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Morphological Changes in The Lungs in The Model of Experimental Chronic Kidney Failure and Its Correction with Drugs

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Abstract

The study of lung morphology under the influence of various environmental factors is of great interest for various fields of medicine and biology. In the experiment, the study of pathomorphological changes in the respiratory part of the lungs of rats and the effect of pharmacocorrection was carried out in case of lung inflammation.

Keywords: *Acute Lung Injury, Lung Pathomorphology, Glycerin, Licorice Root Tincture*

1. Introduction

Human and every other living organism takes in oxygen from the environment and releases carbon dioxide gas called respiration. breath get each one alive of the organism life for the most necessary physiological process is considered breath get process the following from parts consists of: 1. Lung's alveoli and external environment in the middle oxygen and carbonate anhydride exchange (external breath get). 2.Lung's alveoli and of the lung's capillary blood veins in the middle oxygen and carbonate anhydride exchange 3. Blood and tissues in the middle oxygen and carbonate anhydride exchange (internal breath get). breath get through external from the environment acceptance done kyslorod in the presence of cell and in tissues protein, fat and carbohydrates oxidized, energy harvest does Cell and in tissues all vital these are the processes (excitement, movement, reproduction). energy at the expense of done increases. It is vital processes as a result harvest has been carbonate anhydride gas cell and from tissues to the blood through the lungs through external to the environment is issued

Lungs. Lungs one couple into (right and left lung), conical made up. They are breasts of the cage two on the side located. Right and left lung in the middle larynx, esophagus, blood veins, gland, nerve fibers, lymph veins and nodes and heart located. Right lung from the left lung bigger it is upper , middle and bottom from the piece consists of Left lung while above and bottom from the piece organize found Lungs bottom from the side diaphragm , back from the side spine step , front from the side chest bone and surroundings from the side ribs with limited .Lungs texture woody in the form of average , small and the most small from the bronchi and bubbly from the alveoli organize found Lungs texture bronchi and from the alveoli organize found due to , it is porous Created will be Lungs in the alveoli gas exchange process will pass Your brother is one layered epithelium from the tissue consists of is around small blood veins capillaries with reticulate in the form wrapped . Alveoli the number both 750 million in the lungs around will be Alveoli common level 100 sq m organize does Their surface such big level have to be lungs with external environment in the middle and alveoli with blood in the middle gases exchange settlement provides. Lungs external from the side pleura curtain with wrapped. He is two from the floor (internal and external) consists of they are between narrow pleura space harvest will be

Lungs big blood rotation from within came bronchial artery vein through is fed little blood rotation of the circle veins, that is lungs arteries and lungs veins lungs tissue in feeding participation ca n't It's in the veins blood lungs to the alveoli in itself carbonate anhydride from them oxygen acceptance does, that is venous blood to arterial blood becomes.

2. Materials And Methods

In the study, 150 5,9,12-month-old male and female laboratory white mice were used, and they were divided into 3 groups (n=50 each) depending on the observation period. Animals were kept in vivarium

conditions according to standard ration (with food and water supply). They were injected intramuscularly with 5%-0.8mg/100mg of glycerin for one month to induce chronic kidney failure in the experiment. Starting from the 30th day, some of the rats were given licorice root tincture for correction. Animals were removed from the experiment according to the plan on the 30th and 60th days of observation for morphological examination. Conducting experiments, using experiments on animals, without leaving the scope of legal regulations and the global convention (on the protection of vertebrate animals, 1997) was fully followed. The lungs of white mice were isolated and fixed in 10% formalin. Histological sections with a thickness of 3-4 μm were stained with hematoxylin and eosin. Histological preparations were analyzed under a microscope and photographed.

The purpose of the study: Morphology of the lungs in experimental lung inflammation and its correction with licorice root tincture.

3. Results and Discussion

Symptoms of acute lung injury were most common in the control group. Ten days after licorice root infusion, no blood clots or edema were observed in the histological picture of the lungs. In the quantitative assessment of histological signs of acute lung injury, the maximum positive effect of licorice root tincture is developed 48 hours after administration. Licorice root tincture the first in line lungs swell up to decrease take came L inhibited the development of leukocyte infiltration and suppuration process. Licorice root tincture from the moment the lung protective effect is taken48 hours and continued until the 10th day of the experiment.

