

## MICROBIOLOGICAL ASSESSMENT OF THE EFFECTIVENESS OF THE TREATMENT OF PATIENTS WITH CONGENITAL CLEFT LIP AND PALATE BEFORE AND AFTER URANOPLASTY

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### ABSTRACT

This article presents an assessment of the effectiveness of the use of dental adhesive paste Solcoseryl and Hexoral aerosol, we studied the results of treatment in 54 sick children with congenital cleft palate.

**Key words:** congenital cleft lip and palate, dentoalveolar anomalies, prevalence, birth rate, children.

### INTRODUCTION

The problem of treating diseases of the oral mucosa in children, especially with congenital cleft lip and palate before and after uranoplasty, is one of the urgent tasks of practical dentistry (Azimov M.I., 2012).

Despite the achievements of modern science, the effectiveness of most means and methods of treatment of the oral mucosa remains at an insufficiently high level. It should be taken into account the fact that in the presence of a sufficiently effective drug, it is very important to select its optimal dose for each child individually, as well as to evaluate the pharmacodynamic properties of the drug during treatment. It should also be noted that a constant obstacle to the effective treatment of OCM disease is the emergence of the formation of microbial resistance to the drug[2].

An analysis of the available literary sources shows the special significance of the research devoted to the creation of antiseptic preparations. It should be noted that these drugs must meet the following requirements:

- Possess a wide spectrum of antibacterial action in the absence of a negative effect on the macroorganism.
- Have a low level of formation of resistance of strains formed as a result of the use of the drug;
- Possess a prolonging (long-term) effect, with low toxicity;
- Possess a high degree of adsorption and restoration of biocenosis in various biotopes of the macroorganism;

It is known that the emergence and progression of most diseases of the macroorganism, including the oral cavity, is largely facilitated by pathogenic flora, this circumstance constantly encourages scientists to search for and develop new antibacterial drugs. At the same time, the widespread and scientifically unfounded and uncontrolled use of chemotherapeutic drugs leads to the formation of resistant strains of microbes to the drug.

It should be borne in mind that it is necessary to start treating the infection as early as possible, since at the beginning of the disease there are few microbes in the body, and secondly, the drugs actively act on growing and multiplying microbes[2,4].

### **METHODS**

Based on the foregoing, we set ourselves the goal of studying in sick children suffering from congenital cleft lip and palate to evaluate the effectiveness of the use of drugs: Hexoral and Solcoseryl after uranoplasty for these children.

The drug Hexoral has a wide spectrum of action, it is associated with the suppression of oxidative reactions of bacterial metabolism (thiamine antagonist), detrimental to gram-positive bacteria and fungi of the genus *Candida*. It also has antiviral activity against influenza A virus, respiratory syncytial virus (RSV), herpes simplex virus (HSV) - affecting the respiratory tract.

Solcoseryl, a dental adhesive paste, serves as a combination of the active ingredients Polidoconol and Solcoseryl. Polidoconol is an aliphatic non-allergic surface anesthetic. Solcoseryl is a low molecular weight, protein-free dialysate obtained from the blood of dairy calves[1,3]

The active drug Solcoseryl accelerates wound healing by 30% compared to traditional drugs. It also enhances fibroblast migration and proliferation by 30-50%, and collagen synthesis by 30-40%.

To evaluate the effectiveness of the use of dental adhesive paste Solcoseryl and Geksoral aerosol, we studied the results of treatment in 54 sick children with congenital cleft palate.

These children were combined in 2 groups:

1. The first group consisted of 25 sick children with CCLP who received Hexoral in addition to traditional treatment;
2. The second group consisted of 29 sick children with CCLP who additionally received Solcoseryl.

### **RESULTS**

Given the associative nature of the "Microbial landscape" of pathological foci of the oral cavity, the question naturally arises about the role of individual representatives in the development and course of the disease. In this we will be helped by the study of the quantitative ratio of individual representatives of the anaerobic flora. Thus, Table

1 presents the quantitative parameters of obligate and facultative anaerobic bacteria in microbial associations in patients with CCLP.

