



CODEN [USA]: IAJPBB

ISSN: 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.2604427>

Available online at: <http://www.iajps.com>

Research Article

### STUDY OF MICROBIOLOGICAL PARAMETERS OF THE ORAL CAVITY IN ORTHOPEDIC PATIENTS WITH PLASTIC INTOLERANCE SYNDROME AND HYPERTHYROIDISM

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**Article Received:** January 2019

**Accepted:** February 2019

**Published:** March 2019

**Abstract:**

*One of the most pressing problems in dentistry today is the problem of intolerance to plastics (acrylates). The number of patients who use acrylic plastic dentures is constantly growing, which is due to the increase in the average life expectancy of people and the widespread pathology of hard dental tissues, as well as periodontal disease, which is the main cause of tooth loss. Along with the increase in the number of people who use dentures, the number of patients who can not use them for various reasons is growing. Violation of the ratio of anaerobic and aerobic microorganisms, changes in the level of total microbial contamination, the quantitative content of certain types of bacteria and the frequency of their detection-microecological disorders of the oral mucosa (COP), which are detected in patients. 111 patients were examined. The first group - 37 people with hyperthyroidism, the second group-50 patients with hyperthyroidism on the background of complex orthopedic and medical treatment. The control groups 1 and 2 included 15 and 19 patients. Intolerance syndrome develops after the installation of removable plate processes from acrylic plastics, this occurs together with the inflammatory process in periodontal tissues, the level of the total microbial number increases, dysbiotic processes are expressed, the ratio of Airbus/anaerobes changes towards the prevalence of anaerobes.*

**Keywords:** orthopedics, intolerance syndrome, hyperthyroidism, microbiological parameters, acrylic plastics.

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Please cite this article in press Sevbitov Andrey et al., *Study Of Microbiological Parameters Of The Oral Cavity In Orthopedic Patients With Plastic Intolerance Syndrome And Hyperthyroidism.*, Indo Am. J. P. Sci, 2019; 06(03).

**INTRODUCTION:**

The problem of intolerance to materials used in medicine remains one of the most urgent today. Among the materials widely used in medicine and in the household sphere, plastics are widely used. Of the plastics that are used in medical practice, including dentistry, the most popular belongs to acrylates. The number of patients using acrylic plastic dentures is constantly growing, due to the increase in the average life expectancy of people and the widespread pathology of hard tissues of teeth, as well as periodontal disease – the main cause of tooth loss. Simultaneously with the increase in the number of people using dentures, the number of patients who can not use them for various reasons increases [1-3].

In case of intolerance due to allergic stomatitis of acrylic plastics, patients complain about the impossibility or difficulty of using removable prostheses due to the constant burning sensation in the mucous membrane of the prosthetic bed. The burning sensation is more pronounced on the upper jaw than on the lower one, which is apparently due to the buffer properties of the mucosa of the prosthetic field of the upper jaw. Sometimes joins burning tongue, mucous membranes of the alveolar processes, cheeks, lips. Patients complain of dry mouth. Saliva is viscous, "foamy", "sticky" [4,5]. Hyposalivation complicates the use of the prosthesis and exacerbates the clinical

picture of the allergic condition. Removal of the prosthesis, as a rule, eliminates subjective feelings. Often subjective feelings prevail over the objective picture of the disease. In patients with hyperthyroidism, microecological disorders of the oral mucosa are detected – changes in the level of total microbial contamination, the quantitative content of certain types of bacteria and the frequency of their detection, a violation of the ratio of aerobic and anaerobic microorganisms. Violation of the characteristic of the oral cavity of a healthy person, the ratio of aerobes and anaerobes (1:10) modern researchers noted in 68.4% of patients [6-8].

There are changes in the quantitative and species composition of microorganisms in the oral cavity. Hormonal imbalance has an effect on neutrophils, which migrate into the oral cavity and performing phagocytic function. In this case, there is an active development of opportunistic flora, fungi of the genus *Candida* and anaerobic flora, which have a direct impact on the development of acute and chronic inflammatory processes of the oral mucosa [9].

