THE PROGNOSTIC UTILITY OF AN ECHO-ESTIMATED LEFT VENTRICULAR END-DIASTOLIC PRESSURE-VOLUME RELATIONSHIP IN PATIENTS WITH STABLE CORONARY ARTERY DISEASE: THE HEART & SOUL STUDY

Moderated Poster Contributions
Hall C
Saturday, March 29, 2014, 10:30 a.m.-10:45 a.m.

Session Title: Echocardiography: From Utilization to Prognostication
Abstract Category: 15. Non Invasive Imaging: Echo
Presentation Number: 1129M-363C

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Background: Shifts in the left ventricular end-diastolic pressure-volume relationship (LV-EDPVR), reflecting pathologic changes in intrinsic ventricular diastolic chamber properties, can be estimated using echocardiography. However, the prognostic utility of these echo-estimated changes in the LV-EDPVR in patients with stable coronary artery disease (CAD) is unknown.

Methods: We used echocardiographic measurements to estimate the relative position of LV-EDPVR in 868 patients with stable CAD as left-shifted (small or normal LV end-diastolic volume index, moderate or severe diastolic dysfunction), right-shifted (severely increased LV end-diastolic volume index) or intermediate (not left- or right-shifted). We then evaluated the association of LV-EDPVR position with time to hospitalization for heart failure (HF) or cardiovascular (CV) death using Cox proportional hazards models.

Results: During 7.0±3.1 years of follow-up, there were 211 admissions for HF or CV deaths. Compared with the intermediate LV-EDPVR, both leftward and rightward shifts of LV-EDPVR were associated with a significantly higher risk of HF or CV death (HR 1.73, 95% CI 1.16 - 2.56 and HR 6.85, 95% CI 4.33 - 10.84, respectively). These associations were attenuated but remained significant for both left- and right-shifted LV-EDPVR in multivariable adjusted models (HR 1.72, 95% CI 1.07 - 2.74 and HR 1.93, 95% CI 1.01 - 3.66, respectively). In the subgroup of patients with preserved LV ejection fraction (≥50%; n=769), only a left-shifted LV-EDPVR was associated with HF or CV death (HR 1.84, 95% CI 1.10-3.08) in the fully adjusted model.

Conclusions: In patients with stable CAD, echo-estimated shifts in the LV-EDPVR are associated with HF and CV death. While both leftward and rightward shifts in LV-EDPVR are associated with a higher risk of HF or CV death in the entire study population, only a left-shifted LV-EDPVR is associated with a higher risk in participants with preserved LV ejection fraction.