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## **LONG-TERM RESULTS OF COMPLEX TREATMENT WITH CHRONIC GENERALIZED PERIODONTITIS AND A PREDOMINANCE OF THE SYMPATHETIC AUTONOMIC NERVOUS SYSTEM**

**Abstract.** *The features of the clinical course of many diseases depend on the state of the patient's autonomic system, in particular, the predominance of the sympathetic or parasympathetic autonomic nervous system. Given the close relationship of the vascular and nervous systems of the periodontium, the vegetative nervous system has an integrating role. This should be taken into account when treating patients with chronic periodontitis, since these patients have certain problems with the state of general resistance. Given this, the proposed drug treatment regimen for the treatment of generalized periodontitis in patients with a predominance of the sympathetic autonomic nervous system. Aim. The determination of the long-term results clinical efficacy of the proposed complex treatment of patients with chronic course of generalized periodontitis in the presence of sympathetic nervous system predominance. Materials and methods. Clinical investigation was conducted on groups of 60 patients with chronic course of generalized periodontitis and prevalence of the sympathetic nervous system.. Medicamental treatment was performed using proposed sedation composition. Patients were conducted a comprehensive examination of periodontal tissue before treatment and after treatment. To evaluate the clinical efficacy of treatment used Schiller-Pisarev test (1962), the index of PMA by C. Parma (1961), OHI-S hygienic index (1964), the vacuum test by Kulazhenko (1961). Results. As a result of the investigation it was found that the usage of the proposed sedation composition in the complex therapy of patients with chronic course of generalized periodontitis can effectively inhibit the dystrophic-inflammatory process in periodontal tissues. This confirms by the decline in the index PMA, increase the time of formation of hematoma during the vacuum tests on Kulazhenko, improving oral hygiene in remote observation terms. Conclusions. Usage of the proposed sedation composition increases the effectiveness of treatment of chronic course of generalized periodontitis in patients with predominance of the sympathetic nervous system.*

**Key words:** *chronic course of generalized periodontitis, patients with predominance of the sympathetic nervous system, sedation composition.*

**Introduction.** A special place in the emergence and development of dystrophic-inflammatory periodontal diseases, belong to their combination with various common somatic diseases [5, 9, 15]. In the integrated treatment of patients with generalized periodontitis, it is necessary to take into account the clinical picture of periodontal disease and the overall health of patient. The presence of certain common somatic diseases has a significant impact on the clinical picture of generalized periodontitis.

The features of the progression of many diseases depend on the condition of the patient's autonomic system, particularly the predominance of the sympathetic or parasympathetic autonomic nervous system (1). The autonomic nervous system plays an integrating role, according to the close

relationship between the vascular and nervous systems of periodontal [3, 7, 8, 11].

This should be considered during the treatment of patients with generalized periodontitis, while these patients have certain problems with the state of general resistance. Thus, in the occurrence and development of degenerative inflammatory periodontal diseases, their combination with various somatic diseases occupies a special place [5, 9, 15].

Without these characteristics, periodontal diseases have an unfavorable effect and resistance to treatment.

For the medical preparation of patients with chronic generalized periodontitis and predominance of the sympathetic autonomic nervous system, before each visit to the dentist it

was prescribed:

1. "Anaprilin" 0.01 g - 1 tablet 2 times a day;
2. Tinctura Valerianae 0.25 drops 3 times a day.

After the dental intervention appoint for 3 days:

1. "Ibuprofen" 0.2 g - 2 tablets 3 times a day;
2. Tinctura Valerianae 0.25 drops 3 times a day;
3. "Anaprilin" 0.01 g of 1 tablet 4 times a day;

To determine the effectiveness of the proposed pharmacological therapeutic and prophylactic drug composition (Utility model patent No. 114198, A method for treating patients with chronic generalized periodontitis, in which the activity of the sympathetic autonomic

nervous system predominates, 02.27.2017.) and to solve the tasks, a clinical laboratory examination and treatment of 60 patients with generalized periodontitis, with a predominance of the sympathetic autonomic nervous system were performed.

Their examination and treatment was carried out during 2016-2018 at the Department of Therapeutic Dentistry of the Higher state educational establishment "Bukovinian State Medical University".

