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MORPHOLOGICAL CHANGES OF THE UTERUS IN EXPERIMENTAL METABOLIC SYNDROME

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Annotation:

A high-calorie diet is considered one of the main causes of metabolic syndrome. Most morphologic and physiologic research has focused on morphologic changes in the heart and pancreas. There are especially few studies devoted to morphologic changes in reproductive organs of women in the state of metabolic syndrome. Considering the above, we studied morphologic changes in the uterus and ovaries as an object of study. The results revealed that the main morphologic substrate is changes in the form of destruction and defragmentation in the uterus and ovaries.

Keywords: morphology, metabolic syndrome, uterus, ovaries.

The complex mechanisms in the pathogenesis of metabolic syndrome encompass several different mechanisms and include many unresolved problems. Today in economically developed countries the frequency of MS reaches 25-30%; according to WHO data, it is expected that in the next 20 years the frequency of MS will increase to 50% [1,3]. The prevalence of MS among women is 2.4 times higher than among men and reaches 35% [4, 5]. At the same time, there are contradictory data indicating the prevalence of MS among men, and women suffer from this pathology mainly during menopause. Studies in recent years show an increase in the frequency of MS among women of reproductive age, young people, and even adolescents [2]. **The purpose of the research work:** Study of the morphological state of the rat uterus in experimental metabolic syndrome.



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The research material and method: Mature white laboratory rats weighing 180-200 grams were used as the study material. The 100 white rats taken for the experiment were divided into 2 groups. The first group was a control group, and an experimental model of metabolic syndrome was created in the rats of the second group. To induce the experimental metabolic syndrome, the rats' diet consisted of 60% laboratory feed, 20% sheep fat, and 20% fructose. Instead of drinking water, a 20% fructose solution was given. Rats were slaughtered 30 and 60 days after the experiment. The uterus was taken for morphological examination, and the prepared histological sections were stained with hematoxylin and eosin according to the Van Gieson method.

The results of the study: In the conditions of the metabolic syndrome caused by the experiment, hypersecretion in the uterine mucosa was observed, a decrease in the number of private glands located in the private plate of the mucous membrane, a slight decrease in the number of smooth muscle cells in the myometrial layer, an increase in collagen fibers was observed, according to these morphological disorders, a violation of the normal functional state of the uterus can be judged. Macroscopic weight gain was found in rats in the groups receiving a high-calorie diet with induced metabolic syndrome (table 1).

Table 1 Morphological manifestations of the uterus by day

Specification (mm)	Duration of observation			
	Groups	30 days	60 days	90 days
Body length	Experience	2,95±0,05	3,05±0,04	3,1±0,07
	Control	3,25±0,14	3,34±0,07	3,27±0,08
Body width	Experience	4,72±0,12	4,75±0,2	4,8±0,05
	Control	4,96±0,17	5,14±0,18	5,20±0,13
Body thickness	Experience	2,82±0,18	2,88±0,04	2,95±0,2
	Control	3,05±0,13	3,16±0,09	3,20±0,15
King length	Experience	26,9±0,1	27,8±0,4	28,2±0,06
	Control	27,09±0,83	31,2±1,21	31,8±0,95
Diameter of the King	Experience	2,42±0,01	2,45±0,03	2,48±0,05
	Control	2,48±0,06	2,57±0,14	2,6±0,05



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The average weight in experimental rats was 175.25 ± 10.65 g, and on the 30th and 60th days of the experiment, this indicator increased to 215.15 ± 8.45 g. It was found that the increase in body weight and the increase in fat deposits in internal organs and blood vessels continues. This means that during morphological examination, all internal organs, including the functional epithelium of the endometrial layer in the uterus, have high activity, an increase in the amount of mucus, a decrease in the number of closed tubular glands located in the epididymis, a slight decrease in the number of smooth muscle cells in the myometrium, and an increase in collagen between the fibers were observed from the mucus.

Conclusions: In metabolic syndrome, the cells of the endometrial layer of the rat uterus are slightly swollen, hypersecretory, and their nuclei are hyperchromic. It is noted that blood circulation in the vessels of the special endometrial plate is disrupted and the number of private glands decreases, which leads to a decrease in the fluid produced by the uterus, as a result of which the stage of preparation for pregnancy slows down. It was noted that smooth fibrous unformed connective tissue grows into the myometrial layer and divides it into pieces, as a result of multiple growths in the uterine myometrium, muscle elements decrease and collagen fibers grow between smooth muscle cells.

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