Застосування інгаляційного ацетилцистеїну в комплексному лікуванні хворих на бронхіальну астму з нейтрофільним типом запалення

Ігнатьєва В.І., Опімах С.Г., Добрянський Д.В., Гуменюк Г.Л., Ільницький Р.І., Кузьменко Н.М.

1 ДУ «Національний інститут фтизіатрії і пульмонології ім. Ф.Г. Яновського НАМН України», м. Київ, Україна
2 Національний медичний університет ім. О.О. Богомольця, м. Київ, Україна
3 Національна медична академія післядипломної освіти ім. П.Л. Шупика, м. Київ, Україна

Обґрунтування. Бронхіальна астма (БА) є гетерогенним хронічним запальним захворюванням дихальних шляхів. В основі цієї гетерогенності серед інших чинників значну роль відіграє тип запалення (еозинофільний, нейтрофільний або малогранулоцитарний). У зв'язку з цим запропоновано виділяти окремі ендотипії захворювання. БА з нейтрофільним типом запалення характеризується тяжчим перебігом, наявністю обструкції на рівні дрібних бронхів і фіксованої бронхообструкції. У разі порушень на рівні дрібних бронхів доцільним є призначення протизапальних препаратів у доставкових пристроях, які здатні створити високу концентрацію ліків у периферичних відділах (наприклад, Респімат, керовані вдихом інгалятори, дрібнодисперсні аерозолі). Муколітики порушують структуру гелю слизу, тим

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Application of acetylcysteine in inhalation form in complex treatment of patients with bronchial asthma with neutrophilic type of inflammation

Ignatieva V.I.1, Opimakh S.G.1, Dobriansky D.V.2, Gumeniuk G.L.1,3, Ilnytskyi R.I.1, Kuzmenko N.M.1

1 State Institution "Yanovsky National Institute of Phthisiology and Pulmonology of the National Academy of Medical Sciences of Ukraine", Kyiv, Ukraine
2 Bogomolets National Medical University, Kyiv, Ukraine
3 Shupyk National Medical Academy of Postgraduate Education, Kyiv, Ukraine

Background. Bronchial asthma (BA) is a heterogeneous chronic inflammatory disease of the airways. On the base of this heterogeneity, among other factors, a significant role is played by the type of inflammation (eosinophilic, neutrophilic or malagranulocytic). In this regard it is offered to allocate separate endotypes of the disease. BA with a neutrophilic type of inflammation is characterized by more severe course with the presence of obstruction at the level of small bronchi and fixed bronchoobstruction. In the presence of disorders at the level of small bronchi, it is advisable to prescribe anti-inflammatory drugs in delivery devices that can create a high concentration of rugs in the peripheral departments (eg, Respimat, inhaled inhalers, fine aerosols). Mucolytics disrupt the structure of the mucus gel, thereby reducing its viscosity and elasticity and, thus, improving the viscoelastic properties of sputum, which facilitate airway clearance and promote the targeted delivery of bronchodilators and anti-inflammatory drugs to the small bronchi.

Objective. To evaluate the effectiveness of the use of ultrafine-particle glucocorticoid tiotropium bromide through Respimat in standard therapeutic doses and inhalation of 10% solution of acetylcysteine with a nebulizer once a day for 10 days as basic therapy.

Materials and methods. The diagnosis of BA with the neutrophilic type of inflammation was established in patients, followed by the prescription of a combination of a glucocorticoid, tiotropium bromide, Respimat, acetylcysteine, through the nebulizer 1 time a day for 10 days as basic therapy.

Results and discussion. In patients from the test group, the average level of neutrophils was 53.6±3.8 years, FEV1 – 51.5±4.7%, FEV1/FVC – 67.2±3.5%, which statistically significantly increased compared to the control group (25.0±3.0 years, 2.5±0.3 years, 1.5±0.1 years, respectively), with no side effects. The results confirmed the effectiveness of the combined treatment in patients with BA with neutrophilic inflammation of moderate severity.

Key words: ultradisperse inhalation, glucocorticoid tiotropium bromide, acetylcysteine, bronchial asthma.
whose results of the blood analysis by microscopy showed the level of neutrophils ≥4000 in 1 µl. The effectiveness of treatment of patients having BA with neutrophilic type of inflammation was studied in 30 patients. First (control) group consisted of 15 patients (5 men and 10 women, mean age – 53.2±4.9 years, FEV₁ after test with a bronchodilator – 50.6±16.3 %, FEV₁/FVC – 66.4±17.8), who received as a standard therapy a combined drug – 320 mcg of budesonide and 9 mcg of formoterol – twice a day in complex treatment. Second (main) group consisted of 15 patients (9 men and 6 women, mean age – 53.6±3.8 years, FEV₁ – 51.5±4.7 %, FEV₁/FVC – 67.2±3.5), who were administered the inhalation of 250 µg of ultrafine-particle beclomethasone dipropionate and 12 µg of formoterol twice a day, 5 mcg tiotropium bromide as inhalations through the delivery device respimat once a day for 3 months. In the complex treatment, the inhalation of acetylcysteine (3 ml of 10 % solution) with a nebulizer once a day in the morning (duration of an inhalation session – 10 min) for 10 days was additionally prescribed.

Results and discussion. After 3 months in patients of group 2, the effectiveness of treatment was 93.3 %. There was a statistically significant increase in the total score of the test for asthma control (ACT) from 14.3±1.3 to 20.3±0.8 points (p<0.05), a decrease in the total score evaluation of the questionnaire for the control of asthma symptoms (ACQ) from 2.3±0.2 to 1.1±0.1 points (p<0.05), which indicated an improvement in the control of asthma symptoms and a reduction in exacerbations; clinically significant decrease in the number of symptoms from 71.4±5.6 to 51.3±5.0 points (p<0.05) according to the results of the St. George’s Hospital quality of life questionnaire, which indicated an improvement in the quality of life of patients; an increase in MEF₂₅ from 28.9±4.5 % to 41.6±4.2 %, MEF₂₅ from 19.1±2.9 % to 27.6±2.6 % and FEV₁/FVC from 67.2±3.5 % to 76.1±2.3 %, which indicated an improvement in bronchial patency at the level of small bronchi and a decrease in fixed bronchial obstruction; an increase in the number of passed meters 6MWT from 266.3±16.2 to 312.0±14.4 m, a decrease in shortness of breath on the Borg scale from 2.5±0.3 to 1.5±0.1 points before the test and from 4.1±0.3 to 3.1±0.3 points after the test, which testified to the increase of tolerance to physical activity. The complex therapy was well tolerated by patients and was not accompanied by the development of side effects. In patients of the control group, statistically significant dynamics of the studied indicators was not detected.

Conclusions. Prescription to patients with BA with the neutrophilic type of inflammation according to the severity of the disease as a basic therapy of ultrafine-particle inhaled glucocorticoid tiotropium bromide through a modern technical device Respimat in a standard therapeutic dose, and formoterol 12 µg twice a day for 10 days led to a positive dynamics of clinical symptoms of asthma, improved respiratory function, increased tolerance to physical activity, and improved the quality of life, thus, resulted in the effectiveness of treatment of patients with BA with the neutrophilic type of inflammation being 93.3 %.

Key words: ultrafine-particle inhaled glucocorticoid, tiotropium bromide, Respimat, acetylcysteine, bronchial asthma.