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STUDY OF THE REACTIVITY OF THE HYPATALAMO – HYPOPHYSAR NEUROSECRETORY SYSTEM, DEPENDING ON THE DEGREES OF PHYSICAL EXERTION

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Annotation: When rats were chronically subjected to anaerobic stress by swimming in water at a rate of 15% load, from the first day of the stress to the 3rd month, the amount of highly functional NS C , hyperhydration of the neurosecretory nucleus, the amount of glial cells and the surface of the nucleus increased in SO N and PV N of the hypothalamus. It was found that the process of adaptation to anaerobic stress swimming is formed under the increasing synthesis and secretion of NSM, the increase in the amount of NSH with destructive changes and the shift of SO N , PV N NS C towards exhaustion.

Key words: Displaced load, hypothalamus, pituitary gland, swimming, supraoptic nucleus, paraventricular nucleus.

In the world, a number of scientific studies are being conducted to improve the assessment of the protective adaptive reactions, mechanisms of maladaptive changes, and complications caused by aerobic, mixed, and anaerobic physical stress. In this regard, scientific research aimed at increasing the effectiveness of the evaluation of morphofunctional changes occurring in the hypothalamo-pituitary-neurosecretory system, i.e. supraoptic nucleus, paraventricular nucleus, middle gyrus, NG, is of particular importance. On the other hand, it should be said that in case of extremely strong tension, a decrease in the index was observed, dystrophic changes of various degrees occurred in the human body, and it was proved that it was reflected in every organ [Megeryan S.D. 2018; c.21]. In sportsmen engaged in intense continuous stable stress, there were strong changes in the reproductive system and a deficiency of the testosterone hormone was observed [Cadegiani, FA, Kater, CE2019; p.20]. Such a change first takes its place in the central nervous system and, in turn, is reflected in the activity of the disease ring, endocrine systems, cardiovascular, respiratory, reproductive, somatic, as well as the higher nervous system and causes degenerative changes, that is, with the process of adaptive reactive disadaptation. exchange [Skorokhodova Yu.M., Nevzorova E.V., Gulin A.V. 2015; p.352, Malysheva E.V., Zasyadko K.I., Gulin A.V. 2011; p. 317]. Aerobic, mixed, and anaerobic effects of stress on the body of athletes, depending on the strength and duration, cause adaptive and disadaptive changes in the vegetative nervous system, neuroendocrine systems, [Tambovtseva, I.A. Nikulina 2018; s. 13-15]. it is possible that pathological changes of various degrees may occur in other organs. On the one hand, in people with a high level of obesity, if aerobic social stress is continuously provided, it has been observed that heart failure cases are restored [Voronchukov N. S., Kolesnikova N.

V.2020; c.86]. Physical stress is induced in adult male rats with a load of 7.5%, 10%, 15% of body weight through forced swimming in water . The morphofunctional activity of NSHs in the plane of hypothalamo-pituitary-neurosecretory system SOYa, PVYa, O'D, and NG in intact and experimentally stressed (aerobic, mixed, anaerobic) animals was reported by A.L. Polenov. (1993) criteria, that is, type I high, type II medium, type III low functional activity, and type IV destructive cells were counted in 100 cell planes in SOYa and PVYa. Type I NSH has a high functional activity, in which neurosecretory substances are concentrated around the nucleus and in the expanded part of axons. The nucleus is large, the nucleus is located in an eccentric position or two nuclei are identified. Type II NSH has moderate activity, the density of neurosecretory substances is relatively high in the expanded parts of the axon, which are sparsely scattered in the cytoplasm, and the nucleus with an average size is located in the middle. Type III NSH - it has low functional activity, neurosecretory substances, cytoplasm is densely located along the axon, and the nucleus is relatively small in size in the middle. Type IV NSH, these are destructive cells, were observed in the case of degenerative-pycnoform cells . Based on the criterion, the morphofunctional activity of neurosecretory cells was assessed by determining the amount, location, cell size, nuclear size, nuclear condition and size of neurosecretory substances .

the obtained data, all animals were divided into 4 groups and studied based on the purpose of the study: Group I consisted of 15 intact rats . Group II was made up of 35 intact rats, during the (aerobic) physical stress caused by forced swimming in water with an external load of 7.5% of the body weight , during the swimming process and 1 minute after swimming , on the 7th, 21st, 28th days. -, in 3 months, morphofunctional reactivity is studied in SOYa and PVa, hypothalamo-pituitary tract and NG. Group III was made up of 35 intact rats, the process of swimming rats in physical stress (aero-anaerobic) caused by forced swimming in water against a load of 10% of body weight and 1 minute after swimming,

On the 7th, 21st, and 28th days, in the 2nd and 3rd months, the morphofunctional reactivity in the SOYa and PVYa, hypothalamo-pituitary tract, and NG is studied. Group IV was made up of 35 intact rats, forced to swim in water with a load of 15% of their body weight. During the (anaerobic) physical stress caused by the method, the swimming process of rats and the morphofunctional reactivity in the SOYa and PVYa, hypothalamo-pituitary tract and NG are studied 1 minute after swimming, 7-, 21-, 28 days, 2-, 3 months. When rats are subjected to aerobic stress due to a 7.5% load by chronic swimming in water, until the 21st day of the stress, the amount of NSH with high functional activity in the hypothalamus SOYa, PVYa increases, during swimming in animals, the adaptation process is formed, from the 21st day of the stress to the 3rd month. , SOYa, PVYa NSH nuclei due to hyperhydration, glial cell quantity, nucleus surface, NSM synthesis in NSHs prevailed over the secretion process, full adaptation and recovery process was observed in SOYa, PVYa NSHs of the hypothalamus and in aerobic swimming. When rats are subjected to mixed stress by swimming in water chronically with a 10% load, the amount of NSH with high functional activity increases from the first day of the stress, hyperhydration of the NSH nucleus from the 7th day, the number and surface of the nucleus of glial cells increases, the synthesis and secretion of NSM increases, stress From the 14th day, under the increasing amount of NSH with karyolysis, during swimming in animals, the adaptation process is formed, and from the 28th day of stress, until the 3rd month, hyperhydration of the nuclei of SOYa, PVYa NSH, the amount of glial cells, the surface of the nucleus, the process of NSM synthesis and secretion in NSH due to the high level of preservation, a complete adaptation process was ensured in swimming. When rats were chronically subjected to anaerobic stress by swimming in water at 15% load, from the first day of the stress to the 3rd month, the amount of high functional activity NSH in the SOYa, PVYa of the hypothalamus, hyperhydration of the NSH nucleus, the amount of glial cells and the surface of the nucleus increased from the 14th day. It was found that under the increasing synthesis and secretion of NSM, the increase in the amount of NSH with destructive changes and the shift of SOYa, PVYa NSH towards exhaustion, a process of adaptation to anaerobic stress swimming is formed.

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