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Identification and Assessment of Immune-Environmental Aspects of the Immune System of Persons Residing in an Environmentally Unfavorable Industrial Area

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Abstract

Ensuring the primary and secondary immune response in the body is part of one of the main tasks of immunoimmune factors. They are divided into special and non-specific resistance factors depending on the functions they perform. It has been shown that specific resistance factors differ from non-specific resistance factors in the following properties: firstly, protection is provided only by immunocompetent cells of the immune system; secondly, they have the property of both quantitative and qualitative changes in the body when stimulated by an antigen.

Key words: Hypothermia, chemicals, radiation, dust, climate, edaphic, orographic, hydrographic, chemical, lymphoid cells.

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As a result of the impact of environmental factors on the health of the population, there is an increase in chronic diseases, allergic diseases and changes in the immune system. According to WHO experts, the share of the impact of the environmental situation on the health of the population is 17-20%. The environmental component in the pathogenesis of major diseases, according to various authors, occurs from 30% to 60%.

In different gods, the emanation of the ecological situation has a significant impact on the human body. The most sensitive system of the human body to the negative impact of the environment is the immune system. A real assessment of the state of the environment in regions can be given by analyzing the state of health of the population. The immune system is a complex multi-competency system. Therefore, it is very sensitive to the influence of negative environmental factors. Almost any, even the most insignificant external influence on the human body leads to a change in the state of the immune system.

As ecology breaks down, human health deteriorates, nosoglom human zinc becomes low, craving for cocktails is weakened. This, in turn, U3, negatively affects the development of society, its economy and, in general, its economy. The immune system plays a key role in the adaptation (adaptation) and health maintenance of the population to harmful environmental and industrial factors.

The immune system is a network of biological processes that protect the body from diseases. It recognizes a wide variety of pathogens, from viruses to parasitic flies, as well as cancer cells, even wood scraps, giving them an immunological response and distinguishing them from the body's healthy tissues. In most biological species, the immune system consists of two main subgroups. The innate immune system provides protection through pre-formulated immune responses to a wide variety of conditions and effects. The adaptive immune system returns an adapted response to each subsequent stimulus by easily recognizing the molecules it had previously encountered. Both systems use molecules and cells to perform their functions.

Almost all organisms have some kind of immunity. Bacteria have rudimentary immunity in the form of enzymes that protect against viral infections. Other simple immune mechanisms have evolved in ancient plants and animals and have been maintained into their modern descendants. These mechanisms include phagocytosis, antimicrobial peptides called defensin, and the Complement System. Jaw vertebrates, including humans, have the ability to adapt to more complex defense mechanisms, more efficient detection of pathogens. Adaptive (or acquired) immunity produces immunological memory, which allows for a stronger response to subsequent conflicts with the same pathogen. A similar Acquired Immune process forms the basis of vaccination.

Dysfunction of the immune system can lead to autoimmune diseases, inflammatory diseases and cancer. Immunodeficiency occurs when the immune system is weak from normal, resulting in recurrent and life-threatening infections that can be transmitted. Immunodeficiency in humans can be observed as a result of a hereditary disease such as Severe Combined Immunodeficiency, acquired diseases such as HIV / AIDS, or the use of immunosuppressive drugs. Autoimmune is caused by the response of the hyperactive immune system to normal tissues just like it attacks foreign organisms. Common autoimmune diseases include Hashimoto's thyroiditis, rheumatoid arthritis, Type 1 diabetes, and systemic lupus erythematosus. Immunology studies all aspects of the immune system.

The main purpose of immunity and the evolutionary justification for its appearance is to protect the body from biological aggression, which is carried out in two main forms – external and internal. The immune State indicates the total number of individual reactions that, when interacting with the environment, can develop from normal reactions to pathological reactions. The human body cannot be considered a bioindicator of environmental assessment. A person can get sick with any acute disease, but this does not mean that in the human environment there are all kinds of pathogenic bacteria.

