

combined with obesity who were hospitalized in the Rheumatology department of the Ivano-Frankivsk Oblast Hospital from 2011 to 2013.

To study the effectiveness of proposed treatments, patients were divided into groups: Group I - were surveyed in traditional pathogenetic therapy; Group II - patients to traditional pathogenetic therapy added antioxidant quercetin preparation (Corvutin); Group III took traditional pathogenetic therapy with the addition of the aminoacid L-arginine hydrochloride (tivortin); Group IV received traditional pathogenetic therapy in combination with quercetin and L-arginine hydrochloride.

To assess the cytokine profile were tested for TNF- α standardized ELISA using a set of reagents ELISA-TNF- α (DIACLONE, France).

Results. The results confirmed that one of the most significant non-genetic risk factors of primary OA is excess body weight, which causes excessive stress on the joints.

In the study of indicators of systemic inflammation we found increase in proinflammatory cytokines content in all groups of patients, but rates were highest in patients with comorbidity.

It should be noted that the comorbidity concentration of

proinflammatory cytokines was significantly higher than in OA patients that was confirmed by significant increase of TNF- α content 3.5 times in patients with OA and abdominal obesity.

Given that endogenous inflammatory marker which is TNF- α , an important link in the pathogenesis of OA with abdominal obesity, we studied the effect of quercetin and L-arginine hydrochloride in these figures. Although none of the subgroups studied TNF- α .not reached normal levels, but combined treatment with the addition to traditional therapy quercetin and L - arginine hydrochloride in patients with OA has a pronounced positive effect on cytokine status ($p < 0.001$).

Conclusions. In the study of anti-inflammatory properties of complex treatment (traditional pathogenetic therapy, quercetin, L-arginine hydrochloride), we found a positive effect of the offered therapy on the level of TNF- α .

Keywords: *osteoarthritis, abdominal obesity, TNF- α , quercetin, L-arginine hydrochloride.*

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Treatment Features of Generalized Parodontitis in Environmentally Contaminated Regions of Prykarpattia

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Abstract. Objective. To improve the treatment of patients with generalized periodontitis by adding laser radiation and medication quercetin to the complex therapy. According to the research of a number of scientists while applying the laser therapy with antioxidant quercetin the recovery of antioxidant system is evident, normalization of the potential of cell membrane, improving of the oxygen uptake by tissues and peripheral blood circulation, improving of rheological features of patient's blood.

During the study we examined 90 patients with generalized periodontitis living in environmentally contaminated areas of Prykarpattia. All the patients before the treatment were administered a complex of therapeutic interventions that are commonly recommended for the treatment of patients with generalized periodontitis. In Group I patients (45 individuals) were applied periodontal applications of quercetin as a gel for an individual silicone tooth-gingival sealed end. Patients of Group II (45 persons) were applied quercetin gel to the mucous membrane of the gums and it was activated by laser irradiation.

For the purpose of comparative characteristics of two groups there were performed the index evaluation of periodontal tissues, biochemical blood tests, X-rays, and ultrasound examination of the tissue of jaw bone.

The results showed that the use of laser irradiation combined with quercetin in the complex treatment of patients with generalized periodontitis stimulates metabolic processes in periodontal tissues, reduces cyanosis, edema of periodontal tissues. The results show that the use of laser therapy in the complex treatment of patients with GP of the I-II stage of development provides reliable improvement of clinical efficiency of the treatment.

Complex treatment of patients with generalized periodontitis using gel quercetin which was activated by laser irradiation shows significantly higher treatment efficiency over basic therapy and other methods of applying laser irradiation by clinical indicators.

Keywords: *generalized periodontitis, environmentally contaminated territories, laser irradiation, quercetin.*

According to many authors the disease of periodontal tissues is seen as an opportunistic infection that depends not only on existing pathogenic bacteria, but also on the environment that affects their reproduction: the change of pH environment, the resistance of the organism [1, 2, 3]. Negative factors of the industrial surrounding affect the course of generalized periodontitis (GP) of persons living in environmentally adverse

conditions alter the immunological reactivity of the organism, form a disorder of the immune status [2, 3, 4].

