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INTERCONNECTION BETWEEN THE PECULIARITIES OF CHRONIC GINGIVITIS AND THE DENTAL PLAQUE BIOFILM COMPOSITION UNDER CONDITIONS OF PSYCHOEMOTIONAL STRESS.

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Abstract

Subject. *Local and general factors are of great importance in the development and progression of inflammatory periodontal diseases. Particular attention is paid to occupational factors closely related to stress, which have a significant impact on the course of the inflammatory process of periodontal tissues. Employees of the internal affairs bodies are exposed to professional stress, who are forced under the conditions of a tense socio-economic situation in the country, to perform their official duties within strictly limited periods. Of particular interest are cadets of military universities. The stage of entering a higher military educational institution is considered as the entering an independent life.*

The aim is to reveal the interconnection between the peculiarities of the of chronic generalized catarrhal gingivitis course and changes in the dental plaque biofilm composition in cadets of the Ufa juridical institute of the Ministry of Internal Affairs of the Russian Federation (UJI) conditions of psychoemotional stress.

Methodology. *Totally 105 cadets aged 18 to 25 with chronic generalized catarrhal gingivitis took part in a clinical study on the basis of the dental office in the medical unit No. 1 of the medical and sanitary unit of the Ministry of Internal Affairs of the Russian Federation (Ufa).*

Results. *The results of this study show that patients with chronic generalized catarrhal gingivitis course have an unbalanced autonomic vegetative nervous system with a predominance of the madrenergic component in the release of catecholamines. As a rule, gingivitis occurs in such patients more often. The level of anxiety correlates with the severity of the disease.*

Conclusions. *The cadets with signs of psychoemotional stress showed higher values of hygienic and periodontal indices, and the severity of inflammatory periodontal diseases correlates with the severity of psychoemotional stress.*

Keywords: *psychoemotional stress, cadets, dental plaque*

Introduction

According to epidemiological dental surveys of the of the Russian Federation population, the prevalence of periodontal tissue diseases in different age categories is up to 92%. Inflammatory periodontal disease (IPD) is often associated with somatic diseases. In the study of this relationship, the unity of pathogenetic mechanisms was revealed, which are based on violations of redox processes and antioxidant protection, a decrease in immunological protection, etc [*Tsepov LM, 2014*].Both local and general factors are of great importance in the development and progression of inflammatory periodontal diseases. In the scientific literature, special attention is paid to occupational factors closely related to stress which have a significant impact on the course of the inflammatory process of periodontal tissues [*Tarasenko LM, Petrushanko TA,1999*]. Our attention is drawn to the professional impact on the health of specialists whose activities are associated with an active and emotionally negative work schedule [*Kononova OV,2016*].Employees of the internal affairs bodies are exposed to professional stress, who are forced

