

Poster presentation

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Predictive value of electrocardiographic criteria for regional wall thickness in patients with cardiomyopathy

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Background

Electrocardiographic (ECG) criteria for left ventricular (LV) hypertrophy have been shown to have modest predictive values when compared to LV hypertrophy measured by cardiac magnetic resonance (CMR). Prior studies have excluded patients with cardiomyopathies and have not evaluated regional wall thickness in addition to overall LV mass and wall thickness. Thus it remains unknown how well ECG criteria will predict both regional wall thickness and overall LV mass/wall thickness compared to CMR in this population.

Objective

To determine if common criteria for LV hypertrophy on ECG are predictive of regional wall thickness and overall LV mass as determined by CMR in patients with cardiomyopathy.

Methods

A total of 41 consecutive patients (34 male) greater than 40 years old who underwent CMR for evaluation of cardiomyopathy (both ischemic and non-ischemic) were evaluated. Recent ECG's (mean of 8 days from CMR) were blindly evaluated and patients with a QRS > 120 were excluded from analysis. LV mass and regional wall thickness (anterior, septal, inferior, lateral) were measured at end-diastole on CMR. ECG voltage was examined by two commonly used determinants of LV hypertrophy: 1) Sokolow (SV1+RV5 or V6) and 2) Cornell (SV3+RaVL)

criteria. Pearson r correlations were used to examine the relationship between the CMR and ECG parameters.

Results

Mean LV mass was 154 ± 55 grams, and LV mass index was 76 ± 31 grams/meters². Sokolow ECG voltage showed good to high correlations with overall LV mass and regional wall thickness, with no significant differences between LV regions (Table 1). Cornell ECG voltage correlated less strongly with CMR parameters, and also showed no significant regional differences.

Conclusion

Sokolow ECG voltage criteria for LV hypertrophy demonstrates good to high correlations with LV mass and regional LV wall thickness in patients with cardiomyopathy. Cornell criteria performed worse in this population. No significant differences existed between LV regional wall thickness for either criteria.

Table 1: ECG voltage and CMR correlations

Global LV measurements	Sokolow	Cornell
LV mass	0.62*	0.34*
LV mass index	0.73*	0.35*
Average LV thickness	0.52*	0.25
Regional wall thickness		
Anterior wall	0.51*	0.25
Septum	0.53*	0.22
Inferior wall	0.57*	0.32*
Lateral wall	0.40*	0.23

*p < 0.05

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