Heart Failure and Preserved Ejection Fraction in African-Americans: The ARIC Study


Introduction: African-Americans (AA) are at increased risk for heart failure (HF). Nevertheless, there are limited phenotypic and prognostic data in AA with HF and preserved ejection fraction (HFpEF) compared to those with HF and reduced ejection fraction (HFrEF) and those without HF. Methods: Middle-aged AA participants from the Jackson cohort of the Atherosclerosis Risk in Communities (ARIC) study (n=2445) underwent echocardiography between 1993-1996. HF status was available in 1962 for whom left ventricular ejection fraction (LVEF) could be quantified. Participants with prevalent HF were categorized as HFrEF (LVEF < 50%) or HFpEF (LVEF < 50%). We compared clinical characteristics, cardiac structure and function, and all cause mortality between HFpEF and those without HF, and between HFrEF and HFpEF. Results: Prevalent HF was found in 116 participants in the time of echocardiography (73% HFpEF, 27% HFrEF). Compared to those without HF, those with HFrEF were older, female, had more frequent comorbidities, and concentric hypertrophy. In relation to HFpEF, those with HFrEF were more likely female, but less likely to have coronary heart disease, diabetes mellitus, chronic kidney disease, left atrial enlargement, and eccentric hypertrophy. Over a median 13.7 years of follow up, risk of death differed between these groups, with age and sex adjusted hazard ratios of 1.51 (95%CI 1.01-2.25) for HFpEF vs. those without HF, and 2.50 (95%CI 1.37-4.58) for HFrEF vs. HFpEF, Fig. 1. Conclusion: Among middle-aged AA, clinical characteristics as well as cardiac structure and function, significantly differed between HFpEF, HFrEF, and those without HF. HFrEF was more common than HFpEF and portended a worse prognosis than those without HF, but not as severe as HFpEF and no history of CI, stroke or TIA (n=45, mean age 73 yrs), with an age matched cohort of older patients attending a SPC following stroke (HFpEF vs. HFrEF). Design: Retrospective cross-sectional study. Participants: Patients who had an echocardiogram between Jan 2008- Nov 2011 at MetroHealth Medical Center, affiliated with Case Western University, Cleveland, OH. Patients with EF > 50% were included, regardless of heart failure diagnosis. Patients with mechanical valve, severe mitral/ aortic dysfunction, and uncontrolled atrial fibrillation were excluded. Measurements: Data collected included demographics, chronic cardiovascular diseases, cardiovascular medications, blood pressures, LVH, wall motion abnormalities, presence and severity of diastolic dysfunction, HgbA1c levels within 3 months of the echocardiogram. Severity of diastolic dysfunction was graded 0-IIII grade 0 normal, grade I abnormal relaxation, grade II pseudonormal, grade III restrictive. Results: 654 patients were included. Median age was 72, 70% women, 50% Caucasian; nearly 60% were obese or morbidly obese, 90% had HTN, 80% hyperlipidemia, 35% CAD and 4% of patients had renal insufficiency, stroke/TIA and heart failure. Diastolic dysfunction was present in 43% of women and 36% of men. Half of the patients with DD had grade I dysfunction. Patients with diastolic dysfunction were more likely to be female, to have diagnosis of stroke/TIA and PVD and had higher LDL and total cholesterol levels. They also had a higher number of medications and chronic cardiovascular diseases. Compared to those with no DD or type I DD, patients with type II and III DD had higher prevalence of CAD, renal insufficiency, CVA/TIA and PVD. The median number of cardiovascular medications was 3, with twice as many DD patients receiving hydralazine and long acting nitrates, especially in Type II and III DD. A logistic regression model of presence of diastolic dysfunction did not show a significant correlation with HgbA1c, however when severity of DD was evaluated, higher HgbA1c was associated with type I DD, but not with type II and III. Conclusion: In our cohort of elderly patients with type2 DM, the baseline characteristics and comorbidities of patients with type I DD differed significantly compared with patients with type II and III DD. Patients with type I DD had higher HgbA1c levels, suggesting that good diabetic control, along with other risk factor modification, has the potential to decrease the incidence of DD in this patient population.
Right Ventricular Dysfunction in HIV