The predominance of anaerobic microorganisms in the oral cavity causes a decrease in the redox potential, increases the risk of inflammatory and dystrophic processes in the oral cavity [10].

**Indicators of the total microbial number and Airbus/anaerobic ratio after the imposition of lamellar prostheses in orthopedic patients with hyperthyroidism (usl.ed.).**

Indicator	TBC	R1	R2	a	R1	R2	an	R1	R2
TBC Control 1 (healthy)	1,2 ± 0,07			9			1		
Monitoring 2 (prior To prosthesis with hyperthyroidism)	1,3 ± 0,09	>0,05		8	>0,05		,25	<0,05	
The follow - up period of 2 weeks	1,45±0,06	<0,05	>0,05	7,5	<0,05	<0,05	,5	<0,001	<0,05
The follow - up period was 1 month	1,53±0,11	<0,01	>0,05	6,50	<0,05	<0,05	2	<0,001	<0,01
The follow - up period was 3 months	1,55±0,13	<0,01	<0,05	6	<0,001	<0,01	2	<0,001	<0,01

Note: R1-confidence in relation to control 1. R2-reliability in relation to control 2.

**MATERIAL AND METHODS:**

This work was done at Sechenov University with supported by the "Russian Academic Excellence Project 5-100".

A total of 111 patients were examined. Orthopedic patients with hyperthyroidism (37 people) were the first group, 50 patients with hyperthyroidism on the background of complex orthopedic and medical

treatment were the second group. Fifteen and nineteen patients were included in control groups 1 and 2.

Complex examination of patients was carried out according to the scheme: anamnesis collection, oral cavity examination, periodontal and alveolar process examination in the area of missing teeth, clinical and laboratory methods of examination, diagnosis.

Scraping of the oral mucosa was performed with a standard tampon of the transport system of the company "Sarstedt" (Germany), which allows to increase the time of transportation to the bacteriological laboratory up to 72 hours.

Microbiological studies included the determination of the total microbial number (ohms) by counting the colonies of microorganisms, as well as the determination of the ratio of aerobic and anaerobic flora with the use of aerobic and anaerobic cultivation techniques by sowing clinical material from a transport swab to special culture media. The following set of culture media was used for cultivation: for aerobic and facultative bacteria – blood agar, Chistovich medium, Endo medium, for anaerobic bacteria – Kato-Tarozzi medium.

Cultivation of the material on nutrient media was carried out in a thermostat at  $t\ 37^{\circ}\text{C}$  for 3-5 days. Cup with anaerobic pre-cultures were placed in microanatomy bio Merieux, and then to the thermostat. The results of quantitative study of microflora-the level of contamination-expressed in colony-forming units per 1 ml (Qty/1 ml).

The results were processed by the method of variation statistics with the definition of student t-test using standard programs Microsoft Office 2016 on a personal computer class Pentium. Reliable indicators were considered at  $p<0.05$ .

### RESULTS AND DISCUSSION:

Indicators of the total microbial number (ohms) and the ratio of Airbus (a) and anaerobes (an) in healthy individuals were  $1.2 \pm 0.07$  usl.units and 9 to 1, respectively (table. 1, Fig. 1). In patients with hyperfunction of the thyroid gland, these parameters changed, so OMH was  $1.3 \pm 0.09$  usl.unit, which was 8.3 ( $P1>0.05$ ) below 1 control, and an – 1.25, which was 25% ( $p<0.05$ ) above the control. 2 weeks after prosthesis partial removable dentures TBC was  $1,45 \pm 0,06$  CONV.unit, which was 20.8% ( $P1 <0.05$ ) above 1 control and 8.3% - 2 control; at the same time, aerobic flora decreased by 22.2% ( $P1 <0.05$ ) in relation to 1 control and by 14.3% ( $P2 <0.05$ ) in relation to 2 control, and anaerobic increased by 50%

