JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
© 2014 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
PUBLISHED BY ELSEVIER INC.

VOL. 64, NO. 19, 2014
ISSN 0735-1097/$36.00

Letters

Prognostic Role of CMR Imaging After Myocardial Infarction

We read with great interest the recent review by El Aidi and colleagues (1) highlighting the prognostic role of cardiac magnetic resonance imaging (CMR) in patients with myocardial infarction (MI) and patients with suspected or known coronary artery disease (CAD). However, several limitations of that review, especially regarding the prognostic value of CMR in the setting of acute MI, should be also brought to the reader's attention.

The authors conclude that left ventricular ejection fraction (LVEF) is the only CMR predictor of hard clinical events. This finding is inconsistent with previous CMR evidence (2–5) and is mainly a result of the arbitrary definition of an independent prognostic CMR variable chosen by the authors (CMR variable studied in <1,000 patients was classified as not enough evidence to draw definitive conclusions). Almost all CMR studies that were performed demonstrated a superior prognostic value of infarct size (IS) and/or microvascular obstruction (MO) over and above LVEF (2,3). As LVEF is influenced both by residual stunning of the viable myocardium and the necrotic, nonviable myocardium, IS can be a more specific marker for determining the extent of irreversible myocardial damage. Consequently, the primary goal of any infarction therapy is to reduce the amount of infarcted tissue.

The authors do not account for several important factors, issues, and confounders. First, they included a heterogeneous population of patients with ST-segment elevation myocardial infarction (STEMI) and also non-STEMI. However, the prognostic significance of CMR markers of myocardial damage has been only convincingly demonstrated in previous studies for patients with STEMI. Second, the authors included infarction patients reperfused by both primary percutaneous coronary intervention and thrombolysis. Third, it has been clearly demonstrated that late MO has a stronger impact on future cardiovascular events as compared with early MO and should, therefore, be the only included CMR measure of microvascular injury (4). Finally, the authors do not mention the potential prognostic role of myocardial salvage at all, which has been also shown to be independently associated with hard clinical endpoints (5).

In our opinion, there is emerging and strong evidence that CMR markers of myocardial damage (especially IS, myocardial salvage, and MO) add incremental prognostic information to clinical, electrocardiographic, biomarker, angiographic and mere functional outcome markers, including LVEF (2–5). However, we agree with the authors that further, preferably multicenter, investigations are welcome and necessary to further underscore the prognostic significance of myocardial damage and reperfusion injury assessed by CMR.

*Ingo Eitel, MD
Holger Thiele, MD
*Medical Clinic II
University of Lübeck
University Hospital Schleswig-Holstein
Ratzeburger Allee 160
23538 Lübeck
Germany
E-mail: ingoeitel@gmx.de

http://dx.doi.org/10.1016/j.jacc.2014.05.078

REFERENCES

1. El Aidi H, Adams A, Moons KG, et al. Cardiac magnetic resonance imaging findings and the risk of cardiovascular events in patients with recent myocardial infarction or suspected or known coronary artery disease: a systematic review of prognostic studies. J Am Coll Cardiol 2014;63:1031–45.

2. Wu E, Ortiz JT, Tejedor P, et al. Infarct size by contrast enhanced cardiac magnetic resonance is a stronger predictor of outcomes than left ventricular ejection fraction or end-systolic volume index: prospective cohort study. Heart 2008;94:730–6.

3. Larose E, Rodes-Cabau J, Pibarot P, et al. Predicting late myocardial recovery and outcomes in the early hours of ST-segment elevation myocardial infarction traditional measures compared with microvascular obstruction, salvaged myocardium, and necrosis characteristics by cardiovascular magnetic resonance. J Am Coll Cardiol 2010;55:2459–69.

4. de Waha S, Desch S, Eitel I, et al. Impact of early vs. late microvascular obstruction assessed by magnetic resonance imaging on long-term outcome after ST-elevation myocardial infarction: a comparison with traditional prognostic markers. Eur Heart J 2010;31:2660–8.

5. Eitel I, Desch S, Fuernau G, et al. Prognostic significance and determinants of myocardial salvage assessed by cardiovascular magnetic resonance in acute reperfused myocardial infarction. J Am Coll Cardiol 2010;55:2470–9.