

study include the use of *International Classification of Diseases, Ninth Revision* codes to establish allergy issues. For food allergies, these codes can reflect an intolerance, adverse reaction, or sensitization, in addition to immunoglobulin E-mediated allergic reactions. For other allergy issues, a diagnosis of asthma or allergic rhinitis may not have been confirmed by spirometry or allergy testing. Compliance with antibiotic prescriptions could also not be studied. However, the strengths of this study include the large sample size and the use of physician diagnosis of allergic issues in relation to antibiotic orders. Consultation or protopathic (reverse-causality) bias alone cannot account for the associations between early-life antibiotic use and subsequent diagnoses of food allergies and other allergic issues.

REVIEWER COMMENTS. Children with and without allergies have differences in their microbiota. Antibiotic use in early life has been linked to disruptions in the microbiome. The increase in the prevalence of allergies has paralleled the use of broad-spectrum antibiotics among children. This study adds to the literature supporting judicious use of antibiotics in early life.

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Association Between Medication Prescription for Atopic Diseases and Attention-Deficit/Hyperactivity Disorder

van der Schans J, Pleiter JC, de Vries TW, et al. *Ann Allergy Asthma Immunol.* 2016;117(2):186–191

PURPOSE OF THE STUDY. To determine if children with attention-deficit/hyperactivity disorder (ADHD) were more likely than matched controls to have been previously managed for atopic diseases. Furthermore, the authors sought to study the effect on children's ADHD medication use when parents were in treatment for ADHD and atopic diseases.

STUDY POPULATION. Children 6 to 12 years of age and their parents from a northern region of the Netherlands were included.

METHODS. This was a retrospective case-control study of children identified via regional pharmacy dispensing data from 1994 and 2013. The cases of the children reviewed had at least 2 prescriptions of methylphenidate within a 1-year period. Each child with ADHD was matched to 4 controls on the basis of sex, date of birth, and location. Parental prescription data for ADHD and atopic diseases were linked to the children with ADHD and controls. Data were analyzed by using conditional logistic regression and multivariable conditional logistic regression models.

RESULTS. A total of 4257 cases of children treated for ADHD and 17 028 corresponding controls were found. The

mean age of the children on ADHD medication was 8.3 years, and the group was predominantly made up of boys (76.7%); similar findings were seen in the matched control group. Children on ADHD medications were more likely than controls to have received medications for asthma (odds ratio [OR]: 1.4; 95% confidence interval [CI]: 1.3–1.6), allergic rhinitis (OR: 1.4; 95% CI: 1.1–1.8), and eczema (OR: 1.3; 95% CI: 1.1–1.5). The children with ADHD were more likely to have a parent on ADHD medication when compared with the control group (OR: 3.8; 95% CI: 3.3–4.3). Parental use of medications for allergic rhinitis (OR: 1.3; 95% CI: 1.1–1.5) and asthma (OR: 1.2; 95% CI: 1.1–1.3), but not eczema (OR: 1.1; 95% CI: 1.0–1.2), was associated with their child receiving ADHD medication.

CONCLUSIONS. Children with a history of medically treated atopic disease are at an increased risk of receiving ADHD drug treatment. Additionally, if the parent of the child had taken medication for asthma or allergic rhinitis, the child was also at an increased risk of using ADHD medication. These findings imply a link between atopic disease and ADHD that may be based on inherited and/or environmental factors.

REVIEWER COMMENTS. As ADHD and atopic disease have almost synchronously increased in prevalence, questions into possible etiologies and/or links have been raised. Whether atopic disease is implicated as a causative factor in the etiology of ADHD or may be considered a strong risk factor in its development is not clear and requires further investigation. This study aids in increasing provider awareness that atopic disease may be linked to ADHD. Also, the importance of a thorough family history as means to providing proper anticipatory guidance to patients and families is stressed in this study.

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Associations of Physical Activity and Sedentary Behavior With Atopic Disease in United States Children

Strom MA, Silverberg JI. *J Pediatr.* 2016;174:247–253

PURPOSE OF THE STUDY. To determine the association of eczema, asthma, and hay fever with sedentary behavior, including television and/or video game usage, sports participation, and days of vigorous physical activity. The authors of the study also sought to determine if sleep disturbances modify these associations.

STUDY POPULATION. The study included 133 107 children aged 6 to 17 years enrolled in the 2003–2004 and 2007–2008 National Survey of Children's Health.

METHODS. Data from 2 cross-sectional studies were analyzed by using bivariate and multivariate logistic regression models to look for associations between eczema, hay fever, and asthma and vigorous physical activity, television and/or video game use, and sports participation. Furthermore, the authors conducted a subanalysis on the findings, examining the effect of caregiver-reported disease severity and sleep disturbances. Analysis in multivariate logistic regression models was controlled for sociodemographic factors such as age, sex, race, household income, highest level of parent education, insurance coverage, and place of birth (United States versus a foreign location).

