SUPPLEMENTAL MATERIAL

Association of Central Adiposity With Adverse Cardiac Mechanics:

Findings from the HyperGEN Study

Selvaraj et al: Central Adiposity and Cardiac Mechanics

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Supplemental Table 1. Reproducibility of Speckle-Tracking Echocardiography Parameters (N=96)

Parameter	Mean±SD	Interobserver Reliability			Intraobserver Reliability		
		ICC (95% CI)	Mean bias (95% CI)	CV	ICC (95% CI)	Mean bias (95% CI)	CV
GLS, %	15.3±2.7	0.77 (0.69, 0.85)	0.71 (0.34, 1.08)	9.9%	0.90 (0.87, 0.94)	-0.17 (-0.46, 0.11)	7.2%
Septal e', cm/s	3.4±1.0	0.77 (0.69, 0.86)	0.06 (-0.08, 0.21)	13.8%	0.78 (0.70, 0.85)	0.12 (-0.007, 0.25)	13.7%
Lateral e', cm/s	2.7±1.1	0.76 (0.67, 0.84)	-0.11 (-0.28, 0.06)	26.9%	0.81 (0.75, 0.88)	-0.09 (-0.24, 0.06)	22.3%

GLS = longitudinal strain; SD, standard deviation; ICC = intraclass correlation; CI, confidence interval; CV = coefficient of variation

Supplemental Table 2. Association of Waist-Hip Ratio with Cardiac Mechanics and Filling Pressures on Sensitivity Analysis*

Dependent variable	Serum Aldosterone Adjustment		HOMA-IR Adjustment		Triglyceride and HDL Adjustment		Number of Comorbidities Adjustment	
	β (95% CI)	P-value	β (95% CI)	P-value	β (95% CI)	P-value	β (95% CI)	P-value
Global longitudinal strain, %	-0.23 (-0.40, -0.06)	0.008	-0.24 (-0.43, -0.06)	0.01	-0.21 (-0.38, -0.03)	0.02	-0.22 (-0.39, -0.04)	0.01
Early diastolic strain rate, s^{-1}	-0.03 (-0.04, -0.02)	<0.001	-0.03 (-0.05, -0.02)	<0.001	-0.03 (-0.04, -0.01)	<0.001	-0.03 (-0.04, -0.01)	<0.001
e' velocity, cm/s	-0.13 (-0.20, 0.07)	<0.001	-0.16 (-0.22, -0.09)	<0.001	-0.12 (-0.18, -0.05)	<0.001	-0.12 (-0.18, -0.06)	<0.001
E/e' ratio	1.00 (0.21, 1.81)	0.01	0.79 (0.01, 1.56)	0.046	0.88 (0.06, 1.69)	0.04	0.77 (-0.03, 1.57)	0.059

HOMA-IR, homeostasis model assessment-estimated insulin resistance; HDL, high-density lipoprotein; CI, confidence interval. All strain parameters are reported as absolute values. Beta-coefficients are per 1-SD increase in waist-hip ratio.

*All models adjusted for age, sex, race, body-mass index, systolic blood pressure, heart rate, smoking status, serum fasting glucose, total cholesterol, estimated glomerular filtration rate, anti-hypertensive medication use, left ventricular mass, wall motion abnormalities, ejection fraction, center, speckle-tracking analyst, and image quality. Beta-coefficients for the additional adjustment for 1) serum aldosterone, 2) HOMA-IR, 3) triglyceride and HDL level (instead of total cholesterol), and 4) number of comorbidities are shown here.

Supplemental Table 3. Association of Markers of Subcutaneous Adiposity with Cardiac Mechanics and Filling Pressures After Multivariable Adjustment*

Dependent variable	Subscapularis Skinfold Thickness		Triceps Skinfold Thickness	
	β-Coefficient (95% CI)	P-value	β-Coefficient (95% CI)	P-value
Global longitudinal strain, %	-0.18 (-0.39, 0.03)	0.09	-0.10 (-0.31, 0.10)	0.33
Peak systolic strain rate, s^{-1}	-0.01 (-0.02, 0.00)	0.13	-0.01 (-0.03, -0.00)	0.048
Early diastolic strain rate, s^{-1}	-0.01 (-0.03, 0.00)	0.14	-0.00 (-0.02, 0.01)	0.68
Systolic (s') velocity, cm/s	-0.04 (-0.11, 0.02)	0.20	-0.08 (-0.14, -0.01)	0.02
Early diastolic (e') velocity, cm/s	-0.15 (-0.23, -0.07)	<0.001	-0.12 (-0.19, -0.04)	0.004
E/e' ratio	1.18 (0.16, 2.19)	0.02	0.70 (-0.29, 1.68)	0.17

BMI, body-mass index; CI, confidence interval. All strain parameters are reported as absolute values. Beta-coefficients are per 1-SD increase in each marker of subcutaneous adiposity.

*Adjusted for age, sex, race, body-mass index, systolic blood pressure, heart rate, smoking status, serum fasting glucose, total cholesterol, estimated glomerular filtration rate, anti-hypertensive medication use, left ventricular mass, wall motion abnormalities, ejection fraction, center, speckle-tracking analyst, and image quality.

Supplemental Table 4. Association of Residuals from Regression of Body Mass Index and Waist-Hip Ratio with Indices of Cardiac Mechanics and Filling Pressures

Cardiac mechanics parameter	P-value
Global longitudinal strain, %	<0.001
Peak systolic strain rate, s^{-1}	0.001
Early diastolic strain rate, s^{-1}	<0.001
Systolic (s') velocity, cm/s	0.005
Early diastolic (e') velocity, cm/s	<0.001
E/e' ratio	<0.001

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