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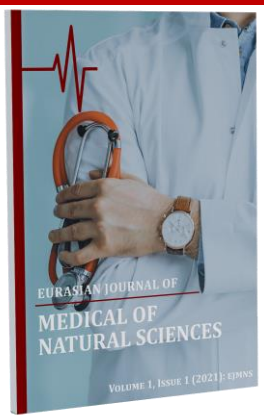

BRONCHO-OBSTRUCTIVE SYNDROME IN CHILDREN

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ABSTRACT

Broncho-obstructive syndrome in children is clinically manifested by paroxysmal cough, expiratory dyspnea, asthma attacks and is associated with impaired bronchial patency, develops acutely, but can be persistent. The first symptoms: shortness of breath and wheezing syndrome often appear in children at an early age. Differential diagnosis of biofeedback in young children is difficult due to the impossibility of using methods for assessing the function of external respiration, difficulties in obtaining sputum for cytological and bacteriological studies in order to verify the diagnosis. Early diagnosis, which determines the tactics of treatment, largely determines the prognosis of the disease and the choice of preventive measures.

INTRODUCTION

Diseases of the respiratory system are leading in the structure of morbidity in childhood [1,3,4,10]. It is important to note the high annual rate of increase in the prevalence of bronchial asthma (BA) in children, which reaches 20%. At the same time, in recent years, BA has been increasingly recorded in children in the first years of life [2,7]. In young children, 5-50% of cases of acute respiratory infections are often complicated by broncho-obstructive syndrome, the main cause of which is acute obstructive bronchitis (AOB) [3,5,6,17].

Broncho-obstructive syndrome (BOS) is a symptom complex that is clinically manifested by paroxysmal cough, expiratory dyspnea, asthma attacks and is associated with impaired bronchial patency of functional or organic origin [9,10,11]. By itself, Broncho-obstructive syndrome has a characteristic clinical picture, so there are no difficulties with its diagnosisand especially clinically evident in children of the first years of life, which is due to the anatomical and physiological characteristics of the respiratory system: the narrowness of the airways, insufficient elasticity of the lungs, the softness of the cartilage of the bronchial tree, insufficient rigidity of the chest, a tendency to develop edema, hypersecretion of viscous mucus, poor development of smooth muscles of the bronchi [12].

When faced with broncho-obstructive syndrome in infants in practice, the doctor, as a rule, makes a diagnosis of obstructive bronchitis or bronchiolitis, occurring with symptoms of respiratory failure, developing more often against the background of acute respiratory infection (ARI) [19,21]. With broncho-obstructive syndrome, many diseases of the bronchopulmonary system occur: acute obstructive bronchitis (AOB), BA, bronchopulmonary dysplasia (BPD), congenital malformations (CM) of the bronchopulmonary system (tracheobronchomalacia, tracheobronchomegaly, pulmonary malformations), as foreign body, etc. [5,6,8]. The uniformity of the clinical symptoms of bronchial obstruction in these diseases complicates early diagnosis and treatment tactics, which can lead to a protracted and recurrent course of some of them.

Broncho-obstructive syndrome can also be a consequence of allergic inflammation of the tracheobronchial tree, obstructive obstruction or hemodynamic disorders, congenital malformations of the upper respiratory tract. The widespread prevalence of biofeedback in children, as well as the heterogeneity of its course, development and outcome, has been an urgent object of study for many years for scientists and medical practitioners, since difficulties arise in the differential diagnosis of this condition [21].

Acute respiratory infections occupy a leading place in the structure of human infectious pathology. The airborne route of transmission of the pathogen, the high susceptibility of the population to almost all viruses, pathogens determine their main epidemiological feature - the speed and breadth of their spread. They are practically unlimited and significantly increase during periods of seasonal immunodeficiency that occurs in the winter and winter-spring periods. Clinical manifestations of broncho-obstructive syndrome consist of the elongation of exhalation, the appearance of expiratory noise (wheezing, noisy breathing), asthma attacks, and the participation of auxiliary muscles in the act of breathing; an unproductive cough often develops. This clinical symptom complex is called "wheezing" - "wheezing syndrome", since whistling sounds (distant or heard during auscultation) are the main clinical manifestation of biofeedback [17,21]. The genesis of wheezing is associated with both turbulent air movement against an obstacle in the airways (trachea, bronchi) and with rapid oscillations of the lumen of the lobar and segmental bronchi. In this case, there is an increase in intrathoracic pressure, fluctuations in the air flow rate during expiration, compression of the bronchi and their vibration, and the end result is the appearance of wheezing rales [22].

