

TOP Journal Club

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Therapy with nebulized beta2 agonists (procaterol) in asthmatic children: pulmonary function and plasma levels after inhalation

Aerugi. 2007 Nov;56(11):1372-7.

BACKGROUND: Relationship between post administrative changes in plasma drug levels and bronchodilation remains unknown. In this study, we measured plasma levels of procaterol, a beta2-agonist, when being inhaled through nebulizers in children with bronchial asthma to examine relationship between improvement of pulmonary function and the plasma levels. METHOD: Six asthmatic children with the mean age of 9.8 years, inhaled 0.3 ml of 0.01% procaterol solution through a nebulizer. We examined changes in pulmonary function and plasma procaterol levels before and after inhalation. RESULTS: Procaterol was detected in the plasma 2 minutes after inhalation when it already rose to the maximum level, and kept the steady until showing a decline in 30 minutes. The measured highest value was 87.8+/-45.1 pg/ml. FEV 1.0 remarkably increased 2 minutes after inhalation and was maintained until 60 minutes after inhalation. Other lung function parameters also improved. There was no significant change in the heart rate, but serum potassium concentrations significantly dropped in all patients 60 minutes after inhalation. CONCLUSION: Plasma procaterol levels promptly rose to the peak at 2 minutes after inhalation and decreased 30 minutes later. Improvement of pulmonary function started promptly at minutes after inhalation and it became a peak 60 minutes later.

Treatment with inhaled corticosteroids in asthma is too often discontinued

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PURPOSE: To study persistence with inhaled corticosteroids (ICS) and its determinants in asthma-patients. METHODS: From the PHARMO database, asthma-patients (age < 35 years) with a first dispensing for ICS in 1999-2002 and ≥ 2 dispensings in the first year were included. Persistence during the first year was defined as the number of days from start to time of first failure to continue renewal of the initial ICS. Potential determinants of persistence were assessed at ICS-start and 1 year before. RESULTS: The study-cohort included 5563 new users of single ICS and 297 of fixed-combined ICS. Less than 10% of patients using single ICS and 15% of patients using fixed-combined ICS were persistent at 1 year. Similar persistence-rates were observed when stratified for age (children/adolescents: 0-18 years and adults: 19-34 years). Increased persistence with single ICS was observed with the type of ICS (budesonide), prescriber (specialist), prior use of long-acting beta-agonists, previous hospitalization for asthma, metered-dose inhaler, low starting-dose and once-daily dosing regimen at start. Persistence with fixed combined ICS-treatment increased with younger age and was decreased in patients having high starting-dose of ICS and prior use of antibiotics. CONCLUSION: New users of both single and fixed combined ICS have alarming low persistence rates with ICS-treatment in the first year of follow-up. Persistence was mainly related to patient factors, such as severity of disease, and to treatment-related factors, such as once-daily dosing frequency.

Poor adherence with inhaled corticosteroids for asthma: can using a single inhaler containing budesonide and formoterol help?

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BACKGROUND: Poor adherence with inhaled corticosteroids is an important problem in asthma management. Previous approaches to improving adherence have had limited success. AIM: To determine whether treatment

with a single inhaler containing a long-acting beta(2)-agonist and a corticosteroid for maintenance treatment and symptom relief can overcome the problem of poor adherence with inhaled corticosteroids. DESIGN OF STUDY: Randomised, parallel group, open-label trial. SETTING: Forty-four general practices in Nottinghamshire. METHOD: Participants who used less than 70% of their prescribed dose of inhaled corticosteroid and had poorly controlled asthma were randomised to budesonide 200 mug one puff twice daily plus their own short-acting beta(2)-agonist as required (control group), or budesonide/formoterol 200/6 mug one puff once daily and as required (active group) for 6 months. The primary outcome was inhaled corticosteroid dose. RESULTS: Seventy-one participants (35 control, 36 active group) were randomised. Adherence with budesonide in the control group was approximately 60% of the prescribed dose. Participants in the active group used approximately 80% more budesonide than participants in the control group (448 versus 252 mug/day, mean difference 196 mug, 95% confidence interval 113 to 279; P<0.001) and were less likely to withdraw from the study (3 versus 13; P<0.01). No safety issues were identified. CONCLUSION: Using a single inhaler for both maintenance treatment and symptom relief approximately doubled the dose of inhaled corticosteroid taken, suggesting this could be a useful strategy to overcome the problems related to poor adherence with inhaled corticosteroids.

Comparison and optimal use of fixed combinations in the management of COPD.

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Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality worldwide. Indications for the use of long-acting beta-agonists (LABAs) and inhaled corticosteroids (ICS) in patients with COPD are described in the various international guidelines, but no special recommendations are made concerning the use of combination inhalers containing a LABA as well as an ICS. To determine the place of combination inhalers in the treatment of COPD we reviewed recent literature concerning this subject. On molecular level ICS/LABA combination therapy has anti-inflammatory properties which cannot be attributed to ICS alone. All clinical studies indicate that the two available combinations (salmeterol/fluticasone and formoterol/budesonide) significantly reduce exacerbation rate of moderate/severe exacerbations when compared with placebo. Some studies also showed a significant reduction in exacerbation rate compared with LABA monotherapy, but not compared with ICS monotherapy. From the patient's perspective, ICS/LABA combination inhalers are the first choice when both need to be prescribed, possibly improving patient compliance for ICS. Currently little evidence is available to predict if flexible treatment with LABA/ICS combination inhalers will improve disease control in COPD. Further studies are needed to elucidate the clinical benefit of combination inhalers versus the individual components in different inhalers, and to investigate the clinical benefit of flexible dosing of combination inhalers in patients with COPD.

Asthma overview.

[Prim Care.](#) 2008 Mar;35(1):41-60.

This article presents our current understanding of the biological heterogeneity of asthma and reviews some of the key features of the latest proposed recommendations of the National Asthma Education and Prevention Program Guidelines. The diagnosis of asthma is based on such clinical features as variable airflow obstruction that is partially if not fully reversible and airway hyperresponsiveness that predisposes to episodic bronchospasm following exposure to a variety of triggers. The underlying inflammation and airway biology of asthma is heterogeneous and is part of the explanation for the variable response to therapy. New biologics that help to characterize patients according to their underlying biology will aid in making better choices for treatment. New asthma guidelines emphasize the importance of regular monitoring.

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