

# **DIFFERENTIATED APPROACH TO THE TREATMENT OF INFLAMMATORY DISEASES OF THE PERIODONTIUM AND MUCOSA IN INDIVIDUALS WITH CHRONIC VIRAL DISEASES**

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## **Abstract:**

Viral hepatitis with parenteral transmission of pathogens is one of the most serious and pressing problems of medical science and practical health care (Zmushko E.I. et al., 2016).

## **Introduction**

Currently, the CIS countries have an unfavorable epidemiological situation in terms of the incidence of hepatitis B and C, which dominate the structure of parenteral viral hepatitis (Chuikova K.I. et al., 2014). In terms of the breadth of distribution, incidence rate, severity of the course and frequency of development of chronic forms, and the economic damage caused, these types of viral hepatitis occupy one of the leading places in human infectious pathology (Shustov A.V. et al., 2015; Sumi H. et al., 2016). al., 2017).

The issues of combined lesions of the oral cavity and internal organs among the problems of dentistry currently occupy a prominent place, as they allow us to reflect the essence of the genesis of diseases manifested in periodontal tissues. Changes in periodontal tissues are often the first signs - markers of emerging general somatic pathological processes, the study of which allows for early diagnosis of many diseases of internal organs ( Banchenko G.V., Rabinovich I.M., 2014).



Among the important problems of modern practical dentistry, the issues of improving the diagnosis, prevention, treatment of diseases of the teeth, periodontal tissues and oral mucosa, despite numerous studies conducted throughout the world, remain relevant and have great social significance.

Viral hepatitis both in our country and abroad occupies a significant place in the general pathology of man, causing significant socio-economic damage to society. At present, at least 9 types of human viral hepatitis are known (A, B, C, D, E, G, F, TT, Sen), among which parenteral viral hepatitis deserves special attention, characterized by severe and chronic forms with an outcome in mixed infection of B + C liver and hepatocellular carcinoma. More than 350 million people are currently carriers of this infection, and about 2 million people die annually from diseases associated with hepatitis [29, 56].

No less significant, and from some positions even more important, is the problem of viral hepatitis C (HCV). It attracts close attention due to the high frequency of formation of chronic forms (up to 50-80 %) and the dominant position among post-transfusion hepatitis. According to WHO, there are currently more than 170 million patients with chronic viral hepatitis C in the world, and the number of people infected with HCV reaches 500 million people [50, 56].

The epidemiological situation in the Republic of Tajikistan for parenteral viral hepatitis, primarily viral hepatitis B (HB), remains unfavorable. The incidence rate of this infection has recently increased almost twofold and is 156.2 per 100 thousand population (2007), and among children it is 3-4 times higher than in healthy individuals. These infections are becoming increasingly social in nature, particularly involving individuals aged 15 to 30 years in the epidemic process. The highest incidence (2007) was observed among the population of the Sughd Region - 326.6, GBAO - 296.5, and in Dushanbe - 129.4 per 100 thousand population [45,46].

It is known that chronic liver diseases cause secondary immunodeficiency, which is of great importance for the oral mucosa and the entire body as a whole, so the importance of examining the oral mucosa in patients with liver pathology, which requires timely and constant correction, becomes clear. Of interest is the fact that infection with hepatitis viruses is also possible through the oral mucosa, for example, when kissing. It has already been proven that hepatitis B and C viruses are transmitted by all biological fluids of the body - up to 30% of the hepatitis B virus and up to 5% of the hepatitis C virus. In this regard, the role of examining

the oral mucosa in preventing the transmission of the virus between parents and children and between spouses becomes obvious [11, 56].

It is impossible not to note the persistence of various microorganisms in saliva , which under certain conditions and secondary immunodeficiency in the body can give rise to pathogenic flora, contributing to periodontal damage . The condition and diseases of the periodontium should be considered dependent not only on the microbial factor, but also as a result of the condition of the body as a whole [28, 68, 69].

