Abstract: P294

Impact of diastolic function and age on global and territorial coronary vascular function

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Background

The assessment of left ventricular diastolic dysfunction (LVDD) by SPECT myocardial perfusion imaging (MPI) has been reported to be stable. LVDD has been associated with impairments in coronary microvascular function. To advance understanding of LVDD measurements obtained by SPECT, we investigated the interactions between LVDD and age on coronary flow reserve (CFR).

Methods

We studied SPECT MPI images of consecutive subjects who underwent vasodilator gated MPI stress and rest studies. Measurements of LVDD, CFR and myocardial perfusion were obtained in the same setting, using standard software package. LVDD parameters studied were peak-filling rate (PFR; highest filling rate in early diastole normalized to end-diastolic volume) and time to peak filling (TTPF; interval between end-systole and PFR). Global CFR was calculated by dividing global stress myocardial blood flow (MBF) with global resting MBF.

Results

Forty-nine subjects (mean age 65 ± 8 years; 40 (82%) males) underwent clinically indicated SPECT MPI (36 (73%) were normal (summed stress score <3). PFR correlated with global CFR (r=-0.39, p=0.019), left anterior descending artery (LAD) flow reserve (r=-0.41, p=0.014) and left circumflex artery (LCX) flow reserve (r=-0.37, p=0.027). Age was associated with reductions in global (r=-0.40, p=0.016) and territorial CFR (LAD: r=-0.38, p=0.023; right coronary artery (RCA) r=-0.38, p=0.024). Gender and TTPF were not associated with CFR. Both PFR (β=-0.14, 95%CI -0.27,-0.003, p=0.046) and age (β=-0.029, 95%CI -0.055,-0.004, p=0.027) were independently associated with LAD flow reserve on multivariate adjustments.

Conclusion

Diastolic function on routine SPECT MPI is associated with global and territorial coronary flow reserve, independent of age-related reductions in coronary flow reserve, particularly in the left anterior descending artery. Future investigations into coronary vascular health should consider the impact of LVDD on CFR measurements.