

CURRENT VIEWS ON THE COURSE OF ACUTE STENOSING LARYNGOTRACHEITIS

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Abstract

Acute stenotic laryngotracheitis (croup) is the most frequent cause of acute upper airway obstruction in young children.

Keywords: acute stenotic laryngotracheitis, acute respiratory viral infection.

Introduction

Acute stenotic laryngotracheitis (ASLT) is an acute respiratory viral infection accompanied by obstruction of the upper respiratory tract below the vocal cords and the development of acute respiratory failure, including a triad of symptoms: change in the tone of voice (dysphonia), rough "barking" cough, noisy difficult (stenotic) breathing with inspiratory dyspnoea.

OSLT (croup syndrome) occurs against the background of acute respiratory viral infections with predominance of parainfluenza and influenza viruses (parainfluenza - 38%, influenza - 30%, RS virus - 8%, adenovirus - 5%). Recently, bocavirus (19%) has become etiologically important in the etiology of severe variants of croup. The etiological structure varies depending on the region of residence, epidemic situation, and time of year. The maximum incidence of OSLT in children is in the cold season (early winter). According to statistical reviews, up to 5.6% of children aged 6 months to 3 years have OSLT every year, and up to 2% of hospitalised children require tracheal intubation. According to M.S. Savenkova (2008), lethality in OSLT ranges from 0.4 to 5%. Classification. There are four degrees of laryngeal stenosis in OSLT. Laryngeal stenosis of the I degree (compensation stage) - short periods of stenotic breathing at physical load with retraction of the pliable areas of the chest and prolonged inhalation [1,7,8]. Rough, "barking" low-productive cough. PaO₂ remains within normal limits and PASO₂ decreases - hypocapnia. Laryngeal stenosis II degree (stage of incomplete compensation) - inspiratory stridor at rest with participation of auxiliary muscles in the act of breathing, restlessness, sweating, para-orbital cyanosis on exertion, tachycardia, increased BP, the ratio of pulse to respiratory rate - 2/1. The increase in the minute volume of respiration is not accompanied by a decrease in PASO₂, and PaO₂ is registered at the lower limit of normal. Laryngeal stenosis of III degree (decompensation stage) - agitation or lethargy, adynamia [3,4,9]. Dyspnoea of mixed character with participation of auxiliary muscles in the act of breathing, loss of pulse wave on inspiration, significant tachycardia. The ratio of pulse to respiratory rate - 1,5/1. Cardiac arrhythmia is a precursor to asphyxia. Cyanosis of the skin.



Decompensated respiratory and metabolic acidosis. Laryngeal stenosis IV degree (terminal stage) - coma, convulsions, pallor and cyanosis of the skin, arrhythmic or paradoxical breathing, bradycardia, decreased BP. Currently, according to the classification, primary croup, recurrent (up to three times a year) and recurrent (more than three times a year) are distinguished. The main components forming respiratory disorders in croup in children: edema of the mucous membrane of the larynx and trachea, inflammatory infiltration; hypertrophy of glands, spasm of the muscles of the larynx and trachea, the presence of foreign masses in the lumen of the airway (mucus, crusts, pus) against the background of physiological features of the structure of the respiratory tract in young children (narrowness of the laryngeal lumen, loose structure and abundant vascularisation of the submucosal layer and subclavian area with the presence of a large number of mast cells). Since 2/3 of all resistance during inhalation falls on the passage through the nasopharynx and larynx, it is the narrowing of the laryngeal lumen that requires an increase in respiratory effort on the part of the child to overcome the resistance to airflow during inhalation and to deliver the air-oxygen jet to the gas exchange organ (lungs) [1,2,3,4,5,6]. During forced inhalation against the background of increased resistance, the subatmospheric pressure of the pleural cavities is transmitted to the area below the obstruction and leads to an increase in the pressure gradient in the trachea (relative to external atmospheric pressure) and a tendency to further decrease the diameter of the lumen, up to "collapse" of the trachea, which is facilitated by the softness and pliability of cartilaginous tissue. In young children with a collapsing trachea and pliable ribs, even a small degree of narrowing can cause marked airway obstruction. As a result of the developing acute obstruction of the upper respiratory tract air flow during breathing from laminar becomes turbulent, there is an irregularity of pulmonary ventilation, the ventilation/blood flow ratio decreases. Part of the blood is not oxygenated and is shunted into the arterial system of the great circle of circulation - hypoxic hypoxaemia develops. The compensatory reaction of the organism in these conditions is hyperventilation, the work of breathing and the need for oxygen supply sharply increases. Invasion of viruses, tropic to the ciliary epithelium of the larynx and trachea, causes damage to the mucosa and disrupts the mechanism of mucociliary clearance. Change of the nasal type of breathing to oral, to facilitate forced breathing, leads to rapid drying of the mucous membrane of the upper respiratory tract, reduces the heating of the air stream. The consequence is a change in the rheology of sputum, which becomes viscous, crusts appear, the mechanical obstruction to the passage of air flow increases, additionally increases the resistance to breathing. The pathogenesis of recurrent croup is influenced by: genetic predisposition, ineffective defence against respiratory tract infections, delayed clearance of infectious agents and their antigens from the respiratory epithelium, allergic inflammation, which is based on suppression of some parts of immunological defence (decrease in CD4+-lymphocytes, macrophages, level of interferonogenesis, decrease in the number of Th1-lymphocytes); atypical (inadequate) type of immunological response leading to the dominance of Th2-lymphocytes, IL-4 and hyperproduction of IgE; increased levels of circulating immune complexes in combination with disorders of microcirculatory haemostasis, hyperreactivity of the respiratory tract (edema, cellular infiltration, spasm) [1,3,5,7,9].

