

# Integrated Approaches To The Diagnosis, Treatment, And Prevention Of Stenosing Laryngotracheitis In Children

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***Abstract:*** Today, acute respiratory infections, including viral ones, occupy a leading place in the pathology of childhood. One of the frequent and severe manifestations of acute respiratory diseases in young children is acute (primary and recurrent) stenosing laryngotracheitis (ASLT). The problems of acute laryngotracheitis are caused not only by its high prevalence, the possibility of severe complications and death, but also by the tendency to recurrence. No less important is the features of the formation of both acute and recurrent laryngotracheitis. In the pathogenesis of acute stenosing laryngotracheitis (OSLT) in children, one of the leading clinical manifestations is the syndrome of endogenous intoxication. These are, first of all, destructive processes, as a result of which an excessive amount of intermediate and final metabolic products accumulate in the body, which have a toxic effect on the most important life support systems.

***Keywords*** Acute stenosing laryngotracheitis, recurrent laryngotracheitis, endogenous intoxication.

## 1. INTRODUCTION

Acute respiratory diseases, including acute respiratory viral infections (ARVI), still occupy a leading place in infectious diseases of childhood. One of the frequent and severe manifestations of ARVI, accompanied by respiratory disorders, is acute and recurrent stenosis laryngotracheitis (OSLT), the frequency of which, according to various researchers in different years, ranges from 0.1 to 0.4% of all hospitalized with ARVI diagnosis.

The problems of acute and recurrent laryngotracheitis are caused not only by its high prevalence, the possibility of bacterial complications, and the onset of death but also by the

tendency to recurrence. In this regard, the issues of diagnosis, treatment, and prevention of acute stenosing laryngotracheitis in children are very relevant.

Most often, OSLT develops in children of the second and third years of life (from 6 to 36 months, more than 50% of cases), somewhat less often in infancy (6-12 months) and in the fourth year of life.

At this age, repeated respiratory illnesses significantly affect the development of the child. They lead to a weakening of the body's defenses, contribute to the formation of chronic foci of infection, cause allergies, interfere with preventive vaccinations, aggravate the premorbid background, and retard the physical and psychomotor development of children.

**Etiology:** Influenza, parainfluenza, adeno- and respiratory syncytial viruses, as well as viral-viral associations, play a leading role in the development of stenosing laryngotracheitis. The predominant etiological factor causing the inflammatory process in the larynx and trachea accompanying the development of croup syndrome is the parainfluenza virus. It accounts for about half of all viral OSLTs. Along with viruses, in the development of an unfavorable (severe, complicated) course of OSLT, an important role is played by the bacterial flora, which is activated in ARVI or joins as a result of nosocomial infection.

**Predisposing factors are** Anatomical and physiological features of the children's larynx and trachea: small diameter, softness and flexibility of the cartilaginous skeleton; short narrow vestibule and funnel-shaped larynx; Highly located and disproportionately short vocal folds; hyperexcitability of the adductor muscles that close the glottis; functional immaturity of reflexogenic zones and hyperpara sympatheticotonia. In the mucous membrane and submucosa, there is an abundance of lymphoid tissue with a large number of mast cells, blood vessels, and with a weak development of elastic fibers. Adverse background factors: anomalies of the constitution (exudative-catarrhal and lymphatic-hypoplastic diathesis); drug allergy; congenital stridor; paratropy; birth trauma, childbirth by cesarean section; post-vaccination period; sensitization by previous frequent ARVI.

**Pathogenesis:** It is currently known that in the pathogenesis of acute and, to a greater extent, recurrent course of laryngotracheitis, not only exogenous but also endogenous factors are important, namely the state of immunity and immunoregulatory systems, in particular, cytokine regulation

Cytokines are involved in the formation and regulation of protective reactions of the body and its homeostasis. They are involved in all parts of the humoral and cellular immune response, including the differentiation of immunocompetent progenitor cells, antigen presentation, cellular activation and proliferation, expression of adhesion molecules, and acute phase response. Some of them are capable of exhibiting many biological effects on various target cells.

