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PATHOGENESIS OF ETIOLOGY AND MODERN METHODS OF TREATMENT OF CHRONIC PHARYNGITIS IN CHILDREN

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Resume. The paper discusses modern approaches to the assessment of etiopathogenesis and treatment of chronic pharyngitis. The results of the application of a new diagnostic method, mass spectrometry of microbial markers, which makes it possible to detect microorganisms in a biofilm in a "dormant state" under the protection of mucin, are presented. Using this express method, it is possible to determine the content of 57 microorganisms in a pharyngeal smear 2 hours after delivery of the biomaterial to the laboratory. Using mass spectrometry of microbial markers, it was found that 91% of people with chronic pharyngitis (n= 62) had an increased total content of microorganisms, which indicates the need for antibacterial therapy; 87% of patients had increased endotoxin levels, which is a sign of general intoxication; 71% of patients had reduced plasmalogen levels and these patients They may be at increased risk for lipid metabolism disorders.; in 100% of the examined patients with frequent exacerbations of chronic pharyngitis, the nasopharyngeal microflora (coccoid) is detected in the pharynx, as well as new etiopathogenetically significant microorganisms (undetectable by PCR and crops), among which 7 are transient (their level is normally 0 in the pharynx), 11 are resident (6 occur in the pharynx in the norm is at a minimum level and 5 is at a high level).

Keywords: chronic pharyngitis, mass spectrometry, immunity, dysbiosis, pathogenesis, laboratory diagnostics, antibacterial drugs.

Introduction. Chronic pharyngitis (CF) is a widespread upper respiratory tract disease characterized by inflammation of the pharyngeal mucosa. Up to 7% of the adult population in Russia and Western countries [3, 4] suffers from CF. CF occupies a leading place in the outpatient practice of otolaryngologists (up to 70% of referrals) [19]. Patients with CF can also be treated by general practitioners, internists, and immunologists, so the number of patients with CF is higher than indicated in the statistics. CF is characterized by pain, scratching, discomfort in the throat, sleep disorders, complaints of constant mucus trickling down the back of the pharynx ("lump of mucus", coughing). These symptoms significantly worsen the quality of life of patients. With CF of a recurrent course, different parts of the pharynx can be affected: nasopharynx, oropharynx, laryngopharynx, often the inflammatory process is of a descending nature. Morphological changes in the mucous membrane in CF have a predominant localization in one of the anatomical parts of the pharynx, which makes it possible to distinguish individual nosologies, for example, chronic nasopharyngitis [12]. Occupational hazards, prolonged stress on the vocal apparatus (singers, teachers), climatic conditions, pathology of internal organs contribute to the recurrent course of HF.

Etiology and classification of chronic pharyngitis. Chronic pharyngitis is often caused by infectious agents: viral, bacterial, fungal, mixed CF can be allergic, traumatic (due to ingestion of a foreign body or surgical intervention). CF can occur against the background of

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exposure to irritating factors (hot liquid or steam, acids, alkalis, radiation, etc.), diseases of the gastrointestinal tract, cardiovascular system, etc. Chronic pharyngitis is usually classified according to the nature of the changes developing in the mucous membrane: catarrhal (simple), atrophic or subatrophic and hypertrophic (hyperplastic, granulose). These forms of chronic inflammation are often combined. Thus, the presence of diffuse atrophic changes in the mucous membrane can be combined with focal hyperplasia of the lymphoid tissue of the posterior pharyngeal wall or tubopharyngeal rollers (hyperplastic process develops). Viral infection in acute respiratory viral infections is often the first phase of CF, it "paves the way" for subsequent bacterial infection [14]. A common form of acute inflammation of the pharyngeal mucosa is catarrhal pharyngitis in acute respiratory viral infections. About 70% of acute pharyngitis (OF) is caused by viruses, among which rhinoviruses, coronaviruses, respiratory syncytial virus, adenovirus, influenza and parainfluenza viruses are more often found. The most typical pathogens of OP are rhinoviruses [14].

If we imagine viruses in acute pharyngitis [15], in descending order of frequency of occurrence, then these will be:

• rhinoviruses

• coronaviruses

• adenoviruses

• the flu virus

• parainfluenza virus

Rare viruses:

• respiratory syncytial virus

• herpes simplex viruses (types 1 and 2)

• enteroviruses

• Coxsackie virus

• Epstein–Barr virus

• cytomegalovirus

• Human immunodeficiency virus (HIV), the clinical significance of HIV in the development of CF has increased significantly in recent years [39].

