PECULIARITIES OF MICROBIOTA IN INFLAMMATORY DISEASES OF THE MUCOUS MEMBRANE OF THE ORAL CAVITY AND PERIODONTIUM, IN ACUTE RESPIRATORY INFECTIONS

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Abstract: *a range of dental problems has increased in Russia in recent years, but the main ones still are dental caries, periodontal diseases and diseases of mucous membranes of the mouth (oral mucous membrane). In the expert evaluation of The World Health Organization "Dentistry in the XXI century" in determining ways to achieve dental health the main role is assigned to prophylaxis compared with treatment interventions [2, 11]. Currently, there is a high prevalence of dental diseases among young people. No somatic pathology is observed and therapeutic, orthodontic, surgical and orthopedic treatment is required [3, 4, 12]. A relevant question at the stage of complex treatment, prophylaxis of inflammatory diseases of the oral mucous membrane, periodontal tissues among young people aged 18-30 years is the selection of non-drugs (the tendency to allergization of the population of the Russian Federation is increasing [3, 4, 12]). Acute respiratory infections (ARI) are common diseases, they account for about 90% of all infectious diseases. There is no special predisposition to the infection, but respiratory diseases of infectious and viral nature are taken harder and give more complications due to the physiological decrease in immunity and exposure to viruses [5, 6, 8]. Over the past decades, leading causes of exacerbation of rhinosinusitis and pharyngolaryngitis are ORI/SARS and urbanization [6, 10]. Young age is a dynamic age group that is in the process of formation and it is in need of a sophisticated system of surveillance and prevention [2, 14].*

Students and teachers (18-30 years) form a special social group that has specific living conditions, forced violations of working conditions, rest and nutrition. They belong to a group of high risk of diseases due to the high psychoemotional load, necessity of adaptation to new conditions of living and education because of the unstable status of the development of the organism [11, 14].

Microbiocenose of the mouth is affected by external factors. They include factors of resistance of the organism, which define the structure of the bacterial community and the degree of inflammatory processes, its seriousness, resistivity and destructive changes of parodentium tissues.

Keywords: *microbiota, pharyngolaryngitis, rinopatiea, inflammatory diseases.*

ОСОБЕННОСТИ МИКРОБИОТЫ ВОСПАЛИТЕЛЬНЫХ ЗАБОЛЕВАНИЙ СЛИЗИСТОЙ ОБОЛОЧКИ ПОЛОСТИ РТА И ПАРОДОНТА ПРИ ОСТРЫХ РЕСПИРАТОРНЫХ ИНФЕКЦИЯХ

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Аннотация: *спектр стоматологических проблем в России за последние годы возрос, однако основными остаются по-прежнему кариес зубов, болезни пародонта и слизистой оболочки полости рта (СОПР). В экспертной оценке ВОЗ «Стоматология в XXI веке» при определении путей достижения стоматологического здоровья главная роль отводиться профилактике по сравнению с лечебными мероприятиями [2, 11].*

В настоящее время наблюдается высокая распространенность различных стоматологических заболеваний у молодых людей без соматической патологии, требующих терапевтического, ортодонтического, хирургического и ортопедического лечения [3, 4, 12].

Актуальным вопросом на этапе комплексного лечения, профилактики воспалительных заболеваний СОПР, тканей пародонта у молодых людей в возрасте (18-30 лет), является выбор не медикаментозных средств (Повышение тенденции к аллергизации населения РФ [3, 4, 12]). Острые респираторные инфекции (ОРИ) - широко распространенные заболевания и составляют около 90% всей инфекционной патологии. Особой предрасположенности к инфекциям не существует, однако респираторные заболевания инфекционной и вирусной природы протекают тяжелее и дают больше осложнений в связи с физиологическим снижением иммунитета и воздействием вирусов [6, 10]. На протяжении последних десятилетий лидирующими причинами приводящими к обострению риносинуситов и фаринголарингитов является ОРИ/ОРВИ и урбанизация [5, 6, 8]. Лица молодого возраста - динамичная возрастная группа, которая находится в процессе формирования, нуждающаяся в продуманной системе наблюдения и профилактике [11, 14].

