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Letter to the Editor

Non-Lymphoid Components of Immunopathology

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ABSTRACT

The role of auxiliary non-lymphoid cells in the functioning of the immune system, the relationship between the immune, nervous, endocrine, metabolic and other body systems are discussed, including the possibility of formulating the concept of the body's integral response to the induction of pathological processes, the possibility of its correction, etc.

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Achievement of clinical immunology in recent years was the establishment of the fact of the formation of immune disorders as the basis for aggravating the course of various diseases [1]. Traditionally, there is an idea that the main participants in immune responses are self-sustained populations of T and B-lymphocytes. Phagocytes (monocytes/macrophages), granulocytes and other cells are classified as auxiliary. Thus, the whole variety of immune defense is reduced to about 1/5 of the white blood cells - lymphocytes. The ability of non-lymphoid elements to form mediators that actively regulate immune responses, antigen presentation, participation in anti-infectious protection, etc., is, as it were, of secondary importance. The axiom of immunology is that the specificity (concreteness) of the immune response is realized only by lymphocytes, and everything else is nonspecific and, therefore, secondary.

It has long been known that neutrophils carry out non-professional, mainly extracellular, killing with the help of active metabolites of oxygen, H₂O₂ and other factors, after which they leave for tissues where they live no more than 3-5 days. Eosinophils remain in circulation for

about 10 hours, then migrate from it, with a subsequent lifespan of about 48 hours. Basophils are 6 hours in the bloodstream and another 1-2 days outside. The specified time is quite enough for the active participation of the aforementioned cells in any pathological processes.

It is necessary to state, the rather artificial isolation of the lymphoid system into something autonomous. Its connection with the nervous, endocrine, and other systems is recognized by all but is not taken into account in the practical aspect [2]. In a number of cases, we are still talking only about the deficit/excess of the formation of immune globulins, imbalance of the phagocytic link, etc. Although in reality, there is a whole complex of pathological reactions, among which the lymphoid ones, as you know, are not the only ones and, perhaps, not the most important. To this should be added a very wide range of endocrine, biochemical and other factors that actively influence the development of immune reactions in general and immunopathological in particular. So, female sex and thyroid hormones stimulate, and corticosteroids and androgens suppress immune reactivity. Lipid peroxidation products, endogenous low molecular weight nucleic acids, breakdown products of

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immune globulins, acute phase proteins, etc. modulate immune disorders during the development of pathological processes.

Many drugs that do not belong to the category of immunotropic drugs modify antigen recognition reactions, and immunomodulators, in turn, are endowed with pronounced metabolic efficiency, the ability to regulate the activity of the neuroendocrine system, etc. These phenomena are constantly induced in the body, but, as a rule, are not taken into account, and in some cases are not even assumed by clinicians, which, of course, does not negate the fact of their deployment. A powerful effect on the immune reactivity of enzymes, the participation of young (light), old (heavy) erythrocytes, platelets in the implementation of the immunomodulatory effects of analgesics, anti-inflammatory, antibacterial and other drugs has been established [3, 4]. Proof of advanced patterns not only expands the pathogenetic understanding of the mechanisms of pathological conditions but also outlines certain ways of their directed correction through immune, biochemical, endocrine and other chains. Traditionally used in immune studies, the stencil method for determining the statistical significance of differences based on the analysis of the average values of indicators (Student's test), various nonparametric criteria is not very promising, since it does not take into account variations in parameters in individual individuals, their relationships, etc.

To identify common patterns, given the great hierarchical complexity and multicomponent deployment of immune mechanisms, their associations with endocrine and other systems, biochemical status, etc., it is necessary to use equally complex methods of mathematical data processing. In our opinion, the most informative in this regard are the following approaches.

- i. Determination of reliable dynamics from a given level of components of the immune, biochemical, clinical statuses simultaneously with the assessment of variations not only in mean values but also in the frequency of distribution of pathology, significant "second - third" degree in the analysed population of patients, suffering from specific diseases [5].
- ii. Selection by means of the "coefficient of diagnostic value" of the leading key markers characterizing the "main" changes in the laboratory status terms - the "disorder formula" [6].
- iii. Establishment of a reliable correlation between immune, biochemical, and clinical parameters, "intra-systemic" (immune reactivity), "intersystem" (immuno-hematological), "extra-systemic" (immuno-biochemical, hemato-biochemical) etc.
- iv. Use of integral approaches to characterize groups of markers of different variants of laboratory status - building a rating algorithm, graphical analysis, scoring, etc. [6].
- v. Application of the above methods for the analysis of variations in the components of the laboratory status in various pathological processes before and after the implementation of differentiated treatment with the establishment of specific targets for the action of drugs and non-medicamentous effects.

Based on the information received, it is proposed to formulate the concept of the body's integral reaction to the induction of pathological processes, the possibility of its correction, expanding the existing ideas

about the mutual mechanisms of influence on immune responses through the granulocyte system, indicators of lipid, protein, mineral, other types of metabolism and on the contrary, the detection of immunotropic effects of conventional drugs, metabolic consequences after the appointment of immunocorrectors, the influence of endocrine disorders on these processes, etc.

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