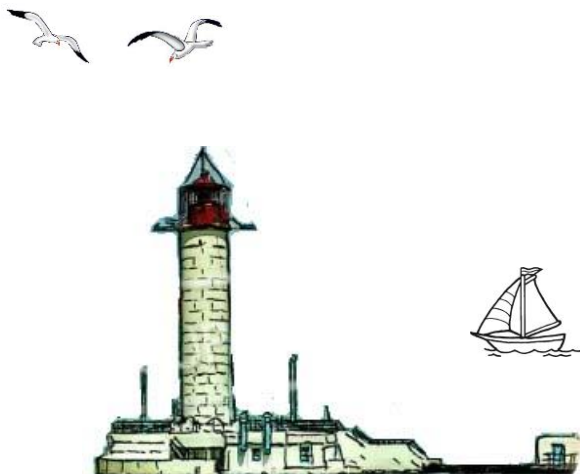


МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
ДП УКРАЇНСЬКИЙ НДІ МЕДИЦИНИ ТРАНСПОРТУ
МОЗ УКРАЇНИ
ОДЕСЬКИЙ НАЦІОНАЛЬНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ
НАУКОВЕ ТОВАРИСТВО ПАТОФІЗІОЛОГІВ УКРАЇНИ
УКРАЇНСЬКА АСОЦІАЦІЯ МЕДИЧНОЇ НАУКИ

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ET-1, eNOS activity, VEGF-A concentration, and vWF level), which reflect the main functions inherent in the vascular endothelium.

Hemic hypoxia together with endothelial dysfunction which observed after 14 days of Nitr injection is a predictor of subendothelial amyloid deposition and the development of cognitive impairment in rats later.

Ключові слова: деменція Альцгеймерівського типу, нітрит натрію, гіпоксія, біохімічні показники, ендотеліальна дисфункція

Key words: Alzheimer's type dementia, sodium nitrite, hypoxia, biochemical indicators, endothelial disfunctions.

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**MORPHOMETRIC PARAMETERS OF THE STRUCTURAL
ELEMENTS OF THE EXO- AND ENDOCRINE PART
OF THE PANCREAS OF NEWBORN RATS
AFTER CHRONIC PRENATAL STRESS**

**МОРФОМЕТРИЧНІ ПОКАЗНИКИ СТРУКТУРНИХ
ЕЛЕМЕНТІВ ЕКЗО- ТА ЕНДОКРИННОЇ ЧАСТИНИ
ПІДШЛУНКОВОЇ ЗАЛОЗИ НОВОНАРОДЖЕНИХ ЩУРІВ
ПІСЛЯ ХРОНІЧНОГО ПРЕНАТАЛЬНОГО СТРЕСУ**

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The ability of the organism to adapt in response to the impact of external stimuli of different nature and duration of exposure ensures its survival in the outside world. The degree of adaptation depends on the initial functional state, as well as the characteristics of the conditioned reflex reactions of organs and systems. It is precisely chronic stress that poses a threat to health and life, when the accumulated tension can lead to a breakdown in adaptation and the appearance of typical violations of the regulation of the functioning of internal organs, especially the digestive organs even under the influence of the most common stimuli. Complications of pregnancy caused by the action of stressors lead to occurrence of deviations in the development of the offspring, which are observed long after birth. There is an increase in the levels of

corticosterone, glucose in the blood, which may be associated with damage to the pancreas. Taking into account the age-related features of organ damage after exposure to harmful factors and the lack of information in the literature about the main links of pathogenesis, which play a leading role in the development of the process, we consider it necessary to continue scientific research in this direction.

The purpose of the study was finding out effects of unbalanced chronic prenatal stress on the morphofunctional state of the pancreas of newborn rats.

Materials and methods. 16 newborn rats of the WAG population took part in the experiment. Animals were divided into groups: 1st - control (n=8) - offspring of intact females; 2nd - offspring of females exposed to chronic stress during pregnancy. For the purpose of realization used routine methods of staining with hematoxylin and eosin, picrofuchsin according to Van Gieson. To verify α -cells and β -cells, of the Langerharts' islets were additionally stained by Mallory and the PAS reaction was performed in combination with the Hale reaction. Histological and histochemical methods were performed according to the instructions set out in the instructions for histological technique and histochemistry.

Results of the research. Morphometric study of structural elements of the exocrine part of the pancreas showed that in the newborn offspring of rats exposed to stress during pregnancy, there is a progressive decrease in the area of acini (by 6.4%), SP (by 10.2%) and an increase in the area of the stroma (by 26, 6%). Such changes in indicators cause a significant ($p < 0.001$) decrease in their ratio by 24.8% in newborn offspring. That is, the negative consequences of chronic stress regarding damage to the function of the pancreas relate to not so many females who endured this stress during pregnancy, how much their newborn offspring, causing the organ to increase at the expense of the stromal part, which is a prerequisite for reducing its functional capacity. Microscopic examination of the pancreas of newborn rats showed swelling and immaturity of the stroma and parenchyma (in 100%) and hemodynamic disturbances (in 40%). round and oval-shaped islets of Langerhans - elements of the endocrine part, were dispersedly located between the acini, however, the morphometric study showed a moderate decrease in the area of the islets and the number of β - and α -cells in them.

Conclusion. The experienced prenatal stress of the newborn offspring of female rats exposed to chronic stress during pregnancy, affects the morphofunctional state of the pancreas, where the immaturity

of the parenchyma and stroma is noted, there is a progressive decrease in the area of the acini and an increase in the area of the stroma (by 26.6%) - an increase in the organ due to the stromal part, which is a prerequisite for a decrease in its functional capacity.

Changes in the morphofunctional activity of the pancreas of the newborn offspring, which are associated with the experienced prenatal stress, increase the risk of developing not only functional disorders of the pancreas, but also organic pathology in the future.

Ключові слова: морфометричні показники, підшлункова залоза, новонароджені щури, хронічний пренатальний стрес.

Key words: morphometric parameters, pancreas, newborn rats, chronic prenatal stress.

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**MECHANISMS OF THE COMORBID COURSE OF THE
INFLAMMATORY PROCESS AND TYPE 2 DIABETES
AND POSSIBILITIES OF HYPOXIC CORRECTION**

**МЕХАНІЗМИ КОМОРБІДНОГО ПЕРЕБІГУ ЗАПАЛЬНОГО
ПРОЦЕСУ І ЦУКРОВОГО ДІАБЕТУ 2 ТИПУ
ТА МОЖЛИВОСТІ ГІПОКСИЧНОЇ КОРЕКЦІЇ**

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Mechanisms of comorbid course of inflammatory processes and metabolic disorders and possibilities of their correction are not fully elucidated. In rats with experimental insulin resistance and type 2 diabetes caused by high-fat diet and low dose streptozotocin administration, we induced acute lung injury by injecting bacterial lipopolysaccharide (LPS). It was found that severity of pneumonia and mortality was depended on the degree of metabolic disorders. Changes in expression of PGC-1 α , IGF-1, SREBP-2 and p66 proteins, microRNA-1, -34a, and -320 in lungs, myocardium and aorta indicated their involving

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