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to perform their official duties in a strictly limited time under the conditions of a tense socio-economic situation in the country [*Bazarny VV,2018*]. A busy work schedule affects negatively the health of employees of the internal affairs bodies, therefore, various diseases are common among them. Periodontal diseases are one of the frequent manifestations of the impact of occupational hazards, in particular occupational stress [*Korenevskaya NA, Gorodetskaya IV,2015*]. There are also other factors for psychoemotional stress due to social relations among employees and aggravating the effect of the primary impact. This includes: constant workload during the day, moral discomfort, refusal of a sufficient level of psychological assistance, disrespectful attitude of other people to their work and high demands of the authorities. Recently, the personality of an employee of the Ministry of Internal Affairs has often become the object of scientific medical research. It is very important to obtain reliable information about the role of external and internal, that is, personal factors that enhance or reduce the impact of occupational hazards on their health. This knowledge helps to provide law enforcement officials with competently selected specialized medical care [*Raigorodskii DY, 2001*]. Professional rehabilitation for employees of the Ministry of Internal Affairs is a very important and necessary condition for maintaining their health and performing important state activities in due time [*De Iuliis V, 2016*]. The cadets of military universities are also of particular interest. The stage of entering a higher military educational institution can be considered as entering an independent life [*Kuznetsova NS, 2018*]. At this moment, in the psychology of the first-year cadet, changes occur that affect his consciousness, associated with parting with the school team, leaving the family, unpreparedness for studying at the university, restriction in freedom, and following orders from commanders and senior officers [*Makeeva IM et al., 2008*]. It is during this period that the cadet begins to experience a strong psychological phenomenon - adaptation to study in a military educational institution. The most difficult for the cadets is the first course as it is associated with entering a different environment, that is, with adaptation to learning. The previous structure of behavior changes, new habits appear. The contradiction between the volume and complexity of the educational material and the lack of desire and ability to study at the university are the distinctive features of the first year cadets [*Korchemny PA,2014*].Cadets need not only to learn how to listen and record lectures, but also study independently and take notes of literature, prepare for practical classes and seminars. Such qualities as independence, responsibility, the ability to allocate time correctly, the desire to learn come to the fore [*Resolution, 2015*]. It is very important to understand the difference between studying in a civilian and military university. Studying at a military university has the following features: the specificity of knowledge, skills, abilities and qualities that must be formed in soldiers is due to their focus on preventing aggression and, if necessary, suppressing, destroying the enemy [*Efremova OY, 2011*]; studying military science for military personnel is an official duty; training of servicemen is carried out inseparably from the performance of official duties, under the conditions of constant combat readiness. Very often cadets have an unbroken chain of activity change: training sessions - entry on duty – performing of the– change-over the duty - training sessions, which leaves them little time to prepare for classes. Both individual and collective forms of education are used simultaneously. The training of military personnel has a practical focus [*Kulygina VN, Mohammad AM,2014*], in this regard, the training department plans trips for cadets to field training centers, mastering military skills is carried out using real military equipment and weapons "14". The training process is carried out within the framework of the charter organization, directed by the responsible commander, is detailed and strictly regulated by the requirements of guidelines that determine a principled approach to the content, organization and methodology of military training and education [*Ippolitov EV, 2016*]. These features of training cause a crisis in the cadet associated with the difficulty of rebuilding to new

To overcome it is possible, due to the uniting the knowledge and will of all doctors in the world

requirements without outside help. The cadets develop a feeling of anxiety, lack of confidence in their abilities, doubts about the correct choice of profession. Observations show that it is in the first year that a larger number of cadets are expelled [*Order 2015*]. The occurrence of a crisis situation is associated with the adaptation process. Chronic generalized catarrhal gingivitis is the most common among dental diseases in young people [*Ghazaryan RK, 2008*]. A large number of studies are devoted to the study of the etiology and pathogenesis of this disease[*Kabirova MF, 2015*].

Despite the previously obtained data on the features of the dentition and the possibility of the influence on it of pathological reactions developing in the body in the presence of prolonged psychoemotional stress, this problem has not been completely solved, and we believe that the approach to the diagnosis and treatment of such patients should be comprehensive and include an assessment of the dental status, the functional state of the dentoalveolar apparatus, and an assessment of the psychoemotional state.

The aim of this work is to identify the relationship between the features of the course of chronic generalized catarrhal gingivitis and changes in the composition of the dental plaque biofilm in cadets of the Ufa juridical institute of the Ministry of Internal Affairs of the Russian Federation (UJI) under conditions of psychoemotional stress.

Material and Methods

We examined 105 cadets of the UJI aged from 18 to 25, among them 90 - with chronic generalized catarrhal gingivitis (main group) and 15 - without signs of periodontal pathology (control group), who did not have other chronic pathology of organs and systems, and during the examination were practically healthy, which was confirmed by the data of clinical and laboratory examinations. The observations were carried out on the basis of the dental office of the medical unit No. 1 of the medical and sanitary unit of the Ministry of Internal Affairs of the Russian Federation in the Republic of Bashkortostan (Ufa). All patients were males. The study was carried out with the permission of the head of the institute, Colonel AS Khanakhmedov, as well as the informed consent of the cadets revealing the procedure for the performed manipulations with an indication of possible side effects. All cadets signed an informed consent protocol to participate in the study. The selection criteria were: consent to participate in the study, a diagnosis of chronic generalized catarrhal gingivitis (K05.10 Chronic gingivitis. Simple marginal), age from 18 to 25 years. Exclusion criteria were: age under 18 and over 25; partial secondary adentia; previous orthodontic treatment; the presence of additional factors of dental plaque retention (fillings with an overhanging edge in the cervical region, acritical crowns), use of cytostatics within the last six months, immunosuppressants and corticosteroids (systemically or locally), diseases of the oral mucosa; existing signs of an acute infectious disease, hypersensitivity to drug components. Exclusion criteria were: refusal from repeated clinical examinations, oral hygiene breaches, the occurrence of undesirable effects requiring drug withdrawal.