On the state of periodontal tissues affect different factors of the chemical (acids, drugs) and physical nature (electricity, high or low temperature, adverse environmental conditions, ionizing radiation). GP, for which is significant inflammatory-dystrophic process in periodontal, has both a progressive and often chronic course, in many cases leads to serious complications immune disorders, metabolic disorders, hypoxia, cyanosis, loss of teeth [5, 6 7].

In the structure of periodontal diseases more severe forms (hypertrophic gingivitis, periodontitis, a severe form of chronic catarrhal gingivitis) more often appear among the residents who live in the areas with the high level of pollution. Characteristic features of the deteriorating environmental state is chemical, physical and radioactive pollution of the air, surface and groundwater, soils. People who live in the areas with high level of nitrates in drinking water, are observed with an apparent cyanosis of the gums and light diffuse cyanosis of the mucous membrane of the mouth, high intensity of gums bleeding. The main mechanisms of realization of the pathogenetic impact of nitrates is hypoxia, oxidative stress, breach of plastic processes [7, 8, 9].

Scientists have proved that the use of laser opens up new possibilities, allowing dentists to offer a wide range of patient actually painless procedure under sterile conditions that meet the highest clinical standards of dental care [10, 11, 12]. Laser radiation has an evident anti-inflammatory, bacteriostatic and bactericidal action [12], has a stimulating effect on the tissue immune system and regeneration processes of the oral mucous membrane (OMM) [13, 14].

A number of studies give grounds to speak about the improving of blood circulation in the area of radiation, increase of the synthesis of proteins and nucleic acids, the effect on the humoral and cellular immunity and metabolic processes in cells. Low-intensity laser irradiation has anti-inflammatory effect in inflammatory processes, laser increases the production of protective proteins (lysozyme, interferon), activates cellular and

humoral defense, normalizes penetration of the vessel walls, decreases tissue edema [12, 13].

In practice medicine quercetin with its anionprotective, membrane, immunomodulating goal is successfully used [8, 10]. This drug has antioxidant effect, improves blood circulation, accelerates epithelization of mucous membrane and affects the processes of bone remodeling.

Objective: improve the efficiency of the treatment of patients with GP who live in environmentally contaminated areas of Precarpathian by combining laser irradiation and quercetin.

Materials and methods of the study

The study involved 90 patients with GP from 24 to 65 years old. To assess periodontal status and for diagnosis there was used the classification of periodontal disease by Danylevsky M.F. (1994) [15].

All patients have undergone the conventional treatment. The first group patients (45 persons) were prescribed drug quercetin (registration certificate №UA/0119/01/01) 1 g, 1 time a day gel application, which is previously applied to an individual silicone sealed end for 10 days.

Patients of the second group (45 persons) were prescribed application of quercetin gel, which was activated by laser irradiation. Quercetin gel is applied with a thin layer to the vestibular and oral surfaces of alveolar bone, and conduct laser irradiation according to the techniques of laser therapy by sessions every other day at least for 10-15 days.

For the purpose of comparative characteristics of performed treatments carry the index assess of the quality before the treatment, after 3 months, 6 months, 12 months; cytology, radiography and ultrasound examination of the jaw bone tissue before the treatment, in 6 months and 12 months after the treatment.

Results and discussion

After 3 months the gums were pale pink in patients of group 1, diffuse cyanosis - in 15 persons, pus in periodontal pockets - in 11 people. The depth of periodontal pockets was $1,53 \pm 0,67\text{mm}$ ($p < 0.05$), which were significantly different from those of before the treatment.

When analyzing the clinical indicators of dental status of patients with GP of the second group in 10 days after the treatment were observed positive changes in periodontal tissues and the reduce of inflammation signs: showed the decreased edema of the mucosa of the gums, the gums became pink with significant vascular pattern, but one person still had diffuse cyanosis of the mucous membranes of the mouth and gums were pale pink.

