

DISTURBANCES IN THE SYSTEM OF LIPID PEROXIDATION IN PERIODONTAL DISEASE

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Annotation: At present, there is no doubt about the great importance of free radical processes in the life of the body [10,20,21,30,48,56,69,207]. Continuous radical formation in the human body normally occurs as a result of exposure to environmental factors or normal metabolism. Many general biological reactions proceed according to the free radical mechanism, for example, phagocytosis, the synthesis of steroid hormones and prostaglandins. Aging, atherosclerosis, and carcinogenesis are associated with the formation of free radicals [110,111].

Key words: Vicious circle, Stress hormones, species.

Until recently, the predominantly pathogenic function of reactive oxygen species, realized through the activation of lipid peroxidation (LPO), was considered. Recent studies have revealed their participation in the regulation of vascular tone, hemocoagulation, cell proliferation, prostaglandin synthesis, the bactericidal action of phagocytes, and the regulation of metabolic processes as intracellular messengers [98]. There is a dynamic balance between antioxidants and reactive oxygen species, the violation of which causes the development of oxidative stress [10,21,110].

Being a nonspecific manifestation of cell metabolism, the intensity of LPO clearly changes under the influence of any stress effect. With psycho-emotional stress, the body's need for energy supply increases, which is covered mainly by increasing lipid metabolism. An increase in the flow of non-esterified fatty acids into the blood, which are LPO substrates, is one of the factors contributing to the intensification of LPO [51,110,111]. "Stress hormones" - catecholamines and glucocorticoids - also realize their effect largely through the activation of free radical oxidation of biomembranes [56].

The LPO process is activated in the zones of hypoxia and ischemia. Toxic lipid peroxidation products damage endothelial cells and vascular intima, contributing to the development of the atherosclerotic process, and provoke spastic reactions [110,111]. Lipid peroxides contribute to increased platelet aggregation and thrombus formation. All this aggravates already existing rheological and microcirculatory disorders. Thus, there is a "vicious circle" [57].

LPO leads to a change in the structural organization of membranes, phospholipid composition, microviscosity and ion permeability, disruption of the functions of membrane-bound enzymes and receptors, energy deficiency in cells, which ultimately causes a complete loss of the functional ability of cells and can underlie various disorders, including inflammatory ones. periodontal diseases [7,144].

The literature provides data on the role of disorders in the LPO-antioxidants system, along with changes in hemodynamics in the pathogenesis of inflammatory periodontal diseases [10,98,110]. So, according to A.I. Grudyanova et al. (2001), the main reason for the increase in free radical oxidation is the release of

peroxidase from phagocytes (mainly neutrophils) that are destroyed in the foci of inflammation. The process of peroxidation is promoted by an increase in blood supply during the development of inflammation of tissues, leading to local enrichment with oxygen [30].

The dynamic balance "LPO - antioxidants" underlies the harmonious functioning of neurohumoral pathways of regulation of vascular tone. Activation of lipid peroxidation processes leads to a disruption in the functioning of systems that regulate the contraction of vascular smooth muscle cells, which determine their tone and peripheral resistance [30,111] and, as a result, blood supply to tissues in this area is disrupted.

Changes in microcirculation processes create prerequisites for the development of trophic disorders in periodontal tissues [20]. Similar changes were described by A.V. Belousov and Yu.V. Kukhareno (2005). In their studies, scientists confirmed that the decrease in microcirculation in the periodontium is due to an imbalance in the LPO-antioxidants system, which is manifested by the accumulation of primary and secondary lipid peroxidation products, as well as primary LPO products [7]. Such violations of lipid peroxidation lead to damage to biomembranes, disruption of tissue respiration, suppression of the synthesis of prostaglandins and prostacyclins, which leads to spasm of the vascular wall and hypoxia of periodontal tissues [30,64].

Thus, an increase in the intensification of lipid peroxidation is one of the mechanisms for the development of inflammatory periodontal diseases. However, the existing methods for diagnosing this condition (determination of the concentration of malonic dialdehyde (MDA), assessment of the total antioxidant activity of the blood (TAA), etc.), are used mainly for scientific purposes.