Before carrying out treatment measures, the patients underwent a proper examination which made it possible to obtain the initial information in a form convenient for further statistical processing. The dental status was formalized using a set of dental indices. Before the examination started, each patient underwent a panoramic image using an OSAHOPHOS SL 2 device (Germany) which was repeated one year later. Periodontal pockets were measured with a volumetric probe. We used a dental formula recommended by the World Health Organization to preserve information about the teeth and periodontal tissues condition. The examination of the patients was carried out according to the plan which included a standard set: interview, examination, palpation and an occlusiogram. During the collection of the medical history, attention was focused on the features of the disease course, whether there are or there aren't bad habits, drug or other allergic reactions.

During the examination, the following was assessed: the depth of the vestibule of the oral cavity, the state of the mucous membrane of the oral cavity, the location of the frenulum of the tongue and lips, the height level of the alveolar processes was noted according to the orthopantomogram. Next the state of the surface of the tongue and the hard and soft palate was described. All of the above, together with the condition of the teeth, was recorded in the individual patient records. The Green-Ver-

milion hygienic index (HI), Russell periodontal index (PI), Interquartile Range (IR), Papillary Marginal Attachment (PMA) index were used to determine an objective assessment of the periodontal tissues clinical state. In parallel with the clinical dental examination, a microbiological study of the dental plaque biofilm was carried out, psychological testing was carried out together with a psychologist of the UJI.

A complete sanitation of the oral cavity was carried out in each patient. Patients of all groups underwent professional oral hygiene:

- elimination of all (supragingival) dental plaque with multifunctional ultrasonic autonomous scaler Varios VA970 LUX (Japan);
- closed curettage of periodontal pockets using Graces curettes Hu-Friedy (Germany) (if necessary).

Selective grinding of teeth was carried out according to the occlusiogram to eliminate traumatic occlusion. All results were statistically processed using the Statistica computer program from Statsoft. To analyze the dynamics of changes in indicators in the variational series, the arithmetic mean (M) and the standard error of the arithmetic mean (m) were calculated. Determination of the indicator of a significant difference between the two arithmetic means and their standard errors was performed using the unpaired Student's t-test.

Psychological research was carried out using the depression scale according to the Beck test, the Spielberger scale of state and trait anxiety, and the Luscher test.

Determination of the peculiarities of the biofilm composition in cadets of the UJI of the Ministry of Internal Affairs.

A microbiological study of the supragingival dental plaque was carried out. The sampling of material for culture was taken from each patient from the area of maximum accumulation of supragingival dental plaque. The material was taken in the morning, on an empty stomach, before brushing teeth. A transport system was used that included a sterile swab probe and a test tube with Amies medium with activated carbon closed with a stopper. After sampling the material, the test tube with the medium was transferred to the microbiological laboratory for inoculation and determination of the qualitative and quantitative composition of the biofilm.

Results

The state of the psychological status of the examined patients

The control group psychological testing

The Spielberger scale of state and trait anxiety (SA and TA, respectively) was used to assess the individual psychological characteristics and the severity of anxiety in the examined patients. TA characterizes a stable tendency to perceive a wide range of situations as threatening, to react to such situations with anxiety. SA characterizes tension, anxiety, nervousness. A very high SA causes attention failure, sometimes impaired fine coordination. A very high TA directly correlates with the presence of a neurotic conflict, emotional and neurotic breakdowns and psychosomatic diseases. The interpretation of the results is based on the possibility of finding the total for each subscale in the range from 20 to 80 points. Intensities of SA and TA were assessed in the same range: 20-30 points - low, 31-45 points - medium, 46 and higher - high. In the control group, the TA mean value corresponded to a low level of anxiety - 23.4 ± 1.3 points, and SA - to an average level of anxiety - 37.0 ± 1.4 points. According to the Beck scale, depression was not detected in practically healthy individuals (the average mean value of the sum of points in the group was 7.2 ± 1.2). Luscher's test identified a stable emotional sphere in this group. No anxiety or stress was identified.

