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METHODS TO INCREASE THE TREATMENT EFFECTIVNESS FOR INFLAMMATORY DISEASES OF PERIODONTIUM IN CHILDREN

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ABSTRACT — The study enrolled schoolchildren diagnosed with chronic catarrhal gingivitis (CCG) and mild form of chronic periodontitis (MFCP). Total 103 patients included 67 patients with chronic catarrhal gingivitis and 36 patients with mild form of chronic periodontitis. The results of laboratory studies showed that in the process of conduction of the therapeutic and preventive measures during the use of a Loroben solution the functional activity of the local immune factors was significantly recovered. During complex treatment of these patients the use of a Loroben solution provided more significant improvement of the indices than the use of the chlorhexidine bigluconate. Loroben solution improves trophic factors of the periodontal tissues, contributes to the elimination of gum bleeding and inflammation, thus, leading to a positive treatment outcome.

KEYWORDS — catarrhal gingivitis, chronic periodontitis, schoolchildren, Loroben.

INTRODUCTION

Periodontal diseases occupy a special place among the main dental pathologies. The history of the study of the etiopathogenesis of these diseases is very ancient. Over the past centuries, numerous theories and classifications of periodontal diseases have been suggested and many researches have been carried out. Epidemiological studies show that the observation of periodontal diseases is increasing in the 21st century as well. According to the World Health Organization, these values are close to 80–92% [5].

Along with the confirmation of the wide spread of periodontal diseases among children and adults, modern epidemiological researches allow to prove the observation of these diseases at an earlier ages too [1, 2, 8, 9]. The etiology and pathogenesis of periodontal diseases, their clinical course, pathological changes should be used under the supervision of clinical, paraclinical and laboratory studies. Despite the successful results of numerous researches, this problem still remains relevant and creates prospects for applications of new diagnostic and practical methods.

Therefore, one of the main aims of modern dentistry is to study methods to enhance the effectiveness of treatment for inflammatory periodontal diseases [6, 7, 3].

The aim of the study was to evaluate of the effectiveness of the use of a Loroben antiseptic solution, including a combination of effective components.

MATERIAL AND METHODS

The study involved 103 patients with a diagnosis of chronic catarrhal gingivitis (CCG) and mild form of chronic periodontitis (MFCP). Of these, 67 people were patients with chronic catarrhal gingivitis and 36 patients with mild form of chronic periodontitis.

The patients were divided into 3 study groups:

Group I — without prescribing any therapeutic measures, professional hygiene of the oral cavity was carried out;

Group II — after professional hygiene of the oral cavity, a solution of chlorhexidine bigluconate was used;

Group III — after professional hygiene of the oral cavity, the Loroben solution was used.

The studies were carried out on the 3rd, 5th, 7th days of the treatment process, as well as closer to the end of the treatment — on the 14th day. Objective dental tests were used, mathematical and statistical analyzes were carried out.

To determine the persistence of the long-term effect of therapeutic and preventive measures, the follow-up results of the clinical state of the oral cavity were carried out.

RESEARCH RESULTS

Dynamic observation of changes in the oral cavity resulting from therapeutic and preventive measures showed that in patients with CCG and MFCP, after the 3rd day of using the Loroben solution, significant positive changes in the studied indices were observed.

Before the treatment in patients with CCG, the value of PMA index was 33.8±2.3, the Greene-Vermillion hygiene index (OHI-S) was 2.24±0.19, and the periodontal index (PI) was 1.69±0.12 on average and

the sulcus bleeding index (SBI) averaged 1.68±0.12 (Table 1)

On the 3rd day, the patients' complaints of discomfort decreased, but in 9 (25.7%) patients, the observation of slight bleeding during tooth brushing continued.

Having decreased by 57.7%, the average of OHI-S index was 1.10±0.10. Having decreased by 51.2%, the PMA index was 24.2±1.6, the PI index, having decreased by 4.4%, was 2.85±0.20.

During the examination, slight hyperemia and edema of the gingival papillae, bleeding during probing were noted. The SBI index, having decreased by 20.7%, averaged 2.11±0.16.