After 3 months the depth of periodontal fissure of patients of the second groups was $1,43 \pm 0,34\text{mm}$ ($p < 0.05$), which was significantly different from that of before the treatment and unreliable different from that of a comparison group ($p > 0.05$). After 3-6 months after the treatment in most of the patients of the first group were eliminated manifestations of the disease. After 12 months we have achieved stabilization of generalized periodontitis by clinical indicators. Dynamics of bleeding test, PMA, PI show positive effects of the treatment. Complex therapeutic manipulations used in the first group of patients, provided disease remission for 6 months after the treatment, but after 12 months dynamic deterioration results of periodontal indices were seen, which corresponded to subjective and objective methods of clinical examination in this group of patients. The results we obtained unreliable differ from results obtained by other authors [3, 5, 8].

Oral hygiene status among the patients of the second group before the treatment was assessed as "unsatisfactory". After 3 months of HI decreased compared to results before the treatment ($p < 0.05$), indicating the positive dynamics of this indicator. However, 6, 12 months later we observe the deterioration HI. However, in this period the results were significantly different from the rate data before the treatment ($p < 0.05$) and not significantly differ among themselves ($p > 0.05$).

As a result of clinical research we have established the directly proportional dependence of oral hygiene and indicators of RI, IR, PMA. After 12 months PMA, PI, IC slightly deteriorated, but were significantly different from those of before the treatment

($p < 0.05$).

Analysis of the results of cytological studies of patients with GP of the first group revealed the positive dynamics of the cellular composition of gingival fluid after the treatment.

Analysis of Cytopathology manifestations of epithelial cells of the second group patients after treatment indicates positive dynamics of cytological index of gums prints (EPA, ID). 6 and 12 months after the treatment these indicators decreased compared with baseline $p < 0.05$.

X-ray results and indices of the ultrasound examination in both groups of patients before treatment showed the presence of pathological changes in periodontal tissues, lowered the heights of the compact plate of the alveolar bone and jaw bone and demineralization of the bone tissue. Indices of the X-ray and ultrasound examination in most patients of both groups improved after the treatment. When X-ray after 6 months in patients of bought groups were observed stabilization process, which appeared in increasing height, compression and clear definition of the compact plate of alveolar bone of the jaw. The results we obtained unreliable differ from results obtained by other authors [3, 5, 10].

Ultrasound research results indicate a significant difference between the method of the treatment of patients of the second group. 6 months after the treatment the mean transit time of ultrasonic waves of patients of the I group amounted 17.56 ± 1.23 microseconds. Of the second group patients - $14.24 \pm 1,03$ microseconds. ($p < 0.05$). After 12 months the mean transit time of ultrasound of patients of the first group - 17.03 ± 1.35 microseconds, of the second group patients - 13.85 ± 1.06 microseconds. ($P < 0.05$); In the long term (12 months) the mean transit time of ultrasonic waves has not changed, indicating the stabilization process of mineralization of bone tissue.

Conclusions

1. On the basis of the study it was found that laser therapy in combination with a drug substance, which stimulate metabolic processes in the mucosa of the gums, is an important stage of complex treatment of patients with GP I-II level of development living in environmentally contaminated areas.

2. We have developed a complex scheme of the treatment of generalized periodontitis with the use of laser therapy and quercetin which provides a significant improvement of clinical performance of the efficiency of the treatment.

3. The use of quercetin in the complex treatment of patients with GP stimulates metabolic processes in periodontal tissues, as a result it provides normalization of cytometric characteristics of mucosa of the gums in the early and late periods after the treatment.

4. Positive dynamics of ultrasound and radiological indicators is caused by the improvement of the microcirculation and metabolism of the bone tissue.

Prospects for further researches

Remote results of the proposed method of complex treatment of patients with generalized periodontal dwelling the ecologically contaminated territories of Precarpathians will be studied.

