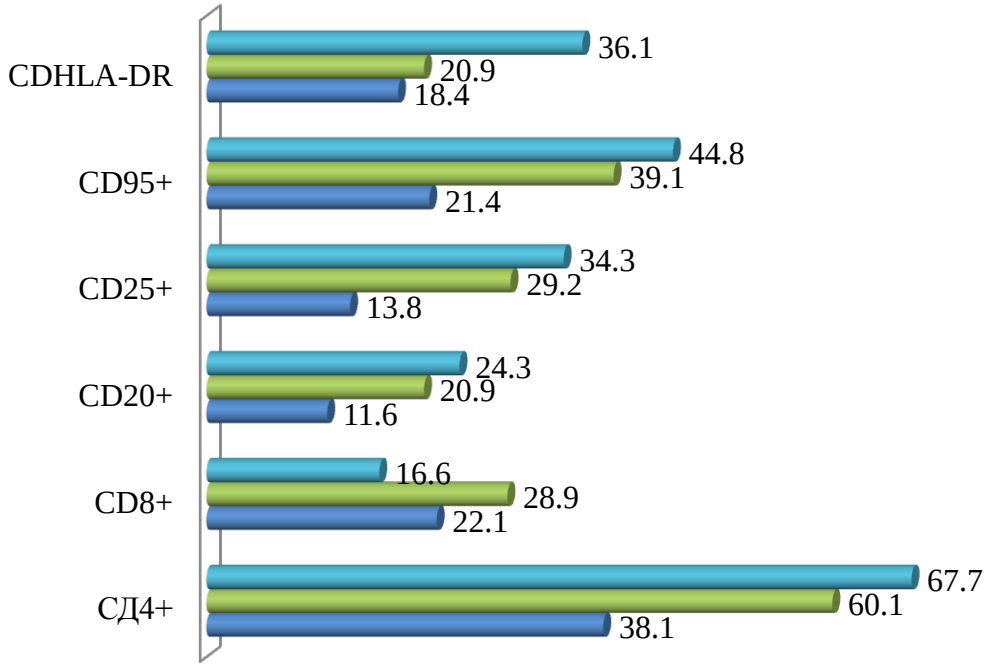

Figure 1: Indicators of cellular immunity in peripheral blood in patients with NAA

The results. The results of the study of the cellular component of immunity in patients with NAA are presented in Figure 1. The obtained data show that in patients with NAA there is a violation of the ratio of the subpopulation composition of peripheral blood lymphocytes in comparison with the control. In patients with stage II AG NAA, there is an increase in the number of both CD4 + and CD8 + cells. In the group of patients with NAA from the III century. AG showed a tendency to increase the content of CD4 + and CD8 + lymphocytes in comparison with the corresponding indicators in patients with stage NAA and AG II. A study of the B-cell component of immunity revealed an increase in the content of CD20 + lymphocytes in the blood of patients with NAA, which increased with the severity of AG. An increase in the expression of the early marker of lymphocyte activation - the alpha chain of the interleukin-2 receptor (CD25 +) and the expression of late activation markers (HLA-DR +) in patients with NAA, compared with stage AG. Evaluation of the expression of the inducing factor apoptosis CD95 + on lymphocytes revealed an increase

in CD95 + in patients with NAA, which increased in parallel with the AG stage. Studies have shown exacerbation of cellular immune disorders in NAA patients correlated with stage AG.

Maximum changes in the content of CD4 + (67.7 ± 3.3%), CD8 + (16.6 ± 2.5%) phenotype, increase in the content of CD20 + (24.3 ± 1.4%), as well as impaired expression of early CD25 + (34.3 ± 1.4%), late HLA-DR + (36.1 ± 1.9%) markers of activation and inductive apoptosis factor CD95 + (44.8 ± 2.9%) occurred in patients with NAA and III stage AG.