As can be seen from the table, normal in healthy children, anaerobic microbes, as a rule, quantitatively prevail over the facultative flora. However, in children with congenital cleft lip and palate, the picture changes in the opposite direction, that is, as we see in this case, there is a significant dominance of the amount of facultative flora over anaerobic.

**Table 1.**

**The state of the microflora of the oral cavity in children with cleft lip and palate Ig CFU/ml M±m**

Groups of microbes	The number of microbes in 1 ml of	
	Control group healthy children n=15	Children with cleft lip and palate n=75
Total count.anaerobes	5,47±0,13	4,77±0,11 <sup>a</sup>
Peptostreptococcus	3,65±0,15	3,35±0,13
Lactobacili	4,47±0,20	3,17±0,12 <sup>a</sup>
Total count.aerobes	5,90±0,08	7,59±0,09 <sup>a</sup>
Staphylococcus epidermidis	4,30±0,11	4,47±0,12
Staphylococcus	2,27±0,17	3,55±0,14 <sup>a</sup>
Staphylococcus aureus	0	3,69±0,14 <sup>a</sup>
Streptococcus pyogenes	0	4,28±0,15 <sup>a</sup>
Streptococcus agalactiae	5,45±0,10	4,75±0,10 <sup>a</sup>
Escherichia coli (+)	1,15±0,14	3,30±0,13 <sup>a</sup>
Escherichia coli (-)	0	2,00±0,05 <sup>a</sup>
Fungi of the genus Candida	2,00±0,15	4,36±0,12 <sup>a</sup>

Note: <sup>a</sup> - The results are significant in relation to the indicators of the control group.

We also noted that the shifts in the direction of increasing the amount of facultative flora by approximately 2 orders of magnitude were most significantly expressed. It is interesting to note that not only quantitative, but also qualitative changes have occurred, since both pathogenic Staphylococci and Group A Streptococci began to be sown, and quite in large numbers.

Moreover, we noted an increase in the amount of Escherichia in the oral cavity, which also had qualitative changes. It is impossible not to note the increase in the number of fungi of the genus Candida.

All these qualitative changes are not accidental, since they have high aggressive properties, and therefore they will determine the monitoring of the further development of the clinical course of the disease.

We found it interesting to study the state of the microflora of the oral cavity in children with congenital cleft lip and palate in the early stages after uranoplasty surgery, namely 3-7 days. The materials of these studies are presented in Table No. 2.

However, as can be seen from Table No. 2 in children with CCLP on days 3-7, the microflora of the oral cavity, in general, represents a positive shift. It should be noted that this shift concerns only general quantitative parameters, and on all other issues we have no positive shifts.

Apparently, this is due to the fact that surgery, as a traumatic effect, reduced the body's resistance.

**Table 2.**

**The microflora of the oral cavity in healthy children and patients with CCLP of the 1st group before and after uranoplasty (lg CFU/ml M±m)**

Groups of microbes	Control. Group (n=15)	Patients of the 1st group (n=21)		
		before uranoplasty	3 days after uranoplasty	7 days after uranoplasty
Total count.anaerobes	5,47±0,13	4,77±0,11 <sup>a</sup>	6,11±0,13 <sup>a, b</sup>	5,19±0,11 <sup>b</sup>
Peptostreptococcus	3,65±0,15	3,35±0,13	3,46±0,11	3,15±0,08 <sup>a</sup>
Lactobacili	4,47±0,20	3,17±0,12 <sup>a</sup>	3,01±0,08 <sup>a</sup>	3,32±0,12 <sup>a</sup>
Total count.aerobes	5,90±0,08	7,59±0,09 <sup>a</sup>	6,53±0,21 <sup>a, b</sup>	7,15±0,10 <sup>a, b</sup>
Staphylococcus	4,30±0,11	4,47±0,12	4,14±0,15	3,33±0,11 <sup>a, b</sup>
Staphylococcus	2,27±0,17	3,55±0,14 <sup>a</sup>	3,42±0,07 <sup>a</sup>	3,51±0,13 <sup>a</sup>
Staphylococcus aureus	0	3,69±0,14 <sup>a</sup>	2,90±0,14 <sup>b</sup>	3,13±0,09 <sup>b</sup>
Streptococcus pyogenes	0	4,28±0,15 <sup>a</sup>	4,43±0,09	3,09±0,12 <sup>b</sup>
Streptococcus agalactiae	5,45±0,10	4,75±0,10 <sup>a</sup>	4,52±0,10 <sup>a</sup>	3,83±0,16 <sup>a, b</sup>
Escherichia coli (+)	1,15±0,14	3,30±0,13 <sup>a</sup>	2,98±0,11 <sup>a</sup>	2,44±0,07 <sup>a, b</sup>
Escherichia coli (-)	0	2,00±0,05 <sup>a</sup>	1,10±0,04 <sup>b</sup>	0.63±0,09 <sup>a, b</sup>
Fungi of the genus	2,00±0,15	4,36±0,12 <sup>a</sup>	3,39±0,14 <sup>a, b</sup>	2,72±0,13 <sup>a, b</sup>

