

OXIDATIVE MODIFICATION OF PROTEINS, ION-TRANSPORT ADENOSINE TRIPHOSPHATASE AND HEART RHYTHM DISORDERS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Abstract

The life-threatening cardiac arrhythmias are the most common causes of sudden death in patients with chronic obstructive pulmonary disease (COPD). The intensification of the oxidation of the thiol groups of the proteins manifests in disorders of the barrier function of cell membranes, decreasing activity of Na/K-adenosine triphosphatase (ATPase), transmembrane potential and destabilization of bioelectric processes at the level of heart structural units.

Objective: To assess the state of oxidative modification of proteins (OMP) of blood plasma and ion-transport ATPase of erythrocytes in cardiac arrhythmias in stage II COPD patients with exacerbation.

Material and methods. 20 patients from 44 to 62 years old diagnosed with COPD stage II and 20 healthy individuals were included in the study. The content of blood plasma products of OMP and ATPase were examined in erythrocyte's membranes. Holter monitoring was carried out.

Results. In patients with COPD exacerbation the intensification of the oxidation of the thiol groups of the protein molecules in blood plasma was observed, which manifested by destabilization at the level of the cell membrane and decreased activity of transport ATPases. This was associated with higher risk of life-threatening cardiac arrhythmias and sudden cardiac death.

Conclusions. Intensification of the protein oxidation in blood plasma reduced the activity of Na/K-ATPase and promoted the occurrence of life-threatening cardiac arrhythmias.

Key words: chronic obstructive pulmonary disease, oxidative modification of proteins, ion-transport ATPase.

Ukr. Pulmonol. J. 2017; 1:44–46.

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