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The authors

1. Kirillina Maria Petrovna - Ph.D. (biology), Leading researcher, Yakut science Center of complex medical problems, Head of laboratory Clinic of Medical institute, M.K.Ammosov Nord-Eastern Federal University, Yakutsk, kirillinamp@mail.ru;
2. Ivanova Anna Konstantinovna- cytologist, Clinic of Medical institute, M.K.Ammosov Nord-Eastern Federal University in Yakutsk, ivanova.ak11@gmail.com;
3. Popova Irina Dmitrievna - medical assistant Clinic of Medical institute, M.K.Ammosov Nord-Eastern Federal University, Yakutsk;
4. Garmaeva Darima Kyshekhtovna - Ph.D. M.D (Medicine) professor, Medical institute, M.K.Ammosov Nord-Eastern Federal University, Yakutsk dari66@mail.ru.

N.M. Zakharova, N.A. Gulyaeva, A.M. Ammosova, S.V. Markova, M.V. Khandy, S.Yu. Artamonova, L.A. Stepanova, V.B. Egorova

ANALYSIS OF ORAL MICROFLORA IN CHILDREN

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ABSTRACT

To study the microflora of the oral cavity, 485 children and adolescents living in Yakutsk were examined. We've taken smears from the mucous throat and tonsils for microbiological analysis of the oral microflora, also used the method of rapid diagnosis - Streptatest, for the presence of b-hemolytic streptococcus of group A (BHSA). When studying the qualitative and quantitative composition of the oral microflora of frequently ill children, it was revealed that 16.3% are carriers of the pathogenic and conditionally pathogenic flora - a trigger factor in the development of chronic tonsillitis. In the examined children yeast fungi of the genus Candida were found - in 8,7%, bacteria of the genus Staphylococcus - in 1,3%, in the genus Streptococcus - in 7,5%, in the genus Klebsiella - in 1,3%. In 80% of the children in the crops, monoculture growth was detected. With abundant growth, 6.6% of microorganisms were detected, with moderate growth - 46.7% and with scant - 46.7%. As a result of the treatment, the children notice a shift in the anaerobic index to the normal range, which contributes to the provision of conditions for improving the life of the obligate microflora. In Children's Infectious Diseases Hospital (CIDH), children with acute tonsillopharyngitis, acute pharyngitis, and angina were examined. All patients underwent a rapid Streptatest test for the streptococcal etiology of the infection. According to the rapid test, 37% of patients were positive. Timely establishment of BHSA allowed conducting eradication antibacterial therapy, which led to recovery without complications. Streptatest can be widely used in the rapid diagnosis of streptococcal infection for the detection of BHSA in patients with angina and acute tonsillopharyngitis without age restrictions.

Keywords: children, microflora of the oral cavity, diagnostics, streptococcal infection.

Introduction

Normally, the microbial composition of the oral cavity is formed by various kinds of microorganisms: bacteria, viruses, protozoa. In a healthy organism, the constant microflora serves as a biological barrier, preventing the proliferation of pathogenic microorganisms coming from the external environment; participates in the self-cleaning of the oral cavity, is a constant stimulant of local immunity [1]. Persistent changes in the composition and properties of microflora due to a decrease in the reactivity of the organism, resistance of the mucous membrane of the oral cavity, as well as certain therapeutic measures, can lead to the appearance of various diseases of the oral cavity, the causative agents of which are pathogenic microorganisms from outside as well as conditionally pathogenic representatives of the constant microflora of the oral cavity [4].

To conditionally-pathogenic representatives of the constant microflora of the oral cavity the bacteria of anaerobic type of respiration, streptococci, constitute 30-60% of the whole microflora of the oropharynx. Streptococci caused streptococcal infection – a polymorphic in its clinical manifestations of bacterial infection. B-hemolitic streptococcus group A (BHSA) causes a wide range of diseases in childhood: streptococcal respiratory tract infections, tonsillitis, pharyngitis, their complications - cervical lymphadenitis, peritonsillar and zaglone abscesses, sinusitis, mastoiditis, otitis media, pneumonia, etc. [7, 10]. This is due to the anatomical location of the tonsils in the area of the airway cross and upper digestive tract, their constant traumatization and infection, as well as the age-related features of the child's immune system [5]. The peak incidence falls on the average and senior school age.

