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**MICROSCOPIC CHANGES IN THE LIVER CATS KALITSYVIRUSNOYI FOR  
INFECTIONS**

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*The results of histological studies of liver of cats that died from kalitsyvirusnoyi infection. Found distinct inflammatory changes characterized by expansion and overflow with blood blood vessels, inflammation of the parenchyma of organs and infiltration of inflammatory cells. These changes were accompanied by degeneration and necrosis of hepatocytes. In the liver capsule registered cell necrosis of hepatocytes, which did not have clear boundaries. Necrosis of liver cells characterized kariolisis.*

**Keywords:** *cats, kalitsyvirusna infection, pathological-anatomical diagnosis, microscopic changes in the liver.*

**Statement of the problem.** Kalitsyvirusna infection of cats (kalitsyviroz) - vysokokontahiozna disease animal family Felidae, which clinically manifested conjunctivitis, ulcerative stomatitis, rhinitis, bronchitis, pneumonia, and is accompanied by significant mortality [4]. The disease was first described in 1957 in New Zealand, but this time not all aspects studied sufficiently. The vast majority of work has been devoted to developing methods of diagnosis, treatment and prevention kalitsyvirozu cats, while other aspects of this disease, including pathological-anatomical changes are not given enough attention [5].

**Analysis of recent research and publications in initiating the resolution of this problem.** In the available literature indicates that pathological-anatomical changes vary depending on the virus strain. Most ulcers register dorsal surface of the tongue. Ulcers can also be localized to the hard palate, lips and the outer surface of the nostrils. Changes in the epithelium of the upper respiratory tract and conjunctiva are less noticeable. Replication of the virus occurs in the joint synovial macrophages with macroscopic and histopathological manifestations of acute course. Damage to the lungs begins with focal alveolitis, which leads to focal exudative pneumonia and ends proliferative interstitial pneumonia [5-7]. In other organs and tissues of pathological anatomy, especially tiny, little changes were studied.

**Purpose and objectives of the research.** The aim was to determine the microscopic changes in the liver of cats that died from kalitsyvirusnoyi infection.

**Materials and methods research.** The work was performed at the Department of Pathology of the National University of Life and Environmental Sciences of Ukraine. Diagnosis of infection kalitsyvirusnu set comprehensively considering epizootic data, clinical signs of disease, pathological-anatomical changes and the results of laboratory diagnostics (laboratory "Baldo", Kyiv). Pathological-anatomical dissection of corpses and 14 cats was performed by partial evistseratsiyi [2]. In the course of pathological-anatomical dissection for histological studies selected pieces from different parts of the liver. The selected pieces were fixed in 10% neutral aqueous solution of formalin and after dehydration in increasing concentrations of ethanol through chloroform embedded in paraffin. 7-10 micron thick sections were obtained by microtome Luge [3]. To identify the histological structure of organs and tissue sections staining was performed with hematoxylin and eosin Karatsu [1].

**Studies.** In a histological study of liver cats that died from kalitsyvirusnoyi infection, we found that all the central veins of hepatic lobules distinctly dilated, most of them are full of blood cells. Hematocrit was significantly impaired: the plasma in the plane of histological sections were only from 5.1 to 8.4% of the lumen of a blood vessel. Liver tissue was diffusely swollen. Because of this swelling was lost precise microscopic structure of the body. In hepatic lobules only occasionally Registered liver fragments beams whose dimensions do not exceed 10-12 located along the cells. However, even in many of these residues hepatic beams majority of hepatocytes that formed them were partially or completely dyskompleksovani, indicating a significant disturbance of cell contacts. Most hepatocytes was in a state of granular dystrophy. Their cytoplasm was dull, unevenly painted eosin, the boundaries between adjacent cells are unclear or do not manifest. As part of the recorded cells hidropichnoyi initial stages of malnutrition, in which appeared in the cytoplasm of single transparent or translucent vacuoles small size. These changes indicate the progression of degenerative processes in the liver, as is well known that granular dystrophy may be the initial stage of other dystrophies, including hidropichnoyi. The nuclei of hepatocytes to acquire correctly rounded result of distortion of the nuclear envelope, both inside and outside the nucleus. In addition, parts of hepatocytes as modified and unmodified kernels were located eccentrically - one of the poles of the cell, directly at the nuclear envelope. Part of hepatocytes was in a state of perednekrozu, insofar as they manifest profound degenerative changes and relatively small-sized plots the destruction of the nuclear membrane or chromatin condensation at the nuclear envelope of enlightenment nucleoplasm (hiperhromatoz nuclear envelope), which, according to modern ideas, regarded as a forerunner cell death. At the same time between dystrophic hepatocytes revealed necrotic liver cells are isolated, and their small group of 2-5 cells. Isolated liver cells are destroyed.

Liver parenchyma was infiltrated by inflammatory cells: hepatocytes were found between neutrophils, monocytes, basophils and lymphocytes isolated. Note that cell infiltration organ was uneven - in some areas recorded a considerable number of inflammatory cells (ratio of cells to hepatocytes ranged from 1: 11 to 1: 21), in other areas of inflammatory cells was less (ratio of cells to hepatocytes ranged from 1: 34 to 1: 47), while in certain areas of inflammatory cells did not manifest. When the capsule body in most animal appears quite large areas of necrosis of hepatocytes. Such areas do not have sharp boundaries: necrotic hepatocytes were immediately surrounded by fresh liver cells. Necrosis of hepatocytes characterized kariolisis. Infiltration of inflammatory cells in the foci of necrosis of hepatocytes and immediately adjacent areas of living liver tissue was not registered with us.

#### **Conclusions and recommendations for further research:**

1. In the liver of cats that died from kalitsyvirusnoyi infection, we found distinct inflammatory changes.
2. Inflammation of the liver accompanied by degenerative changes and necrosis of hepatocytes.

Further histological studies appropriate to other organs and tissues of cats that died from infection kalitsyvirusnoyi to establish in them the nature of pathological changes.

#### **REFERENCES**

1. Горальський Л. П., Хомич В. Т., Кононський О. І. Основи гістологічної техніки і морфофункціональні методи дослідження у нормі та при патології. – Житомир: Полісся, 2005. – 288 с.
2. Зон Г. А., Скрипка М. В., Івановська Л. Б. Патолого-анатомічний розтин тварин. – Донецьк: ПП Глазунов Р. О., 2009. – 189 с.
3. Лили Р. Патологическая техника и практическая гистохимия. – М. : Мир, 1969. – 640 с.
4. Справочник по лечению собак и кошек с описанием лекарственных средств / И. В. Сидоров, В. В. Калугин – М. : Издательский дом «Оникс XXI век», 2001. – 576 с.
5. Чандлер Э. А., Гаскелл К. Дж, Гаскел Р. М.; Пер. с англ. / Болезни кошек. – Аквариум-Принт, 2002. – 696 с.
6. Dawson S. (1991) Studies on feline calicivirus and its role in feline disease. PhD thesis, University of Liverpool.
7. Knowles J. O., McArdele F., Dawson S., Carter S., Gaskell C. J. & Gaskell R. M. (1991) Studies on the role of feline calicivirus in chronic stomatitis in cats. Vet. Microbiol. – 27, 205.