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## CHRONIC STRESS AND CHANGES IN RATS' PANCREAS

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**Introduction.** The pancreas combines digestive and endocrine functions, and therefore plays a vital role in maintaining the body's metabolic balance. Structural or functional disorders of the pancreas can affect digestive processes, insulin secretion, and carbohydrate metabolism. One of the factors capable of negatively affecting the condition of internal organs is chronic stress, which is accompanied by the activation of neuroendocrine mechanisms and changes in hormonal regulation. That is why studying the effects of stress on the pancreas is an important component in understanding pathological processes.

**Objective.** To analyze the effect of chronic stress on the condition of the pancreas in rats and their offspring

**Materials.** This study involves an analysis of current scientific literature.

**Results.** Under the influence of chronic stress, structural abnormalities in the pancreas were observed in rats: stromal edema, tissue congestion, microcirculatory disorders, cellular dystrophic changes, a reduction in the area of the islets of Langerhans and acini, and a decrease in cell count. An important mechanism of this effect is the activation of the body's stress-mediating systems, particularly the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system. According to experimental studies, chronic stress can increase the pancreas's susceptibility to inflammatory damage. Pro-inflammatory cytokines play a key role in this process, particularly tumor necrosis factor-alpha, which is capable of activating inflammatory signaling pathways and contributing to cellular damage. According to the literature, structural changes in the pancreas are accompanied by biochemical changes; elevated levels of pancreatic enzymes in the blood have been observed, along with a disruption of the enzyme-inhibitor balance and possible depletion of protective mechanisms, and signs of metabolic disorders against a background of hyperinsulinemia combined with hyperglycemia, increased free fatty acids, and ketone bodies.

In the offspring, abnormalities in pancreatic structure are pronounced and similar to those in the mothers, and are already noticeable in the early postnatal period. Such changes may indicate a disruption in the normal development of the pancreas due to the in utero influence of stress factors.

**Conclusions.** Chronic stress during pregnancy causes morphofunctional changes in the pancreas of rats. In rat pups, these abnormalities are already evident in the early postnatal period and are similar to those observed in the mothers. The data suggest that chronic gestational stress may be a risk factor for pancreatic disorders.

**Keywords:** chronic stress, gestational stress, pancreas, rats.