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Alcoholic Intoxication Lungs

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ABSTRACT

The problem of alcohol abuse remains relevant, as indicated by high (30.5%) frequency of alcohol intoxication, identified during forensic medical examination corpses. Ethanol poisoning and its surrogates are widespread in foreign countries. Each of us knows that alcohol negatively affects the liver, stomach and brain, but few people who drink alcohol think about the fact that the lungs are also under attack.

Relevance. One of the main systems of the body that are directly involved in the utilization and excretion of the decay products of alcohol taken is the bronchopulmonary system. Lung damage in people with alcoholism is observed 3-4 times more often than in those who do not abuse alcohol. About 5% of the alcohol that enters the human body is released when breathing through the lungs. That is why, when communicating with a person who has consumed alcohol, we hear the characteristic smell of alcohol, “fume”. Ethanol itself and its decay products have a detrimental effect on the mucous membrane lining the bronchi, and on the lung tissue itself. In almost half of the cases, the causes of death in patients who abused alcohol are pathologies associated with the respiratory system. Alcohol intake aggravates the course of the pathological process, making it protracted, provoking abscessing and the formation of bronchiectasis. Respiratory impairment during alcohol consumption is due to a decrease in surfactant production, deterioration in mucociliary clearance, damage to normal microflora, and a decrease in humoral and cellular immunity. These mechanisms lead to disruption of gas exchange in the alveoli and inhibition of the protective properties of the body, which leads to an exacerbation of bronchopulmonary infection.

However, studies have shown that alcoholism can cause the development of a wide variety of lung diseases, including such formidable ones as pneumonia and pulmonary tuberculosis. Alcohol abuse leads to a significant decrease in antioxidants in the body and the accumulation of free radicals, which creates favorable conditions for the development pathogenic microbes.

However, it should be noted that scientific studies on morphological changes in the lung tissue in chronic alcohol intoxication, wear few and very fragmented, with most of them related to lung changes described in experimental studies. At the same time, the data cited in the literature about changes in the lungs do not always reflect specificity and may occur with other types "acute" death. In this regard, it should be noted what else M.L. Lebenzon in 1901 noted in the lungs

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rabbits given ethyl alcohol, hemorrhages in the parenchyma, necrosis and desquamation of the cells lining the alveoli. IN experiment on rats was established, What reception ethanol inside And inhalation that tank smoke reduce height olfactory epithelium. Structural changes cells included loss of cilia and metaplasia. In many animals developed pneumonia, which often ended in pneumosclerosis. Of great importance in the mechanism of emerging changes in the respiratory organs with alcohol abuse give damage to the microcirculatory bed. It is known that ethanol can cause a sharp increase in the permeability of the vascular wall. As a result of the toxic effect ethanol in the walls of blood vessels, dystrophic, destructive processes and iminecrobiotic changes in the parenchyma of organs occur. Thus, microscopic examination of the microhemocirculatory bed of the lungs revealed collagenization of the inner membrane and sclerotic changes in the middle membrane of the vessels of the middle and large caliber with atrophy of muscle fibers. Increased vascular wall permeability in alcohol intoxication can be associated with direct toxic effects ethanol and its metabolites on the vascular wall, causing changes in its morphofunctional structures. Apparently, this is associated with the constant homogenization of the vascular walls due to swelling and disintegration of the structures that form them, swelling, vacuolization and desquamation of the endothelium, leading to vascular dystonia and accumulation of acid polysaccharides in alcoholic disease. It has been established that structural changes in the respiratory organs in acute alcohol intoxication are associated with two main points. The first is the ability of the lungs to excrete both ethanol itself and its metabolite, acetaldehyde, unchanged. The second is an increased the likelihood of aspiration of food and vomit. Currently considered established pathological effect of ethanol on the respiratory center and the protective pharyngeal reflex. Ethanol causes suppression of the cough reflex, which plays a special role in the formation of obstructive - aspiration complications that occur both in coma and outside it in a state of strong degree of alcohol intoxication. In addition, ethanol contributes to the inhibition of mucociliary activity of the bronchi, and indicated the dependence of impaired mobility of cilia on the concentration of alcohol. Alcohol has a destructive effect on the structural elements of the walls of the alveoli. According to some authors, significant changes are noted in the cells of the alveolar epithelium. Moreover, if in acute ethanol poisoning on the part of alveolocytes of types I and II, phenomena expressed to one degree or another are noted intracellular edema, then with chronic alcohol intoxication, changes in these cells are in the nature of pronounced fatty and vacuolar protein dystrophy. These changes are especially pronounced appear in type II alveolocytes, in which marked changes in osmio filamentous lamellar bodies. There are some data on the effect of alcohol on lung surfactant, which stabilizes surface tension in the alveoli and counteracts the extravasation of fluid into the alveoli. It is known that the surfactant produced by type II alveolocytes, creating surface tension, maintains the shape and volume of the alveoli, participates in gas exchange processes, and also has an antibacterial effect. It has been experimentally proven that in acute and chronic alcoholization of animals there is a direct toxic effect of alcohol and its metabolites on the surfactant alveolar complex, damage to type II alveolocytes functional insufficiency of pulmonary macrophages and suppression of cellular immunity. Alcohol negatively affects function alveolar macrophages, which important role in lung protection. The exact mechanisms by which alcohol impairs the immune function of alveolar macrophages remains to be elucidated; however, several observations indicate that macrophages undergo an altered environment characterized by oxidative stress and zinc deficiency. Both clinical and experimental studies have found an increase in oxidative stress in the alveolar space following alcohol exposure (Moss et al. 2000; Velasquez et al. 2002). The exact mechanisms responsible for the occurrence of this redox imbalance remain unclear, but several explanations have been proposed. An experimental model of chronic alcohol consumption in rats revealed lipid metabolism disorders similar to those observed in alcohol-induced fatty liver disease (Romero et al ., 2014).

