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LIPOPEROXIDATION SYNDROME AND LIVER DYSFUNCTION IN RHINOSINUSITIS WITH COMORBIDITY AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Relevance. The analysis of modern literature data confirms the concept of interaction between the ENT organs and the lower respiratory tract. However, the assessment and correction of the syndrome of endogenous intoxication, lipoperoxidation and functional status of the liver against the background of comorbidity of chronic obstructive pulmonary disease (COPD) in rhinosinusitis remains insufficiently investigated. Additional research is needed to deeply understand the pathogenesis, the effect of upper and lower respiratory tract comorbidity on each other, as well as on the detoxification potential of the body in order to develop optimal interdisciplinary approaches to diagnosis and treatment.

The purpose of the study. Assessment with correction of lipoperoxidation syndrome and liver dysfunction in rhinosinusitis with COPD comorbidity.

Materials and methods of research. The work was carried out according to the research plan of the Andijan State Medical Institute at the clinical base of the Department of Otorhinolaryngology for the period from 2020 to 2023.

In accordance with the inclusion/exclusion criteria, at the first stage of studying the frequency of occurrence of 178 patients with rhinosinusitis, 64 (36%) patients were diagnosed with COPD. The incidence of COPD in patients with acute rhinosinusitis (ARS) was 13.5% - 24 patients, and in 40 patients with chronic rhinosinusitis (CRS) – 22.5%. To further study lipoperoxidation in patients with rhinosinusitis, we identified 2 study groups and one group from the pulmonology department of the Institute's clinic with isolated COPD for comparative analysis. Group 1: 24 (25.5%) patients with acute rhinosinusitis with COPD; Group 2: 40 (42.6%) patients with chronic rhinosinusitis with COPD; group 3: 30 (31.9%) patients with COPD.

Depending on the methods of treatment and control of lipoperoxidation syndrome, all the studied groups were divided into the following subgroups: 1-group was divided into A and B subgroups

of 12 (12.76%) patients in whom standard therapy was performed in the A-subgroup, and in the B-subgroup the complex of standard therapeutic measures included sorption-antioxidant therapy. Group 2 (patients with CRS with COPD) was also divided into A and B subgroups of 20 (21.28%) patients, and standard and sorption-antioxidant treatment was also performed in these subgroups. The condition of the patients, biochemical blood parameters, the level of lipoperoxidation, and the results of dynamic evaluation of treatment were compared with the control group (group 3, n=30) of patients with isolated COPD. In all three study groups, basic clinical and functional, instrumental, laboratory examinations and treatments were carried out in accordance with the recommendations, GOLD 2020, EPOS 2020 and the approved protocol of the Ministry of Health of the Republic of Uzbekistan.

The results and their discussion. Scientific interest in the process of lipoperoxidation has increased especially in connection with the clarification of their role in the pathogenesis of many diseases. Damage to biomembranes and the associated functions of most integral and primembrane proteins, including receptors, transport and structure-forming proteins, enzymes and enzyme systems, both the plasma membrane and the membranes of various subcellular organelles, disrupt the course of many cellular processes and the functioning of the cell as a whole.

The effectiveness of complex combined therapy with the use of sorption-antioxidant therapy can also be traced by the dynamics of lipoperoxidation indicators. Upon admission to the hospital in patients with acute respiratory viral infections with COPD, the level of MDA in the blood plasma in the 1st subgroup of patients exceeded normal values by 3.6 times. Under the influence of sorption-antioxidant therapy in the complex of standard treatment, the level of this indicator in this subgroup of patients decreased by 45.2% on the 3rd day of the treatment period and was significantly lower than the initial indicator ($p<0.05$).

A significant decrease in this indicator in patients with CRS with COPD comorbidity was also noted on the 3rd day of treatment by 46.0%. In patients with acute respiratory viral infections and CRS with COPD, as well as in patients with COPD without rhinosinusitis, a significant decrease in the concentration of MDA was noted on the 7th day of the treatment period by 49%, 47.2% and 46.3%, respectively. By this time, patients with acute respiratory viral infections and CRS with COPD who underwent sorption-antioxidant therapy were 1.6 and 1.9 times lower than in relation to subgroups 1-A and 1-B, and in relation to 3-groups 1.6 and 1.8 times, respectively. This once again confirms the advantage of sorption-antioxidant therapy in comparison with standard treatment methods.

