



## ADENOID VEGETATIONS: EFFECTIVENESS OF THERAPY (REVIEW)

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### ABOUT ARTICLE

**Keywords:** adenoid, hypertrophy, difficulty in nasal breathing.

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**Abstract:** The problem of adenoids in childhood has not been solved to date. In pediatric otorhinolaryngology, 70-75% of operations in pediatric ENT hospitals are performed for hypertrophy of the pharyngeal tonsil. To this day, the question of the justification of this approach to adenoids has not been fully resolved. It is also not established in which cases surgical intervention is necessary and to what extent.

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## ADENOID O'SIMLIKLARI: TERAPIYA SAMARADORLIGI (KO'RIB CHIQISH)

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### MAQOLA HAQIDA

**Kalit soʻzlar:** adenoid, gipertrofiya, burun nafasida qiyinchilik.

**Annotatsiya:** Bolalikdagi adenoidlar muammosi bugungi kungacha hal qilinmagan. Bolalar otorinolarinologiyasida bolalar lor shifoxonalarida operatsiyalarning 70-75% faringeal bodomsimon gipertrofiyasi uchun amalga oshiriladi. Bugungi kunga qadar adenoidlarga bunday yondashuvni asoslash masalasi to'liq hal qilinmagan. Qaysi hollarda jarrohlik aralashuvi zarurligi va qanchalik darajada ekanligi ham aniqlanmagan.

## АДЕНОИДНЫЕ ВЕГЕТАЦИИ: ЭФФЕКТИВНОСТЬ ТЕРАПИИ (ОБЗОР)

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**О СТАТЬЕ**

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<b>Ключевые слова:</b> гипертрофия, затруднение дыхания.	<b>аденоиды, носового</b>	<b>Аннотация:</b> Проблема аденоидов в детском возрасте до сих пор не решена. В детской оториноларингологии 70-75% операций в детских ЛОР-стационарах выполняют по поводу гипертрофии глоточной миндалины. До настоящего времени вопрос об обоснованности такого подхода к аденоидам до конца не решен. Также не установлено, в каких случаях и в каком объеме необходимо хирургическое вмешательство.
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**INTRODUCTION**

There are two points of view regarding the pharyngeal tonsil in cases of its increase in size. The first point of view is shared by a number of otorhinolaryngologists, who advocate the need to remove the enlarged pharyngeal tonsil even if it at least to some extent interferes with nasal breathing. The justification in this case is the circumstances that the developed volumetric enlargement of this tonsil negatively affects the child's body, making it difficult to breathe through the nose, reducing the oxygen supply to the body, and disrupting metabolic processes. This leads to developmental delays in the child, including mental development. At the same time, the functions of the nasal mucosa in cleansing, warming and humidifying the inhaled air suffer. Proponents of this point of view also note that enlarged tissue of the pharyngeal tonsil disrupts the physiology of the auditory tube, creating conditions for the development of acute inflammatory or exudative processes in the middle ear. This, in turn, according to this group of specialists, leads to hearing loss, in some cases irreversible or requiring prompt intervention. At the same time, removal of the pharyngeal tonsil is justified in the presence of chronic inflammatory process in adenoid tissue, occurring in isolation and not amenable to conservative therapy [5-7]. Oposing group of otorhinolaryngologists I think It is clear that hypertrophy of the pharyngeal tonsil is due to various reasons that should be identified and appropriate conservative therapy carried out. policy aimed at eliminating them. At the same time, frequent ARVI in children is considered the most significant among the reasons [7-10]. In this situation, pediatricians quite often prescribe courses of immunocorrective therapy.