Currently, it has been shown that rhinoviruses are responsible for more than 80% of SARS cases during the autumn epidemics. Among bacterial pathogens in AF, the leading role belongs to beta-hemolytic streptococcus group A: 15-30% of cases in children and 5-17% of cases in adults. Relatively rarely (less than 5%) OF or exacerbations of CF can be caused by

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streptococci of groups C and G [3]. In 90% of cases, the bacterial flora of the posterior pharyngeal wall is represented by associations of 2-3 types of microorganisms [3].

The classification of pharyngitis can be represented as follows. According to the severity of the manifestation:

• sharp

• chronic

By etiological factor:

• viral

• bacterial

• fungal

• allergic

• traumatic, including after tonsillectomy

• caused by exposure to irritating factors, including smoking.

• caused by diseases of the gastrointestinal tract (GERD, hernias of the esophagus, chronic gastritis, including atrophic, IBS, IBS, functional disorders of the gastrointestinal tract, chronic cholecystitis, pancreatitis)

There are pharyngitis associated with specific pathogens:

• Epstein–Barr virus in infectious mononucleosis

• Yersinia enterocolitica for yersinous pharyngitis

• Gonococcus in gonorrheal pharyngitis

• Leptotrix buccalis in pharyngeal leptotrichosis. By the nature of the inflammation:

• hypertrophic (granulose)

• atrophic (indicates involutional changes in the pharynx, pathology of internal organs and systems (gastrointestinal tract, decreased metabolism)

• catarrhal

• Mixed form.

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The clinical picture of chronic pharyngitis, the main mechanisms of pathogenesis. The clinical picture of chronic pharyngitis is characterized by scratching, dryness, discomfort and sore throat when swallowing. Patients complain of a "lump of mucus" in their throat, which causes them to cough. With inflammation of the tubopharyngeal rollers, pain usually radiates to the ears. Palpation may show tenderness and enlargement of the upper, anterior, or/and posterior cervical lymph nodes. Pharyngoscopy shows hyperemia of the posterior pharyngeal wall and palatine arches, individual inflamed lymphoid granules, while hyperplasia of the tonsils may occur. The signs of inflammation of the palatine tonsils characteristic of angina are more often absent. Exacerbation of chronic pharyngitis or acute pharyngitis may be the first manifestations of certain infectious diseases: measles, scarlet fever, measles rubella. In some cases, differential diagnosis with Kawasaki disease and Stevens–Johnson syndrome is required [2]. The clinical picture of chronic pharyngitis is not characterized by a significant increase in temperature and a significant deterioration in general condition (weakness, chills). Patients report frequent acute respiratory viral infections, nasal congestion, prolonged, dry, sometimes paroxysmal cough. At the same time, the quality of life is disrupted: discomfort in the throat is associated with the need to constantly swallow mucus located on the back of the pharynx, breathing becomes heavier during sleep, this makes patients irritable, and forces them to consult doctors. The course of the chronic inflammatory process on the posterior pharyngeal wall depends on the nature of the microflora, its virulence, the degree of contamination, the state of the macroorganism, local immunity, and the mucous membrane itself: its innervation, blood circulation, and degree of moisture [28]. The mucous membrane of the pharynx has a complex composition: muscular, nervous, vascular, secretory and lymphoid divisions. The pharynx is an important regulator of reflex stimuli, inhibition of the respiratory act, and delay in swallowing. With the help of the pharynx, vocalization, speech, breathing, and carrying food through the esophagus are performed. The pain syndrome in acute pharyngitis and exacerbation of CF is explained by the richness of pharyngeal innervation [3]. The upper laryngeal nerve (the "vagus branch") also participates in the innervation of the larynx. The richness of neural connections explains the possibility of pain radiating from diseases of the pharynx to the ear and lower jaw [16]. With atrophic pharyngitis, the mucous membrane of the pharynx looks thin, dry, and often covered with dried mucus.

