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COMPARISON OF THE IMPACT OF ANTISEPTIC AGENTS ON GARDNERELLA VAGINALIS AND ATOPOBIUM VAGINAE DETECTED IN THE ORAL CAVITY OF WOMEN WITH BACTERIAL VAGINOSIS

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Abstract.

When women with comorbid bacterial vaginosis visit periodontologist, it is essential to understand the presence of cross-infection processes between the oral cavity and vagina in this particular category of subjects. Conducting detection of *Gardnerella vaginalis* and *Atopobium vaginae*, which are provocative microbial factors for bacterial vaginosis, is a mandatory step in the laboratory examination of subjects.

When choosing an antiseptic for oral cavity disinfection, the use of 0.25% dequalinium chloride is more advisable. Both subjective and objective examination methods thoroughly demonstrate the higher clinical effectiveness of 0.25% dequalinium chloride: patients report a 20% more frequent improvement in subjective indicators, the index assessment of periodontal status improves by 1.2-1.6 times, and the detection rate of *Gardnerella vaginalis* and *Atopobium vaginae* is by 20% lower compared to 0.2% chlorhexidine. The specific composition of oral microbiota in this group of subjects necessitates adjustments to treatment protocols and consideration of the specific impact on *Gardnerella vaginalis* and *Atopobium vaginae*.

Key words. Antiseptic, Gardnerella vaginalis, Atopobium vaginae, oral cavity disinfection, bacterial vaginosis.

Introduction.

The human oral microbiota consists of more than 400 representatives with varying degrees of pathogenicity [1-3]. Cross-infection within the open cavities of the human body leads to the appearance of atypical oral flora bacteria, such as *Gardnerella vaginalis* and *Atopobium vaginae*. It has been proven that the above microorganisms act as causative agents of bacterial vaginosis and are detected in the oral cavity of subjects with this pathology [4,5]. *Gardnerella vaginalis* and *Atopobium vaginae* are known for their high ability to form biofilms and their resistance to medications [6,7], including antiseptics commonly used in periodontal practice [8].

Purpose.

To compare the clinical impact of antiseptic treatment of the oral cavity in women using 0.2% chlorhexidine and 0.25% dequalinium chloride, taking into account the presence of a concomitant condition, namely bacterial vaginosis, as well as the presence of atypical representatives of oral microbiota, namely *Gardnerella vaginalis* and *Atopobium vaginae*, in subjects with the mentioned pathology.

Materials and Methods.

The study involved 40 women aged 18-45, who were diagnosed with bacterial vaginosis by an obstetrician-gynecologist based on the clinical and laboratory studies. Selection for the groups was made out under the condition of the absence of harmful habits and severe forms of general somatic diseases in the subjects. The participants were divided into 2 groups of 20 subjects each. Women in Group I used 0.2% chlorhexidine for antiseptic treatment of the oral cavity, while subjects in Group II used 0.25% dequalinium chloride.

The subjects were examined prior the treatment and following 28 days after its completion. The examination included assessment based on the Greene-Vermillion Hygiene Index, PMA index (in the Parma modification), comprehensive periodontal index by Leus (CPI), Pisarev-Schiller tests and the Svrakov's number. The diagnosis was formulated according to MF Danylevsky's classification (1994) [9].

The next step involved the series of professional oral hygiene procedures performed using a combination of mechanical and manual techniques, depending on the indications. After the professional oral hygiene procedure, the subjects of Group I were prescribed antiseptic treatment of the oral cavity using dissolving tablets containing 0.2% chlorhexidine, while the subjects of Group II were prescribed oral cavity treatment with 0.25% dequalinium chloride in a similar pharmaceutical form. The regimen and method of use were the same for both groups: 1 tablet every 12 hours, after individual oral hygiene in the morning and evening, with a duration of use of 7 days.

Gardnerella vaginalis and *Atopobium vaginae* were detected in the oral cavity using the polymerase chain reaction method.

Results and Discussion.

Periodontal examination showed the presence of clinically intact periodontium in all examined subjects from both groups. In Group I, chronic generalized catarrhal gingivitis was detected in 10% of the subjects; initial stage of chronic generalized periodontitis was detected in 75% of the subjects, and chronic generalized periodontitis of the first degree was detected in 15% of the subjects. In the subjects of Group II, the indices were 15%, 70% and 15%, respectively.

The follow-up examination made 28 days after the end of treatment revealed positive changes, namely: subjectively, no complaints of halitosis, disappearance of pain, discomfort and itching in the gums, as well as a decrease in bleeding during brushing and flossing in 60% of the examined subjects in Group I and in 95% of subjects in Group II were revealed.

