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INTENSITY OF LOCAL PROCESSES FREELY- RADICAL OXIDATION IN RED LICHEN PLANUS OF THE ORAL MUCOSA

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Lichen planus (CPL) occupies a special place among diseases of the oral mucosa (COPR) associated with chronic keratosis, which occurs in 50-75% of cases in the structure of mucosal pathologies. At the same time, despite extensive study, the problems of its treatment and prevention remain unresolved and the pathogenetic mechanisms have not been fully elucidated. In this regard, the study of the intensity of local processes of free radical oxidation at CPL COPR is an urgent task.

The purpose of the study: to evaluate the intensity of free radical oxidation processes in patients with CPL COPD in the oral fluid.

Materials and methods of research. 66 patients with a diagnosis of CPL COPR and 33 practically healthy individuals were examined. To characterize the intensity of SRO in the main and control groups, oral fluid was taken into test tubes after preliminary rinsing of the oral cavity with 10 ml of 0.9% sodium chloride solution. The intensity of free radical oxidation processes in the oral fluid was characterized by chemiluminescence (CML) on the LS 50B "PERKIN ELMER" spectrometer. Statistical processing of the results was carried out using methods of variational statistics.

Results and discussion. Studies of chemiluminescence of mixed saliva in patients with CPL SOPR showed an increase in the generation of oxygen radicals and lipid peroxides: the Ssp value, confirming the intensity of production of toxic radicals, exceeded the identical indicator of the control group by 1.4 times ($p < 0.05$). Against the background of intensive generation of radical products (H) of mixed saliva in the main group, the indicator is 2.42 times ($p < 0.05$) higher compared to the same indicator in practically healthy individuals, there was a decrease in the level of antioxidant antiradical protection (Sind-2) by 1.66 times ($p < 0.05$), which indicates insufficient activity of the antioxidant defense system (AOS) of a patient with CPL SOPR. Chemiluminescence studies have shown that patients with CPL COPD revealed an imbalance between the processes of SRO and antioxidant protection, this is due to an increase in oxidant load and a decrease in antioxidant resources in mixed saliva in the main group compared with identical data in practically healthy individuals. The results obtained indicate the generation of free radical reactions in the group with CPL of the COPR.

Conclusion. An imbalance in the ratio of the processes of "formation of active metabolites – destruction of active metabolites" indicates hyperproduction of toxic SRO products in mixed saliva in patients with CPL COPR and disruption of work in the AOS system. The study of the activity of the SRO processes and the AOS system can be a condition for increasing the effectiveness of the therapy, by making adjustments to the standard treatment regimens of this category of patients, taking into account the functional state of the body's antioxidant barrier.

Keywords: chemiluminescence, lichen planus, oral fluid, free radical oxidation, antioxidant defense system.

Introduction. Lichen planus occupies a special place among diseases of the oral mucosa associated with chronic keratosis, which occurs in 50-75% of cases in the structure of mucosal pathologies [3].

The cause of the disease has not been studied enough. In many works, the opinion is given that numerous risk factors can be the impetus for the development

of lichen planus: toxic-allergic, hereditary, viral and neurogenic origin. Based on clinical observations, researchers associate the occurrence of CPL with the influence of exogenous and endogenous factors on the tissues and organs of the oral cavity, taking certain medications, and general somatic pathology [1].

The clinical picture of CPL is characterized by the appearance of nodular elements on the SOPR with a combination of exudative-hyperemic, erosive-ulcerative, bullous and hyperkeratotic lesions [1]. One of the main mechanisms of destruction of cell membranes is oxidative stress (OS), which leads to hyperproduction of free radicals and has high activity. The intensification of free radical processes and the development of OS is one of the links in the inflammatory processes of immunogenesis in lichen planus.

Violation of the balanced state between the processes of free radical oxidation (SRO) and the activity of antioxidant protection (AOS) can lead to a violation of the integrity of the oral mucosa [5]. The biochemical characteristics of the intensity of SRO in blood serum and mixed saliva in patients with CPL COPR on the background of primary hypothyroidism were studied, indicating an increase in the activity of free radical processes with

a decrease in antioxidant protection. The timely correction of the revealed pathobiochemical disorders in endocrine pathology is justified [4].

Variants of changes in the intensity of SRO in mixed saliva are a reflection of the general processes occurring in the oral cavity and related to the biochemical processes of the body as a whole [2].

The purpose of the study – to evaluate the intensity of free radical oxidation processes in patients with CPL COPR in the oral fluid.

Materials and methods of research.

A survey of 66 patients diagnosed with CPL COPR (the main group), aged 35 to 65 years, including 18 men (27.2%) and 48 women (72.8%). The average age was 54.3 ± 1.3 years. The control group consisted of 33 practically healthy individuals, aged 35 to 65 years, without lesions of the oral mucosa, aged 52.3 ± 1.7 years, 25 (75.7%) women and 8 (24.3%) men.