Over the 20-year history of debates about the determining factors of periodontal condition, works on changes in periodontal condition in cardiovascular diseases, strokes , heart attacks, gastrointestinal diseases, thyroid gland, and pancreas have now begun to be published in the world press. The widespread prevalence of periodontal diseases justifies the search for and introduction into clinical practice of new means and methods of treating this pathology.

In the available literature there are few publications on the issues of the condition of periodontal tissues and oral mucosa in patients with viral hepatitis in the CIS countries, however, studies by domestic authors on this issue are 15 or more years old. Issues concerning the dental status of patients with viral hepatitis B and C have not been studied at all, which was the reason for choosing the topic of the study.

### **Objective of the Study**

To improve the effectiveness of treatment of chronic generalized periodontitis in patients with chronic viral hepatitis B, C and mixed infection B+C.

### **Research Objectives**

1. Based on anamnestic and clinical laboratory data, study the condition of periodontal tissues in patients with chronic viral hepatitis B, C and mixed infection B+C.
2. In patients with chronic hepatitis B, C, and B+C, determine the state of immune defense factors and identify the quantitative and qualitative composition of the oral microflora.
3. To determine the concentration of gamma-glutamyl transpeptidase and ornithine decarboxylase in saliva in patients with chronic hepatitis B, C, and B+C.

4. To evaluate the effectiveness of the use of immunocorrective and anti-inflammatory therapy in the treatment of chronic generalized periodontitis against the background of chronic hepatitis B, C and mixed infection B + C.

## MATERIALS AND METHODS OF CLINICAL AND LABORATORY STUDIES

To achieve the stated goals and objectives of the study, a clinical and instrumental study of the state of periodontal tissues in 110 patients aged 20-60 years with chronic diffuse liver diseases of viral origin was conducted in the Samarkand Regional Dental Clinic from 2020 to 2023. Of the examined patients, 53 (48.3%) men and 57 (51.6%) women had inflammatory periodontal diseases for 3 to 5 years.

The classification of patients by gender, age and duration of the disease is given in Table 2.1.1.

Table 2.1.1

### Distribution of examined patients of the main group by gender, age and duration of the disease

Floor	Age	Duration of the disease, years			Total
		1-2 years	2-3 years	3-5 years	
Women	20-29	6	4	5	15
	30-39	5	5	4	14
	40-49	5	4	6	15
	50-60	4	5	4	13
	<b>Total</b>	<b>20</b>	<b>18</b>	<b>19</b>	<b>57</b>
Men	20-29	5	5	3	13
	30-39	5	4	4	13
	40-49	6	6	3	15
	50-60	4	5	3	12
	<b>Total</b>	<b>20</b>	<b>20</b>	<b>13</b>	<b>53</b>
<b>Total</b>	<b>40</b>	<b>38</b>	<b>32</b>	<b>110</b>	

At the first stage, among 110 examined patients of the main group, 50 patients (9 with CCG, 12 with CGPLS, 16 with CGPPS, 13 with CGPTS) with viral hepatitis B – subgroup 1A, 38 patients (6 with CCG, 10 with CGPLS, 13 with CGPTS, 9 with CGPTS) with viral hepatitis C – subgroup 1B and 22 patients (1 with CCG, 4 with CGPLS, 7 with CGPPS, 10 with CGPTS) with mixed infection B + C – group 2.

3 - the control group consisted of 25 people with chronic periodontal diseases (4 with CCH, 10 with CHPLST, 6 with CHPSST, 5 with CHPTST), who did not have chronic viral liver diseases.

At the second stage, we divided the patients we examined with chronic generalized periodontitis of mild, moderate and severe severity against the background of chronic viral hepatitis B, C and mixed infection B + C into two groups for further comparison of the effectiveness of the complex immunocorrective and anti-inflammatory therapy we carried out: 1 - control - 39 patients with chronic viral hepatitis who received traditional treatment for chronic generalized periodontitis, and 2 - the main group - 55 patients who were given the drug together with traditional treatment. immunomodulatory action Deoxynate in the form of rinsing 4-6 times a day. The duration of the course of treatment is 5-10 days , as well as ultrasound phonophoresis with peach oil in the area of the mucous membrane of the alveolar process using a mobile technique in the form of sliding spiral movements along the gum in a pulsed mode; exposure time is 5 minutes; the course of treatment is 10-12 procedures, which were carried out every other day.

