



Ischemic Heart Disease

MENTAL STRESS-INDUCED AUTONOMIC DYSFUNCTION IS ASSOCIATED WITH CARDIOVASCULAR MORTALITY

Moderated Poster Contributions

Ischemic Heart Disease Moderated Poster Theater 7_Hall F

Sunday, March 5, 2023, 2:45 p.m.-2:55 p.m.

Session Title: Addressing the Many Complexities of Ischemic Heart Disease

Abstract Category: 23. Ischemic Heart Disease: Population Science

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Background: Cardiovascular disease (CVD) mortality remains a leading cause of death, but our understanding of its pathogenesis is incomplete. Acute stress may lead autonomic activation which can increase CVD death risk. Electrocardiographic measures of vagal withdrawal during acute psychological stress episodes may help illuminate important pathways linking stress and CVD death.

Methods: We studied a pooled cohort of 765 participants with stable coronary heart disease (CHD) from 2 prospective studies. All patients underwent mental stress testing with a standardized speech stressor while also undergoing Holter monitoring. We assessed vagal function with high frequency heart rate variability (HF HRV), defining rest HF as the period before mental stress and HF reactivity as the change during mental stress. Participants were followed for events up to 5 years and CVD mortality was independently adjudicated. The relationship of log transformed HF HRV with CVD death was assessed using multivariable Cox proportional hazards models, with adjustment for demographic factors, traditional risk factors, coronary artery disease burden, and ejection fraction.

Results: The mean (SD) age was 58 (10) years, 35% were women, and 44% were Black; 37 CVD deaths occurred after a median follow-up of 5.6 years. On average, HF HRV declined with mental stress by 0.5 ln ms². Each standard deviation (SD) lower rest HF was associated with a hazard ratio (HR) of 1.8 (95% CI, 1.3 - 2.5) of CVD death in adjusted models. Each SD reduction in HF reactivity was associated with an additive HR of 2.1 (95% CI, 1.4 - 3.1). Those who had below median values, which was considered abnormal, of both rest HF and HF reactivity had a HR of 3.5 (95% CI, 1.2 - 10) for CVD mortality compared with those who had above median values of rest HF. No events occurred in those with above median values of both rest HF and HF reactivity.

Conclusion: Among participants with stable CHD, electrocardiographic measures of acute vagal withdrawal both at rest and during acute stress are robustly associated with increased risk for CVD death. Vagal pathways during acute stress may play an important role in CVD death in CHD patients.