

CLINICAL STUDY REGARDING THE EVALUATION OF THE THERAPEUTIC EFFICIENCY OF CERTAIN REMEDIES IN ORAL HALITOSIS

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ABSTRACT

Halitosis can be determined by oral, systemic or physiological conditions. The complexity of halitosis has imposed the development of a treatment system – the NT Necessary of Treatment. The purpose of this study is that of assessing the efficiency of a complex of therapeutic measures, according to the necessary of treatment grid NT1 and NT1 in a batch of patients diagnosed with forms of physiological halitosis and oral pathological halitosis. These patients have benefited from therapeutic measures according to the NT1 necessary of treatment, respectively NT1, according to the type of halitosis. The efficiency of the applied treatment was assessed at an interval of 3 months after the main examination and comprised the same methods of assessment as at the beginning. As a result of the analysis of data obtained after the therapeutic measures applied in our study, we can speak about major favourable modifications as regards the quality of the oral breath of the patients who participated in the research. We have noticed a clear improvement in all the patients assessed. The scores diagnosed through the halitosis detector substantially decreased, becoming favourable, indicating the absence of halitosis.

Key words: assessment, oral pathological halitosis, necessary of treatment.

INTRODUCTION

Although statistically speaking, the proper halitosis has a frequency of 50%, very few patients ask for treatment. This proves that these patients, even those with a real disorder, have a different psychological perception on their own breath [2, 3, 8].

The negative psychological aspects can be intensified through an inadequate treatment

management. That is why it is important to establish a precise treatment protocol even when the halitosis is difficult to detect [1, 6]. Halitosis can be determined by oral, systemic or physiological conditions. The complexity of halitosis has imposed the development of a system of treatment – the NT Necessary of Treatment [5].

Classification	Necessary of treatment
1. The proper halitosis 1. Physiological halitosis 2. Pathological halitosis - Oral - Extra-oral	NT – 1 NT – 1 and NT – 2 NT – 1 and NT – 3 NT – 1 and NT – 4 NT – 1 and NT – 5
2. Pseudo-halitosis	
3. Halitophobia	

Table 1. The classification of halitosis and the necessary of treatment

Category	Description
NT-1	Explaining and instructing the patient in the oral hygiene (his/her awareness)
NT-2	Oral prophylaxis, professional methods of sanitation and the treatment of oral disorders, especially of periodontal ones
NT-3	The interest of a doctor or a specialist physician
NT-4	Awareness, explaining, instruction, education
NT-5	Collaboration with a psychologist, psychiatrist

Table 2. The need of treatment (NT) for halitosis

At the beginning, all the patients with halitophobia are diagnosed with oral or extra-oral pathological halitosis or with pseudo-halitosis [4]. The patients will be treated according to the corresponding NT. After the treatment ending, the patients are re-examined for the halitosis. If the examiner can confirm that there is no physical or social evidence of halitosis, but only the patient claims that the smell persists, he/she can be diagnosed with halitophobia.

The treatment of the proper halitosis

NT – 1 represents the basis of the treatment for halitosis. The tongue cleaning reduces the sulphur volatile compounds (CVS) – the desquamated epithelial cells, sanguine cells and bacteria are reduced [7, 9]. Although the brushing and the use of the dental floss are not very efficient in reducing the halitosis, these procedures obtain a good oral hygiene and will prevent the periodontal

disease, the main cause of oral halitosis. Some mouthwashes and toothpastes are efficient in reducing the oral smell [10].

An odontal-periodontal periodical treatment is necessary, these disorders being the main cause of the oral pathological halitosis. **NT – 2**

The principle of the management protocol is:

The practitioner must establish a connection between him/her and the patient, through an attitude of acceptance, sympathy, support and safety. He/she must not argue with the patient on the existence or inexistence of halitosis. The doctor must explain the patient that the avoidance behaviour of the people around him/her is not due to halitosis. The patient must be trained in NT-1. The patient must be aware that he/she must not think of halitosis according to the attitude of the people around him/her.

