

LABORATORY DIAGNOSTICS OF LARYNGOTRACHEITIS

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Abstract

Acute respiratory disorders in children are a pressing problem in modern emergency pediatrics. Their share in the structure of primary morbidity is about 60%. Acute laryngotracheitis is one of the most common and most severe manifestations of respiratory infections in children under 6 years of age, as well as one of the main causes of respiratory failure. The incidence does not tend to decrease, and a significant proportion of patients (from 30 to 50%) experience repeated and multiple episodes of laryngeal stenosis.

Keywords: Laryngotracheitis, etiological factors, clinical symptoms, prognosis.

Introduction

Laryngotracheitis is an inflammatory disease that affects both the larynx and trachea. The main causes of its occurrence are infectious agents, including viruses and bacteria. Viruses such as parainfluenza, adenoviruses and rhinoviruses often serve as triggers for this disease, especially in the autumn-winter period, when the human immune system is weakened. In addition, bacterial infections, in particular streptococci and staphylococci, can aggravate the disease.

Some unfavorable factors also contribute to the development of laryngotracheitis. This is, first of all, cold and dry air, which causes irritation of the mucous membrane of the respiratory tract. Allergens and chemicals such as cigarette smoke can trigger inflammation. Finally, a predisposition to allergic reactions and chronic respiratory diseases also increases the risk of developing this pathology [2, 10, 17].

The pathogenesis of laryngotracheitis is a complex process that begins with an infectious agent, most often a virus, penetrating the mucous membrane of the upper respiratory tract. In this context, primary inflammation results from the activation of immune cells, leading to the release of cytokines and inflammatory mediators. These molecules cause swelling of the mucous membrane, hyperemia and increased secretion of the mucous glands.





In children, the specific anatomy of the trachea and larynx, as well as the immature immune system, contributes to the rapid spread of the inflammatory process, which can lead to serious complications such as laryngeal stenosis. As the airways narrow, symptoms include hoarseness, difficulty breathing, and a barking cough. In addition, secondary bacterial infection can aggravate the patient's condition, which requires timely intervention [1, 10, 16].

Thus, the pathogenesis of laryngotracheitis illustrates the interaction of viral infection and body reactions, being a multi-stage and dynamic process that requires an integrated approach to treatment.

The clinical symptoms of this disease are varied and may include manifestations such as a nonproductive cough, which is often described as "barking," as well as hoarseness or loss of voice, which is associated with the involvement of the vocal cords in the inflammatory process [2, 9, 18]. Patients may also experience difficulty breathing due to swelling of the lining of the airways. In some cases, fever, fatigue and general malaise are observed. Laryngotracheitis is often accompanied by respiratory failure, especially in children, which requires immediate medical intervention and observation [2, 6, 13].

The clinical course of the disease can vary from mild to severe, so timely diagnosis and adequate therapy are critical to prevent complications and improve the patient's condition.

Laboratory diagnosis of laryngotracheitis is an important component in the process of establishing an accurate diagnosis and choosing adequate treatment. The main methods are microbiological studies, including culture of smears from the pharynx and trachea, which makes it possible to identify infectious agents such as viruses, bacteria and fungi [1, 5, 12].

An important step is also the polymerase chain reaction (PCR), which provides high sensitivity and specificity in identifying viral pathogens. Serological tests can be used to confirm the presence of specific antibodies, which helps determine the stage of the disease.

Additionally, a general blood test taking into account the leukocyte formula can indicate the presence of an inflammatory process. The use of chest x-ray is sometimes necessary to exclude concomitant diseases. An integrated approach, including laboratory tests, provides a more accurate understanding of the clinical picture.

One of the most common complications is airway stenosis, which can occur due to swelling and narrowing of the trachea, making breathing difficult. In children, this condition requires immediate medical attention, as it can lead to asphyxia [2, 8, 15].

In addition, laryngotracheitis can provoke secondary bacterial infections such as pneumonia, especially in debilitated patients. These infections can be severe and require antibiotic treatment.

An equally dangerous complication is the development of chronic inflammation, which can develop into persistent laryngitis, accompanied by changes in voice and difficulty swallowing. In some cases, surgery may be required to eliminate narrowing or remove polyps formed as a result of a long-term inflammatory process [3, 4, 11].

Its treatment requires an integrated approach aimed at alleviating symptoms and eliminating the cause of the disease. First of all, it is necessary to maintain optimal conditions for recovery: moist air and temperature within normal limits help reduce irritation of the respiratory tract.





It is important to use inhalations with saline solutions, such as salt or mineral water, which help reduce swelling and thin phlegm. The use of anti-inflammatory drugs and antiseptics can help treat the infection. In case of bacterial infection, antibiotics are prescribed.

In addition, you should pay attention to bed rest, drinking plenty of fluids and a gentle diet. Reducing vocal stress and avoiding allergic factors also play a significant role [1, 7, 14]. In advanced cases, consultation with an otolaryngologist may be required for more careful monitoring.

Conclusions

Proper prevention and timely treatment play a key role in preventing complications. Timely provision of qualified prehospital care is an important condition for optimizing the treatment of laryngotracheitis, which allows preventing deterioration of the condition, reducing the incidence of complications, shortening the duration of hospital treatment, and in some cases avoiding hospitalization.

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