Note: <sup>a</sup> - P<0, 05 reliability of results in relation to healthy.

<sup>b</sup> - P<0, 05 reliability of results in relation to data before treatment.

Our body makes active contact with the environment through the oral cavity, in particular, the ingestion of a wide variety of antigens determines what is the "theater" of the action of various effector mechanisms of the human immune system. At the level

of the mucous membrane of the submucosal layer of the oral cavity and the lymphoid apparatus of the maxillofacial region, to one degree or another, all the important functions of the immune system are realized.

The next group of our studies consisted of children who, in addition to traditional therapy, used Hexoral aerosol. The materials of these microbiological studies are presented in Table No. 3.

**Table 3.**

**Microflora of the oral cavity before and after uranoplasty in children of the 2nd group with CCLP (lg CFU/ml M±m)**

Groups of microbes	Control. Group (n=15)	Patients of the 2 <sup>nd</sup> group (n=25)		
		before uranoplasty	3 сутки после уранопласти	7 сутки после
Total count.anaerobes	5,47±0,1	4,77±0,11 <sup>a</sup>	5,43±0,10 <sup>b</sup>	5,10±0,19
Peptostreptococcus	3,65±0,1	3,35±0,13	3,49±0,10	3,17±0,07 <sup>a</sup>
Lactobacili	4,47±0,2	3,17±0,12 <sup>a</sup>	3,14±0,09 <sup>a</sup>	3,38±0,11 <sup>a</sup>
Total count.aerobes	5,90±0,0	7,59±0,09 <sup>a</sup>	6,22±0,14 <sup>a, b</sup>	5,12±0,17 <sup>a</sup> ,
Staphylococcus	4,30±0,1	4,47±0,12	3,71±0,15 <sup>a, b</sup>	3,10±0,09 <sup>a</sup> ,
Staphylococcus	2,27±0,1	3,55±0,14 <sup>a</sup>	3,34±0,07 <sup>a</sup>	2,87±0,12 <sup>a</sup> ,
Staphylococcus aureus	0	3,69±0,14 <sup>a</sup>	1,03±0,04 <sup>b</sup>	0,17±0,04 <sup>a</sup> ,
Streptococcus pyogenes	0	4,28±0,15 <sup>a</sup>	1,67±0,06 <sup>b</sup>	0,64±0,10 <sup>a</sup> ,
Streptococcus agalactiae	5,45±0,1	4,75±0,10 <sup>a</sup>	4,15±0,07 <sup>a, b</sup>	3,63±0,18 <sup>a</sup> ,
Escherichia coli (+)	1,15±0,1	3,30±0,13 <sup>a</sup>	1,18±0,12 <sup>b</sup>	0,87±0,09 <sup>b</sup>
Escherichia coli (-)	0	2,00±0,05 <sup>a</sup>	0,52±0,04 <sup>a, b</sup>	0,20±0,04 <sup>a</sup> ,
Fungi of the genus	2,00±0,1	4,36±0,12 <sup>a</sup>	1,64±0,07 <sup>a, b</sup>	0,92±0,11 <sup>a</sup> ,

Note: <sup>a</sup> - P<0, 05 reliability of results in relation to healthy.

<sup>b</sup> - P<0, 05 reliability of results in relation to data before treatment.