And also the nature of the course and outcome of infectious diseases largely determines the balance between pro-inflammatory and anti-inflammatory cytokines. The ratio of pro-inflammatory and anti-inflammatory protection factors, apparently, plays a key role in the pathogenesis of acute and recurrent laryngotracheitis.

The main mechanism of development of stenosing laryngotracheitis is:

1. Inflammatory and allergic edema with cellular infiltration of the mucous membrane of the larynx (sub-lining space) and trachea.
2. Reflex spasm of the muscles of the larynx.
3. Hypersecretion of mucous glands, accumulation of thick sputum, crusts, fibrinous or necrotic deposits in the glottis

**Clinical manifestations:**

The change in timbre and hoarseness of the voice correlates with the degree of edema of the laryngeal mucosa. Hoarseness increases as the edema progress until the development of

aphonia - the inability to phonate when only articulation (whispering) is possible. Sputum in the lumen of the larynx interferes with the work of the vocal cords and causes hoarseness of the voice, while the spasm of the muscles of the larynx affects the change in its timbre (from slight hoarseness to aphonia within a few seconds). The cough in OSLT is rough, "barking", sometimes "croaking", short, abrupt. The specific sound color of the cough, its height is a reflection of the severity of the phenomenon of spasm of the muscles of the larynx: the higher the cough, the more muscle spasm prevails. Its volume is due to the degree of edema of the mucous membrane: the more edema, the quieter the cough. Stenotic breathing is the leading symptom due to the difficulty in passing the inhaled air through the narrowed lumen of the larynx. The inhalation is lengthened and difficult, there is a pause between inhalation and exhalation, the breathing becomes noisy, "sawing" character. Moderately expressed phenomena of stenosis of the larynx are accompanied by an inspiratory type of shortness of breath. The transition of inspiratory dyspnea to mixed indicates an increase in the severity of stenosis. The increase in breathing resistance, due to stenosis of the lumen of the upper airways, leads to the activation of the respiratory muscles and the retraction of the compliant places of the chest. The onset of the disease is acute, often sudden, mainly at night or in the evening. The child wakes up from an attack of rough cough, noisy breathing, becomes restless. With ARVI, croup can develop at different times from the onset of the disease and is sometimes the first and only manifestation. In practical work, it is important to distinguish the degree of laryngeal stenosis from the stage of croup. The degree of stenosis reflects the severity of the respiratory failure, while the stages of croup characterize the dynamics of the development of the disease. Staged development of croup is characteristic of laryngeal diphtheria, but not typical for OSLT in ARVI.

Four degrees of stenosis are subdivided: Stenosis of the 1st degree (compensated). Clinically characterized by all the signs of OSLT. With anxiety, physical exertion, an increase in the depth and noise of breathing is noted, inspiratory dyspnea appears. There are no clinical signs of hypoxemia. The body's compensatory efforts maintain the blood gas composition at a satisfactory level (pO<sub>2</sub> 85-95 mm Hg; pCO<sub>2</sub> 35-40 mm Hg). The duration of stenosis of the larynx is from several hours to 1-2 days. Stenosis of the 2nd degree (subcompensated). Strengthening of all clinical symptoms of ASLT. The characteristic stenotic breathing is well audible at a distance, it is noted at rest. Constant inspiratory dyspnea. Compensation of stenosis occurs by increasing the work of the respiratory muscles by 5-10 times. There is a retraction of the compliant places of the chest at rest, which intensifies with tension. Children are usually agitated, restless, and sleep disturbed. The skin is pale, perioral cyanosis appears, aggravated during a coughing attack, tachycardia. Indicators of the gas composition of arterial blood: pO<sub>2</sub> decreases moderately, pCO<sub>2</sub> is within the upper limit of the norm. The phenomena of stenosis of the larynx of the 2nd degree can persist for a longer time - up to 3-5 days. They may be permanent or paroxysmal. Grade 3 stenosis (decompensated).