The level of DC concentration in the blood of patients with acute respiratory viral infections with COPD (1-A and 1-B subgroups) at admission to the hospital exceeded normal values by an average of 1.9 and 2 times, respectively. Under the influence of complex treatment with the use of sorption-antioxidant therapy, the concentration level of DC 1-B in the subgroup of patients decreased to 3.53±0.12 mmol/l (by 29.1%) on the 3rd day of the treatment period and significantly differed from the initial data. As a result of the complex treatment using sorption-antioxidant therapy in patients with CRS with COPD on the 3rd day of treatment, the level of DC in blood plasma decreased by 43.8% (1.6 times lower than the 2nd subgroup of patients by this time) and reached normal values - 2.68±0.09 mmol/l, whereas in 3-The level of this indicator remained high in the group of patients.

The effectiveness of the use of sorption-antioxidant therapy against the background of standard treatment can also be traced by the dynamics of a number of indicators of the functional state of the liver. In patients with acute respiratory viral infections with COPD comorbidity (subgroup 1), the total bilirubin content in the blood at admission reached 53.4±2.3 mmol/L., and in patients with

CRS with COPD comorbidity (subgroup 2), this indicator increased to 51.5±2.1 mmol/L. Against the background of complex combined therapy, the level of total bilirubin in both subgroups significantly decreased on day 3 (27.5±1.3 mmol/l, 24.4±1.3 mmol/l,), which is 48.5% and 52.6% ($p<0.05$) relative to the baseline data, respectively. In the 1st and 2nd subgroups of patients, the level of total bilirubin returned to normal on day 7. By this time, in patients with COPD, the level of this indicator decreased by 48.4%, and in subgroup 1 by 43.5% relative to the initial data, but has not yet reached normal values. The level of alkaline phosphatase in patients of the 1st subgroup decreased by 18.8% on day 3, and in patients of the 2nd subgroup decreased by 21.8% and was significantly lower than the baseline level ($p<0.05$). In the following days, the level of this indicator continued to decrease and on the 7th day of complex treatment reached normal values (in the 1st subgroup - 89.6 ± 1.2 u/l; in the 2nd subgroup – 87.2±1.1 u/l). This is 1.7 and 1.8 times less than at admission ($p<0.05$). In 3 groups of patients with isolated COPD, the level of alkaline phosphatase normalization was noted on day 7, but still remained at the upper limits of the normal value. A significant decrease in the activity of liver enzymes (AsT/AlT) was also noted on day 3 (by 63.5% and 60.7%, respectively) against the background of sorption-antioxidant therapy in patients with acute respiratory viral infections with COPD, and in patients with CRS with COPD comorbidity, the level of liver enzymes by this time significantly decreased by 56.8% and 57.8%, respectively ($p>0.05$). In patients with COPD (group 3), a significant decrease in AsT/AlT levels (by 40.3% and 32.6%) was noted only on the 7th day of treatment. Creatinine levels in patients with acute respiratory infections with COPD significantly decreased on the 3rd day of treatment (by 45.6%), and in patients with CRS with COPD by 47.4% and almost reached normal values. In group 3, a significant decrease in this indicator was noted on the 7th day of the treatment process by 8.5% (114.7 ±3.5 mmol/ l) relative to the initial data. The level of urea against the background of complex therapy with sorption-antioxidant therapy in patients with acute and chronic rhinosinusitis with COPD comorbidity decreased by 34.8% and 36.8% on day 3, respectively, relative to baseline data ($p<0.05$).

Prothrombin (INR) is one of the criteria for assessing the functional state of the liver. In patients with acute respiratory viral infections with COPD comorbidity against the background of standard therapy, the level of this indicator was reduced by 6.25% compared to the baseline data on the 3rd day of the treatment period, and in patients with CRS with COPD by 6.7%. Against the background of complex treatment with sorption-antioxidant therapy, the level of INR by this time in patients 1-B and 2-B significantly decreased by 11.8% and 16.7% ($p<0.05$), respectively. On the 7th day of treatment, the difference in the decrease in INR levels between the A and B subgroups was significant by 23.1% and 30.8%, and with the 3rd group of patients with COPD - by 16.7% and 25%, respectively.

Conclusions.

Lipoperoxidation syndrome in rhinosinusitis with comorbidity of COPD is caused by the development of systemic inflammation with an increase in the level of endotoxicosis markers and excessive accumulation of lipoperoxidation products (MDA – increased 3.6 times; DC – increased 2.0 times). Liver damage occurs, as evidenced by significant changes in the studied indicators of its functional status upon admission of patients to the hospital. At the same time, attention is drawn to the fact that the restoration of the functional status of the liver in the chronic form of rhinosinusitis against the background of complex therapy is relatively faster than the acute form of this disease with COPD.

The data obtained indicate that the use of the method of sorption-antioxidant therapy in the complex of standard treatment is rational and mutually complementary, has a pronounced

hepatoprotective and antihypoxic effect, significantly reduces the intensification of EI and lipoperoxidation processes in the body, the functional load on the liver and kidneys, and allows them to use their detoxification potential more fully.