This study presents the long-term results of treatment of patients with chronic onset of generalized periodontitis in case of predominance of the sympathetic nervous system.

The aim of our study was to determine the long-term results of the clinical effectiveness of the proposed complex treatment of patients with generalized chronic periodontitis with the predominance of the sympathetic nervous system.

**Material and methods.** Comprehensive treatment of generalized periodontitis was carried out in a group of 60 patients aged 25-45, with a chronic generalized periodontitis of the I-II degree and the predominance of the sympathetic nervous system in them. Among them were 38 (63.33%) women and 22 (36.67%) men. They were divided into two groups - the main (40 patients) and the group comparison (20 patients). The distribution of patients into groups in accordance with the degree of disease, age and gender was almost the same. 40 patients were amounted to the main group of the study. For their treatment, a drug therapy regimen was developed (Utility model patent No. 114198, A

method for treating patients with chronic generalized periodontitis, in which the activity of the sympathetic autonomic nervous system predominates, 02.27.2017.) Assessment of the autonomic nervous system status was carried out by determining the Kerdo index [14].

A control group consisted of 20 patients with a chronic generalized periodontitis of the first degree with a predominance of the sympathetic nervous system.

The treatment of periodontal disease in them was carried out by generally accepted methods according to the treatment protocols approved by the Ministry of Health of Ukraine, 2004.

Essentially local treatment of both groups of patients with generalized periodontitis was carried out the same. For antiseptic rinses, a 0.5% chlorhexidine bigluconate solution was used. To conduct professional oral hygiene, all patients used a manual toothbrush, flosses, toothpaste and mouthwash "Lacalut". Completely eliminated all periodontal tissue irritants (plaque, calculus, etc.). Subsequently, the complete removal of subgingival dental deposits with the treatment of the tooth roots surface (the so-called SRP - scaling and root planning) was carried out. A comprehensive examination of periodontal tissues was performed for all patients before and after treatment. The severity of the inflammatory process in the gums was assessed using a Schiller-Pisarev test (1962) and the PMA index C. Parma (1961). Hygiene of the oral cavity of patients was determined using the hygiene index OHI-S (1964). The state of vascular permeability of the gums was evaluated using a vacuum test according to Kulazhenko (1961) [4, 10, 12, 13, 16].

For the diagnosis of periodontal disease it was used the classification of periodontal disease according to M.F. Danilevsky [2]. The results were processed by statistical methods using student's personal computers [6]

**Results.** Long-term results of treatment were monitored on the basis of clinical, radiographic and laboratory research methods in terms of 6, 12 and 18 months. After 6 months, 39 (97.5%) patients of the main group were examined, after 12 months 37 (92.50%) and after 18 months, 34 (85.0%) patients.

Similarly, to compare the results, a survey of the corresponding percentage of patients in the group comparison was conducted: after 6 months - 19 (95.0%) , after 12 months - 17 (85.0%) patients and after 18 months - 16 (80.0%) patients. All patients underwent a complex examination of periodontal tissues, as before treatment.

After treatment using the proposed drug premedication, it was observed a satisfactory condition of periodontal tissues in patients of the main group after 6 months in 35 (89.47%) of 39 examined patients, after 12 months - in 32 (86.49%) of 37 patients and after 18 months - in 29 (85.29%) of 34 patients. Accordingly, in the group comparison , satisfactory treatment results were found after 6 months in 15 (78.95%) of 19 patients, after 12 months in 13 (76.47%) of 17 patients and after 18 months in 12 (75.0%) ) from 16 patients examined.

After 6 months, patients of the main group noted the absence of unpleasant subjective sensations in the oral cavity, soreness , bleeding , feeling of heaviness and itching in the gums. The mucous membrane of the gums was dense, the gingival papillae were not hyperemic. The Schiller-Pisarev test in 33 (84.62%) of the 39 examined was slightly yellow. In patients with I degree of generalized periodontitis, discharge from periodontal pockets was not observed.

The oral cavity hygiene was satisfactory: the hygiene index before treatment was  $1.74 \pm 0.09$  ; after treatment  $0.85 \pm 0.07$ . The level of gum inflammation also decreased, as evidenced by the PMA index -  $9.7 \pm 0.78\%$  after treatment and after 6 months it only slightly increased - up to  $10.6 \pm 0.95\%$ .