It is characterized by signs of respiratory decompensation and circulatory failure, a sharp increase in the work of the respiratory muscles, which does not prevent the development of hypoxemia, hypoxia, hypercapnia. External and tissue respiration is impaired, the level of oxidative processes in tissues decreases, mixed acidosis appears. The general condition is serious. Expressed anxiety, accompanied by a feeling of fear, is replaced by lethargy, drowsiness. The voice is sharply hoarse, but complete aphonia is not observed. Cough, at first rough, loud, as the narrowing of the larynx increases, it becomes quiet, superficial. Shortness of breath, constant, mixed. Respiration is noisy, frequent, with a sharp retraction of the compliant parts of the chest. In this case, one should pay attention to the severity of the retraction of the lower end of the sternum, which can appear already at the 2nd degree and sharply increases with the 3rd degree of laryngeal stenosis. As stenosis increases, breathing

becomes arrhythmic, with uneven depth and paradoxical excursions of the chest and diaphragm. Noisy, deep breathing gives way to quiet, shallow. Clinical signs of hypoxemia are expressed. Auscultation over the lungs, at first, rough rales of a wired nature are heard, then a uniform weakening of breathing. Muffled heart sounds, tachycardia, paradoxical pulse (loss of pulse wave during inspiration). Arterial hypotension may be registered. Hypoxemia and hypercapnia, combined acidosis is expressed in the blood

Stenosis of the 4th degree (asphyxia). Some authors assess this condition as an extremely serious condition, a deep coma develops, there may be convulsions, the body temperature drops to normal or subnormal values. Breathing is fast, shallow, or irregular with periodic apnea. Heart sounds are muffled, bradycardia occurs, and then asystole. Hypoxemia and hypercapnia reach extreme values, and a deep combined acidosis develops. In addition to obstructive respiratory failure, the severity of the condition is determined by the severity of toxicosis, the addition of complications.

Diagnosis: The diagnosis is based on the presence of a characteristic triad of symptoms (voice change, barking cough, rough breathing), as well as on other manifestations of ARVI. The data of anamnesis, laboratory and instrumental (direct laryngoscopy, etc.) research methods are taken into account. If necessary, virological diagnostics are carried out. Bacteriological examination of the output material (mucus from the oropharynx, nose) is mandatory to exclude diphtheria. If diphtheria croup is suspected (in unvaccinated or improperly vaccinated against diphtheria patients with OSLT symptoms; a child from a diphtheria focus; a combination of stenosis of the larynx with angina and swelling of the subcutaneous tissue of the neck), bacterioscopy of smears taken from the lesions is indicated. Differential diagnosis of viral croup is carried out with a number of diseases that are accompanied by a clinical picture of upper respiratory tract obstruction. Diphtheria (true) croup occurs mainly in unvaccinated children. It is characterized by a staged flow and gradual development. The initial stage (dysphonic, catarrhal or croupous cough stage) is characterized by the appearance of clinical signs of laryngitis against the background of moderate intoxication phenomena - hoarseness, cough, which later becomes "barking". With direct laryngoscopy at this stage, fibrinous films are absent, edema, and hyperemia of the mucous membrane are noted. The stenotic stage with diphtheria croup is characterized by a gradual increase in the severity of laryngeal stenosis and clinical manifestations of respiratory failure. Against the background of the progression of intoxication, the voice becomes sharply hoarse, the volume of the cough decreases (up to soundless). Before the onset of complete aphonia (soundless screaming, crying, coughing) a characteristic feature of diphtheria croup is the absence of strengthening (raising) of the voice when crying, screaming. In viral stenosis, in contrast to true croup, complete aphonia is never observed. At this stage, when carrying out direct laryngoscopy against the background of hyperemia and edema of the mucous membrane of the larynx, characteristic fibrinous deposits are visible. With measles, croup can develop at the end of the catarrhal period (early croup) and during the period of pigmentation of the rash (late croup, which is much less common than the early one). As a complication of scarlet fever, croup develops when the necrotic process spreads from the tonsils to the larynx. Against the background of chickenpox, when bubbles appear on the mucous membrane of the larynx in the area of the vocal folds, in some cases, a picture of laryngitis is observed, sometimes with attacks of stenosis of the upper respiratory tract. Difficulty breathing can occur with a pharyngeal abscess, which is characterized by an acute onset with a high temperature. In this case, the voice does not change, there is no rough cough, the speech is slurred, with a nasal tinge. Breathing is not stenotic but snoring, the mouth is open. Swallowing is difficult, painful. Children refuse to eat, infants - salivation is noted. A forced position is characteristic (the head is thrown back and to the sore side). Trismus of the

