

Risk stratification in patients discharged for STEMI. Ejection fraction by echocardiography as the gatekeeper for a selective use of cardiac magnetic resonance

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Background: CMR permits robust risk stratification of discharged STEMI patients but an indiscriminate use in all cases is unfeasible.

Purpose: We evaluated the usefulness of left ventricular ejection fraction (LVEF) by echocardiography (Echo) as the gatekeeper for identifying those patients discharged for ST-segment elevation myocardial infarction (STEMI) who benefit most from cardiac magnetic resonance (CMR) for prognostic purposes.

Methods: Echo and CMR were performed in 1119 patients discharged for STEMI included in a multicenter registry. The prognostic power of CMR beyond Echo-LVEF was assessed using C-statistic, net reclassification index (NRI) and integrated discrimination improvement index (IDI).

Results: During a 4.8-year median follow-up, 136 (12%) first major adverse cardiac events (MACE) occurred (47 cardiovascular deaths and 89 re-admissions for acute heart failure). Lesser Echo-LVEF and CMR-LVEF

associated with the occurrence of MACE but only CMR-LVEF and microvascular obstruction were independent predictors. The MACE rate significantly increased only in patients with CMR-LVEF <40% (≥50%: 7%, 40–49%: 9%, <40%: 27%, p<0.001). The majority of patients (629, 56%) displayed Echo-LVEF ≥50% and most of them (94%) were at the “safe zone” (CMR-LVEF >40%). On the other hand, 490 patients (44%) exhibited Echo-LVEF <50% and 33% of them were incorrectly classified either in the “safe zone” (CMR-LVEF ≥40%) or in the “risk zone” (CMR-LVEF <40%). C-statistic, NRI and IDI demonstrated potent reclassification for MACE prediction by CMR in patients with Echo-LVEF <50% but not in those with Echo-LVEF ≥50%.

Conclusions: Echo-LVEF <50% identifies the subset of discharged STEMI patients who may benefit most from CMR in terms of long-term risk prediction.

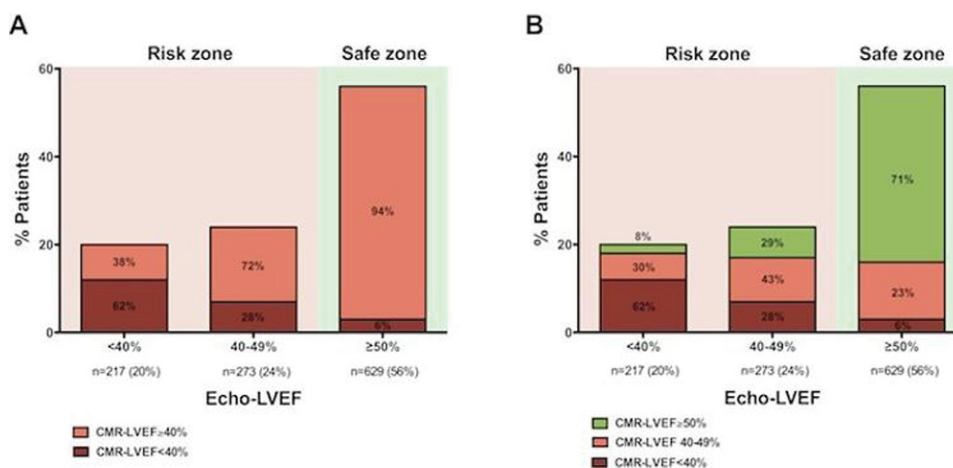


Figure 1. LVEF reclassification