If so, then all people will be sick all year round. Some people get sick who react to certain types of bacteria that are pathological for him. The immune status of humans and animals can change under the influence of various stressors. They can be influenced by anthropogenic factors such as physiological (natural – food intake for the body, muscle load, influence of climatic and geographical conditions) and non-physiological (hypothermia, chemicals, radiation, dust, etc.).

There is another group of factors called environmental factors-a complex of environmental conditions that affect living organisms. There are inanimate nature factors-abiotic (climatic, edaphic, orographic, hydrographic, chemical, pyrogenic), wildlife factors – biotic (phytogenic and zoogenic) and anthropogenic factors (influence of human activity). The immune system is a complex organized system. And he is responsible for the body's reactions aimed at eliminating foreign elements. The basis of the immune system consists of lymphoid cells that form lymphoid tissues that are involved in the formation of lymphoid organs. The influence of negative chemical factors can, first of all, have a direct (toxic) effect on the immune system, which is the subject of industrial Toxicology, but is often manifested by prolonged exposure, which leads to the formation of allergies in workers who come into contact with dyes, aerosols, dust particles for a long time.

Ensuring a primary and secondary immune response in the body is part of one of the main tasks of immuno-immune factors. They are divided into special and non-special resistance factors, depending on the functions they perform. It has been shown that specific resistance factors differ from non-specific resistance factors in the following properties: firstly, protection is provided only by immunocompetent cells of the immune system; secondly, they have the property of quantitative and qualitative (proliferation and differentiation) change in the body when there is antigen stimulation [1,7].

Non-specific resistance factors include skin and mucous membranes, connective tissue, normative microflora of the human body, biological fluids of the body, blood and acute phase proteins, along with lysozyme, complement, lactoferrin and procalcitonins Ham. It has been found that non-specific resistance factors provide mainly local immunity, while being the first protective barrier against antigen invasion and stimulation, it should be noted that their main functions are actually different. It is a notable case that the body, along with its main function, has been proven to perform a protective function [1,4].

Another non-specific resistance factor is procalcitonin,this factor is produced by cells in the body when various bacterial infections and tissue damage are observed. It is the initial derivative of the hormone calcitonin and supports calcium metabolism in the human body. The cells that produce it are the parafollicular cells of the pancreas, neuroendocrine cells of the lungs and intestines. It turns out that their serum content is very low and increases only in inflammations of a bacterial nature in the body [3].

Patients of different ages serum immunoglobulin concentrations changed quantitatively after treatment measures, and the dysbalance caused by the disease was restored. In both age groups, immunoglobulin levels have changed positively ($R<0.05$). In age groups, IGA has shown a convincing decrease in IgM levels from 1.20 and 1.97 times after treatment to treatment ($R<0.05$ - 0.001), while IgG has increased convincingly ($R<0.05$) to 1.30 and 1.16 times respectively - 1.52 and 1.43 times respectively ($R<0.05$). It is noteworthy that, in addition to averages, practically all individual indicators also showed an increase. The extent of changes in IGE metrics has attracted particular attention, as the dynamics of these changes differed dramatically from other immunoglobulins.

During treatment, the serum concentration of ige decreased sharply in the dynamics of treatment, and the post-treatment indicator decreased convincingly from the pre-treatment parameter to 6.16 times in children 5.03 times ($R<0.001$), but the results did not reach the norm level and remained convincingly higher than the control group indicators ($R<0.05$). These changes have shown that ige is inextricably linked with disease pathogenesis, that treatment treatments have changes in this immunoglobulin concentration, that treatment should not stop if this immunoglobulin concentration does not decrease in Norm indicators, that this immunoglobulin has correct and reverse, moderate and strong links to other immunoglobulins (iga, IgM, IgG) in the blood serum. The diagnosis of this disease in children with allergic diseases indicates the need for a comparative analysis of immunoglobulins, and when prescribing treatment measures, an assessment of the effectiveness of the treatment indicates the need to study them in the dynamics of treatment. In the dynamics of treatment, the amount of lactoferrin, S3S, procalcitonin in blood serum was studied in order to study and comparative analysis of the dynamics of changes in non-specific factors of the immune system.

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