chewing muscles is possible. Pharyngoscopy reveals edema and protrusion of the posterior pharyngeal wall.

**Complication:** The most frequent and independent of the degree of laryngeal stenosis complication of OSLT is obstructive bronchitis with decompensated (3rd degree) stenosis, purulent laryngotracheobronchitis (1/3 of patients) and pneumonia often develops. Bacterial otitis media, sinusitis, lacunar tonsillitis, purulent conjunctivitis, purulent meningitis are also possible. The accession of pneumonia is the leading cause of death in viral croup. One of the serious complications is epiglottitis. Epiglottitis is an acute inflammation of the supraglottic structures (epiglottis, arytenoid cartilage, scopolaryngeal ligaments, tongue) of predominantly Hemophilus (less often streptococcal, staphylococcal) etiology, which is accompanied by severe symptoms of upper airway obstruction. The rapid, within a few hours, a progression of symptoms of airway stenosis against the background of severe dysphagia (it is difficult for a child to swallow even saliva), rapidly increasing intoxication with hyperthermia, tachycardia, anxiety or confusion speaks in favor of this condition. There is no change in voice (hoarseness), the voice is usually quiet. Cough is uncommon. For epiglottitis, a forced position is characteristic - the so-called "sniffing" posture. When examining the posterior wall of the pharynx, one can see a dark cherry infiltration of the tongue root, and sometimes an enlarged, cherry-colored epiglottis.

**Differential diagnosis:** When carrying out a differential diagnosis between OSLT and laryngospasm, it should be borne in mind that the latter is characterized by a recurrence of attacks several times a day, especially in spring, in children aged 6 to 24 months with signs of rickets and other manifestations of increased neuromuscular excitability. The voice is not changed, there is no cough, there is difficulty in inhaling and a "cock" cry on exhalation. Aspiration of a foreign body (into the larynx, trachea) can also lead to the development of stridor breathing and paroxysmal coughing. In this case, the symptoms develop suddenly, against the background of full health, in the daytime, while playing or eating.

Laryngeal papillomatosis may resemble ASLT if a child with papillomatosis has ARVI. With a carefully collected anamnesis, you can always establish that similar attacks of stenotic breathing and hoarseness of the voice were noted in the child before. In addition, with papillomatosis of the larynx, the hoarseness of the voice persists outside the manifestations of ARVI.

**Treatment:** In recent years, various methods have been proposed for the treatment of children with an acute respiratory viral infection, occurring with symptoms stenosing laryngotracheitis. Until now, questions about the appropriateness of certain methods of treatment are being discussed [1, 2, 3, 8, 12].

A prerequisite for the successful treatment of stenosing laryngotracheitis is mandatory early hospitalization of patients in a specialized department for the management of patients with ASLT or in a somatic pediatric (infectious) department with an intensive care unit. Patients with grade 3 ASLT, as well as grade 2, if the course of the disease does not improve within 24-48 hours against the background of ongoing therapy adequate to the severity of the condition, are admitted to the intensive care unit and intensive care unit.

