



Cytological Changes in Lung Tissue in Chronic Purulent Inflammation of the Lungs Caused by Prolonged Mechanical Irritation of the Respiratory Tract. (Experimental Study).

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Abstract

The model of experimental chronic purulent inflammation of the lungs was caused in 20 rats for 40 days after prolonged mechanical irritation of the bronchi with a capron thread inserted into the trachea lumen. Cell shifts in the bronchial mucosa and lung tissue with lymphoid reaction, the appearance of young plasma cells, occurring against the background of a decrease in the activity of macrophages, indicating a decrease in the protective capabilities of the body in e-CP. Early elimination of long-term respiratory tract irritation helps to prevent the development of purulent inflammation in the lungs and preserve the body's defenses, which should be taken into account in medical practice.

Keywords: Chronic Purulent Pneumonia; Experiment; Lungs; Cytology; Macrophage; Lymphocyte

Introduction

Medical and socioeconomic importance of chronic inflammation in the bronchi and lungs, extremely high due to its prevalence in the structure human morbidity, increased development of chronic obstructive disease light and atypical pneumonia, significant mortality and disability of patients [1-5,7].

Pneumonia is the most common diseases, occurs at any age, has certain features currents in different age periods and is a complex pathological processes developing in the distal lung tissue. The main manifestation of these processes is an infectious, exudative, rarely interstitial inflammation caused by microorganisms of various nature, and dominant in the whole picture of the disease [6].

Significant prevalence of bronchopulmonary diseases all over the world, the diversity of the clinical picture, the duration and severity of the flow with a possible fatal outcome makes it very topical cytological studies of lung tissue during chronic purulent pneumonia.

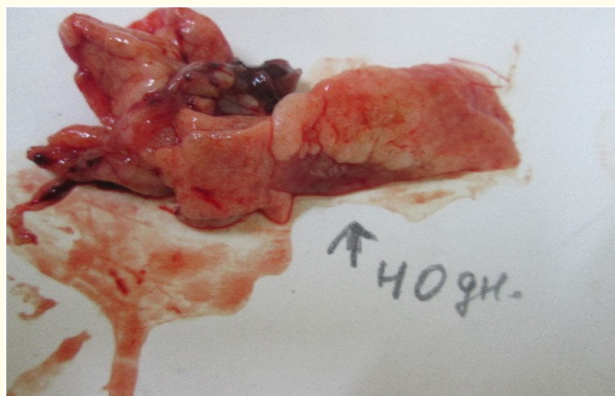
Objective To examine cytological changes in lung tissue during chronic pneumonia in rats caused by prolonged mechanical irritation of the respiratory tract in the experiment (e-CP).

Material and methods. 20 outbred white rats - males weighing 180-200.0 g were examined. Test rats were divided into 2 groups. In the first group were examined healthy rats (10). In the second group were examined rats with model of e-CP (10). The model was reproduced by the method of Batyrova. Z.B. and Shamirzaeva N.H. [8,9] Cytological examinations of preparations - prints are carried out according to Nadzhimitdinov S.T.

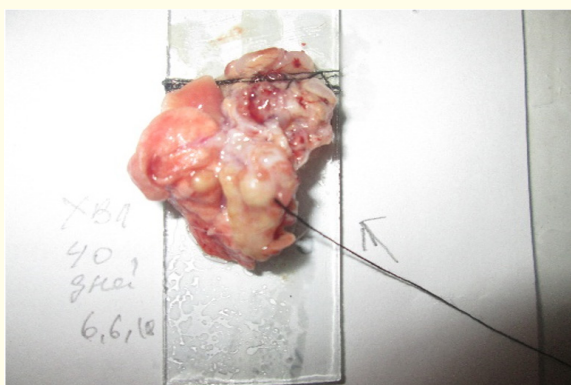
Results and Discussion

Macroscopic picture of the e-CP model on day 40: not collapsed lung, in places pale gray-red or dark red color, dough consistency, under the pleura and parenchyma found small hemorrhages. On a section of the lumens and transected bronchi extruded and flows foamy cloudy liquid, sometimes colored in pink. The surface of the lung is smooth, juicy, gray - or dark red in color, against which it

is distinctly extended gelatinous strands of infiltrated interstitial connective tissue serous exudate (Picture 1, 2).



