
Pesticides and myocardial infarction incidence and mortality among male pesticide applicators in the Agricultural Health Study

K Mills, University of North Carolina, Chapel Hill, NC; A Blair, National Cancer Institute, National Institutes of Health, Bethesda, MD; DP Sandler, JA Hoppin, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, NC.

Background: Acute organophosphate and carbamate pesticide poisonings have been shown to result in adverse cardiac outcomes. Low-level pesticide exposure has not been assessed as a potential risk factor for myocardial infarction (MI).

Methods: Using data from the Agricultural Health Study, we analyzed self-reported lifetime use of pesticides from enrollment (1993-1997) and self-reported doctor-diagnosed incident myocardial infarction diagnoses from follow-up interviews (1999-2003) among male pesticide applicators to assess non-fatal MI incidence. We also analyzed mortality through 2004. Using proportional hazard models we estimated the association between lifetime use patterns of 50 pesticides and myocardial infarction incidence and mortality.

Results: We observed 665 nonfatal self-reported MI incidents among the 27,231 participants who completed the follow-up interview and 452 MI deaths among the 55,569 men enrolled in the study. We saw associations between MI incidence and mortality and commonly associated risk factors, including age, BMI, and history of smoking. However, we saw no evidence of an association between MI and ever having used pesticides, individually or by class (e.g., organophosphate hazard rate ratio (HRR) = 0.88, 95% confidence interval (CI) = 0.69, 1.12, carbamate HRR = 1.11, 95% CI = 0.92, 1.35, organochlorine HRR = 1.19, 95% CI = 0.99, 1.44). Additionally, there was no evidence of a dose response with any measure of pesticide exposure. The study has 80% power to detect hazard rate ratios as low as 1.24 and 1.57 for pesticides with exposure prevalence of 50% and 5%, respectively.

Conclusions: In a population with low risk for MI, we see no increased risk of MI incidence or mortality associated with the occupational use of pesticides.