Original Article

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The Use of Leukotriene Inhibitors as Basic Therapy in Children with Bronchial Asthma

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Abstract

In the pharmacotherapy of bronchial asthma, a ”step-by-step” approach is recommended, which includes an increase or decrease in the volume of therapy, depending on the severity of clinical symptoms. In complex therapy, it is possible to use non-drug methods of treatment, although the effectiveness of some of them is debatable and needs further study. To achieve this goal, children over the age of 3 years (the group of patients consisted of 26 children) with different forms and degrees of severity of bronchial asthma were included in the study. Patients of the main group took L-Montus (montelukast), children of the ketotifen comparison group. Leukotriene receptor antagonists (montelukast, zafirlukast) are the first mediator-specific therapy of AD and represent a new therapeutic class of drugs in the treatment of the disease. The effectiveness of leukotriene receptor antagonists has been proven in randomized clinical trials among adults and children with bronchial asthma. Leukotriene receptor blockers, in particular L-Montus relieves the symptoms of AD and is a drug for the basic therapy of this disease, leads to a significant improvement in control, reduces the frequency of exacerbations of AD caused by viral infection in children aged 3-5 years. It has an anti-inflammatory effect, complementary to the action of glucocorticosteroids.

Keywords: Leukotriene, Bronchial Asthma, Montelukast, Inflammatory, Glucocorticosteroids.

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Introduction

Bronchial asthma is a chronic inflammatory disease of the respiratory tract, accompanied by spasm of the bronchial tree. Bronchial asthma is recognized as one of the most common chronic pathologies among school-age children. The number of patients is increasing every year, which is associated with the deterioration of the environmental situation. Constant attention to the problem of AD is also due to the fact that with insufficiently effective treatment, frequent exacerbations of the disease, the quality of life of patients decreases, limiting their vital activity. Severe forms of bronchial asthma are accompanied by impaired functions not only of the respiratory organs, but also of other body systems.[1–3] Disability develops in 7% of the officially registered children with bronchial asthma. Currently, this problem has acquired not only medical, but also socio-economic significance. Based on the pathogenesis of bronchial asthma, modern therapy is aimed at eliminating allergic inflammation of the bronchial mucosa, reducing bronchial hyperreactivity, restoring bronchial patency and preventing structural restructuring of the bronchial wall. Untimely diagnosis and inadequate therapy are the main causes of the severe course of the disease and mortality of patients with bronchial asthma. The choice of treatment is determined by the severity of the course, the degree of control and the period of bronchial asthma. However, in any case, an individual approach is needed in the choice of means and methods of treatment.[4–7]

In the pharmacotherapy of bronchial asthma, a ”step-by-step” approach is recommended, which includes an increase or decrease in the volume of therapy, depending on the severity of clinical symptoms. In complex therapy, it is possible to use non-drug methods of treatment, although the effectiveness of some of them is debatable and needs further study. At the same time, it must be remembered that successful treatment of AD is impossible without establishing a partnership, trusting relationship between the doctor and the patient. Significant progress in the treatment of bronchial asthma was achieved with the introduction of a basic (control) therapy that affects the chronic allergic inflammatory process in the bronchi, thereby reducing the

likelihood of bronchial obstruction and the formation of irreversible structural restructuring of the bronchial wall. The means of basic therapy include: glucocorticosteroids (inhaled and systemic); leukotriene receptor antagonists; prolonged B2 -agonists in combination with inhaled glucocorticosteroids; cromones (cromoglycic acid, sodium nedokromil); prolonged theophyllins; antibodies to IgE. [8–11]

The purpose of the study

To achieve control over bronchial asthma by combining various groups of basic drugs and to determine the role of leukotriene receptor antagonists in the treatment of various forms and severity of asthma.

Materials and Methods

To achieve this goal, children over the age of 3 years (the group of patients consisted of 26 children) with different forms and degrees of severity of bronchial asthma were included in the study. Patients of the main group took L-Montus (montelukast), children of the ketotifen comparison group. The general condition of patients, objective data were evaluated and clinical, laboratory and instrumental studies were conducted.

Results and Discussion

The use of the drug L-Montus as a basic therapy led to an improvement in clinical indicators, which was characterized by a decrease in shortness of breath, cough, choking attacks and adverse events such as sedation and in the form of neurosis in younger and older children was not observed. These adverse reactions were observed when using ketotifen in therapeutic doses. [12,13]

Leukotriene receptor antagonists (montelukast, zafirlukast) are the first mediator-specific therapy of AD and represent a new therapeutic class of drugs in the treatment of the disease. The effectiveness of leukotriene receptor antagonists has been proven in randomized clinical trials among adults and children with bronchial asthma. [14–16] Antileukotriene drugs are of particular interest for pediatric practice as nonsteroidal drugs for oral administration. It's no secret that some patients have an "inhaler phobia". In addition, montelukast can be prescribed once a day, which creates prerequisites for better compliance. [17–20]

Conclusion

Leukotriene receptor blockers, in particular L-Montus relieves the symptoms of AD and is a drug for the basic therapy of this disease, leads to a significant improvement in control, reduces the frequency of exacerbations of AD caused by viral infection in children aged 3-5 years. It has an anti-inflammatory effect, complementary to the action of glucocorticosteroids.

It can be argued that monotherapy with antileukotriene drugs is highly effective and acts as an alternative to inhaled corticosteroids in children with mild persistent asthma, but the effect of inhaled corticosteroids on spirometry indicators is more pronounced.

