

VETERINARY SCIENCES

ULTRASONOGRAPHIC FEATURES IN THE EXAMINATION OF THE PANCREAS IN DOMESTIC CATS DIAGNOSED WITH DIABETES MELLITUS: A PROSPECTIVE STUDY IN 7 CATS

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The article analyzes the informativeness of the method of ultrasound diagnosis of the pancreas in diabetes mellitus in domestic cats.

Keywords: Ultrasound examination, pancreas, domestic cats, diabetes mellitus, pancreatitis

Introduction. Today, in their daily activities, veterinarians often meet at the reception with cats with diabetes, the diagnosis of which is not difficult enough. But the root causes of this pathology in a particular individual, the presence or absence of comorbid diseases, it is desirable to understand in advance, because it depends on the prognosis and stability of hyperglycemic control [1].

Ultrasound examination of the abdominal cavity in patients with diabetes provides some information about the condition of the pancreas, liver, gastrointestinal, urogenital system and, in the process of comprehensive diagnosis, makes it possible

to exclude or confirm the presence of pathological changes in these organs, which play an important role in the development of diabetes or its complications.

Materials and methods. Examination of the abdominal cavity, namely the pancreas was performed on the basis of the veterinary clinic "VetExpert" Poltava on an ultrasound machine IMEGIC Elite (Sigma 5000 series) KONTRONMEDICAL, a linear sensor with a frequency of 7.5-12 MHz in B- mode. The object of the study were domestic cats aged four to twelve years, of different breeds and genders diagnosed with diabetes. The assessment, if possible, was performed on an empty stomach. Animals were examined in the dorso-ventral position with ventral access in the left lateral, subcostal area (left lobe of the pancreas), in the area of the xiphoid process (body of the pancreas), in the right and left subcostal and lateral areas (liver, foregut), sedation was not used.

Results. For the period from September 2016 to March 2020, seven animals with clinical signs of diabetes (complaints of polydipsia, polyuria, polyphagia with weight loss, for one to two months) were registered at the reception, which was confirmed by laboratory methods diagnosis (hyperglycemia, glucosuria). All animals in the preliminary examination were sent for ultrasound examination of the abdominal cavity. In the study of the pancreas focused more on the left lobe, which in cats is better visualized. It is located in the left epigastrium, caudal to the bottom of the stomach and above the cranial pole of the left kidney, ventral to the splenic vein. After finding the left lobe, you can move along it, go to the body of the pancreas, ventrally from the portal vein closer to the midline in the area of the bottom of the stomach. The right lobe is located along the descending part of the duodenum [2-4].

To evaluate the ultrasound signs, clinically healthy animals were examined in parallel and the obtained results were compared with the literature data. In clinically healthy cats, the pancreas is a difficult organ to visualize because it has similar echogenicity and echostructure to surrounding tissues. Impaired visualization in overweight animals and increased mass of visceral fat. But an additional landmark is the duct of the pancreas, which passes in the middle of the body. In domestic cats, the width of the left lobe is up to 9.5 mm, body - up to 8.5 mm, right lobe - up to 4.4 mm,

diameter of the central duct -1 mm, with age can increase up to 2.5 mm [3], for other sources - 4-6 mm, the width of the duct up to 1 mm, with age - up to 2.5 mm [4]. The main indicators of sick animals included in the experimental group were hyperglycemia (from 21.3 to 31 mmol/l), polydipsia, polyuria and cachexia.

As a result, in six animals out of seven, we recorded joint ultrasonographic changes of internal organs, namely: increase in the width of the left lobe of the pancreas (9.8 - 13.8 mm), dilation of the central duct (2.6-2.8 mm), signs hepatolipidosis (diffuse increase in echogenicity of the liver parenchyma, distal attenuation of the echo signal, deterioration of the visualization of the vascular pattern on the periphery), high activity of indicator enzymes (ALT (92-158 IU /l), AST (83-120 IU /l), and one cat (age 12 years) - signs of pancreatic sclerosis (reduction of organ size, diffuse increase in echogenicity, heterogeneity of the parenchyma due to multiple hypoechoic nodes).

Thus, examination of cats with uncomplemented diabetes revealed increased visualization of the pancreas in most animals (85.7%) - reduced echogenicity, rounding of the edges of the body, expanding the diameter of the central duct, with or without changes in the echogenicity of surrounding tissues. Such changes are described in the special literature at an inflammation of a pancreas, its hypostasis. There are also reports of pancreatic edema in pancreatitis, hypoalbuminemia or portal hypertension in dogs [5], which was taken into account in the development of treatment and diagnostic plan for the above patients [6-8]. After stabilization of the clinical condition of sick cats and obtaining control of blood glucose levels during treatment, ultrasound screening of the pancreas was performed a month later. Normalization of echogenicity of the parenchyma of the organ was observed in six cases, except for animals with signs of pancreatic sclerosis.

Discussion. Thus, in the diagnosis and treatment of diabetes in cats, it is possible to recommend ultrasound etiology examination of the pancreas to monitor its condition in complicated and uncomplicated cases. The of the detected ultrasound changes needs further study.

REFERENS

1. Yhnatenko N. Sakharnyy diabet u koshek, yak sprostyty zadachu? VetPharma; 2014. №5. (in Russian)
2. John S Mattoon; Thomas G Nyland. Small animal diagnostic ultrasound. 3-nd ed. Elsevier Science Health Science; 2014. 600 p.
3. Penninck D.G, d'Anjou M. Atlas of Small Animal Ultrasonography. 2-nd ed. Ames: Wiley Blackwell; 2015. 504 p.
4. Huynh E., Berry C.R. Small Animal Abdominal Ultrasonography: The Pancreas. Today's Veterinary Practic. 2018; Vol.8 (3): 60-65
5. Lamb CR. Pancreatic edema in dogs with hypoalbuminemia and portal hypertension. J Vet Intern Med 1999;13 (5): 498-500.
6. Armstrong P.G., Williams D.A. Pancreatitis in Cats. Top Companion Anim Med. 2012; Aug; 27(3): 140–147.
7. Torrans E.D., Muni K.T. Rukovodstvo po endokrinologii melkikh domashnikh zhiivotnykh. M.: Akvarium-Print, 2006, 312 s. (translated from Russian into English)
8. Feldmen E., Nel'son R. Endokrinologiya i reproduktsiya sobak i koshek / pod red. A.V. Tkacheva-Kuz'mina i dr. – M.: Sofion, 2008, 1242 s. (translated from Russian into English)