Acute coronary syndrome and long-term exposure to air pollution: a cohort study

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Background and Aim: Air pollution is one of the most important triggers of myocardial infarction.[1] Long-term exposure was also linked to coronary heart disease including myocardial infarction, but data show consistent associations only with fatal events.[2] We studied the association between exposure to traffic-related air pollution over 35 years and incidence of acute coronary syndrome (ACS) in a prospective cohort study.

Methods: We followed 57 053 participants of the Danish Diet, Cancer and Health cohort since baseline (1993-1997) until 2006 in the Danish National Patient Register for incident (first-ever admission) cases of ACS, and included only confirmed cases through review of hospital records. ACS diagnoses include myocardial infarction, angina pectoris, and cardiac arrest. We estimated the annual mean levels of nitrogen dioxide (NO_2) at residential addresses of the cohort participants since 1971, and linked mean levels of NO_2 to incident ACS by Cox regression analyses. We tested for modification of the effect of air pollution by gender, body mass index, waist-to-hip ratio, smoking status, physical activity, and educational level.

Results: Over a mean follow-up of 9·7 years of 50 141 eligible subjects, there were 1 535 (3.1%) incident ACS cases. We detected significant association between incident ACS and mean levels of NO_2 since 1971 (hazard ratio 1.09; 95% confidence interval 1.02-1.16, per IQR), as well as with proxies of major road within 50m (1.24; 1.06-1.46) and 100m (1.17; 1.03-1.32) at baseline.

Conclusions: Long-term exposure to traffic related air pollution may increases the risk of coronary heart disease.

References:

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