### THE MAIN RESULTS AND FINDINGS

In case In the absence of a pronounced therapeutic effect, without a preliminary assessment of the state of immunity, such children are referred for adenotomy. At the same time, it is known that frequently ill children often initially have a violation of innate and adaptive immunity, and organ, which plays an important role in the formation development of the immune system may lead to the unfavorable development of inflammatory and infectious processes. In the know in the vast majority of cases this leads to chronic the course of inflammation in the mucous membrane of the upper respiratory tract, controlled by the pharyngeal tonsil. In the conservative treatment of chronic adenoid dita (CA) exacerbations of the disease periodically develop vaniya and unfavorable (there are classification signs of this) its course [10]. The pharyngeal tonsil in a newborn child is located in the fornix of the nasopharynx, consists of lymphoid tissue and belongs to the lymphoepithelial organs of the mucous membrane (mucosa associated lymphoid tissue (MALT)), which provides an immune barrier and peripheral tolerance to inhaled antigens. The barrier function is also determined by its location, where it interacts interacts with microorganisms and other particles entering the nasopharynx due to the retranasal direction of mucociliary clearance. In the structure of the pharyngeal tonsil there are glands that open with excretory ducts into its lacunae and thereby do not allow long-term exposure of antigens on the surface [11-14]. An immune response is formed in the pharyngeal tonsil, the morphological equivalent of which is hyper plasia of lymphoid tissue [14-16]. At the present stage, innate and adaptive immunity are distinguished. Infectious agents upon penetration encounter the first line of defense created by innate mechanisms that are provided by the skin and mucous membrane - phagocytosis, bactericidal substances (lysozyme, interferon), the development of an inflammatory reaction, etc.

Therefore, the mucous membrane and skin are currently They are considered to be the largest barrier organs that perform a protective function. In addition, innate receptor structures have been found in humans and mammals - Toll -like receptors (Toll like receptors (TLRs)), which carry out detection (recognizing tion) of the microbial environment and signal the danger of penetration of foreign genetic material. Through signaling from Toll -like receptors, non-specific reactions are activated. physical defense and adaptive immune reactions. In the innate immune system, recognition receptors characterize are specific to certain patterns of pathogens and are called pattern recognition receptors (pattern recognition receptors (PRRs)) for conserved molecules (patterns of pathogenicity) that provide the microorganism with survival and pathogenicity [12, 17].

The achievements of modern immunology have made it possible to establish that nonspecific defense mechanisms act as initiators of the immune response adap. tive immune system. According to this concept, the launch of an adaptive immune response is impossible without the

participation of innate immune factors: recognition of the antigenic structure of a pathogen during the first interaction with a macroorganism and the first immediate response actually are mediated by the mechanisms of innate immunity. The innate immune system, interacting through dendritic cells with T-cells and B-cells of lymphoid tissue, activates adaptive immunity sequentially and delayed [18, 19]. As a result of a morphological study of the tissue of the pharyngeal tonsil, it was found that the adenoids represent a reactively changed pharyngeal tonsil line in the form of hyperplasia of its lymphoid tissue. Gistolov The genetic structure of this hyperplastic tonsil as a lymphoepithelial organ reflects the interaction of immunocompetent cells with the epithelium of the organ in the form of lymphoepithelial symbiosis and the presence of intraepithelial lymphocytes in the layer of respiratory epithelium.

Identified by immunohistochemical research In this case, the distribution of the main populations of T-lymphocytes and B-lymphocytes in the diffuse and follicular lymphoid tissue of the adenoids confirmed the existing separation of functional compartments. It reflects cooperative immune response involving cellular and humoral links of immunity [17]. To date, the effect of a number of drugs used in the conservative treatment of adenoiditis on the morphology of tonsil tissue has not been studied, although the inhibitory effect of antibiotics and corticosteroids on the immune system is well known. The reasons leading to hypertrophy of adenoid tissue include age-related immaturity, inflammatory diseases of the nose and pharynx, various childhood infectious diseases (measles, infectious mononucleosis, chicken pox, scarlet fever, etc.), complicated perinatal course long period of ontogenesis, atopic diseases, frequent episodes of acute respiratory viral infections, endocrine disorders (congenital and acquired hypothyroidism, puberty, etc.), acid-dependent diseases of the stomach, congestive processes in the body (heart failure, etc.), hygienic vitamin deficiencies, unfavorable social and living conditions, radiation and other effects that reduce the body's reactivity [2, 8, 10, 17, 20—23]. Since the venous network of the pharyngeal tonsil is directly connected If it is connected with intracranial and vertebral veins, then increased intracranial pressure can lead to congestion in the tissue of the pharyngeal tonsil [2, 23]. In recent years, enlargement of adenoids is considered one of the manifestations of a child's adaptation, just like frequent episodes of ARVI in the first years of a child's life, to a high antigen load and changing environmental conditions [1]. In addition, there is physiological hypertrophy of the tissue of the pharyngeal tonsil at the age of 2 to 7 years, which does not require any therapeutic manipulations [24-26].