Contribute to the development of chronic pharyngitis:

• constitutional features of the pharyngeal mucosa and the entire gastrointestinal tract;

• prolonged exposure to exogenous factors (dust, hot, dry or smoky air, chemicals);

• difficulty in nasal breathing (breathing through the mouth, abuse of decongestants);

• Smoking and alcohol abuse;

• allergic diseases (pollinosis, food allergy);

• Endocrine disorders (menopause, hypothyroidism, metabolic syndrome);

• vitamin deficiency (vitamin A);

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• diabetes mellitus;

• heart and lung failure;

• kidney failure;

• disorders in the intestinal microecology system (SIBR, IBS, etc.).

Disorders in the intestinal microecology system (dysbiosis) and pharynx play an essential role in the development and maintenance of chronic inflammatory processes of the posterior pharyngeal wall [7,8,9]. The formation of dysbiosis in different parts of the digestive tract is possible in the case of an imbalance in the system of physiological balance between factors of resistance and aggression.

The development of microecological disorders is facilitated by: non-compliance with sanitary and hygienic standards, the use of certain medicines (antibiotics, etc.), the presence of severe chronic, allergic diseases, and immunodeficiency conditions. Chronic pharyngitis can be combined with gastrointestinal pathologies: chronic gastritis (atrophic), gastroesophageal reflux disease (GERD), cholecystitis, pancreatitis. With a persistent, untreatable course of CF and the presence of complaints, differential diagnosis is performed with a number of syndromes that develop in certain systemic diseases and diseases of the nervous system.

Plummer–Vinson syndrome occurs in women aged 40 to 70 years on the background of iron deficiency anemia. Sjogren's syndrome is an autoimmune disease accompanied, in addition to severe dryness of the mucous membrane of the gastrointestinal tract, by a diffuse enlargement of the salivary glands. Eagle syndrome (stylalgia) is characterized by severe, persistent, often unilateral sore throat caused by an elongation of the styloid process, which is located on the lower surface of the temporal bone and can be felt above the upper pole of the palatine tonsil. A number of neuralgias (of the glossopharyngeal or vagus nerve) can also cause sore throats, especially in the elderly. Thus, chronic pharyngitis is often not an independent disease, but a consequence of the pathological condition of other organs and systems, and this makes the task of its treatment sometimes very difficult.

Diagnosis of chronic pharyngitis. CF diagnosis is carried out using a set of modern methods: 1. survey-identification of complaints, clinical symptoms (sore throat, tickling, mucus trickling down the back of the pharynx, additional symptoms — dry mouth, dry, paroxysmal cough) 2. objective examination: examination of the posterior pharyngeal wall (pharyngoscopy), palpation, ultrasound of the lymph nodes of the neck (submandibular, anterior and posterior cervical), most often hyperemia, edema, mucosal atrophy, formation of different sizes of granulomas (mucosal hyperplasia) are detected on the posterior pharyngeal wall in CF, 3.

Laboratory examination. The standard of laboratory diagnostics for CF is to culture a smear taken from the posterior pharyngeal wall to determine etiologically significant microflora (bacterial, fungal), and PCR is also used to diagnose chlamydia, mycoplasma, and viral microflora (herpes group viruses — 1, 2, 6 types, cytomegalovirus, Epstein-Barr virus) [5].

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An innovative diagnostic method for chronic pharyngitis. With constant complaints from patients with CF, etiologically significant microorganisms are often not detected in the pharynx. In this regard, the introduction of new diagnostic methods for CF is extremely important. More than 20 years ago, the method of mass spectrometry of microbial markers (MSMM) was developed and recommended for diagnostic use, which allows detecting 57 markers of microorganisms in a pharyngeal smear (by the level of fatty acids and aldehydes, for comparison, 12-15 microorganisms are detected in a crop).

During the MSMM, the content of genetically stable biomarkers of microorganisms is determined — coccoid, anaerobic microflora, actinomycetes, gram-negative microorganisms, enterobacteria (HP, campylobacter), fungal, viral markers. A result and a conclusion are given, which shows the amount of each microorganism in 1 ml of a biological sample. The result can be given as early as 2 hours after the transfer of the biomaterial to the laboratory [6]. The implementation of this method in practice is currently difficult due to some difficulty in interpreting the results obtained (60 indicators). Our work presents the experience of using MSMM in chronic pharyngitis. Treatment of chronic pharyngitis. General principles At the initial stages of the development of the disease, treatment is carried out by otorhinolaryngologists, after repeated courses of therapy with insufficiently high clinical effect, patients seek help from immunologists.

