

**Conclusion.** The applied experimental models indicate the development of osteoporotic changes in periodontitis associated with diabetes mellitus. The use of strontium ranelate consistently slows down the processes of bone mineral density's loss and contributes to an increase in the calcium to phosphorus ratio and strontium content, which indicates the activation of the bone component of the periodontium remineralization.

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## **IMMUNOLOGIC STATUS OF THE ORAL FLUID DURING SURGICAL SANITATION OF THE ORAL CAVITY IN DIABETES MELLITUS PATIENTS**

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**Aim:** to study the dynamics of immunologic indices of the oral fluid during surgical sanitation of the oral cavity in patients with diabetes mellitus.

**Materials and methods.** We examined 57 patients with type 2 diabetes with sub-compensated and decompensated forms of the disease and 25 clinically healthy patients. They were divided into four groups. The first group was the control one; the second group included 12 individuals with sub-compensated and 11 with decompensated forms having just experienced tooth extraction; the third group included 12 individuals with sub-compensated and 11 with decompensated forms whose oral cavity was irrigated with lysomuroid; the fourth group included 11 individuals with decompensated forms who were administered the combination of lysomuroid and tymalin before and during sanitation.

**Results.** The examination results of patients from the 2<sup>nd</sup> group with sub-compensated form of the disease before sanitation revealed 1,2 times lower lysozyme activity of the oral fluid compared to the control group, and with decompensated form it was twice as low. Correlating results were found before sanitation in the third and fourth groups.

The level of SIgA in the oral cavity of patients from the 2<sup>nd</sup> group with sub-compensated form was 1,5 times lower, and in those with decompensated form was 2,7 times lower compared with that of the control. Comparison of the indices in the second and third groups with sub-compensated and decompensated forms found this index to be 1,8 times lower in patients with decompensated form.

The indices of bactericidal lysozyme activity and SIgA level did not change after surgical sanitation performed using classical method.

The activity of lysozyme in the oral fluid of patients from the third clinical group was found to increase on the third day after preliminary oral irrigation by means of lysomuroid. SIgA level did not change compared to the index before treatment.

When the surgical sanitation of patients from the third group was completed, lysozyme activity was found to increase consistently: by 1,2 times in patients with sub-compensated form, and by 1,4 times in patients with decompensated form. SIgA level increased by 1,2 and 1,3 times respectively.

In patients from the fourth group, bactericidal activity of lysozyme increased by 1,4 times, and SIgA level increased by 1,3 times following the combined administration of lysomuroid and tymalin for 3 days. When surgical sanitation was completed, lysozyme activity was 1,7 times higher and SIgA level was 1,6 times higher compared to the indices before treatment.

**Conclusion.** Therefore, the bactericidal activity of lysozyme and SIgA level in the oral fluid decrease in diabetes mellitus patients with dental surgical pathology. Introducing lysomuroid and tymalin into a complex of preventive measures is found to promote increase of these immune indices, and thus lowering the probability of inflammatory processes occurrence in the oral cavity.

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## **PREVALENCE AND INTENSITY OF DENTAL CARIES OF PREGNANT WOMEN IN DIFFERENT TRIMESTERS OF PREGNANCY**

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A functional restructuring of all organs and systems occurs in a woman's body during pregnancy. Adaptive changes occur in the nervous, endocrine, cardiovascular and other systems of the body and also in the oral cavity. Although preventive methods and remedies are widely used in dental practice, the prevalence of dental diseases in pregnant women remains high. Studies of many authors show that pregnancy increases the risk of new dental diseases or exacerbation of existing diseases, especially lesions of hard dental tissues and periodontal tissues. According to WHO, the prevalence of dental caries among pregnant women is 2.9 times more frequent than among women that are not pregnant and the inflammatory process of periodontal tissues is 2.2 times more frequent in pregnant women.

The aim is to study the dental status in different trimesters of pregnancy.

The investigation involved 75 pregnant women living in Bukovina. They had a triple examination: 1st trimester (5-13 weeks), 2nd trimester (17-26 weeks), 3rd trimester (30-36 weeks). The examination was performed according to the conventional method. The hygiene index, the intensity of caries and the condition of periodontal tissues were determined.