During the entire observation period, the statistics showed a slight decrease in the values of periodontal indices. PMA index decreased by 81.3% (9.3±0.8), PI index — by 85.2% (0.44±0.03), SBI index — by 78.9% (0.56±0.04). Oral hygiene was considered good, the average OHI-S index decreased by 88.1% was 0.31±0.02.

To determine the persistence of the effect of therapeutic and prophylactic measures in the future, the long-term results of the clinical state of the oral cavity were checked.

In children with CCG, included in the main group, after 3 months, gingival bleeding and visu-

Table 1. *Dynamics of clinical indicators in patients with chronic catarrhal gingivitis before and after the use of the Loroben solution*

Clinical indices	Before treatment	Treatment dynamics			
		3 day	5 day	7 day	14 day
OHI-S	2,24±0,19 (1,1 – 3)	1,05±0,06 (0,4 – 2) ***	0,58±0,04 (0,1 – 1,3)***	0,24±0,02 (0 – 0,8) ***	0,12±0,01 (0 – 0,4) ***
PMA,%	33,8±2,3 (41 – 66)	20,6±1,8 (30 – 31) ***	12,4±1,1 (8 – 21) ***	7,8±0,6 (4 – 15) ***	5,6±0,4 (2 – 12) ***
SBI	1,68±0,12 (1,3 – 3,2)	1,07±0,09 (0,5 – 1,8) ***	0,65±0,05 (0,3 – 1,2)***	0,26±0,01 (0 – 0,8) ***	0,10±0,01 (0 – 0,4) ***
PI	1,69±0,12 (1,1 – 3,5)	1,23±0,09 (0,8 – 1,6) **	0,96±0,05 (0,5 – 1,4)***	0,32±0,02 (0,1 – 0,9)***	0,11±0,01 (0 – 0,3) ***

Note: *Statistical significance of the difference with the measurements before treatment: * — p <0.05; ** — p <0.01; *** — p <0.001 (W — according to Wilcoxon).*

Having decreased by 53.1%, the OHI-S index equaled to 1.05±0.6, and the PMA index, having decreased by 39.1%, amounted to 20.6±1.8%. During the examination, slight hyperemia and edema of the gingival papillae were noted.

The PI index, having decreased by 27.2%, became 1.23±0.09. Bleeding during probing was observed only in 6 patients. Having decreased by 61.7%, the SBI index was 1.07±0.09.

Before treatment, in 14 patients diagnosed with MFCP, the average PMA index was 49.6±3.8, the Greene-Vermillion hygiene index (OHI-S) averaged 2.60±0.22, the periodontal index (PI) — 2 , 98±1.22 and the sulcus bleeding index (SBI) averaged 2.66±0.21 (Table 2).

Table 2. *Dynamics of clinical indices in patients with mild form of chronic periodontitis before and after local use of the Loroben solution*

Clinical indices	Before treatment	Treatment dynamics			
		3 day	5 day	7 day	14 day
OHI-S	2,60±0,22 (1,1 – 3)	1,10±0,10 (0,6 – 1,8) ***	0,72±0,05 (0,4 – 1,4) ***	0,51±0,03 (0,2 – 1) ***	0,31±0,02 (0,1 – 0,6) ***
PMA, %	66,6±5,8 (51 – 75)	34,2±2,2 (25 – 45) ***	16,8±1,4 (24 – 36) ***	11,2±1,0 (7 – 19) ***	9,3±0,8 (5 – 16) ***
SBI	2,66±0,21 (1,4 – 3,8)	2,11±0,16 (1,3 – 3,2) *	2,06±0,15 (1,2 – 3) *	1,81±0,14 (0,8 – 2,6) **	0,56±0,04 (0,2 – 1,2) ***
PI	2,98±0,22 (2 – 4,1)	2,85±0,20 (1,8 – 3,9)	2,33±0,18 (1,2 – 3,4) *	1,93±0,14 (1 – 3) ***	0,44±0,03 (0,2 – 1,1) ***

Note: *Statistical significance of the difference with the measurements before treatment: * — p <0.05; ** — p <0.01; *** — p <0.001 (W — according to Wilcoxon).*

ally detectable areas of inflammation were absent. In isolated instances, the presence of these signs was due to non-compliance of oral hygiene or incomplete treatment (Table 3).

