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ABSTRACT
BOOK





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MICROSCOPIC FEATURES OF THE SPLEEN UNDER THE IMPACT OF XENOBIOTICS

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Introduction. Pollution of the environment and its influence on the body is a very urgent problem for medicine, as it is accompanied with an increase in the incidence among the population. Chronic exposure to some well-absorbed but slowly eliminated xenobiotics can lead to their bioaccumulation in living organisms. Exposure to environmental agents compromises numerous immunological functions with immunotoxicological focuses on the evaluation of the potential adverse effects of xenobiotics on immune mechanisms.

Materials and methods. The experiment was conducted on 48 WAG male matured rats with the initial weight 180-220g. They were randomly divided into 4 groups 6 in each depending on the dose of induced polyether and length of administration: 7, 15, 30, 45 days. For the present research widely used polyether – tryglycidyl ether of polyoxypropylentriol (TEPPT) was chosen. All rats were treated via gastric gavage during 7, 15, 30, 45 days by aqueous solutions of TEPPT in dose 1/10LD₅₀ in conversion to 5.75g/kg. Rodents were deduced from the experiment by immediate cervical dislocation according to ethical rules. Obtained material was fixed in 10% neutral buffered formalin for 24 hours, were subjected to standard processing and embedded in paraffin. From the prepared blocks made serial sections thick 5x10-6m. Histological examination of removed spleens was performed according to accepted guidelines with microscope «OlympusBX41» followed by morphometric study using «Olympus DP-soft 3.12» program. Statistical comparison was performed using Mann-Whitney test for statistical analysis. The accepted level of significance was $p \leq 0.05$.

Results. The received and analyzed data demonstrate reliable changes of the white pulp area of the spleen from $17.87 \pm 1.04\%$ to $28.04 \pm 1.22\%$, diameter of lymphatic follicles from $426.59 \pm 11.18 \mu\text{m}$ to $354.21 \pm 10.21 \mu\text{m}$, width of the mantle zone from $45.73 \pm 1.08 \mu\text{m}$ to $37.01 \pm 2.18 \mu\text{m}$, width of the marginal zone from $81.32 \pm 1.79 \mu\text{m}$ to $74.28 \pm 1.02 \mu\text{m}$, width of the periarterial zone from $88.73 \pm 2.69 \mu\text{m}$ to $98.22 \pm 2.12 \mu\text{m}$. The revealed structural changes in the spleen of animals indicate the hypoplasia of white pulp, which can be attributed to the increased incidence of apoptosis and a decrease in the level of cell proliferation in response to the effect of an unfavorable factor. The central arteries of lymphatic follicles have thicker walls due to the development of sclerotic changes. Trabecular connective tissue is well defined; its thickness is increased.

Conclusion. The spleen is very sensitive to the effects of xenobiotics, in our case TEPPT that is even reflected in histological features. Our obtained data can be sign of specific decreased cellularity of



the B cell-rich marginal zone, as it could be similar with treatment-related effect due to possible increasingly encountered with the development of novel immunomodulatory drugs.

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HISTAMINE AND ACETYLCHOLINE IN THE CONDENSATE OF EXPIRED AIR AND BLOOD OF PEOPLE WITH COPD AND ACUTE BRONCHITIS

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Introduction. Nowadays chronic obstructive pulmonary disease (COPD) is one of the most significant chronic pathological conditions. Such a disease as acute bronchitis (AB) is also widely spread. That is why various mechanisms of AB and COPD have recently been studied. Particularly, much attention is paid to the study of chemical compounds of exhaled air condensate (EAC), which contain biomarkers of lung diseases. Histamine and acetylcholine are known to be inherent components of EAC. However, there is a lack of information about the peculiarities of their metabolism during COPD and AB. The aim of our investigation: to determine the content of histamine and acetylcholine in expired air condensate and serum of patients with COPD and AB.

Materials and methods. It was examined 30 patients (35-45 y.o.) of the pulmonary department of Kharkiv municipal clinic №13. Blood serum and EAC of patients were collected for investigation. EAC was being taken in the morning for 15 min after 12-hour fasting; the volume of condensate was measured. Histamine content was determined via column chromatography. Acetylcholine content was measured via spectrophotometry.

Results. Our studies have shown that the lung inactivation of histamine is significantly reduced in people ill for COPD and AB. Its content in the EAC is greatly reduced. (in healthy people - $0,3 \pm 0,02$ nm/l, in people with COPD - 0.18 ± 0.02 nm/l, $p < 0.02$; during AB - $0,27 \pm 0.02$ nm/l, $p < 0.05$). The decrease of concentration of histamine in the EAC was accompanied by significant increase of the substance level in blood in most cases.

Conclusion. 1. The inactivation of histamine and acetylcholine is significantly reduced in people with chronic obstructive pulmonary disease (to a greater extent, in case of exacerbation of the disease). This leads to their appearance in the condensate of exhaled air as well as to an increase of the content of these biologically active compounds in the serum. Such processes contribute to the progression of the disease. 2. The study of the chemical content of expired air condensate opens up new possibilities for a multilateral analysis of the peculiarities of lung metabolism during pulmonary diseases. These facts should be taken into account during therapy elaboration of the disease.