( $P1<0.001$ ) in relation to 1 control and by 16.6% ( $P2 <0.05$ ) in relation to orthopedic patients with hyperthyroidism. In the subsequent periods of observation 1-3 months microbiological parameters with a high degree of reliability changed, so omch was  $1.53 \pm 0.11$  usl.ed. and  $1.55 \pm 0.13$  cont.units, which was 27.1-29.1 ( $P1 <0.01-0.001$ ) above 1 control, respectively, while aircafts decreased by 27.7-50.0% ( $P1<0.01-0.001$ ), and anaerobes increased by 100% ( $P1<0.001$ ).

### CONCLUSIONS:

After the installation of removable plate processes from acrylic plastics develops intolerance syndrome, which is accompanied by an inflammatory process in periodontal tissues. With the syndrome of intolerance to acrylic plastics, the level of the total microbial number increases compared to the control: from 1.3 usl.unit to 1.55 conl. In the syndrome of intolerance, dysbiotic processes are expressed, the ratio of Airbus/anaerobes changes in the direction of the prevalence of anaerobes.

### REFERENCES:

1. Voloshina I.M., Borisov V.V., Sevbitov A.V., Davidyants A.A., Mironov S.N., Kuznetsova M.Yu., Ergesheva E.V. Distinctive features of microcrystallization of mixed saliva in children with different levels of activity of carious process. Asian Journal of Pharmaceutics. 2018; 12(S3): 1017-1020.
2. Platonova V.V., Nevdakh A.S., Kuznetsova M.Yu., Sevbitov A.V., Mironov S.N., Borisov V.V., Danshina S.D. Frequency of traumatic complications of orthodontic treatment depending on type of braces which are used. Indo American Journal of Pharmaceutical Sciences. 2018; 5(1): 141-143.
3. Yumashev A.V., Gorobets T.N., Admakin O.I., Kuzminov G.G., Nefedova I.V. Key aspects of adaptation syndrome development and anti-stress effect of mesodiencephalic modulation. Indian Journal of Science and Technology. 2016; 9(19): 93911.
4. Kuznetsova M.Yu., Nevdakh A.S., Platonova V.V., Sevbitov A.V., Dorofeev A.E. Evaluation of effectiveness of a preparation on the basis of phytoecdysteroids for treatment of traumatic injuries of oral mucosa in orthodontic patients. Int J Green Pharm 2018; 12: 297-300.
5. Sevbitov A.V., Borisov V.V., Davidyants A.A., Timoshin A.V., Ershov K.A., Enina Yu.I., Pustokhina I.G. Prevention of injuries of the maxillofacial area in contact sports using sports

- caps. Indo American Journal of Pharmaceutical Sciences. 2018; 5(11): 12322-12325.
6. Rostock D., Crouch Yu., Kuznetsov and other. Adhesion of *Candida albicans* to corrective plastics used in orthopedic treatment with removable dentures. Dentistry. 2004; 5: 14-16.
  7. Sevbitov A.V., Dorofeev A.E., Davidyants A.A., Ershov K.A., Timoshin A.V. Assessment of pain perception of elderly patients with different levels of dentophobia during surgical dental appointment. Asian Journal of Pharmaceutics. 2018; 12(S3): 1012-1016.
  8. Borisov V.V., Sevbitov A.V., Poloneichik N.M., Voloshina I.M. Use of vector patterns for manufacturing of individual protective dental splints by method of thermoforming. Indo American Journal of Pharmaceutical Sciences. 2018; 5(1): 697-699.
  9. Turkina A.Yu, Novikova I.A., Turkin A.N., Sheklemetieva G.N. Operation field illuminance in dentistry. Light and engineering. 2018; 26(3): 181-187.
  10. Ershov K.A., Sevbitov A.V., Dorofeev A.E., Pustokhina I.G. Evaluation of elderly patients adaptation to removable dentures. Indo American Journal of Pharmaceutical Sciences. 2018; 5(3): 1638-1641.