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# Research Guides Medication Choices for Young Asthma Patients

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DENVER — New research should help physicians choose effective asthma medications tailored to the characteristics of their individual patients. Researchers at National Jewish Medical and Research Center and their colleagues in the National Heart, Lung and Blood Institute's (NHLBI) Childhood Asthma Research and Education Network identify in the February *Journal of Allergy and Clinical Immunology* specific characteristics in children associated with better responses to inhaled steroids and to leukotriene antagonists. The research builds on a trend to use scientific evidence, rather than trial-and-error, to customize medication choices for specific individuals.

"We found that responses to these two medications varied considerably from child to child," said Stanley Szefler, MD, lead author and Professor of Pediatrics at National Jewish Medical and Research Center. "Young asthma patients with low pulmonary function or evidence of allergic inflammation are most likely to respond well to inhaled corticosteroids and should try those first. Other young patients can try either the inhaled steroids or leukotriene receptor antagonists first. Patients under 10 years of age who have had asthma for a short time may respond well to the leukotriene receptor antagonists."

Inhaled corticosteroids are broadly acting anti-inflammatory medications that are applied directly to the airways by breathing them in. Leukotriene receptor antagonists, taken in pill form, act systemically to block substances call leukotrienes, which are associated with inflammation and allergic reactions. Both medications are considered effective, but inhaled steroids are currently the preferred long-term therapy for persistent asthma.

"If we can pinpoint in advance which children will do better with a certain type of therapy, we can improve their lives more quickly and save them the risk of trying medications that are less effective for them," noted James Kiley, PhD, director of the NHLBI Division of Lung Diseases. "This is an important step in developing ways to individualize asthma therapy."

One hundred and twenty six (126) mild to moderate asthma patients, 6 to 17 years of age, took the inhaled corticosteroid fluticasone (Flovent) and the leukotriene receptor antagonist montelukast (Singulair) separately for eight weeks each.

The primary measure of response to medication was the amount of air a person can exhale in one second, known as FEV1. Improvement of 7.5% in FEV1 was considered a clinically significant and positive response.

At the end of the 16-week trial, 17% of the young patients improved their FEV1 scores by 7.5% or greater with both medications; 23% improved only with the inhaled corticosteroid; 5% improved only with montelukast; and 55% did not improve with either medication.

Favorable response to the inhaled steroid was associated with lower pulmonary function, more sensitive, or "twitchy," airways, and higher levels of markers associated with allergic inflammation, including exhaled nitric oxide, eosinophils, and serum IgE. Patients who responded to montelukast were generally younger and had asthma for fewer years than those who did not respond to either medication.

Response to fluticasone but not montelukast was associated with more use and greater response to bronchodilator rescue medications, higher levels of the inflammatory marker exhaled nitric oxide, and lower pulmonary function. None of the monitored characteristics was associated with response to montelukast but not fluticasone.

Patients who responded to neither medication had better lung function and lower levels of markers of allergic inflammation than those who responded to either or both medications. However, they had about the same number of days with asthma symptoms as other patients.

"The patients whose FEV1 did not improve with either medication might represent a specific asthma phenotype

whose lung function has not been compromised and show no evidence of allergic inflammation but who suffer asthma symptoms nonetheless," said Dr. Szefler. "We need to evaluate them further."

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