



HISTO STRUCTURES OF RAT PANCREAS UNDER THE CONDITIONS OF EXPERIMENTAL DIABETES

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ANNOTATION

In experiments on white rats, males, it was shown that experimental alloxan diabetes causes a violation of the structure of not only the endocrine, but also the exocrine part of the pancreas. This is manifested in the degeneration of the islet apparatus, as well as in the infiltration and inflammation of the tissues of the acini.

KEY WORDS: *alloxan diabetes, pancreas, histostructure, acinus, endocrine islets.*

INTRODUCTION

As you know, diabetes is a disease caused by metabolic disorders of carbohydrate metabolism. Diabetics have a significant increase in blood and urine glucose levels, thirst, fatigue, weakness, itching and other symptoms [1].

The risk of diabetes is associated with its adverse effects on almost all body systems. Diabetes is usually accompanied by tachycardia, hypertension, encephalopathy, impaired vision, impaired digestive processes and a number of other pathologies [1,2]. This indirectly suggests the possible structural changes in organs, including in the pancreas.

The aim of the study is to study the microstructure of the pancreas in experimental diabetes mellitus.

MATERIALS AND METHODS

In the experiments, white breedless male rats weighing 180 ± 20 g were used, which were kept at room temperature and natural light. After adaptation to laboratory conditions, experimental diabetes was induced in rats. For this, alloxan

(Chemapol, Czech Republic) was administered intraperitoneally to rats at a dose of 170 mg / kg. The animals were choked by decapitation. After slaughter in the rats, the abdominal cavity was quickly opened, the pancreas was removed and placed in a 10% formalin solution for 2-3 days. Then the pancreatic preparations were dried by placing the organ in ethanol solutions with increasing concentration. The organ was dried with filter paper and embedded in paraffin. The resulting paraffin blocks of the pancreas were cut into plates. 7–10 μm thick and stained with hematoxylin-eosin solution. The obtained sections were photographed using a digital microscope (DN-300M).

RESULTS AND ITS DISCUSSION

The results of microscopic studies showed that in animals of the control group the acini of the exocrine part of the pancreas are the same size, the cells are homogeneous, have a rounded shape, the epithelial cells are arranged in one row. The nucleus is located in the basal part, in the adolescent acini contains an eosinophilic staining protein. The islands



occupy a relatively large space, rounded with a high content of endocrine cells. (Fig.) In the center of the islet are β -cells, and along the periphery α - and other cells. The cytoplasm of these cells has a uniform staining, the nuclei are rounded. The intermediate tissue, consisting of connective tissue, is underdeveloped. Blood vessels are full, endothelium, smooth muscle and adventitious connective tissues have a normal appearance.

10 days after the administration of alloxan in the pancreas, there was a meto-increase in infiltration and interstitial inflammation. Connective tissue has grown significantly, especially around blood vessels. Such proliferation usually occurs due to blood vessel infiltration and sclerosis. In the surrounding connective tissue, the presence of infiltrate and inflammation is noted. The endocrine islet is small, with a sharply reduced number of endocrine cells. In exocrine acinus of the gland, diffuse parenchymal protein dystrophy occurs, in some acini epithelial necrosis is observed.

The research results show that in experimental rat diabetes, the pancreas undergoes significant structural changes. They indicate that in experimental diabetes, the microstructure of both the exocrine and endocrine pancreas is disturbed. These data are associated with the literature that exocrine function is impaired in 77% of patients with type 1 diabetes mellitus [3]. Atrophy of pancreatic tissue may be associated with the trophic effect of insulin. Pancreatic fibrosis can also be a consequence of angiopathy and neuropathy.

Thus, in experimental acute diabetes, a violation of the histostructure of the exocrine and endocrine apparatus is observed. This suggests the need for an integrated approach to the treatment of diabetes.

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