8 patients were complaining on discomfort and bleeding gums during toothbrushing. Clinical examination revealed slight hyperemia and swelling of the gingival papillae and bleeding while probing. But, on 14th day

Table 3. *Long-term results of using the Loroben solution in patients with chronic catarrhal gingivitis*

Clinical indices	Observation dynamics			
	After treatment (n=35)	3 months (n=28)	6 months (n=23)	12 months (n=17)
PMA, %	5,6±0,4 (2–12)	6,8±0,6 (3–14)	8,2±0,7 (5–15) **	10,8±1,0 (5–16) ***
SBI	0,10±0,01 (0–0,4)	0,70± 0,05 (0,2–1,2) ***	1,20±0,09 (0,8–1,9) ***	1,25±0,10 (0,8–2) ***

Note: *Statistical significance of the difference with the measurements after treatment: * — p <0.05*

In children with CCG, included in the main group, after 3 months in 28 patients, the PMA index was 6.8±0.6, the SBI index was 0.70±0.05. The improvement in the condition of the periodontium to such an extent occurred against the background of the oral hygiene normalization.

After 6–12 months in children with CCG, included in the main group, the clinical state of the oral cavity mainly did not change. In rare cases, negative changes were observed when parental control over hygiene was weakened. Such cases were corrected by improving hygiene and prescribing proper procedures.

In children with MFCP, included in the main group, the clinical and objective results, one might say, were similar. Despite a slight increase in the PMA and SBI indices, after 3–6–12 months they were 3.9 times lower than the initial results.

DISCUSSION

Chronic diseases of periodontal tissues still occupy major part among diseases of the oral cavity of children. Treatment of these diseases has always been in the field of interest of dentists. So, the main objective of the study was to reveal effectiveness of Loroben solution application in treatment of chronic catarrhal gingivitis and mild form of chronic periodontitis.

So, after continuous application of Loroben solution in patients with CCG on the 3rd day of treatment major complaints reduced, while in 25.7% of examined patients slight gingival bleeding was observed. However, on the 14th day of treatment none of the patients had any complaint and the clinical examination revealed elimination of all signs of chronic catarrhal gingivitis.

In the group of patients with MFCP the results were almost same. So, on the 3rd day of treatment only of treatment none of the patients had any complaint. During clinical examination neither signs of inflammation, nor bleeding on probing were observed.

Long-term results have also shown positive changes. So, in children with chronic catarrhal gingivitis after 3 months clinical examination revealed no visually detectable signs of inflammation and gingival bleeding. Even after 6–12 months the condition of the oral cavity in patients with chronic catarrhal gingivitis mainly didn't change.

In the group of patients with mild form of chronic periodontitis the results of clinical and objective examinations were almost same with the results of chronic catarrhal gingivitis. Even though PMA and SBI indices were slightly increased at the beginning, after 3–6–12 months these marks were 3.9 times lower than the initial results.

The main limitation for the study was impossibility to control the implementation of the rules of personal oral hygiene in the surveyed group of patients, so the occurrence of the negative outcome in some of the patients CCG and MFCP was the result of the non-compliance to the rules of personal oral hygiene, lack of parental control, interruption of the treatment.

Also, should be mentioned, that immediately after cleaning of the dental plaque and application of Loroben drug to the gingival sulcus area, a significant change in the qualitative and quantitative composition of the oral microflora was observed in patients with CCG and MFCP. More than that, the results of laboratory studies show that usage of Loroben solution for prevention and treatment of periodontal diseases leads to the significant recovery of the functional activity of local immune factors.

CONCLUSION

Based on the results of clinical, immunological studies and objective tests, it can be concluded that the use of Loroben solution is effective in the treatment and prevention of periodontal diseases in children.

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