Morphologically, there are three stages of acute lung injury (hereinafter referred to as ALI). The first of them is the early exudative stage (up to five days). It is characterized by blockage of capillaries, collapse of pulmonary alveoli, microthrombi, damage to alveoli, infiltration of neutrophils, pulmonary edema, presence of hyaline membrane and fibrin in alveoli. The second stage is fibrino-proliferative (from six to ten days). Lung edema gradually disappears and fibroblast proliferation begins. The third fibrotic stage, formed from the tenth day after the onset of ALI, is characterized by the appearance of connective tissue (cells and fibers) in the foci of destruction [1]. The main decompensating phenomenon in all stages is the increase in the permeability of the components of the air-blood barrier, which contributes to the development and progression of pulmonary edema. The occurrence of acute emphysema is a compensatory mechanism. Atelectasis and dystelectasis occur when bronchioles are obstructed by secretions, epithelial cells are desquamated, and alveolocytes of type II, which are responsible for the synthesis and secretion of surfactants, are damaged, which contributes to further development of structural changes in the lungs and increased hypoxia. [2]. Many studies have shown that the trigger for the development of ALI is the release of reactive oxygen, reactive nitrogen, which in turn increases the effect of proteolytic enzymes, pro-inflammatory cytokines, and activates neutrophils, alveolar and interstitial macrophages. activates [3]. In this case, the endothelial vasodilating factor NO decreases, and increased antioxidant protection restores it [4]. The anti-inflammatory effect of antioxidants in the context of ALI is achieved by reducing the migration of macrophages, monocytes and neutrophils to the lungs and by reducing the production of reactive oxygen and reactive nitrogen by these cells [5].

It is now clear that pharmacological methods of limiting alveolar-capillary membrane permeability and reducing extravascular lung fluid have beneficial effects on the prognosis and outcome of ALI [6]. For example, due to osmosis, hypertonic solutions are able to redistribute fluid from the intracellular space to the extracellular (vascular) space.

Lungs were fixed in 10% formalin solution for histological examination. The preparations were embedded in paraffin and 7-8 μm sections were prepared on a PFM Rotary 3003 rotary microtome, and the dewaxed sections were stained with hematoxylin and eosin.

Histological preparations were viewed using a Nikon Eclipse NI-SS light microscope. Photomicrographs were taken using a Nikon DS-F21 camera attachment at 100, 200, and 400x magnification. For quantitative assessment of the histological picture, five sections of 5 μm thickness were prepared from each section of the lung at different depths. The degree of lung damage was assessed quantitatively by the presence and severity of three groups of morphological signs: 1) the presence of fibrin or hyaline membranes inside the alveoli, 2) the presence of blood cells in the alveolar space and in the foci of necrosis. of alveolar septa, 3) infiltration with granulocytes and monocytic cells of different localization [19]. Each group of signs was given a score from 0 to 3 depending on the degree of severity (0 - no sign, 1 - mildly expressed, 2 - moderately expressed, 3 - the most obvious changes) [19-20]. If the severity of changes was different in different histological sections of a piece of the lung, then the section with the maximum signs of damage was subjected to statistical analysis. For each

animal in the group, the sum of the scores for each marker in all 5 lung lobes was determined, so that the maximum possible score was 15. Observed differences in numerical values were assessed using Student's t -test and chi-square. test Statistically significant differences were concluded at the $p<0.05$ significance level.

4. Conclusion

The study of lung morphology under the influence of various environmental factors and chemical agents is of great interest to various fields of medicine and biology. study of the secret was carried out. Glycerin was used as a damaging agent, licorice root tincture as a pharmacological remedy. A control group of animals received antibiotic therapy. Staining of the slides was done using hematoxylin and eosin. Quantitative assessment of histological markers of lung tissue damage was performed. As a result of the study of lung preparations, the degree of pulmonary edema was determined, as well as the anti-edema effect of pharmacological corrections. Histological examination of the lungs showed a general disturbance of the architecture of the organ in response to the impact of the damaging factor and its reduction under the influence of pharmacological corrections.

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