In patients with II degree of generalized periodontitis, slight deposits of calculus were noted. The depth of periodontal pockets was at the level obtained after treatment. The discharge from them was noted in 6 (15.38%) patients, they were in a small amount of serous nature. The X-ray signs of stabilization of the pathological process in the periodontium were noted.

The positive clinical results of treatment were confirmed by laboratory data. Vacuum hematoma formed on average after  $37.2 \pm 3.8$  , which is even

higher than immediately after treatment. Indicators of leukocyte migration into the oral cavity were approximately at the same level. In periodontal pockets, a small amount of microflora was noted. Mostly cocci and mixed flora prevailed (in a small amount the same as after treatment, yeast-like fungi and protozoa were found). In the cellular composition of pockets, neutrophilic granulocytes, polyblasts and epithelial tissues prevailed.

In patients of group comparison, similar satisfactory clinical, radiological and laboratory results of treatment were noted in 16 (84.21%) of 19 patients. In 2 (10.53%) of them, a further slight progression of the dystrophic-inflammatory process was noted. Clinical laboratory indicators in the group comparison were satisfactory, but slightly lower than in the main group of patients with generalized periodontitis. Thus, the occurrence of certain complications in the group comparison can be considered as a consequence of the aggravation of the dystrophic-inflammatory process in periodontal disease.

12 months after the treatment, 37 (92.50%) patients of the main group and 17 (85.0%) patients of the group comparison were examined. In 30 (81.08%) of 37 patients of the main group, there was a lack of unpleasant subjective sensations in the oral cavity, soreness, bleeding and itching in the gums. The mucous membrane of the gums was dense. The gingival papillae were not hyperemic. The Schiller-Pisarev test was slightly yellow in 12 (32.43%) of the 37 examined. The state of oral cavity hygiene was satisfactory: the OOI-S hygiene index before treatment was  $1.74 \pm 0.09$  and decreased to  $0.84 \pm 0.06$  points after treatment. The gum inflammation also decreased, as evidenced by the PMA index -  $9.7 \pm 0.78\%$ , and after 12 months -  $11.45 \pm 1.15\%$ .

Dental deposits were noted in a small amount in 5 (13.51%) of 37 patients. Pathological tooth mobility was significantly lower than before treatment.

The depth of periodontal pockets remained at the level reached immediately after treatment. Radiologically, the phenomena of osteoporosis in the alveolar bone of the jaw were lower than

before treatment. The height of the interalveolar septa remained at the same level.

The obtained clinical laboratory examinations demonstrated the stabilization of the dystrophic-inflammatory process in the periodontium of this category of patients.

In patients with positive clinical results, it was maintained gum capillaries stability, achieved after treatment. Vacuum hematoma formed on average after  $35.4 \pm 1.2$  s, which can be considered as a satisfactory result. The amount of neutrophils that migrated to the oral cavity remained almost at the same level achieved after treatment. The total number of cells in the content of periodontal pockets was lower; neutrophilic granulocytes, polyblasts and epithelial cells prevailed.

The amount of microflora was lower than before the treatment, but more than in the group comparison. Cocci prevailed, mixed microflora and yeast-like fungi remained at the same level. In patients of group comparison, similar satisfactory clinical, radiological and laboratory treatment results were noted in 12 (70.59%) of 17 patients. In 3 (17.65%) of them, further slight progression of the dystrophic-inflammatory process was noted (in these cases, exacerbation of the pathological process was treated). Clinical quality indicators in the group comparison were satisfactory, but slightly lower than in the main group of patients with generalized periodontitis. The results obtained indicate to the positive comparative clinical laboratory results of the patients treatment with generalized periodontitis using the proposed drug premedication.

18 months after treatment, 30 (88.24%) of 34 patients of the main group and 14 (87.5%) of 16 patients of the group comparison were examined. In 25 (83.33%) of 30 patients of the main group and in 10 (71.43%) of 14 examined patients of the group comparison a satisfactory condition of periodontal tissues was found. The gingival mucosa was dense, hyperemia of the gingival papillae was absent in 25 (83.33%) of the 30 patients of main group and in 10 (71.43%) of the 14 patients of the group comparison.