Bronchial obstruction against the background of respiratory diseases in children, as a rule, occurs more often in the form of acute obstructive bronchitis. Biofeedback mainly develops acutely, but it can be persistent. Differential diagnosis of BOS in young children is difficult due to the impossibility of using methods for assessing the function of external respiration, difficulties in obtaining sputum for cytological and bacteriological studies in order to verify the diagnosis [18,22]. The persistent recurrent course of biofeedback, resistant to traditional conservative therapy, may require an endoscopic examination of the bronchial tree, which makes it possible to visualize changes in the bronchi, as well as laboratory study of biological fluids and tissues obtained duringbronchoscopy [12,19,20].

The first symptoms: shortness of breath and wheezing syndrome often appear in children at an early age [13,15,23]. Previous bronchial obstruction also increases the risk of viral lower respiratory tract infection [17,19].

A study conducted in 2008 by L. B. Bacharier et al. Showed that 60% of infants hospitalized with bronchiolitis had more frequent respiratory infections and episodes of bronchopulmonary obstruction within 2 years of follow-up compared with controls [18,24]. Biofeedback of both infectious and allergic inflammatory origin is always more severe in children with bronchial hyperreactivity and manifestations of atopy [22]. It is also known that AD develops in 30–50% of children who had recurrent biofeedback of viral origin in infancy [21].

The viral infection acts synergistically with allergic sensitization and decreased lung function during infancy, leading to the development of AD later. Atopy is a risk factor for the development of AD after virus-induced biofeedback. Children who underwent BOS in the early years of life and have such signs of atopy as allergic sensitization, atopic dermatitis, allergen-specific immunoglobulin E, have the highest risk of developing AD [20]. In a study by R.F. Lemanske et al. Found that children of the group with a high genetic risk of developing allergic respiratory diseases at the age of 3 years more often develop biofeedback in the presence of the following risk factors in infancy: passive smoking, allergic sensitization to food at the age of 1 year, any respiratory disease without biofeedback moderate and severe, at least one episode of BFB associated with infection with respiratory syncytial (RS) virus, rhinovirus or other pathogens in infancy [23]. In children who often suffer from respiratory infections, biofeedback is recorded more often [7,20] according to some data, bronchial obstruction in infants with ARI reaches 50% or more [18].

The frequency of BOS, which developed against the background of infectious diseases of the lower respiratory tract, ranges from 5 to 40% [18]. Soroka Yu.A. et al. argue that in every second child ARI is accompanied by bronchial obstruction of varying severity [12,23], and recurrent episodes of respiratory infection occur with recurrent BFB [11,22], which often progress to severe exacerbations requiring hospitalization of children. Timely and correct identification of infants at increased risk for persistent asthma can help predict long-term outcomes and improve prevention and treatment [15,21,27].

Over the past two decades, many scientific advances have improved the understanding of AD and the physician's ability to effectively control it [2,7,22]. Early diagnosis, which determines the timely start and tactics of treatment, and also largely determines the prognosis of the disease and the choice of preventive measures [1, 6] The basis for determining the prognosis of biofeedback, as well as early diagnosis of AD, was the study of biofeedback phenotypes depending on age, genesis and characteristics of the course of the disease [12,23].