Psychological testing in cadets of the UJI with chronic generalized catarrhal gingivitis (CGCG) before treatment.

Psychological testing using the Ch Spielberger scale of trait and state anxiety was carried out to cadets of the UJI at the beginning and end of the treatment course. It is known that psychoemotional disorders play an important role in the development of chronic generalized catarrhal gingivitis.

In this regard, psychological testing is an indispensable way to determine the psychoemotional state of the patient and allows us to select adequately drug-induced psychotropic therapy. The data of the study of the anxiety levels according to the Spielberger test and depression according to the Beck test in points in patients with chronic generalized catarrhal gingivitis are presented in Table 1. When conducting a study using the Luscher test, the majority [*Lüscher M, 1971*]

TABLE 1.

Indicators of anxiety and depression in patients with chronic generalized catarrhal gingivitis depending on the severity of the disease (M ± m)

Severity of gingivitis	Average indicators of anxiety and depression in points		
	Trait	State	Depressions
Control	23.4±1.3	37.0±1.4	7.2±1.2
Mild	30.5±1.2	44.4±1.2	9.1±2.4
Medium	36.2±2.4	51.1±1.7	10.2±2.7
Heavy	45.3±5.9	62.1±1.7	10.5±2.7

of the surveyed showed a high level of anxiety and the presence of stress in various interpretations (psychological and physiological). Frustration was noted in 28 patients.

In patients with chronic generalized catarrhal gingivitis, an increase in the indices of state and trait anxiety is observed, which correlates with the severity of gingivitis, which corresponds to the literature data. Eleven patients had mild depression. The conducted examinations confirmed that the majority of patients with chronic generalized catarrhal gingivitis are characterized by psychoemotional instability and the phenomena of vegetative dystonia. When comparing the indices of autonomic tone (according to the results of the questionnaire) in patients with chronic generalized catarrhal gingivitis in terms of the severity and course of the disease, no significant differences were found ($p > 0.1$). This indicates a violation of neurogenic regulation, not associated with a disease flare, but correlated with an increase in anxiety (the correlation coefficient is 0.32 at $p > 0.01$). According to clinical and experimental studies, the state of chronic stress often accompanies the development of chronic generalized catarrhal gingivitis.

An analysis of the features of studies at the UJI showed that combination of sudden unexpected psychotraumas with prolonged situational traumas, leading to persistent mental stress are the most common. Thus, 44% of patients with CGCG associated the onset of the disease with the neuropsychiatric shocks they suffered, serious situational-conflict states with the head of the course. We noted an increase in the level of anxiety corresponding to an increase in the severity of gingivitis ($p > 0.05$).

Analyzing the results of the study, it can be noted that patients with CGCG have an unbalanced autonomic nervous system with a predominance of the madrenergic component in the release of catecholamines. As a rule, gingivitis in such patients occurs more often. The level of anxiety correlates with the severity of the disease.

Analysis of the treatment results of cadets with CGCG with and without the use of drug-induced correction of changes in the nervous system.

According to the results of the clinical, neurological, neuropsychic examination, we have chosen for treatment medications glycine with an antioxidant effect, motherwort oil extract, powder from the roots and rhizomes of the burnet, polyvalent pyobacteriophage. Traumatic occlusion was eliminated from all patients of subgroups I - III with medium and heavy severity of the disease. If necessary, surgical interference to eliminate papillary hypertrophy; orthopedic and orthodontic treatment were performed. As a result of drug therapy, the dental indices, the values of the indicators of gum bleeding, and the hygiene index have changed. In patients of the main group (I subgroup), who underwent traditional treatment of periodontal diseases, rinses with a solution of powder from the roots and rhizomes of the burnet was prescribed 3 times a day for 14 days (27 people), compaction of the gingival margin, a decrease and in some cases - (21%) - disappearance of bleeding one month after the start of treatment in patients with mild and medium severity degree were marked.

