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# MICROBIOME-ORIENTED APPROACH IN THE TREATMENT OF BRONCHOPULMONARY PATHOLOGY IN CHILDREN: CLINICAL EFFECTIVENESS AND PROSPECTS FOR PERSONALIZATION

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**Abstract**

Recurrent and chronic diseases of the bronchopulmonary system in children occupy one of the leading positions in the structure of childhood morbidity. Modern scientific data confirm the key role of the microbiota of the respiratory tract and the intestine in modulating the immune response, inflammatory processes and restoration of the mucous membranes. This is especially relevant for young children, when the immune system is in a stage of active formation. Dysbiosis of the oropharynx and intestine may contribute to a prolonged course of respiratory diseases, frequent exacerbations and a decrease in the effectiveness of standard therapy.

**Objective**

To study the features of the composition of the oropharyngeal and intestinal microbiota in children with bronchopulmonary pathology, determine the clinical significance of the identified dysbiosis and evaluate the effect of microbiome-oriented therapy on the course of the disease and the frequency of relapses. Also – to substantiate the introduction of a personalized approach to treatment based on the microbiotic profile of the patient.

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## Materials and Methods

The examination was carried out among 110 children with various forms of bronchopulmonary pathology (bronchitis, pneumonia, bronchiectatic disease) and 30 practically healthy children who made up the control group. A comprehensive clinical and laboratory examination included taking anamnesis, physical examination, analysis of oropharyngeal smears and stool to assess the microbiota. The bacteriological culture method was used to identify quantitative and qualitative characteristics of the microflora. If dysbiosis was confirmed, patients were prescribed probiotics, prebiotics, and individually selected diet therapy. The effectiveness was evaluated according to the following criteria: duration of symptoms, length of hospitalization, and frequency of relapses within 3 months.

## Results

In 78% of children of the main group, a pronounced imbalance of the microflora was detected – both in the oropharynx and in the intestine. Opportunistic strains of Klebsiella, Staphylococcus aureus, Candida predominated, and in the stool a decrease in the levels of Lactobacillus and Bifidobacterium was observed. After microbiome correction, the following was noted:

- a significant decrease in the severity of cough, wheezing and other respiratory symptoms;
- reduction of the average duration of hospitalization from 7.2 to 4.8 days;
- reduction of relapse frequency to 15% versus 40% in children who did not receive microbiome therapy.

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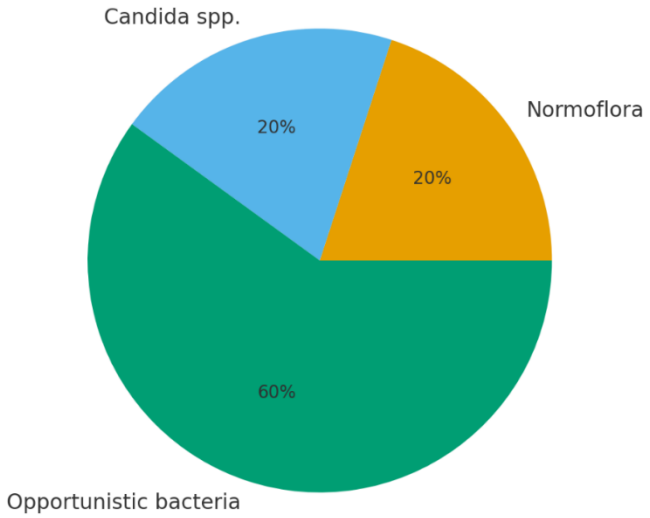


