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Morphological Peculiarities Of The Spleen In Normality And With The Influence Of A Gene-Modified Product In Experiment

Dilnoza Akhrorovna Khasanova
Ph.D., Head Of The Department Of Anatomy, Bukhara Medical Institute Named After Abu Ali Ibn Sino, Bukhara, Uzbekistan

ABSTRACT

In the presented article, the features of the structure and function, morphological and morphometric parameters of the main structures of the spleen, which belongs to the peripheral organ of the immune system, are studied, the patterns of development of this organ at the stages of postnatal ontogenesis are revealed. The article analyzes the data of domestic and foreign literature on the influence of environmental factors on structural changes in the spleen at the organ, tissue and cellular levels. Further study of the spleen will make it possible to identify and analyze the patterns of their structural and functional changes when exposed to a genetically modified product (soybeans).

KEYWORDS

Morphology, Spleen, GMO action (genetically modified product), lymphoid nodules.

INTRODUCTION

The multifaceted activity of the spleen in the body is controlled by a complex regulatory system, which has not been sufficiently studied to date. Recently, new diseases of the spleen have been identified and new methods of their treatment have been developed. Primary

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diseases and secondary changes in the spleen are considered in the body system as a whole [1,3,11,13]. Some authors consider the spleen as a lymph node included in the blood circulation, others - as a concentrated reticuloendothelial system anatomically and functionally closely related to each other. As you know, the skeleton of the lymphatic tissue also consists of reticular elements. [2, 4, 5,10]. Also from the literature we know that the spleen is involved in the protection of the body, the destruction of blood corpuscles, iron metabolism, the formation of bilirubin, protein synthesis, metabolism, etc. The immune system of humans and animals is one of the most reactive systems of the body, which quickly responds to the effects of damaging factors at the earliest stages. The immune system is formed by a complex of organs and tissues that create protection against foreign endo and exogenous influences [1, 6, 7, 8, 9]. Studies show that the spleen is structurally formed by the age of 10, and two mutually opposite processes are observed in ontogenesis - an increase in the amount of one tissue while a decrease in the other. In the spleen, there was a steady growth of connective tissue with a decrease in the lymphoid lymphoid [12].

THE PURPOSE OF THE RESEARCH

In an experiment on white outbred male rats, morphological changes in the spleen were studied. These laboratory rats were kept in a vivarium, cared for in accordance with the "Rules for working with experimental animals." All laboratory animals were divided into 3 groups: the 1st experimental group - animals that included soy flour in the general food ration (at a dose of 0.02-0.03 g per 1 rat weighing 130-150 g for 30 days (n = 30 control group - animals that received only general food ration, without soy flour (n = 30) Group 3 - intact animals (n = 30) kept under standard vivarium conditions Soy was used as a GM product in the experiments. Using the PCR method, the presence of the 35S + FMV promoter was revealed in the studied GM soybeans, which proves that the studied soybean is a GM product, which is absent in ordinary soybeans.

MATERIALS AND METHODS

The spleen of the rats in the control group had a typical structure. Outside, it was covered with a capsule of dense connective tissue. Trabeculae, represented by fibrous connective and smooth muscle tissues, departed from the capsule into the spleen. The spleen parenchyma was formed by lymphoid tissue in the form of lymphoid nodules and periarterial lymphoid muffs that make up the white pulp. Primary lymphoid nodules were large, dense clusters of lymphocytes. The study of the morphofunctional organization of the spleen made it possible to identify and analyze the patterns of structural and functional changes in immune organs when exposed to GMOs.

In the experimental group of animals, the relative weight of the spleen decreased in comparison with the body weight of the animal. Considering the systemic nature of the reaction of lymphoid organs to the combined effect of GMOs, the likelihood of the development of functional failure of all organs of immunogenesis and the possibility of a decrease in the immune status in animals are assumed.

