

Lung Function Worsens for Some Children with Asthma

AUGUST 31, 2004

DENVER — About one quarter of children in a long-term study of mild to moderate asthma suffered a significant loss of lung function over the course of four to six years. The decline occurred more often among younger, male children. The decline was not affected by any medication they took. Researchers from National Jewish Medical and Research Center report the results of this large-scale study in the August issue of the [American Journal of Respiratory and Critical Care Medicine](#).

"Our findings show that even children with mild asthma can lose lung function," said senior author Stanley Szeffler, MD, Professor of Pediatrics at National Jewish. "A child whose lung function continues to decline at the rates we observed could have severely compromised breathing ability as an adult. We may have observed a critical phase of rapid decline, which will halt in some patients but continue in others. We will need to continue monitoring these children to better understand the natural course of asthma."

The researchers evaluated the lung function of 990 children with mild to moderate asthma for four to six years as part of the National Heart Lung and Blood Institute's Childhood Asthma Management Program. All the children were taking a rescue medication, albuterol, and were divided evenly among those also taking a placebo, the inhaled steroid budesonide or nedocromil. Lung function was measured primarily by the amount of air the children could exhale in one second, called forced expiratory volume in one second (or FEV1), expressed as percent predicted of normal values for age, height, and gender.

As a whole, the group of children experienced a minimal decline in lung function of 0.2% per year of predicted FEV1. That loss was not considered great enough to warrant any significant concern. However, 253 of those children lost more than 1% per year of predicted FEV1, five times the average lung function decline of the group as a whole.

The medications did not appear to alter the course of the disease; the loss of lung function occurred equally among children taking either of the two anti-inflammatory medications or placebo. Severity of disease also did not make a difference either; lung-function loss occurred equally among children with mild and moderate asthma.

There were several factors that did distinguish children whose lung function declined during the study. Almost 70% of them were male, compared to 57% males among those whose lung function did not decline. They were younger, averaging 7.56 years of age when they began the study, compared to 8.74 for those who did not have a significant lung-function decline. The decliners had also suffered asthma for a shorter period than non-decliners.

On average, decliners also had a greater lung function than non-decliners when they entered the study, but had worse lung function by the end of the study. However, even those with significant lung-function decline averaged an FEV1 of more than 95% at the end of the study.

"It can be difficult to detect this loss of lung function if children are tested only once," said co-author [Ronina Covar](#), MD, Assistant Professor of Pediatrics at National Jewish. "We believe it is important to monitor lung function in children with asthma over the course of several years in order to detect those patients with the declining trend."

"We hope that continued monitoring and future research will help us learn more about the course of and reason for this phenomenon, the implication of this decline, and possible ways to limit the loss of their lung function."

National Jewish Health is the leading respiratory hospital in the nation. Founded 123 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the

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Media Contacts

Our team is available to arrange interviews, discuss events and story ideas.

Jessica Berry

303.398.1082

berryl@njhealth.org

Sean Andersen-Vie

303.398.1002

andersenvies@njhealth.org