If in acute adenoiditis the main cause of levania is an infection of the body, mainly of viral etiology [12], then with hypertrophy and chronic inflammation of the pharyngeal tonsil leading etiology The logical factor is much more difficult to isolate. Pathogenic The effect of viruses on the pharyngeal tonsil is partly the same as in the nasal cavity: the virus damages the dense

epithelium on the surface of the pharyngeal tonsil, forming areas that are more vulnerable to adhesion factors of viruses and bacteria. With single impacts (unit individual episodes of ARVI), these changes are reversible - complete restoration of ciliary structures occurs th epithelium. With frequent exposure to viral agents (in frequently ill children), regeneration is disrupted ative processes of the mucous membrane. Damaging excluding the basement membrane and its own layer The zona zest of the tonsil provokes the release of transforming growth factor beta by fibroblasts, which leads to hyperplasia of the tonsil tissue [27]. This occurs under the influence of some viruses that have a tropism for lymphoid tissue (such as adenoviruses, herpes viruses, rhinovirus, bocavirus, parainfluenza virus type 2, enterovirus, cytomegalovirus, ECHO and Coxsackie viruses, etc.) [2, 15, 28, 29].

Particular attention is now paid to EBV infection (herpes virus type 4), which causes pronounced hypertrophy of the pharyngeal tonsil with the subsequent formation of persistent nasopharynx ringeal obstruction [2, 10, 30—32]. Great importance in the development of adenoiditis is attached to chronic bacterial infection, especially trans pathogenic microflora: microorganisms of the genera *Moraxella* (*M. catarrhalis*), *Bacillus*, *Micrococcus*, *Pseudomonas* and the family *Enterobacteriaceae* (*K. pneumoniae*, *K. oxytoca*, *E. coli*), *Staphylococcus aureus* (*S. aureus*), pneumococcus (*Str. pneumoniae*), pyogenic streptococcus (*Str. pyogenes*). Normally, these bacteria are found in the nasopharynx in small quantities in 2-25% of cases. If weak growth (up to 4th degree) of a representative of the pathogenic microflora is determined ry, then they regard this as a carriage, which is usually not accompanied by clinical adenoiditis [33]. It should be noted that one of the markers is chronic Another bacterial infection is bacterial biofilms, which are microbial communities characterized by high production of adhesion molecules. As a result, microorganisms are attached to each other and covered with a certain exopolysaccharide matrix (glycocalyx), produced by the microbes themselves, which holds the biofilm on the surface tissue of an organ or mucous membrane. Bacterial biofilms were found on the surface of the removed adenoids. were married in 8 out of 9 cases [34-36]. In addition, fungi and intracellular pathogens (*mycoplasma*, *chlamydia*, etc.) play a certain role in the development of adenoiditis [21, 22, 37]. It is believed that the pharyngeal tonsil is heterogeneous in the composition of its microbiocenosis [38, 39]. On the surface of the pharyngeal tonsil, a poorer composition of the microbiocenosis is usually isolated (5-6 opportunistic species, represented mainly by hemolytic streptococci and neisseria). On the surface of adenoid vegetations, the microbiocenosis is more susceptible to environmental factors yes and often changes species composition.