NT 1 = Instructions for patients
Hygiene of the tongue
Brushing and the dental floss
Mouthwash and toothpaste
Periodical examinations and dental measurements
Other methods

Tabel 3. Physiological halitosis NT - 1

The necessary of treatment 2
A. Periodontal treatment
- Odontal treatments
- Endodontic
- Restorative
B. Surgical and medical treatments
- Extractions
- Treatment of ulcerations
- Treatment of xerostomy
C. Prosthesis

Tabel 5. NT – 2: Oral pathological halitosis

The treatment of the patients with halitosis of systemic or psychological cause is difficult, requiring medical or psychological therapy. NT-1 refers especially to physiological halitosis, but can be also applied to all the cases that can belong to NT-2 to NT-4. That is why, all the patients diagnosed with extra-oral or halitophobic pathological halitosis must go through the stages NT-1, supervised by the dental medical doctor, for their own sanitary education and for a better oral hygiene. NT-1 represents the most important necessary of treatment for halitosis [11].

The purpose of this study it to assess the efficiency of a complex of therapeutic measures, according to the grid of the necessary of treatment NT1 and NT2 in a batch of patients diagnosed with forms of oral physiological halitosis and pathological halitosis.

MATERIAL AND METHOD

Within a batch composed of 123 students (VI year) and 64 patients who requested specialty examination within the Chair of Odontology and Periodontology from "M. Kogălniceanu" Dental Clinical Basis, with ages comprised between 24-76 years, evaluated in view of establishing the halitosis diagnosis, we selected 22 persons divided in four lots of study, whom, after a detailed clinical examination: odontal and periodontal, after the oral hygiene tests, the periodontal indices, the evaluation of saliva from the quantitative and qualitative point of view, after testing the halitosis degree with a halitosis detector and an especially conceived questionnaire, we diagnosed with oral physiological halitosis or pathological halitosis of odontal-periodontal nature. These patients benefited from therapeutic measures according to the necessary of treatment NT1, respectively NT2, according to the type of halitosis. The efficiency of the treatment

applied was assessed at an interval of 3 months from the primary examination and comprised the same methods of assessment as at the beginning. Both in the physiological halitosis and in the oral pathological halitosis, TetroBreath products were used. The batches were formed in the following manner:

- 4 patients diagnosed with physiological halitosis benefited from therapeutic measures NT1: explaining and instructing the patient in view of an appropriate oral hygiene (his awareness raising) with the use of the TetroBreath introductory kit.
- patients diagnosed with oral pathological halitosis of odontal nature benefited from therapeutic measures NT1- NT2: explaining and instructing the patient in view of an appropriate oral hygiene (his/her awareness raising). Oral prophylaxis, professional hygiene methods and the treatment of odontal disorders, plus the use of TetroBreath Plus introductory kit
- 5 patients diagnosed with oral pathological halitosis of periodontal nature have benefited from NT1-NT2 therapeutic measures: explaining and instructing the patient in view of an appropriate oral hygiene (his awareness raising). Oral prophylaxis, professional hygiene methods and the treatment of odontal and periodontal disorders, with the use of Tetro Breath Perio Therapy introductory kit.
- patients diagnosed with oral pathological halitosis of mix odontal-periodontal nature have benefited from NT1-NT2 therapeutic measures: explaining and instructing the patient in view of an appropriate oral hygiene (his awareness raising). Oral prophylaxis, professional hygiene methods and the treatment of odontal and periodontal disorders, with the use of Tetro Breath Perio Therapy introductory kit alternatively with the TetroBreath Plus

- kit.
- The parameters assessed in the study:
- 1 Assessment of the salivary parameters;
 - 2 Assessment of the salivary flow at rest and of the stimulated flow
 - 3 Assessment of the saliva viscosity

- 4 Periodontal assessment
- 5 CPITN (Community Periodontal Index Treatment Needs), periodontal indices
- 6 Gingival bleeding indices
- 7 Halitosis degree (Halitosis Detector).

