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Predictors of Cardioprotective Medication Prescription versus Mortality in Patients Hospitalized with Acute Myocarditis

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Importance: High-sensitivity blood biomarkers and cardiovascular magnetic resonance (CMR) have increased recognition of myocarditis in acutely symptomatic patients. Cardioprotective medications (CPM) such as renin-angiotensin-aldosterone system (RAAS) inhibitors and beta-blockers have proven mortality benefit across other cardiac conditions, yet their benefit in acute myocarditis remains uncertain.

Objectives: We sought to test the hypothesis that CPM prescription is driven by low LV ejection fraction (EF), whereas myocardial injury burden drives mortality.

Methods: We retrospectively analyzed electronic health records of patients hospitalized for a first episode of acute myocarditis at two quaternary referral centers. Logistic regression and survival analysis were used to evaluate the association between clinical parameters, treatment, and all-cause mortality.

Results: Of 362 patients identified with acute myocarditis, 177 (48.9%) were prescribed at least 1 new CPM at discharge; as expected, such therapy was more frequent with LV dysfunction (56% of patients with reduced LVEF vs 17% with preserved LVEF, p<0.001). In a multivariable model, myocardial injury by CMR portended greater all-cause mortality (OR=1.81, 95% CI 1.26-2.61, p=0.001), which persisted after accounting for segmental wall motion abnormality (WMA; OR=1.4. 95% CI 1.02-1.92, p=0.04). While LVEF best accounted for CPM prescription, CPM prescription after adjustment for injury burden was not associated with improved outcomes.

Conclusions: All-cause mortality in patients hospitalized with acute myocarditis is predicted by myocardial injury burden by LGE-CMR after accounting for segmental WMA, and not overcome by CPM prescription per current LVEF-guided practice. Myocardial injury itself as a treatment target warrants investigation to reduce mortality after acute myocarditis events.

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