Comparative Efficacy and Safety of Low-Dose Fluticasone Propionate and Montelukast in Children With Persistent Asthma


PURPOSE OF THE STUDY. To evaluate efficacy, safety, health outcomes, and cost-effectiveness of fluticasone propionate (FP) versus montelukast in children with asthma.

STUDY POPULATION. Children aged 6 to 12 years with persistent asthma.

METHODS. Multicenter, randomized, double-blind, double-dummy, parallel-group study of 342 children with persistent asthma. Children received either FP 50 μg twice daily via Diskus or montelukast 5 mg once daily for 12 weeks. The primary efficacy variable was percent change in morning predose forced expiratory volume in 1 second at the end point.

RESULTS. Compared with montelukast, children treated with FP experienced a significantly greater increase in mean percent forced expiratory volume in 1 second, mean morning peak expiratory flow rate, and mean evening peak expiratory flow rate. Children treated with FP also experienced significantly greater reductions in total supplemental albuterol use, mean nighttime albuterol use, and mean nighttime symptom scores compared with children treated with montelukast. There were no significant differences between the groups for daytime asthma symptom scores, daytime albuterol use, percent symptom-free days, or adverse events. Parent and physician satisfaction ratings were significantly higher for FP treatment. The daily total asthma-related cost per patient in the FP group was approximately one third of the cost in the montelukast group.

CONCLUSIONS. FP was significantly more effective than montelukast in improving pulmonary function, asthma symptoms, and rescue albuterol use. Both therapies had similar safety profiles.

REVIEWER COMMENTS. Comparative studies in adults and adolescents have previously shown greater efficacy with inhaled corticosteroids versus leukotriene receptor antagonists. This 12-week study reports similar findings for children 6 to 12 years of age with persistent asthma. Based on efficacy, cost, and safety profiles, low-dose inhaled corticosteroids should be considered first-line therapy in this age group.

Montelukast, Compared With Fluticasone, for Control of Asthma Among 6- to 14-Year-Old Patients With Mild Asthma: The Mosaic Study


PURPOSE OF THE STUDY. Per current asthma guidelines, montelukast is considered a suitable alternative to inhaled corticosteroids (ICSs) for the treatment of mild persistent asthma, and this study was conducted to evaluate the use of oral montelukast compared with inhaled fluticasone in children with mild asthma.

STUDY POPULATION. Children (aged 6–14 years) with mild persistent asthma participating in the Montelukast Study of Asthma in Children (MOSAIC) study.

METHODS. In this 12-month, multicenter, randomized, double-blind, noninferiority comparison study, patients were randomly assigned to receive oral montelukast 5 mg once a day (n = 495) or inhaled fluticasone 100 μg twice a day (n = 499) after an appropriate run-in period. After baseline evaluations, patients were evaluated at 4-month intervals with spirometry and review of an asthma diary card. The primary end point, the percentage of asthma rescue-free days (RFDs), included days with no rescue-medication use and no asthma-related primary care or urgent care visits or hospitalizations. Secondary end points included forced expiratory volume in 1 second (FEV₁), use of additional asthma medications, asthma attacks, β-agonist use, and peripheral blood eosinophil levels.

RESULTS. The mean percentage of RFDs was 84% in the montelukast group compared with 86.7% in the fluticasone group. The least-squares means difference was −2.8% (95% confidence interval: −4.7% to −0.9%), which represents a difference of <1 day/month. Both montelukast and fluticasone were associated with improvement in FEV₁ (percent predicted) from baseline as well as reduction in the percentage of days with β-agonist use, reduction in blood eosinophils, and improvement in patient-perceived asthma control and asthma quality-of-life scores; however, fluticasone was significantly favored in terms of FEV₁, β-agonist use, asthma control, and quality of life. Montelukast was associated with the increased use of systemic corticosteroids (17.8% vs 10.5%; P = .001) and a higher percentage of patients with an asthma attack (32.2% vs 25.6%) compared with fluticasone.
CONCLUSIONS. Montelukast was not inferior to fluticasone in terms of asthma RFDs; however, the use of montelukast was associated with more asthma attacks and more systemic steroid use. FEV₁, β-agonist use, and quality of life improved significantly better for those in the fluticasone group.

