STUDY POPULATION. Subjects included 3641 Greek children reported as having wheezed in the past 12 months or having physician-diagnosed asthma. A total of 1626 children ages 2 to 5 years were included from the Genesis study, conducted between 2003 and 2004. The Healthy Growth study conducted during 2007 and 2008 included 2015 children aged 9 to 13 years.

METHODS. This retrospective review included subjects from 2 cross-sectional studies conducted to assess the relationship between pediatric asthma and adiposity. Selected patients underwent somatometric measurements and skinfold thickness–mediated body fat assessment at 4 sites. The International Obesity Task Force cutoff points were used to categorize patients as normal weight, overweight, or obese.

RESULTS. In the Genesis study, 11% of preschool-aged children were overweight and 6% were obese. In the Healthy Growth study, 30.5% of preadolescents were overweight and 12% were obese. The researchers found that in preschool-aged children, z scores of anthropometric variables correlated with asthma but not with BMI z scores or BMI-defined overweight/obesity. In preadolescents, z scores of anthropometric variables and BMI, as well as BMI-defined overweight/obesity, were positively associated with asthma.

CONCLUSIONS. In both studied pediatric groups, there was a positive correlation of total and regional fat mass indices with asthma. This correlation was best assessed in both age groups with multiple fat mass markers. BMI measurements could be an efficient way to study the relationship of obesity with asthma in preadolescents but may not be suitable for younger children due to continuous alterations of body mass.

REVIEWER COMMENTS. This study found a relationship between the rising prevalence of both obesity and asthma among pediatric patients. Obesity can be more accurately identified by using body fat measurements such as waist circumference among younger children or BMI among older subjects. It then becomes important to delineate among that population of obese patients whether perceived wheezing and/or exercise intolerance is due to deconditioning versus asthma. Pulmonary function testing alone may not be adequate, as obese patients have been shown to demonstrate restrictive lung patterns due to chest wall impedance as well as obstructive patterns with a reduced forced expiratory volume in 1 second/forced vital capacity ratio.

Airway and Systemic Inflammation in Obese Children With Asthma

PURPOSE OF THE STUDY. The goal of this study was to compare airway and systemic inflammation in obese and nonobese children with asthma.

STUDY POPULATION. The study participants included 361 mainly white children 8 to 17 years old in Australia. Participants were divided into 4 groups: obese asthmatics, nonobese asthmatics, obese control subjects, and nonobese control subjects.

METHODS. In a cross-sectional analysis, biomarkers of airway and systemic inflammation were compared among groups. These biomarkers included exhaled nitric oxide, sputum inflammatory cells, C-reactive protein, IL-6, leptin, and adiponectin. Obesity was defined based on BMI z score, and lung function was measured by using spirometry.

RESULTS. Obese asthmatic female subjects had more non-necokinophilic asthma compared with male subjects; however, there was no significant difference in inflammatory cells between obese asthmatic and nonobese asthmatic subjects. Obese control subjects had higher leptin levels compared with nonobese control subjects, but there was no difference in the obese asthmatic subjects compared with nonobese asthmatic subjects. Adiponectin was reduced in obese asthmatic subjects compared with nonobese control subjects, but there was no difference in the obese asthmatic subjects compared with nonobese control subjects.

CONCLUSIONS. In this cohort, there was no statistically significant association between obesity and biomarkers of inflammation in children with asthma.

REVIEWER COMMENTS. In children, there is a paucity of studies that examine associations between obesity and biomarkers of airway and systemic inflammation in asthma compared with adults. Some studies have demonstrated a positive association between biomarkers of inflammation and obesity in adults with asthma (Sutherland ER. Linking obesity and asthma. Ann N Y Acad Sci. 2014;1311:31–41). More longitudinal studies are needed to further investigate this relationship in children as they transition into adolescence and adulthood. To thoroughly examine this association, the present study should be replicated in a large diverse population, which may have implications for racial and ethnic disparities in asthma.
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