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Air pollution and atherosclerosis : a cross-sectional analysis of four European cohort studies in the ESCAPE study

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In four European cohorts, we investigated the cross-sectional association between long-term exposure to air pollution and intima-media thickness of the common carotid artery (CIMT), a preclinical marker of atherosclerosis.; Individually assigned levels of nitrogen dioxide, nitrogen oxides, particulate matter $\leq$ 2.5 μm (PM2.5), absorbance of PM2.5 (PM2.5abs), PM10, PMcoarse, and two indicators of residential proximity to highly trafficked roads were obtained under a standard exposure protocol (European Study of Cohorts for Air Pollution Effects-ESCAPE study) in the Stockholm area (Sweden), the Ausburg and Ruhr area (Germany), and the Girona area (Spain). We used linear regression and meta-analyses to examine the association between long-term exposure to air pollution and CIMT.; The meta-analysis with 9,183 individuals resulted in an estimated increase in CIMT (geometric mean) of 0.72% (95% CI: -0.65%, 2.10%) per 5-μg/m3 increase in PM2.5 and 0.42% (95% CI: -0.46%, 1.30%) per 10-5/m increase in PM2.5abs. Living in proximity to high traffic was also positively but not significantly associated with CIMT. Meta-analytic estimates for other pollutants were inconsistent. Results were similar across different adjustment sets and sensitivity analyses. In an extended meta-analysis for PM2.5 with three other previously published studies, a 0.78% (95% CI: -0.18%, 1.75%) increase in CIMT was estimated for a 5-μg/m3 contrast in PM2.5.; Using a standardized exposure and analytical protocol in four European cohorts, we found that cross-sectional associations between CIMT and the eight ESCAPE markers of long-term residential air pollution exposure did not reach statistical significance. The additional meta-analysis of CIMT and PM2.5 across all published studies also was positive but not significant.;
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