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Background: HIV-infected individuals are at increased risk for pulmonary hyperten-

sion and cardiomyopathy, portending poor prognosis in the setting of right ventricular (RV) dysfunction. The purpose of the study was to determine the prevalence of RV dysfunction in a healthy outpatient HIV cohort. Methods: We performed echocardiography in 104 adult HIV–infected individuals recruited from a research registry. Measurements included: estimated pulmonary arterial systolic pressure (PAP), RV fractional area of change (RVFAC), tricuspid annular planar excursion (TAPSE), myocardial performance index (MPI) and mid RV free wall longitudinal myocardial strain (RV LMS) via speckle tracking. Results: Sixteen subjects (15%) had PAP > 35 mm Hg, yet RV function (RVFAC, TAPSE, MPI) did not differ signif-
icantly. Eleven subjects had RVFAC <35%, as well as lower TAPSE, RVLMS and LVEF (2.2±0.5 vs 2.6±0.5 cm, 23.9±4.3 vs 27.3±5.5%, 55±6 vs 61±7, respec-
tively, all P<0.05). The lowest TAPSE quartile (<2.2 cm) had no other significant differences. Seventeen subjects (16%) had RV LMS ≤21.6% (i.e., between 0 and -21.6%, previously shown to be associated with decreased regional function) and lower TAPSE (2.3±0.5 vs 2.6±0.5 cm, P=0.02, RV LMS -18.2±1.6% vs -28.7±4.1%, P<0.001), but no differences in other measures. There were 23 subjects with LVEF<55% and these had lower TAPSE (2.4±0.5 vs 2.6±0.5 cm, P=0.03). There was no relationship of CD4 count or viral load to any echocardiographic mea-
sures. Conclusions: The prevalence of global RV dysfunction in this outpatient HIV cohort is 11% defined by RVFAC <35%; however, regional RV dysfunction defined by RVLMS ≤-21.6% is 16%. LVEF<55% co-segregated with a mild decrease in TAPSE (known to decrease LV dysfunction), but not RVLMS. The prevalence of el-
evating RV dysfunction was 15% similar to previous reports, but was not associated with global or regional RV dysfunction. Regional RV dysfunction in asymptomatic HIV may be a separate entity from LV/global cardiomyopathy or pulmonary hypertension and de-

serves further study.

Role of Obstructive Sleep Apnea in the Incidence of Atrial Fibrillation in Elderly Heart Failure Patients

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Introduction: Heart Failure (HF) and Obstructive Sleep Apnea (OSA) are risk fac-

ors for Atrial Fibrillation (AF) in the general population. Advancing age is an inde-

pendent risk factor for AF. The incidence of AF in elderly HF patients with OSA is unclear. Hypothesis: Elderly HF patients with OSA have higher incidence of AF when compared to elderly HF patients without OSA. Methods: A total of 3410 el-

derly patients aged between 65 to 89 years (mean 76.81, median 78, SD 6.73), who presented to a single community medical center, were included in this cross-sec-
tional study. Patients were divided to HF (n=663) and No HF (n=2747) groups. The HF and No HF groups were further divided based on gender and history of OSA. The HF group included 345 males (n=47 with OSA) and 318 female (n=24 with OSA) sub-
nects. The No HF group had 1250 males (n=60 with OSA) and 1497 (n=25 with OSA) females. We studied the incidence of AF in these subjects. We used Co-

chrane-Mantel-Haenszel statistics to test for association of OSA with AF stratified by genders. Logistic regression analysis was performed to assess the correlation of OSA and AF within individual subgroups. Results: In elderly male pa-

tients with HF, the incidence of AF in those with OSA is 49% as compared to 48% in those without OSA (P=0.87). In elderly female patients with HF, the incidence of AF in those with OSA is 42% as compared to 19% in those without OSA (P<0.0001). In elderly female patients with-

out HF, the incidence of AF in those with OSA is 28% compared to 14% in those without OSA (P=0.06). Conclusion: In both male and female elderly patients with HF, the presence of OSA does not significantly affect the incidence of AF.