The kinetics of periodontal inflammation, as a chain and self-regulating reaction of tissues to damage (bacterial and / or other foreign agents), is determined not only by the "strength" of the latter, cooperative connections of various cell populations in the focus of damage, but also by the lymphatic system, the functioning of which provides the nature of the immunological response [115,175,199].

Reference:

1. Ахмедов А. А. Иммунологические аспекты патогенеза гингивита и пародонтита //IQRO. – 2023. – Т. 3. – №. 2. – С. 121-123.
2. Astanovich A. A. Comparative Analysis of the Stress-Strain State of the Lower Jaw with Different Splinting Systems in Localized Periodontitis of Middle Gravity by Finite Element Modeling //Scholastic: Journal of Natural and Medical Education. – 2023. – Т. 2. – №. 5. – С. 181-187.
3. Zukhriddinova, Z. D. (2022). clinical and metabolic peculiarities children and teenagers with arterial hypertension. central asian journal of medical and natural sciences, 3 (3), 177-184.
4. Astanovich A. D. A. et al. The State of Periodontal Tissues in Athletes Engaged in Cyclic Sports //Annals of the Romanian Society for Cell Biology. – 2021. – С. 235-241.
5. Jalalova D. et al. СОЧЕТАННАЯ СТОМАТОЛОГИЧЕСКАЯ И ГЛАЗНАЯ ПАТОЛОГИЯ //Science and innovation. – 2022. – Т. 1. – №. D8. – С. 91-100.
6. Akhmedov A., Rizaev J., Hasanova L. The evaluation of the functional condition of thrombocytes in athletes of a cyclic sport //International Journal of Advanced Science and Technology. – 2020. – Т. 29. – №. 5. – С. 1945-1947.
7. Jalilov R. B. et al. Key directions of development of measures to improve the reliability of electrical power systems //E3S Web of Conferences. – EDP Sciences, 2019. – Т. 139. – С. 01001.

