



AC082

Adult Cardiology & Clinical Cardiovascular Medicine • Poster Presentation

CORRELATES OF LEFT ATRIAL RESERVOIR STRAIN IN A NIGERIAN HYPERTENSIVE COHORT

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Background Left atrial (LA) reservoir strain (LARS), measured by four-dimensional automated LA quantification (4D Auto LAQ), reflects dynamic LA deformation during ventricular systole. Its physiological correlates in African hypertensives, a population with a high burden of hypertensive heart disease, have not been characterised.

Methods 101 consecutive hypertensives (57 male; mean age 52 ± 12 years; BMI 30 ± 7 kg/m²; SBP 130 ± 13 mmHg) underwent comprehensive 3D echocardiography with 4D Auto LAQ software. LARS (longitudinal component) was correlated with age, BMI, SBP, DBP, LVMI, LAEF, E/e', GLS, biplane LAVI, and 3D LAVI using Pearson and Spearman analyses. Independent predictors were identified by multivariable linear regression.

Results Mean LARS was $22.9 \pm 7.7\%$ (range 10.0–56.0%). On univariable analysis, LARS correlated significantly with age ($r = -0.398$; $p < 0.001$), LAEF ($r = 0.379$; $p < 0.001$), LVMI ($r = 0.221$; $p = 0.026$), biplane LAVI ($r = 0.196$; $p = 0.049$), and LV GLS ($r = 0.211$; $p = 0.034$). Left atrial reservoir strain did not correlate with SBP, DBP, E/e', or 3D LAVI. On multivariable regression ($R^2 = 0.282$; adjusted $R^2 = 0.220$), only age ($\beta = -0.190$; 95% CI -0.305 to -0.076 ; $p = 0.001$) and LAEF ($\beta = 0.299$; 95% CI 0.130 to 0.468 ; $p = 0.001$) were independent predictors of LARS. Sex did not significantly influence LARS ($p = 0.165$).

Conclusions In Nigerian hypertensives, 4D LARS is principally determined by age-related LA mechanical decline and LA ejection function, independent of loading conditions or LV geometry.

Keywords: Left atrial reservoir strain; 4D Auto LAQ; hypertension; echocardiography