The simplified oral hygiene index (OHI-S) (points) decreased from 3.52 ± 0.04 to 2.16 ± 0.03. PI (points) decreased from 4.32 ± 0.08 to 1.73 ± 0.04, Sulcus bleeding index (SBI) (%) - from 82.14 ± 6.71 to 23.11 ± 3.30. When conducting a neurological study, 5 people noted an improvement in their state of health but there were no significant differences in the indices of vegetal loads. Similarly, no significant changes were found during psychological research. For 32 cadets of the main group of the II subgroup, in addition to traditional treatment, applications on the gum mucous of polyvalent pyobacteriophage were used twice a day during 14 days, and the glycine was prescribed sublingually, 1 tablet 3 times a day for 14 days. As a result of drug-induced therapy in patients with mild CGCG severity, compaction of the gingival margin with a decrease was objectively observed, and in some cases (32%), the disappearance of

bleeding one month after the start of treatment. OHI-S index (points) decreased from 3.52 ± 0.04 to 1.56 ± 0.03 points; PI (points) from 4.32 ± 0.08 to 1.17 ± 0.04 points, SBI index (%) from 82D4 ± 0.11 to 12.31 ± 0.05. During a neurological study, 9 people noted an improvement in their well-being, but there were no significant differences in the indices of vegetal loads. When neurological examination in patients with CGCG after complex therapy (III subgroup - 31 hours), 11patients - with mild and 6 - with medium severity of the disease marked improved health, normalized sleep, increased working capacity; 7 people reported improved attention, decreased frequency of dizziness; 4 - noted a decrease in tachycardia from 96 to 84 *beats / min.*

In subgroups I-II, changes in the state of health were observed in 5 and 9 patients, respectively. As a result of drug-induced therapy, compaction of the gingival margin was noted, in 92% - the disappearance of bleeding, pain, itching in the gums in cadets of the UJI with mild and in 42% - with meduim severity of CGCG a month after the start of treatment. The OHI-S index (points) decreased from 3.52 ± 0.04 to 0.45 ± 0.03 points. PI (points) from 4.32 ± 0.08 to 0.37 ± 0.04 points, SBI (%) from 82.14 ± 0.11 to 10.07 ± 0.05. The data of psychological testing of patients with chronic generalized catarrhal gingivitis before and after treatment with a complex of glycine, an oil extract of motherwort, powder from the roots and rhizomes of burnet, polyvalent pyobacteriophage in gel form are presented in Table 2.

Studies of psychological disorders in patients with CGCG in this subgroup after complex treatment using the Spielberger and Luscher tests showed that 75.8% of the examined people marked a significant decrease in the levels of state and trait

Table 2.

Indicators of trait and state anxiety in patients with chronic generalized catarrhal gingivitis (M ± m)

Severity of gingivitis	Trait anxiety		State anxiety	
	Before	After	Before	After
Control	23.4±1.3	-	37.0±1.4	-
Mild	30.3±1.3	27±1.2	45.2±1.3	41.0±1.1
Medium	36.4±2.2	31±1.5	51.4±1.7	46±1.5
Heavy	46.1±5.9	41±1.7	61.6±1.7	56.1±1.4

anxiety, while in patients with mild CGCG the indicators of anxiety scales at the end of treatment course approaches the norm indice, while in patients with severe manifestations of the disease, the average test scores on the anxiety scales improve but still remain above the norm indice. No significant changes were found in the 1st subgroups. In patients with a mild degree of CGCG, the indices of the anxiety scales at the end of treatment course approached the norm indice.

