

Depression and Cardiovascular Events in Women: Do Inflammatory Markers Explain this Relationship? The NHLBI-Sponsored Women's Ischemia Syndrome Evaluation (WISE) Study

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Background: Recent evidence shows depression and inflammation as risk factors for cardiovascular (CV) events, and depression associated with higher levels of inflammatory markers. We hypothesized that inflammation may explain the link between depression and CV outcomes in women.

Methods: We evaluated the relationship among high-sensitivity C-reactive protein (CRP), Beck Depression Inventory (BDI) scores, and CV events in 551 women undergoing coronary angiography for suspected ischemia. CV events were defined as myocardial infarction, congestive heart failure, stroke, and CV mortality over a median 5.2 years of follow-up. Because of skewed distributions, CRP was log transformed.

Results: Mean age was 58±11 years, 17% were non-white, 32% had coronary artery disease (CAD), 55% had high CRP (>3.0 mg/L), 28% were depressed (BDI > 14), and 75 (14%) had a CV event. Mean BDI increased by CRP tertiles (9.0, 10.4, 12.4 [p=0.0002]). LogCRP (hazard ratio [HR] 1.41 [1.17, 1.69] p=0.0003) and BDI (HR 1.04 [1.01, 1.07], p=0.002) were univariate predictors of CV events. When combined into one model, the estimate for BDI was reduced by 22% (p=0.02) while that for CRP by 14% (p=0.002). Both variables remained independent predictors of CV events after adjusting for CAD severity and traditional CAD risk factors, including obesity. However, when adding smoking to the model, BDI was no longer significant (p=0.16) while CRP was (p=0.02).

Conclusion: In women undergoing coronary angiography, about a quarter of the association between depression and CV events is explained by increased inflammation. Much of this relationship may be mediated by smoking.