The table shows that on the 3rd day after surgery in the oral cavity in children, in general, positive changes are observed. So, the total number of anaerobes increased slightly, the number of lactobacilli significantly increased, which amounted to lg 3.14±0.09 CFU/ml, which is slightly more than in the control group of microbes, however, there is also a positive shift, the total number of microbes decreased, the number of fungi of the genus Candida. However, it is alarming that although the number of fungi of the genus Candida is significantly reduced, the presence of pathogenic streptococcus (Streptococcus A) and lactose-negative strains of esrichia

persist. Apparently, within 3 days there have not yet been cardinal changes in the state of the protective forces of macroorganisms, the factors that accompany the surgical intervention continue to influence.

Microbiological studies in the same children, that on the 7th day after the operation in children who used Hexoral in the oral cavity, the trend of positive changes continues, which occurred on the 3rd day after the operation. It should be noted that during this period of research in the anaerobic group of microbes, the quantitative parameters are very close, and in some respects higher than in the control group of children.

Impressive are the positive quantitative shifts that have occurred in the facultative group of oral microbes. Thus, the total facultative flora significantly changed in the direction of reduction, the number of which amounted to  $\lg 5.12 \pm 0.17$  CFU/ml, at a rate equal to  $\lg 5.90 \pm 0.08$  CFU/ml. The significant decrease in the coccal flora is especially pleasing, and what is especially important is the elimination of the entire pathogenic group of coccal and gram-negative flora, and the number of fungi of the genus *Candida* is reduced to  $0.92 \pm 0.11$  cfu / ml, which is less than even in the control group of children. Thus, based on the data of microbiological studies, it can be stated that the use of Hexoral for the treatment of children with CCLP, both before and after surgery, is fully justified and appropriate.

The next group of our studies consisted of sick children suffering from CCLP who underwent microbiological and immunological studies when included in the complex treatment of the drug "Geksoral aerosol" and "dental adhesive paste Solcoseryl".

Studying the literature, and in the process of conducting an information search on this topic, we did not find any information about the use of Hexoral Aerosol and Solcoseryl Dental Adhesive Paste for the prevention and treatment of inflammatory complications after uranoplasty. The study of this issue will certainly contribute to the determination of their biological effectiveness in uranoplasty.

Microbiological studies in this group of sick children suffering from CCLP were carried out on days 3-7 after uranoplasty. The results of these studies are presented in table No. 4.

#### **Table 4**

**The microflora of the oral cavity of children of the 3rd group with CCLP before and after uranoplasty ( $\lg$  CFU/ml  $M \pm m$ )**

Groups of microbes	Control. Group (n=15)	Patients of the 3 <sup>rd</sup> group (n=29)		
		before uranoplasty	3 сутки после уранопласти	7 сутки после уранопласти
Total count. anaerobes	5,47±0,1	4,77±0,11 <sup>a</sup>	5,37±0,05 <sup>b</sup>	5,08±0,17
Peptostreptococcus	3,65±0,1	3,35±0,13	3,57±0,10	3,15±0,05 <sup>a</sup>
Lactobacili	4,47±0,2	3,17±0,12 <sup>a</sup>	3,19±0,09 <sup>a</sup>	3,39±0,10 <sup>a</sup>
Total count. aerobes	5,90±0,0	7,59±0,09 <sup>a</sup>	6,34±0,10 <sup>a, b</sup>	5,37±0,14 <sup>a, b</sup>
Staphylococcus	4,30±0,1	4,47±0,12	3,74±0,12 <sup>a, b</sup>	3,06±0,11 <sup>a, b</sup>
Staphylococcus	2,27±0,1	3,55±0,14 <sup>a</sup>	3,31±0,07 <sup>a</sup>	2,67±0,10 <sup>a, b</sup>
Staphylococcus aureus	0	3,69±0,14 <sup>a</sup>	1,06±0,08 <sup>a, b</sup>	0,11±0,03 <sup>b</sup>
Streptococcus pyogenes	0	4,28±0,15 <sup>a</sup>	1,73±0,06 <sup>a, b</sup>	0,60±0,09 <sup>a, b</sup>
Streptococcus agalactiae	5,45±0,1	4,75±0,10 <sup>a</sup>	4,12±0,05 <sup>a, b</sup>	3,57±0,16 <sup>a, b</sup>
Escherichia coli (+)	1,15±0,1	3,30±0,13 <sup>a</sup>	1,20±0,09 <sup>b</sup>	0,84±0,10 <sup>b</sup>
Escherichia coli (-)	0	2,00±0,05 <sup>a</sup>	0,54±0,05 <sup>a, b</sup>	0,18±0,03 <sup>a, b</sup>
Fungi of the genus	2,00±0,1	4,36±0,12 <sup>a</sup>	1,46±0,05 <sup>a, b</sup>	0,87±0,12 <sup>a, b</sup>

