NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696 Website: ijiert.org
VOLUME 7, ISSUE 7, July-2020

THEORETICAL BASIS OF THE ACTION OF AUTOTOMBOCYTE MASS

TURAEVA F. A.
Bukhara State Medical Institute Department of Pediatric Dentistry

ABSTRACT
This article is devoted to the modern complex treatment of patients with generalized periodontitis using platelet-rich plasma. Platelet autoplasma is a highly active biological stimulator of regeneration processes due to the various growth factors contained in the alpha-granules of platelets, which act on all structural units of the surrounding tissues and stimulate regeneration processes. The article describes the use of platelet autoplasma and their advantage in the treatment of generalized periodontitis in patients of older age groups.

KEY WORDS: periodontitis, immunoglobulins, plasmolifting, microflora, tissue, men, women, lysozyme, autothrombocyte mass.

RELEVANCE

Today, platelet-rich autoplasma is widely used in clinical practice in many countries. Due to the high plasma concentration of platelets, fibrinogen, leukocytes, macrophages, growth factors and interleukins, the regenerative capabilities of tissues are stimulated [1]. The usual platelet count in the blood is 180-320 thousand / ml. In plasma rich in platelets, their number reaches 1 million per 1 ml. The following growth factors are contained within platelets: insulin-like factor (InsulineLikeGrowthFactor 1, IGF-1), platelet factor (PlateletDerivedGrowthfactor, PDGF), transforming growth factor beta (TransforningGrowthFactorBeta, TGF-ß) (PlateAletFactorFactor), angiogenic factorAngiogenesis FibroblastGrowthFactor, FGF). IGF-1 is a major stimulant of bone growth and is enhanced when combined with two other factors. PDGF, having an angiogenic, chemotactic, mitogenic effect for all cells, is able to accelerate the functional cycle of damaged cells.

The therapeutic effect of ATM is explained by the presence of platelets and the growth factors (RF) contained in them, but the effect of blood plasma can also be based on other qualitative components, for example, micro- and macroelements, vitamins, which are in the most bioavailable state for tissues [2]. Therefore, the author of the method, Professor Akhmerov R.R. does not reject other hypotheses of plasma action (nutritive, environmental, etc.). The following hypotheses of plasma action are assumed.

1. Platelet.
2. Environment.
3. Homeopathic.
4. Nutrient.
5. Hormonal.

In the 1980s. when stimulating regeneration processes, the main attention was paid to the role of tissue oxygenation [2,3,10]. Of course, tissue oxygenation remains a fundamental factor, since it improves the phagocytic and bactericidal capacity of the body's immune cells, as well as supports the synthesis of collagen and other proteins.Currently, the main goal of research on regeneration processes is the need to identify RFs, to know the mechanism of their action. tions and possibilities of application to improve the regeneration of the wound surface [1,2,7].

The use of platelet autoplasm today represents one of the few opportunities for starting and accelerating natural regeneration mechanisms due to the RF contained in platelets. In addition, it is non-toxic and non-

immunoreactive. Obtaining autoplasma involves the separation of plasma and platelets from erythrocytes both along the density gradient and using specialized laboratory filters. Platelet autoplasm modulates and regulates the function of primary, secondary and tertiary RF, influencing all stages of regeneration simultaneously. This property distinguishes RF of platelet autoplasma from recombinant RFs responsible for a separate mechanism of regeneration [7,8].

Platelets in their composition have a variety of RFs and cytokines, which contribute to the restoration of damaged tissues. In α-granules of platelets there are more than 30 RF, which affect the processes of regeneration of periodontal tissues simultaneously.

Growth factors are delivered to the tissues during the injection form of autoplasma and are concentrated by introducing a larger amount of autoplasma, which increases the activity of fibroblasts and stimulates their formation. Fibroblasts produce collagen fibers, hyaluronic acid and elastin. All this leads to the formation of new connective tissue, the growth of capillaries. Growth factors also block osteoclasts and stimulate osteoblast proliferation, which inhibits further bone tissue loss and promotes its regeneration.

As a result, metabolic processes are restored, micro-circulation and metabolism in tissue cells are improved, tissue respiration is normalized, and local immunity is activated [6,7].