At the same time, in patients with severe manifestations of the disease, the average test scores on the anxiety scales were better, but did not become close to normal. The addition of a combination of glycine preparation, motherwort oil extract, powder from the roots and rhizomes of burnet, polyvalent pyobacteriophage to traditional therapy had a positive effect on the psychoemotional sphere, thereby improving the clinical condition of patients with CGCG by 21.3% during traditional therapy. Considering all of the above, the proposed comprehensive approach to the problem of chronic generalized catarrhal gingivitis with the determination of clinical, pathogenetic and diagnostic criteria for assessing functional changes in the nervous system, neurohormonal regulation, psychoemotional sphere should be considered justified, as well as drug-induced correction of the identified disorders with neurotransmitters and antioxidant drugs.

Features of the biofilm composition in patients with signs of psychoemotional stress.

To study the features of the microbial plaque composition, a bacteriological study of dental plaque was carried out. For comparison, material was taken from each patient from the enamel surface in the cervical region in the zone of normal position of the teeth in the dentition. The study was carried out only in patients with gingivitis diagnosis. Table 3 shows data on periodontal pathogenic flora in cadets of the UJI with signs of psychoemotional stress and in cadets without signs of stress.

The composition of the microbial plaque taken from the surface of the teeth of the cadets of the UJI with signs of psychoemotional stress has fundamental features - periodontopathogenic microorganisms of the red, orange and green complexes of Sokransky are sown more often. Microorganisms of the red complex are detected, on average, 5

Table 3.

Features of the microbial composition of dental plaque in patients with signs of psychoemotional stress

Types of microorganisms	Detection rate of sychoemotional stress	
	Signs	No signs
Red Complex		
Porphyromonas gingivalis	9 (15%)	1 (1.7%)
Tannerella forsythia (B. forsytus)	7 (11.7%)	2 (3.3%)
Treponema denticola	5 (8.3%)	1 (1.7%)
Orange complex		
Fusobacterium nucleatum	48 (80%)	9 (15%)
Prevotella intermedia	32 (53.3%)	5 (8.3%)
Prevotella nigrescens	28 (46.7%)	4 (6.7%)
Peptostreptococcus micros	46 (76.7%)	3 (5%)
Streptococcus constellatus	25 (41.7%)	2 (3.3%)
Eubacterium nodatum	24 (40%)	3 (5%)
Campylobacter showae	31 (51.7%)	4 (6.7%)
Campylobacter gracilis	29 (48.3%)	4 (6.7%)
Campylobacter rectus	22 (36.7%)	3 (5%)
Yellow complex		
Streptococcus sanguis	60 (100%)	60 (100%)
Streptococcus oralis	59 (98.3%)	58 (96.7%)
Streptococcus mitis	57 (95%)	58 (96.7%)
Streptococcus gordonii	54 (90%)	53 (88.3%)
Streptococcus intermedius	51 (85%)	51 (85%)
Green Complex		
Eikenella corrodens	30 (50%)	22 (36.7%)
Capnocytophaga sputigena	35 (58.3%)	30 (50%)
Aggregatibacter Actinomycetemcomitans	12 (20%)	10 (16.7%)
Purple and blue complexes		
Actinomices naeslundii	60 (100%)	60 (100%)
Veilonella parvula	52 (86.7%)	52 (86.7%)
Actinomices odontolyticus	40 (66.7%)	38 (63.3%)

times more often than among cadets without signs of psychoemotional stress, and bacteria of the orange complex - 6.5 times more often. At the same time, microorganisms of the yellow and purple complexes were detected with the same frequency, both in cadets with signs of stress and without. Microorganisms of the red and orange complex are considered the main cause of the development of inflammatory periodontal diseases; more often they are detected in a mature, highly organized dental plaque. In the presence of signs of psychoemotional stress, the quality of individual oral hygiene is much worse, mature dental plaque is more often formed in this zone, and, accordingly, periodontal pathogenic microorganisms are detected more often.

Microbiological evaluation of the effectiveness of a gel from a complex of glycine, an oil extract of motherwort, powder from the roots and rhizomes of burnet, a polyvalent pyobacteriophage.

Also, 10 days after the treatment started, a repeated microbiological study of plaque was carried out in the examined cadets of the UJI. The results are reflected in table 4.