To achieve the set goals, we used a comprehensive research methodology. All patients underwent a clinical examination, which included studying the patient's life history and illness, complaints, genetic status and illness, diet and nutritional regimen. To assess the severity of the disease, criteria such as clinical and biochemical indicators, immunological changes and apoptosis were used.

Dental research methods

Table 2.2.1 shows the distribution of patients depending on gender and nosological indicators of periodontium.

Table 2.2.1.

Distribution of patients by gender and nosological indicators of periodontium

Forms of KhVZP	Number of patients		Total
	Women	Men	
<b>HCG</b>	6 (10.5%)	5 (9.4%)	11 (19.9%)
<b>HGPLST</b>	17 (29.8%)	16 (30.2%)	33 (60%)
<b>HGPST</b>	19 (33.4)	18 (33.9%)	37 (67.30%)
<b>HGPTST</b>	15 (26.3)	14 (26.5%)	29 (52.8%)
<b>Total</b>	<b>57</b>	<b>53</b>	<b>110</b>

Note: The data in the table are presented in absolute numbers and percentages.

Table 2.2.2.

**Distribution of patients with chronic inflammatory periodontal diseases (CIPD) by clinical forms**

Diagnosis	CHB	CHC	CHB+CHC	Control group
HCG	9 (18%)	6 (15.8%)	1 (4.6%)	4 (16%)
HGPLST	12 (24%)	10 (26.3%)	4 (18.2%)	10 (40%)
HGPST	16 (32%)	13 (34.2%)	7 (31.8%)	6 (24%)
HGPTST	13 (26%)	9 (23.7%)	10 (45.4%)	5 (20%)
<b>Total</b>	<b>50 (45.45)</b>	<b>38 (34.54)</b>	<b>22 (20.10)</b>	<b>25</b>

*Note:* The data in the table are presented in absolute numbers and percentages.

The main symptoms of periodontal inflammation observed in this study are:

- Chronic gingivitis.
- The presence of periodontal pockets and pus in them.
- Dental plaque in the peri- and subgingival area.
- Resorption of alveolar bone.
- Teeth mobility, occlusal disorders.
- Hypersensitivity of the tooth neck.
- Disruption of the microcirculatory system of the periodontal complex, changes in tissue metabolism.

-Changes in local immunoreactivity and tissue resistance periodontal disease.

-Changes in other organs and systems, formation of endogenous intoxication.

Mild chronic generalized periodontitis is characterized by the following symptoms: periodontal pockets up to 3.5 mm deep, mainly in the interdental area;

- the degree of radiographic destruction of bone tissue (absence of cortical plaques at the apices and lateral surfaces of the teeth);
- the degree of bone loss in the periodontium, mainly in the interdental area;
- alveolar septum, foci of osteoporosis and expansion of the periodontal space in the cervical region).

Radiographs show deformation of the roots due to mineralized deposits on the teeth;

- The teeth are not mobile or displaced;
- The general condition is not disturbed;

Chronic generalized periodontitis of moderate severity is characterized by:

- Depth of periodontal pockets - up to 5 mm;

- Bone resorption of 1/3-1/2 of the interdental septum on radiographs. Root deformation on radiographs due to highly mineralized dental deposits;
  - Class I-II tooth loosening, which may result in tooth displacement.
- Severe degree of chronic generalized periodontitis is determined by the following signs:
- Periodontal pockets deeper than 5-6 mm;
  - Radiographic examination shows destruction of more than 1/2 of the alveolar process or complete absence of bone. The teeth are displaced, the interdental spaces are changed, the shape of the roots is deformed on radiographs due to a large amount of mineralized supra- and subalveolar deposits;
  - Pathological mobility, displacement of teeth of II-III degree;
  - Severe traumatic occlusion;
  - Possible problems with the general condition of the patient.

