



## TREATMENT OF ADENOID VEGETATION UNDER ALLERGIC RHINITIS (REVIEW)

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### ABSTRACT

The initial part of the digestive tract between the oral cavity and the esophagus is represented by the pharynx, which at the same time is a fragment of the respiratory tract, connecting the nasal cavity with the larynx. The pharynx ensures the passage of food and conduction of air into the lower important parts of the body, participates in voice formation and the formation of articulate speech, and performs a protective function. The important role of the pharynx in protective mechanisms is largely due to the work of the pharyngeal lymphoepithelial structures, which form the so-called Waldeyer-Pirogov ring. As part of the latter, paired palatine and tubal tonsils, unpaired pharyngeal tonsils (PG) and lingual tonsils are differentiated line and granules of lymphoid tissue of the posterior pharyngeal wall.

### KEYWORDS

Adenoid vegetation, Waldeyer-Pirogov ring, palatine tonsils.

### INTRODUCTION

Lymphoid tissue of the pharynx is part of the unified human immune system and, unlike other peripheral organs of immunity, is both an immune barrier and a lymphocytopoietic organ that creates conditions for constant transepithelial migration of macrophages and other antigen-presenting cells. The immunological reactivity of our body This is ensured due to the active participation of the lymph epithelial ring in local protective processes and the development of a systemic response triggered by sensitization of lymphocytes of the tonsils [1]. The functions of the lymphoid tissue of the pharynx, in addition to lymphopoiesis, are the formation of antibodies and secretory immunoglobulins (Ig), regulation of the processes of phagocyte migration, exocytosis and phagocytosis, production of defensins, lactoferrin, proteolytic enzymes, lysozyme and some others. According to a number of authors, hypertrophy of the structures of the Waldeyer –Pirogov ring indicates the insufficiency of their function in providing conditions for antigen presentation and is probably a sign of immunodeficiency [2]. At birth, a person's tonsils are underdeveloped and functionally inactive. Lymphoid formation fooid structures occurs in response to colonization of the child's respiratory tract by microorganisms. Then, during life, the lymphoepithelial structures of the pharynx involute, and the lymphoid tissue is replaced by connective tissue. Typically, these changes begin in adolescence and last for quite a long time. GM develops most

quickly in children. This process is especially intense at the age of 1.5–3 years, which is due to the significant frequency of contacts of the child with various microorganisms, and physiological hyperplasia of the brain is observed. According to various authors, the “peak maturity” of the brain is observed at the age of 5–7 years, after which its age-related involution occurs [3].

After contact with a particular pathogen, separate clones of plasma cells are formed in the brain, which then spread to the mucous membrane of the nasal cavity and paranasal sinuses, where they synthesize the corresponding secretory Ig A. When a new pathogen appears, the above processes are repeated. After removal of the GM, this complex mechanism practically does not work, which can contribute to the development of chronic respiratory tract pathology in the child [2]. The GM is located in the area of the posterior fornix of the nasopharynx, but can fill its entire dome, and also spread to the side walls in the area of the pharyngeal openings of the auditory tubes. Normally, the GM does not reach the upper edge of the vomer and choanae; its pathological hypertrophy (proliferation) is determined divides like adenoids. In Russia they use the classification tion of GM, proposed by A.G. Likhachev. According to this classification, depending on the degree of obstruction of the lumen of the choanae, the following degrees of hypertrophy are distinguished: fii adenoids:

- 1st degree – adenoid vegetations cover 1/3 of the area Nika;
- 2nd degree – adenoid vegetations cover 2/3 of the area Nika;
- 3rd degree – the choanae are completely closed [4].

