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**ТИББИЁТДА ЯНГИ КУН
НОВЫЙ ДЕНЬ В МЕДИЦИНЕ
NEW DAY IN MEDICINE**

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PREVENTIVE MEASURES IN CHILDREN WITH GERD FOR MARKERS OF INFLAMMATION IN THE ORAL FLUID

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✓ Resume

Gastroesophageal reflux disease (GERD) In children, it is accompanied not only by lesions of the upper gastrointestinal tract, but also by pronounced changes in the oral cavity, including inflammatory processes of the mucous membrane and periodontal tissues. One of the objective criteria for assessing the activity of inflammation and the effectiveness of treatment is the markers of inflammation in the oral fluid, reflecting the state of local immune and metabolic homeostasis.

Keywords. gastroesophageal reflux disease; children; oral cavity; oral fluid; markers of inflammation; dental status; comprehensive treatment; prevention.

ПРОФИЛАКТИЧЕСКИХ МЕРОПРИЯТИЙ У ДЕТЕЙ С ГЭРБ НА МАРКЕРЫ ВОСПАЛЕНИЯ В РОТОВОЙ ЖИДКОСТИ

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✓ Резюме

Гастроэзофагеальная рефлюксная болезнь (ГЭРБ) у детей сопровождается не только поражением верхних отделов желудочно-кишечного тракта, но и выраженными изменениями в полости рта, включая воспалительные процессы слизистой оболочки и тканей пародонта. Одним из объективных критериев оценки активности воспаления и эффективности проводимого лечения являются маркеры воспаления в ротовой жидкости, отражающие состояние местного иммунного и метаболического гомеостаза.

Ключевые слова. гастроэзофагеальная рефлюксная болезнь; дети; полость рта; ротовая жидкость; маркеры воспаления; стоматологический статус; комплексное лечение; профилактика.

ОҒИЗ СУЮҚЛИГИДАГИ ЯЛЛИҒЛАНИШ БЕЛГИЛАРИ УЧУН ГЭРК БЎЛГАН БОЛАЛАРДА ПРОФИЛАКТИКА ЧОРАЛАРИ

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✓ **Резюме**

Гастроезофагеал рефлюкс касаллиги болаларда у нафақат юқори ошқозон - ичак трактининг шикастланиши, балки оғиз бўшлигидаги аниқ ўзгаришлар, шу жумладан шиллиқ қават ва пародонт тўқималарнинг яллигланиш жараёнлари билан бирга келади. Яллигланиш фаоллигини ва даволаш самарадорлигини баҳолашнинг объектив мезонларидан бири бу маҳаллий иммунитет ва метаболик гомеостаз ҳолатини акс эттирувчи оғиз суюқлигидаги яллигланиш белгиларидир.

Калит сўзлар. гастроезофагеал рефлюкс касаллиги; болалар; оғиз бўшлиги; оғиз суюқлиги; яллигланиш белгилари; тиш ҳолати; комплекс даволаш; олдини олиш.

Relevance

Gastroesophageal reflux disease (GERD) is one of the most common chronic pathologies of the gastrointestinal tract in children and adolescents and is characterized by a variety of clinical manifestations, including both esophageal and extraesophageal symptoms [1]. In recent years, special attention has been paid to extraesophageal manifestations of GERD, among which changes in the organs and tissues of the oral cavity occupy a significant place [2]. The oral cavity is the initial link of the digestive tract and the first anatomical zone exposed to acidic gastric reflux containing hydrochloric acid, pepsin and microorganisms [3]. Chronic exposure to these factors leads to a violation of the homeostasis of the oral fluid, a decrease in its buffer capacity and a change in immunobiochemical properties, which contributes to the development of inflammatory diseases of the oral mucosa and periodontal tissues, as well as demineralization of hard dental tissues [4]. Oral fluid is a highly informative biological medium reflecting the state of local defense mechanisms and inflammatory processes in the oral cavity [5]. Changes in the level of pro-inflammatory and anti-inflammatory markers in the oral fluid are considered as an objective indicator of the activity of inflammation and the effectiveness of therapeutic and preventive measures [6]. In conditions of GERD in children, these indicators acquire special diagnostic and prognostic significance [7].

Despite the existence of separate studies on the dental manifestations of gastroesophageal reflux disease, the issues of the influence of an integrated therapeutic and preventive approach on markers of inflammation in the oral fluid in children remain insufficiently studied [8]. The lack of unified algorithms for interdisciplinary interaction between gastroenterologists and dentists necessitates further research in this area [9]. In connection with the above, it seems relevant to study the effect of complex therapeutic and preventive measures on inflammation in the oral fluid in children with gastroesophageal reflux disease, which will improve the effectiveness of treatment and develop scientifically sound approaches to the prevention of dental complications in this category of patients [10]. An important element in assessing the dental status of the oral cavity is the study of the state of microbiocenosis. For this purpose, the degree of dysbiosis is assessed by calculating the ratio of the relative activities of urease enzymes to lysozyme [11]. The urease enzyme is formed by opportunistic microorganisms, so its activity correlates with the number of bacteria in the oral cavity. The second enzyme, lysozyme, reflects the level of nonspecific protection of the oral cavity [12].

The aim of the study was to evaluate the effect of complex therapeutic and preventive measures on the level of inflammatory markers in the oral fluid in children with gastroesophageal reflux disease and to determine their importance in optimizing dental prevention and treatment of this category of patients.

