

*Materials of Conferences***ULTRASTRUCTURE OF HEPATOCYTES  
PIGS IN ONTOGENESIS**

Andreeva S.D., Nikandrov N.N.

FGBOU VPO «Vyatka State Agricultural Academy»,  
Kirov, e-mail: a\_s\_d\_16@bk.ru

In the study of mammalian organogenesis is important to determine the period of greatest change and adaptive features of the cells to the factors of the external and internal environment. In this particular importance morphological changes in the liver as an organ that is directly involved in the maintenance of homeostasis. Object of research were omnivores liver that plays an important role in the metabolism in mammals. Ultramicroscopic studies set morphogenesis hepatocytes omnivorous animals at different stages of ontogeny, morphometric characteristics confirmed cytoarchitectonic change the basic cells of the liver parenchyma of pigs of large white breed in the age aspect.

Objective: to study the ultrastructure of liver omnivorous animals at different stages of ontogeny and evaluation of morphometric parameters of components of the liver cells of pigs. For the study were taken from the bodies of healthy animals five age groups: 49-day-old fetus, newborn, 14-day-old piglets, 3 month animals and 1 year old Large White breed pigs (5 animals per group), which were grown in ZAO «Doronichi» Kirov. For ultramicroscopic study took pieces of pig liver and examined by conventional methods at the Institute of Biology of Inland Waters RAS. The use of ultra-microscopic and morphometric methods of research has revealed the basic laws of structural reforms pig liver, which is associated with increased functional load on hepatocytes in the age aspect. For morphometric assessment of the functional state of the parenchyma using image analysis software Image Scope Color M.

The results of the study. Among the various cells of the liver parenchyma, we studied hepatocytes, as more fully characterize the structural and functional properties of the body. To normal cells of the liver cells are attributed to the well-differentiated nucleus, nucleolus decorated, the whole of the cytoplasmic membrane. By degenerating cells include hepatocytes with kernel modifications (kariopiknoz, kariolizis, karyorhexis) and cytoplasm (protein, fatty), and non-nuclear cells. Statistical analysis was performed using Fisher's exact test (F) and the software package Statistica 6.0 for Windows-2007. In the analysis of cytological characteristics of hepatocytes established that the fetal period

pig liver has a beam structure, there are pockets of hematopoietic parenchyma, hepatocytes have the most high nuclear-cytoplasmic ratio ( $0,57 \pm 0,09$ ) for the entire period of observation, indicating that intense functional load body neonatal ontogeny. Newborn animals hepatocyte area was significantly increased compared with the previous period was 2,3 times ( $37,1 \pm 0,004$  and  $16,1 \pm 0,002$  mm<sup>2</sup>) as by increasing the area of the cytoplasm and the nucleus of the cell ( $28,2 \pm 0,04$  and  $8,4 \pm 0,01$  mm<sup>2</sup>, respectively). In the postnatal development of the average area of the nucleus of hepatocytes most significantly increased in the first month of life and stabilize by the end of the first year of life ( $4,85 \pm 2,6$  mm<sup>2</sup>), which indicates that the active restructuring of the genetic apparatus of the cell. Quantitative indicators of the average area of the cytoplasm of hepatocytes, the highest in infants and animals at the age of 1 year. At a later stage of ontogeny is marked cellular polymorphism, the number of mitotically dividing cells, due to increased secretory organ work and compensatory-adaptive reactions of the liver parenchyma in yearling pigs. For animals under the age of one year is typical stabilization cytological indicators glandular parenchyma cells: nuclear-cytoplasmic ratio remains the same ( $0,44 \pm 0,06$ ), the average area of the nucleus of hepatocytes is  $4,85 \pm 0,09$  mm<sup>2</sup> ( $p \leq 0,05$ ), which is 1,2 less than in the fetal period, the relative area of the cytoplasm of hepatocytes was 70,6% of the area of the cell.

At each stage of the omnivores in hepatocytes qualitative changes, characterized by gradual structural complexity of cellular organization. According to our data, the completion of the restructuring and stabilization of cell architectonics is the 3-month-old pigs postnatal period of life. By year of age in the liver of pigs changed location and density of organelles and inclusions, there are connective tissue cells and rearrangement of the nuclear apparatus, which indicates the age of the destructive changes in parenchymal organ.

The data obtained can be used to investigate punctates liver, which is one of the most progressive methods of in vivo diagnosis of disease of the body. Cytopunctio will put a definitive diagnosis or specialist to focus more research will help identify the disease process and predict the further course of the disease.

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