Студенты и преподаватели (18-30 лет), являются особой социальной группой, которая имеет специфические условия жизни, вынужденные нарушения условий труда, отдыха, питания и относятся к группам повышенного риска заболеваний в связи с высокой психоэмоциональнной нагрузкой, необходимостью адаптации к новым условиям проживания и обучения из-за неразрешенности развития организма [2, 14].

Миробиоциноз полости рта зависит от влияния внешних факторов. к которым относятся: факторы резистентности организма, определяющие структуру бактериального сообщества и степень воспалительных процессов их тяжести, СОПР и деструктивных изменений тканей пародонта.

Ключевые слова: *микробиота, фаринголарингиты, ринопатия, воспалительные заболевания.*

The aim of the study is to determine the level of contamination of total aerobic bacteria in the mucous membrane of the mouth, teeth and tongue surface, the quantitative and species composition, frequency of determining strains among patients with inflammatory diseases of the mucous membrane of the oral cavity in acute respiratory viral infections.

According to medical statistics, there are more than 25% of people who suffer from vasomotor rinopatiea and pharyngolaryngitis in Russia [4, 11].

This disease is based on an allergic reaction – a hypersensitivity of immediate type. Possible allergens that can cause vasomotor rinopatiea and pharyngolaryngitis can be included to the composition of cosmetic products (fragrances: rose oil, rosemary oil, eugenol geraniol, etc.), allergens of molds and yeasts, certain drugs and food additives (preservatives, flavors, dyes, etc.).

Antihistamine treatment often brings temporary relief.

The symptoms of allergic rinopatiea are often viewed as precursors to bronchial asthma.

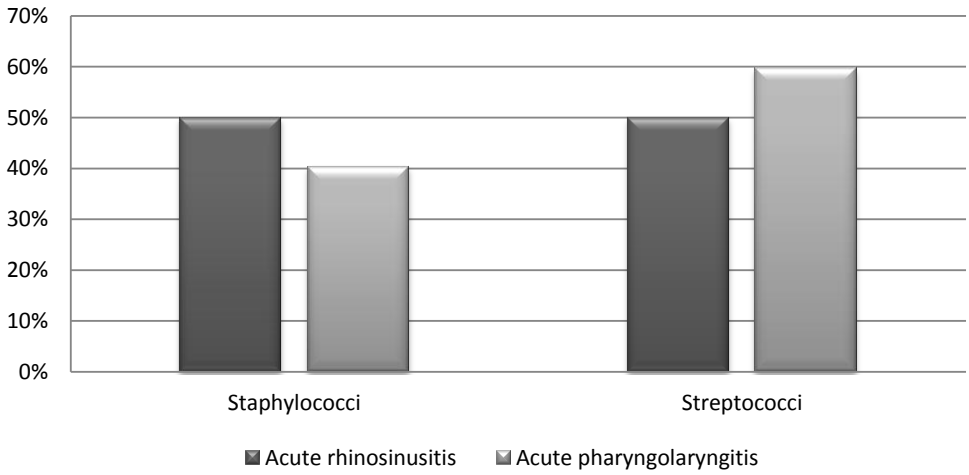

Fig. 1. Selected bacterial Association

Examination methods: the materials for the study were bacteria of the oral cavity (OC) derived from the material of the smears of the buccal mucosa, the cervical area of the teeth and on the dorsal surface of the tongue of 203 people.

During randomization we took into account the patients ' age, gender, physical health condition, bad habits, antiseptic and antibacterial drugs usage; with generalized periodontitis (GP) of mild degree and average degree, and with acute herpetic stomatitis (AHS) of mild degree and average degree. Microbiological investigation included: the material collecting with empty stomach from the tooth surface of the buccal mucosa and dorsal surface of the tongue for 15 sec., using a standard sterile plastic sticks, and then, materials were transferred to a test tube with sterile transport, and then we sent them to the laboratory in 2-4 hours. In the laboratory, inoculation of material was done according to Gold for the meat-peptide agar, Saburo's environment, Endo and Blichfeldt. Cultivation and identification of cultures was carried out according to standard methods. Petri dishes were incubated at 37 ° C for 24 hours, then the number of colonies was counted in different sectors and then the number of bacteria in 1 ml was indicated.

