No association between perfluorinated compounds and preeclampsia in the highly exposed population of Ronneby, Sweden

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Background: Previous studies examining associations between poly- and perfluorinated alkyl substances (PFAS) and preeclampsia have shown inconsistent results. In 2013, high levels of perfluorooctane sulfonate (PFOS), perfluorohexane sulfonate (PFHxS) and perfluorooctanoic acid (PFOA) were detected in the municipal drinking water in Ronneby, Blekinge county, Sweden. The contamination had likely been ongoing for 30 years. This study aimed to investigate the association between residential exposure to PFAS and preeclampsia.

Methods: All singleton births occurring during 1993 to 2013 in Blekinge, together with information on maternal diagnoses, were retrieved from the Medical Birth Register (n=30916). Information on residential exposure was retrieved from the Total Population Register. The three years before pregnancy was defined as the exposure-window of interest and women were categorized as exposed (residential address in Ronneby receiving contaminated water, n=1542), unexposed (residential address in Ronneby receiving uncontaminated water, n=4996) or controls (residential address outside Ronneby in Blekinge, n=24378). We used multilevel logistic regression to estimate associations between preeclampsia, including gestational hypertension, and residential PFAS exposure while adjusting for confounding by maternal body mass index, age, smoking status, birth country, education level and parity.

Results: We did not find an increased odds ratio of preeclampsia in women who had been resident in the area receiving contaminated water, neither compared to the control group (adjusted OR: 0.839, 95% CI: 0.640-1.101) nor compared to the population living in the unexposed area (adjusted OR: 0.939, 95% CI: 0.696-1.267).

Conclusions: We did not find any evidence of an association between residential exposure to PFAS and preeclampsia.