From the data in Table 4 it can be seen that in groups 1 and 2, the frequency of detection of red and orange complex microorganisms significantly decreased. In group 2, P. gingivalis and Tr. denticola were detected in one patient; in group 2 microorganisms of the red complex were not detected in the supragingival plaque. In group 3, the frequency of P. gingivalis, T. Forsythia and Tr. Denticola decreased by 5% and amounted to 5%, 5% and 10%, respectively. Also, in all groups the frequency of detection of microorganisms of the orange complex decreased. The frequency of F. Nucleatum detection in group 1 decreased from 85% to 15%, in group 2 - from 75% to 5%, and in group 3 - from 80% to 60%. The dynamics of indicators in group 3 was significantly worse than in groups 1 and 2, that is, the frequency of detection of microorganisms of the red and orange complex 10 days after the start of treatment in group 3 was significantly higher than in groups 1 and 2 (Fisher's criterion was 2.2 when comparing groups 1 and 3 and 2.4 when comparing groups 2 and 3). This proves the advisability of local therapy as part of the comprehensive treatment of gingivitis in patients with signs of psychoemotional stress. At the same time, anti-inflammatory therapy did not have a significant effect on bacteria of the yellow complex, which are most often found in an immature plaque.

Conclusion

The cadets with signs of psychoemotional stress showed higher values of hygienic and periodontal indices, and the severity of inflammatory periodontal diseases correlates with the severity of

Table 4.

Dynamics of the composition of dental plaque against the background of gingivitis before and after 10 dey treatment

Types of microorganisms	Group 1		Group 2		Group 3	
	Before	After	Before	After	Before	After
P. gingivalis	3 (15%)	1 (5%)	4 (20%)		2 (10%)	1 (5%)
T. forsythia	2 (10%)		2 (10%)		3 (15%)	2 (10%)
Tr. denticola	3 (15%)	1 (5%)	3 (15%)		3 (15%)	2 (10%)
F. nucleatum	17 (85%)	3 (15%)	15 (75%)	1 (5%)	16 (80%)	12 (60%)
Pr. intermedia	11 (55%)	3 (15%)	11 (55%)	1 (5%)	10 (50%)	8 (40%)
Pr. nigrescens	9 (45%)	1 (5%)	10 (50%)	1 (5%)	9 (45%)	7 (35%)
Peptostr.micros	16 (80%)	3 (15%)	15 (75%)	2 (10%)	15 (75%)	11 (55%)
Str. constellatus	8 (40%)	0	7 (35%)		10 (50%)	5 (25%)
E. nodatum	9 (45%)	1 (5%)	8 (40%)	1 (5%)	7 (35%)	3 (15%)
C. showae	10 (50%)	2 (10%)	12 (60%)	2 (10%)	9 (45%)	3 (15%)
C. gracilis	10 (50%)	1 (5%)	9 (45%)		10 (50%)	4 (20%)
C. rectus	8 (40%)	1 (5%)	7 (35%)		7 (35%)	2 (10%)

psychoemotional stress. Cadets with signs of psychoemotional stress develop a mature dental plaque containing red and orange microorganisms.

When treating gingivitis in patients with signs of psychoemotional stress, it is advisable to use plant-based neurotransmitters and anti-inflammatory drugs. In particular, a preparation made from a complex of glycine, an oil extract of motherwort, powder from the roots and rhizomes of burnet, and a polyvalent pyobacteriophage can significantly reduce the concentration of periodontopathogens in dental plaque and has an anti-inflammatory effect. The use of the proposed complex of glycine, motherwort oil extract, powder from the roots and rhizomes of burnet, polyvalent pyobacteriophage in gel form is convenient to use, since it allows to increase the exposure time on the oral mucosa and provides the optimal concentration of drugs to achieve the fastest therapeutic effect. This medicinal composition of glycine, motherwort oil extract, powder from the roots and rhizomes of burnet, polyvalent pyobacteriophage has demonstrated efficacy and ease of use, and requires further implementation as an additional agent in the treatment of chronic generalized catarrhal gingivitis against the background of psychoemotional stress.

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