Research materials and methods

The study was of a prospective clinical and experimental nature and was aimed at assessing the impact of complex therapeutic and preventive measures on the dental status and oral fluid parameters in children with gastroesophageal reflux disease (GERD). The study included 128 children aged 8 to 14 years who were examined at a dental office after receiving written informed consent from their parents and oral consent from the child. The inclusion criteria were clinically and instrumentally confirmed GERD; exclusion criteria were withdrawal, acute infectious diseases, congenital malformations, and endocrine pathology. Depending on the clinical and dental status, the following groups were formed: the main group consisted of 75 children with dental hard tissue erosion on the background of GERD; the comparison group consisted of 53 children with dental hard tissue erosion without signs of GERD; the control group consisted of 20 practically healthy children. The gastroenterological examination

included an analysis of complaints, a questionnaire, as well as an assessment of esophagogastroduodenoscopy performed before the start of antisecretory therapy.

The dental examination included an assessment of the condition of the oral mucosa and the red border of the lips, diagnosis of caries and non-carious lesions of the hard tissues of the teeth, determination of the CP index, assessment of dental hyperesthesia according to the classification of Yu.A. Fedorov, as well as an analysis of the hygienic condition of the oral cavity using the Silness-Lowe index. The acid-base state of the oral cavity was assessed by the pH of mixed saliva and the local pH on the surfaces of the teeth. The rate of unstimulated salivation was determined by the standard method. All patients in the main and comparative groups received basic GERD therapy in accordance with the recommendations of a gastroenterologist, including diet therapy, antacids, alginates, proton pump inhibitors, H₂-histamine receptor blockers and prokinetics (depending on the severity of the disease). In the comparison group, standard dental preventive measures were carried out, including training in individual oral hygiene and the use of basic care products. In addition to basic dental therapy, the main group used a developed set of therapeutic and preventive measures aimed at correcting the acid-base balance of the oral cavity, increasing enamel mineralization and reducing the severity of inflammatory processes. The complex included the use of probiotic drugs for resorption, remineralizing agents, as well as professional methods for the prevention of erosive lesions of hard dental tissues. In the presence of initial erosion of the enamel, microinvasive infiltration therapy was used, and in severe hyperesthesia, remineralizing therapy using individual mouthguards was used. The effectiveness of therapeutic and preventive measures was evaluated before the start of therapy and 1 month after its completion, as well as in dynamics during subsequent follow-up examinations. Statistical processing of the results was carried out using the methods of descriptive and variational statistics. The data is presented as mean±SD. The normality of the distribution was checked using the Shapiro–Wilk criterion. The differences between the groups were considered statistically significant at a level of $p < 0.05$.

The results and their discussion

The present study analyzes the dental status, oral fluid parameters and the effectiveness of complex therapeutic and preventive therapy in children with GERD. The presented results reflect the dynamics of key markers of inflammation, the state of dental hard tissues, acid-base balance, and salivation rate in various patient groups. The data obtained are discussed in terms of the impact of an integrated approach on the correction of GERD dental syndrome, as well as taking into account modern ideas about the pathogenesis of erosive lesions and dental hyperesthesia in children. As a result of the data analysis, Fig.2. A decrease in urease activity was detected by 67.3% in the CL group and by 13.1% in the TL group after treatment. Subsequently, in the comparison group, urease activity equaled the baseline value, and in the CL group, this indicator became 52.7% lower than the baseline value. Thus, after the treatment, there was a half-fold increase in the KPVz index in the CL group compared with the TL group, while the KPI index of the proposed LPC was 53.72%. The proposed treatment regimen led to an improvement in oral hygiene and a reduction in periodontal inflammation in children of the main group even after 6 months of clinical follow-up. This is evidenced by the PMA index, which was almost the same at the beginning and at the end of treatment in both groups, but after 6 months it doubled in the TL group compared with the CL group. The mixed saliva of children with manifestations of GERD had reduced mineralizing properties, which is confirmed by the corresponding pH value and the average values of ionized calcium and inorganic phosphates, which were at the lower limit of the norm. The prescribed LPC in combination with GERD therapy improved the mineralizing properties of mixed saliva in children of the CL group: the pH decreased by 62.2% and approached the upper limit of the norm, the content of inorganic phosphates increased by 69.7%, and ionized calcium doubled. In the TL group, the pH improved by only 11.8%, the content of inorganic phosphates increased by 16.7%, and ionized calcium increased by 35.2%. The study found that gastroesophageal reflux disease (GERD) in children, it is accompanied by a violation of the mineralization and protective properties of the oral fluid, which is manifested by a decrease in pH, concentration of ionized calcium and inorganic phosphates, as well as an increase in inflammatory markers. The revealed changes create prerequisites for the development of non-carious lesions of the hard tissues of the teeth and inflammatory diseases of the oral mucosa. Comprehensive therapeutic and preventive intervention, including correction of dental status and compliance with gastroenterological therapy, demonstrated a pronounced positive effect on the

condition of the oral fluid. In particular, children in the main group showed a significant increase in the mineralizing properties of saliva, normalization of pH, an increase in the concentration of ionized calcium and inorganic phosphates, which indicates a decrease in the activity of inflammatory processes and an improvement in the physiological state of the oral cavity.

Conclusion

The results of the study confirm the need for an interdisciplinary approach to the treatment of children with GERD, including both gastroenterological therapy and individually selected dental measures. The data obtained are of practical importance for the development of effective protocols for the prevention and treatment of dental complications in this category of patients.

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