RESULTS. Atopic disease alone was not consistently associated with a specific pattern of vigorous physical activity level or sedentary behavior. However, children with an atopic disease who also had sleep disturbances had significantly higher odds of screen time and lower odds of sports participation than children with either an atopic disease or sleep disturbances alone. Children with a lifetime history of asthma showed decreased odds of ≥ 1 days of vigorous physical activity (adjusted odds ratio [aOR]: 0.87; 95% confidence interval [CI]: 0.77–0.99) and decreased odds of sports participation (aOR: 0.91; 95% CI: 0.84–0.99). Moderate (aOR: 0.76; 95% CI: 0.57–0.99) and severe eczema (aOR: 0.45; 95% CI: 0.28–0.73), severe asthma (aOR: 0.47; 95% CI: 0.25–0.89), and hay fever (aOR: 0.53; 95% CI: 0.36–0.61) were associated with decreased sports participation in the past year. Severe eczema (aOR: 0.39; 95% CI: 0.19–0.78), asthma (aOR: 0.29; 95% CI: 0.14–0.61), and hay fever (aOR: 0.48; 95% CI: 0.24–0.97) were all associated with decreased odds of ≥ 1 days of vigorous physical activity.

CONCLUSIONS. Children with a severe atopic disease, especially when accompanied by sleep disturbances, were at a higher risk for sedentary behavior.

REVIEWER COMMENTS. This is an interesting study with a large, nationally representative sample size from the National Survey of Children's Health populations. The sample included children across a wide spectrum of ages and of various socioeconomic backgrounds. The findings have important public health and social implications. As the authors of the study noted, this is an association study, and no causation conclusions can be affirmed by the findings. The authors of future studies should focus on atopic disease control and its effect on sedentary behavior and physical activity. Because an association between sedentary behaviors and severe atopic diseases and sleep disturbances was found, further exploration of the effects of sedentary life on cardiovascular comorbidities in atopic patients should be considered.

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Disagreement Between Skin Prick Tests and Specific IgE in Early Childhood

Chauveau A, Dalphin ML, Kaulek V, et al. *Int Arch Allergy Immunol.* 2016;170(2):69–74

PURPOSE OF THE STUDY. To evaluate for agreement between the results of skin prick tests (SPTs) and serum-specific immunoglobulin E (SSiGE) testing for sensitivity to environmental aeroallergens and food allergens in children. The authors of this study also assessed the associations between SPTs with positive results and the presence of atopic dermatitis in children from ages 1 to 6 years.

STUDY POPULATION. Test results were available for 204 children from rural areas in France, who were recruited through the Protection against Allergy: Study in Rural Environments (PASTURE) project, which included a cohort of European children managed from birth to 10 years of age to determine the effect of farm exposure on the occurrence of allergies.

METHODS. SPTs, atopic dermatitis evaluations using Scoring Atopic Dermatitis Severity Scores, and SSiGE levels were completed at the following ages: 1 year, 4.5 years, and 6 years. SPTs and SSiGE testing were performed for a panel of common aeroallergens and food allergens at each visit. An overall SPT with positive results was defined as at least 1 SPT resulting in a reaction covering ≥ 3 mm of skin, induced by an allergen from among the following categories: seasonal aeroallergen, perennial aeroallergen, food allergen, or any allergen. An overall SSiGE test with positive results was defined as at least 1 SSiGE test with positive results from among the same categories, and 4 different cutoffs for positive results of SSiGE testing were used for analysis (0.2, 0.35, 0.7, and 3.5 IU/mL). κ -Coefficients were calculated to assess for agreement, and a value of >0.61 was defined as good agreement.

RESULTS. One hundred and thirty-seven children completed all 3 study visits. Overall, SPTs and SSiGE tests had inconsistent results, despite analyzing with different immunoglobulin E cutoffs. There were some specific exceptions in which the 2 tests trended toward agreement, but that agreement level did not reach statistical significance. SPT and SSiGE test results approached agreement for both perennial and seasonal aeroallergens at 6 years of age when they used an immunoglobulin E cutoff of >0.7 IU/mL (κ -coefficient = 0.69, 95% confidence interval [CI]: 0.52–0.86; and κ -coefficient = 0.66, 95% CI 0.49–0.83, respectively). Test results trended toward consistency between SPTs and SSiGE testing at 6 years of age when using an SSiGE cutoff of >3.5 IU/mL, but only for seasonal aeroallergens (κ -coefficient = 0.69, 95% CI: 0.51–0.87). As for the occurrence of atopic dermatitis at any time point during the follow-up period lasting up to 6 years of age, positive SPT results at 1 year of age to at least 1 aeroallergen or food allergen was associated with

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