

Poster presentation

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Ejection fraction is not sensitive for the identification of high infarct mass

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from 13th Annual SCMR Scientific Sessions
Phoenix, AZ, USA. 21-24 January 2010

Published: 21 January 2010

Journal of Cardiovascular Magnetic Resonance 2010, **12**(Suppl 1):P56 doi:10.1186/1532-429X-12-S1-P56

This abstract is available from: <http://jcmr-online.com/content/12/S1/P56>

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Introduction

Myocardial infarction (MI) may establish the substrate for ventricular tachycardia (VT). Infarct size as measured by cardiac magnetic resonance imaging (CMR) has been shown to be an independent predictor of mortality in patients with chronic MI [1]. Infarct mass expressed as a percent of LV mass (IM%) has also been demonstrated to be a better predictor of inducible VT on electrophysiologic study than left ventricular ejection fraction (LVEF), with a cutoff of > 10% providing the highest sensitivity [2]. Currently, implantable cardioverter defibrillators (ICD) are indicated for primary prevention of sudden cardiac death (SCD) only in coronary artery disease (CAD) patients with LVEF \leq 35% [3]. As the prevalence of SCD is greater among CAD patients with LVEF > 35%, additional markers of SCD risk are needed.

Purpose

We sought to define the proportion of patients with prior MI who have an infarct mass > 10% of LV and LVEF > 35%, as they do not qualify for ICD therapy by current guidelines but may have increased risk of SCD.

Methods

We retrospectively analyzed a cohort of patients who were scanned acutely (< 7 days) and chronically (> 2 months) following ST-segment elevation MI (STEMI) in a study of ventricular remodeling. End-diastolic and end-systolic volumes were manually planimeted from cine images

for calculation of LVEF, and infarct and total LV mass from contrast enhanced images for calculation of IM%.

Results

In 79 patients, CMR was performed 138 +/- 52 days following STEMI. Mean age was 58 +/- 11 years. In patients with chronic MI, 52% (41/79) had IM% > 10 and LVEF > 35% (Figure 1). When patients were grouped by IM% <10, 10-15, 15-20, 20-25, and > 25%, mean LVEF was 53.4%, 49.4%, 44.9%, 42.4%, and 32.0% respectively.

Conclusion

A substantial proportion of patients with chronic MI have LVEF > 35% and IM% > 10. When stratified according to IM%, mean LVEF did not fall below 35% until IM% was > 25. LVEF is therefore an insensitive marker of infarct burden. As it is related to both mortality and inducible VT, high IM% in the setting of mild to moderate impairment of LVEF merits further investigation as a predictor of SCD.

References

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