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Research Article

HYPOXIA. ETIOLOGY, PATHOGENESIS, TYPES OF HYPOXIA. DISTRIBUTION OF TYPES OF HYPOXIA, DEVELOPMENT SPEED AND DEGREE. PREVENTION AND TREATMENT OF HYPOXIA

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ABSTRACT

In this article, the definition of hypoxia, the factors that cause it, the conditions observed in the body during hypoxia, and the definition of hypoxia. Ideas and concepts about the widespread use of methods of prevention and treatment of hypoxia in modern medicine are presented.

KEYWORDS

Oxygen, hypoxia, tissue respiration, exercise, hemic hypoxia, blood circulation

INTRODUCTION

We all know that humans breathe through oxygen and all their cells actively use oxygen to maintain normal life activity. Oxygen is the most important for living organisms. However, in some cases, there may be a lack of oxygen in the body. This situation occurs for various reasons. The resulting lack of oxygen is called hypoxia in medical language. Hypoxia or oxygen deficiency (from the Greek - hupo - low, oxugenum - oxygen) is a pathological process that occurs as a result of insufficient oxygen supply of tissues or impaired use of oxygen. The classification of hypoxia is based on the factors and mechanisms that cause its origin.

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Tissue respiration is the absorption of oxygen. Blood circulation, blood and external respiratory organ systems participate in tissue oxygen respiration. Disruption of the activity of one of these systems is compensated by an increase in the activity of the other, thereby ensuring the continuity of tissue respiration.

The following main types of hypoxia are distinguished:

- hypoxic;
- Asthma
- Hemic
- Circulator
- Tissue
- Download
- Substrate dependent
- Mixed hypoxias are distinguished and we will consider each of them.

Hypoxic hypoxia - in this type, the amount of oxygen in the breathing air is reduced. An example of this is mountain sickness. Exogenous hypoxia can also be created experimentally in barochambers.

Respiratory hypoxia is caused by a violation of the process of gas exchange in the lungs. These reasons can cause:

1. Violation of respiratory tract permeability (bronchospasm, inflammatory processes, bronchitis, tracheitis), lung obstruction (pneumothorax, accumulation of exudates in the pleural cavity) and other respiratory diseases. violation.

2. Violation of the exchange process between blood and alveoli involved in gas exchange in the lungs.

Blood circulation hypoxia develops as a result of local and general blood circulation disorders and can be divided into ischemic and inactive forms of blood stasis. If hemodynamic disturbances develop in the large blood circulation, the oxygen saturation of the blood in the lungs may be sufficient, but there is a possibility that it will be difficult for the oxygen to reach the tissues. If the hemodynamics in the small blood circulation is disturbed, the oxygen supply of the arterial blood is disturbed.

Hemic hypoxia - pathological changes in the blood system, mainly caused by a decrease in the effective oxygen capacity of the blood. Hemic hypoxia is divided into hypoxia caused by anemia and hemoglobin dysfunction.

Tissue hypoxia is a process of impaired utilization of sufficient oxygen in tissues. When tissues are supplied with sufficient oxygen, the process of biological oxidation is disrupted. The main cause of tissue hypoxia is a decrease in the activity or amount of respiratory enzymes and a violation of the process of oxidation and phosphorylation.

Stress hypoxia is a type of hypoxia caused by stress. Tissues are formed when there is sufficient or excess oxygen supply. But the increase in the work of the organ and the significant increase in the demand for oxygen lead to oxygen supply that does not correspond to the demand, and metabolic changes characteristic of true oxygen deficiency occur.

Substrate-dependent hypoxia is a lack of substances (substrates) important for the normal course of biological oxidation. In practice, this hypoxia is sometimes caused by a lack of glucose. Starvation, lack of fatty acids can also cause this type of hypoxia.

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Mixed hypoxia is characterized by the simultaneous disruption of several systems that supply tissues with oxygen. For example, in a severe injury, the volume of blood circulating at the same time decreases (circulatory hypoxia), breathing becomes superficial and quickened (respiratory hypoxia), as a result, gas exchange in the alveoli is disturbed. If more blood is lost as a result of the injury, hemic hypoxia is added.

Treatment of hypoxia includes a number of measures and depends on the type, stage and degree of hypoxia and the reaction of the body to hypoxia. First of all, the main cause of oxygen deficiency should be identified and eliminated. Oxygen delivery is the main criterion when the tissue's ability to absorb oxygen is intact. In a number of diseases, oxygen is injected under high pressure. In weak hypoxia, it is important to stimulate the nervous system to enhance protective reactions by the circulatory and respiratory systems. The use of adrenal cortex and pituitary hormones, which increase the body's general resistance, is pathogenetically proven. Measures aimed at stopping pathological changes in hypoxia and neutralizing toxic substances in anaerobic metabolism are important.

The method of training in hypoxia is one of the main methods of preparing the body for lack of oxygen. Through physical exercise, it increases resistance not only to hypoxia, but also to physical stress, changes in external temperature, infection and poisoning.

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