

IN UTERO EXPOSURE TO DRINKING WATER FROM DIFFERENT SOURCES AND EARLY POSTNATAL WEIGHT GROWTH VELOCITY. RESULTS FROM THE FRENCH EDEN MOTHER-CHILD COHORT

Jérémie Botton, Centre for Research in Epidemiology and Population Health (CESP) Inserm UMR-S 1018 – Université Paris-Sud, France

Yves Levi, UFR de Pharmacie – Université Paris-Sud, France

Jean-Claude Parnaudeau, Agence Régionale de Santé (ARS) de Poitou-Charentes, France

Marie-Agnès Pilard, Agence Régionale de Santé (ARS) de Lorraine, France

Philippe Romac, Agence Régionale de Santé (ARS) de Lorraine, France

Rémy Slama, Institut Albert Bonniot – Inserm U823 and University J. Fourier of Grenoble, France

Marie-Aline Charles, Centre for Research in Epidemiology and Population Health (CESP) Inserm UMR-S 1018 – Université Paris-Sud, France

and the EDEN study group

Background and Aims: There are sparse data about the potential effects of maternal exposure to tap water contaminants during pregnancy on child development and growth. As analytical chemistry is not able to identify all contaminants, a global approach could be usefully complementarily used. We studied the relationship between water consumption and infant growth, according to the source supplying tap water.

Methods: The EDEN cohort included 2002 women in the cities of Nancy and Poitiers before the 24th gestational week. Addresses were geo-localised and merged with data from Regional Health Agencies to get source of water used to produce tap water (surface, ground or mixed). Water consumption habits during the 1st trimester of pregnancy were estimated by self questionnaire. Infant postnatal weight growth during the first year was modelled using a mixture of measured and parent-reported data. We used regression models and partial correlation coefficients taking confounders such as breastfeeding, parental socioeconomic factors and anthropometric measurements into account.

Results: Women from Nancy were more exposed to surface water (52% *versus* 14% in Poitiers; $p < 0.0001$). Birth weight and postnatal weight growth velocities were not significantly different between the cities. There was no significant relationship between maternal exposure to surface water and early weight growth velocities. However, weight growth velocities at one and three months were positively associated with the amount of consumed water among the women exposed to surface water ($r = 0.11$, $p = 0.03$ at 1 month) but not in the others ($r = 0.00$, $p = 0.98$; p -for-interaction = 0.09). There was no interaction with child gender (all $p > 0.20$).

Conclusions: We highlighted a weak association between amount of consumed water and postnatal weight growth in mothers exposed to tap water from sources of a lower global quality. These results encourage collecting data on water source in the birth cohorts. If they were replicated, incriminated compounds should be identified.