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# RECURRENT BRONCHITIS IN CHILDREN: DIAGNOSTIC CRITERIA AND TREATMENT METHODS

**ANNOTATION**

Recurrent bronchitis occupies one of the leading places among respiratory diseases in children and requires a careful approach from pediatricians, since it is a risk factor for the subsequent development of a number of chronic respiratory diseases. The occurrence of recurrent bronchitis is associated with an acute respiratory viral infection and occurs under the influence of unfavorable environmental factors: passive smoking, air pollution, poor living conditions; presence of a burdened perinatal history. Episodes of recurrent bronchitis in children are characterized by inflammatory changes in the bronchial mucosa, weakening of local protective factors, mild obstructive disorders, as well as cytomorphological changes in the cellular composition of induced sputum and degeneration of the ciliated epithelium). The use of combination drugs as a means of initial therapy has a positive effect on the clinical course of recurrent bronchitis in children and accelerates recovery, which is due to its normalizing effect on mucociliary clearance, nonspecific factors of local immune defense of the bronchial mucosa, as well as mucokinetic and indirect anti-inflammatory effects.

**KEY WORDS:** recurrent bronchitis, children, causes, diagnostic criteria, treatment.

Recurrent bronchitis is a distinct nosological condition that demands careful attention from pediatricians, as it serves as a risk factor for the potential development of various chronic respiratory diseases. This condition is among the most prevalent respiratory disorders, with its incidence in the structure of bronchopulmonary diseases ranging from 5% to 40% [1-5].

The increased prevalence of recurrent bronchitis among preschool children in environmentally unfavorable areas, followed by a decline in primary school age, is attributed to adaptation processes [8-11]. The long-term outcomes of recurrent bronchitis are not always predictable: in many cases (70-80%), spontaneous recovery occurs, but in some children, the condition may progress to bronchial asthma.

The development of recurrent bronchitis is closely associated with acute respiratory viral infections (ARVI), with the initial episode often triggered by viruses such as influenza, parainfluenza type 1, adenovirus, or respiratory syncytial (RS) virus. As bronchitis recurs, bacterial infections (e.g., pneumococcus, Haemophilus influenzae) and mycoplasma may also contribute to its progression [8-13].

Recurrent bronchitis in young and preschool-age children is often associated with adverse environmental factors, as confirmed by numerous studies. These factors include passive smoking, indoor and outdoor air pollution, poor living conditions, frequent illnesses among close family members, and a history of perinatal complications (such as threatened miscarriage, previous stillbirths, and intrauterine infections). Additionally, a hereditary predisposition to respiratory diseases plays a significant role [12-15].

The anatomical and physiological characteristics of the respiratory system in children during the first three years of life—such as narrow airways, a loose and

highly hydrophilic bronchial mucosa, and its susceptibility to edema and hypersecretion in response to inflammation—are likely among the primary factors contributing to bronchitis symptoms [14].

Impairment of the mucociliary and surfactant systems further promotes the persistence of inflammation, leading to changes in the quantity and rheological properties of sputum and disrupting the bronchial drainage function.

It is important to emphasize that impaired mucociliary clearance is the key mechanism contributing to the recurrence of bronchitis [9,10]. Clinical studies confirm that in children with recurrent bronchitis, mucociliary dysfunction is accompanied by changes in the viscosity and elasticity of bronchial secretions, increased secretory activity of bronchial glands and goblet cells, and alterations in the ratio of neutral and acidic glycoproteins in sputum. As a result, mucostasis develops, further exacerbating existing dysfunctions of the ciliated bronchial epithelium.

Currently, the main diagnostic criteria for recurrent bronchitis include:

- Repeated episodes of acute bronchitis (two to three times or more per year) occurring alongside acute respiratory infections;
- Exacerbation periods lasting two weeks or longer;
- Absence of external signs of bronchospasm, bronchial obstruction, or respiratory failure;
- Presence of low-grade fever;
- Clinical manifestation primarily as a cough, which persists longer than wheezing in the lungs;
- Normal percussion tone over the lungs, though it may be slightly diminished in the basal regions;
- Harsh breathing sounds on auscultation, accompanied by diffuse dry and variable wet rales;

- Alterations in the pulmonary pattern without the presence of infiltrative or focal shadows in the lungs [6,7].

Research has shown that even during remission, children with recurrent bronchitis exhibit abnormalities in the cellular composition of induced sputum. Specifically, they display cytomorphological changes such as an increased number of effector cells (neutrophils, lymphocytes, eosinophils) associated with bacterial colonization of sputum, reduced macrophage activity, and a significant rise in dystrophically altered cells of the bronchial ciliated epithelium.

Additionally, children with recurrent bronchitis experience local immune dysfunction, characterized by decreased levels of secretory immunoglobulin A (IgA) and lysozyme in saliva. These pathological changes weaken the protective functions of the bronchial tree, impair bronchial drainage, and ultimately contribute to the persistence and recurrence of the inflammatory process [4,12].

The treatment of recurrent bronchitis remains one of the most challenging issues in pediatric pulmonology [15]. A key factor influencing the prognosis of the disease is the rational selection of initial therapy at the primary stage of medical care. Since the primary clinical symptom of recurrent bronchitis is a persistent cough, it is essential for pediatricians to accurately assess its characteristics and adhere to modern treatment guidelines.

Effective cough management requires consideration of the pharmacological properties of antitussive medications. The pharmaceutical market currently offers a broad range of cough remedies from various groups, including expectorants, mucolytics, mucoregulators, mucohydrants, and combination drugs.

It is important to note that at the onset of an acute inflammatory process in the bronchi, which presents with a dry cough, expectorants are recommended. For an unproductive wet cough, mucolytic agents that help thin the sputum are indicated, whereas for a productive cough, mucoregulators are preferred to normalize mucus production and secretion composition.

In recent years, combination antitussive drugs—containing multiple active ingredients with different mechanisms of action that facilitate sputum clearance—have become increasingly prevalent in outpatient pediatric practice. The major advantage of these combination drugs lies in their simultaneous expectorant, mucolytic, and anti-inflammatory properties, allowing them to target multiple key mechanisms in the pathogenesis of cough [11,13].

Thus, episodes of recurrent bronchitis in children are characterized by inflammatory changes in the bronchial mucosa, impaired local defense mechanisms, mild obstructive disorders, latent bronchospasm, and cytomorphological alterations in the cellular composition of induced sputum—primarily an increase in key effector cells and dystrophy of the ciliated epithelium [12,14].

The use of combination drugs as an initial therapy positively impacts the clinical course of recurrent bronchitis in children, accelerating recovery by normalizing mucociliary clearance, enhancing nonspecific local immune defense mechanisms of the bronchial mucosa, and exerting mucokinetic and indirect anti-inflammatory effects.

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