REVIEWER COMMENTS. This study represents the first direct comparison between montelukast and an ICS measuring differences in multiple parameters of asthma control in children with mild persistent asthma. This study establishes the noninferiority of montelukast compared with fluticasone in terms of RFDs; however, in terms of FEV₁, systemic corticosteroid use, number of asthma attacks and β-agonist use, fluticasone was significantly superior to montelukast. This study underscores the fact that asthma control cannot be determined with just one measure and confirms the role of montelukast as an alternative to ICSs as suggested by the current guidelines. The role of montelukast in future asthma guidelines is currently under investigation. Future studies are needed for evidence-based clinical application.

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Montelukast Reduces Asthma Exacerbations in 2- to 5-Year-Old Children With Intermittent Asthma


PURPOSE OF THE STUDY. To evaluate the role of montelukast in prevention of viral-induced asthma exacerbations among 2- to 5-year-old children with a history of intermittent asthma.

STUDY POPULATION. A total of 549 children aged 2 to 5 years (from 68 sites in 23 countries) with a history of intermittent wheezing associated with upper respiratory infections.

METHODS. This was a multicenter, double-blind, parallel-group randomized trial comparing once-daily oral montelukast (4- or 5-mg chewable tablets) with placebo for 12 months. Subjects were required to have been free of symptoms and β-agonist use in a typical week over the 3 months before enrollment. An asthma exacerbation was defined as any 3 consecutive days with daytime symptoms and at least 2 β-agonist treatments per day; rescue use of oral/inhaled corticosteroids during ≥1 days; or a hospitalization because of asthma. The primary efficacy end point was number of exacerbation episodes over 1 year. Numerous secondary outcomes were also measured.

RESULTS. Patients in the montelukast group experienced a mean of 1.60 asthma-exacerbation episodes, compared with 2.34 in the placebo group, for a 31.9% rate reduction (P ≤ .001). Other end points with significant differences favoring the montelukast group included time to first exacerbation (median: 206 vs 147 days; P = .0024), rate of inhaled corticosteroid use (39.8% rate reduction; P = .027), and proportion of patients with asthma episodes (45% vs 56%; P = .008). There were no statistically significant differences in rates of oral corticosteroid use, average duration and severity of exacerbations, or proportion of patients who missed time from day care or school. Both groups experienced more exacerbations in the fall and fewer in the summer. Montelukast was well tolerated, and no patient discontinued therapy because of a drug-related adverse event.

CONCLUSIONS. The authors concluded that once-daily montelukast significantly reduces asthma exacerbations secondary to respiratory tract infections compared with placebo among 2- to 5-year-old children with intermittent asthma and also reduces time to first exacerbation and need for β-agonist or inhaled corticosteroid therapy. There was no difference in severity or duration of episodes, although the authors argue that the study was not specifically designed to detect differences in these end points.

REVIEWER COMMENTS. This study attempts to address the question of whether a controller medication may be useful in young children who wheeze with colds but are otherwise categorized as mild intermittent or even symptom-free. Asthma guidelines do not endorse use of preventive medications for such children, yet this study suggests that daily montelukast during the respiratory viral season may be useful to reduce exacerbations (although it did not reduce oral steroid use or severity of exacerbations). Montelukast during specified times might be a good option for many young children with intermittent asthma, but the cost/benefit ratio of chronic use is unclear, because the number of wheezing episodes per child was low even in the placebo group. Investigation of episodic use of montelukast with upper respiratory infections would be of interest.

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A Meta-analysis on Intravenous Magnesium Sulphate for Treating Acute Asthma


PURPOSE OF THE STUDY. To evaluate the effectiveness of intravenous magnesium sulphate in the treatment of acute asthmatic attacks in children.
Montelukast, Compared With Fluticasone, for Control of Asthma Among 6- to 14-Year-Old Patients With Mild Asthma: The Mosaic Study
Jeremy D. Bufford and Mark H. Moss
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