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Abstract

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**CORE 2. EPIDEMIOLOGY AND PREVENTION OF CV DISEASE:
PHYSIOLOGY, PHARMACOLOGY AND LIFESTYLE
SESSION TITLE: IMAGING IN CV RISK ASSESSMENT**

Abstract 13217: Effect Modification of Airborne Particulate Matter on Subclinical Atherosclerosis by Risk Factor Burden: The Multi-Ethnic Study of Atherosclerosis (MESA)

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Originally published 26 Mar 2018 | Circulation. 2018;124:A13217

Abstract

Background: Associations between airborne particulate matter and subclinical measures of atherosclerosis have been inconsistent. We hypothesized that cardiovascular risk factor burden may modify the effect of particulate matter exposures on subclinical atherosclerosis.

Methods: We used cross-sectional data from the Multi-Ethnic Study of Atherosclerosis (MESA), a multi-center cohort study of individuals 45 to 84 years of age who were free of clinical CVD at baseline (2000-2002). Long-term exposures to particulate matter $<2.5 \mu\text{m}$ ($\text{PM}_{2.5}$) and $<10 \mu\text{m}$ (PM_{10}) in aerodynamic diameter were estimated using a spatio-temporal model based on regulatory monitoring data and land-use covariates. Outcomes included common carotid intimal-media thickness (CIMT), ankle-brachial index (ABI), and coronary

artery calcification (CAC) at the baseline exam. Participants were categorized into 4 strata of risk factor burden based upon their levels of blood pressure, total cholesterol, glucose, smoking status, BMI and medications: (1) All Optimal; (2) No Risk Factors High, But ≥ 1 Unfavorable; (3) 1 Risk Factor High; (4) ≥ 2 Risk Factors High. Linear and binomial regression were used as appropriate and adjusted for age, sex, race/ethnicity, site and SES.

Results: Of the 5,132 participants included in this analysis, 298 (5.8%) had optimal levels of risk factors, 2,166 (42.2%) had 1+ elevated risk factors, 893 (17.4%) had 1 high risk factor, and 1,775 (34.9%) had 2+high risk factors. Increasing risk factor burden was associated with being African American, less education and lower SES. The prevalence and severity of subclinical atherosclerosis increased with increasing risk factor burden. PM_{10} and $PM_{2.5}$ exposures were similar across risk factor strata with means (SD) of 34.1 (7.6) $\mu g/m^3$ and 21.9 (5.0) $\mu g/m^3$, respectively. There were no significant associations with CIMT, ABI or CAC and particulate matter at any level of risk factor burden. Nor was there evidence of differences in association by strata (p values for interaction terms ranged from 0.48-0.97).

Discussion: No associations between $PM_{2.5}$ and PM_{10} levels and subclinical CVD were observed. Cardiovascular risk factor burden does not appear to modify this relationship. Future studies are needed to confirm these findings.

Footnotes

[Previous](#)

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[Next](#)