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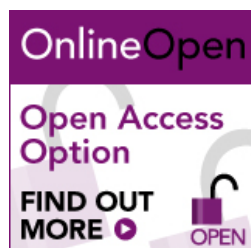
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PEDIATRIC PULMONOLOGY

Original Article

Can a single dose response predict the effect of montelukast on exercise-induced bronchoconstriction?

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Issue



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The study was performed at the Medisch Spectrum Twente, Enschede, the Netherlands.

Preliminary results from this study were previously presented at the American Thoracic Society annual congress, San Fransisco 2012.

The manufacturer of montelukast (Merck Sharpe & Dohme) had no role in study design, analysis and interpretation of data, writing of the manuscript, and in the decision to submit the manuscript for publication.

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Keywords:

Montelukast; exercise-induced bronchoconstriction; asthma; children

Summary

Rationale

Exercise-induced bronchoconstriction (EIB) can be prevented by a single dose of montelukast (MLK). The effect is variable, similar to the variable responsiveness observed after daily treatment with MLK. We hypothesized that the effect of a single MLK-dose (5 or 10 mg) on EIB could predict the clinical effectiveness of longer term once daily treatment.

Methods

This was a prospective, open-label study. Twenty-four asthmatic adolescents (12–17 years) suboptimally controlled by low-dose inhaled corticosteroids, with $\geq 10\%$ post-exercise fall in FEV_1 , were included. They performed an exercise test at baseline, 20 hr after a single MLK-dose and 40–44 hr after the last dose of 4 weeks once daily treatment. The correlations between the effect of a single dose and 4 weeks treatment on area under the curve (AUC) and maximum % fall in FEV_1 were calculated.

Results

$AUC_{0-20 \text{ min}}$ decreased significantly after a single MLK-dose ($P = 0.001$, CI: 64.9–218.2), but not after 4 weeks of treatment ($P = 0.080$, CI: –12.2 to 200.4). There was a moderate correlation between the effect of a single MLK-dose and 4 weeks treatment on $AUC_{0-20 \text{ min}}$, $r = 0.49$ ($P = 0.011$), and maximum % fall in FEV_1 , $r = 0.40$ ($P = 0.035$).

Conclusion

The protection provided by a single MLK-dose against EIB only modestly predicts the effect of regular treatment against EIB in adolescent asthmatics on low-dose inhaled corticosteroids. If used on a daily base, MLK offered clinically significant protection against EIB in two thirds of adolescents suboptimally controlled by low-dose ICS. **Pediatr Pulmonol.** 2015;9999:XX–XX. © 2015 Wiley Periodicals, Inc.

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