As a result of the development of immune inflammation in NAA, the endothelium manifests itself as dysfunction in the form of increased endothelin-1 secretion and decreased NO production, which contributes to the development of vasoconstriction, thrombosis and activation of remodeling processes. To date, endothelin content in NAA patients is virtually unexplored. Determination of ET-1 content in patients with NAA with different stages of AG revealed an increase in the concentration of ET-1 in parallel with stage AG. The maximum level of ET-1 (15.29 ± 1.2 ng / l, p <0.01) was observed in patients with NAA and stage III AG (Fig. 2).

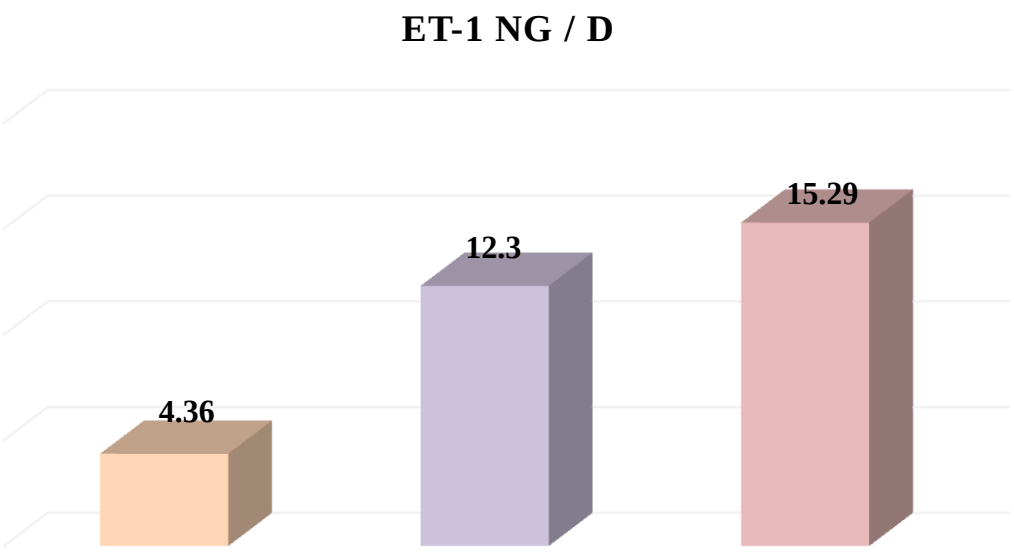

Figure 2

Of interest was the determination of the number of circulating desquamated endotheliocytes in patients with NAA (Table 1).

Table 1: The content of CEC in the serum of patients with NAA

Groups of patients	n	CEC indicator (cell / 100 µl)
Control	30	3.4 ± 0.5
NAA + AG II st	46	8.9 ± 0.3*[1]
NAA + AG III st	35	12.3± 0.5*[1,2]

There was a significant increase in endotheliocythemia with increasing stage AG. Determined the functional state of the endothelium in patients with NAA by changing the diameter of the brachial artery during a test with reactive hyperemia

The relative dilation of the brachial artery during the test with reactive hyperemia in patients with NAA was significantly lower than in the control group - 6.2 ± 1.3% and 10.5 ± 2.3%, respectively. In the group of NAA patients with III st. AG in reactive hyperemia was determined by a significant change in blood flow velocity (on average 35% below the control level), the mean level of dilatation caused by flow was 1.5 lower in patients with NAA compared with control.

Of unconditional interest was the determination of the relationship between indicators of cellular immunity and markers of endothelial dysfunction in patients with NAA. A direct correlation was established between the levels of

CD4 +, CD8 +, CD20 +, CD25 +, CD95 + and HLA-DR, the content of endothelin-1 and CEC (r = 0.63 **, p <0.01) and the inverse relationship between the above and the following indicators. r = -0.59 *, r <0.01). The results
Correlation analysis indicates a significant role of activation of the cellular link of immunity in the formation of endothelial dysfunction syndrome in patients with NAA.

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