HISTOLOGICAL CHANGES IN RAT HYPOTHALAMUS HISTAMINERGIC NEURONS UNDER PRENATAL ALCOHOLISATION

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Introduction. The histaminergic system of the hypothalamus is of particular interest, since the metabolic pathways of histamine and ethanol in the brain have a common enzyme, aldehyde dehydrogenase, involved in the breakdown of acetaldehyde [1]. The postnatal development of histaminergic neurons has not been studied in the offspring of rats that consumed ethanol during pregnancy, which determines the relevance of this study.

Aim of the study. The aim of the research is assessment of histological changes in the E2 nucleus histaminergic neurons of the hypothalamus in the offspring of rats that consumed alcohol during pregnancy.

Materials and methods. The study was carried out on female outbred white rats (12 animals) and their offspring (60 rats). During pregnancy, females of the experimental group consumed a 15% ethanol solution as the only source of drink; control females were offered water. Decapitation of rat pups was carried out on the 5-, 10-, 20-, 45- and 90th days after birth, the hypothalamus was frozen in liquid nitrogen vapor. The posterior hypothalamus sections 12 μm thick were prepared in a cryostat and stained using the Nissl method to assess the size and shape of neurons. The results obtained were processed using nonparametric statistics methods.

Results and discussion. In the course of studying the structural changes in the perikarya of histaminergic neurons of the hypothalamus of 5-day-old offspring of rats that consumed alcohol during pregnancy, when compared with the control group of animals (Mann-Whitney U test), differences were found in the following morphological parameters: an increase in the minimum and maximum diameter, perimeter, area and volume of histaminergic neurons perikarya by 37%, 36%, 27%, 46% and 76%, respectively. In the 10-day offspring of the experimental group rats the minimum and maximum diameters, perimeter, area and volume of the perikarya of histaminergic neurons also increased by 14%, 20%, 19%, 34% and 55%, respectively. This indicates toxic swelling of the studied neurons on the 5th and 10th days of postnatal development as a result of edema of the brain structures of rats.

In the 20-day-old offspring of experimental animals, no significant changes in the studied parameters were detected. This may indicate the disappearance of toxic swelling of the studied neurons as a result of edema of the brain structures of rats that underwent chronic prenatal alcoholization. At the same time, in the experimental

group of animals there is a decrease in the form factor (by 9 %), which indicates a decrease in the sphericity of the histaminergic neurons bodies.

On the 45th day after birth, in the offspring of rats from the experimental group, the perimeter, area and volume of the histaminergic neurons perikarya are less than the same indicators of this group of control neurons by 17%, 26% and 36% respectively. In addition, in the experimental group there is a tendency towards a decrease in the maximum diameter (by 10%) and an increase in the form factor (by 9%), which may indicate some increasing the sphericity of histaminergic neurons in experimental animals.

In the 90-dayoffspring of rats that had undergone prenatal alcoholization, maximum diameter, perimeter, area and volume of the histaminergic neurons perikarya was less by 21%, 17%, 26% and 36%, respectively. In addition, there were an increase in the form factor (by 8%) and a decrease in the elongation factor (by 15%). This indicates that the bodies of histaminergic neurons in the experimental group of animals are smaller and more rounded in shape.

Conclusion. Alcohol consumption by female rats throughout pregnancy disrupts the structure of hypothalamus histaminergic neurons of their offspring. The growth of the nerve cells perikarya under study is inhibited. By demonstrating the consequences of the harmful effects of alcohol on brain cells, the significance of the results of the presented scientific research is visible, which indicate the need to inform women of childbearing age about the inadmissibility of alcohol consumption during pregnancy.

ЛИТЕРАТУРА

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ATTITUDES ON EUTHANASIA AMONG FIRST MEDICAL UNDERGRADUATES

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Introduction. Euthanasia is defined as a process which is aimed to cause painless death in a person to end his/her life. Netherlands was the first country to permit active euthanasia. Euthanasia is illegal in most countries, including Sri Lanka. Sri Lanka is predominantly a Buddhist country with well-developed healthcare. Most