The analysis of the hygiene index assessment showed improvement of individual oral hygiene. The initial examination before treatment showed that the Green-Vermillion index in the group using 0.2% chlorhexidine as an oral antiseptic was 1.329 ± 0.035, and in the group using 0.25% dequalinium chloride, it was 1.334 ± 0.036. Following 28 days of treatment completion, the values dropped to score of 1.02±0.017 and 1.018±0.011, respectively. The analysis of changes in the hygiene index revealed that thorough selection of the subject for the study

Table 1. *Dynamics of gingival and periodontal indices values in the examined subjects (M±m).*

Indices	Group I (n=20)		Group II (n=20)	
	Before treatment	**Following 28 days after treatment**	**Before treatment**	**Following 28 days after treatment**
PMA index, %	62,66±6,48	25,01± 2,49*	64,67±6,68	11,64± 2,02*#
CPI index by Leus, score	2,38±0,54	1,612±0,17*	2,43±0,57	1,16±0,116*#
Svrakov's number	3,56±0,67	1,02±0,053*	3,64±0,66	0,67±0,042*

Note: *in parentheses – the number of examined women, * - significant difference (p<0.05) compared to the value in the group before treatment, # - significant difference (p<0.05) compared to the value in Group I following 28 days after treatment, p<0.05 – significant difference compared to the value in Group I before treatment.*

Table 2. *Gardnerella vaginalis and Atopobium vaginae in the oral cavity of women with bacterial vaginosis before treatment and following 28 days after treatment, %.*

Causative agents for bacterial vaginosis	Group I (n=20)		Group II (n=20)	
	Before treatment	**Following 28 days after treatment**	**Before treatment**	**Following 28 days after treatment**
Gardnerella vaginalis	95±9,24	20±1,51*	90±9,11	0*#
Atopobium vaginae	80±7,93	25±1,97*	85±8,01	5±0,047*#

Note: *in parentheses – the number of examined women, * - significant difference (p1<0.05) compared to the value in the group before treatment, # - significant difference (p<0.05) compared to the value in Group I after 28 days of treatment, p<0.05 – significant difference compared to the value in Group I before treatment.*

groups (confirmed by the absence of a significant difference in group indices before treatment) provides equal conditions for further study. The statistically insignificant difference in the results following 28 days of treatment completion can be justified by the choice of the gender group of subjects (according to statistics, women perform individual oral hygiene more qualitatively than men), high motivation and an increase in the level of oral hygiene skills to the proper level.

The absence of a significant statistical difference in the values of gingival and periodontal indices prior the start of treatment confirms the relatively equal initial examination conditions. The indices of periodontal diagnosis before treatment and after its completion are presented in Table 1.

Prior treatment, the PMA index in Group I subjects was by 2.01% lower compared to Group II, without registering a statistically significant difference. Following 28 days after the completion of medical intervention and drug therapy, the value of PMA index in Group I and Group II decreased by 37.65% and 53.03%, respectively. The significant difference between the values accounted for 13.37%, indicating a more pronounced effect of 0.25% dequalinium chloride on the pathogenic agents of the oral microbiota in women with bacterial vaginosis.

Before treatment, no statistically significant difference in the values of the CPI index by Leus was established in subjects of Group I and II. After completing the course of antiseptic therapy, the score of the CPI index by Leus decreased by 0.768 and 1.27 points in the subjects of Group I and Group II, respectively. After completion of treatment the significant difference between the score in the groups was 0.452 points, indicating the more pronounced effect of 0.25% dequalinium chloride on provoking microbial factors in the periodontal tissues of women with a diagnosed bacterial vaginosis.

Prior the treatment, the values of the Svrakov's number also did not show a significant difference in the subjects of both groups. Following 28 days after completion of the treatment regimen, the Svrakov's number in Group I and Group II decreased by 2.54 and 2.97 points, respectively. Upon examination, the difference between the values in the subjects of Groups I and II accounted for 0.35 points and was not statistically significant.

The presence of bacterial vaginosis pathogens in the oral cavity of women with a reliably established diagnosis was determined using the polymerase chain reaction method. *Gardnerella vaginalis* and *Atopobium vaginae*, which are causative agents of bacterial vaginosis and are atypical bacteria of oral microbiota, were detected. The results before treatment and following 28 days after treatment are provided in Table 2.

Prior to start of treatment, a 5%-difference in the levels of *Gardnerella vaginalis* and *Atopobium vaginae* presence in both groups (with respect to both microorganisms) was recorded, which was not statistically significant. The findings allowed for the diagnosis of cross-infection in both open cavities, namely the vagina and oral cavity, and the presence of absolutely atypical bacteria of *Gardnerella vaginalis* and *Atopobium vaginae* in the latter. After the completion of the dental procedures in the subjects of Group I, the detection of *Gardnerella vaginalis* and *Atopobium vaginae* decreased by 75% and 55%, respectively. In women of Group II, the detection rate of *Gardnerella vaginalis* in the oral microbiota decreased by 90%, and *Atopobium vaginae* decreased by 80%. The significant difference between the values of Group I and Group II accounted for 20% and applied to both microorganisms that caused bacterial vaginosis.

Conclusion.

When women with comorbid bacterial vaginosis visit periodontologist, it is essential to understand the presence of cross-infection processes between the oral cavity and vagina in this particular category of subjects. Conducting detection of *Gardnerella vaginalis* and *Atopobium vaginae*, which are provocative microbial factors for bacterial vaginosis, is a mandatory step in the laboratory examination of subjects.

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