During the examination of the condition of the mucous membrane of the oral cavity of the senior students of CFU, gingivitis was observed in 285(68.5 per cent) cases: up to 19 years - 53,3%, 20-24 years – (66,9%) 25-29(69,2%). Generalized gingivitis was diagnosed in 18% cases; men - 9.2%, women - 8.8%; to 19 years – 14.5%, 20-24 years - 11.6%, 25-29 years - 12.7%. Parodontopatiea, gingivitis, dental plaque, periodontitis, stomatitis were diagnosed in 74% of the cases (among 3-year students), 77,8% among the 4-year students ; 84.7% among 5-year students during the period of seasonal acute respiratory infections/colds.

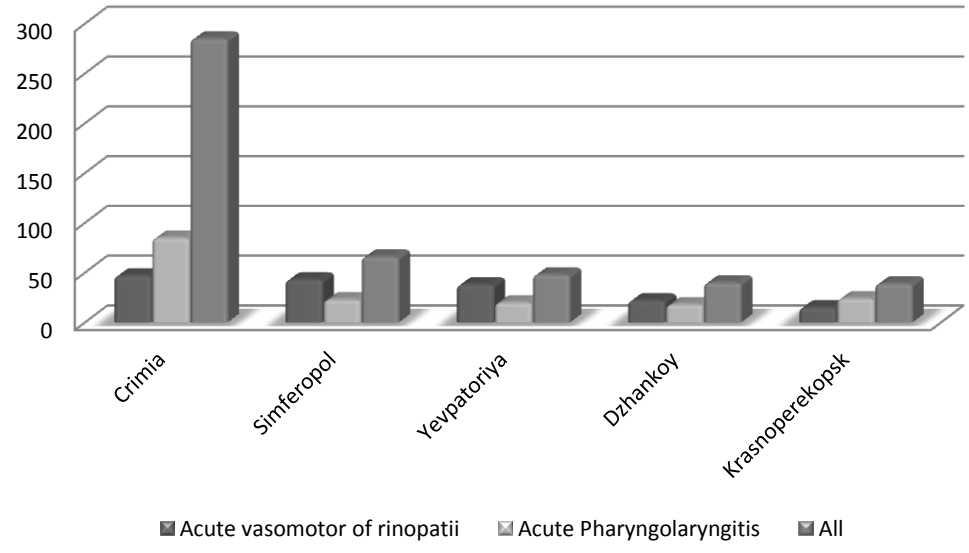

Fig. 2. The incidence of patients with a rhinosinusitis adrimi and pharyngolaryngitis in Crimea

In the study of the microbial landscape in the regions of Crimea which involved 288 patients with acute rhinosinusitis and pharyngolaryngitis we have identified 12 genus and more than 34 species of microorganisms. In modern concepts, the origin and progression of periodontal disease is associated with the influence of microorganisms which have some factors of aggression to the tissues of periodontium [7,8,9]. Currently, about 700 species of microorganisms are identified in a mouth. The possibility of detecting them among patients with inflammatory-destructive diseases of the periodontium allows you to plan and apply the amount of necessary therapeutic measures individually.

Some microorganisms were found only in certain areas, for example, in Simferopol were found: S. saprophyticus, S. schleiferi, S. gallinarum, S. agalactiae, S. sanguis, Aerococcus viridans, Lactobacillus and fungi of the genus Mucor; in Yalta - S. warneri; in Krasnoperekopsk - S. luqduensis, S. salivarius, in Djankoy - B. cereus. In the monitoring analysis we determined that the selected cultures of isolated microorganisms in Crimea were found only in 15.7% of cases, in the form of association of 2 organisms - in 35.4% cases, in the form of association of 3 organisms – in 38,3% cases, in case of 4 organisms - in 10.5%.

