

A large subgroup of mild-to-moderate asthma is persistently non-eosinophilic

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A large percentage of patients with mild-to-moderate asthma have persistently non-eosinophilic disease which may not respond to currently available anti-inflammatory treatments, according to a new study.

In a cross-sectional study of 995 asthmatic subjects enrolled in nine [clinical trials](#) conducted by the NHLBI's [Asthma](#) Clinical Research Network, sputum eosinophilia ($\geq 2\%$ eosinophils) was found in only 36% of asthmatics not using an inhaled corticosteroid (ICS) and 17% of those using an ICS. Among patients who achieved good asthma control, 26% had sputum eosinophilia, compared with 15% among patients who had not achieved good control.

The findings were published online ahead of print publication in the American Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*.

Among asthmatic subjects not taking an ICS who had repeated induced sputum samples, 22% had sputum eosinophilia on every occasion (persistent eosinophilia), 31% had eosinophilia on at least one occasion (intermittent eosinophilia), and 47% had no eosinophilia on every occasion (persistently non-eosinophilic). Two weeks of treatment with a combination of anti-inflammatory drugs resulted in significant improvements in airflow obstruction in subjects with eosinophilic asthma, but not in those with persistently non-eosinophilic asthma. Bronchodilator responses to albuterol, however, were similar in eosinophilic and non-eosinophilic asthma.

"Prevalence estimates for non-eosinophilic asthma in earlier studies were based on single sputum samples," said John Fahy, MD, MSc, professor of medicine and director of the Cardiovascular Research Institute/University of California San Francisco Airway Clinical Research Center. "Here we show for the first time that sputum eosinophilia is persistently absent in a large percentage of patients with mild/moderate asthma when sputum is analyzed repeatedly over time."

The poor response to intense combined treatment seen in patients with persistently non-eosinophilic asthma suggests that these patients have a unique disease phenotype for which new treatments need to be developed. Treatment responses in patients with intermittent eosinophilia were similar to those of patients with persistent eosinophilia.

"A large subgroup of patients with mild-to-moderate asthma do not have the usual eosinophilic subtype that is responsive to steroid treatment," concluded Dr. Fahy. "In addition to the implications for the care of these patients, our results have important implications for future asthma research. In clinical studies, the eosinophil phenotype of patients should be characterized to better understand treatment responses and disease mechanisms. In addition, appropriate in vitro and animal models for the study of the mechanisms of non-eosinophilic airway disease need to be developed."

Provided by American Thoracic Society

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