OSLT begins acutely, with an increase in body temperature, catarrhal phenomena of the upper respiratory tract. The body temperature usually does not exceed 38-38.5°C and lasts for two to



three days. Catarrhal phenomena are moderate, characterised by serous-mucous nasal discharge, dry "barking" cough. Examination of the patient reveals hyperaemia of the pharyngeal mucosa, tonsils, granularity of the posterior pharyngeal wall. There are no changes in the internal organs. Catarrhal phenomena in the absence of complications subside within a week. The clinic of the syndrome of inflammation of the upper respiratory tract may vary depending on the specific viral agent. Symptoms of croup may be the first signs of infection (early croup), or they may occur on the second or third day and later in the course of acute respiratory infections (late croup). The clinical picture of croup consists of inspiratory stridor (prolonged noisy breath heard at a distance), rough "barking" cough, dysphonia. The severity of the condition in croup is determined by the degree of laryngeal stenosis. Assessment of the degree of stenosis is based on clinical manifestations (severity and nature of dyspnoea, participation of accessory muscles in the act of breathing, skin colour, patient's behaviour, severity of changes in the cardiovascular system) [9, 10]. In a child with high obstruction, attention should be paid to the child's voice (cry) and cough pattern. If they are not changed, the lesion is most likely localised above or below the vocal cords. Hoarseness, hoarseness, aphonia - signs of involvement of the vocal cords in the pathological process. A rough, "barking cough" is typical of subvocal cord laryngitis. Understanding the differences in the clinical symptoms of early and late croup allows the doctor to predict the possibility of bacterial complications. To determine the severity of croup abroad, the Westley scoring scale is used [8,10].

OSLT can be complicated by the development of descending obstructive or purulent-necrotic laryngotracheobronchitis, as well as pneumonia. In addition, paralysis of vocal folds is possible, and in decompensated and terminal stages may develop pulmonary oedema and extrapulmonary complications in the form of: posthypoxic encephalopathy, carditis, multiorgan failure. Therapeutic measures in croup are aimed at rapid restoration of respiratory function and improvement of the patient's condition, preventing the progression of laryngeal stenosis, obstructive tracheobronchitis and death. When parents seek medical help, it is necessary to clarify the age of onset of symptoms of acute respiratory infections, hoarseness of voice, difficulty breathing, restlessness or lethargy of the child, to assess the degree of laryngeal stenosis on a point scale.

References

1. Shamsiddinova D. K., Kudratova Z. E. Genetikaning turli patologiyalar rivojlanishidagi ahamiyati //Journal of new century innovations. – 2024. – T. 51. – №. 2. – C. 198-201.
2. Kudratova Z. E., Shamsiddinova D. K. New insights into the etiopathogenesis of type 1 diabetes mellitus //Western European Journal of Medicine and Medical Science. – 2024. – T. 2. – №. 4. – C. 81-84.
3. Qudratova Z. E. et al. Qalqonsimon bez kasalliklarining zamonaviy klinik laborator tashxisot usullari //Journal of new century innovations. – 2024. – T. 49. – №. 1. – C. 38-40.
4. Kudratova Z. E. et al. Modern methods of laboratory diagnostics of pyelonephritis //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – T. 2. – №. 1. – C. 38-40.



5. Muhamadiyeva L. A., Kudratova Z. E., Sirojeddinova S. Pastki nafas yo'llari patologiyasining rivojlanishida atipik mikrofloraning roli va zamonaviy diagnostikasi //Tadqiqotlar. Uz. – 2024. – T. 37. – №. 3. – С. 135-139.
6. Исомадинова Л. К., Даминов Ф. А. Современная лабораторная диагностика хронического пиелонефрита у детей //Journal of new century innovations. – 2024. – Т. 49. – №. 2. – С. 112-116.
7. Isomadinova L. K., Daminov F. A. Glomerulonefrit kasalligida sitokinlar ahamiyati //Journal of new century innovations. – 2024. – Т. 49. – №. 2. – С. 117-120.
8. Isomadinova L. K., Qudratova Z. E., Shamsiddinova D. K. Samarqand viloyatida urotilizaz kasalligi klinik-kechishining o'ziga xos xususiyatlari //Центральноазиатский журнал образования и инноваций. – 2023. – Т. 2. – №. 10. – С. 51-53.
9. Isomadinova L. K., Qudratova Z. E., Sh B. F. Virusli gepatit b fonida Covid-19 ning klinik laborator kechish xususiyatlari //Journal of new century innovations. – 2023. – Т. 30. – №. 3. – С. 60-65.
10. Isomadinova L. K., Yulayeva I. A. Buyraklar kasalliklarning zamonaviy diagnostikasi //Центральноазиатский журнал образования и инноваций. – 2023. – Т. 2. – №. 10 Part 3. – С. 36-39.

