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CELL DYSTROPHY AND ITS TYPES

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Abstract: Dystrophy is a pathological process that leads to the loss or accumulation of substances in the tissues that do not normally belong to it (for example, the accumulation of coal in the lungs). With dystrophy, cells and intercellular substance are damaged, as a result of which the work of the diseased organ is disturbed. A complex of mechanisms - trophism - is responsible for maintaining metabolism and cell structure. It is he who suffers from dystrophy: the self-control of cells and the transport of metabolic products are disturbed**.**

Key words: Dystrophy, trophism, metabolism, actmyosin, protein dystrophy, vacuolar dystrophy.

Dystrophy (dys... and Greek. trophe - food, nutrition) is a pathomorphological and pathophysiological expression of metabolic disorders in cells and tissues; previously called degeneration - nausea. Dystrophy is the basis of development of many (especially inflammatory) diseases. Infiltration and absorption (for example, protein absorption into the epithelium of renal tubules in neurosis, lipoid absorption into the inner membrane of arteries in atherosclerosis), disruption of protein synthesis, conversion of fats and carbohydrates into proteins or transformation of proteins and carbohydrates into fats (transformation) are mechanisms of development of dystrophy. As mentioned above, damage due to this, before the start of structural changes in the cell, metabolic and enzymatic processes in it are derailed, these processes are expressed morphologically differently. For example, the presence of mitochondria, the shortening of their crystals, the discoloration of the matrix indicate that the cell lacks adenosine triphosphate and, as a direct consequence of hypoxia, the oxidation processes in the cell are disturbed. In classical pathology, dystrophic processes, which continue along with dysfunction of cell

metabolism, were considered. A characteristic of these processes is the accumulation of various exchange products in the cell. Dystrophic processes are classified according to the nature of the chemicals that accumulate in the cell. For example, if protein inclusions appear, this is a derailment of protein metabolism (protein degeneration), and if fat and lipid inclusions are found in the cell, this is called fatty dystrophy. . Accordingly, the exchange of pigments and carbohydrates in the cell may be disturbed, etc.

Thus, dystrophy is a complex pathological process that proceeds with significant changes in cell structure mainly due to derailment of cell metabolism. When the dystrophic process progresses, it disrupts cell functions. Etiology and pathogenesis. The causes of dystrophy are different. Based on the etiological factors leading to the onset of dystrophy, dystrophies are distinguished, mainly due to discirculatory endocrine and cerebral changes, as well as immunopathological processes. Regardless of the type of dystrophy, in all cases we are talking about one or another change in metabolic and enzymatic processes in the cell, physico-chemical changes that occur in the cell, so that different substances inside the cell These are the main reasons for the planing. These substances, which accumulate inside the cell, in some cases do not affect the functional state of the cell, and in other cases, this process causes damage to the cell. Accumulation of inclusions inside the cell depends on the following various processes: 1) usually, i.e., excessive accumulation of metabolites in the cell (for example, in patients with diabetes, when the blood glucose level is high for a long time, the cell glycogen accumulating inside); 2) abnormal accumulation of some products that do not participate in the exchange (this phenomenon is observed in congenital defects of metabolism — thesaurisms, that is, accumulation diseases); 3) depends on excessive synthesis of some substances inside the cell. An example of this is pigments, for example, excess accumulation of the pigment melanin in adrenal insufficiency. Most dystrophic processes are observed only in weakened, functionally active cells (liver, kidney, heart cells). At the same time, different mechanisms underlie the same dystrophy, which occurs in cells with different structures and functions. For example, fatty dystrophy of the liver is mainly related to the accumulation of triglycerides in hepatocytes. The mechanism of fatty dystrophy, which begins in cardiomyocytes at the site of diphtheria, is based on the entry of the exotoxin produced by the diphtheria bacillus into the metabolism of carnitine, a cofactor involved in the oxidation of fatty acids. As mentioned above, cell dystrophy is mainly caused by various changes in metabolism. In this regard, the types of dystrophies are distinguished: protein, fat, carbohydrate, pigment, mineral dystrophies, etc.

The functional state of tissue and cell structures largely depends on protein metabolism. For example, the neuroreflective activity of neurons is tightly linked to the metabolism of proteins, including sulfur-containing proteins. Muscles have the ability to contract due to actimyosin. This shows how deep functional changes occur in tissues when protein metabolism is disturbed. Protein dystrophy is divided into: 1) hydropic, 2) hyaline droplet, 3) corneal dystrophies. These types of it differ from each other in terms of the mechanism of occurrence Hydropic dystrophy. One of the most important signs of cellular dystrophy and the initial symptom of all forms of cellular damage is cell swelling, that is, bulging. This phenomenon occurs when the permeability of the cell membrane increases, diffusion and osmotic mechanisms and the work of cell pumps are disturbed. Under such conditions, the cell loses its ability to maintain ion and water homeostasis. Due to this, fluid begins to flow into the cell from the extracellular space. If fluid continues to enter the cell, small vacuoles filled with fluid appear in its cytoplasm. These are the parts of the endoplasmic reticulum that have expanded and separated into pieces. This type of cell damage is called vacuolar or hydropic dystrophy, which is characterized by the excessive amount of water in the cell cytoplasm and the appearance of vacuoles of various sizes. Vacuoles can be single or merge with

each other, completely occupying the cytoplasm and pushing aside the nucleus. At the same time, the appearance of the organs does not change. Several scientists believe that it is more correct to call this type of dystrophy "water-protein dystrophy".

Vacuolar dystrophy is observed in muscle and nerve cells, leukocytes, epithelium of skin and kidney tubules, hepatocytes in cells of the cortex of adrenal glands. Hydropic degeneration that occurs in the epithelium of kidney tubules in the place of diarrhea that makes a person exhausted is especially obvious - hydropic necrosis. Aqueous protein dystrophy of hepatocytes in the liver is observed at the site of viral hepatitis. All forms of water-protein dystrophies lead to cytolysis at a very advanced stage. At the same time, the function of the organs is disturbed. The causes of this type of dystrophy include: infectious, infectious-toxic processes, hypoproteinemia, water-electrolyte imbalance. The appearance of vacuoles in the cytoplasm can be observed under physiological conditions as a manifestation of secretory activity. In particular, such a phenomenon is noted in the ganglia of the central and peripheral nervous system, especially in the neurons of the hypothalamus.

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