Association between allergic diseases, allergic sensitization and attention-deficit/hyperactivity disorder in children: A large-scale, population-based study

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Abstract

Background
Increasing prevalence of allergic diseases has been matched by parallel trends in attention-deficit/hyperactivity disorder (ADHD). However, previous studies concerning the association between ADHD and allergic diseases have been inconsistent. Moreover, it is not clear whether this association is modified by allergic sensitization status. Therefore, we evaluated the association between allergic diseases, allergic sensitization, and ADHD in children.

Methods
We conducted a large-scale cross-sectional, population-based survey to investigate the relationship between allergic diseases, allergic sensitization, and ADHD. Children aged between 3 and 6 years were selected from kindergartens, and received skin prick tests (SPTs) for mite, cockroach, dog, milk, egg, and crab allergens. Information about allergic diseases, environmental exposures, and physician-diagnosed ADHD were collected. Multiple logistic regressions were performed to estimate the association between allergic diseases and ADHD, with adjustments made for potential confounders.

Result
A total of 2772 children were found to be eligible for analysis; of these 411 (14.8%) had atopic dermatitis (AD), 954 (34.4%) had allergic rhinitis (AR), 451 (16.3%) had asthma, and 28 (1.01%) had ADHD. Children who had AD and asthma with allergic sensitization were found to be at increased risk for ADHD, with adjusted ORs (95% CI) of 4.50 (1.28–15.86) and 3.65 (1.07–12.49). Children who had AR, allergic conjunctivitis, or food allergies were also related to ADHD, though failed to reach statistical significance.

Conclusion
Our results suggest that AD and asthma with allergic sensitization are associated with ADHD in children. As allergic sensitization is an increased factor of developing allergic diseases, early control of environmental and allergens exposure could help to modify the burden of ADHD.