By activating all regeneration processes simultaneously and acting on them synergistically, platelet autologous plasma becomes a simple and safe biological method that accelerates regenerative processes [5,7]. Platelet-rich plasma is harmless to a person's own tissues, bioavailable in a biochemical ratio of components that is characteristic of a given organism [1,2,3,10].

The pathophysiological (pathological, since the pathological state is "imitated") the process of action of autologous platelet plasma can be simplified as follows: due to the loss of contact of the platelet with the endothelium when leaving the blood flow, it changes its shape, stimulates a-granules, ejecting, into in turn, into the FR wound [3,6].

According to studies, it has been shown that an increase in the number of platelets up to 1 million / μL enhances the tissue repair phase [9]. Based on the data obtained, it is necessary to obtain not only autologous platelet plasma, but also to achieve an increase in the absolute number of platelets in the tissues.

The principal advantage of the Plasmoliftmg ™ method is the ability to increase the number of platelets in tissues due to the larger volume of injected plasma. This property is inherent only in the natural, liquid state of plasma in accordance with the law m = Vq, where m is the mass of the absolute number of platelets, V is the volume of plasma, q is the concentration of platelets. In practice, this means the introduction of not 0.2-0.3 ml, but 1-2 ml, which is quite easy to perform in soft tissues and large joints [2, 8.9].

The study of the links in the pathogenesis of inflammatory periodontal diseases remains relevant due to the insufficient effectiveness of therapeutic interventions, both conservative and surgical. In connection with the almost 100% prevalence and the ever-increasing prevalence of young people with an aggressive form of periodontitis, an in-depth study of the state of the periodontal structures is not only scientific, but also of purely practical interest to substantiate an individualized approach to predicting the course of the disease and treating patients [5,6 9]. Blood derivatives, in particular platelet-rich plasma, represent a promising source of natural autologous growth factors that enhance proliferation, migration and differentiation of stem cells. In addition, clinical trials have confirmed the safety of platelet-rich plasma as well as its ability to improve the clinical outcomes of stem cell therapy.

Thus, summing up the results of the study of scientific literary sources devoted to the pathogenesis, diagnosis and treatment of HP, we can conclude that at present there is a clear tendency to an increase in their number in the structure of dental morbidity in the population of many countries, including the Republic of Uzbekistan , which requires the search and development of new methods of diagnosis and treatment.

PURPOSE OF THE STUDY

To study the effectiveness of the treatment of chronic generalized periodontitis using platelet autoplasma.

RESEARCH MATERIALS AND METHODS

To study the prevalence of chronic generalized periodontitis of varying severity in the period from 2017 to 2019, 240 people with chronic inflammatory periodontal diseases (CDD) were examined. The clinical study was carried out in the dentistry office of the Bukhara Regional Multidisciplinary Medical Center, Bukhara. Of the examined 240 patients with CDD, 160 (66.7%) patients suffering from HAP in the age from 25 to 65 years were selected, including 78 (48.8%) men and 82 (51.2%) women. The average age of the patients was 42.9 ± 7.5 years. We also studied a control group of people with healthy periodontal disease in the amount of 20 people without regard to gender.

Selected for the study, 160 patients suffering from HAP were divided into two groups.

The first, main, group consisted of 80 patients, of whom there were 42 (52.5%) men and 38 (47.5%) women. The patients of the first group in the complex treatment were carried out with the use of an auto-platelet mass.

The second, control group also consisted of 80 patients, 47 (58.8%) women and 33 (41.2%) men, who used standard methods of HP treatment in the complex treatment. In addition, a control group of people with healthy periodontium in the amount of 20 people was allocated.

When examining patients, standard methods of examination at a periodontal appointment were used.

During the initial examination of patients, the following complaints prevailed:

- The presence of an unpleasant smell from the port,
- Bleeding gums when brushing teeth and taking solid food,
- Gum color change,
- The presence of plaque (dental calculus),
- Stripping of the necks,
- The presence of periodontal pockets and discharge from the skin.

On the basis of clinical data, the diagnosis was made “chronic generalized periodontitis.

The main complaints of patients with HAP: bleeding gums (83.1%) and their soreness (26.2%), bad breath (23.1%), suppuration from periodontal pockets (PC) (16.9%), mobility teeth (13.8%), exposure of the necks of the teeth (18.5%) and their hyperesthesia (20%).

