International Journal of Scientific Pediatrics
published: 22 March 2025
doi.org/10.56121/2181-2926-2025-4-2-935-938

Article / Review

00 INFLUENCE OF INTESTINAL MICROBIOTA ON THE COURSE AND OUTCOME OF OBSTRUCTIVE BRONCHITIS IN FREQUENTLY SICK CHILDREN 0

M.F.Ibragimova[1]

1. Samarkand State Medical University, Samarkand, Uzbekistan.

OPEN ACCESS
IJSP

Correspondence
Ibragimova Marina Fedorovna,
Samarkand State Medical University, Samarkand, Uzbekistan.

e-mail: marinapediatr1984@gmail.com

Received: 07 February 2025
Revised: 11 February 2025
Accepted: 20 March 2025
Published: 22 March 2025

Funding source for publication: Andijan state medical institute and I-EDU GROUP LLC.

Publisher's Note: IJSP stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Abstract.

Introduction. Despite the progress in antibacterial therapy and intensive care, obstructive bronchitis continues to occupy a leading position among childhood diseases worldwide. Recently, more and more attention has been paid to the role of intestinal microflora in immune regulation and its impact on the course of infections, including bronchitis. This work focuses on the analysis of modern data on the effect of intestinal microflora on the course and outcome of obstructive bronchitis in children. **Objective**: to study the effect of intestinal microflora on the course and outcome of obstructive bronchitis in frequently ill children. **Materials and methods of the study.** To study this problem, we conducted research in the pediatric departments of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care, in the gastroenterology and pulmonology department of the Samarkand Regional Children's Multidisciplinary Medical Center. The study included 52 patients with obstructive bronchitis aged 1 to 10 years. Of these: Group I - 26 patients with obstructive bronchitis who received combination therapy with probiotics. Group II - 26 patients with obstructive bronchitis who received traditional treatment. The control group consisted of 20 practically healthy children. **Conclusions**. The state of the intestinal microbiota has a significant impact on the course and outcome of obstructive bronchitis in children. Dysbacteriosis can contribute to the development of inflammatory processes and a decrease in the effectiveness of the immune response. Healthy microflora helps maintain a balance between pro- and anti-inflammatory reactions, which reduces the risk of severe obstructive bronchitis and complications. Correction of microbiota with probiotics and prebiotics can improve the immune response, reduce the severity of the disease and speed up recovery. Convenient to use, higher efficiency, the absence of side and adverse effects allow us to recommend this treatment for widespread use in pediatric practice.

Key words: eintestinal microbiota, obstructive bronchitis, frequently ill children.

Relevance. In the structure of childhood diseases, diseases of the bronchopulmonary system occupy a significant place, both in prevalence and in severity of clinical manifestations [1,4]. Studies by many authors have established that at present, the severity of respiratory diseases is progressing, in particular with atypical etiology, there is no tendency to reduce its prevalence among young children, in connection with which the issues of improving and perfecting the development of measures to reduce their specific weight require further study. [2,11]. In a healthy person, the microflora of the gastrointestinal tract consists of more than 92-95% obligate anaerobes. Microflora performs numerous vital functions that are part of the human body. Microorganisms and macroorganisms together make up the so-called symbiosis, where each derives benefit for its coexistence and influences its partner. Of great interest is the effect of probiotic bacteria on infectious and inflammatory changes in the bronchopulmonary system in frequently ill children who repeatedly receive antibiotic therapy. After all, everyone knows that uncontrolled use of antibiotics plays a significant role in disrupting the intestinal microflora. According to the results of the latest studies, which claim that healthy intestinal microflora is very important not only for intestinal physiology and the formation of normal immune function, but also protects against any pathological reactions, such as inflammation, allergies, autoimmune disorders. Metabolites produced by intestinal microflora are able to modulate not only intestinal immunity, but they also affect other organs, including the lungs. Therefore, the use of drugs that improve the microbiota of the gastrointestinal tract leads to a faster resolution of the inflammatory process, a faster recovery, a decrease in the mortality rate, which is associated with a decrease in the level of TNF-a and interleukin-6, an increase in the production of interleukin-10. [9,10,12]. But there are a number of reasons that disrupt the intestinal microflora. These include: first of all, this is the irrational use of antibiotics;

alimentary reasons, improperly introduced complementary foods in the first year of life, unbalanced nutrition; various previous infectious diseases; allergic conditions, diathesis, atopic dermatitis; congenital dysfunctions of the gastrointestinal tract and its enzymes, such as malabsorption syndrome; diseases of the gastrointestinal tract; sanitary and hygienic violations

