



MORPHOLOGICAL ASPECTS OF APOPTOSIS IN HEPATOCYTES AND THEIR ELIMINATION

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ABSTRACT

Light optical and electron microscopic methods were used to study the morphological aspects of hepatocyte apoptosis and their elimination. Along with apoptosis, hepatocyte extrusion phenomena were detected in the perivenous zones..

Research results. The material used was the liver of sexually mature rabbits (n=36) processed using general morphological and electron microscopic methods. The studies showed that hepatocytes in the intermediate and perivenous zones of the lobules are more prone to apoptosis, which begins with the clearing of the cytoplasm and the lumpy breakdown of the cell's nuclear contents.

In some cases, the change in the nucleus is preceded by the release of the nucleolus into the cytoplasm, after which the nuclear envelope shrinks and the nuclear contents condense into a dense clump. The clearing of the cytoplasm is followed by granular disintegration or vesiculation. Then, the cell membrane of the apoptotically altered hepatocyte separates from its neighbors, and the cell moves toward the sinusoid.

At this stage, the cell nucleus undergoes pyknosis or breaks down into small clumps. Subsequently, the cell membrane ruptures and the contents of the cytoplasm are washed out into the sinusoid lumen. We did not observe their absorption by neighboring hepatocytes or macrophages. Electron microscopic studies also confirmed the lumpy disintegration of the nucleus, the formation of apoptotic bodies due to the vesiculation of cytoplasmic structures, and, moreover, the wedging of erythrocytes into the dead cell.

Along with apoptosis, we found hepatocyte extrusion in the perivenous areas. Electron microscopy showed that such cells contain all intracellular organelles and even the nucleus, but the nucleolus undergoes severe changes.

Conclusions. Thus, the results of our studies have shown that hepatocyte death in the liver occurs through apoptosis and extrusion, and in both cases, the cells are eliminated into the bloodstream as they disintegrate.

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