PRENATAL EXPOSURE TO ORGANOCHLORINE COMPOUNDS (OCs) IN RELATION TO BIRTHWEIGHT AND DURATION OF GESTATION: THE SPANISH INMA PROJECT

Mikel Basterrechea, *Public Health Division of Gipuzkoa, Basque Government, Spain; Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP); Health Research Institute, Biodonostia, San Sebastián, Spain*
Aitana Lertxundi, *University of Basque Country, Spain; Health Research Institute, Biodonostia, San Sebastián, Spain*
Carmen Iñiguez, *Unit of Environment and Health, Centre for Public Health Research (CSIP), Valencia, Spain; Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP)*
Mónica Guxens, *Hospital del Mar Research Institute (IMIM), Center for Research in Environmental Epidemiology (CREAL), Barcelona, Spain; Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP)*
Mario Murcia, *Unit of Environment and Health, Centre for Public Health Research (CSIP), Valencia, Spain, Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP)*
Michelle Mendez, *Hospital del Mar Research Institute (IMIM), Center for Research in Environmental Epidemiology (CREAL), Barcelona, Spain; Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP)*
Fernando Goñi, *Public Health Labortory, Basque Government, Spain; Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP); Health Research Institute, Biodonostia, San Sebastián, Spain*
Joan Grimalt, *Department of Environmental Chemistry, Institute of Environmental Assessment and Water Research (IDAEA-CSIC), Barcelona, Spain; ; Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP)*
Marieta Fernández, *University of Granada, San Cecilio Universitary Hospital, Granada, Spain*

Background and aims: To evaluate associations between prenatal organochlorine compounds (OC) exposure and birthweight and duration of gestation in a population with low exposure levels.
Methods: The analysis included 1527 mother-child pairs from three sub-cohorts of the INMA project (www.proyectoinma.org) recruited during pregnancy between 2003-2008. Polychlorinated biphenyls (PCBs 138, 153, 180 and the total), p,p´-dichlorodiphenyldichloroethylene (p,p'-DDE), hexachlorobenzene (HCB) and • -hexachlorocyclohexane were measured in maternal serum obtained in weeks 10-13 of gestation. Multivariable linear regression was used to assess the association between the exposure to these compounds and birthweight and gestation duration adjusting for potential confounders.
Results: The mean (sd) gestational age was 39.7 (1.6) weeks and mean birthweight 3254.8 (465.7) grams. After multivariate adjustment including other OCs, the increase levels of p,p'-DDE were significantly negatively associated with gestation duration among male infants (• =-0.129; 95%CI: -0.251 to -0.007), but not among females. Among infants of both sexes whose mothers smoked during pregnancy (31,7% of the sample), p,p'-DDE was also associated with shorter gestation duration after multivariable adjustment (• =-0.192; 95%CI: -0.356 to -0.028) and PCBs were associated with significant reductions in birthweight among infants (• =-50.474; 95%CI: -99.442 to -1.506); these associations were marginally non-significant after adjusting for other OCs. When OCs were categorized in quartiles, the main differences were found betwen the first and the fourth quartile (p,p'-DDE: • 0.43 vs. >0.16 • g/L; • PCBs: • 0.43 vs. >0.91 • g/L).
Conclusions: Results suggest infants of women who smoke during pregnancy may be vulnerable to adverse effects of low-level p,p'-DDE exposure on the duration of gestation and to effects of PCB exposure on birthweight. Overall, boys also appeared to be more susceptible than girls to negative effects of p,p'-DDE on the duration of gestation.