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Reactivity of the supraoptic, arcuate nucleus of the hypothalamus and the B- and D-basophilic cells of the adenohypophysis in the early post-reanimation period.

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Annotation
In the early postresuscitation period, we studied the relationship of neurosecretory cells of the supraoptic nucleus and paraventricular nucleus with the B and D basophilic cells of the adenohypophysis in the early stages (I-II-III stages) of postresuscitation disease in animals that underwent a 5-minute clinical death by clamping the vascular bundle of the heart using method B G. Korpacheva (1982). Sham-operated animals served as control. Physiological, morphological, morphometric, histochemical studies and morphofunctional activity of neurosecretory cells of the supraoptic and arcuate nuclei of the hypothalamus, as well as B- and D-basophilic cells of the adenohypophysis were carried out. We used image analysis using a Leiss microscope with an electronic micro-attachment connected to an Intel computer, and the content of neurosecretory substances was studied using a cytophotometer. In the early postresuscitation period (stages I-II), there is an increase in morphofunctional activity, which is more pronounced in the NSC SOY, ARN and D-basophilic cells of the adenohypophysis, at the III-stage post-resuscitation disease, there is a further increase in the morphofunctional activity of NSC SOS ARN and B-basophilic cells adenohypophysis, with a shift towards depletion.
Key words: Clinical death, postresuscitation disease, period, arcuate nucleus, neurosecret, glycoprotein.

Relevance. It is known that clinical death occurs against a background of severe stress and hypoxia [9.5]. Stress and hypoxic effects on the body cannot, will not affect the functional

activity of the body's cells. The combination of these factors against the background of adrenergic fixation and activation of the adenylate cyclase system promotes the development of overload hypoxia and, accordingly, catabolic processes at the cellular level, and the relationship between the synthesis and secretion of NSCs of the hypothalamic-pituitary system as a whole remains in an unfavorable position. This state cannot but affect the integrative system of the body [9,16,12,13]. Responsible for the productive state of the body's cells are anabolic hormones. The center of regulation of these hormones, located in the hypothalamic-pituitary system, secretes peptide and glycoprotein secrets for the synthesis and secretion of anabolic hormone [2,1,4,15,14]. Testosterone is one such hormone [11]. Without knowing the mechanisms of the staged changes in the regulation of the synthesis of catabolic and anabolic hormones, we cannot reveal the mechanisms of changes in the productive states of the body cells.

The purpose and objective of this work. In connection with the above, our goal was to identify the reactions of the relationship of neurosecretory cells (NSC) of the supraoptic nucleus (SON) and paraventricular nucleus (PON) with B- and D- basophilic cells of the adenohypophysis at early stages (I-II-III-stages) post reanimation disease in animals that have suffered a 5-minute clinical death.

Materials and research methods. In connection with the tasks set, we conducted a study on 30 outbred male rats weighing 150-220 grams, in which the state of clinical death and postresuscitation disease was modeled [6].

Pieces of the brain, including the hypothalamus and pituitary gland, were fixed in Bouin's fluid. After passing through alcohols of ascending concentration, the pieces were embedded in paraffin, then sections of 5-7 microns in size were prepared from them, oriented frontally and sagittally.

Sections were stained with paraldehyde fuchsin according to the Gomori-Gabu method with a Heidenhain finish, chromium-alum hematoxylin according to Gomori, and hematoxylin-eosin.

Assessment of the functional state of the NSC and basophilic cells of the adenohypophysis was determined by the method of A.L. Polenov. [ten].

Results and Discussions. In the postresuscitation period during stages I-II, the functional activity of cells is more pronounced in D-basophilic adenocytes. At the same time, the number of actively functioning cells continues to increase to 15.2 ± 0.6% ($P < 0.001$), while the number of cells of moderate and low functional activity continues to decrease to 68.0 ± 0.6% ($P < 0.001$) and 16, 8 ± 0.2% ($P < 0.001$). During this period, in the SOYN, the NSC of high functional activity was increased to 44.2 ± 1.3% ($P < 0.001$), while cells of moderate functional activity decreased to 46.2 ± 2.2% ($P < 0.001$), cells with low functional activity up to 4.8 ± 1.8% ($P < 0.01$). The functional activity of NSC POY is insignificantly less than the functional activity of NSC SOY. At the same time, in the NSC NSC high functional activity increased to 43.8 ± 2.2% ($P < 0.001$), NSC of high and low functional activity decreased to 46.2 ± 1.3% ($P < 0.001$) and 5.2 ± 1.8% ($P < 0.01$).

Consequently, it can be said that the functional activity of NSC SOY and ARN is much more pronounced in comparison with basophilic cells of the adenohypophysis.

In the third stage of postresuscitation disease, the basophilic cells of the adenohypophysis, as well as the NSC of the SOY and ARN are in maximum functional activity. At the same time, the synthesis of glycoprotein and neurosecretory substances lags behind its secretion, where the number of cells of high functional activity in B-basophilic adenocytes increased to 57.8 ± 0.5,

and in D-basophilic adenocytes up to 57.0 ± 0.5% the number of cells moderate and low functional activity was reduced to the minimum values in B-basophilic adenocytes to 32.6 ± 0.4% and 9.6 ± 0.3%, and in D-basophilic adenocytes to 33.6 ± 0.4% and 9 , 4 ± 0.3% indicators significantly differ from such intact animals (P <0.001).

In comparison with the basophilic cells of the adenohypophysis, the functional activity is much more pronounced in the cells of the NSC SOY. At the same time, in SOY and NSC of high functional activity it increased to 62.8 ± 1.7% (P <0.001). NSC of moderate and low functional activity decreased to 19.0 ± 1.7% (P <0.001) and 5.6 ± 1.3% (P <0.01), and in the PON of high functional NSC increased to 61.8 ± 1.7% (P <0.001), and the NSC of moderate and low functional activity decreased to 21.2 ± 0.8% (P <0.001) and 5.4 ± 1.3% (P <0.01). Accordingly, during this period, there is an increase in the number of destructively altered NSCs in the form of karyolysis and cytolysis in NSC SOY up to 12.4 ± 1.3% and in PON up to 11.6 ± 1.3%

Consequently, it can be said that the morphofunctional activity of the NSC in the SOY and ARN is more pronounced in comparison with the basophilic cells of the adenohypophysis.

If, to interpret the obtained data with the data of scientists [11,8,7,10,17,18], then, in the early postresuscitation period (I-II-stages), the increase in morphofunctional activity is higher in the NSC SOY indicates the connection of the compensatory mechanism against the strongest stress factor, activation of vasprinergic receptors of the PON of the nucleus are aimed at activating the D-basophilic cells of the adenohypophysis of the peripheral endocrine glands and connecting compensatory processes to the cellular level and for the secretion of testosterone from Leydig cells to ensure the productive state of the body cells. Starting from stage III post-reanimation disease, an increase in the activity of B-basophilic adenocytes is aimed at stimulating the synthesis of testosterone.

Therefore, we can say that in the early postresuscitation period, such activity is aimed at connecting the compensatory mechanism to the cellular level in response to such a strong stress factor.

Conclusions:

1. In the early postresuscitation period (stages I-II), there is an increase in morphofunctional activity, which is more pronounced in NSC SOY, ARN and D-basophilic cells of the adenohypophysis.
2. At the III-stage post-resuscitation disease, there is a further increase in the morphofunctional activity of the NSC SOYA ARN and B-basophilic cells of the adenohypophysis, with a shift towards depletion.

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