RESULTS

1. The variations of the cariogenicity of the bacterial biofilm (Hardwick J.L., Manly E.B. test)
2. The values of the PI bacterial plaque (Silness and Loe).
3. The evaluation of the salivary RFR / RFS parameters.
4. CPITN (Community Periodontal Index Treatment Needs) periodontal indices
5. Gingival bleeding indices
6. Halitosis degree (Halitosis Detector)

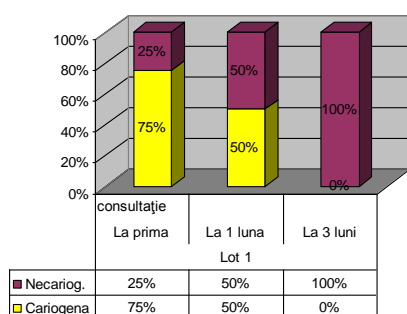


Fig. 1. The variations of the cariogenicity of the bacterial biofilm (Hardwick J.L., Manly E.B. test). Lot 1

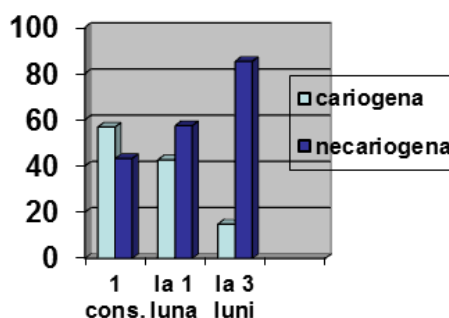


Fig. 2. The variations of the cariogenicity of the bacterial biofilm (Hardwick J.L., Manly E.B. test). Lot 2

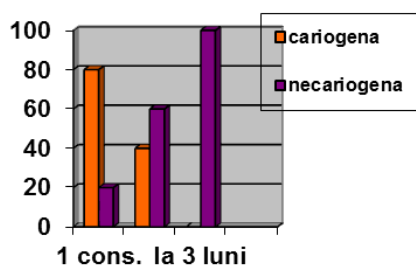


Fig. 3. The variations of the cariogenicity of the bacterial biofilm (Hardwick J.L., Manly E.B. test). Lot 3

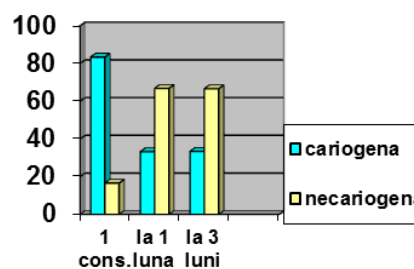


Fig. 4. The variations of the cariogenicity of the bacterial biofilm (Hardwick J.L., Manly E.B. test). Lot 4

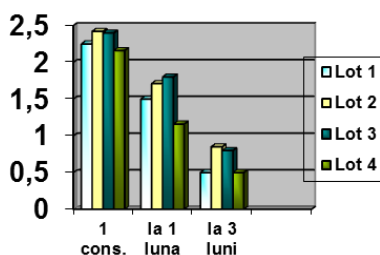


Fig. 5. The values of the PI bacterial plaque index (Silness and Loe)

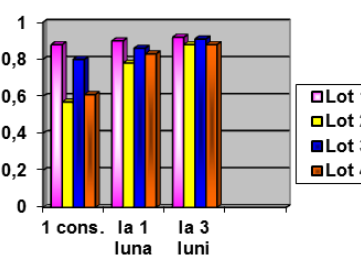


Fig.6. Assessment of the stimulated salivary flow (1 examination at 1 month/3 months)

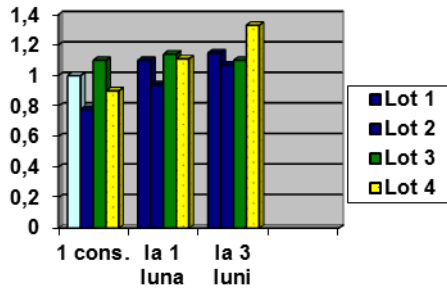


Fig. 7. Assessment of the stimulated salivary flow (1 examination at 1 month/3 months)

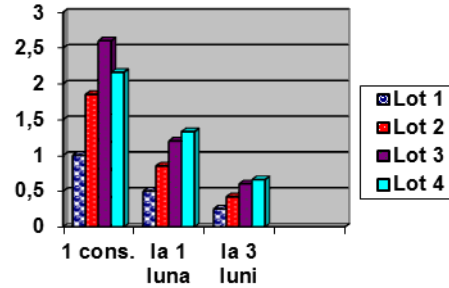


Fig. 8. Assessment of the CPITN indices (1 examination at 1 month/3 months)

