

ASSOCIATIONS OF PERSISTENT ORGANIC POLLUTANTS WITH ABDOMINAL OBESITY IN THE ELDERLY: THE PROSPECTIVE INVESTIGATIONS OF THE VASCULATURE IN UPPSALA SENIORS (PIVUS) STUDY.

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Background and Aims: Although experimental studies observed that persistent organic pollutants (POPs) could induce visceral obesity, there is little human study on this possibility. This study aimed to evaluate associations between POPs and abdominal obesity using both cross-sectional and prospective data.

Methods: Twenty one POPs (including 16 polychlorinated biphenyl (PCB) congeners, 3 organochlorine (OC) pesticides, 1 brominated diphenyl ether (BDE), and 1 dioxin) were measured in plasma collected at baseline in 969 participants aged 70 years of the Prospective Investigation of the Vasculature in Uppsala Seniors (PIVUS). Prospective analyses were based on 511 participants re-examined after 5 years. Abdominal obesity was defined by an increased waist circumference using the APTIII/NCEP-criteria.

Results: At age 70, 322 subjects were abdominally obese. Plasma concentrations of the less chlorinated PCBs, OC pesticides such as p,p-DDE and dioxin were associated with increased risk of abdominal obesity (adjusted odds ratios of 2 to 3). Many of relations had inverted U-shapes rather than being linear, in particular in women. On the contrary, serum concentrations of highly chlorinated PCBs were strongly inversely associated with abdominal obesity. As plasma concentrations of POPs were highly correlated, when summary measures of the less chlorinated PCBs, highly chlorinated PCBs, and OC pesticides were included in one model, both the positive associations and inverse associations became strengthened. During 5 years follow-up, 100 subjects developed abdominal obesity. Similar associations, however less powerful, were seen between POPs and risk of development of abdominal obesity.

Conclusion: Using both a cross-sectional and a prospective design, low-dose exposure to some POPs, like low-chlorinated PCBs, p,p-DDE, and dioxin, were found to contribute to the development of abdominal obesity, while high-chlorinated PCBs seem to induce the opposite effect in an elderly population.