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## Imaging

### UTILITY OF ECHOCARDIOGRAPHIC INDICES FOR THE DIFFERENTIAL DIAGNOSIS OF AMYLOIDOSIS AND HYPERTENSIVE HEART DISEASE

ACC Moderated Poster Contributions

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**Background:** Cardiac amyloidosis and hypertensive left ventricular hypertrophy (HLVH) are causes of heart failure with normal ejection fraction with different prognoses and treatments. The conditions are often difficult to distinguish by 2-dimensional echocardiography.

**Methods:** Echocardiographic measurements of cardiac function were compared in age and gender-matched patients with biopsy proven amyloidosis (n = 20, 66.3 ± 9.9 years, 13 male), HLVH (n = 20, 64.9 ± 10.9 years, 13 male), and healthy controls (n = 20, 64.5 ± 9.9 years, 13 male). Amyloid and HLVH patients were also matched for LV wall thickness. LV end-systolic (LVSEV), end-diastolic (LVEDV) volumes, LV mass and left atrial volumes (LAV) and Doppler diastolic function indices were compared among the groups. Syngo Velocity Vector Imaging was used to calculate mean left ventricular longitudinal, circumferential and radial strain. Blood pressure (BP) was recorded at the time of examination.

#### Results:

	Amyloidosis	HLVH	Controls	p-value
LVEDV (ml)	81.5±26.1*	111±39.7	90.9±30.0	0.009
LVESV (ml)	49.4±27.6	55.2±23.0	37.9±17.7	0.471
LAV (ml)	87.2±30.3	89.9±41.5	42.6±14.4	0.813
LV Mass (g)	267±87.4	300±118	131±38.9	0.332
E (cm/s)	84.0±28.3	94.8±38.1	111±177	0.315
E' (cm/s)	5.2±1.1	7.1±2.8	10.2±3.3	0.010
Radial Strain	12.7±6.1	22.1±11.1	24.0±9.9	0.002
Circumferential Strain	-13.6±5.5	-18.5±6.0	-21.5±5.9	0.011
Longitudinal Strain	-7.6±3.4	-12.4±3.7	-15.6±3.7	<0.001
Systolic BP (mm Hg)	107±19.7	141±26.6	127±13.8	<0.001

\*mean ± SD

By ROC analysis, Longitudinal Strain was the strongest discriminating index between Amyloid and HLVH patients (ROC area under curve = 0.847). Whereas other indices did not improve discrimination, incorporating blood pressure increased discriminating strength (ROC area under curve = 0.893).

**Conclusion:** Longitudinal wall strain is the best echocardiographic index to differentiate cardiac Amyloidosis from HLVH. BP measurements obtained at the time of echocardiographic evaluation are important to differentiate both conditions.