SECTION 5. VETERINARY MEDICINE

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ULTRASOUND DIAGNOSTICS FOR CHRONIC KIDNEY DISEASE IN DOMESTIC CATS

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Ultrasound examination is one of the most informative instrumental methods for the examination of animals with kidney diseases, in particular, chronic kidney disease [1, p. 310]. Indications for conducting an ultrasound

examination of the kidneys are renal colic, renal failure, pathological components in the urine sediment, as well as clinical data indicating kidney disease, in particular, nephrocalcinosis [2, p. 1565]. Diffuse alterative processes in the renal parenchyma are of particular interest, since kidney lesions are united by similar morpho-sonographic characteristics, regardless of the manifestation of which disease they are. In this regard, the identification of morphological and sonographic parallels in the terminal destructive process – nephrosclerosis – Is of particular importance for diagnosticians. This issue is under constant study by International Renal Interest Society (IRIS) [3, p. 786].

When we performed an ultrasound examination of the kidneys of cats with clinical and laboratory manifestations of chronic kidney disease, the following parameters were determined: the size of the kidneys, the echogenicity of the parenchyma, the level of differentiation of cortical and medullary substances. The size of the kidneys depends on the body weight of the animal and can be estimated by measuring the length of the kidney in its sagittal image, it is necessary to study the kidneys in three planes: sagittal, transverse and dorsal.

When analyzing the size of the kidneys of cats with chronic kidney disease, we did not establish their reliable increase or decrease in comparison with the normative indicators of other authors. This may be due to the fact that the volume of the kidneys decreases during relatively uniform sclerosing of the parenchyma. In one of the cases of complete unilateral sclerosing of the kidney, we observed its significant reduction, while the other kidney was enlarged due to the development of compensatory mechanisms.

According to the results of our research, in 60 % of cats with clinical manifestations of chronic kidney disease, a diffuse increase in the echogenicity of the parenchyma of both kidneys was observed, in 45 % of animals – a decrease in the cortico-cerebral differentiation of the parenchyma, which may be related to the accumulation of connective tissue components in the parenchyma.

It should be noted that normally in cats, the medulla of the kidney has a low echogenicity compared to the cortex, which may be due to the significant content of glycosaminoglycans in the interstitial tissue and the presence of smooth muscle cells in it.

With the development of nephrosclerosis, the parenchyma is thickened due to hyperplasia of the intima of vessels, an increase in elastic fibers, hyalinosis, sclerosis of arterioles and renal capillaries, which leads to increased echogenic properties.

Thus, the use of the ultrasound method of research provides additional information about the state of the kidneys in cats. In our research, no clear dependence between the stages was found chronic kidney disease and

ultrasound picture of the kidneys, however at the II stage of chronic kidney disease, the degree of increased echogenicity of the parenchyma was less pronounced than at IV, which is associated with the development of diffuse sclerosis of the parenchyma and stroma of the kidneys. It is known that ultrasound in general does not allow establishing a diagnosis of chronic diffuse kidney disease, because ultrasound signs are nonspecific.

Thus, carrying out a sonographic examination of the kidneys at chronic kidney disease allows you to detect focal pathological processes – tumors, cysts, nephrolithiasis, which can potentially be the cause chronic kidney disease. This makes ultrasound a necessary and mandatory diagnostic measure when examining domestic cats with clinical manifestations chronic kidney disease.

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