ETHIOPIAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 11, November-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980 2024: 7,662

D.T.Sodiqova

Faculty of medical advancement department of professional and re-training of family physicians, folk medicine and functional diagnostics

Andijan State Medical Institute,Andijan, Uzbekistan

THE IMMUNE STATUS AND SPECIFICITY OF LIPID PEROXIDATION PROCESSES IN PATIENTS WITH HYPERTENSION

Summary. According to modern concepts, lipid peroxidation (LPO) is a constantly occurring physiological process that, when intensified, is involved in the development of a number of pathologies. It has been established that activation of LPO processes is involved in the pathogenesis of many diseases of the cardiovascular system [2]. Lipid peroxides play an important role in the body: lipoperoxides are an important intermediate in the biosynthesis of prostaglandins E, progesterone; they are involved in the hydroxylation of the cholesterol core; they are necessary for activating a number of membrane processes and regulating membrane permeability.

Key words: cardiovascular diseases, lipid peroxidation, immune status, low-dialdehyde.

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Introduction. The enormous damage caused to human health by cardiovascular diseases (CVD) poses serious challenges to both clinicians and public health professionals. In many countries of the world, heart and artery diseases, in particular hypertension, are the cause of death for more than one third of the population [1].

According to modern concepts, lipid peroxidation (LPO) is a constantly occurring physiological process that, when intensified, is involved in the development of a number of pathologies. It has been established that activation of LPO processes is involved in the pathogenesis of many diseases of the cardiovascular system [2]. Lipid peroxides play an important role in the body: lipoperoxides are an important intermediate in the biosynthesis of prostaglandins E, progesterone; they are involved in the hydroxylation of the Sterol core of cholesterol; they are necessary for activating a number of membrane processes and regulating membrane permeability.

However, peroxides in high concentrations also have a number of pathological effects on the cell: they have a damaging effect on-SH and amino groups, inactivate a number of enzymes, destroy vitamins, ubiquinone, steroid hormones, and change the permeability of cell membranes. Literature data indicate the presence of complex relationships between the processes of LPO and the state of the immune status [2,3]. In pathology, this balance is disturbed, most often in the direction of increasing free radical oxidation and reducing antioxidant protection, and, as a result, there is a change in the immune system. data indicate the presence of complex relationships between these components of homeostasis [3,4]. the mechanism of action of immunogenesis includes a negative inotropic effect, heart remodeling, violation of endothelium-dependent dilatation of arterioles, increased apoptocardiomyocytes and peripheral muscle cells [2,3,5]. Increased activity of POL stimulates the production of IL-6, TNF-α. Almost every pathological process is characterized by activation of POL, which is manifested by the accumulation of primary (hydroperoxides, diene conjugates) and secondary POL products (MDA, pentane, etc.), as well as a sharp decrease in the body's antioxidant defense

In response to pathological changes in the myocardium and peripheral tissues, there is a violation of the functions of the receptors, which is manifested by their overstimulation, which in turn leads to hyperactivation of the SAC POL, closing the vicious circle [2,6,7].

The aim of the study. To study disorders of the LPO processes and immune status in patients with GB.

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Research materials and methods. we observed 45 patients aged 30 to 65 years suffering from GB. 45 patients were randomized into 3 groups based on the diagnosis. 15 patients were diagnosed with GB; 15- GB+IHD. Stable angina, FC II; in the remaining 15 patients with GB complicated by a hypertensive crisis. The control group consisted of 10 relatively healthy individuals aged 20-45 years. The diagnosis in all examined patients is based on data from clinical observation, laboratory analysis, and functional diagnostics, taking into account risk factors.

The method of V.B.Gavrilov, A.R.Gavrilova, and A.M.Mazhul (1987) was used to determine the activity of POL. The content of POL products was judged by the content in the blood serum of their secondary product – malonovodialdehyde (MDA), determined by the reaction with 2-thiobarbituric acid. For determination of immunoglobulins in blood plasma, the method of radial immunodiffusion in gel in the Mancini modification was used.

The concentration of interleukin-6 was determined by a similar method of solid-phase enzyme Immunoassay using the test systems of Cytokine LLC (Saint Petersburg, Russia) on the Human enzyme immunoassay analyzer (Germany).

Research results. The results of studies showed that in patients of group I with GB, the MDA level was 6.81±0.33 NML/l, which is 99.1% higher than the control. This fact is particularly clear when analyzing the level of fluorescent POL products.

In group II patients with GB+IHD, the MDA level was slightly higher, amounting to 8.4±0.63 nmol/l, which is 145.6% higher than the control, and 29.0% higher than in group I.

In the third group, the level of MDA was much higher than in other groups of subjects and amounted to 9.4±0.65. The state of the immune status was also studied in PARALLEL. The levels of interleukin-6 in patients with GB and GB+IHD did not differ significantly, while in patients with GB+ha the indicator was 118.4±5.9 Pkg/ml. In the control group, the IL-6 index was 26.6±1.2 Pkg/ml.

Discussion of results: Biological effects of interleukin-6 involvement in the development of inflammatory and immune responses, as well as in the regulation of intersystem interactions. Provides the relationship between the autonomic and immune systems [9,11,12]. Studies have shown an increase in the blood content of IL-6 in patients with GB, which is correlated with the severity of clinical manifestations and the activity of POL processes.

Currently, it is known that the accumulation of POL products occurs in a number of pathological conditions [3,8,12]. These are known to include conditions that are accompanied by activation of the immune status, in which there is a sharp increase in free-radical SEX. Activation of free-radical peroxide processes underlies the pathogenesis of many diseases of internal Organs, including GB [4,7]. the degree of lipid peroxidation is directly proportional to the severity of the pathological process in the coronary arteries. The data indicate a strained immune system in arterial hypertension and especially in the presence of complications.

Conclusion. Thus, the "immunocytokine" model of CHD pathogenesis does not contradict the neurohumoral theory, but complements our understanding of the mechanisms of HD development. The involvement of immune inflammatory mediators in the disease scheme expands the "base of therapeutic intervention" and opens up new prospects for improving the effectiveness of treatment. Ways to influence the cytokine link are already being seriously discussed. And it is possible that soon anti-cytokine drugs will become as common a means of treating patients with cardiovascular diseases as anti-anginal tablets, cardiac glycosides and I-ACE.

A comprehensive study of the processes of POL and the state of the immune system in patients with GB showed that in a hypertensive crisis, there is a pronounced violation of POL, which is expressed by an increased content of MDA. When combined with stable angina, there is a slight increase in the MDA content compared to other groups. Lipid peroxides play an important role in the body: lipoperoxides are an important intermediate in the biosynthesis of prostoglandins E,

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progesterone. Peroxides in high concentrations have a pathological effect on the cell: they have a damaging effect and disrupt the basic functions of cells, change the permeability of cell membranes.

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