Local demineralization of enamel (caries in the spot stage) at the initial examination was found in 52.0 % of the examined. During the observation period, indicators increased to 53.3 % in the second trimester and 56.0 % in the third trimester. Caries intensity according to DMF index: 1st trimester - (11,34 ± 0,11), in 2nd trimester - (11,55 ± 0,12), and in 3rd trimester - (11,98 ± 0,83). Based on the study of caries increasing, we also observed the highest caries activity in the third trimester in women with the second pregnancy, and in the second trimester in women with the first pregnancy.

By the way the acute carious process of intact teeth is observed in 38,0 % of cases. Secondary caries occurs in 79.0 % of women, with an intensity of growth of 0.83 of a tooth. The carious lesions that were present before the pregnancy have a chronic course. The intensity of caries increases at the beginning of the second trimester.

During pregnancy, the prevalence of periodontal tissue inflammation ranges from 36 to 100 %, chronic catarrhal gingivitis is observed in 90.0 % of cases. Pregnancy gingivitis is observed in 50.0 % of women with physiological pregnancy. Condition of periodontal tissues: in the first trimester, 60.0 % of pregnant women have chronic localized mild catarrhal gingivitis, starting with the second half of pregnancy in 43.0 % of women gingivitis occurs as a generalized, diffuse process with a predominance of hypertrophic process in 26.0 % of cases, in the 3rd trimester - 21.3 % have an exacerbation of chronic generalized catarrhal gingivitis of mild severity.

Thus, during pregnancy, there is a significant increase in all indicators, especially in the third trimester of pregnancy. It proves the dependence of the dental status of pregnant women on the duration and nature of pregnancy, the number of previous pregnancies, and the presence of chronic diseases. The high prevalence of caries and its complications, and also inflammatory diseases of periodontal tissues, once again demonstrates the need for the introduction of mandatory preventive medical examination of pregnant women by the dentist. The main direction of the work of the doctor at this stage should be preventive measures and, if necessary, early treatment of pathological conditions. It will allow preserving not only the dental health of the woman but also to carry out antenatal prevention of the caries of temporary teeth in the future child.

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## **METABOLIC STIMULATION BY L-ORNITHINE, BUT NOT L-ARGININE, INCREASES THE DENSITY OF CD68+ AND CD163+ MACROPHAGES IN THE GINGIVAL TISSUES OF PERIODONTITIS PATIENTS**

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Despite confirmed disturbance, M1/M2 ratio in periodontitis attempts to modify macrophages (Mφs) polarization for treatment purposes have not been made. But understanding the Mφs' answer in periodontitis-affected gingiva to metabolic loading/stimulation by L-arginine and L-ornithine is impotent as potential targeted therapy. We suggested that inflammatory M1 Mφs might be identified among CD68+ cells, and alternatively activated M2 – as CD163+ cells. The study aimed to investigate whether oral administration of L-arginine or L-ornithine could modulate Mφs densities and M1/M2 ratio in periodontitis by using immunohistochemical detection of CD68+ and CD163+ Mφs in gingiva biopsies.

**Materials and methods.** The diagnosis of periodontitis was based on the Classification of Periodontal and Peri - implant Diseases and Conditions 2017. The study was approved by the human subjects ethics board of Ethics Commission of Ukrainian Medical Stomatological Academy (No. 177b, from 27.11.2019) and was conducted by the Helsinki Declaration of 1975, as revised in 2013. All individuals were provided with written informed consents when enrolling in the study.

Periodontal examination embraced 75 periodontitis patients receiving conventional therapy. 25 out of them received conventional treatment only (Conv group); 25 – L-arginine (Arg), and 25 – L-ornithine supplementation (Orn) accordant to available instructions. For the precise immunohistochemical study of macrophages, a gingival biopsy was conducted before treatment and after 1 month. M1 macrophages were identified among CD68+ cells and M2 – as CD163+, and their densities were calculated as numbers at 10 000 μm<sup>2</sup>. Besides appropriate statistics, the CD68+/CD163+ ratio was assessed by t-tests also.

**Results.** The research has a reconnaissance nature to a large extent. A global goal is to find out whether the metabolic modulation of local macrophages can change periodontal inflammation to less active and the response to treatment of the periodontitis to more predictable. The main result was pronounced effect of the L-ornithine which significantly increased CD68+ and CD163+ Mφs densities with predominance of CD163+ Mφs, and thus demonstrated M2 promotion. L-arginin and L-ornithine were well tolerated by all participants without any adverse effects. After L-ornithine administration CD68+ and CD163+ Mφs density increased significantly at intragroup