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INSIGHTS INTO DIASTOLIC DYSFUNCTION IN PATIENTS WITH LEFT VENTRICULAR HYPERTROPHY AND T-WAVE INVERSION ON THE 12-LEAD ELECTROCARDIOGRAM

ACC Oral Contributions

Ernest N. Morial Convention Center, Room 245

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Background: Many heart failure (HF) patients have preserved systolic function. Animal studies suggested that an abnormal repolarization sequence from endocardium to epicardium may contribute to diastolic dysfunction (DD). We hypothesized that T-wave inversion (TWI) in the setting of ECG left ventricular hypertrophy (LVH) could be a marker of more advanced DD.

Methods: We reviewed 1342 ECGs with LVH and identified patients with ejection fraction of >50% measured within 6 months of the index ECG. Patients with QRS>130msec, atrial fibrillation, 2nd or 3d degree A-V block, paced rhythm, ST elevation/depression>1mm or heart rate>100 bpm were excluded. The remaining 247 patients were allocated to two groups based on TWIs in any of the leads I, aVL, V4, V5 or V6 (n=132) and those without TWIs (n=115). Standard ECHO/Doppler evaluation for DD was obtained.

Results: Average age was 65±14 years, 61% women, 41% had coronary artery disease (CAD), 43% had diabetes and 89% had hypertension. Patients with TWIs had more diabetes and CAD (p<0.02) and displayed more DD abnormalities than LVH patients without TWIs (Table). DD parameters remained more prominent in patients with TWIs after adjustment for relative LV wall thickness or LV mass index.

Conclusions: Patients with preserved LV function, LVH and TWIs have more advanced parameters of DD when compared to LVH patients without TWIs. The reversal of the normal sequence of repolarization manifested on the 12 lead ECG as TWI may be a contributing factor.

*Mean (95% CI); **Adjustment for LV mass index or LV wall thickness did not change significance.

	LVH with TWI (n=132)*	LVH w/o TWI (n=115)*	P-value
E/(lateral e')	12.38 (11.46, 13.40)	9.50 (8.81, 10.27)	<0.0001**
E/(septal e')	18.91 (17.22, 20.77)	13.02 (11.73, 14.45)	<0.0001**
LA volume	81.95 (77.42, 86.47)	67.50 (62.55, 72.46)	<0.0001**
Pulmonary artery pressure	27.71 (25.76, 29.81)	24.40 (22.67, 26.26)	0.017