To characterize the intensity of SRO in the main and control groups, oral fluid was taken into test tubes after preliminary rinsing of the oral cavity with 10 ml of 0.9% sodium chloride solution. Saliva was pre-frozen for 3-5 days, followed by defrosting and centrifugation with a rotation speed of 1500 rpm. The material for the work was a filler fluid.

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The intensity of free radical oxidation processes in the oral fluid was characterized by chemiluminescence on the LS 50B "PERKIN ELMER" spectrometer [2]. Spontaneous and induced Fe²⁺ CML were studied.

CML indicators were recorded: spontaneous glow reflecting the intensity of free radical formation (Ssp), after initiation (addition of an activator – iron), the value of a "fast" flash (h) of induced CML was determined, indicating the content of lipid hydroperoxides and the luminescence light sum (Sind-1) reflecting the rate of accumulation of lipid peroxide radicals.

The kinetics of CML initiated by H₂O₂ in the presence of luminol was analyzed by light sum in 1 min. luminol - dependent CML, indicating the intensity of free radical formation and the state of free radical peroxidation without external influence (Slum); by the maximum of H₂O₂ – induced luminescence (H) depending on the rate of oxidation and formation of reactive oxygen species in the medium and reflects the intensity of SRO; by the light sum for 2 min. H₂O₂ - induced CML (Sind-2), indicates the activity of AOS. The indicators were determined in relative units of luminescence intensity.

Statistical processing of the results was carried out using the methods of variational statistics with the calculation of the arithmetic mean (M), the standard deviation of the studied features (σ) and the error of the arithmetic mean (m), 95% significance level was considered reliable. The parametric criterion of the reliability of Student-Fisher differences (t) was used to compare the averages with the normal distribution of the variant.

Results and discussion. Studies of chemiluminescence of mixed saliva in patients with CPL SOPR showed an increase in the generation of oxygen radicals and lipid peroxides: the Ssp value, confirming the intensity of production of toxic radicals, exceeded the identical indicator of the control group by 1.4 times (1,272±0.052 vs. 0.908±0.108 rel.units; P < 0.05). Studies of chemiluminescence of mixed saliva in patients with CPL SOPR

showed an increase in the generation of oxygen radicals and lipid peroxides: the Ssp value, confirming the intensity of production of toxic radicals, exceeded the identical indicator of the control group by 1.4 times (1,272±0.052 vs. 0.908±0.108 rel.units; P < 0.05).

The toxic effect of free radicals is manifested in the intensification of lipid peroxidation processes in the main group, the activation of the production of lipid hydroperoxides (h) was found to be 1.69 times higher (2.036 ±0.088 vs. 1.203 ± 0.132 rel.units; P < 0.05) than the level of practically healthy individuals.

The leading mechanism for the development of hyperactivation of free radical oxidation is an increase in the rate of formation of lipid peroxide radicals (Sind-1), recorded in patients with CPL COPR, a significantly high level was noted 1.96 times higher than normal (4,117 ± 0.212 vs. 2,096 ± 0.254 rel.units; P < 0.05).

An increase in the concentration of hydroxyl radicals in mixed saliva was found in patients with CPL COPR, in contrast to the control group, which is reflected by an increase in the value (Slum) by 1.26 times (1.266 ± 0.051 vs. 1.002 ± 0.099 rel.units; P < 0.05).

Against the background of intensive generation of radical products (H) of mixed saliva in the main group, the indicator was 2.42 times higher (3.4±0.186 vs. 1.482±0.090 rel.units; P < 0.05) compared to the same indicator in practically healthy individuals, there was a decrease in the level of antioxidant antiradical protection (Sind-2) by 1.66 three times (3,555±0.120 vs. 2,137±0.066 rel.units; P < 0.05), which indicates insufficient activity of the AOS system of a patient with CPL SOPR.

Chemiluminescence studies have shown that patients with CPL COPR revealed an imbalance between the processes of SRO and antioxidant protection, this is due to an increase in oxidant load and a decrease in antioxidant resources in mixed saliva in the main group compared with identical data in practically healthy individuals.

The obtained results indicate an in-

crease in the generation of free radical reactions against the background of weakening of antiradical protection in the group with CPL COPR, which indicates the development of local oxidative stress, which is one of the pathogenetic links of inflammatory processes occurring in the oral mucosa.

Conclusion. The revealed imbalance in the ratio of the processes of "formation of active metabolites – destruction of active metabolites" indicates hyperproduction of toxic SRO products in mixed saliva in patients with CPL COPR and disruption of work in the AOS system, requiring a differentiated approach to the appointment of corrective antioxidant therapy.

The study of the activity of the SRO processes and the AOS system can be a condition for improving the effectiveness of the therapy, by making adjustments to the standard treatment regimens in this category of patients, taking into account the functional state of the body's antioxidant barrier.

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