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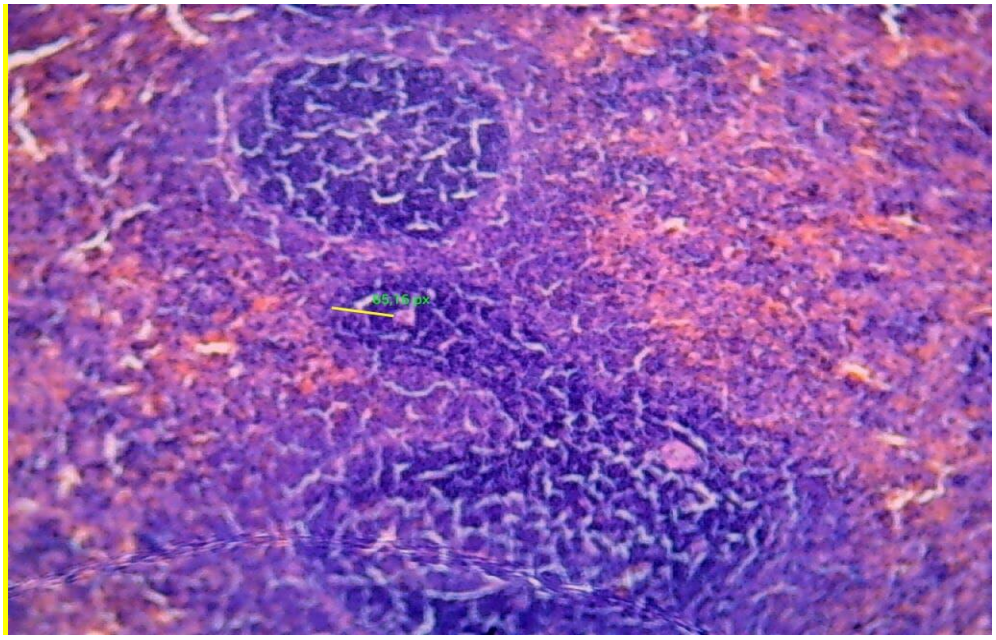

Fig 1. Spleen hyperplasia, the spleen reticular system is activated, the number of reticular cells is increased. Coloring: G-E. SW: about 10, ob. 20.

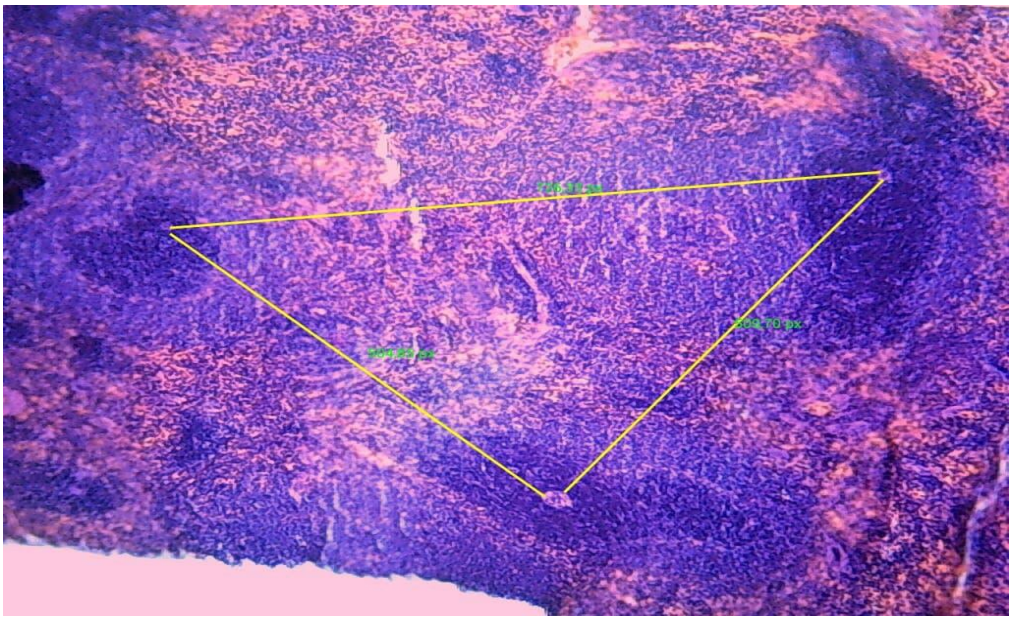

Fig. 2. Increased volumetric density of interlobular connective tissue. Hyperplasia of pulp and sinus cells, as well as enlargement of the spleen sinuses. Coloring: G-E. SW: about 10, ob. ten.

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CONCLUSION

And thus we came to the conclusion that morphological studies of the spleen, related to the peripheral organs of the immune system, make it possible to assess age-related changes in the functioning of the immune system in response to the action of GMOs. Modern immunohistochemical research methods create opportunities for clarifying stromal relationships in the organs under study.

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