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The Reply

Champion contends that *early* invasive management may improve outcomes in patients with myocardial infarction and cardiogenic shock. We fully agree. The SHould we emergently revascularize Occluded Coronaries for cardiogenic shocK (SHOCK) trial compared an invasive strategy of emergent revascularization versus a conservative strategy of initial medical stabilization.[1,2] In the conservative strategy, 66.7% of patients received coronary angiography with 25.3% of patients receiving angioplasty or coronary artery bypass graft surgery with a median time to revascularization from randomization of 102.8 hours.[1] Champion is correct in that in the SHOCK trial, early invasive management, when compared with delayed invasive or no invasive management, was beneficial. In our study, the majority of patients underwent cardiac catheterization within 24 hours (82.9%), and among patients who underwent percutaneous coronary intervention, the majority (86.8%) underwent percutaneous coronary intervention within 24 hours.[3] In our study, unlike in the SHOCK trial, conservative strategy was defined as no cardiac catheterization/percutaneous coronary intervention or coronary artery bypass graft surgery. The benefits of an invasive strategy were observed (when compared with conservative strategy of no cardiac catheterization/percutaneous coronary intervention or coronary artery bypass graft surgery) in the group that underwent revascularization within 24 hours and in the group that underwent revascularization after 24 hours.[3] We did not directly compare or perform a propensity score matching for outcomes of patients who underwent revascularization within 24 hours versus those who underwent revascularization after 24 hours.

We agree with the author that many patients with severe myocardial infarction and cardiogenic shock may have died before being stabilized enough to undergo invasive management. In our study, approximately 18% of patients had a cardiac arrest.[3] In the SHOCK trial, 32.7% and 23.9% in the revascularization and medical therapy arms, respectively, had cardiopulmonary resuscitation, sustained ventricular tachycardia, or ventricular fibrillation before randomization, attesting to the high-risk nature of this patient subset.[1] Despite this, invasive strategy of emergent revascularization was beneficial in the SHOCK trial.[1]

Finally, the decision between percutaneous coronary intervention and emergent coronary artery bypass graft surgery for multivessel disease and cardiogenic shock has not been addressed by randomized trials. We agree that the decision should be based on a heart team approach weighing the risk of potential delays with coronary artery bypass graft surgery, the ability to achieve complete revascularization, the presence of concomitant valvular heart disease, and the patient's comorbidites.[4]

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