## RESEARCH RESULTS

The level of caries in the studied patients with chronic disseminated viral liver disease with CHB, CHC and mixed infection B + C, the prevalence of caries was 84.7%, 83.5%, 96.6%, and the intensity of caries was 7.69% and 10.17%, respectively (Table 3.1.1.), which indicates a high prevalence of carious lesions.

Table 3.1.1.

**Prevalence (in %) and intensity (on average per one examined person) of dental caries in patients with chronic diffuse viral hepatitis**

Clinical forms of hepatitis	Prevalence of dental caries	Intensity of dental caries
CHB	84.5±1.96	8.65
CHC	83.5±1.95	7.68
CHB+CHC	96.4±2.44	10.15

The most widespread and intensive development of caries was observed in patients with mixed infection B+C - 96.4 ± 2.44 and 10.15, while in patients with CHB and CHC these indicators were higher by 84.5 ± 1.96 and lower by 83.5 ± 1.95, respectively.

Elemental composition of KPU indicators in patients with chronic viral hepatitis B, C and mixed infection B+C.

In chronic hepatitis B, specific changes were observed in 15 (30%) patients aged 30-39 years, in 13 (26%) aged 40-49 years, in 11 (22%) patients aged 20-29 and 50-60 years; in chronic hepatitis C, significant changes were observed in 11 (29%) patients aged 30-39 years, in 10 (26%) aged 20-29 years, in 9 (24%) aged 40-49% and in 8 (21%) patients aged 50-60 years.

According to the duration of the disease, all patients with CHB and CHC were divided into the following groups (Table 3.1.4, Fig. 2). In the first years, chronic viral hepatitis B was diagnosed in 15 patients (30%), from 2 to 3 years in 19 patients (38%), and up to five years in 16 (32%).

At the same time, patients with chronic viral hepatitis C complained of dry mouth and thirst at night (54.1%), decayed teeth (51.3%), bleeding gums (36.9%), loose teeth and bitterness in the mouth (34.1%). Hyperemia and burning in the oral cavity (25.6%) and swelling (19.9%) of the oral mucosa were observed.

Table 3.1.5

**Subjective complaints and clinical signs in the studied patients with chronic viral liver pathology**

Subjective complaints	CHB, n =50		CHC, n =38	
	abs .	%	abs .	%
Hyperemia	43	87.1	10	25.6
Edema	41	81.7	7	19.9
Bleeding gums	43	87.1	14	36.9
Tooth mobility	38	76.2	13	34.1
Destroyed teeth	17	34.1	19	51.3
Dry mouth	20	39.9	20	54.1
Bitterness in the mouth	13	25.3	13	34.1
Thirst at night	19	37.9	21	54.1
Burning and itching on the gums	10	19.9	9	25.6

Fifty patients with chronic viral hepatitis B and 38 patients with chronic viral hepatitis C were studied.

It was found that the composition of the oral microflora is heterogeneous. Bacteria dominated both in diversity and in the number of species living in the oral cavity.

Staphylococcus epidermidis was detected in 38.1%, Enterococcus in 16.6%, and Staphylococcus aureus - in 5.6% of patients with chronic viral hepatitis B (Table 3.1.10).

