

THE CONDITION OF SOME ENDOCRINE GLANDS OF WHITE RATS AFTER AN EXPERIMENTAL TRAUMATIC BRAIN INJURY

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✓ *Resume*

Traumatic brain injury is relevant in the current conditions, when the latest technological devices have been introduced, urbanization has led to an increase in road vehicles, as well as side effects. Basically, male persons aged 20-50 years are susceptible to injury, which determines its social significance, i.e. in the most physically active, able-bodied category of the population. In men, this type of injury occurs 3 times more often than in women. The relevance of the study of changes in the endocrine organs is due to the importance of this system in maintaining the body's homeostasis.

Keywords: traumatic brain injury, adrenal glands, testes, morphological changes.

СОСТОЯНИЕ НЕКОТОРЫХ ЭНДОКРИННЫХ ЖЕЛЁЗ БЕЛЫХ КРЫС ПОСЛЕ МОДЕЛИРОВАННОЙ ЧЕРЕПНО-МОЗГОВОЙ ТРАВМЫ

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Черепно-мозговая травма актуальна в современных условиях, когда были внедрены новейшие технологические устройства, урбанизация привела к увеличению количества дорожно-транспортных средств, а также к побочным эффектам. В основном травме подвержены лица мужского пола в возрасте 20-50 лет, что определяет ее социальную значимость, т.е. в наиболее физически активной, трудоспособной категории населения. У мужчин этот вид травм встречается в 3 раза чаще, чем у женщин. Актуальность изучения изменений в эндокринных органах обусловлена важностью этой системы в поддержании

Ключевые слова: черепно-мозговая травма, надпочечники, семенники, морфологические изменения.

МОДЕЛЛАШТИРИЛГАН ТРАВМАТИК МИЯ ЖАРОҲАТИДАН КЕЙИН ОҚ КАЛАМУШЛАРНИНГ БАЪЗИ ЭНДОКРИН БЕЗЛАРИНИНГ ҲОЛАТИ

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Травматик мия шикастланиши замонавий шароитда долзарб бўлиб, энг сўнги технологик қурилмалар жорий этилиши, урбанизация туфайли йўл-транспорт воситалари сонининг ортишига, шунингдек, ноҳўя таъсирларга олиб келди. Асосан, 20-50 ёшдаги эркалар травмага мойил бўлиб, унинг ижтимоий аҳамиятини белгилайди, яъни аҳолининг энг жисмоний фаол, меҳнатга лаёқатли тоифасида. Эркаларда бу турдаги жароҳатлар аёлларга нисбатан 3 марта кўп учрайди. Эндокрин органлардаги ўзгаришларни ўрганишнинг долзарблиги бу тизимнинг организм гомеостазини сақлашдаги аҳамиятига боғлиқдир.

Калит сўзлар: травматик мия шикастланиши, буйрак усти безлари, мояклар, морфологик ўзгаришлар.

Relevance

The outcomes of acute traumatic brain injury can be different: from complete recovery to the development of various adverse consequences and complications in 30-96% of victims up to long-term complications due to hormonal regulation disorders against the background of structural changes from the higher parts of regulation to the periphery [1,6,9].

Hormones that affect the work of all organs and systems enter the blood from special endocrine glands, which are combined into a single endocrine system. These are the adrenal glands, thyroid and parathyroid glands, ovaries (in women), testes and testicles —in men), pancreas, hypothalamus and pituitary gland [2,4,7]. Traumatic brain injury (TBI) is one of the most common types of injuries (up to 50% of all types of injuries) and in recent decades has been characterized by a tendency to increase the proportion of brain injuries. Every year, 1.5 million people die from TBI in the world, and 2.4 million become disabled. About 120 thousand traumatic brain injuries are registered annually in Uzbekistan. Every year, up to 10 thousand victims die due to traumatic brain injury, and many of them are disabled for many years [3,5,10]. Therefore, the study of the properties of the endocrine glands in traumatic brain injury is an urgent task.

Post-traumatic brain injury is accompanied by multidirectional changes in the blood content of prolactin of adenocorticotropic and thyroid-stimulating hormones, the level of corticosterone, testosterone [5,6,7]. Violations of hormonal regulation mechanisms in traumatic illness are manifested by the inability of the hypothalamic-pituitary complex, hypothalamic-pituitary-adrenal and hypothalamic-pituitary-testicular systems to provide the necessary level of hormones, their optimal ratio.

Purpose of the study: Studies of endocrine glands in white rats after a modeled Craniocerebral Injury

Materials and methods

To achieve the goal and solve the tasks, we conducted a study on 150 rats. Manipulations with animals were carried out in accordance with the provisions of the "European Convention for the Protection of Vertebrates that are Used for Experimental or Other Purposes" (Strasbourg, 1985). Experimental animals were kept under normal conditions. After induced experimental TBI in rats, morphological parameters of various parts of the testes and adrenal glands were

studied taking into account the TBI period. After the autopsy, the testicles and adrenal glands of rats were extracted, weight, length and transverse dimensions were measured. For a detailed study of the structures, pieces were taken from different departments of these organs. For histological studies, culture samples were fixed in 10% neutral formalin, and then, according to the standard method (Lilly, 1969), they were poured into paraffin.

Results and discussions

Morphological examination of the organotypic structure of the adrenal gland from 3-month-old animals showed that it is sufficiently adequate to the structure of the organ of animals of this age. The cells of the bundle zone contain a slightly larger amount of lipids than the adrenal gland, however, weakly expressed heterochromia and the presence of individual cells in which the cytoplasm is poorly visualized were detected in the culture. Microscopic examination of the structure and function of the adrenal gland of 6-month-old rats revealed significantly greater width of the glomerular zone, pronounced proliferation and cell density than at other times.

At the same time, there was a weakly expressed discompensation of cellular structures, heterochromia and anisocytosis of cells. However, in the lower parts of the bundle zone, there is a violation of the rhythmicity of the bundle structure, heterochromia and polymorphism of cells, which indicates dystrophic changes in the cells of this zone.

The testis of a rat has the shape of an ovoid, compressed in the transverse direction and elongated sagittal, covered with a dense shell that gives the septum deep into the organ. On the transverse a section of the testicles of immature rats shows that the parenchyma of the organ consists of numerous convoluted seminal tubules of small diameter located in different planes. The epitheliospermatogenic layer fits tightly to the wall of the tubule and is represented by rows of spermatogenic cells that fill its entire lumen. Increased permeability of the vascular wall, swelling of the nuclei of the endothelium and muscle fibers, edema of the stroma, loosening and swelling of the tubules, dystrophic changes in the spermatogenic epithelium, spermatophagy and suppression of spermatogenesis, obesity of interstitial cells and epithelium of the tubules were found. These phenomena were expressed to varying degrees depending on the severity and prescription of TBI.

Conclusions

From the presented data, it can be concluded that disorders associated with morpho-functional changes occur in the ontogenesis of adrenal and testicular tissues. This is evidenced by the morphological data of various zones of the adrenal cortex and the structure of the testes.

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