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The Use of Ozone Therapy in the Complex Treatment of Flat Leukoplakia of the Oral Mucosa

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Abstract
Leukoplakia is a precancerous disease characterized by the appearance of a white spot or plaque on the oral mucosa, slightly protruding above the level of the mucosa. The disease begins with the formation of a small area of inflammation, which remains unnoticed due to the absence of pronounced symptoms - only a whitish or gray coating may be present.

Keywords: Leukoplakia, pronounced symptoms, inflammation.

But as the disease develops, there are more foci, and other signs join the plaque. A distinctive feature is that it is impossible to remove plaque with improvised means. Over time, the affected area becomes rougher, which significantly increases the risk of developing a malignant tumor.

Leukoplakia is a keratinization mucous membrane of the oral cavity and red karma of the lips, accompanied by inflammation, occurring, as a rule, in response mainly to chronic exogenous irritation, without denying the influence of endogenous factors (A.A. Bezrukov, 2018; E.A. Gaibullaev, L. Chau et al, 2022).

Clinically , flat, verricose , erosive-ulcerative, smokers' (Toppeiner's) leukoplakia, simple and mild forms of leukoplakia are distinguished.

Leukoplakia of the oral mucosa is an optional precancer , the degree of probability and frequency of malignancy of which is not clearly defined and, according to cancer studies, varies from 12 to 25% (O.F. Rabinovich et al ., 2022; M.A. Nivech , 2010; J Lodi _ et al , 2016).

Therefore, identifying the early stages of pathogenetic features of the development of oral leukoplakia and carrying out timely adequate treatment is of great importance for preventing the oncological degeneration of this disease.

Meanwhile, in recent years, non-drug therapy methods, one of which is ozone therapy, have attracted much attention from scientists and practitioners.

To date, no studies have been conducted on the use of general and local ozone therapy in complex

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treatment of flat leukoplakia of the oral mucosa.

The purpose of this study is to increase the effectiveness of treatment of patients with flat leukoplakia of the oral mucosa through the use of general and local ozone therapy.

Material and methods 20 patients with flat form of leukoplakia aged from 30 to 60 years of both sexes were examined. The survey began with the collection of analytical data. The patients were found out about their age, profession, bad habits, existing chronic diseases, hereditary conditions, and kisses. everyday life, hygienic status (does he brush his teeth, regularity, parts used and how does he brush), medical history (when and at what age did the first signs of the disease appear, what is their occurrence associated with, did the first signs of the disease appear, what is associated with their occurrence, whether see a doctor, if so, what methods were used to treat and how effective it was).

When examining the oral cavity, attention was paid to the condition of the oral mucosa. its color, consistency, the presence of swelling, hypertrophy, atrophy , ulceration , the condition of the soft tissues of the vestibule and the floor of the mouth, the nature and amount of dental plaque . The dental formula was recorded, the teeth were identified as carious lesions, pulpitis or periodontitis, the presence of fillings, inlays, crowns and dentures will determine the presence of defects in the dentition, including those with preserved roots. The nature of occlusion, type of bite, and the presence of traumatic nodes were noted.

When studying the clinical and functional indicators of the oral cavity, we noticed that leukoplakia in the oral cavity develops gradually. Inflamed areas with swelling appear on the mucous membrane, more often on the tongue or on the inner buccal surface, the lesions were identical and multiple, and a strong burning sensation occurs or an itchy, rubbed area that can be identified by the tongue. Often the disease does not manifest itself for a long time and remains unattended. Over time, the affected areas rise above the mucous membrane, becoming covered with a dense whitish coating. It is not difficult to remove it , but after a few days the plaque will form again. As a rule, no painful manifestations are observed.

Next, the hygienic hygiene of the oral cavity is determined according to Federovo - Volotskina , the state of non-scophytic factors of protection of the oral cavity (saliva lysozyme titer, phagocytic activity of neutrophils in saliva, level of secretory immunoglobulin A in saliva) in patients.

Depending on the type of treatment performed, patients were divided into 2 groups. The first group (main) included 10 patients who, after sanitation of the oral cavity, received general (intravenous) and local ozonated rosehip oil. Rosehip oil was pre-ozonized by long-term (20-60 min) bubbling with an ozone-oxygen mixture in an Ozonator-1m apparatus with an ozone concentration of 5 mg/l. When mixed with oil, ozone enters into oxidative reactions, and the resulting peroxides provide a therapeutic effect.

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Ozone oil does not lose its activity when stored in a dark glass container at 20 C, and when stored in a refrigerator at 5 C in a dark glass container, it retains its activity for a year.

