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LIN S[1], KIELB CL[1], HERDT-LOSAVIO ML[1], BELL EM[2], CHAPMAN BR[3], ROCHELEAU CM[4], WATERS MA[4], LAWTON CC[4], STEWART PA[5], ROMITTI PA[6], DRUSCHEL CM[1]. [1]NYS Dept. of Health, Troy, NY, United States, [2]University at Albany, Rensselaer, NY, United States, [3]Upstate Medical University, SUNY, Syracuse, NY, United States, [4]NIOSH, Cincinnati, OH, United States, [5]Stewart Exposure Assessments, LLC, Arlington, VA, United States, [6]University of Iowa, Iowa City, IA, United States. Maternal Occupational Exposure to Pesticides and the Risk of Musculoskeletal Birth Defects: A Preliminary Analysis

Introduction: This study investigates the association between maternal occupational pesticide exposure during the periconceptional period and majormusculoskeletal malformations in their infants. Methods: A multi-center case-control analysis was conducted using data from the National Birth Defects Prevention Study among women with due dates between October 1, 1997 and December 31, 2002. Cases included 1,041 live or still-born infants with transverse limb deficiencies, craniosynostosis, gastroschisis, or diaphragmatic hernia. Controls included 3,009 live-born infants without malformations. Self-reported maternal occupational information was used to estimate herbicide and insecticide exposure for each job held during one month pre-conception to three months post-conception. Pesticide exposure was estimated by an experienced industrial hygienist and metrics included whether any exposure occurred, exposure intensity, frequency, duration, and a cumulative index incorporating these variables for all jobs combined. To estimate peak exposure intensity and peak exposure frequency for mothers with multiple jobs, the job with the highest intensity and highest frequency, respectively, was used. Malformations with statistically significant crude associations were analyzed using logistic regression controlling for risk factors for each malformation, including infant sex, parity, maternal age, education, race/ethnicity, body mass index, folic acid use, alcohol use, and smoking. Results: Gastroschisis was associated with peak herbicide exposure frequency (adjusted odds ratio (adjusted OR): 2.80; 95% confidence interval (CI): 1.33-5.93), peak herbicide exposure intensity (adjusted OR: 2.62; 95% CI: 1.33-5.15), and the top tertile of cumulative herbicide exposure (adjusted OR: 2.31; 95% CI: 1.34-3.99), *versus* no exposure after controlling for gastroschisis risk factors and any insecticide exposure. Transverse limb deficiencies were significantly associated with peak herbicide exposure frequency (adjusted OR: 2.54; 95% CI: 1.06-6.08) and intensity (adjusted OR: 2.66; 95% CI: 1.22-5.81). Both gastroschisis and transverse limb deficiencies were significantly associated with peak insecticide exposure intensity after controlling for risk factors for these anomalies and any herbicide exposure. Discussion: This study employs an extensive exposure assessment methodology to estimate occupational pesticide exposure. This research suggests that gastroschisis and limb deficiencies may be associated with maternal occupational herbicide and insecticide exposure.

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BROWNE ML[1,2], CATON AR[1,2], BOTTO LD[3], LOUIK C[4], RICHARDSON S[1], DRUSCHEL CM[1,2]. [1]New York State Department of Health, Troy, NY, United States, [2]University at Albany School of Public Health, Rensselaer, NY, United States, [3]Division of Medical Genetics, Department of Pediatrics, University of Utah Health Sciences Center, Salt Lake City, UT, United States, [4]Slone Epidemiology Center at Boston University, Boston, MA, United States. Maternal Butalbital Use and Selected Defects in the National Birth Defects Prevention Study

Introduction: Butalbital is one component of combination products prescribed for the treatment of migraine and tension-type headaches; the combination products typically also contain caffeine and an analgesic (acetaminophen, aspirin or codeine). Controversy exists as to whether butalbital should continue to be prescribed in the United States because of the potential for abuse, medication overuse headache, and withdrawal syndromes. Butalbital crosses the placenta but there is very limited information about potential teratogenicity. Methods: The National Birth Defects Prevention Study (NBDPS) is an ongoing, case-control study of nonsyndromic, major birth defects conducted in ten states. The detailed case classification and large number of cases in the NBDPS allowed us to examine the association between maternal self-reported use of butalbital and specific birth defects. We conducted a preliminary analysis of 8,494 unaffected controls and 22,127 case infants with estimated dates of delivery between 1997 and 2007; included were birth defects with 250 or more cases including 11 types of congenital heart defects (CHDs) and 18 non-cardiac defects. Results: Seventy-five case mothers (0.34%) and 15 control mothers (0.18%) reported periconceptional butalbital use. Of 29 specific defect groups analyzed, odds ratios (ORs) for maternal periconceptional butalbital use, adjusted for mother's age, race/ethnicity, education, periconceptional smoking and study center, were statistically significant for two CHDs: tetralogy of Fallot (adjusted OR=3.5; 95% confidence interval=1.3-9.0) and pulmonary valve stenosis (adjusted OR=4.4; 95% confidence interval=1.7-11.8) based on 6/859 and 6/772 exposed/nonexposed cases, respectively. Discussion: Based on preliminary analysis, associations were found between maternal periconceptional butalbital use and certain CHDs. We will conduct a more detailed analysis to assess potential confounding by indication and by the other components in butalbital medications (*e.g.*, acetaminophen, aspirin, codeine, and caffeine). If supported in the final analysis, our findings will be useful in weighing the risks and benefits of butalbital use for the treatment of migraine and tension-type headaches.