The Schiller-Pisarev test was negative in 23 (76.67%) of 30 patients of the main group and 10

(71.43%) of 14 patients of the group comparison. In another part of the patients, it was yellow. The state of oral cavity hygiene was satisfactory: the hygiene index before treatment was  $1.74 \pm 0.09$  and  $0.89 \pm 0.06$  after treatment. The level of gum inflammation also decreased, as evidenced by the PMA index -  $9.7 \pm 0.78\%$  after treatment and after 18 months -  $11.55 \pm 1.15\%$  (Table 1). An insignificant amount of dental plaque was noted in 7 (42.42%) of 30 patients of the main group and in 6 (52.94%) of 16 patients of the group comparison. Pathological tooth mobility and the depth of periodontal pockets remained at the level achieved after treatment in 25 (83.33%) of 30 patients of the main group and 10 (71.43%) of 14 patients of the group comparison. Radiologically, the phenomena of osteoporosis in the alveolar bone of the jaw were lower than before treatment. The height of the interalveolar septa remained at the same level. The stability of the gum capillaries, which was achieved immediately after treatment at the level of vacuum hematoma formation after an average of  $34.5 + 2.5$  s, was maintained, which can be considered as a satisfactory result. The number of neutrophils migrating into the oral cavity in the majority - 26 (86.67%) of the 30 patients of the main group and in 12 (75.00%) of the 16 patients of the group comparison remained almost at the level reached after treatment (Table 5.27).

The total amount of cells in the periodontal pockets was at the level obtained immediately after treatment, neutrophilic granulocytes, polyblasts and epithelial cells prevailed. The number of microflora was slightly increased, but was lower than in the similar group comparison. Cocci prevailed, mixed microflora and yeast-like fungi were at the same level. The obtained data from clinical laboratory examinations indicate to the stabilization of the dystrophic-inflammatory process in the periodontium of this category of patients (Table 1-3); also, it was observed the pronounced beneficial effect of the proposed drug premedication usage in the treatment of patients with generalized periodontitis with a predominance of the sympathetic autonomic nervous system.

Table 1

**The dynamics of clinical quality indicators in patients with generalized periodontitis with the predominance of the sympathetic autonomic nervous system 18 months after treatment**

Clinical quality indicators	Main group				Group control			
	Before treatment	After treatment	18 months after treatment	p <sub>1</sub>	Before treatment	After treatment	18 months after treatment	p <sub>1</sub>
OHI-S (scores)	1,74±0,09	0,67±0,06 p <sub>2</sub> >0,05	0,89±0,06 p <sub>2</sub> <0,05	<0,05	1,79±0,08	0,81±0,06	1,05±0,08	<0,05
Schiller-Pisarev test (scores)	2,8±0,25	1,35±0,11 p <sub>2</sub> <0,05	1,55±0,15 p <sub>2</sub> <0,05	<0,05	2,85±0,25	1,65±0,12	1,9±0,12	<0,05
PBI (scores)	2,66±0,3	0,67±0,04 p <sub>2</sub> <0,05	0,76 ±0,02 p <sub>2</sub> <0,05	<0,05	2,62±0,48	0,81±0,04	1,09±0,04	<0,05
The depths of periodontal pockets (mm)	2,7±0,37	0,82±0,03 p <sub>2</sub> >0,05	1,05±0,02 p <sub>2</sub> >0,05	<0,05	2,7±0,35	1,1±0,02	1,5±0,02	<0,05
PMA (%)	60,25±2,4 5	9,7±0,78 p <sub>2</sub> <0,05	11,55±1,15 p <sub>2</sub> <0,05	<0,05	60,35±3,5 1	13,46±0,9 8	18,33±1,25	<0,05
The periodontal index	2,66±0,3	0,67±0,04 p <sub>2</sub> >0,05	0,85±0,07 p <sub>2</sub> >0,05	<0,05	2,52±0,48	0,89±0,07	1,29±0,08	<0,05
Vacuum test according to Kulazhenko (s)	12,6±1,2	36,3±2,4 p <sub>2</sub> <0,05	34,5±2,5 p <sub>2</sub> <0,05	<0,05	9,8±0,5	20,4±1,1	24,3±1,1	<0,05