In the lacunae and crypts of the pharyngeal tonsil, a richer in high diversity of microbiocenosis: 8-9 types of opportunistic bacteria, of which 4-5 types of anaerobes, 2-3 types of cocci, 1-2 types of gram-negative rods [2]. Adenoiditis can occur with complications such as

the development of rhinosinusitis or otitis media, bronchitis, pneumonia monia, etc. Typically, conservative treatment is carried out in cases where there are no complications of adenoiditis, there is no obstruction of nasal breathing and nocturnal apnea. The goal of therapy is to eliminate the cause that led to the development of the disease; most often, therapy is aimed at stopping the inflammatory process in the tissue of the pharyngeal tonsil and suppressing the pathogen using a minimum set of medications. For this purpose, irrigation and elimination systems are used. therapy (IET) using various complexes and devices and an isotonic solution of sea water; topical and systemic antibacterial agents. For IET you need can clearly follow the instructions for performing the method rinsing instructions, take into account the permitted age of use formulation of the product, and also use solutions of sea salt without preservatives [40]. The nasopharynx is washed with solutions of antibiotics and antiseptics using the moving method, using vacuum therapy, aerosols of various drugs natural drugs [21, 41]. Systemic antibacterial This therapy is prescribed only when absolutely necessary and taking into account the sensitivity of the microbial flora obtained from the patient. Most often pediatricians and pediatric otorhinolaryngologists use protected aminopenicillins and cephalosporins of the second generation. Currently, pediatricians have recognized it as advisable prescription of drugs that have immunomodulatory properties - immunomodulators of bacterial origin. Among them, highly purified bacteriolysates (BL), membrane fractions, and ribosomal proteoglycan complexes are distinguished [8, 9, 37].

Bacterial immunomodulators, depending on the "point of application", have topical or combination controlled action. BL and ribosomal immunomodulators are often called "mucosal vaccines", since they not only activate nonspecific defense factors (macrophages, interferon, etc.), but also contribute to the formation of specific, mainly local, immunity (the formation of antibodies and T-lymphocytes) zellous membrane [37, 42]. Nonspecific action This results in an increase in the phagocytic activity of macrophages, polymorphonuclear neutrophils, an increase in the production of lysozyme and the secretory component IgA (SIgA) [9]. However, their effect on the morphology and functional activity of the pharyngeal tonsil has not been studied. In recent years, the use of topical glucocorticosteroids in the treatment of adenoiditis. Latest generation glucocorticosteroids for intranasal use, such as Fluticasone propionate, fluticasone furoate and especially mometasone furoate, have low bioavailability, which reduces the likelihood of side effects and makes it possible for long-term safe use of these drugs even in preschool children. These drugs have a strong anti-inflammatory effect, but also a number of side effects, including a suppressive effect on the immune system [39, 43].

## CONCLUSION

If conservative therapy is ineffective or if the parents of a patient with CA of a child are not compliant, They are considering surgical treatment - adenotomy, while the immunomodulatory

process has already started, and the formation of local immunity has not yet been completed (completion occurs by the age of 14). This situation can in no way be classified as rational, and often leads to the development the occurrence of adverse effects on the child's body (the development of frequent inflammatory diseases of the upper and lower respiratory tract, bronchial asthma, etc.). In this regard, clinical studies have not yet been carried out and follow-up data have not been analyzed that would help resolve this situation. In addition, during the removal of chronically inflamed adenoid tissue, the main problem is increased bleeding of the surgical wound [44, 45]. In this regard, during periods of exacerbation of the course of CA, operative This intervention is strictly contraindicated [46]. Considering the presence of a number of unresolved issues in the study Based on the study of the morphology of the pharyngeal tonsil and changes in immunity under the influence of modern means of therapy, the question of the advisability of adenotomy in childhood remains open.

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