The non-atopic phenotype of biofeedback is the most difficult to diagnose and understand. It is known that severe adenovirus infection can lead to prolonged bronchial obstruction in a previously healthy child. Respiratory viruses, including rhinovirus, RSV, metapneumovirus, influenza, affect the respiratory epithelium of the lower respiratory tract and provoke a local immunological response, as well as a protective antiviral response with the production of interferons, chemotaxis and activation of NK cells. Respiratory viruses damage the ciliated epithelium of the mucous membrane of the respiratory tract; increase its permeability to allergens, toxic substances and the sensitivity of the receptors of the

submucous layer of the bronchi, which causes an increase in bronchial hyperreactivity and the occurrence of BOS in children [14,26].

Thus, the differential diagnosis of clinically heterogeneous phenotypes of children with symptoms of bronchial obstruction, concealing many diseases and conditions that are of the same type in their clinical manifestation, will help in determining the prognosis of biofeedback in young children, in choosing treatment tactics and preventive measures [25,28].

References:

1. Alekseeva O.V. The use of artificial neural networks in the differential diagnosis of recurrent bronchitis in children / O.V. Alekseeva, D.A. Rossiev, N.A. Ilyenkova // Siberian Medical Review. - 2010. - T. 66, No. 6. - P. 75-79.
2. Volkov I.K. Volkov I.K. Differential diagnosis of broncho-obstructive syndrome in children // Medicine of emergency conditions. - 2013. - No. 48 (1). -S. 125-128.
3. Genetic diagnostics: polymorphism of cytokine genes / F.F. Rizvanova, O. I. Pikuza, RA Faizullina [and others] // Practical medicine. –2010. - No. 6 (45).-P.41-43.
4. Geppe N.A. Working classification of the main clinical forms of bronchopulmonary diseases in children / N.A. Geppe, N.N. Rozinova, I.K. Volkov [et al.] // Difficult patient. - 2009. - No. 1-2.-P.35–39.
5. Zaitseva S.V. Zaitseva S.V., Murtazaeva O.A. Syndrome of bronchial obstruction in children // Difficult patient. - 2012. - No. 10 (2-3). -P. 34-39.
6. Ibatova Sh. M., Mamatkulova F. Kh., Ruzikulov N.Y.The Clinical Picture of Acute Obstructive Bronchitis in Children and the Rationale for Immunomodulatory Therapy. International Journal of Current Research and Review. Vol 12 Issue 17. September 2020. - P.152-155.
7. Ibatova Sh. M., F. Kh. Mamatkulova, N. B. Abdukadirova, Yu. A. Rakhmonov, M. M. Kodirova. Risk Factors for Development of Broncho-Ostructive Syndrome in Children. International Journal of Current Research and Review. Vol 12. Issue 23 December 2020.-P. 3-6.
8. Ibatova Sh.M., Mamatkulova F.Kh., Rakhmonov Y.A., Shukurova D.B., Kodirova M.M. Assessment of the Effectiveness of Treatment of Rachit in Children by Gas-Liquid Chromatography. International Journal of Current Research and Review. Vol 13, Issue 06, 20 March 2021. P.64-66.
9. Sh.M. Ibatova, F.Kh. Mamatkulova, D.S. Islamova. Efficiency of combined application of apricot oil and aevit as a regulator of lipase activity of blood serum in children with vitamin D-deficiency rickets. Journal of Critical Reviews. // ISSN- 2394-5125. VOL 7, ISSUE 11, 2020. P.1266-1274.
10. 10. Ibatova Sh.M., Baratova R.Sh., Mamatkulova F.Kh., Ergashev A.Kh. State of immunity in chronic obstructive pulmonary disease in children. Asian Journal of Multidimensional Research (AJMR). Vol.10, Issue 3, March, 2021. P. 132-136.