8. Ахмедов А. А., Холбеков Ш. Т., Джулай Т. Е. Орфанные заболевания как медико-социальная проблема //Тверской медицинский журнал. – 2020. – №. 2. – С. 59-64.
9. Ортикова Н., Ризаев Ж., Кубаев А. Психоземационального напряжения у детей на амбулаторном стоматологическом приёме //Журнал стоматологии и краниофациальных исследований. – 2021. – Т. 2. – №. 3. – С. 59-63.
10. Саттарова, Х. С., Жалалова, Д. З., & Бектурдиев, Ш. С. (2011). Причины слепоты и слабовидения при сахарном диабете. Академический журнал Западной Сибири, (6), 27-28.
11. Ортикова Н., Ризаев Ж., Норбутаев А. Распространенность и причины стоматофобии у детей //Общество и инновации. – 2020. – Т. 1. – №. 1/С. – С. 706-709.
12. Ортикова Н. POLITICAL ELITE AS A SCIENTIFIC PROBLEM //МЕЖДУНАРОДНЫЙ ЖУРНАЛ КОНСЕНСУС. – 2021. – Т. 2. – №. 1.
13. Ортикова Н. Глобализация биоэтики в период пандемии COVID-19 //Общество и инновации. – 2020. – Т. 1. – №. 1/С. – С. 677-682.
14. Shernazarov, F., & Tohirova, J. D. Jalalova TYPES OF HEMORRHAGIC DISEASES. CHANGES IN NEWBOENS, THEIR EARLY DIAGNOSIS.–2022.
15. Иргашев Ш., Норбутаев А., Исламова Н. Эффективность энтеросгеля при лечении генерализованного пародонтита у ликвидаторов последствий аварии на чернойбыльской АЭС //Общество и инновации. – 2020. – Т. 1. – №. 1/С. – С. 656-663.
16. Исламова Н., Чакконов Ф. Роль продуктов перекисного окисления липидов и противовоспалительных цитокинов крови в развитии заболеваний полости рта при гипотиреозе //Общество и инновации. – 2020. – Т. 1. – №. 1/с. – С. 577-582.
17. Ахмадов И. Н. Нарушения в системе перекисного окисления липидов при парадантозе //IQRO. – 2023. – Т. 3. – №. 2. – С. 124-127.
18. Nizomitdin A. I. Modern Methods of Odontopreparation for MetalCeramic for Beginner Prosthodontists //Eurasian Medical Research Periodical. – 2023. – Т. 18. – С. 98-102.
19. Shavkatovich O. R., Nizomitdin A. I. EFFECTIVENESS OF THE USE OF OSTEOPLASTIC MATERIAL" STIMUL-OSS" IN SAMARKAND //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 11. – С. 612-617.
20. МЕЛИБАЕВ Б. А., МАХМУДОВА У. Б. ЭФФЕКТИВНОСТЬ ПРИМЕНЕНИЯ ПАРАПУЛЬПАРНЫХ ШТИФТОВ (ППШ) ПРИ ВОССТАНОВЛЕНИИ ДЕФЕКТОВ КОРОНКОВОЙ ЧАСТИ ФРОНТАЛЬНЫХ ЗУБОВ //ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ. – 2022. – Т. 7. – №. 1.
21. Jalalova, D., Axmedov, A., Kuryazov, A., & ГЛАЗНАЯ, F. S. С. С. И. ПАТОЛОГИЯ//SAI. 2022. № D8. URL: <https://cyberleninka.ru/article/n/sochetannaya-stomatologicheskaya-i-glaznaya-patologiya> (дата обращения: 01.12. 2022).
22. Makhmudova U. B. THE EFFECTIVENESS OF THE USE OF PARAPULPAR PINS (PPP) WHEN RESTORING DEFECTS IN THE CROWN PART OF THE FRONTAL TEETH //Asian journal of pharmaceutical and biological research. – 2022. – Т. 11. – №. 2.
23. Bakhtiyorovna M. U. CAUSES OF REMOVABLE DENTURE BREAKS AND ALLERGIC REACTIONS //Spectrum Journal of Innovation, Reforms and Development. – 2022. – Т. 10. – С. 374-377.