**Etiotropic therapy** for OSLT in ARVI involves exposure to the virus (antiviral drugs); the use of factors of nonspecific protection (interferons); an impact on immunity. The effectiveness of antiviral therapy increases inversely with the severity of the croup. With compensated croup and a bright ARVI clinic, the use of antiviral agents is more appropriate than with sub- and decompensated stenosing laryngotracheitis. There is a lot of controversy about the use of antibiotics for this disease. Antibiotic therapy is prescribed for severe laryngeal stenosis and in case of bacterial complications. It is advisable to use broad-spectrum antibiotics. A number of authors have shown a high prevalence of persistent

chlamydial infection in children with recurrent stenosing laryngotracheitis. The authors propose to use "new" macrolides with a wide spectrum of action (including against chlamydia) - summed, ruled, rapamycin, josamycin (wilprafen) [2].

**Pathogenetic therapy.** OSLT is aimed at suppressing the main mechanisms that form pathophysiological changes and clinical manifestations of upper airway obstruction. To eliminate the edematous component, corticosteroids, antihistamines, and diuretics are used. Indications for the inclusion of glucocorticoids in OSLT therapy are sub- and decompensated stenosis of the larynx. Corticosteroids (hydrocortisone, prednisolone, dexamethasone) are prescribed parenterally and in high doses - 10 mg/kg in prednisolone equivalent. In this case, the initial dose of steroids is 5 mg/kg for prednisolone, and the rest is distributed evenly throughout the day. The therapeutic effect of the administration of steroids occurs after 15-45 minutes. Corticosteroids work for 4-8 hours. When symptoms recur, re-introduction is necessary. In view of the fact that the phenomena of stenosing laryngotracheitis can persist for up to 5-7 days, steroid therapy can be continued for several days, however, from the second day, the dose of corticosteroids is reduced to 3-4 mg/kg per day. In addition to parenteral administration of glucocorticoids, for the treatment of patients with ASLT, hydrocortisone inhalation is used at the rate of 5 mg/kg (single dose for inhalation). With regard to the use of diuretics to relieve the edematous component, there is no consensus about their safety and effectiveness. The inclusion of antihistamines (H1-histaminolytics) in the routine therapy of viral croup is advisable in cases where glucocorticoids are not indicated (compensated laryngeal stenosis) or after discontinuation of steroid therapy. For the provision of emergency care for 1st-degree stenosis, 1st generation H1-histamine receptor blockers can be used: promethazine, diphenhydramine, clemastine, chloropyramine, which can be administered parenterally. Their appointment in an average therapeutic dose allows minimizing undesirable side effects, primarily M-anticholinergic action. For routine therapy, the daily dose can be administered in 3-4 doses (per os or intramuscularly). In children with an unfavorable allergic history, it is justified to include in the complex therapy of compensated stenosis of the larynx H1-histaminolytic of the 2nd generation - loratadine. Pharmacological effects on the spasmodic component can be realized by using drugs that reduce the tone and contractile activity muscles of the larynx and trachea. Antispasmodics are used, such as aminophylline, isoquinoline derivatives. The dose of aminophylline for emergency care is 3-5 mg/kg, for planned therapy - 10-15 mg/kg per day. A single dose of drotaverine for emergency care is 1-2 mg / kg, for planned therapy for oral administration - 4 mg / kg / day, for parenteral administration - 0.5-1 mg / kg every 6 hours. Sedation therapy is prescribed for the purpose of leveling the negative psychoemotional reactions of the child associated with both the disease and the therapeutic effects. Tranquilizers, antipsychotics, sodium oxybutyrate are used. These drugs also reduce the intensity of metabolic processes in the nervous tissue, reduce the need for nerve cells in oxygen with an increase in the body's resistance to hypoxia. The negative aspects of the use of these drugs are as follows: 1) relaxation and reduction of the contractile activity of skeletal (including respiratory) muscles; 2) suppression of the cough reflex; 3) oppression of the respiratory center. Therefore, their appointment is justified in a hospital setting, requires constant monitoring of the patient, periodic stimulation of cough, and evacuation of mucus and sputum from the upper respiratory tract. A single dose of diazepam is 0.1-0.2 ml/kg. From neuroleptics, droperidol or chlorpromazine are prescribed. Single doses: for droperidol - 0.1 ml / kg, chlorpromazine - no more than 0.5 ml for children under 1 year old, for children under 4 years old - no more than 1.0 ml, for sodium oxybutyrate - 70-100 mg / kg. With a mild course of OSLT (compensated stenosis), sedative therapy is not indicated, or you can limit yourself to the appointment of "mild sedatives": 1-3% sodium bromide solution, tincture of valerian extract. To improve the

