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INFLUENCE OF DIFFERENT TYPES OF HORMONAL STIMULATION ON THE MORPHOLOGICAL TRANSFORMATION OF THE OVARIES IN THE FORMATION OF POLYCYSTOSIC OVARY SYNDROME

ВПЛИВ ГОРМОНАЛЬНОЇ СТИМУЛЯЦІЇ НА МОРФОЛОГІЧНУ ПЕРЕБУДОВУ ЯЄЧНИКІВ ПРИ ФОРМУВАННЯ СИНДРОМУ ПОЛІКІСТОЗНИХ ЯЄЧНИКІВ

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The purpose. Elucidation of morphological changes in the ovaries of rats against the background of hormonal stimulation in the simulation of polycystic ovary syndrome.

Materials and methods. The study was conducted on 40 white female rats of the WAG / G Sto population. Before the start of the experiment, the age of the rats was 27 days and the weight was 90-100 g. The animals were divided into 2 groups: main and control. The main group included 30 experimental animals, which were induced with experimental polycystic ovaries by daily subcutaneous administration of 0.5 mg of testosterone propionate for one 2 weeks, which led to masculinization of the hypothalamus with the loss of the ability to maintain the cyclic secretion of gonadotropic hormones.

30 rats of the main group were divided into 3 subgroups of 10 animals each to determine the dynamics of age changes at 2, 5 and 8 weeks of the study. The control group included 10 sexually mature females with a normal estrous cycle.

Ovaries for histological examination were fixed with 8% neutral formalin, embedded in paraffin according to the generally accepted scheme, serial sections with a thickness of 4-6 μm were made, which were stained with hematoxylin and eosin for transmission electron microscopy by the light-optical method.

To determine the morphological changes in the ovaries of the main group of rats, after the development of PCOS in the age aspect, the animals were removed from the experiment by CO2 asphyxiation for 2, 5 and 8 weeks (10 rats in each group of experiments). For morphological research, the material was fixed in a 10% formalin solution. From the prepared blocks, serial sections with a thickness of 4-5 mm3 were prepared, which were stained with hematoxylin and eosin, picrofuchsin according to van Gieson, Mallory, Sudan III.

For statistical evaluation, all data were entered into Excel spreadsheets. Analysis of the results was carried out using licensed Windows statistical programs.

Results. Changes in folliculogenesis were noted in the androgenized rats of the main group in the 2nd week of the experiment: the development of follicles occurs in the complete absence of corpora lutea of any stage. In addition, the number of stunted primordial follicles in the ovaries decreased. Accordingly, the number of follicles of subsequent generations decreased. Large normal vesicular follicles were absent. In the follicles of different stages of development, signs of atresia or cystic degeneration were observed. Ovaries were hypertrophied, bumpy, on cross-section most of the ovary is occupied by multiple mature, diffusely located follicles, with atresia phenomena, while sharply expressed proliferation and hyperplasia of thecalutein cells of the stroma are revealed. Yellow bodies were found. The morphological structure of the ovaries corresponded to PCOS.

When examining the ovaries of the main group after androgenization of rats on the 5th week, numerous fully formed cysts were present. In five-month-old control and androgenized animals of the main group of rats, the ratio of parenchyma - stroma was shifted, in contrast to previous age groups, towards a clear predominance of follicular structures. On macroscopic examination, the ovaries were enlarged 4-5 times compared to the control, hyperplasia of the stroma, the presence of many cystic-atresous, peripherally located follicles with a diameter of 5-8 mm, located under a compacted capsule, was noted.

Dystrophic processes in the ovaries of the main group of experimental rats in the 8th week of the study precede the senile. They reached their maximum expression during androgenization. In them, the protein shell of the ovaries was noticeably thickened, there was a directed replacement of the parenchyma by connective tissue with a predominance of the fibrous component, which ensured total sclerosing of the organ.

On the part of the follicular apparatus of the ovaries, there is a further decrease in the generative reserve, there were practically no normal follicles, the process of cyst formation continues. Regressive changes in blood vessels also occurred in the medullary tissue of the ovaries, where their number was significantly reduced.

In the macroscopic examination of the main group of animals, the ovaries were reduced in size compared to the control group, elongated in shape and contained multiple point cavities in the cortical layer. There is a large number of follicles at various stages of maturity with the phenomena of atresia and the formation of layers of collagen fibers. Yellow bodies were not detected. Cystic degeneration of the ovaries became a natural result of the dynamics of the described morphological processes in most animals. This age group of androgenized rats is characterized by the presence of a significant number of follicular cysts of different diameters, which are closely adjacent to each other and confirm the further development of PCOS.

Conclusions. Thus, the conducted studies showed that the formation of PCOS corresponds to the morphological structural criteria of ovarian remodeling in age-

related dynamics in experimental polycystic rats and is significantly dependent on the violation of hormonal regulation against the background of heparandrogyny.

In the reorganization of interorgan homeostasis in androgenized rats, the period of puberty should be considered, when in the thecal membranes of the growing ovarian follicles, the nature of differentiation of the thecal interstitial cells of the iron type changes, which contributes to cyst formation.

The age-related dynamics of pathomorphological rearrangements of the ovaries in experimental polycystic disease is characterized by progressive depletion of the follicular reserve and cyst formation, increased collagenization of the stroma, and the absence of corpora lutea.

Key words: morphological reconstruction of ovaries, age dynamics, hormonal regulation, follicular cysts.

Ключові слова: морфологічна перебудова яєчників, вікова динаміка, гормональна регуляція, фолікулярні кісти.

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STRUCTURAL CHANGES OF THE OPTIC NERVE HEAD IN PATHOGENESIS OF TRAUMATIC OPTIC NEUROPATHY

СТРУКТУРНІ ЗМІНИ ГОЛОВКИ ЗОРОВОГО НЕРВУ В ПАТОГЕНЕЗІ ТРАВМАТИЧНОЇ ОПТИЧНОЇ НЕВРОПАТІЇ

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Introduction. Structural damage resulting from optic nerve injury represents a serious problem that affects the vision and quality of life of patients. Traumatic optic neuropathy (TON) is the most common form of optic nerve damage, but the mechanisms underlying its development and consequences are not yet fully understood.

Until recently, most studies of structural changes were based on experimental studies. However, the introduction of optical coherence tomography (OCT) into practice allows to study lifelong neurodegenerative and restorative processes [1].

In general, the study of structural damage in the retina during optic nerve injury is key to understanding pathological processes and developing new treatment methods. This opens up prospects for improving the diagnosis, prognosis and treatment of diseases associated with optic nerve injuries, and may have a significant impact on clinical practice in the future.

The goal is to characterize the structural changes of the retina in early period of optic nerve's traumatic damage.

ЗМІСТ