References

1. Van Mason J, Portnoy JM. Immunologic strategies for prevention of asthma. J Allergy Clin Immunol Pract. 2020;8(3):834–847. Available from: https://doi.org/10.1016/j.jaip.2019.11.029.
2. Rai SP, Patil AP, Vardhan V, Marwah V, Pethe M, Pandey IM. Best Treatment Guidelines For Bronchial Asthma. Med J Armed Forces India. 2007;63(3):264–268. Available from: https://dx.doi.org/10.1016/S0377-1237(07)80151-1.
3. Guilbert TW, Bacharier LB, Fitzpatrick AM. Severe asthma in children. J Allergy Clin Immunol Pract. 2014;2(5):489–500. Available from: https://doi.org/10.1016/j.jaip.2014.06.022.
4. Chung KF, Wenzel SE, Brozek JL, Bush A, Castro M, Sterk PJ, et al. International ERS/ATS guidelines on definition, evaluation and treatment of severe asthma. Eur Respir J. 2014;43(2):343–73. Available from: https://doi.org/10.1183/09031936.00202013.
5. Bousquet J. Global initiative for asthma (GINA) and its objectives. Clin Exp Allergy. 2000;30:2–5. Available from: https://doi.org/10.1046/j.1365-2222.2000.00088.x.
6. Veremchuk LV, Yankova VI, Vitkina TI, Nazarenko AV, Golokhvast KS. Urban air pollution, climate and its impact on asthma morbidity. Asian Pac J Trop Biomed. 2016;6(1):76–85. Available from: https://doi.org/10.1016/j.apjtb.2015.10.001.
7. Moorman JE, Zahran H, Truman BI, Molla MT. Centers for Disease Control and Prevention (CDC). MMWR Surveill Summ. 2006;60:84–90.
8. Moonie SA, Sterling DA, Figgs L, Castro M. Asthma status and severity affects missed school days. J Sch Health. 2006;76(1):18–24. Available from: https://doi.org/10.1111/j.1746-1561.2006.00062.x.
9. Lang A, Carlsen KH, Haaland G, Devulapalli CS, Munthe-Kaas M, Mowinckel P, et al. Severe asthma in childhood: assessed in 10 year olds in a birth cohort study. Allergy. 2008;63(8):1054–60. Available from: https://doi.org/10.1111/j.1398-9995.2008.01672.x.
10. Hirai K, Tanaka A, Homma T, Kawahara T, Oda N, Mikuni H, et al. Prevalence and clinical features of Asthma-COPD overlap in patients with COPD not using inhaled corticosteroids. Allergol Int. 2021;70(1):134–135. Available from: https://doi.org/10.1016/j.alit.2020.07.009.
11. Bellin MH, Osteen P, Kub J, Bollinger ME, Tsoukleris M, Chaikind L, et al. Stress and Quality of Life in Urban Caregivers of Children With Poorly Controlled Asthma: A Longitudinal Analysis. J Pediatr Health Care. 2015;29(6):536–346. Available from: https://doi.org/10.1016/j.pedhc.2015.04.018.

12. Godard P, Chanez P, Siraudin L, Nicoloyannis N, Duru G. Costs of asthma are correlated with severity: a 1-yr prospective study. Eur Respir J. 2002;19(1):61–67. Available from: https://doi.org/10.1183/09031936.02.00232001.
13. Zahran HS, Bailey CM, Damon SA, Garbe PL, Breysse PN. Vital Signs: Asthma in Children — United States, 2001–2016. MMWR Morb Mortal Wkly Rep. 2018;67(5):149–155. Available from: https://dx.doi.org/10.15585/mmwr.mm6705e1.
14. Puig-Junoy J, Pascual-Argente N. Socioeconomic costs of asthma in the European Union, United States and Canada: A systematic review. Rev Esp Salud Publica. 2009;p. 91.
15. Bateman ED, Hurd SS, Barnes PJ, Bousquet J, Drazen JM, Fitzgerald M, et al. Global strategy for asthma management and prevention: GINA executive summary. Eur Respir J. 2008;31(1):143–178. Available from: https://doi.org/10.1183/09031936.00138707.
16. Zyryanov SK, Diyakov IN, Avdeev SN. Pharmacoeconomic analysis of using biological agents for uncontrolled moderate-to-severe atopic asthma in the Russian Federation. FARMAKOEKONOMIKA. 2020;12(4):268–78. Available from: http://dx.doi.org/10.17749/2070-4909.2019.12.4.268-278.
17. Lemanek K. Adherence issues in the medical management of asthma. J Pediatr Psychol. 1990;15(4):437–58. Available from: https://doi.org/10.1093/jpepsy/15.4.437.
18. Kohlboeck G, Koletzko S, Bauer CP, Berg V, Berdel A, Krämer D, et al. GINI-plus Study groups. Association of atopic and non-atopic asthma with emotional symptoms in school children. Pediatr Allergy Immunol. 2013;24(3):230–236. Available from: https://doi.org/10.1111/pai.12056.
19. Goodwin RD, Fergusson DM, Horwood LJ. Asthma and depressive and anxiety disorders among young persons in the community. Psychol Med. 2004;34(8):1465–1474. Available from: https://doi.org/10.1017/s0033291704002739.
20. Feldman JM, Steinberg D, Kutner H, Eisenberg N, Hottinger K, Sidora-Arcoleo K, et al. Perception of pulmonary function and asthma control: the differential role of child versus caregiver anxiety and depression. J Pediatr Psychol. 2013;38(10):1091–1100. Available from: https://doi.org/10.1093/jpepsy/jst052.

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