

Microscopic changes in kidneys of cats at polycystic kidney disease

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Presented results of study of microscopic changes in kidneys of cats at polycystic kidney disease. Microscopically in the kidneys of cats, which died from polycystic kidney disease, the typical cysts of different sizes appeared. Part of them contained a liquid only, part of them – tissues of kidneys on the different stages of destruction and lysis, and part of them – homogeneous cellular detritus. Tissues of kidneys on the different stages of destruction and lysis, which were in the part of kidney cysts, consisted of cells and fibrous component.

The walls of cysts had a different thickness and different microscopic structure, however in all cases they were formed by those or other kidney tissues.

In renal corpuscles appeared the different stages of their destruction. The cavity of Bowman's capsule was often distinctly extended due to an accumulation of filtrate. Cells of parietal lamina of this capsule were in a state of grain dystrophy. Part of these cells was collapsed. Basal membrane of epithelium of parietal lamina of Bowman's capsule in all renal corpuscles was distinctly incrassate and homogeneous. In some renal corpuscles were registered regions of complete destruction of this capsule.

The capillaries of glomerulus usually also did not contain the blood cells. Its basale membranes were distinctly incrassate and making more compact. In addition they acquired basophilic properties. Cells of mesangium were in a state of grainy or hydropic dystrophy.

In further as a result of increase pressure of filtrate in the cavity of Bowman's capsule and dystrophic changes of cells of glomerulus's took place its discomplexation and disintegration on separate fragments which gradually collapsed. In future there was a lysis of part of glomeruli, as a result such glomeruli notably diminished in sizes.

Convolute tubules in the areas, where the stroma was strongly edematous, were unevenly extended. In part from such tubules was registered an extraordinarily expressive subepithelial edema.

The histological researches conducted by us enabled to set the sequence of process of formation of cysts in the kidneys of cats, i.e. the morphogenesis of these cysts.

At first on the separate, small areas of kidney the local lysis of stroma was registered. The hydropic dystrophy of apical part of cytoplasm of epithelial cells appeared in convolute tubules. Such dystrophy of epithelial cells was accompanied by the apical clasmocytosis. In future there was a lysis the apical cytoplasm of epithelial cells of convolute tubules with the next destruction at first of apical part of their cytoplasm, and then – of all cell.

Next to it also there was a lysis of basal membranes of epithelium of convolute tubules. With development of process the epithelium of convolute tubules collapsed fully. Such tubules showed by itself cavities, surrounded by basal membranes. At the lysis of basal membranes of the alongside located cavities they met. The further accumulation of liquid in such cavities resulted in the increase of their sizes and formation of microcysts surrounded by the basal membrane .

In second case the gradual lysis of stroma and tubules of kidney resulted in formation of microcavities (microcysts) of wrong form and different sizes. Formed microcysts met inter se, forming noticeable grossly cysts.

Thus microcysts in kidneys of cats at polycystic kidney disease forms in two ways: 1) by confluence of the alongside located extended areas of tubules and 2) by the way of two simultaneous processes: lysis of stroma and destruction and lysis of tubules.

Except the form of cysts in the organ the characteristic microscopic changes in renal corpuscles are an incrassate, homogeneous basal membrane of epithelium of parietal lamina of Bowman's capsule and incrassate, making more compact, basophilic basal membranes of capillaries of glomeruli.