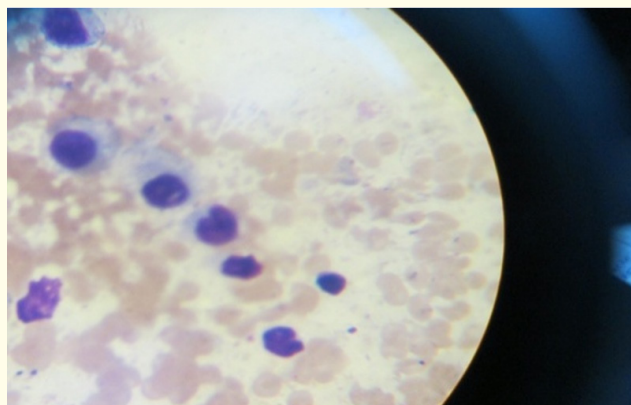
Picture 1: Model of purulent pneumonia on the 40th day of calling the model e-CP.



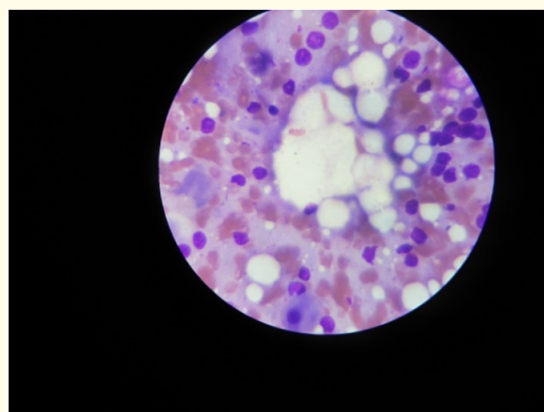
Picture 2: Model of purulent pneumonia on the 40th day of calling the model e-CP.

The cytological picture of the cellular pattern on the impressions in the bronchi and lungs in healthy rats is shown in Picture 3, 4.

So, in healthy rats (Picture 3) on preparations - imprints obtained from the mucous membrane of the trachea and bronchus bifurcation, the lymphocytes were $9.9 \pm 9.8\%$, macrophages $3.63 \pm 2.1\%$. Neutrophil leukocytes up to 2%.



Picture 3: Macrophages in the bronchial mucosa. Control-healthy rats. Magnification 100, immersion IMG_0320. jpg

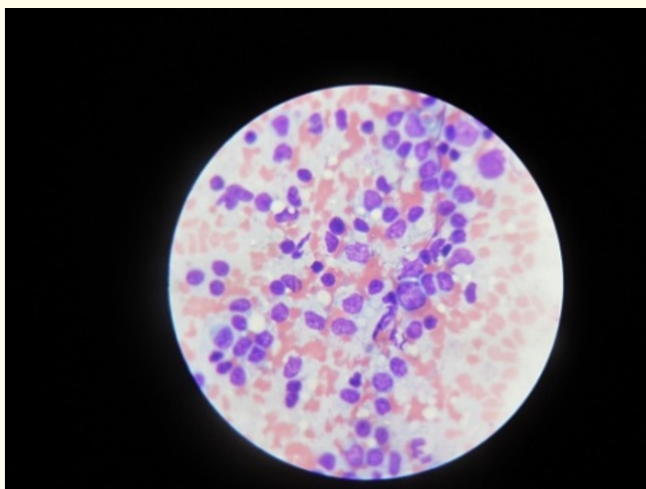


Picture 4: Control -healthy lung. Macrophages in lung tissue. Magnification 100, immersion IMG_0320. jpg.

In the lung tissue of healthy rats (Picture 4), the alveolus are flat, empty. In the lung tissue, pulmonary macrophages were inactive with unexpressed digestive vacuoles. They were located far from the alveoli, making $3.4 \pm 1.8\%$ in the first row, in the second row from the alveoli $12.7 \pm 2.9\%$ and in the third row away from the alveoli, that is, in the lung tissue $63.5 \pm 5.8\%$. Lymphocytes were $11.1 \pm 4.7\%$. Neutrophil leukocytes were $2.1 \pm 0.3\%$. In healthy rats with no signs of inflammation in the cytological picture, according to the preparations of the impression of the bronchi and lungs, the cellular elements of tissue and blood origin were in a dispersed state.