The general state of health of the patients before the start of treatment was assessed according to their words. When collecting anamnesis, it was revealed that 72 people (44.6%) consider themselves to be practically healthy, the remaining 88 (55.4%) noted certain diseases and / or allergic reactions in the anamnesis. Most often, patients noted diseases of the gastrointestinal tract - 21.5%, ENT organs - 16.9% and diseases of the cardiovascular system - 12.3%. Allergic history was present in 23.1% of patients. The results of collecting the anamnesis of the disease showed that in 137 patients (85.6%) the diagnosis of periodontitis was first established when they applied to the dental office of the Bukhara Regional Medical Association. The remaining 23 patients (14.4%) were aware of the presence of periodontitis, but they had not previously received specialized care from periodontists. They carried out treatment sporadically by dental therapists, which, as a rule, consisted of a single removal of dental plaque. Hygiene training was provided to only 15 patients (9.4%), who, despite this, did not know about the need to use intradental hygiene products. None of the patients were offered courses of maintenance therapy, and the effectiveness of the treatment received was assessed by all patients as low.

During intraoral examination, special attention was paid to the anatomical and functional disorders that have a pathogenetic significance in the development of inflammatory periodontal diseases. In 25.4% of patients

with periodontitis, the presence of ischemia of the gums in the region of the lower anterior teeth was noted, in 22.4% - a shallow vestibule of the oral cavity, in 23.8% of patients - pathology of frenulum attachment, in 21% - traumatic effect of bands. Bite pathology was detected in 77.8% of patients, the presence of three - in 11.5%, partial defects of the dentition - in 44.4%, gum recession - in 32.1%, the absence of abrasion of enamel tubercles - in 17.9% , orthopedic structures - in 41.8%, dental caries in 71.2% of patients.

Most patients, in addition to treatment with a periodontist, required consultations from doctors of related specialties: a therapist (in the presence of dental caries and violation of marginal adherence to fillings), an orthopedist (in case of partial defects in the dentition), orthodontist (in case of crowding of teeth and bite pathology).

When examining the periodontal status, 100% of patients showed bleeding of the gums during probing, in 95.6% - hyperemia of the gums, in 51.2% - their pronounced swelling, in 47.1% - their pain on palpation, in 32.4% purulent discharge from the PC was noted, in 74.1% - tooth mobility.

When probing the PC, it was revealed that in the area of 76.4% of the teeth, the depth of the PC was up to 6 mm, however, in the area of individual teeth, foci of deep destruction up to 8 mm (14.9%) and up to 10 mm (6.9%) were revealed. ...

When determining the mobility of the teeth, it was revealed that 52% of the teeth had physiological mobility, and 44% - pathological, with I degree - 18.2% of the teeth, II degree - 16.3% and III - 9.5%.

In all patients, orthopantomograms showed pronounced destructive changes in the bone tissue of the interalveolar septa, including complete destruction of the cortical plates in the area of all teeth. Destruction of interdental septa up to 1/3 of the root length was noted in 5.6% of teeth, up to 1/2 in 75.5%, more than 1/2 in 16.9%. Subgingival dental deposits were determined on orthopantomograms in all patients, In 62.4% of patients, bony pockets were found, in the area of which, as a rule, overhanging edges of fillings (54.7%) or crowns (25.2) were determined. In 69 patients with an aggressive course of periodontitis, characteristic features of the structure of molars were revealed: large crowns of teeth with relatively short roots.

Before the start of treatment, each patient was individually trained in hygiene, which consisted in the selection of hygiene products, including interdental ones, and training in the method of their use. Local anti-inflammatory therapy (MPT) consisted of removing dental plaque, performing antiseptic treatment of PC and applying anti-inflammatory periodontal dressings under Diplain films.

The number of MPHT sessions required to relieve the inflammatory process in the periodontium varied from 2 to 5, depending on the severity of inflammation and the body's response to the treatment. The professional oral hygiene of the studied patients was carried out according to the standard technique, using an ultrasonic scaler of the dental workplace itself. In case of severe inflammation, the treatment of patients began with drug treatment (application of medicinal dressings based on metronidazole and chlorhexidine under Diplain films for 2 hours), which was carried out until the pronounced symptoms of inflammation disappeared. Prescribed rinsing with chlorhexidine solution 0.05-0.12% for 10 days and the use of anti-inflammatory toothpastes.

