Body mass index trajectory classes and incident asthma in childhood: results from 8 European Birth Cohorts--a Global Allergy and Asthma European Network initiative.

Abstract:

The causal link between body mass index (BMI) or obesity and asthma in children is still being debated. Analyses of large longitudinal studies with a sufficient number of incident cases and in which the time-dependent processes of both excess weight and asthma development can be validly analyzed are lacking. We sought to investigate whether the course of BMI predicts incident asthma in childhood. Data from 12,050 subjects of 8 European birth cohorts on asthma and allergies were combined. BMI and doctor-diagnosed asthma were modeled during the first 6 years of life with latent growth mixture modeling and discrete time hazard models. Subpopulations of children were identified with similar standardized BMI trajectories according to age- and sex-specific "World Health Organization (WHO) child growth standards" and "WHO growth standards for school aged children and adolescents" for children up to age 5 years and older than 5 years, respectively (BMI-SDS). These types...
of growth profiles were analyzed as predictors for incident asthma. Children with a rapid BMI-SDS gain in the first 2 years of life had a higher risk for incident asthma up to age 6 years than children with a less pronounced weight gain slope in early childhood. The hazard ratio was 1.3 (95% CI, 1.1-1.5) after adjustment for birth weight, weight-for-length at birth, gestational age, sex, maternal smoking in pregnancy, breast-feeding, and family history of asthma or allergies. A rapid BMI gain at 2 to 6 years of age in addition to rapid gain in the first 2 years of life did not significantly enhance the risk of asthma. Rapid growth in BMI during the first 2 years of life increases the risk of asthma up to age 6 years.