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THE MOST COMMON CAUSES OF DEATH IN THE FIRST HOURS OF ACETIC ACID POISONING

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Abstract: This article presents the main types of complications in case of poisoning with acetic acid essence, leading to death on the first day, as well as statistical data on referrals to the toxicology department with acetic acid poisoning, literature data on the pathogenesis of the development of acute poisoning, the development of a chemical burn depending on the degree of hemolysis is presented erythrocytes and basic methods of treatment.

Keywords: Exogenous intoxication, specialized toxicological care, mortality, high mortality, chemical injury, acetic acid.

INTRODUCTION

The purpose of the article is to reveal the most common causes of death in patients with vinegar essence poisoning and to determine the mortality rate in recent years. According to the Department of Toxicology in 2008-2022. patients with poisoning with acetic acid poisoning averaged from 6% to 15% of the total number of patients with acute exogenous poisoning. This is due to the great availability and constant use of acetic acid in the household. It is worth noting that in the countries of the European Union and America, cauterizing poisons occupy an insignificantly small place in the overall structure of acute poisonings: 0.4% - 0.5% of the total number of toxicological patients due to the elementary absence of 70% of the acid on sale.

MATERIALS AND METHODS

Poisoning with vinegar essence	2008	2011	2014	2017	2020
Total number of dropped out patients with this nosology	165	173	112	92	114
Number of deaths	25	21	13	6	8
Mortality percentage (in relation to this nosology)	15	12	11,6	6,5	7

Acetic acid is a colorless liquid with a characteristic pungent odor. Highly volatile compound. Dissolves in water, heavier than water. Vapors are highly flammable in case of fire and form explosive mixtures. Glacial acetic acid contains 96% acid, diluted acetic acid - 40-90%, table vinegar - 3-8%. In Uzbekistan, the most widely used solution in the food industry and everyday life is a 70% solution of acetic acid.

RESULTS AND DISCUSSION

Acetic acid has a local cauterizing effect of the type of coagulative necrosis and a pronounced resorptive - hemato-, nephro- and hepatotoxic effect caused by hemolysis of erythrocytes and the development of toxic coagulopathy.

The cauterizing effect is most pronounced in the gastrointestinal tract and respiratory tract. The most affected areas of the digestive tract are the oral cavity, pharynx, esophagus in the thoracic region and its lower third, the stomach in the fundus, lesser curvature, cardinal and antral regions.

Not only the mucous membrane becomes necrotic - the process can spread to the entire thickness of the submucosal and muscular layers. Endoscopically, there are three degrees of gastrointestinal burn:

1st degree - hyperemia and swelling of the mucous membrane;

2nd degree – damage to the submucosal layer, necrosis up to the muscle layer;

3rd degree - damage to all layers, this phase is characterized by early profuse bleeding and perforation of the esophagus in the early stages.

Tissue damage is caused by disruption of cell membranes as a result of the dissolution of lipids that constitute their main structural unit. The formation of acid radicals stimulates lipid peroxidation (LPO) of membranes and aggravates the process of cell destruction. Destruction of the cell membranes of the mucous membrane of the gastrointestinal tract and the cell membranes of the vascular wall leads to a progressive decrease in the mass of circulating blood due to the loss of its liquid part and to the development of absolute hypovolemia, which is the main element of exotic shock in this pathology in 47% of cases, mortality is 70% in first day. Sharp hyperemia of the burned mucous membrane of the stomach and intestines contributes to the rapid penetration of acetic acid into the bloodstream.

The consequence of resorption is hemolysis of red blood cells. The undissociated molecule of acetic acid is the main hemolytic agent, which leads to another complication - the development of hemoglobinuric nephrosis, which, if inadequately treated, leads to the development of acute renal failure, the mortality rate is 40%. And the third on the first day is early bleeding, mortality is 67% of all cases.

It is necessary to dwell in more detail on the mechanism of erythrocyte hemolysis. There are 3 stages in the process of hemolysis:

• The first stage is contact between the surface of the erythrocyte and hemolysin (acetic acid molecule), which suppresses selective permeability and active transport of substances through the membrane and penetrates into the cell;

• The second stage is the destruction of the internal structure of the red blood cell. The low molecular weight fraction leaves the erythrocyte along an osmotic concentration gradient, and large protein molecules, released from ordered structures, are retained inside the cell. As a result, the contents of the cell become hypertonic in relation to the environment, and water begins to flow inside, the shell stretches until the mechanical resistance of the shell is overcome by osmotic pressure from the inside;

• The third stage is the rupture of the cell membrane and the release of large molecular fractions from the cell until the osmotic pressure between the erythrocyte and the environment is balanced.

Transport of free hemoglobin through the renal tubules under conditions of intravascular hemolysis, impaired microcirculation and thrombus formation in the small vessels of the kidneys causes damage to the basement membrane up to rupture of the distal tubules, manifested by the pathomorphological picture of acute hemoglobinuric nephrosis. According to our observations, there is a direct proportional relationship between patient mortality and the level of blood hemolysis.

CONCLUSION

The most common causes of death in patients with vinegar essence poisoning are: Exotoxic shock, early gastrointestinal bleeding, as well as the development of acute renal failure against the background of severe hemoglobinuric nephrosis at a later date.

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