DETERMINANTS OF TEMPORAL CHANGE IN REGIONAL MYOCARDIAL FUNCTION: THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS (MESA)

Poster Contributions
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Aim: To assess the relation between baseline traditional cardiovascular risk factors and longitudinal change in regional myocardial function.

Methods: 848 participants (63±9 years, 49.9% men) underwent 2 CMR tagging exams separated by a period of 8 years. Mid-ventricular mid-wall circumferential (Ecc %), and radial strain (Err %) and global torsion (\[\text{\text{\[Unable to Display Character: ̊\]\]}}/cm\] were determined by harmonic phase analysis. By convention, Ecc is negative and reduced absolute values indicate decreased regional function. The association of traditional risk factors with strain and torsion was evaluated by multivariable linear regression (B=Regression coefficient) adjusted for baseline age, ethnicity (Caucasian: reference, African American, Chinese and Hispanic), systolic BP, heart rate, diabetes, cigarette smoking, baseline and year 8 anti hypertensive medication and lipid lowering medication use, left ventricular mass index (LVMi), and baseline function.

Results: In women, Ecc improved (-15.6±2.8 to -16.5±3, p=0.0001), torsion increased (4.1±1.2 to 4.8±1.4, p=0.0001) and Err decreased (19.4±4.5 to 17±4.6, p=0.0001). In men, Ecc (-15.3±2.7 to -14.9±3.2, p=0.05) and Err (20.1±4.6 to 18.1±4.6, p=0.0001) worsened and torsion increased (3.4±1.1 to 3.7±1.1, p=0.002) over 8 years. Hispanic ethnicity (B=0.9) and baseline Ecc (B=0.8) were associated with improvement in Ecc regardless of gender. Age (B=0.04) and LVMi (B=0.04) in women; smoking (B=1.09), diabetes (B=1.6) and LVMi (B=0.02) in men were associated with worsening of Ecc. Chinese ethnicity (B=0.4), systolic BP (B=0.01) and heart rate (B=0.01) were associated with increase and LVMi (B=0.01) and baseline torsion (B=0.7) were associated with decrease in torsion in men. Systolic BP (B=0.007) was associated with increase; LVMi (B=0.02) and baseline torsion (B=0.02) were associated with a decrease in torsion in women. Baseline Err (B=0.8) was associated with decrease in Err in both genders.

Conclusion: Ecc improved in women and worsened in men. In both genders, torsion increased and Err decreased over 8 years. Predictors for change in function were different in men and women.