

Topic: perfluorinated compound exposure and miscarriage

Title: Association between perfluorinated compound exposure and miscarriage in Danish pregnant women

Conclusion: Women with the highest tertile of exposure to perfluorononanoic acid (PFNA) and perfluorodecanoic acid (PFDA) in pregnancy had increased risk for miscarriage compared to women in the lowest tertile.

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Abstract: Perfluorinated alkylated substances (PFAS) have been extensively used in consumer products and humans are widely exposed to these persistent compounds. A recent study found no association between exposure to perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) and miscarriage, but no studies have examined adverse effect of the more recently introduced PFASs. We therefore conducted a case-control study within a population-based, prospective cohort during 2010-2012. Newly pregnant women residing in the Municipality of Odense, Denmark were invited to enroll in the Odense Child Cohort at their first antenatal visit before pregnancy week 12. Among a total of 2,874 participating women, 88 suffered a miscarriage and 59 had stored serum samples, of which 56 occurred before gestational week 12. They were compared to a random sample (N=336) of delivering women, who had also donated serum samples before week 12. Using a case-control design, 51 of the women suffering a miscarriage were matched on parity and gestational day of serum sampling with 204 delivering women. In a multiple logistic regression with adjustment for age, BMI, parity and gestational age at serum sampling, women with the highest tertile of exposure to perfluorononanoic acid (PFNA) and perfluorodecanoic acid (PFDA) in pregnancy had odds ratios for miscarriage of 16.5 (95% CI 7.4-36.6-36.5) and 2.67 (1.31-5.44), respectively, as compared to the lowest tertile. In the matched data set, the OR were 37.9 (9.9-145.2) and 3.71 (1.60-8.60), respectively. The association with perfluorohexane sulfonic acid (PFHxS) was in the same direction, but not statistically significant, while no association was found with PFOA and PFOS. Our findings require confirmation due to the possible public health importance, given that all pregnant women are exposed to these widely used compounds.

Keywords: perfluorinated compounds, miscarriage