Phthalates exposure and attention-deficit/hyperactivity disorder in school-age children.

Division of Child & Adolescent Psychiatry, Department of Psychiatry and Institute of Human Behavioral Medicine, Seoul National University College of Medicine, Seoul, Republic of Korea.

Abstract

BACKGROUND: Very few studies have examined the association between attention-deficit/hyperactivity disorder (ADHD) and phthalate exposure in humans. The aim of this study was to investigate the impact of phthalates on symptoms of ADHD in school-age children.

METHODS: A cross-sectional examination of urine phthalate concentrations was performed, and scores on measures of ADHD symptoms and neuropsychological dysfunction with regard to attention and impulsivity were obtained from 261 Korean children, age 8-11 years.

RESULTS: Mono-2-ethylhexyl phthalate (MEHP) and mono-2-ethyl-5-oxohexylphthalate (MEOP) for metabolites of Di-2-ethylhexylphthalate (DEHP) and mono-n-butyl phthalate (MNBP) for metabolites of dibutyl phthalate (DBP) were measured in urine samples. The mean concentrations of MEHP, MEOP, and MNBP were 34.0 microg/dL (SD = 36.3; range: 2.1-386.7), 23.4 microg/dL (SD = 23.0; range: .75-244.8), and 46.7 microg/L (SD = 21.4; range: 13.2-159.3), respectively. After adjustment for covariates, teacher-rated ADHD scores were significantly associated with DEHP metabolites but not with DBP metabolites. We also found significant relationships between the urine concentrations of metabolites for DBP and the number of omission and commission errors in continuous performance tests (CPT) after adjustment for covariates.

CONCLUSION: The present study showed a strong positive association between phthalate metabolites in urine and symptoms of ADHD among school-age children.

PMID: 19748073 [PubMed - indexed for MEDLINE]