rheological properties of sputum, the administration of expectorant drugs with a secretolytic and secretomotor effect (marshmallow, licorice, potassium, and sodium iodide, sodium benzoate, sodium bicarbonate, etc.) in age-related dosages are indicated. The use of modern mucolytics (acetylcysteine, carbocysteine, ambroxol, bromhexine) is justified in the treatment of severe forms of OSLT, with the development of purulent laryngotracheitis, pneumonia. In case of stenosis of the larynx of the 1st degree, warm drink, milk with soda or "Borjomi", decoctions of expectorant herbs are indicated. The appointment of antitussives - prenoxidiazine, glaucine, oxeladin, butamirate is justified to suppress a debilitating, paroxysmal cough that does not stop with inhalation and sedative therapy. The basic therapy for OSLT in a hospital setting is steam-oxygen therapy, which reduces muscle spasm and edema of the laryngeal mucosa, dilutes sputum, moisturizes and warms the inhaled air, contributing to the improvement of the function of the ciliated epithelium and mucus rejection, prevents the formation of crusts, allows to achieve satisfactory blood oxygenation, reduce metabolic acidosis. Oxygen vapor inhalations are supplemented by spraying various medicinal substances into the chamber (adrenomimetics, bronchodilators, corticosteroids, mucolytics). The length of stay in the steam-oxygen tent is determined by the degree of laryngeal stenosis. At the 1st degree of stenosis, steam-oxygen therapy is carried out fractionally for 2-3 hours 2-3 times a day. The special use of medications in aerosols is not necessary. With subcompensated laryngeal stenosis, the stay in the tent is longer - 3-4 hours 4-6 times a day, with decompensated stenosis - permanent (even a short stay of patients outside the tent leads to a sharp decompensation of respiratory failure). This method of therapy is contraindicated in children with purulent laryngotracheobronchitis, with the broncho-obstructive syndrome, with suspected pneumonia, patients with a large amount of sputum. Patients on steam-oxygen therapy need to periodically vibrate the chest, stimulate coughing, and suck mucus using an electric suction. In inhalation form, the so-called. decongestant mixtures, alkaline solutions (0.5-1-1.5% sodium bicarbonate solution), physiological sodium chloride solution. In the absence of an effect from the therapy of grade 2 OSLT for 48 hours, the progression of grade 2 stenosis and grade 3 OSLT, nasotracheal intubation with a thermoplastic tube of a significantly smaller diameter than the child needs by age is mandatory. Detoxification therapy is carried out according to indications and under the strict control of diuresis. The total volume of infusion is calculated on the basis of 30-50 ml per kg of body weight per day. In this case, it is necessary to take into account the presence of general toxic manifestations and the degree of their severity. The need for immunocorrective therapy in the complex treatment of acute and recurrent laryngotracheitis can be caused by the severity of immune and immunoregulatory disorders, the polyetiology of the pathology, and the peculiarities of the adaptive immune response in children.