For Simferopol and Krasnoperekopsk the most frequent options of the selected cultures were associations of 2 and 3 microorganisms. In Yevpatoria and Dzhankoy the most frequent associations were of 3-and 4 microbial cultures. Traditional antiviral and antibacterial therapy on the background of acute infections and concomitant manifestations of rhinosinusitis, pharyngolaryngitis, exacerbation of gingivitis, periodontitis and stomatitis did not give a stable therapeutic effect, therefore, we have proposed a set of measures which included physiotherapy: aerosol therapy, hydro massage, irrigation of the mouth with Saki mineral water (the mucous membrane of the oral cavity) and periodontal tissues in combination with innovative technologies of ozone-applications in oral (HealOzone apparatus). Biodata, multiplicity, compatibility and the treatment course are given individually, depending on the severity of symptoms. To the pathogenetic therapy complex we included “Complivit anti-stress”. For the prophylaxis and oral health hygiene we used such antiseptics as Miramistin 0.05%, Panavir 0.002% and gel Panavir of 0.002%, toothpaste Dentavit (Vitex).

Discussion: as a result of our treatment, treatment time of acute respiratory infection has reduced for 3 days in average. Complications of pharyngolaryngitis and stomatitis decreased by 14.7%, which clinically proves the effectiveness of implementation in practical health care of the Crimea (Russia) combined therapeutic treatments of physiotherapy and balneological factors in the treatment of rhinosinusitis, pharyngolaryngitis, stomatitis, gingivitis, periodontitis and prevention of relapse of exacerbation of the diseases in the season of acute respiratory infections/colds. Depending on the nature of the disease some regularities were observed in the frequency of occurrence of selected species of microorganisms. In acute sinusitis prevailed (% of the number of selected microbial cultures in acute sinusitis): S. aureus – 20,9%, S. epidermidis – 16,4%, K. pneumoniae - 11.6%, S. mutans - 6.5%, S. hominis -5,6%, S. pneumonia - 4.6%. Most frequently S. epidermidis was found in association with S. mutans, S. sanguis, Candida. In chronic sinusitis species composition of micro flora in frequency was as follows: S. epidermidis – 17,3%, K. pneumoniae – 20,0%, S. aureus – 12,1%, S. mutans - 6.6%, Candida albicans - 6.1%, and E. coli - 5.6%, K. pneumoniae - 4.9%, Peptococcus and Peptostreptococcus in the whole amount were 6.9%.

3. Periodontal diseases and oral mucous membrane diseases are polietiologic diseases, pathogenesis of which is inextricably linked to the pathological processes in the body, which are caused by imperfect functioning of body systems.

4. For the successful treatment of periodontal diseases and oral mucous membrane when they even are especially severe and have an often relapse, patients require a comprehensive approach which, along with local therapy, allows timely treatment of somatic pathology and infectious seasonal respiratory illnesses.

5. Promising plans are those which provide the development of innovative treatment methods of combined pathology of the oral cavity in the aspect ratios of the correlation in the change of homeostasis.

Conclusions:

1. Currently in Crimea pathogenic microorganisms are offset by the buffer properties of saliva, by the prevalence of normal microflora, by rational hygiene of oral cavity, thus for the normalization of the microbial landscape of the pH in the oral cavity it is necessary to conduct exogenous correction of homeostasis of the oral cavity using the "Dentavit" from "Vitex". System pH balance prevents the formation of acids, inhibiting the growth of bacteria to prevent the application of the aerosol therapy.

2.For the prophylaxis of acute rhinosinusitis, gingivitis and periodontitis complex treatment should include aerosol therapy, antiseptic “Myramistin” 0,05% from day 1 to day 3, then medium-dispersity (5-25) "Panavir" to 0.002% at t=37-38 C; and from the fourth day use No. 5, which improves the condition of gums, reduces halitosis, slows the growth of bacteria.

3. Use hydro massage, irrigation of the oral cavity (the oral mucous membrane) and gums with the ozonized mineral water Saki No. 7-10 2 times a day. It prevents the formation of probity, adjusts pH to the natural.

4. When there is a case of the combination of pharyngo-laryngitis and acute herpetic stomatitis of the oral cavity, use ozone application "HealOzone" No. 3-7 according to the scheme.

5. During the period of seasonal acute respiratory disease/SARS infection, and the consistency of the lesions of ENT organs, and inflammatory diseases of the oral cavity, take Complivit anti-stress course about one month on prescription. It reduces the formation of microbiota, enhances the immunity and reparative functions of the organism.

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