Research results and discussion.

At the initial stage of treatment, all patients of the two study groups underwent an index assessment, which was carried out before treatment, on the 3rd day, after 7 days, after 1 month, after 6 months and one year after treatment, which is presented in the tables below in the text ...

On the day of treatment, patients complained of bleeding gums when brushing their teeth, swelling of the gums, aching pain in the gums, pain when chewing, bad breath, mobility of teeth, and impaired chewing. Some patients complained of a general disorder: weakness, malaise, irritability, decreased appetite. Objectively: in the 1st visit, there were clinically observed hyperemia, edema, loose consistency of the gums, the depth of the PC averaged 5.8 ± 1.2 mm, from the PC there was serous-purulent exudate, from some pockets - the growth of granulations. In some teeth, mobility reached II-III degrees, there was a displacement of the

teeth, exposure of the neck of the partial roots of the teeth, hyperesthesia was observed. Bleeding of the gums according to the Muhllemann index had an average value of 2.91 ± 0.11. Revealed a significant amount of plaque and tartar, especially subgingival, oral hygiene was assessed as follows: the value of the index of dental plaque on the approximal surfaces API was 77.61 ± 7.37%; the PHP index also indicated an insufficient level of hygiene 2.41 ± 0.25. Already in the 3rd visit (10 ydenprovodimogo-treatment), all patients otmechaliznachitelnoeuluchshenie-uosnovnoychastipatsientovzhalobyotsutstvovali.Prianalizedinamikiurovnyagigienynafone the treatment at vsehpatsientovotmechalos reduction urovnyagigienicheskihindeksov APIiPHP cherez 10 dney, zakreplenierezultata vtecheniepolutoramesyatsevposlebazovogolecheniyav form dopolnitelnogonebolshogosnizheniyaznacheny indices and obratnyyihneznachitelny rise after 3 and 6 months within normoptimalnoy oral hygiene (Fig. 1)

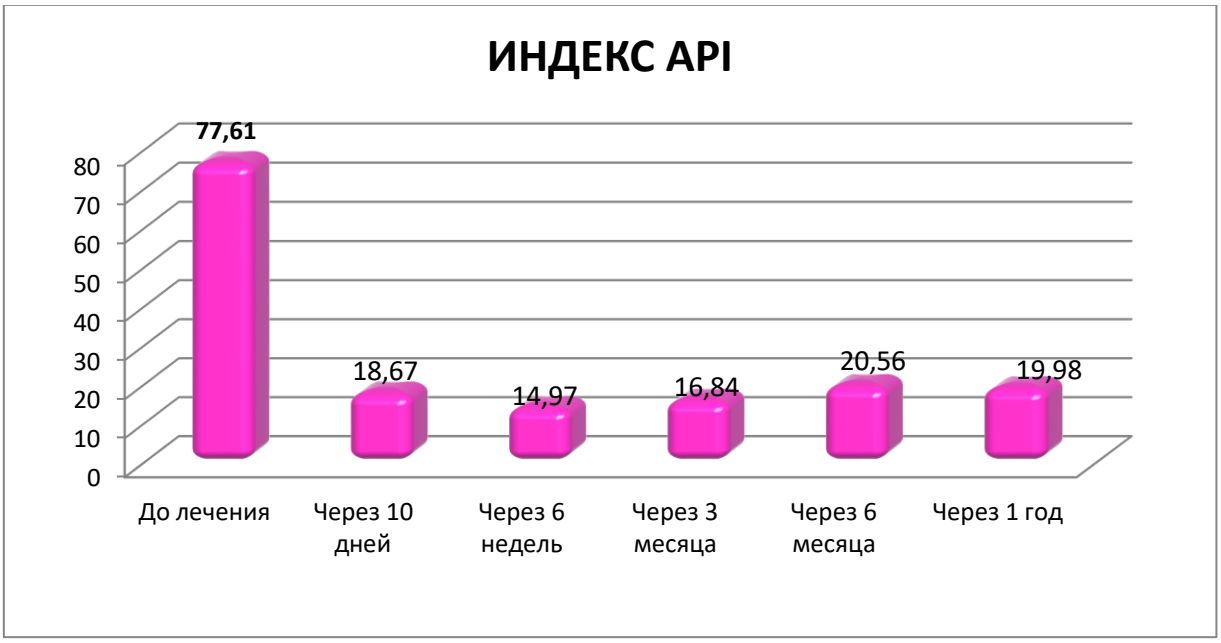

Fig. 1. Dynamics of the plaque index on the approximal surfaces of the API against the background of ongoing therapy.