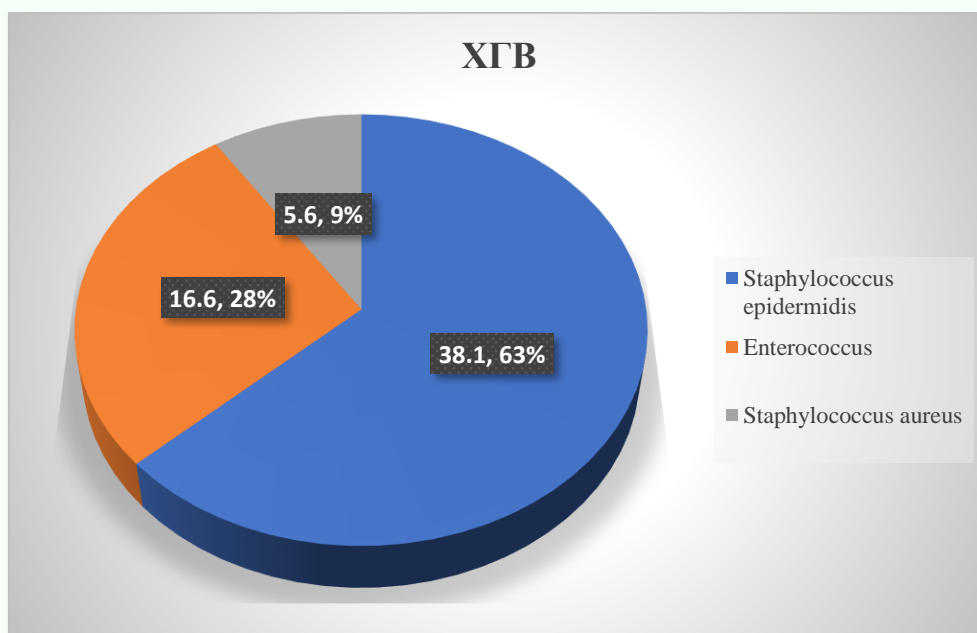
Staphylococcus strains epidermidis were also frequently found in the oral cavity of 38 patients with chronic viral hepatitis C (33.2%), and Str . haemoliticus strains were co-invasive (5.6%).

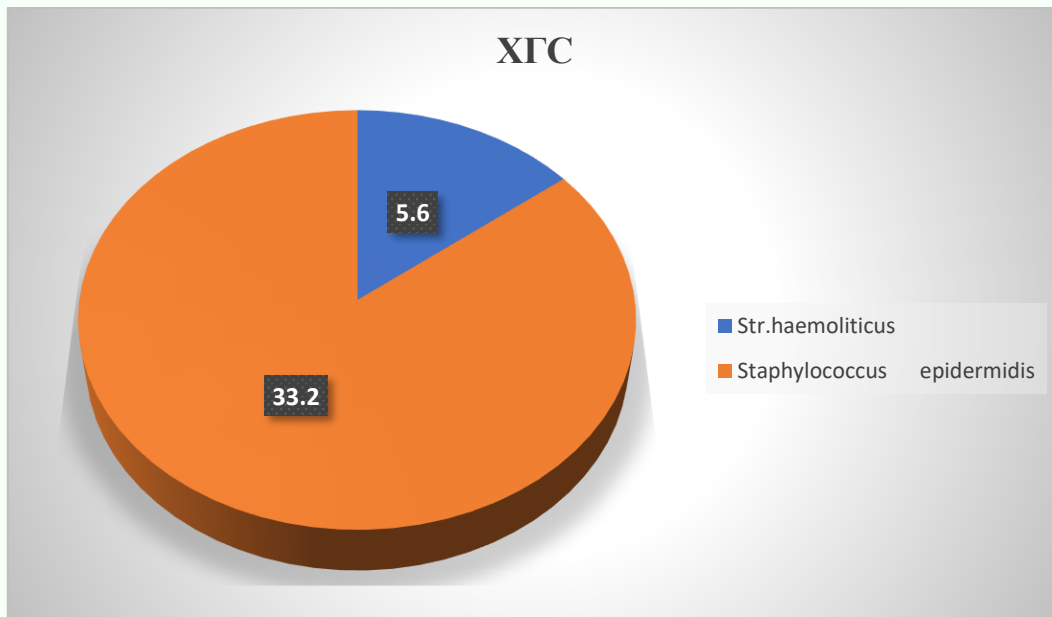
The study showed that Staphylococcus strains predominated in the microflora of patients with chronic hepatitis B and C epidermidis (Table 3.1.10, Figure 7).