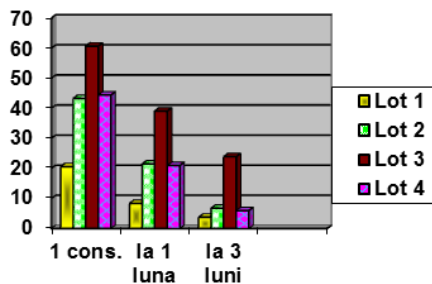


Fig. 9. Assessment of gingival bleeding indices (1 examination at 1 month/3 months)

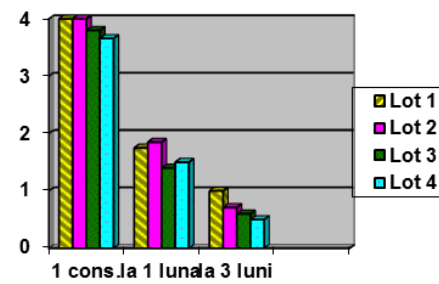


Fig.10. Assessment of the halitosis degree

DISCUSSIONS

In the treatment of physiologic halitosis, the main question that persists is how do we treat and what products are efficient? The dental practitioner usually searches in the studies published in specialty magazines, and the patient guides himself/herself based on the advice offered by the mass media, internet, commercials etc. When evaluating the specialty literature, we will take into account that the *in vitro* studies are not practical for examining the abilities of products to reduce the halitosis, it is much better to guide ourselves based on the *in vivo* tests [12, 13, 14]. The best method of determining the efficacy of products is represented by the CVS measurement from the air expired through the mouth. Silwood reports a 16.8 % reduction of CVS by using a mouthwash with chlorine dioxide - their clinical results are doubtful. Frascela used a monitor for registering the sulphites – registers a reduction of 4% by using the mouthwash with chlorine dioxin. Solid

clinical studies were carried out only on the mouthwashes that contain Zink, CHK, significant alcohol and hydrogen peroxide concentrations; which prove their efficiency in reducing halitosis. The dental prophylaxis represents a basic measure from NT-1. All the patients must be aware of the importance of periodical dental examinations. We notice similar results with those from our study in a recent study within the businesspersons from Tokyo and New York regarding oral hygiene. They reveal that: only 38% of the Japanese businesspersons periodically go to the dentist and only % are satisfied with their oral hygiene, the main source of discomfort (70%) is represented by halitosis.

Another study carried out in America shows that: 79% of the Americans investigated go to the dentist periodically, 69% being satisfied with their oral hygiene (absence of halitosis and the cosmetic effect of their denture). The practitioners reached the conclusion that if the patients go to the dentists periodically, motivated only by the

presence of halitosis, the state of their oral health can be improved.

As regards the **oral pathological halitosis**: Otaki establishes the fact that the active cavities, the secondary or the radicular surface cavities can be the cause of halitosis, specific dental treatments being necessary: restorations, endodontic treatments, extractions.

Kleinberg shows that a reduction of the saliva fluidity determines an increase of the bacterial density. In every masticating cycle, the residual saliva from the palate and from other oral mucosae is replaced by the saliva from the anterior oral area. The residual saliva at the level of the posterior palate is reduced in those with hyposalivation. The "Savage mouth" or the "savage breath" is caused by a reduction of salivation during the sleep. Kawaguchi recommends patients

exercises for the tongue to stimulate the salivary secretion.

The extra-oral pathological halitosis, as regards its treatments is not the dental medical doctor's appanage. If the practitioner diagnoses or suspects such a disorder, the patient will be sent to a specialist physician (NT-3).

As a result of the analysis of data obtained after the therapeutic measures applied in our study, we can speak about major favourable modifications as regards the quality of the oral breath of the patients participating in the research. We have noticed a clear improvement of all the assessed parameters. The scores diagnosed through the halitosis detector substantially diminished, becoming favourable, indicating the absence of halitosis.

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