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USING OF WATER-AEROSOL MIXTURE OF OZONATED TITANIZED DISTILLED WATER FOR ANTISEPTIC TREATMENT OF PERIIMPLANT DISEASES

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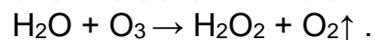
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Introduction.

The algorithm of periimplant tissues medical care, which is currently used in Ukraine and abroad consists of mechanical cleaning, local antiseptic and antibacterial therapy, removal of inflamed tissues accompanied by osteoplastic techniques, antibiotic therapy [1].

Noteworthy are methods that have a multifaceted effect (along with local) on the patient's body, and as a result, have minimal side effects. Such methods include ozone therapy. It is known that ozone therapy has immunomodulatory, anti-inflammatory, bactericidal, virolytic, fungicidal, cytostatic, anti-stress and analgesic effects. Methods of its implementation are quite simple and accessible in practice [2].

Simplified reaction of ozone interaction with distilled water :



The fundamental molecule of reactive oxygen species is hydrogen peroxide (H_2O_2). Ozone generates the formation of hydrogen peroxide and the release of active (protonated) oxygen [3].

The lesion of the oral cavity soft tissues ozonated by distilled water-aerosol method has been proven as the best effect method.

The usage of medical sorbents for local treatment of inflammatory diseases of periimplant tissues has increased in recent years [4]. One of these is submicron-sized titanium dioxide. Its main advantage is a large surface area and high exchange capacity [5]. Ozonated water with microdispersed particles of titanium dioxide provides sorption of microorganisms and their toxins, tissue breakdown products, toxic metabolites, localize them in the wound and provide subsequent elimination from the site of inflammation [6].

The aim of this study is to enhance the therapeutic effect and reduce the duration of treatment by improving the methods of obtaining and applying a water-aerosol mixture of a solution of titanium dioxide of submicron size in ozonated distilled water.

Materials and methods of research.

90 patients (58 women, 32 men) aged 21-65 applied to the clinic for treatment of inflammatory changes in periimplant tissues. While the examination paid attention to the index of bleeding gums, as this indicator is strongly correlated with the severity of the inflammatory process and the hygienic index, the hygienic condition of soft tissues and dental implants, the pH-metry of the implant-gingival sulcus contents, which is a predictor of destructive processes in periimplant pathology and verifier of treatment effectiveness.

Patients of the main group were treated with a solution of titanium dioxide of submicron size in ozonated distilled water were performed by our method, antiseptics were performed by water-aerosol irrigation of the oral cavity. Patients of the comparison group - the solution was prepared in the traditional open way, antiseptics were performed by rinsing the mouth.

The proposed method was carried out as follows: titanium dioxide powder (rutile) of submicron size was introduced into distilled water, sealed with a sterile rubber stopper and a metal cap and sterilized by autoclaving. A long (up to the bottom of the vial) and two short (immersed in solution) needles were inserted into a vial with distilled water and titanium dioxin fixed upside down. A long needle was attached to the compressor of the dental unit to create pressure in the system. One short needle was connected to the ozonator fitting, the other to the water-air waste of the dental unit. After bubbling, ready-to-use OTDW was applied to the oral cavity with the help of a puster. Pressing the two supply buttons (liquid and air) at the same time formed a water-aerosol mixture at the outlet, which is necessary for better soft tissue irrigation. Procedures should be performed daily, but not more than 5-7 days, depending on the speed of wound cleansing.

Results of the research.

After mechanical cleaning of the dental implants surface and local antiseptic and antibacterial treatment using ozonated titanium water, prepared by our method, removal of inflammatory periimplant tissues with curettage, therapeutic effect came after five days of procedures. After a similar treatment algorithm, but with the traditional method of preparation and use of ozonated titanium water, the therapeutic effect came after a seven-day of procedure.

Numerical indicators show a positive effect when using both treatment regimens, but a clearer and statistically significant effect was achieved thanks to our proposed method of obtaining and using a solution of titanium dioxide of submicron size in ozonated distilled water.

Conclusion.

Evaluation of the effectiveness of the developed treatment method and prevention of periimplantitis lesions was performed based on the results of clinical, physicochemical and functional research methods in comparison with a group of patients who underwent treatment and prevention measures in the traditional way.

The commonality of the positive dynamics of digital indicators of the condition of periimplant tissues after treatment was traced. Therefore, a positive effect was achieved by the management of all patients. However, the best results were obtained using suggested method.

Mathematical analysis of the presented data demonstrates the advantages of the developed method of treatment of periimplant diseases, especially in non-surgical treatment regimens, greater effectiveness in initial lesions, and thus - the prophylactic orientation of the measures of integrated control of periimplant tissues.

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