МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ

М А Т Е Р І А Л И

106-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького колективу
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ
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Матеріали підсумкової 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) – Чернівці: Медуніверситет, 2025. – 450 с. іл.

У збірнику представлені матеріали 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) зі стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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Results. As a result of the conducted studies, it was established that the increased content of nitrogen monoxide (NO) in patients of the 1st group decreased by 1.2 times ($p<0.05$), and in the 2nd group – by 2.2 times ($p<0.05$) and there was a significant decrease in the activity of inducible NO-synthase (iNOS) in patients of both groups: by 1.4 and 3.1 times, respectively ($p<0.05$). The consequence of optimizing the functional state of the endothelium was a decrease in the content of vasointestinal peptide (VIP) in the blood, which in the patients of the 1st group decreased probably by 1.2 times ($p<0.05$), and in the 2nd group – by 1.6 times ($p<0.05$), which we also attribute to the influence of R.

Conclusions. Rosuvastatin, which is a powerful hypolipidemic agent due to the inhibition of the activity of the enzyme 3-hydroxy-3-methyl-glutaryl-CoA-reductase, which catalyzes the biosynthesis of cholesterol in the liver, as well as promoting the expression of LDL receptors on hepatocytes, which bind to blood LDL and by of endocytosis are absorbed by hepatocytes, thereby reducing the content of proatherogenic LDL in blood serum, in combination with the prokinetic agent mosapride, which is a selective agonist of 5HT4 receptors and an antagonist of 5HT3 receptors and helps to accelerate the passage of food through the gastrointestinal tract, thus reducing the time of absorption of saturated fatty acids, from which proatherogenic lipoproteins are then synthesized, exceed the intensity of the effect of the combination of atorvastatin and domperidone.

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THE EFFECT OF DIFFERENT X-RAY RADIATION DOSES ON THE RAT LIVER LIPID PEROXIDATION PRODUCTS

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Introduction. The problem of low-intensity radiation impact has become particularly acute after the Chernobyl disaster, when a significant number of people and animals were exposed to radiation. The effect of ionizing radiation is primarily initiated by the radiolysis intermediate products of intracellular water and changes in the formation of bioradicals as a result of these processes. Under such conditions, the level of lipid peroxides as the indicators of membrane integrity is changed, and their structure alterations determine the functional consequences of radiation exposure on the organism. At the same time, the literature concerning the impact of low doses ionizing radiation during fractionated irradiation on the liver lipid peroxidation (LPO) is contradictory. A great amount of experimental data has been accumulated regarding the study of sublethal and lethal dose radiation effects on the balance of the "LPO – antioxidants system" (AOS). However, insufficient attention has been given to the changes in this system under prolonged fractionated irradiation over time after its cessation.

The aim of the study. To study the peculiarities of different dose fractionated X-ray irradiation effects on the dynamics of lipid peroxidation (LPO) in the liver at various time points following the exposure.

Materials and methods. The research was conducted on 48 white non-linear male rats weighing 120-150 g, which were kept on a standard vivarium diet. Fractional total irradiation of the animals with X-rays was performed for 30 days with an interval of 24 hours using the X-ray diagnostic unit 12 P6: exposure dose rate 0.258 mCl/s, voltage 90 kV, current 40 mA, aluminum filter, skin-to-focus distance 48 cm. The total doses were 0.3 Gy (group 1); 0.6 Gy (group 2); 0.9 Gy (group 3); and 1.2 Gy (group 4), respectively. The control group consisted of intact rats, which were decapitated at the same time as the experimental animals. The status of LPO was assessed by the content of its primary product – dien conjugates (DC) and secondary product – malondialdehyde (MDA) in the liver homogenate. Statistical analysis was performed using the Student's t-test. The results of the studies were expressed as a percentage control.

Results. DCs are products of oxidative destruction of polyunsaturated fatty acids. Thirty-day fractional X-ray irradiation of animals with total doses of 0.3 Gy (group 1), 0.6 Gy (group 2), 0.9 Gy (group 3), and 1.2 Gy (group 4) on the first day caused directional changes in the DC content in groups 2, 3, and 4, while in group 2, there was an insignificant increase. Subsequently, there was a

monotonous increase in the DC content, reaching maximum values on the 30th day after irradiation: 125%, 116%, 124%, and 105% in groups 1, 2, 3, and 4, respectively. In group 2, a decrease in DC content was observed on the 10th day.

After irradiation, MDA content in the experimental groups (1, 3, and 4) decreased by 29%, 40%, and 44%, respectively. After 10 days, MDA levels remained lower than control values in groups 1, 3, and 4, and reached maximum values in experimental groups 1 and 3 after 30 days (124% and 113%, respectively). Changes in MDA content in the liver in group 2 were phase-like: an increase on the first day after irradiation, a decrease after 10 days (79%), followed by an increase on the 20th day. After 30 days, MDA content in group 2 approached control values.

Conclusions. The investigation of the dynamics of lipid peroxidation (LPO) post-radiation processes suggests that the effect of prolonged low dose X-ray irradiation on the content of LPO products has a reversible nature for almost all the irradiation doses used (on the 30th day, MDA and DC content approached control values).

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FEATURES OF CHANGES IN RED BLOOD CELLS COUNT WITH OXIDATIVE STRESS BACKGROUND IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND ITS COMORBIDITY WITH HYPOTHYROIDISM

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Introduction. Chronic obstructive pulmonary disease (COPD) is becoming more common in the world, especially in developing countries. By 2050, the number of patients may reach 600 million people (Boers et al., 2023). Financial losses directly related to COPD can range from 2,000 to 10,000 euros per patient each year (Ehteshami-Afshar et al., 2022). COPD is often associated with the presence of various concomitant diseases as well. Also, the prevalence of hypothyroidism among patients with COPD is significantly higher than in the general population and can be as much as 37% (Arrey Agbor et al., 2024).

The aim of the study. To ascertain red blood cells (RBC) count changes and alterations of reduced glutathione (GSH) in COPD and its combination with hypothyroidism.

Material and methods. We performed blood tests for blood count and plasma GSH (Travina method modified by Meshchyshen) in 30 patients with COPD, including 10 persons with diagnosed hypothyroidism, and did the same in 25 controls.

Results. All patients with COPD had significantly lower mean values of GSH than in the control group: 0,82±0,069 vs 0,95±0,054 μmol/L ($p<0,05$). Depending on the presence of concomitant hypothyroidism, a significant difference in the parameters of oxidative stress was found, too. GSH levels were lower in COPD patients with hypothyroidism than in others (0,68±0,073 vs 0,98±0,085 μmol/l, $p <0,01$). RBC counts also differed: it was significantly higher in COPD patients without hypothyroidism than controls, as expected for respiratory pathology (4,89±0,24 vs. 4,21±0,19 T/l, $p<0,01$). Whereas, in comorbid patients, it was significantly lower than in COPD patients without hypothyroidism (4,42±0,29 vs 4,89±0,24 T/l, $p<0,05$), and there was no significant difference with the control. A correlation of the RBC count with GSH was moderate and positive ($r= 0.62$, $p<0.05$ in the subgroup of patients without comorbidity and $r= 0,57$, $p<0,05$ in the subgroup of COPD patients with hypothyroidism).

Conclusions. This study confirms that the high impact of environmental and inner-generated active oxygen radicals in COPD pathogenesis. Decreasing of glutathione, which is the main component of the antioxidant system of cells, erythrocytes in particular, occurs in COPD, especially in its comorbidity with hypothyroidism. This evidence should be further assessed.