Air pollution from road traffic and systemic inflammation in adults : a cross-sectional analysis in the European ESCAPE project

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Exposure to particulate matter air pollution (PM) has been associated with cardiovascular diseases.; In this study we evaluated whether annual exposure to ambient air pollution is associated with systemic inflammation, which is hypothesized to be an intermediate step to cardiovascular disease.; Six cohorts of adults from Central and Northern Europe were used in this cross-sectional study as part of the larger ESCAPE project (European Study of Cohorts for Air Pollution Effects). Data on levels of blood markers for systemic inflammation-high-sensitivity C-reactive protein (CRP) and fibrinogen-were available for 22,561 and 17,428 persons, respectively. Land use regression models were used to estimate cohort participants' long-term exposure to various size fractions of PM, soot, and nitrogen oxides (NOx). In addition, traffic intensity on the closest street and traffic load within 100 m from home were used as indicators of traffic air pollution exposure.; Particulate air pollution was not associated with systemic inflammation. However, cohort participants living on a busy (< 10,000 vehicles/day) road had elevated CRP values (10.2%; 95% CI: 2.4, 18.8%, compared with persons living on a quiet residential street with > 1,000 vehicles/day). Annual NOx concentration was also positively associated with levels of CRP (3.2%; 95% CI: 0.3, 6.1 per 20 μg/m3), but the effect estimate was more sensitive to model adjustments. For fibrinogen, no consistent associations were observed.; Living close to busy traffic was associated with increased CRP concentrations, a known risk factor for cardiovascular diseases. However, it remains unclear which specific air pollutants are responsible for the association.
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