Otorhinolaryngologists usually carry out complex treatment — nasopharyngeal sanitation with local antiseptics, anesthetics are used for pain, and tonsillitis is washed (when CF is combined with exacerbation of chronic tonsillitis). After detecting pathogenic microflora, signs of intoxication, fever, and ineffectiveness of local antiseptics, antibacterial therapy is prescribed, taking into account sensitivity — these may be penicillin antibiotics or other groups, macrolides, and antiviral and antifungal drugs are used to detect viral or fungal agents [5]. When herpes group viruses are detected: HSV types 1, 2, 6, CMV, EBV (PCR in pharynx, saliva, blood — PCR or ELISA when IdM is detected) are prescribed topically (systemically) — interferon — alpha preparations (in the form of sprays, drops — genferon, grippferon), according to indications, systemic antiviral therapy (acyclovir, valvir, famvir in tablet form or insufflation rectally (viferon, genferon, KIPferon).

In the presence of mucosal edema and allergic reactions, antihistamines will be included in therapy, topical steroids in case of ineffectiveness, and sedation in case of insomnia. For local therapy (irrigation, inhalation, rinsing), there is a large selection of drugs with anti— infective, anti-inflammatory and anesthetic (in the presence of pain) effects, drugs of choice: strepsils, pharyngosept, chlorhexidine, miramistin, gramicidin C, octenicept, iodinol, sprays - ingalipt, hexoral, tantum verde, sialor, also "natural antiseptics" — calendula, chamomile, propolis (in the absence of allergic reactions).

General recommendations are important for CF with a recurrent course — diet, clean air, treatment of concomitant pathology, caries, giving up bad habits (smoking, drinking alcohol, drinking hot drinks). Considering that inflammatory diseases of the nasal cavity often occur in chronic catarrhal pharyngitis, it is necessary to sanitize the nose and paranasal sinuses (elimination of purulent infection, elimination of the causes of nasal breathing disorders, rehabilitation of lymphadenoid formations and, above all, pharyngeal tonsils).

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Treatment of exacerbations of chronic pharyngitis: local therapy The choice of the optimal drug is determined by the spectrum of its antimicrobial activity, the absence of allergenicity and toxic effect, i.e. local administration of drugs with a wide range of antimicrobial activity is in many cases the method of choice. Medicines used for local treatment of CF can be divided into seven groups: local antibiotics, antiseptics, antiviral drugs, immunocorrectors, local anesthetics, anti-inflammatory drugs, and homeopathic remedies [1]. With an uncomplicated course of CF, systemic antibiotic administration is usually not required [9]. Currently, there is a worldwide trend towards the use of topical drugs for the relief of inflammatory processes in CF. This is due to the increasing allergization of the population in most countries, the high percentage of side effects of systemic drugs and their low effect on inflammatory diseases of the pharynx [14]. The optimal treatment for sore throat is to prescribe medications that have not only an antiseptic effect, but also can quickly relieve pain [5]. Usually, drugs for the local treatment of CF include one or more antiseptics: miramistin, gramidine C, chlorhexidine (it should be remembered about the toxicity of chlorhexidine, which is part of antiangin, drill, sebidine, eludril, and prevent their unrestricted uncontrolled intake by patients (especially children), hexetidine (hexoral), benzydamine, ambazone, thymol and its derivatives, alcohols, iodine preparations, etc.), essential oils, less often — antibiotics (framycetin) or sulfonamides, deodorizing agents, natural antiseptics (plant extracts, bee products), synthesized factors of nonspecific protection of mucous membranes, microflora components (lysates, ribosomes, common determinants of bacteria — glucosomuramyl dipeptide — the drug lycopede).

Main conclusions.

1. Recurrent chronic pharyngitis (CF) is a chronic infectious and inflammatory process with a complex etiopathogenesis caused by a complex of pathogenic factors;

2. The main factors supporting CF in a recurrent course: etiologically significant microorganisms that acquire virulent properties and increased invasiveness with a decrease in resistance and immunity of the patient; the presence of concomitant chronic diseases in the patient that are insufficiently compensated; the effect of concomitant pathogenetically significant factors (occupational hazards, nutritional characteristics, etc.);

3. The new diagnostic method for MSM is highly informative in CF and can be recommended for widespread use in upper respiratory tract diseases.;

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