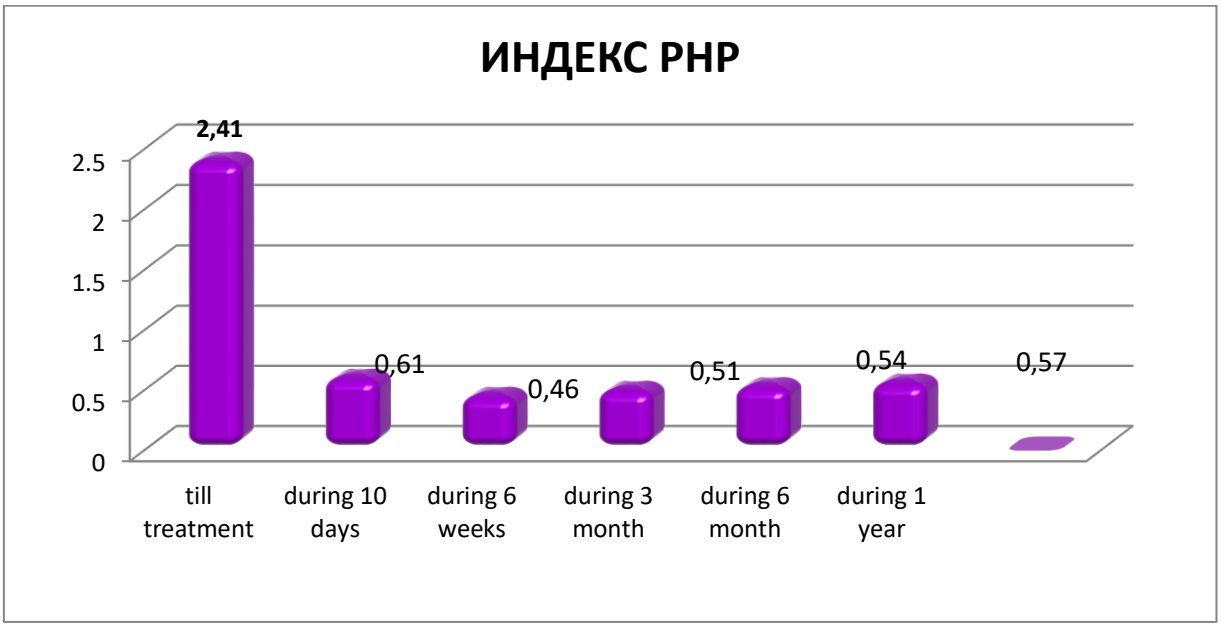

Fig. 2. Dynamics of the PHP hygiene efficiency index during treatment.

An improvement in the clinical condition of the gums was noted on the 2nd visit, after the norm on the 10th day in terms of bleeding (<1.0), which reached a maximum after 6 weeks (<0.5) and remained stable practically throughout the observation period (Fig. 3).

