

Qualities in the Areas of T- And B-Dependent Zones of the Spleen in the Dynamics of Temperature

Shaxnoza Rakhmonovna Davronova

Department of Histology, cytology and embryology of Bukhara State Medical Institute, Bukhara, Uzbekistan

Abstract: Studies have proved that the rat spleen is characterized by certain structural and functional features. Firstly, the spleen in rats is mainly an organ of the exchange type, which has a high proportion of white pulp over red (1:6). On the other hand, the rat spleen is a universal hematopoietic organ, where the processes of erythro, thrombo- and granulocytogenesis are carried out.

Keywords: immunity, morphology, peripheral immunoglobulin receptors.

Material and research methods.

Experimental salmonellosis was reproduced on white laboratory outbred male rats with an initial weight of 120-140 grams according to the methodology worked out by the department staff. The animals were divided into two groups – control (32 rats), experimental (218 rats).

Experimental and control animals were killed by decapitation after 3,6,12,24 hours, 3,5,7,14,21 days of the study. On longitudinal sections obtained at the level of the hilum of the spleen in order to determine the areas of T-dependent zones, the activity of acidic alpha-naphthylacetesterase was detected according to the method modified by us by E. Meyer and others (1970). All digital data were processed by the Fisher-Student variation statistics method modified by Montsevichute-Ehringene. Differences satisfying $P < 0.05$ were considered significant.

Results of our own research:

The immune system, which includes central (thymus, bone marrow) and peripheral (spleen, lymph nodes, all lymphoid tissue) organs, as well as effector cells - T, -B - lymphocytes, macrophages in unity and in interaction with each other, ensures immune homeostasis of the body [1,2,3,4].

To date, the structural and functional basis of the reaction of immune organs to various antigenic influences has not been sufficiently elucidated. The existing works in this regard are devoted mainly to the quantitative characteristics of one or another organ of a given system and they were carried out mainly on cell suspensions and therefore cannot reflect the essence of intercellular interactions at the tissue, organ and interorgan levels [5,6,7,8].

As our studies have shown, structural and functional changes in the spleen during under thermal exposure are characterized by certain dynamics and can be conditionally divided into three periods: early changes (from 3 to 24 hours of experiments), pronounced immunomorphological changes (3-14 days of experiments) and convalescence (21 days of experiments).

The most pronounced changes in the areas of T- and B-dependent zones are observed on days 3-14 of the experiments and reach their peak on the 5th day of the study, when the total area of lymphoid follicles increases threefold. Moreover, the increase in area is accompanied mainly by hypertrophy of the area of the T-dependent periarterial zone. On the 21st day of the experiment, the indicators of the areas of the T and B-dependent zones of the spleen are relatively normal [9,10].

The white pulp of the organ is represented by lymphoid follicles, in which there is a light center, marginal (marginal) and periarterial zones, in which the cellular composition has a different character. The red pulp consists of a large number of pulp vessels, sinusoidal capillaries and sinusoidal tissues,

where the cells of the mononuclear phagocyte system, megakaryocytes and plasma cells are predominantly located.

Thus, the spleen of rats has the same structural and functional zones as the spleen of other mammals. At the same time, this organ in rats has certain specific characteristics. As shown by quantitative and morphological studies of the spleens of control and intact rats, they do not have significant differences and therefore we took the indicators of control animals as a control in the dynamics of the experiments.

Our studies have shown that experimental Salmonella exposure is accompanied by a certain dynamics of structural and functional rearrangements in various zones of the spleen. These changes, identified using a set of morphological research methods, are adaptive in nature and can be conditionally divided into the following periods:

- early changes (from 1 to 3 days after infection) characterized by a high content of antigenic products in the spleen tissue and microcirculatory disorders;
- pronounced immunomorphological changes (from 3 to 4 days after infection), which is characterized by hypertrophy and hyperplasia of the lymphoid follicles of the spleen, a high degree of plasmatisation;
- reconvalescence (21 days of experiments), in which organ restructuring tends to normalize.

