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MORPHOLOGY OF THE THYMUS OF OFFSPRING BORN UNDER THE INFLUENCE OF CHRONIC STRESS

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Abstract
The article studied the morphological and morphometric characteristics of the thymus organ of 3, 7, 14 and 21-day-old offspring born from pregnant rats under the influence of chronic stress and compared them with the offspring in the control group. The expected results showed that the thymus of the offspring in the experimental group showed profound and significant morphological changes compared to those in the control group.

Keywords: thymus, stress, morphology, morphometry, Hassall bodies.

A pathological condition that is considered a risk factor for the development of many common diseases today is stress. Stress is a general nonspecific neurohormonal reaction of the body in the form of an increase in nonspecific adaptive mechanisms in response to a signal that threatens the life or well-being of the body, which is manifested by an increase in the body's resistance or its damage.

The purpose of the study. Methods of study in different periods of thymus morphology of offspring born under the influence of chronic stress from pregnant rats.

Research materials and methods. To achieve this goal, 30 white laboratory rats weighing 160-180 grams and 90 offspring born from them were used. White laboratory rats were divided into 2 groups: Group 1 consisted of 10 healthy rats as a control group. Pregnant rats of the control group were injected with 1.0 ml of physiological solution into the stomach every morning. A subclavian catheter was used as a probe. The second group was the experimental group, 20 pregnant white

laboratory rats were kept in specially prepared labyrinth cages to create experimental stress. Several methods were used to achieve the result: general histological method, organometric, morphometric. After opening the chest and separating the thymus, the anatomical parameters of the organ were determined. These thymus dimensions were measured using calipers. Electronic scales were used to measure the weight of the thymus of the rats.

Results of the study: On the 3rd day, the boundaries between the parenchymal fragments in the histological preparation are very weakly expressed due to the strong thinning of the connective tissue septa. At the same time, lymphoid cells are distributed evenly in many places. However, there are entire areas where thymocytes undergo significant degenerative changes. On the 7th day, many reticuloepithelial cells degenerate, and small cyst-like spaces appear in their place. There were also cases of lymphocytes "sticking" to reticular cells. Gassal bodies are more common in experimental rats than in control animals. The smaller of them have an empty plate surrounded by concentrically arranged flattened reticuloepithelial cells with elongated nuclei. On the 14th day, the plate in larger bodies is filled with fragments of cell protoplasm; in their structure they resemble lymphoid follicles. Small blood vessels are rarely found in the thymus tissue. In some places, the thymus wall thickens and surrounds large blood vessels. In the thymus fragments, the cortex and medulla are not clearly separated, differing in density. The relief of lymphoid cells has changed sharply and their number has significantly decreased. On the 21st day, among the lymphocytes of the cerebral cortex, reticuloepithelial cells are often found with a well-defined karyolemma and clearly visible nuclei of round and ovoid nuclei. Sometimes necrotic reticuloepithelial cells are also found. In some cases, the tellate cells of the cerebral cortex are located in small groups, in which we observed clear signs of the destruction of individual reticuloepitheliocytes. This phenomenon undoubtedly indicates the beginning of the formation of thymic corpuscles, which at a later stage are the same irregularly shaped structures containing the disintegrating nuclei of reticuloepitheliocytes or empty spaces surrounded by layers of reticular cells. Lymphoid cells are located here very rarely, and their nuclei are

noticeably larger than in the cortical substance. In most cases, they were found to have an indistinct karyolemma and indistinctly visible nuclei.

Conclusion

The results of the study showed that organometric and morphological changes in the thymus in offspring born under stress were more severe and deeply damaged than in control rats. In particular, in the experimental group of rats, compared with control rats, it can be seen that the karyolemma and Hassall bodies in the thymus medulla were deeply damaged and significantly reduced in size, the number of T-lymphocytes was sharply reduced, and profound dysfunction was observed. The size of the thymus lobes also decreased in length and diameter, and in some cases, necrosis was observed in the trabeculae.

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