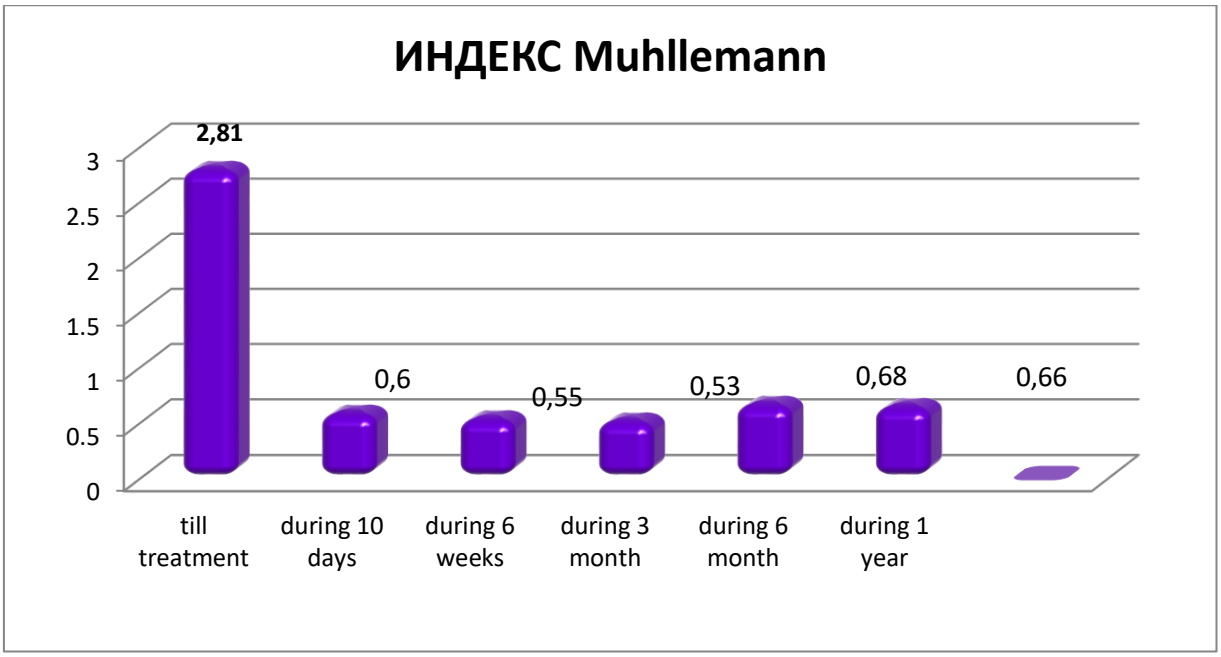

Fig 3. Changes in the bleeding index during the treatment

As a result of the treatment, there was a significant positive dynamics in reducing the depth of the periodontal pocket. The degree of reduction in the depth of the periodontal pocket was 29.17% (1.7 mm), so that in some patients after a year of active maintenance therapy, the depth of periodontal pockets was less than 5 mm (as in periodontitis of the median tissue structure). a slight decrease in the size of the destruction of the interalveolar septa. The effectiveness of treatment according to the Ulitovsky index after a year of observation was 91.24%, 100% of patients were transferred to the phase of remission of the disease.

One month after the treatment and prophylactic measures in group 1 of patients (80 patients), dental plaque re-formed in 8 people (10%), in group 2 (80 patients) in 10 people (12.5%).

After 6 months from the beginning of the research in the main group, dental plaque re-formed in 10 people (12.5%), and dental calculus in 4 people (5.0%); whereas in the control group, plaque was formed in 29 people (36.25%), and calculus in 12 people (15.0%). Bleeding gums in the first group reappeared in 3 people (3.75%); in the second group there are 30 people (37.5%).

After 6 months, a slight increase in indicators began to be observed in group 2 (control) compared with group 1, which was treated with the use of autologous platelet mass, which is clearly seen in the diagrams.

When examining patients one year later (control study) after the start of treatment, the stability of indicators was observed in the first group: plaque re-formed in 12 people (15.0%), tartar in 5 people (6.25%); bleeding of the gums appeared in 4 people (5.0%). Whereas in the second group, dental plaque was formed in 35 people (43.75%), and dental calculus in 20 people (25%); bleeding of the gums appeared in 35 people (43.75%).

Evaluating the effectiveness of the treatment of both groups (the formation of dental plaque and calculus) after one year, it can be concluded that the frequency of repeated treatment in the first group was 21.3%) (17 people), in the second group - 68.75% (55 people).

When analyzing the data obtained, one year later, the average group index scores in the main group changed for the better as compared to the control group.

Analysis of data at all stages of the study (3 days, 7 days, 1 month, 6 months and 1 year) revealed a fairly clear positive dynamics of index indicators during treatment, followed by a period of remission.

There was a sharp decrease in all index indicators in the main and control groups on the 3rd day of the study; after 7 days, a decrease was also recorded in both groups, albeit insignificant. After one month of the study, the indicators of the main group remained at the same level as before, while the indicators of the control group increased. A sharp increase in indicators occurred after 6 months in patients of the control group compared to the main group.

Positive clinical and visual indicators in patients of the main group were observed already at the 3rd visit (7 days) after the start of treatment, which makes it possible to speak of a decrease in the duration of treatment for periodontal patients to three visits.

