

PERSISTENT ORGANIC POLLUTANTS AND ENDOMETRIOSIS: IMPORTANCE OF BIOLOGIC MEDIA FOR DEFINING EXPOSURE - THE ENDO STUDY

Germaine Buck Louis, *NICHD, USA*
C. Matthew Peterson, *University of Utah, USA*
Mary Croughan, *University of California, USA*
Zhen Chen, *NICHD, USA*
Rajeshwari Sundaram, *NICHD, USA*
Mary Hediger, *NICHD, USA*
Joseph Stanford, *University of Utah, USA*
Michael Varner, *University of Utah, USA*
Linda Giudice, *University of California, San Francisco*
Victor Fujimoto, *University of California, San Francisco*
Patrick Parsons, *Wadsworth Center, USA*
Kannan Kurunthachalam, *Wadsworth Center, USA*

Background and Aims: Persistent organic pollutants (POPs) have been associated with endometriosis, though with equivocal results possibly reflecting choice of biospecimen. We sought to assess this relation using omental fat as a measure of internal dose then compared findings with serum concentrations to assess the consistency.

Methods: We used a population-based matched exposure cohort design to establish an operative cohort of women aged 18-44 years undergoing laparoscopy from 14 clinical centers (n=495) for capture of incident endometriosis, and a similarly aged population cohort residing within 40 miles of the clinical centers who underwent pelvic magnetic resonance imaging (MRI) for the identification of incident endometriosis (n=131). All women completed baseline interviews, anthropometric assessment and provided blood and urine specimens, 2007-2009. Surgeons obtained visceral fat and completed standardized operative reports for gynecologic pathology and endometriosis staging. Two radiologists completed all standardized MRI. Using high-resolution mass spectrometry, fat and serum concentrations were quantified for organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and polybrominated diphenyl ethers (PBDEs) in fat and serum. All chemical concentrations were log transformed prior to inclusion in logistic regression models when estimating odds ratios (OR) and 95% confidence intervals (CIs) for visually-diagnosed endometriosis adjusting for age, cotinine, body mass index, and a conditional parity-breastfeeding variable.

Results: Fat concentrations were higher than serum POP concentrations. In unadjusted models, significantly increased ORs for endometriosis were observed for hexachlorobenzene (HCB; OR=3.04), PBDE #183 (OR=1.3), PCB #28 (OR=1.64), PCB #151 (OR=15.01), and PCB #201 (OR=4.37), but only when using fat. HCB remained significant in adjusted models (OR=2.49; 95% CI 1.07-5.79). Further model exploration is underway, given the reduction conferred by cotinine (OR=0.88; 95% CI 0.79-0.99).

Conclusions: POPs were associated with endometriosis when using both the gold standard for internal dose (fat) and diagnosis (laparoscopy). Reliance on other biospecimen proxies may mask relations between lipophilic chemicals and endometriosis.