

PFAS exposure and association with polycystic ovarian syndrome

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Background

Polycystic ovarian syndrome (PCOS) is a common endocrine disorder that affects women in reproductive age. Common features are irregular menses, hirsutism and anovulatory infertility. The etiology is multifactorial and the endocrine characteristics implicate that endocrine disruptive chemicals in the environment could be a driver for onset of disease. Perfluorinated and polyfluorinated substances (PFAS) are persistent manmade substances that may possess endocrine disrupting properties on reproductive hormones. The few studies available on PFAS exposure and PCOS indicates PFAS to play a role in the etiology of disease, but the results are inconclusive.

In 2013 high levels of PFAS were found in the drinking water from one of the two waterworks in the municipality Ronneby, Sweden. Biomonitoring revealed very high serum levels of PFAS. The purpose was to investigate the association between PFAS exposure and PCOS.

Methods

The cohort consisted of all women residing in Ronneby municipality between 1985 and 2013. Exposure was assessed based on yearly residence address and waterworks supply data. Diagnoses were obtained from the National Board of Health and Welfare in Sweden up to 2013. A Cox proportional hazards model, with calendar year on the time axis, was used to estimate the associations between PFAS exposure and disease.

Results

A total of 29 856 women were included between 1985 and 2013. Of these, 7823 (26%) had resided in the area with contaminated drinking water. In total there were 161 cases of PCOS. We found significantly increased HRs for PCOS in women aged 20 to 50 years old in the highest exposure category. Also, results for uterine fibroids and endometriosis will be presented.

Conclusion

PFAS exposure in drinking water was associated with an increased risk for PCOS.