Note: p<sub>1</sub> – the indicator of the difference reliability between the main group and the group comparison before and after treatment;

p<sub>2</sub> – the indicators of difference reliability between the main group and group comparison after treatment;

Table 2

**The dynamics of leukocyte migration into the oral cavity in patients with generalized periodontitis with predominance of the sympathetic autonomic nervous system 18 months after treatment (cells in 1 mm<sup>3</sup> of flushing liquid)**

Groups of patients	Time of the survey	Neutrophil Granulocytes	p <sub>1</sub>	Of them alive (%)	p <sub>1</sub>	Cells of desquamated epithelium	p <sub>1</sub>
Main group	Before treatment	376,6±36,3	<0,05	58,6±5,1	<0,05	188,6±8,4	<0,05
	After treatment	182,7±16,8 p <sub>2</sub> <0,05		82,7±6,3 p <sub>2</sub> >0,05		96,5±8,3 p <sub>2</sub> <0,05	
	18 months after treatment	226,5±14,8 p <sub>2</sub> >0,05	<0,05	80,5±3,5 p <sub>2</sub> >0,05	<0,05	88,5±6,4 p <sub>2</sub> <0,05	<0,05
Group comparison	Before treatment	386,4±25,2	<0,05	72,8±4,6	>0,05	206,2±9,7	<0,05
	After treatment	257,7±14,3		84,3±6,6		117±8,4	
	18 months after treatment	298,5±12,4	<0,05	86,3±3,5	>0,05	98,4±9,3	<0,05

Note: p<sub>1</sub> – the indicator of the difference reliability between the main group and the group comparison before and after treatment;

p<sub>2</sub> – the indicators of difference reliability between the main group and group comparison after treatment;

Table 3

**The dynamics of cytologic content of periodontal pockets in patients with generalized periodontitis with predominance of the sympathetic autonomic nervous system 18 months after treatment (% detection)**

Clinical quality indicators	Main group				Group control			
	Before treatment	After treatment	18 months after treatment	p <sub>1</sub>	Before treatment	After treatment	18 months after treatment	p <sub>1</sub>
Epithelial	8,33±0,5	13,32±0,9 p <sub>2</sub> <0,05	14,88±0,9 p <sub>2</sub> <0,05	<0,05	5,56±0,5	8,32±0,8	8,55±0,8	<0,05
Neutrophil Granulocytes: unchanged	31,35±2,13	39,67±1,35 p <sub>2</sub> <0,05	38,55±1,35 p <sub>2</sub> <0,05	<0,05	26,36±2,17	35,17±2,25	31,25±1,25	<0,05
Macrophages	0,39±0,12	1,88±0,37 p <sub>2</sub> <0,05	1,85±0,25 p <sub>2</sub> <0,05	<0,05	0,51±0,12	0,91±0,15	0,95±0,15	<0,05
Destroyed	65,73±3,65	44,74±3,18 p <sub>2</sub> <0,05	46,5±2,15 p <sub>2</sub> <0,05	<0,05	63,12±3,81	53,12±2,53	56,67±2,67	<0,05
Lymphocytes	0,55±0,15	1,56±0,21 p <sub>2</sub> >0,05	1,64±0,21 p <sub>2</sub> >0,05	<0,05	0,61±0,18	1,23±0,21	1,35±0,21	<0,05
Polyblasts	0,67±0,15	1,51±0,17 p <sub>2</sub> >0,05	1,69±0,16 p <sub>2</sub> >0,05	<0,05	0,59±0,15	1,25±0,15	1,28±0,13	<0,05

Note: p<sub>1</sub> – the indicator of the difference reliability between the main group and the group comparison before and after treatment;

p<sub>2</sub> – the indicators of difference reliability between the main group and group comparison after treatment;

**Conclusions.** Conducted clinical examination in the long term observation of patients with chronic generalized periodontitis of the main group with a predominance of the sympathetic autonomic nervous system after complex treatment, showed a significant decrease in the level of inflammation in periodontal tissues. Thus, the proposed scheme of drug treatment and inclusion in the complex therapy of the proposed drug preparation allows to achieve significant effectiveness of treatment of patients with generalized periodontitis with predominance of the sympathetic nervous system in long-term observation.

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