Exposures to Environmental Toxicants and Attention Deficit Hyperactivity Disorder in US Children

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Abbreviations:

ADHD-Attention Deficit-Hyperactivity Disorder
AOR-Adjusted Odds Ratio
ETS-Environmental Tobacco Smoke
μg/dL-Microgram/deciliter of blood
NICU-Neonatal Intensive Care Unit
Abstract

Objective: The purpose of this study was to examine the association of exposures to tobacco smoke and environmental lead with attention deficit hyperactivity disorder (ADHD).

Methods: Data was obtained from the National Health and Nutrition Examination Survey 1999-2002. Prenatal and postnatal tobacco exposure was based on parent report; lead exposure was measured using blood lead concentration. ADHD was defined as current stimulant medication use and parent report of ADHD diagnosed by a doctor or health professional.

Results: Of 4,704 children age 4 to 15 years, 4.2% were reported to have ADHD and stimulant medication use, equivalent to 1.8 million children in the U.S. In multivariable analysis, prenatal tobacco exposure (Odds Ratio [OR]: 2.5; 95% CI: 1.2, 5.2) and higher blood lead concentration (first vs. fifth quintile, OR: 4.1; 95% CI: 1.2, 14.0) were significantly associated with ADHD. Postnatal tobacco smoke exposure was not associated with ADHD (OR 0.6; 95% CI: 0.3, 1.3; p=0.22). If causally linked, these data suggest that prenatal tobacco exposure accounts for 270,000 excess cases of ADHD and lead exposure accounts for 290,000 excess cases of ADHD in U.S. children.

Conclusions: We conclude that exposure to prenatal tobacco and environmental lead are risk factors for ADHD in U.S. children.