Table 3.1.10.

**Oral microbiota of patients with chronic viral hepatitis B and C (p=0.05)**

Group of patients	Pathogens	%
Chronic hepatitis HB V ( n = 50 people)	Staphylococcus epidermidis	38.1%
	Enterococcus	16.6%
	Staphylococcus aureus	5.6%
Chronic hepatitis HCV ( n = 3 8 people )	Str.haemoliticus	5.6%
	Staphylococcus epidermidis	33.2%
<b>Total number of strains identified</b>		<b>100%</b>





**Figure 7. Oral microbiota of patients with chronic viral hepatitis B and C**

## **EVALUATION OF THE EFFICIENCY OF ADVANCED TREATMENT OF PERIODONTITIS IN PATIENTS WITH VIRAL HEPATITIS**

Search for funds immunocorrective and anti-inflammatory therapy, combining local and systemic immunomodulatory effects on periodontal tissues, has created a need to study the clinical, immunomodulatory and anti-inflammatory effects of the drugs we used.

All patients studied at the second stage were divided into 2 groups: 1 - control - 39 patients with chronic viral hepatitis who received traditional treatment for chronic generalized periodontitis, and 2 - the main group - 55 patients who were given the drug together with traditional treatment. immunomodulatory action Deoxynate in the form of rinsing 4-6 times a day. The duration of the course of treatment is 5-10 days, as well as ultrasound phonophoresis with peach oil in the area of the mucous membrane of the alveolar process in the form of using a mobile technique in the form of sliding spiral movements along the gum in a pulsed mode; exposure time is 5 minutes for each jaw; the course of treatment is 10-12 procedures, which were carried out every other day.

A discussion was also held on the role of oral hygiene in the development and occurrence of periodontal diseases. Subsequently, patients learned the rules of oral hygiene using dental floss, toothpicks and dental elixirs. A toothbrush and toothpaste were selected for each patient.

All patients in the main and control groups underwent thorough oral hygiene treatment for caries every six months. Ultrasonic devices and periodontal instruments were used to remove dental plaque. After plaque removal, periodontal pockets were cleaned with Decasan solution, and the root surfaces were polished with a rubber nozzle and an endo-circular brush. Polishing paste was applied to the brush.

Teeth with the first or second degree of mobility and alveolar bone atrophy up to 1/3 of the root length were temporarily splinted, and occlusal The surfaces were leveled to eliminate traumatic nodes that could contribute to inflammation.

Dental examinations of patients with chronic viral liver diseases were performed before, 20 days after completion, and 6 months after the start of periodontal disease treatment.

## CONCLUSIONS

1. According to the study data, all patients with chronic viral hepatitis B, C and mixed infection B + C required treatment for periodontal diseases. Dental plaque was detected in 28 (55.2%) patients with CHB and 19 (51.5%) patients with CHC, bleeding gums were observed in 11 patients (22.8%) with CHB and 9 (24.2%) patients with CHC. Pathological periodontal pockets of 4-5 mm or more were detected in 7 (16.2%) patients with CHB and in 6 (19.2%) with CHC. In patients with mixed infection B + C, dental plaque was noted in 12 (54.5%), and bleeding - in 6 (27.3%) patients. Pathological pockets were 4-5 mm and more than 5 mm in 4 (18.2%) patients.

