OCCUPATIONAL SOLVENT EXPOSURE DURING PREGNANCY AND CHILD BEHAVIOR AT AGE TWO IN THE PELAGIE COHORT

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Background: Many women work during pregnancy and are exposed to occupational toxicants. The developing central nervous system is highly vulnerable to neurotoxics such as solvents. Although ample evidence shows the neurotoxicity of solvents on adults, very few studies have examined their neurodevelopmental effects in humans following prenatal exposure. Our objective was to analyze the associations between maternal occupational exposure to solvents during pregnancy and child behavior problems (attention deficit/hyperactivity, aggressivity, opposition, and emotionality) at age two.
Methods: Women from the PELAGIE mother-child cohort (including 3005 working women) were recruited in Brittany (France) between 2002 and 2006, at the beginning of pregnancy to document occupational exposure to solvents at that time. Maternal reports (n = 1277) described children's behavior at two years of age. We evaluated the associations between occupational solvent exposure and children's behavior with linear regressions after adjustment for confounders.
Results: 51% of women reported no occupationally exposure to solvents, 21% occasional exposure and 28% regular exposure in early pregnancy. Children prenatally exposed to solvents were more likely to have higher scores for attention deficit/hyperactivity (p for trend = 0.019) and aggressivity (p for trend = 0.014) scores, and dose-response relations were observed.
Conclusions: The dose-response effect and the high prevalence of children potentially exposed to solvents from their mother's workplace exposure underline the public health relevance of this result. Further studies should corroborate our results and explore which particular solvents are most deleterious. Determination of the persistence of these behavioral effects requires long-term follow-up of exposed children.
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