Chronic adenoiditis (CA) – polyetiological care levy with a duration of more than 12 weeks, which is based on a violation of the physiological immune processes of the brain. CA still retains one of the leading positions among infectious and inflammatory diseases of the upper respiratory tract in children under 10 years of age. The etiological factors for the development of CA are impaired nasopharyngeal aeration, antenatal and perinatal factors, high antigen load, unfavorable environmental conditions, immunodeficiency cytic conditions and congenital diseases, accompanied expected decrease in nonspecific immunity, unfavorable allergic history [5, 6]. Morphological changes in the lymphoid tissue of the nasopharynx are formed due to disruption of regenerative processes during prolonged antigenic viral and bacterial exposure, which contribute to persistent microbial colonization and lead to an increase in infiltration by lymphocytes and macrophages of adenoid vegetations with the formation of a transitional type of surface epithelium. CA, accompanied by adenoid hypertrophy, affects 70–75% of children aged 3 to 10 years [5, 7]. Chronic diseases of the upper respiratory

tract are often comorbid. Many patients have a combination of CA and chronic rhinitis, including allergic rhinitis [8]. Allergic rhinitis (AR) is quite commonly known chronic disease of the respiratory tract. According to the World Health Organization, more than 40% of the world's population suffers from AR. According to the data ARIA 2010 revision AR affects 10 to 20% of the population [1].

Symptoms of AR, according to the ISAAC study, were observed on average in 31.7% of children 6–7 years old and in 14.6% of children 13–14 years old. In Russia, the prevalence of AR in children was 11.7%. There has been an increase in the prevalence inadequacy of AR, especially in developed countries [9]. AR in children against the background of cerebral hypertrophy, according to scientific research, occurs in children of preschool and primary school age in 45–55% of cases [10]. Scientific forecasts indicate a further continuing trend towards an increase in the level of allergic diseases in the human population, including in childhood [11]. Allergic inflammation of the brain and its subsequent hyperplasia significantly aggravate nasal obstruction. Conducted research studies on the study of microbiocenosis of the mucous membranes data from the nasal cavity in patients with AR show that when it is colonized by *Staphylococcus aureus* and fungi of the genus *Candida albicans* increases the risk of developing secondary immune deficiency and complicated course of AR. Fungi of the genus *Candida*

have a damaging effect on the nasal mucosa, increasing the production of inflammatory mediators, and supporting chronic allergic and infectious inflammation [8, 12]. Questions of tactics for the management of children with GM pathology against the background of AR and determining indications for surgical treatment niya remain open to this day. The purpose of the review is to analyze the effectiveness of conservative and complex (combination of surgical and conservative) nogo) treatment of children with GM and AR pathology. Materials and methods, We analyzed 35 scientific publications published in the PubMed and Scopus databases over the past 10 years. Results Scientific research data show that a number of external and internal factors can lead to various disorders in the human immune system.

Excessive antigenic load leads to a compensatory increase in the lymphoid tissue of the pharynx in children with the subsequent development of lymphadenopathy. This process is caused by the inhibition of the mechanism of apoptosis of lymphocytes by viruses that have tropism for them, namely adenoviruses, res pyratoric syncytial, herpes viruses type 4, Epstein– Barr virus, atypical microorganisms and other pathogens, constitutional predisposition susceptibility to lymphoproliferative processes, which leads to inflammatory and hyperplastic changes in the lymph nodes foid tissue of the pharynx, in particular to CA [6]. According to recent

information, the role of fungal microflora in the development of chronic pathology of the nasopharynx has not been confirmed. Regular reflux of acidic chyme into the pharynx during gastroesophageal Reflux disease leads to disruption of the mechanisms of local immunity (primarily the mucociliary system), which creates favorable conditions for the colonization and growth of pathogenic bacterial microflora. In children with gastrointestinal tract esophageal reflux disease sowing frequency *S. aureus* from the GM surface is at the level of 70–75%. Most authors consider *Streptococcus* to be the main pathogens responsible for the pathological process in CA. *Pneumoniae*, *Haemophilus influenzae*, *Moraxella Catarrhalis*, *S. aureus*. However, the indicators differ significantly. *S. aureus* – Torretta et al. (2019) in 50% of cases found fired up *Str. Pneumoniae*, *H. influenzae* – in 66.7% [13], I. Brook et al. (2000) – *H. influenzae* – in 64.4%, *M. catarrhalis* – in 35.6% and *S. aureus* – in 33.3% of cases; *S. aureus* – from 50 to 75% depending on concomitant pathology, *H. Influenza* – 3.3–66.7%, *M. catarrhalis* – 6.7–35.6%, *Str. Pneumoniae* – 3.3% of cases. According to the authors, the most frequently detected associations of microorganisms in the nasopharynx are The following are available: *H. influenzae* + rhinovirus – in 8 (7.8%), *S. pneumoniae* + adenovirus – in 5 (4.9%), *S. pneumoniae* + rhinovirus – in 3 (2.68%), *S. pneumoniae* + parainfluenza virus type 1 – in 3 (2.68%) patients, in 8 (7.8%) patients *S. pneumoniae* was the only causative agent of the disease tion, and in 13