In recent decades, there has been a steady trend towards an increase in the incidence of chronic tonsillitis and its "rejuvenation" [6]. The starting factor of development are pathogenic or conditionally pathogenic microorganisms persisting in the lymphoid tissue of the tonsils due to a weakened antigen-spe-

cific immune response of the organism. With prolonged contact of microflora with tonsil tissues, conditions are created for permanent alteration and exudation on the background of active proliferation processes [8, 10]. In turn, chronic foci of inflammation in the pharynx change the immunobiological balance and cause the development of immunopathological conditions, of which the leading are allergic reactions of a delayed type and the formation of immune complexes [8, 12].

Often the etiological factors of the development of chronic tonsillitis are b-hemolytic streptococcus of group A (BHSA), staphylococci, *Haemophilus influenzae*, pneumococci, moraxella, mycoplasmas, fungi and viruses (adenoviruses, cytomegaloviruses, herpes viruses.) In recent years, the importance of polymicrobial infection is emphasized. chronic tonsillitis is 12-16% according to the data of various authors and is one of the most frequent diseases in the structure of chronic diseases of childhood.

The reliable statistics of classical streptococcal infection according to the data of the 20th century showed temporary (cyclic) fluctuations both in terms of the incidence of the disease and in the severity of the disease associated with the increased virulence of streptococcus. V.D. Belyakov (1996), after studying the dynamics of the incidence of streptococcal infection, revealed 3 of its peak, accompanied by high mortality, and warned: "We are entering the XXI century, in the first half of which, according to the laws of streptococcal infection, it must show its power, as it was in the early twentieth century" [2].

Currently, streptococcal infection caused by BHSA, the most common bacterial infection, the disease is mainly manifested in childhood - estimated prevalence is 3 000 - 100 000 children per year. At the same time, only 20-30% of ill children are treated with classical clinical symptoms of pharyngitis or tonsillitis, and since clinical differentiation from viral and bacterial infections is difficult even for an experienced physician, clinically streptococcal infections are often not diagnosed [6]. Due to the wide variety of clinical manifestations, the final diagnosis is established only after additional laboratory confirmation (allocation of streptococcus from the material of lesions, increase in the titer of O-antistreptolysin). For rapid verification of streptococcal infection, around 200 test systems have been developed in the world, however many of them have low diagnostic value and are not able to adequately replace bacteriological research.

In order to quickly determine BHSA in the oral cavity, Streptatest was registered in Russia in June 2010. This method has been used in European medicine for 8 years, during which time it has become a method of routine diagnosis for physicians of various specialties [12]. Streptatest is used without age restrictions, by doctors in polyclinics and hospitals; considering the compactness of the system, it is used during home calls; the test is effectively used in closed collectives, kindergartens and schools. The expediency and necessity of using Streptatest for express diagnostics of streptococcal tonsillopharyngitis in children is explained by the rationalization of the use of antibiotics for streptococcal infection.

Antibacterial therapy at the moment takes a leading place in the conservative therapy of chronic tonsillitis. The most serious problem of such treatment is the constant growth of resistance of pathogenic microorganisms to antibacterial drugs [3, 8, 9]. At the same time antibiotics are not effective enough to suppress the growth of encapsulated microbes that have a polysaccharide membrane – *Haemophilus influenzae, Streptococcus pneumoniae*, some anaerobes [11].

Thus, the study of the microflora of the oral cavity is an actual direction of modern science to develop new approaches to maintaining and correcting the normal microflora of the oral cavity with the goal of preventing and treating inflammatory diseases.