24. Obloberdievich S. J. Grade States Fabrics Periodontal by Clinical Indexes //Scholastic: Journal of Natural and Medical Education. – 2023. – Т. 2. – №. 5. – С. 175-180.
25. Nazhmiddinovich S. N., Obloberdievich S. J. Optimization of Orthopedic Treatment of Dentition Defects in Patients with Chronic Diseases of the Gastrointestinal Tract //Eurasian Research Bulletin. – 2023. – Т. 17. – С. 157-159. Qobilovna B. Z., Maxzuna U. Improvement of Providing Therapeutic Dental Care to Pregnant Women. Therapeutic and Preventive Measures //Eurasian Research Bulletin. – 2023. – Т. 16. – С. 146-150.
26. F. Shernazarov WHITE TONGUE OR FORMATION OF WHITE EYES CAUSES, METHODS OF TREATMENT // SAI. 2022. №D8. URL: <https://cyberleninka.ru/article/n/white-tongue-or-formation-of-white-eyes-causes-methods-of-treatment> (дата обращения: 27.01.2023).
27. F. Shernazarov SORE THROAT IN ADULTS AND CHILDREN, SYMPTOMS, CAUSES, TREATMENT, TIPS // SAI. 2022. №D8. URL: <https://cyberleninka.ru/article/n/sore-throat-in-adults-and-children-symptoms-causes-treatment-tips> (дата обращения: 27.01.2023).
28. F. Shernazarov FLU SYMPTOMS, FORM, CAUSES, DIAGNOSIS, TREATMENT AND PREVENTION // SAI. 2022. №D8. URL: <https://cyberleninka.ru/article/n/flu-symptoms-form-causes-diagnosis-treatment-and-prevention> (дата обращения: 27.01.2023).
29. F. Shernazarov ACUTE TONSILLITIS (ANGINA) CAUSES, COMPLICATIONS, DIAGNOSIS, TREATMENT, PREVENTION // SAI. 2022. №D8. URL: <https://cyberleninka.ru/article/n/acute-tonsillitis-angina-causes-complications-diagnosis-treatment-prevention> (дата обращения: 27.01.2023).
30. D. Jalalova, X. Raxmonov, F. Shernazarov РОЛЬ С–РЕАКТИВНОГО БЕЛКА В ПАТОГЕНЕЗЕ СОСУДИСТЫХ ЗАБОЛЕВАНИЙ ОРГАНА ЗРЕНИЯ У БОЛЬНЫХ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ // SAI. 2022. №D8. URL: <https://cyberleninka.ru/article/n/rol-s-reaktivnogo-belka-v-patogeneze-sosudistyh-zabolevaniy-organa-zreniya-u-bolnyh-arterialnoy-gipertenziey> (дата обращения: 27.01.2023).
31. D. Jalalova, A. Axmedov, A. Kuryazov, F. Shernazarov СОЧЕТАННАЯ СТОМАТОЛОГИЧЕСКАЯ И ГЛАЗНАЯ ПАТОЛОГИЯ // SAI. 2022. №D8. URL: <https://cyberleninka.ru/article/n/sochetannaya-stomatologicheskaya-i-glaznaya-patologiya> (дата обращения: 27.01.2023).
32. Farrukh Shernazarov, Jalalova Dilfuza Zuhridinovna MICROCIRCULATION DISORDERS IN THE VASCULAR SYSTEM OF THE BULBAR CONJUNCTIVA IN THE INITIAL MANIFESTATIONS OF CEREBRAL BLOOD SUPPLY DEFICIENCY // SAI. 2022. №Special Issue 2. URL: <https://cyberleninka.ru/article/n/microcirculation-disorders-in-the-vascular-system-of-the-bulbar-conjunctiva-in-the-initial-manifestations-of-cerebral-blood-supply> (дата обращения: 27.01.2023).
33. F. Shernazarov, D. Jalalova, A. Azimov, S. Azimova CAUSES, SYMPTOMS, APPEARANCE, TREATMENT OF VARICOSE VEINS // SAI. 2022. №D7. URL: <https://cyberleninka.ru/article/n/causes-symptoms-appearance-treatment-of-varicose-veins> (дата обращения: 27.01.2023).
34. F. Shernazarov, J. Tohirova, D. Jalalova TYPES OF HEMORRHAGIC DISEASES, CHANGES IN NEWBOENS, THEIR EARLY DIAGNOSIS // SAI. 2022. №D5. URL: <https://cyberleninka.ru/article/n/types-of-hemorrhagic-diseases-changes-in-newboens-their-early-diagnosis> (дата обращения: 27.01.2023).
35. Qobilovna B. Z., Nodirovich E. A. EVALUATION OF ORTHOPEDIC TREATMENT WITH REMOVABLE DENTAL PROSTHESES FOR PATIENTS WITH PAIR PATHOLOGY //Spectrum Journal of Innovation, Reforms and Development. – 2023. – Т. 11. – С. 95-101.

36. Zhalalova, D. Z., & Pulatov, U. S. (2022). MICROCIRCULATORY DISORDERS IN THE VASCULAR SYSTEM OF THE BULBAR CONJUNCTIVA WITH INITIAL MANIFESTATIONS OF INSUFFICIENT BLOOD SUPPLY TO THE BRAIN. European journal of molecular medicine, 2(5).
37. Qobilovna B. Z., Azamatovich B. M. MANIFESTATION OF SYMPTOMS IN THE ORAL CAVITY IN PATIENTS WITH TUBERCULOSIS INFECTION //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – №. 11. – C. 402-407.
38. Rustam R., Jurabek T. D., Qobilovna B. Z. The Role of Hygienic Education in the System Primary Prevention of Dental Diseases //Eurasian Research Bulletin. – 2023. – T. 17. – C. 45-49.
39. Tohirovna M. L., Qobilovna B. Z. Optimization of Conservative Treatment of Periodontal Diseases Using Modern Technologies //Eurasian Research Bulletin. – 2023. – T. 17. – C. 132-137.