General ozone therapy included intravenous drip administration of 100 ml. 0.9% ozonated saline sodium chloride solution. Ozone was also obtained using the Ozonator-1m apparatus . Ozone concentration in 100 ml. physiological solution when barbated for 5 minutes according to the scheme for preparing the ozonized solution in the clinic was 1300-1800 mg/l. The transfusion rate was 120-150 drops per 1 minute, the procedures were carried out every other day, a total of 8-10 sessions.

Local ozone therapy included the application of ozonized rosehip oil to the affected areas of the oral mucosa with leukoplakia under a protective - fixing agent . I'll bring it . The course of treatment was 12-15 procedures daily.

The second group (control) included 10 patients with a flat form of leukoplakia, who received traditional therapy, including sanitation of the oral cavity, removal of dental plaque, treatment pathological lesions of the oral mucosa with 0.2% chlorhexidine solution; selective grinding of teeth, dental plaque Cormans and applications affected areas with rosehip oil protective fixing bandage.

All clinical, functional and immunological research methods were carried out before treatment (initial data), after 15 days, 30 days and in the long term - 6 months after treatment.

Statistical processing of the research results was carried out in the traditional way on a computer with calculation t – Student-fitter test.

Research results and discussion. When analyzing clinical observations, the following results were obtained. After treatment in the main group of those examined, already 2-3 days after ozone therapy with rosehip oil, more than half of the patients noted the disappearance of swelling and burning. At the same time, in the control group of patients receiving traditional treatments, swelling and burning in the oral mucosa still persisted. At 15-30 days of observation, the grayish plaques disappeared, and after 6 months of observation, the retraction, discomfort and tart areas that were identified by the tongue in the oral mucosa disappeared. This indicates a more beneficial effect of using ozonated rosehip oil than traditional treatment in patients with flat leukoplakia of the oral mucosa.

Index	norm	Patients with leukoplakia before treatment	Group of examined people	Duration of the study		
				For 15 days	After 1 month	In 6 months
Lysocymium titer mg%	19.11+-0.60	12.31+-0.32	Basic	20.32+-0.49	19.65+-0.37	16.58+-0.30
			control	18.17+-0.28	17.09+-0.26	10.1+-0.15

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Phygocytic activity of neutrophils %	57.20+-1.23	45.80+-1.11	Basic	55.02+-1.25	54.11+-1.28	56.42+-1.41
			control	48.12+-1.26	49.15+-1.36	47.53+-1.49
Level s Zg A	3.01+-0.11	1.51+-0.03	Basic	3.94+-0.15	1.91+-0.19	3.01+-0.42
			control	1.74+-0.11	1.71+-0.1	0.91+-0.04

A study of the status of research on oral protective factors in patients with leukoplakia is shown (Table 1).

Note : Groups – main (ozone therapy: IV + local).

Control (traditional treatment).

As can be seen from the data in Table 1, immunodeficiency is noted in the oral cavity of patients with lekoplakia . Thus, the lysozyme titer is equal to the phogocytosis index - 45.80+-1.11 mg%, with a norm of 57.20 +-1.23 mg%, level s Zg A - 1.51+-0.03, which is actually 1.2-2 times below the norm.

On the 15th day after ozone therapy treatment, the protective factors of the oral cavity tend to become more active. Thus, the titer of salivary lysozyme is 20.32+-0.49 mg% (with the norm being 19.11+-0.60 mg%), compared to before treatment (12.31+-0.32 mg%).

The phygocytic activity of salivary neutrophils was 55.02 +-1.25% (with the norm being 57.20+-1.23%) compared to before treatment (45.80+-1.11), and the level of s Zg A was (at the norm 3.01+-0.11%), compared to before treatment - 1.51+-0.03.

This indicates a 1.2-2.1 fold activation of local protection of the oral cavity on the 15th day after the start of treatment for patients with ozone therapy.

It is interesting to note that the positive progress achieved in the local immune system persisted on the 30th day of the study. However, the level of the studied indicators of the oral cavity in patients of the main group was at a high level even after 6 months, but to a less pronounced degree.

In patients in the control group who received traditional treatment with rosehip oil and vitamin A, positive symptoms were also observed, but 6 months after traditional treatment, all studied indicators of local protection of the oral cavity again tended to decrease.

Thus, the inclusion of a complex of traditional treatment of flat leukoplakia and ozone therapy (intravenous and local) leads to an improvement in the clinical condition of the oral mucosa and activation of nonspecific factors of local protection of the oral cavity, which persist 6 months after the start of treatment.

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