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The purpose of the work. The purpose of this study was to study experimentally the nature of pathomorphological changes in the respiratory organs in chronic alcoholism in rats.

Material and Methods. The study was conducted on 25 white outbred rats weighing 180-210 g. The animals were divided into 2 groups, in 10 rats they reproduced saline by intragastric administration, served as control. Animals of the 2nd series were injected intragastrically with ethanol at a dose of 10 mg/kg of body weight once. Animals were slaughtered 3,7,15,30 days after exposure to ethanol and were removed from the experiment at 3 months of age by instantaneous decapitation of animals under ether anesthesia. The lung extracted from the chest was fixed in 10% formalin solution and embedded in paraffin according to generally accepted rules. Next, histological sections were prepared with a thickness of 6-7 μm, which were stained with hematoxylin and eosin.

Result and discussion. Thus, in the lungs under the influence of ethanol changes occur, some of which are a direct consequence of the effects of alcohol, for others it is the favorable background against which these changes develop. An extremely variegated picture emerges, the interpretation of which significant difficulties, especially in microscopic examination. Microscopic examination of the lung tissue reveals a thickening of the walls of blood vessels with perivascular cell infiltration, overflow of capillaries and small veins with blood is also characteristic, but along with this, desolation of the vessels also occurs. Vascular disorders are invariably combined with sclerotic processes in the interstitial tissue of the lungs and atrophy of the lung parenchyma. The macroscopic picture depends on the underlying disease of the respiratory system, the course of which was aggravated by alcohol intake. Many authors do not clearly differentiate the consequences of acute alcohol intoxication from changes caused by long-term alcohol consumption, and always take into account some other factor that affects the lungs (for example, the action inhalation drugs or various toxic substances). The data presented strongly suggest that the effects of alcohol on the human body are accompanied by pronounced structural and functional changes in the lung tissue. Ethanol and its metabolites affect all structural elements of the respiratory systems (components of the histohematic barrier, lung surfactant, a system of general and local protection of lung tissue, etc.). Numerous negative effects on the lungs of abuse alcohol cause a peculiar course many pulmonary diseases on the background of alcohol intoxication.

Literature

1. Kamolov, HY (2022). MORPHOLOGICAL FEATURES OF THE LUNG AND BRONCHIAL TREE IN CHRONIC ALCOHOLISM. World scientific research journal, 2(2), 179-184.
2. Kamolov, KY (2022). Alcohol and Lungs. Miasto Przyszłości, 24, 371-373.
3. Metabolic correction of alcohol intoxication: monograph / SV Lelevich [et al.]. Grodno: GrGMU, 2013. - 176 p.
4. Lelevich, SV Central and peripheral mechanisms of alcohol and morphine intoxication / SV Lelevich . - Grodno: GrGMU , 2015. - 251 p .
5. Ilhomovna, N. F. (2023). THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION AND PROFESSIONAL TRAINING OF STUDENTS. *Open Access Repository*, *4*(3), 680-686.
6. Ilxomovna, N. F. (2023). GROUP PLAY THERAPY AS A METHOD OF PRESERVATION MENTAL HEALTH OF THE CHILD. *IQRO JURNALI*, *2*(1), 262-267.

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7. Ostrovsky, Yu. M. Amino acids in the pathogenesis, diagnosis and treatment of alcoholism. / Ostrovsky Yu. M. Ostrovsky S. Yu. //Minsk: Navuka i technology i ka . - 1995. - 279 p .
8. Smith, A. Differential increase in taurine levels by low-dose ethanol in the dorsal and ventral striatum revealed by microdialysis with on-line capillary electrophoresis / A. Smith, // Alcohol Clin Exp Res. - 2004. - Vol. 28, no. 7. - P. 1028-1038.
9. Kamolov, KY (2022). MORPHOLOGICAL FEATURES OF THE LUNG IN ALCOHOLISM. EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE, 2(3), 12-15.
10. Schumann, Y. New IFCC reference procedures for the determination of catalytic activity. concentrations of five enzymes in serum: preliminary upper reference limits obtained in hospitalized subjects / Y. Schumann, R. Kbanke // Clin . Chem. Acta . - 2003 - V.327. - No. 1–2. – P. 69–79.
11. Muzafarovna, KS, & Joraboy , S. (2022). The Effect of Scoliosis on the Morphometric Aspects of the Lower Extremities. Miasto Przyszłości , 24 , 101-103
12. Kamalova, Sh . M ., Teshaev , Sh . Zh ., & Khasanova , D . A . (2021). Morphometric characteristics of the parameters of the physical development of children with scoliosis. Operative surgery and clinical anatomy (Pirogov Scientific Journal), 5(2), 26-31.
13. Kamalova , SM, & Teshaev , SJ Comparative Characteristics of Morphometric Parameters of Children with Scoliosis. measurements , 14, 15.
14. Kamalova , SM (January 2021). CHANGES IN THE PARAMETERS OF THE PHYSICAL DEVELOPMENT OF 9-YEAR OLD CHILDREN WITH SCOLIOSIS. In Archive of Conferences (pp. 5-6).
15. Muzaffarovna, KS (2021). Morphometric changes in the parameters of physical development of children with scoliosis. ACADEMICIA: AN
16. Yoqubovich, K. K. (2023). THE USE OF AMINO ACIDS FOR CORRECTION IN CHRONIC ALCOHOL INTOXICATION. *Open Access Repository*, *4*(3), 1216-1219.

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