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Association Between Obesity and Atopy in Chinese Schoolchildren

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lack of data regarding the reason for early antibiotic use, but it suggests that much of the effect of antibiotics on respiratory disease is a result of the confounding effects of early chest infection. More prospective studies are needed to better illuminate this complex association.

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Leung TF, Kong APS, Chan HIS, et al. *Int Arch Allergy Immunol.* 2009;149(2):133–140

PURPOSE OF THE STUDY. To investigate the association between asthma traits, atopy, and obesity-related markers in Chinese adolescents.

STUDY POPULATION. Chinese children ($N = 486$) who were randomly selected from a Hong Kong obesity study of adolescents had their allergy features assessed.

METHODS. Anthropometric measurements were made, with BMI greater than local age- and gender-specific 85th percentile defining overweight and BMI greater than 95th percentile defining obesity. Fasting blood samples were collected to measure levels of allergen-specific immunoglobulin E (to dust mite, cat, and cockroach), lipids, and inflammatory biomarkers.

RESULTS. The median age was 15.0 years (interquartile range: 14.0–16.0 years), and the median BMI was 19.3 kg/m² (interquartile range: 17.5–21.7 kg/m²). There were 62 overweight children (12.8%) and 36 obese children (7.4%). There were 239 atopic subjects (49.2%). Neither overweight nor obesity status was associated with asthma, allergic rhinitis, or eczema ($P > .25$). Atopy was also not associated with age-adjusted BMI, waist circumference, serum lipid profiles, or fasting glucose levels. Atopy and presence of allergen-specific immunoglobulin E did not differ between overweight or obese children and those with normal BMI ($P > .25$). Subgroup analysis suggested that cockroach sensitization was more common among boys who were obese or overweight ($P = .045$). The white blood cell (WBC) count was significantly higher among atopic versus nonatopic children (mean: 6.5×10^9 vs 6.2×10^9 cells per L; $P = .006$). Logistic regression revealed higher WBC count to be a risk factor for atopy (odds ratio: 18.97; $P = .004$).

CONCLUSIONS. Obesity is not associated with asthma or atopy. A high WBC count is an important risk factor for atopy in boys and girls. Gender does not exert any consistent effect on the association between obesity and allergy sensitization in children.

REVIEWER COMMENTS. In developed countries, childhood asthma and obesity have been increasing in prevalence, and there is increased interest in determining whether there is an association between the 2. Both involve inflammatory processes, but often the findings are as inconclusive as determining whether the chicken or the egg came first. In this cross-sectional study, the authors found no strong correlation between atopy and obesity. This suggests that other factors, including genetic and environmental effects, are separately affecting atopic and obesity features, especially by the time a child has reached adolescence. A prospective study of birth cohorts may further define whether there is a significant relationship between weight gain, development of atopic features, and changes in obesity- and atopy-related laboratory values.

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Association of Obesity With IgE Levels and Allergy Symptoms in Children and Adolescents: Results From the National Health and Nutrition Examination Survey 2005–2006

Visness CM, London SJ, Daniels SJ, et al. *J Allergy Clin Immunol.* 2009;123(5):1163–1169, 1169.e1–1169.e4

PURPOSE OF THE STUDY. To study the association of obesity with total and allergen-specific immunoglobulin E (IgE) levels and allergy symptoms in children and adolescents.

STUDY POPULATION. A nationally representative survey of 4111 children 2 to 19 years of age enrolled in the 2005–2006 National Health and Nutrition Examination Survey.

METHODS. Eligible persons who completed both the household interview and medical examination components of the National Health and Nutrition Examination Survey and had height and weight measured were included in the study. Total serum IgE and allergen-specific IgE tests were performed depending on age. Atopy was defined as a positive response (≥ 0.35 kU/L) to ≥ 1 of the allergens tested. BMI was calculated for all study participants, and detailed questions regarding physical activity, household smoking, maternal smoking during pregnancy, and birth weight were asked.

RESULTS. Total serum IgE levels were higher among overweight and obese children versus normal-weight children, unrelated to smoking exposure, birth weight, or physical activity. The odds ratio for atopy was increased for the obese children, compared with normal-weight children. Most of the children with atopy were sensitized to foods, and there was no association seen between obesity and reported allergy symptoms and hay fever.

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