Note: <sup>a</sup> - P<0, 05 reliability of results in relation to healthy.

<sup>b</sup> - P<0, 05 reliability of results in relation to data before treatment.

It can be seen from the table if we compare the data obtained by us after the use of Hexoral aerosol and Solcoseryl dental adhesive paste with the traditional method of treatment. The total number of anaerobes was significantly reduced and amounted to lg 5.37±0.05 CFU/ml, while after traditional therapy they were equal to lg 6.11±0.13 CFU/ml. Against this background, we see the unimpeded growth of the facultative group of microbes, the number of which was lg 6.34±0.10 CFU/ml, which is significantly higher than in the control group of children. In this group, the growth and preservation of the coccal group of microbes is slightly alarming: staphylococci and streptococci.

However, one of the positive factors in this case should be noted the elimination of Escherichia. The data we obtained can be explained by the fact that, apparently, the surgical intervention and the ensuing consequences, on the other hand, these changes are also justified by the fact that the laws of immunology dictate that, in response to antigenic stimuli, the body begins to intensify. And what is most interesting is that our microbiological data are quite consistent with the postoperative clinical course of sick children.

Table No. 4 shows that the treatment of sick children with the use of Hexoral aerosol and Solcoseryl dental adhesive paste generally showed a positive effect. Thus, the total number of anaerobes became less than in the control group and amounted to

$lg 5.08 \pm 0.17$  CFU / ml, the cultures of lactobacilli have the same tendency, and only strains of peptostreptococci are somewhat reduced in number. It is gratifying to note that the total number of microorganisms significantly decreased and amounted to  $lg 5.37 \pm 0.14$  CFU / ml, which is actually closer to the control group of children. However, it should be noted that in this group of microbes, a fairly significant number of cocci, especially *Streptococcus pyogenes*, which apparently supports the pathological process.

### **DISCUSSION**

Apparently, it is appropriate to note here that when studying the state of intestinal microecology in the norm and with the development of pathological processes, the picture is actually the same. Based on this, it can be fully assumed that the human body, as a single ecosystem, responds to various influences in a single legislation, that is, this is, apparently, a single evolutionary process in the body.

It should be noted that, as a rule, in healthy children *Escherichia* are not sown in the oral cavity, and if they are sown, then in a small percentage of cases, and fungi of the genus *Candida* are found in small quantities. However, in children with congenital cleft lip and palate, it is these microbes that most often change and, most importantly, their number significantly increases.

Thus, our microbiological studies in children with congenital cleft lip and palate convincingly show that these patients, compared with healthy ones, have dysbacteriosis in the oral cavity, which must be taken into account when preparing for surgery[3].

### **CONCLUSION**

In conclusion, based on the conducted microbiological and its analysis in patients with congenital cleft lip and palate, who underwent uranoplasty and in the treatment processes using Hexoral aerosol and Solcoseryl dental adhesive paste, the following can be stated:

Firstly, the use of Hexoral and Solcoseryl in the treatment of patients with congenital cleft lip and palate after uranoplasty has a generally positive effect on the state of the oral microflora;

At the same time, it should be noted that the positive effect in the late terms of the study - on the 7th day, is more pronounced than in the early - 3 days.

Secondly, the same trend of a positive shift was revealed when studying local indicators of the protection of the immune system - in particular, when studying the titer of lysozyme, a phagocytic indicator of neutrophils.

In the third, a clear, direct correlation was noted between the indicators of the clinical course, microbiocenosis and the immune system, which once again clearly demonstrates the importance of the theory of the unity of macroorganism homeostasis.



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