11. Ibatova Sh. M., Abdurasulov F.P., Mamutova E.S. Some aspects of diagnostics of out-of-social pneumonia in children indications for hospitalization. EPRA International Journal of Research and Development (IJRD) Volume: 6 | Issue: 4 | April 2021. P. 242-244.
12. Ibatova Sh.M., Mamatkulova F.Kh., Mukhamadiev N.K.State of immunity in chronic obstructive pulmonary disease in children. Central asian journal of medical and natural sciences. Volume: 02 Issue: 05 | Sep-Oct 2021 ISSN: 2660-4159. P. 103-107.
13. Ibatova Sh.M., Muhamadiev N.Q. Efficiency of immunomodulating therapy in acute obstructive bronchitis in children. Central Asian Journal of Medical and Natural Sciences. Volume: 02 Issue: 02 | March-April 2021 ISSN: 2660-4159. P. 210-213.
14. Ibatova Sh.M., D.T. Rabbimova, E.S.Mamutova, N.B.Abdukadirova, M.M.Kadirova. Gas-chromatographic appraisal of aplication of apricot oil and aevit in complex therapy of vitamin D- deficiency rickets in children. International Scientific Journal Theoretical &Applied Science, 24.04.2019, Philadelphia, USA, P.333-336.
15. Ibatova Sh.M. Evaluation of the effectiveness of the use of apricot oil and aevit in the complex treatment of children with rickets // J. Bulletin of the Association of Physicians of Uzbekistan. - 2015. - No. 4. - P.50-53.
16. Ibatova Sh.M. Optimization of the treatment of rickets in children // J. Infection, immunity and pharmacology. - 2015. - No. 5. - S. 99-103.
17. Ibatova Sh.M. D.S. Islamova, Sh.O. Akhmedov. The use of cumin oil in the treatment of children with rickets // J. Problems of biology and medicine, Samarkand. - 2015. - No. 2 (83). - S. 50-52.
18. 18.Sh.M.Ibatova, F.Kh.Mamatkulova, N.B.Abdukadirova, Kh.M.Oblokulov, F.A. Achilov. The effectiveness of the use of apricot oil in children with rickets. // Scientific and practical journal "Questions of Science and Education", Moscow, 2019, No. 27 (76), -p.40-46.
19. Sh.M.Ibatova, F.Kh.Mamatkulova Gas chromatographic evaluation of the use of apricot oil and aevit in the complex therapy of vitamin D-deficient rickets in children. Scientific journal "New day in medicine". No. 2 (30/2) 2020. S. 265-267.
20. 20. Ibatova Sh.M., F.Kh. Mamatkulova M.M. Kodirova. Evaluation of the effectiveness of treatment of rickets in childrenby gas-liquid chromatogramphy Asian Journal of Multidimensional Research Vol. 9, Issue 10, October, 2020. P. 44-47.
21. 21. Ibatova Sh.M., Islamova D.S., Goyibova N.S. Studying the level of immunoglobulins in the blood serum of children in depending on feeding. Eurasian journal of medical and natural sciences. 2023. P. 10-14.
22. Ibatova Sh.M., Mamatkulova F.Kh., Normakhmatov B.B. Giardiasis in children and its significance in the etiopathogenesis of diseases in children. American Journal of Technology and Applied Sciences. 2023.P.36-41
23. Islamova D. S., Ibatova Sh. M., Mamatkulova F. Kh. About the risk factors of development complicated duodenal ulcer in children //Health, demography, ecology of the Finno-Ugric peoples. – 2020. – no. 4. - S. 46-47.
24. Okhotnikova O.M. Bronchial obstruction syndrome in children: differential diagnosis and treatment / O.M. Okhotnikova // Art of love. - 2010. - No. 1 (67). - P. 45-56.

25. PatrushevaYu.S. Diagnostics and treatment of acute bronchiolitis in children / Yu.S.Patrusheva, M.D. Bakradze, T.V. Kulichenko // Issues of diagnostics in pediatrics. - 2011. - T. 3, No. 1. - P. 5-11.
26. Causes of bronchial obstruction in children and directions of therapy / N.A. Geppe, N.A. Seliverstov, V.S. Malyshev [and others] // RMZh. - 2011. - T. 19, No. 22. - P. 1371-1374.
27. Seroklinov V.N. Broncho-obstructive syndrome in children: textbook. Manual for doctors / VN Seroklinov, AV Fedorov, IA Ponomareva. - Barnaul: AGMU, 2010. - 49 p.
28. Simbirtsev A.S. Cytokines in the diagnosis and treatment of respiratory diseases // Russian rhinology. - 2004. - No. 1. P. 38-40.