**Figure 1. Distribution of oropharyngeal and intestinal microflora in children with bronchopulmonary pathology**

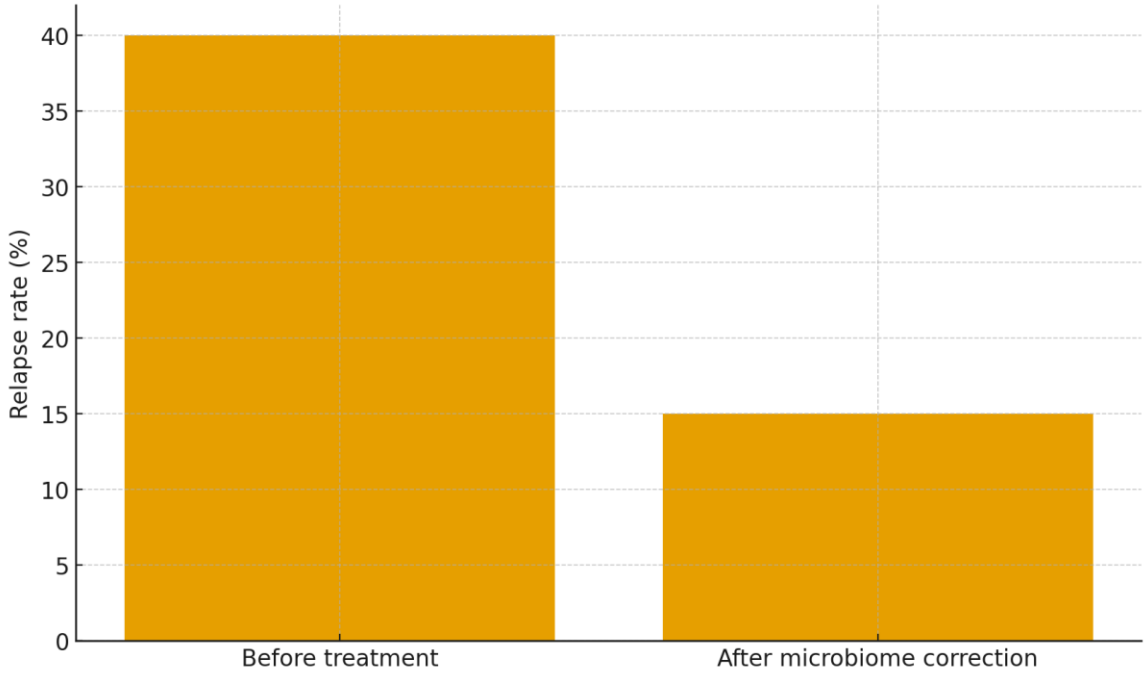


**Figure 2. Frequency of relapses of bronchopulmonary pathology before and after microbiome correction**

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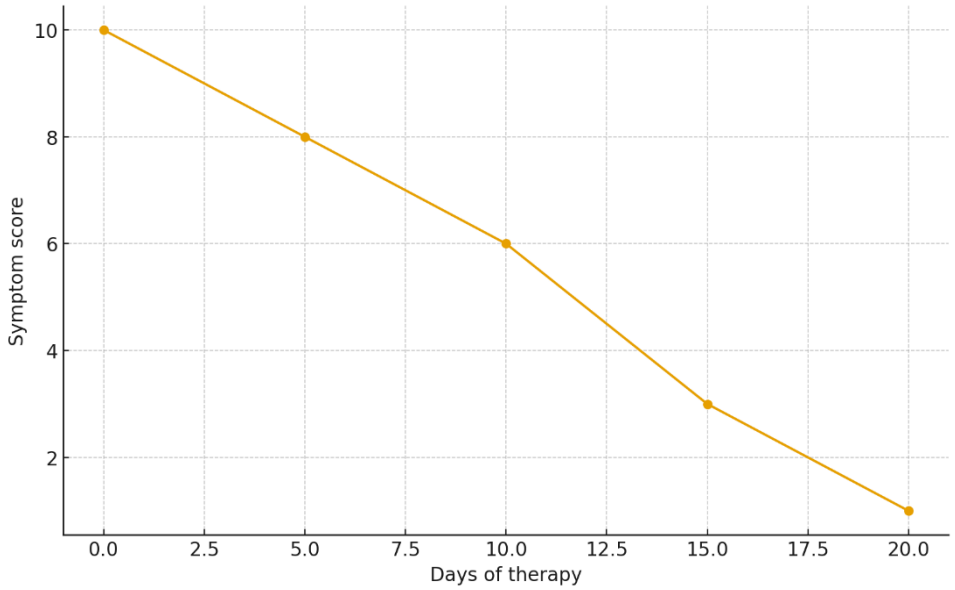


**Figure 3. Dynamics of regression of clinical symptoms during microbiome-oriented therapy**

The obtained data indicate the importance of including microbiota assessment in the diagnostic and therapeutic algorithm for managing children with recurrent respiratory diseases. Restoration of microbial homeostasis of the oropharynx and intestine contributes to a decrease in local and systemic inflammation, normalization of immune regulation and an increase in the effectiveness of the main therapy. Our results correlate with modern literature data on the role of the "gut–lung axis" in the pathogenesis of bronchopulmonary diseases.

**Conclusions**

- In most children with bronchopulmonary pathology, a disturbance in the microbial composition of the oropharynx and intestine is detected.
- Microbiome correction helps shorten the duration of treatment, reduce the severity of symptoms and decrease the number of relapses.
- A personalized approach based on the microbiotic profile increases the clinical effectiveness of therapy.
- The inclusion of microbiome-oriented strategies in the standard treatment of bronchopulmonary diseases in children is expedient and scientifically justified.

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**References**

1. Arrieta M.-C., Stiemsma L.T., Amenyogbe N., Brown E.M., Finlay B.B.
The intestinal microbiome in early life: health and disease. Frontiers in Immunology. 2014; 5:427.
2. Fujimura K.E., Lynch S.V.
Microbiota in allergy and asthma and the emerging relationship with the gut microbiome. Cell Host & Microbe. 2015; 17(5):592–602.
3. Shenderov B.A.
Metabiotics: novel idea or natural development of probiotic conception. Microbial Ecology in Health and Disease. 2013; 24:20399.
4. Zhang D., Li S., Wang N., Tan H.-Y., Zhang Z., Feng Y.
The Cross-Talk Between Gut Microbiota and Lungs in Common Lung Diseases. Frontiers in Microbiology. 2020; 11:301.
5. Budden K.F., Gellatly S.L., Wood D.L.A., Cooper M.A., Morrison M., Hugenholtz P., Hansbro P.M.
Emerging pathogenic links between microbiota and the gut–lung axis. Nature Reviews Microbiology. 2017; 15(1):55–63.