(12.7%) - in combination with various viruses: adenovirus - 5 (4.9%), rhinovirus - 3 (2.68%), parainfluenza virus type 1 - 3 (2.68 %) [14–16].

The most significant etiological factors of the form Causes of CA are poor ecology, impaired aeration of the nasopharynx, immunodeficiency states and congenital diseases accompanied by impaired immunity, and a negative allergic history [7, 15, 17]. AR among all atopic diseases is the most significant risk factor in the development of lymph hyperplasia id fabric. AR is a chronic disease of the nasal mucosa, which is based on IgE -mediated inflammation caused by exposure to various allergens and manifested by a complex of symptoms such as rhinorrhea , nasal congestion , sneezing and itching in the nasal cavity. AR often occurs with rhinosinusitis , adenoiditis , otitis media and other diseases of the upper respiratory tract and is combined with other allergic pathology [13, 18]. The presence of AR and CA in a child can be the leading cause of the development of obstructive sleep apnea syndrome and orthodontic changes [19]. According to a number of otorhinolaryngologists , this problem in case of GM hypertrophy , surgical treatment is the solution – adenotomy [20].

Adenotomy is one of the most common surgical interventions performed in pediatric otorhinolaryngology; This operation can quickly solve the problem of nasal obstruction. breathing , as well as restoring the drainage of natural anastomoses in the

rhinosinus-tubal area, helps to reduce the contamination of the brain. Indications for adenotomy for hypertrophy of the brain are: • obstructive sleep apnea syndrome; • the presence of anamnestic and clinical signs of frequently recurring or regular episodes of structural sleep disorders (snoring, daytime sleepiness and lethargy of the child); • persistent course of exudative otitis media (lack of resolution of disease symptoms within 3 months ), not amenable to conservative treatment research and confirmed by tympanometry data ; • recurrent course (3 or more episodes in the last 6 months or 4 or more in the last 12 months ) of acute otitis media and/or acute sinusitis, with the exclusion of other causes (primarily immunodeficiencies) and the ineffectiveness of drug prevention; • persistent difficulty in nasal breathing ( without other causes of nasal obstruction ), resistance driven by a decrease in the child’s quality of life (disturbance in sleep or educational activity in adolescents) or leading to deformation of the facial skeleton (according to a cephalometric study and conclusion orthodontist or maxillofacial surgeon) ; • chronic sinusitis, accompanied by severe clinical manifestations and/or frequent exacerbations with a significant decrease in the child’s quality of life when 1–2 courses of conservative treatment are ineffective; • expert opinion on the need to carry out nia adenotomy as a stage in the treatment of concomitant pathology (for example, the conclusion of cardiac surgeons on

the need for adenotomy as a stage in preparing the patient for cardiac surgery) [3].

According to the literature, relapses of adenoids are observed occur in 9–65% of cases and develop under the influence of the same factors that initially cause hypertrophy of adenoid tissue. Some foreign scientists have discovered unsuccessful results of adenotomy for CA and RI nasinusitis in 55 children out of 121. Most often these were children under 7 years of age and with a history of bronchial asthma. P. \_ Mattila reported the effectiveness of elective adenotomy in children [21]. Complex treatment , including local antibacterial agents drugs and the use of nasal steroids, in some cases, allows to achieve stable remission in patients suffering from the concomitant pathology of adenoid hypertrophy diseases /CA and AR, as well as bronchial asthma [7, 22]. Research by Russian scientists has shown the importance of GM for the development of the child’s body; a number of researchers have expressed an opinion in favor of partial adenotomy and preservation of GM, arguing their point of view by indicating that adenoid vegetations are an immunocompetent organ for inducing a mucosal and systemic immune response. In addition, after adenotomy there is a risk of developing vicarious hyperplasia of the lymphoid tissue of the tubal tonsils , which leads to worsening exudative symptoms nary , adhesive otitis. Relapses of adenoid hypertrophy From 2–10 to 40–75% of children have