The purpose of the study: to study the microflora of the oral cavity in children who are often ill and sick with acute tonsillopharyngitis.

Materials and methods of research

485 children and adolescents living in Yakutsk were included in the study. Of these, 80 children often (from 5-6 to 8-9 times a year) had respiratory diseases; the age of children - from 5 to 7 years, attended children's educational institutions. The children were taken smears from the mucous throat and tonsils for microbiological analysis of the microflora of the oral cavity.

In the Children's Infectious Diseases Hospital (CIDH) 405 children from early to old age who were on inpatient treatment with acute tonsillitis, acute tonsillitis, tonsillitis were examined. When entering the hospital, all patients underwent general clinical studies: a general blood test, a general urine test, for the etiologic diagnosis, the rapid diagnostic method - Streptatest, for the presence of BHSA was used. The test is a diagnostic for the detection of a specific antigen of group A streptococcus in the material obtained with a smear from the mucous membrane of the posterior pharyngeal wall and palatine tonsils. The kit includes 2 reagents that allow the extraction of the antioxidant BHCA from the material, a test strip working on an immunochromatographic principle. On the membrane of the test strip in the test zone, an immobilized antibody was applied to the specific antigen of BHSA, and in the control zone, an extraction reagent. The appearance of the purple band indicates a positive result, while its absence denotes a negative result.

The results were processed using parametric and nonparametric methods. The average arithmetic "M" was calculated; the mean error of the mean "m". The reliability of the differences in the "p" results of the study was assessed by the Student's test. Differences were assessed as significant at $p < 0.05$.

Results and discussion

Candida yeast fungi in 7 (8.7%), bacteria of the genus *Staphylococcus* - in 1 (1.3%), and in the genus *Streptococcus* - in 6 (in the study of the microflora of the oral cavity were observed in microbiological analysis of the oral cavity) 7.5%), the genus *Klebsiella* - in 1 (1.3%). In 80% of the children in the crops, monoculture growth was detected. In 1 (7.7%) girls, bacteria of several genera were simultaneously found: *Streptococcus*, *Klebsiella* and *Candida* fungi. From the anamnesis of this girl it is known that she was born on the 26th week of pregnancy, she was on artificial ventilation for a long time, until she was 2 years old she was repeatedly treated in the pulmonology department of the Pediatric Center of Republican Hospital №1 – NCM with the diagnosis: bronchopulmonary dysplasia. The kindergarten visits from the age of 4, for the last three years it has been ill on average 8 times per year, with the following diagnoses: pharyngitis, acute respiratory disease, bronchitis, catarrhal sinus, stomatitis.

It is noteworthy that the parents of children, in the analysis of which yeast fungi of the genus *Candida* were found, noted uncontrolled self-treatment with antibiotics of a wide spectrum of action, which could lead to an increased growth of yeast-like fungi resistant to most antibiotics.

Seven-year-old boy, in the analysis of which was found staphylococcus, within the last year 4 times had a follicular sore throat.

In 7 (53.8%) children with microbiological examination of feces revealed a dysbacteriosis of III-IV degrees.

In addition to the qualitative composition of microorganisms in the study of

smears, their degree of growth was determined (abundant, moderate and lean). With abundant growth, 1 (6.6%) of microorganisms were detected, with a moderate one - 7 (46.7%) and with scant - 7 (46.7%).

After a seven-day antibacterial therapy with augmentin, the number of children who had pathogenic bacteria detected in the crops of the contents of the lacunae decreased to 50%, while the persistence of bacteria persisted in 37.5% of the children, but the degree of colonization decreased. In 12.5% of children after administration of antibacterial therapy, changes in the microbial landscape of the oral cavity were not observed (Table).

With further monitoring of children within one year, the incidence of respiratory diseases decreased to 3-4 times on average. Thus, treatment with augmentin provides a reduction in the frequency of carriage of pathogenic flora and the degree of contamination of the tonsils, positively influences the microbial landscape of the oral cavity.