Index score IGR-U according to J.C. Green - J.R. Vermillion decreased 2.4 times in group 1, which corresponds to 59.01%; in the 2nd group - by 1.5 times, which corresponds to 36.36%; PHP hygiene efficiency index in the 1st 1.7 times, which corresponds to 43.75%; the second is 1.2 times, which corresponds to 18.7%; The index of dental plaque on the approximal surfaces of API is 2.9 times in the 1st, which corresponds to 66.5%; in the 2nd, it is 1.9 times, which corresponds to 48.4%; The PMA index is the first by 2.0 times, which corresponds to 49.5%; the second is 1.5 times, which corresponds to 36.6%; CPITN index in the 1st 1.36 times, which corresponds to 26.6%; in the second, 1.1 times, which corresponds to 9.67%; Bleeding index according to Muhleman H.R. (1971) by 1.8 times, which corresponds to 47.0%; in the second, 1.2 times, which corresponds to 16.6%;

In addition, positive visual indicators were observed in the patients of the main group, which did not change one year after the treatment with the use of an autologous platelet mass.

The absence of clinical signs of inflammation and a stable level of API and PHP indices within the limits of optimal oral hygiene during the entire observation period, a decrease in the PC depth by an average of 1.2 ± 0.5 mm confirm the high efficiency of conservative therapy for severe chronic generalized periodontitis when included in a complex of treatment of a modern method of using autoplatelet mass.

CONCLUSION

The absence of clinical signs of inflammation and a stable level of values of all indices within the limits of optimal oral hygiene during the entire observation period, reduction of the PC depth confirm the high efficiency of conservative therapy for chronic generalized periodontitis when a modern method of using autoplatelet mass is included in the treatment complex. Also, the analysis of the data obtained allowed us to conclude that the greatest antibacterial effect was achieved in the first group of patients who were treated with the use of autoplatelet mass compared with standard methods of conservative treatment in the second group.

REFERENCES

1) Akhmerov R.R., Zarudiy R.F., Rychkova I.N., Isaeva M.G., Altyeva A.F. "Autostimulation of regenerative processes in maxillofacial surgery and cosmetology" Methodological manual. - Moscow. - 2011 .-- 55s.
2) Zorina O.I., Grudyanov A.I., Byakova S.F. Surgical treatment of periodontal diseases using materials for targeted tissue regeneration // Terra Media.-2003.-№2.-p. 21.
3) Makhmutova A.F. The effectiveness of complex rehabilitation treatment of patients with inflammatory periodontal diseases: Abstract of the thesis of Candidate of Medical Sciences. Moscow. - 2009.-23p.
4) Permission for the use of new medical technology from 26.10.2010 FS No. 2010/380 "Autostimulation of regenerative processes in the treatment of periodontitis and atrophic conditions of the soft tissues of the midface zone."

5) Aminova Z.M., Emelin A.L., Ovechkina M.V., Kalyanova E.V. Application of platelet-rich plasma in orthopedics. PlasmoliftingTM technology. Orthoplasma procedure: a methodological guide for doctors. - M.: Prospect, 2012 .-- S. 305-412.
6) Zhuravleva MV, Firsova IV, Vorobiev AA, Makedonova Yu.A., Fedoseeva EA. Non-drug methods of treatment of inflammatory periodontal diseases // Periodontology. - 2015 .-- T. XX. - No. 1 (74). - S. 65-67.
7) Zhuravleva M.V., Firsova I.V., Vorobiev A.A. An experimental model to study the effect of the combined plasma lifting method on the oral mucosa // Bulletin of the Russian Military Medical Academy. - 2015. - No. 2 (50). - S. 49-50.
8) Starikova IV, Trigolos NN, Firsova IV, Makedonova Yu.A., Piterskaya NV, Marymova E.B. Assessment of the complex treatment of patients with chronic generalized periodontitis against the background of metabolic syndrome by clinical and immunological indicators // Bulletin of the Volgograd State Medical University. - 2015. - No. 2 (54). - 109-
9) Kamalova F.R., Turaeva F.A, The dynamics of the prevalence of diabetes and the study of dental status in children of the Bukhara region. 2-3 c. doi 10.5958/2278-4853.2019.00312.4
10) Turaeva F.A, The dynamics of the prevalence of diabetes and the study of dental status in children of the Bukhara region “International Journal of Applied Research 2019