In the literature of recent years, more and more data appear that it is practically impossible to cope with the increase in infectious diseases with the help of antibiotics, antiviral, and other chemotherapeutic drugs alone. The above drugs inhibit the reproduction of the pathogen, but its final elimination from the body is the result of the activity of immunity factors.

Therefore, against the background of suppressed immunoreactivity, the action of antiviral, antibacterial agents will be ineffective or not very effective. In addition, immunotherapy is of particular importance due to the increase in anti-biotic-resistant  $\beta$ -lactamase-producing strains, the increased role of opportunistic microbial flora in the etiology of laryngitis in children.

In this regard, at present, the interest of researchers and practitioners in drugs that affect immunity, used in the complex treatment of various pathologies of both infectious and another genesis, has significantly increased.

Many authors point out the need for immunotherapy during the period of convalescence. The duration of immunotherapy courses and the choice of the drug is determined by the presence of an isotropic pathogen and concomitant microflora, the prevalence of the inflammatory process, and the child's age [5, 12].

The need for immunoprotection is justified by a violation of the immune status of sick children with SLT, in particular, a decrease in the parameters of the cellular component of immunity, dysimmunoglobulinemia, a decrease in phagocytosis, and others.

Immunotherapy is prescribed in combination with other drugs (antibiotics, NSAIDs). Its effectiveness depends on the correct assessment of the initial state of the patient's immunoreactivity, the nature and severity of pathological changes, the choice of the optimal drug, and the scheme of its use. It is also necessary to have an idea of the mechanisms of action of the prescribed drugs, their side effects, compatibility with other methods of treating laryngotracheitis, and allergenic properties. Among all the variety of immunocorrectors, the most promising is the use of drugs from the class of recombinant interferons, in particular, an Aeron for children, inducers of endogenous interferon - drugs of a universally wide spectrum of action (Zovirax), as well as drugs belonging to the group of thymic factors (Imunofan). A number of authors, for the treatment of children suffering from recurrent stenosis laryngotracheitis, suggest using bacterial lysates, such as Bronchomunal and ribomunil, which are stimulants of specific and non-specific immunity [3, 9]. In the complex therapy, bifiform was also used - a combined preparation, which includes natural bifidum bacteria and enterococci, fenspiride hydrochloride, which has an anti-inflammatory effect [8]., Retinol acetate or TrioVit capsules containing vitamins C, E and  $\beta$ -carotene [ 11], phenibut is a nootropic drug that was prescribed to patients with significant disorders of the bioelectrical activity of the brain.

L. V. Kramar et al. (2009) believe that one of the important components of the treatment of ASLT is inhalation therapy aimed at restoring the airway patency, combating the drying of exudate and affecting the inflammatory focus. Inhalation therapy was performed in all (100%) patients using compression inhalers "NE-29" and ultrasonic nebulizers "OMRON N-U17". The frequency and duration of nebulizer therapy were determined by the severity of stenosis and ranged from 2 to 4 fifteen-minute inhalations per day.

At the prehospital stage, when it is not possible to prescribe more effective treatment measures, preference is given to warm wraps, warm (hot) foot baths, and other types of distraction therapy.

However, successful treatment of children with ASLT presupposes early hospitalization with timely, comprehensive, etiopathogenetic, and symptomatic therapy.

Thus, the algorithm for treating patients with ASLT developed against the background of ARVI. The algorithm for treating patients includes an effective combination of agents affecting the causative agent of the disease (isotropic treatment) and macroorganism (basic, pathogenetic and symptomatic therapy). For antiviral therapy, not only drugs acting on viruses are used, but also immunomodulators correcting immunity disorders, while it is necessary to take into account the timing of therapy, the etiology of the infection, and the pathogenetic features of the disease. Basic therapy includes a therapeutic regimen and rational therapeutic nutrition. Pathogenetic treatment, immunomodulatory, and symptomatic therapy are aimed at restoring disturbed body functions, preventing complications and relapses of this formidable disease.

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