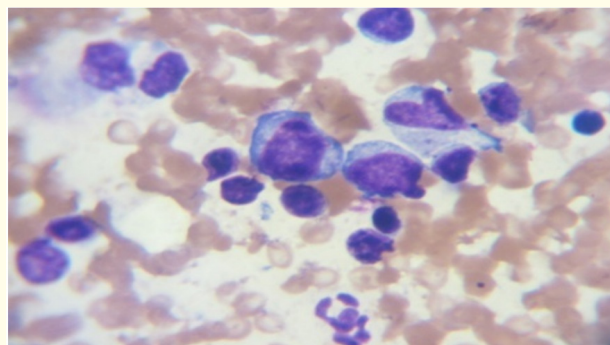
On day 40 in the group in rats with the induced e-CP model on preparations - imprints from the bronchial mucosa, was detected multiple lymphocytes of various sizes ($34.3 \pm 2.4\%$) (Picture 5).

On preparations-imprints from lung tissue in model e-CP, isolated inactive pulmonary macrophages with unexpressed digestive vacuoles were detected. They had a different size and relative position relatively to the alveolar membranes. (5%). Macrophages located close to the alveoli (first level $15.4 \pm 4.6\%$), in lung tissue (in the second row from the alveoli $12.3 \pm 3.9\%$) and third level (away from the alveoli $1.7 \pm 0.4\%$). Some macrophages were located in the center of the alveoli. Identified solitary large, young plasma cells with small protoplasm (4%), epithelial cells against the abundance of lymphocytes ($31.9 \pm 3.7\%$) and neutrophilic leukocytes (33%) indicating the presence of a chronic inflammatory process. In the pathological purulent area, the alveoli had uneven edges. Revealed an abundance of destroyed neutrophilic leukocytes to 100%, the presence of young single destroyed lymphocytes.



Picture 5: e-chronic inflammation of the lungs. Healthy plot. Macrophages and Lymphocytes. Magnification 100, immersion.jpg

With the advent of the inflammatory process in the bronchi and especially in the lungs, there was a "revitalization" of both blood and tissue protective cells at the site of inflammation. So around the alveoli, directly adjacent to the outer surface of the alveolar membrane, there was an accumulation of alveolar macrophages in response to the inflammatory process in the alveoli, as a result



Picture 5: e-CP. Pathological purulent area of the lung. Magnification 100, immersion.jpg

of which the alveoli were cleared of inflammatory contents. So in some cases, the penetration of alveolar macrophages into the cavity of the alveoli was observed, where they were engaged in "cleansing" work. In some macrophages that are not only inside the alveolar cavity, but also directly at the alveolar membranes and outside of them, signs of phagocytic activity appeared - digestive vacuoles, particles or detritus residues phagocytosed by macrophages.

With prolonged chronic purulent inflammation of the lungs, the torpid course of the inflammatory process took place and the presence of alveolar macrophages in the alveolar membranes and the neutrophilic-leukocyte reaction around them was observed for a long time. Thus, during long-term irritation in e-CP, cellular changes occur in the bronchial mucosa and lung tissue.

Based on the study of the cytological picture of preparations of bronchial and lung tissue prints in experimental rats, the existence of a pattern has been established (opening number 295 dated September 27, 2000, registered in the Republic of Uzbekistan copyright agency. "Patterns in the kinetics of cellular elements in the inflammation focus as an indicator of the effectiveness of physical treatment methods") about the kinetics of cellular elements in the inflammation.

Conclusion

With prolonged mechanical irritation of the bronchi and e-CP call, cellular changes occur in the bronchial mucosa and lung tissue. The main feature of cytological changes in the long-standing form of a chronically purulent purulent process in the lungs is a lymphoid reaction with the appearance of young plasma cells, oc-

curing against the background of a decrease in the activity of macrophages, indicating a decrease in the protective capabilities of the organism in chronic inflammation of the lungs. Early elimination of long-term irritation of the respiratory tract helps to prevent the development of purulent inflammation in the lungs and preserve the body's defenses.

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