2. Microbial contamination in the oral cavity of patients showed that Staphylococcus strains predominated in the microflora of patients with chronic hepatitis B and C epidermidis (38.1%, 33.2%), and with mixed infection B+C it was more diverse: Staphylococcus were isolated epidermidis (16.6%), Staphylococcus aureus (13.5%), Str . salivarius (12.2%), Staphylococcus saprophiticus (13.4%), yeast and yeast-like bacteria (21.7%) and Candida (22.6%). When studying the level of sIgA in saliva, a significant decrease in these indicators was found compared with the control values. When studying local immunity, the level of sIgA in saliva decreased to a mild degree of 0.44 g / l, moderate - 0.35 g / l and severe - 0.28 g / l (usually 0.15-0.54 g / l). The relative values of T-lymphocyte and T-helper subpopulations, which were initially reduced, increased in both groups as a result of complex treatment and almost

approached the values of healthy people. These changes were associated with a noticeable improvement in the condition of the periodontium; B-lymphocytes and natural killer cells also increased significantly. The number of IL-2 receptor cells (CD25+) increased, which means an increase in the percentage of activated T- and B-lymphocytes. Complex treatment improved immunological parameters in patients with chronic viral hepatitis B, C and B+C with chronic generalized periodontitis.

3. The content of gamma-glutamyl transpeptidase and ornithine decarboxylase in the saliva of patients with chronic liver diseases B, C and B+C differed from the corresponding parameters in healthy individuals. Salivary enzyme levels in patients with chronic hepatitis B and mild generalized periodontitis were  $0.94 \pm 0.20 \mu\text{mol} / \text{ml}$ , moderate –  $0.96 \pm 0.18 \mu\text{mol} / \text{ml}$  and with severe CGP -  $0.99 \pm 0.22 \mu\text{mol} / \text{ml}$ ; in patients with chronic hepatitis C and mild generalized periodontitis were  $1.03 \pm 0.21 \mu\text{mol} / \text{ml}$ , moderate –  $1.05 \pm 0.19 \mu\text{mol} / \text{ml}$  and with severe CGP -  $1.08 \pm 0.20 \mu\text{mol} / \text{ml}$ , respectively. That is, the content of GGTP in saliva in CHB was slightly lower than in CHC. The level of GGTP in the saliva of patients with mild chronic generalized periodontitis and mixed infection B+C was  $1.02 \pm 0.12 \mu\text{mol} / \text{ml}$ , moderate -  $1.04 \pm 0.11 \mu\text{mol} / \text{ml}$ , and in severe CHP -  $1.07 \pm 0.12 \mu\text{mol} / \text{ml}$ .

ornithine decarboxylase enzyme in the saliva of patients with chronic hepatitis B and mild generalized periodontitis was  $0.13 \pm 0.03 \text{ nkat} / \text{ml}$ , moderate –  $0.15 \pm 0.02 \text{ nkat} / \text{ml}$  and with severe CGP –  $0.18 \pm 0.04 \text{ nkat} / \text{ml}$ ; in patients with chronic hepatitis C and mild generalized periodontitis they were  $0.10 \pm 0.02 \mu\text{mol} / \text{ml}$ , moderate –  $0.12 \pm 0.03 \text{ nkat} / \text{ml}$  and with severe CGP –  $0.15 \pm 0.04 \text{ nkat} / \text{ml}$ , respectively. The level of ODC in the saliva of patients with mixed infection and mild CGP was  $0.62 \pm 0.03 \text{ nkat} / \text{ml}$ , with moderate infection –  $0.72 \pm 0.01 \text{ nkat} / \text{ml}$ , and with severe CGP –  $0.81 \pm 0.01 \text{ nkat} / \text{ml}$ .

4. Complex treatment with immunomodulators and anti-inflammatory agents showed a good clinical response in patients of the main group, with bleeding stopping on the second day of treatment and swelling disappearing on the third day. Similar changes occurred much later (5-6 days) in patients of the comparison group. A good level of hygiene was observed 20 days and 6 months after treatment of mild, moderate and severe chronic generalized periodontitis.

The conducted studies have shown that after combined therapy with immunomodulators and anti-inflammatory agents using Dezoksinat A and

ultraphonophoresis with peach oil, a significant decrease in the activity of periodontitis was observed. It has been established that the above-mentioned complex treatment plays an important role in the treatment of periodontitis, along with hygienic measures, it helps restore impaired immunological changes, significantly reduces inflammatory phenomena, participates in the regenerative process of periodontal tissues and significantly increases the duration of remission.

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