As a result of the influence of these factors, disorders and organic lesions occur in the gastrointestinal tract to varying degrees. Probiotics are a group of drugs that are used to prevent disorders and normalize intestinal microflora. [5,6]. One of these drugs is Enterol, which is used for diarrhea in children and adults. Saccharomyces boulardii is a probiotic. According to the WHO definition, these are live microorganisms that have a healing effect on the human body as a whole. [3,7,8]. The action of this drug is due to the antagonistic effect on pathogenic and opportunistic microorganisms. It has an antitoxic effect, especially with respect to bacterial cytotoxins and enterotoxins, and also improves the enzymatic function of the intestine. The drug Enterol helps to restore intestinal microflora without disturbing its own unique intestinal microflora for each. To date, despite successful work on the study of the role of intestinal microflora in the body, the problems of community-acquired obstructive bronchitis and gastrointestinal dysfunction that developed against the background of intestinal dysbiosis, and at the same time the effectiveness of treatment with probiotics in such cases are insufficiently studied, in connection with which this study was conducted.

Objective of the study: to study the effect of intestinal microflora on the course and outcome of obstructive bronchitis in frequently ill children

Materials and methods of the study. To study this problem, we conducted studies in departments 1, 2 pediatrics of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care, Samarkand Regional Children's Multidisciplinary Medical Center and family clinics No. 3 in Samarkand. The study included 52 patients with community-acquired pneumonia aged from 1 year to 10 years. Of these:

Group I - 26 patients with community-acquired pneumonia with atypical microflora, who received combination treatment with probiotics.

Group II - 26 patients with community-acquired pneumonia who received traditional treatment.

The control group consisted of 20 practically healthy children. Children from both groups underwent anamnestic data collection, examination by generally accepted clinical, laboratory-instrumental and special diagnostic methods.

Polymerase chain reaction (PCR) methods, determination of procalcitonin and C-reactive protein levels were used to detect obstructive bronchitis. Simultaneous detection of infection based on a positive PCR result, procalcitonin and C-reactive protein levels increases the reliability of pathogen diagnostics. The drug Bifolak zinc was prescribed in different age doses, i.e. for children from 1 year to 5 years old - 1 sachet or 1 capsule 2-3 times a day, from 5 to 10 years old - 1-2 capsules 2 times a day. The assessment of the effectiveness of the therapy was compared based on the study of the dynamics of the child's general condition, clinical manifestations such as cough, fever, dyspnea, physical changes in the lungs, radiographic data, as well as follow-up for 6 months.

Results of the study and their discussion. According to the study of anamnestic data, obstructive bronchitis in 45% of patients developed on the 3.1-1.1 day from the onset of symptoms of acute respiratory infection. The results of the studies before treatment showed that 21 (80.7%) patients in the 1st group and 19 (73%) patients in the second group showed signs of intoxication. 14 patients in the 1st group and 10 patients in the 2nd group had abdominal syndrome, manifested by diarrhea. 22 (84.6%) and 20 (76.9%) patients in the 1st and 2nd groups had a wet cough. Symptoms of grade 1 respiratory failure were observed in 11 (42.3%) and 13 (50%) patients.

By day 3-4 from the start of treatment, positive clinical dynamics of the disease was observed in 19 (73%) children of the 1st group and in 17 (65.3%) of the 2nd group: body temperature decreased. Cough decreased, appetite increased in 23 (88.4%) children of the 1st group and in 19 (73%) of the 2nd group; combination therapy was continued.

On day 5-6 of treatment, cough, wheezing in the lungs, and intestinal syndrome disappeared in 22 (84.6%) children of the 1st group and in 20 (76.9%) of the 2nd group.

On the 10-12th day of therapy, improvements were noted in the X-ray image in 24 (92.3%) sick children of the 1st group and in 21 (80.7%) of the 2nd group.

Ultimately, the use of drugs led to a reliable reduction in the duration of inpatient treatment, since patients of the 1st group were in the clinic on average 1.1 bed-days less

compared to patients of the 2nd group.

To determine the effectiveness of the role of intestinal microflora in the prevention and prevention of relapses of lung disease, we conducted a comparative follow-up observation of patients for 6 months after discharge from the hospital. The study showed that children who periodically received bifolak zinc after discharge from the hospital showed a reliable decrease in the incidence of relapses of the disease, and in the period from 1 to 3 months the decrease continued by an average of 33%. Observation of patients in the period from 4 to 5 months after discharge from the hospital showed a further decrease in the frequency of relapses of the disease by an average of 59% in patients receiving the probiotic, and from 6 months - a decrease of 55% in patients of group II.