disabilities ; they develop under the influence of the same factors that cause CA. Surgeon Clinical treatment of adenoid vegetations, performed according to indications, does not negatively affect the immune defense mechanism and is highly effective in relation to the quality of life of children [23, 24].

Conservative treatment includes drug and non-drug methods of influencing CA. According to the clinical guidelines “Adenoid hypertrophy. Hypertrophy of the palatine tonsils”, approved approved by the Russian Ministry of Health dated September 1, 2021, conservative treatment includes irrigation and elimination tera pyu , topical antibacterial therapy, mucolitis ical therapy, local glucocorticosteroid (GCS) therapy [3]. These therapeutic directions are described are also found in foreign literature [25]. Irrigation-elimination therapy is aimed at reducing the severity of symptoms of adenoiditis . Regular use of isotonic and hypertonic solutions of sterile sea water does not allow dysbiotic changes to progress and prevents prevents the growth of pathogens, and also improves mucociliary clearance and rheological properties of nasal mucus. Hype rosmolar saline solutions reduce nasal obstruction due to a pronounced anti-edematous effect. Isotonic and hypertensive drugs have the same effect. chemical solutions of sterile sea water in the treatment of AR [9, 12, 26–28].

One of the possible causes of the pathology is lymphoepititis lyal pharyngeal ring is a microbial obse

changeability \_ The microbiological picture against the background of GM pathology is quite diverse, but which specific pathogens are fundamental in the development of GM/CA hypertrophy is not completely clear. Microbial biofilms play an important role in the formation of CA. Biofilms are communities formed by related and unrelated microorganisms, delimited from the external environment by additional membranes, within which cells have specialization and contact with each other . Bacterial films have been found in a large number of patients with adenoid hypertrophy on the surface of the removed tissue [29]. Against the background of irrigation- elimination therapy in children with adenoiditis , conditions are created for the use of local antibacterial agents in order to suppress pathogenic and opportunistic microorganisms [thirty, 31]. The use of nasal sprays with etiotropic components tami allows achieving eradication of infectious agents . The use of local antibacterial therapy in the complex treatment of adenoiditis in children increases the effectiveness and compliance of treatment [32, 33]. In order to reduce the severity of postnasal drip In the treatment of CA in children, mucolytic drugs are used teacher rats with a dominant mucoregulatory effect [33]. Intranasal topical corticosteroids, namely mometasone furoate are indicated in the treatment of CA/GA against the background of AR according to the Clinical Guidelines “Hypertrophy of the palatine tonsils ” , approved by the Ministry of Health of Russia dated September 1,

2021. This drug is able to reduce the inflammatory process, reduce the volume of tissue of adenoid vegetations in children with AR, which is the main indication for use values intranasal GCS [28]. In the foreign literature there is clinical experience with the endonasal use of mometasone furoate to reduce the size of GM. After a course of treatment (1 month ) , in 70.4% of patients the size of adenoid vegetations decreased, which made it possible to avoid surgical intervention [34].

## CONCLUSIONS

Thus, the results of studies of recent decades, carried out by Russian and foreign clinicians in the field of pathogenesis, etiology, clinical picture and methods of treatment of children with CA/HA, including against the background of AR, leave questions of rational tactics for managing such patients largely open. The need for further study of the feasibility and effectiveness of using this or that method and method of treating children with GM pathology against the background of AR is not raises doubts. In conclusion, we can conclude that adequate weight The care of children with chronic adenoiditis and AR is an urgent problem of modern clinical otitis nolaringology and allergology. There is no doubt that the treatment of such patients should be comprehensive and individual. Further research into this problem is needed in order to optimize treatment tactics.

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