With the use of seven-day antifungal therapy with fluconazole, a negative result was observed in all children in the control study.

During treatment with children, allergic reactions and side effects of the use of augmentin and fluconazole were not noted.

In CIDH children received acute tonsillopharyngitis, acute pharyngitis, tonsillitis, noted an acute onset of the disease: an increase in body temperature above 38 ° C, severe pain in the throat, especially when swallowed, patients often complained of headache, pain in muscles and joints, a decrease appetite, weakness. According to the physical examination in children with angina, there was a bright hyperemia, hypertrophy of the tonsils, suppurative supplements on the tonsils, lymphadenopathy. In the peripheral blood marked leukocytosis.

Given the clinical picture of the disease, all patients underwent a rapid Streptatest test for the streptococcal etiology of the infection. According to the rapid test, 37% of patients (149 people) had a positive result. In children with streptococcal infection of the upper respiratory tract, rhinorrhea, cough, subfebrile body temperature, hyperemia, edema of the posterior pharyngeal wall, mild lymphadenopathy were noted.

Deciphering the etiology of the disease is fundamentally important, since streptococcal infection requires adequate eradication therapy. Eradication of BHSA contributes not only to eliminating the symptoms of infection, but also prevents early and late complications, and also prevents the spread of infection, the formation of immunopathological options (acute rheumatic fever, glomerulonephritis). The use of antibiotics not only prevents the spread of streptococcal infection, but also reduces the number of carriers of the pathogen [6].

Intensity of bacterial colonization of pharyngeal tonsils before and after treatment (n = 13)

Causative agent	Degree of dissemination of pharyngeal tonsils, n							
	Abundant growth		Moderate growth		Lean growth		No growth	
	before treatment	after treatment	before treatment	after treatment	before treatment	after treatment	before treatment	after treatment
Streptococcus	-	-	3	-	3	3	-	3*
Staphylococcus	-	-	1	-	-	-	-	1
Klebsiella	1	-	-	1	-	-	-	-
Fungi genus *Candida*	-	-	3	-	4	-	-	7

* $p<0,05$.

The drug of choice for the treatment of angina, tonsillopharyngitis in a hospital was cephalosporins of the 3rd generation, because until now, β-hemolytic streptococci are highly sensitive to penicillin and cephalosporins. In 10% (15 patients) due to intolerance or an allergic reaction, macrolides (klatsid) were administered orally. Antibiotic therapy was 10 days. With the use of antibacterial therapy, body temperature quickly normalized, pains in the throat ceased, and general symptoms came to a stop.

All children in addition to antibiotic therapy are prescribed non-steroidal anti-inflammatory drugs (nurofen, naise) [12], symptomatic treatment. Against the background of the therapy, all children had a positive dynamics; the children were discharged with improvement for further monitoring of the local pediatrician at the place of residence.

Conclusion

In the study of the qualitative and quantitative composition of the oral microflora of frequently ill children, it was revealed that 16.3% are carriers of the pathogenic and conditionally pathogenic flora - the triggering factor of the development of chronic tonsillitis. As a result of the treatment, the children notice a shift in the anaerobic index to the normal range, which contributes to the provision of conditions for improving the life of the obligate microflora.

Using the method of rapid diagnosis of Streptatest in patients with angina, acute tonsillopharyngitis of children, BHSA was detected in 37% of patients. Timely establishment of BHSA allowed conducting eradication antibacterial therapy, which led to recovery without complications. Streptatest can be widely used in the rapid diagnosis of streptococcal infection for the detection of BHSA in patients with angina and acute tonsillopharyngitis without age restrictions.