As can be seen from the results of the study in children with pneumonia of atypical etiology, combined treatment with antibacterial drugs and probiotics led to rapid positive dynamics. Children tolerated the combined treatment well, no adverse reactions were noted. Conclusions. The state of the intestinal microbiota has a significant impact on the course and outcome of obstructive bronchitis in children. Dysbacteriosis can contribute to the development of inflammatory processes and a decrease in the effectiveness of the immune response. Healthy microflora helps maintain a balance between pro- and anti-inflammatory reactions, which reduces the risk of severe obstructive bronchitis and complications.

Conclusions. Correction of the microbiota with probiotics and prebiotics can improve the immune response, reduce the severity of the disease and speed up recovery. For effective treatment and prevention of obstructive bronchitis in children, it is important to take into account the state of the intestinal microbiota and, if necessary, correct it with nutrition, probiotics and rational antibiotic therapy. Thus, the combined use of probiotics in frequently ill children is effective in the treatment of pneumonia. Convenient to use, higher efficiency, the absence of side and undesirable effects allow us to recommend this treatment for its widespread use in pediatric practice.

LIST OF REFERENCES

[1] Tursunova, B., Urunova, M., & Ibragimova, M. (2023). Changes in the state of immunity at the cellular level in patients with bronchiolitis. International Journal of Scientific Pediatrics, 2(12), 428-430.https://ijsp.uz/index.php/journal/article/view/199

[2] Komilzhonovich M. I. OPTIMIZATION OF TREATMENT OF ATOPIC DERMATITIS IN CHILDREN //International journal of scientific researchers (IJSR) INDEXING. - 2024. - Vol. 5. - No. 2. - P. 642-646 https://worldlyjournals.com/index.php/IJSR/article/view/3073

[3] Fedorovna, I. M., & Kizi, S. Z. S. (2023). STATE OF HUMORAL IMMUNITY IN PATIENTS WITH ATYPICAL PNEUMONIA IN FREQUENTLY ILL CHILDREN. Research Focus, 2(10), 125-128. https://cyberleninka.ru/article/n/state-of-humoral-immunity-in-patients-with-atypical-pneumonia-in-frequently-ill-children

[4] Avdeev S.N. Intensive care in pulmonology. Moscow, 2015. Vol. 1. 304 p.

[5] Khusainova, Sh.K. (2024). GENEOLOGICAL RISK FACTORS FOR THE DEVELOPMENT OF RECURRENT OBSTRUCTIVE BRONCHITIS IN CHILDREN. Research Focus, 3(3), 173-175.

[6] Khusainova, Sh. K., Zakirova, B. I., & Makhmudzhanova, S. R. (2023). THE PREVALENCE OF RECURRENCE OF OBSTRUCTIVE BRONCHITIS IN CHILDREN. JOURNAL OF HEPATO-GASTROENTEROLOGICAL RESEARCH, 4(3). https://inlibrary.uz/index.php/problems_biology/article/view/2736

[7] Community-acquired obstructive bronchitis in children. Clinical guidelines. - Moscow: Original-maket, 2015. - 64 p. ISBN 978-5-990-66034-2

[8] Agaard K., Ma J., Ganu R., Petrosino J., Versalovic J. The placenta harbors a unique microbiome. Sci Transl Med. 2014; 6: 237-43.

[9] Fedorovna, I. M., & Ravshanovna, E. M. (2024). Optimization of treatment of atypical pneumonia due to hypoxic-ischemic encephalopathy in newborns. Research Focus, 3(1), 220 https://cyberleninka.ru/article/n/optimization-of-treatment-of-atypical-pneumonia-due-to-hypoxic-ischemic-encephalopathy-in-newborns

[10] Schroeder B., Birchenough G., Stahlman M. Bifidobacteria or fiber protects against diet-induced microbiota-mediated colonic mucus deterioration. Cell Host Microbe. 2018; 23 (1): 27-40.

[11] Odamaki T., Kato K., Sugahara H., et al. Age-related changes in gut microbiota composition from newborn to centenarian: a cross-sectional study. BMC Microbiol. 2016; 16:90-8. https://www.researchgate.net/publication/303470262_Age-related_changes_

in_gut_microbiota_composition_from_newborn_to_centenarian_A_cross-sectional_study

[12] Joly F. et al. Saccharomyces boulardii CNCM I-745. In: Marteau P., Dore J., eds. Gut Microbiota: A Full-Fledged Organ. Paris: John Libbey Eurotext; 2017: 305–350.