**UNIVERSAL MECHANISMS OF CELL DAMAGE**

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The role of cellular damage is the basis of any disease, the disease is seen as the suffering of a whole organism, because the whole organism is involved in the pathology as a whole. Mechanisms that damage cells are very complex and can cause their death. There are many causes of damage, and there is no single mechanism. It is important to know the mechanisms of cell damage in order to correctly diagnose the patient and choose the most appropriate treatment.

The next four mechanisms are the most important in the development of cell damage and death. 1. Free radical peroxidation of lipids contributes to cell destruction. This occurs when the tissue is not sufficiently oxygenated and contributes to the formation of free radicals. Calcium homeostasis disorder plays a major role in cell damage. Free calcium outside the cell is present in high concentrations, and in the cytoplasm exclusively in low concentrations. This state is maintained by the cell membrane-related energy-dependent Са2 +, Mg2 +, ATPases. Ischemia, toxins can chew on a larger concentration of calcium in the cytoplasm. Increased calcium content can contribute to activation of certain enzymes that destroy the cell: phospholipase damages the cell membrane, protease destroys the membrane and the cytoskeletal proteins, ATPase depletes the ATP and endonucleases contribute to chromatin fragmentation. 3.Mitochondria may lose pyrididinukleotides and there is further ATP deficiency and decreased ATP synthesis. This is characteristic of ischemic and toxic cell damage. 4. Early loss of selective permeability by the plasma membrane is a symptom of all types of cell damage. Such defects relate to ATP loss and phospholipase activation. An important role in damage to the plasma membrane is played by the direct action of certain bacterial toxins, viral proteins, complement components, as well as a number of physical and chemical agents.

In keeping with this we can safely argue that cell damage has severe consequences, often incurable in the latter stages. Damage to a cell or group of cells, disrupting their natural integration and cooperation in the organ and body, is the material basis of developing pathology. The clarification of specific types of violations, the time of their occurrence, the relationship between them, provides the doctor with the necessary information about the nature and intensity of the action of the causal factor, the depth and prevalence of the pathological process. In order to prevent certain diseases associated with cell failure, it is necessary to understand the causes of injury and the mechanisms of injury. On the basis of these fact, the specialist will be able to correctly diagnose the patient and prescribe appropriate treatment.