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Особливості лікування генералізованого пародонтиту в екологічно забруднених регіонах Прикарпаття

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Резюме: Метою дослідження є підвищення ефективності лікування хворих на генералізований пародонтит шляхом доповнення до комплексної терапії лазерного опромінення та препарату кверцетин. За результатами досліджень цілої низки вчених при застосуванні лазеротерапії з кверцетином прослідковується відновлення антиоксидантної системи, нормалізація потенціалу клітинних мембран, покращення засвоєння кисню тканинами і периферичного кровообігу, покращення реологічних властивостей крові пацієнта.

У ході проведення дослідження нами обстежено 90 хворих на генералізований пародонтит, що проживають на екологічно забруднених територіях Прикарпаття. Усім хворим до лікування вводили комплекс терапевтичних заходів, які є рекомендовані для загальноприйнятого лікування хворих на генералізований пародонтит. У 1 групі хворих (45 осіб) пацієнтам проводили пародонтальні аплікації з кверцетином у вигляді гелю під індивідуальну силіконову зубо-ясенну капу. Хворим 2 групи (45 осіб) наносили гель кверцетину на слизову оболонку ясен та активували лазерним опроміненням.

З метою порівняльної характеристики двох груп проводили індексну оцінку стану тканин пародонту, біохімічні дослідження крові, рентгенографію, ультразвукову остеометрію кісткової тканини щелеп.

Результати дослідження показали, що використання лазерного опромінення в поєднанні з препаратом кверцетин у комплексному лікуванні хворих на генералізований пародонтит стимулює обмінні процеси в тканинах пародонта, зменшує ціаноз, набряк тканин пародонту. Отримані результати доводять, що використання лазеротерапії у комплексному лікуванні хворих на ГП І-ІІ ступеня розвитку забезпечує достовірне покращення клінічних показників ефективності лікування.

Комплексне лікування хворих на генералізований пародонтит з використанням гелю кверцетину, який активували лазерним опроміненням, демонструє достовірно вищу ефективність над лікуванням базовою терапією та іншими способами застосування лазерного опромінення за клінічними показниками.

Ключові слова: генералізований пародонтит, екологічно забруднені території, лазерне опромінення, кверцетин.

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Особенности лечения генерализованного пародонтита в экологически загрязненных регионах Прикарпатья

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Резюме: Целью исследования является повышение эффективности лечения больных на генерализованный пародонтит путем дополнения к комплексной терапии лазерного облучения и препарата кверцетин. По результатам исследований ряда ученых при применении лазеротерапии с использованием кверцетина прослеживается восстановление антиоксидантной системы, нормализация потенциала клеточных мембран, улучшение усвоения кислорода тканями и периферического кровообращения, улучшение реологических свойств крови пациента.

В процессе исследования нами обследовано 90 больных на генерализованный пародонтит, проживающих на экологически загрязненных территориях Прикарпатья. Всем больным до лечения применяли комплекс терапевтических мероприятий, рекомендованных для общепринятого лечения больных на генерализованный пародонтит. В 1 группе больных (45 человек) пациентам делали пародонтальные аппликации с использованием кверцетина в виде геля под индивидуальную силиконовую зубно-десневую капу. Больным 2 группы (45 человек) накладывали гель кверцетина на слизистую оболочку десен и активировали лазерным облучением.

С целью сравнительной характеристики обеих групп проводили индексную оценку состояния тканей пародонта, биохимические исследования крови, рентгенографию, ультразвуковую остеометрию костной ткани челюстей.

Результаты исследований показали, что использование лазерного облучения в сочетании с препаратом кверцетин в комплексном лечении больных на генерализованный пародонтит стимулирует обменные процессы в тканях пародонта, уменьшает цианоз, отек тканей пародонта. Полученные результаты доводят, что использование лазеротерапии в комплексном лечении больных на ГП I-II степени развития обеспечивает достоверное улучшение клинических показателей эффективности лечения.

Комплексное лечение больных на генерализованный пародонтит с использованием геля кверцетина, который активировали лазерным облучением, демонстрирует достоверно высшую эффективность перед лечением базовой терапией и другими методами использования лазерного облучения по клиническим показателям.

Ключевые слова: генерализованный пародонтит, экологически загрязненные территории, лазерное облучение, кверцетин.

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