In the early stages of the experiments, the blood vessels of the white and red pulp were significantly dilated. Particularly pronounced dilatation of blood vessels is observed in the sinusoidal capillaries of the red pulp, which are filled with a large number of destructively modified erythrocytes and leukocytes.

Starting from 12 hours after temperature there was a tendency towards hypertrophy of lymphoid follicles, in which the reactive centers noticeably expanded. In the reactive centers, lymphoblasts predominate, often at various stages of mitosis, and are characterized by high activity. Based on the antigenic composition of salmonella, one would expect stimulation of both T- and B-dependent zones of the spleen in the initial stages of salmonellosis. However, in reality this does not happen. During the period of early changes, a decrease in the area of T-zones is accompanied by the mobilization of lymphocytes into the blood. This is apparently due to the processes of recognition of antigenic effects by T lymphocytes. These immunomorphological changes become more pronounced in the second period of Salmonella infection, a period of pronounced immunomorphological changes. Starting from the 3rd day of the study, they cover both thymus-dependent and thymus-independent zones of the organ.

Conclusions:

1. Each of these periods is characterized by structural, functional and quantitative features, which together determine the essence of the adaptive reactions of the spleen in response to Salmonella exposure.
2. The period of early changes in the spleen is characterized by microcirculatory disorders in the spleen, destructive changes in organelles of immunity cells, a decrease in the area and number of proliferating cells of T-dependent zones and a tendency towards hypertrophy and hyperplasia of lymphoid follicles.
3. During the period of pronounced immunomorphological rearrangements of the spleen, hypertrophy and hyperplasia of T- and B-dependent zones are observed, with an increase in the number and functional activity of macrophages, lymphocytes, plasmatic and reticular cells.

Literature

1. Kvaratskhelia A. G. Morphological characteristics of the thymus and spleen under the influence of factors of various origins. / A. G. Kvaratskhelia, S. V. Klochkova, D. B. Nikityuk, N. T. Alekseeva // Journal of Anatomy and Histopathology. - 2016. - V. 5, No. 3. pp. 79-83.

2. Sh, D., Kharibova, E., & Davronov, R. (2021). Ultrastructural features of the white thymus stromal cells. *The Scientific Heritage*, (79-2), 29-30.
3. Rakhmatovna, A. G. (2021). Efficiency of PDT in severe cervical dysplasia. *ACADEMICIA: An International Multidisciplinary Research Journal*, 11(3), 2566-2568.
4. Davronovich, D. R., & Rahmonovna, D. S. MODERN VIEWS ON THE PARTICIPATION OF THE THYMUS IN THE PROCESSES OF IMMUNOGENESIS.
5. Khasanova, M. T., & Toykulovna–Assistant, K. M. MORPHOFUNCTIONAL CHANGES OF THE GASTROINTESTINAL TRACT DURING CHRONIC ALCOHOLISM.
6. Azimova, S. (2021). THE INFLUENCE OF MOTHER'S EXTRAGENITAL PATHOLOGY ON THE FORMATION OF THYMUS OF THE PROCESSING IN THE EARLY POSTNATAL ONTOGENESIS. *The Scientific Heritage*, (81-2), 44-46.
7. Azimova, S. B. (2021). Morphofunctional Characteristic of thymus under exposure to various environmental factors. *An International Multidisciplinary Research Journal*, 11(3), 2.
8. Davronov, R. D. (2023). Histological Changes In Bone Marrow Cells In The Dynamics Of Antigenic Effects. *Research Journal of Trauma and Disability Studies*, 2(12), 414-419.
9. Davronova, S. R. (2023). Features Of The Areas Of T- And B-Dependent Zones Of The Spleen In The Dynamics Of Antigenic Effects. *Research Journal of Trauma and Disability Studies*, 2(12), 454-458.