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The authors

1. Nadezhda Mihailovna Zakharova, MD, associate professor of the Department of Propaedeutics of Children's Diseases of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
2. Nadezhda Andreevna Gulyaeva, MD, associate professor of the Department of Infectious Diseases of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
3. Aelita Mihailovna Ammosova, MD, associate professor of the propaedeutics department of children's illnesses of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
4. 4. Sardana Valerievna Markova, Candidate of Medical Science, associate professor of the propaedeutics department of children's illnesses of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
5. Maria Vasilievna Khandy, MD, Professor of the Department of Propaedeutics of Children's Diseases of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
6. Sargylana Yurievna Artamonova, MD, associate professor of the propaedeutics department of children's illnesses of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
7. Lena Anatolievna Stepanova, MD, associate professor of the propaedeutics department of children's illnesses of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: nadezdamix15@mail.ru;
8. Vera Borisovna Egorova, MD, associate professor, pediatrics and pediatric surgery of the Medical Institute of the M.K. Ammosov Northeastern Federal University. Address: 677018, Yakutsk, ul. Oyunsky, 27. E-mail: veraborisovna@yandex.ru.

L.A. Lytkina, L.G. Chibyeva

NCAIDS- GASTROPATHY IN PATIENTS WITH CARDIAC DISEASE

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ABSTRACT

The character of clinical endoscopic features of gastropathies, induced by the intake of non-steroidal anti-inflammatory drugs, was evaluated in patients with cardiac pathology.

The clinical picture of NSAIDs-gastropathies in patients with IHD was characterized by a mismatch of symptoms and endoscopic changes. This manifested itself in the fact that in the presence of a bright endoscopic picture (erosion, ulcer), NSAIDs-gastropathies were often asymptomatic. In contrast, in most patients who have noticed pain or other dyspeptic disorders, endoscopic examination revealed minimal changes in the mucosa of the gastroduodenal zone. Therefore, carrying out endoscopic control, preferably in the early stages of treatment, is the most necessary and mandatory method of preventing serious complications.

Keywords: nonsteroidal anti-inflammatory drugs, gastroduodenal lesions, gastric ulcer, ischemic heart disease.

Introduction

Today one of leading places in medical practice is occupied by nonsteroid antiinflammatory medicines (NCAIDs). Medicines of this class have a wide range of clinical effects and are used at diseases of osteomuscular and cardiovascular system and also at a number of other states and diseases [4]. It is no secret that NCAIDs can cause a number of undesirable reactions owing to which the therapeutic value of this class of medicines can be significantly limited [1, 6]. Traditionally on the first place among these reactions put the NCAIDs -gastropathy. The term a NCAIDs-gastropathy designate the erosive cankers of a gastroduodenal zone which are arising against the background of intake of these medicines and having the reference klinik and endoscopic picture. This pathology is bound to systemic action of NCAIDs and develops irrespective of a way of introduction with formation of erosion and ulcers in the mucosa of the top departments of digestive tract, and in certain cases with complications life-endangering - bleedings and perforations [5, 7].

The ischemic heart disease occupies one of the leading positions in structure of incidence of the population. The pathogenesis of an ischemic disease is characterized by the developing and progressing violations of system of a hemostasis that dictates need of use of continuous antiagregantny therapy. The "gold" standard for this purpose are the medicines created on the basis of Acidum acetylsalicylicum (AAS) [2].

The long-lived reception by ischemic heart disease patients of Acidum acetylsalicylicum increases risk of emergence of the dyspepsia phenomena and also development of erosion and stomach ulcers and the duodenum. In this regard there are relevant questions of early diagnostics and adequate therapy of the NCAIDs -gastropathy with ischemic heart disease patients [3].

Research objective – to estimate the nature of clinical and endoscopic features of the gastropathies induced by intake of nonsteroid antiinflammatory medicines at patients with heart pathology.

Material and research techniques

The research included 87 patients, with the ischemic heart disease patients various forms which were on treatment in "YGB №3" and cardiological office of the Yakut city hospital. The gastropathy induced by reception of NCAIDs took place in 32 cases that made 36,8% of