Early revascularization improved 1-year survival after myocardial infarction with cardiogenic shock

Hochman JS, Sleeper LA, White HD, et al., for the SHOCK Investigators. **One-year survival following early revascularization for cardiogenic shock.** JAMA. 2001 Jan 10;285:190-2.

QUESTION

In patients with acute myocardial infarction and cardiogenic shock (MI-CS), is early revascularization (ERV) more effective than initial medical stabilization (IMS) for improving 1-year survival?

DESIGN

Randomized {allocation concealed*}†, unblinded,* controlled trial with 1-year follow-up.

SETTING

36 centers in North and South America, Europe, Australia, and New Zealand.

PATIENTS

302 patients (mean age 66 y, 68% men) who had MI-CS because of left ventricular failure within 36 hours of symptom onset and had ST-segment elevation or Q waves, posterior infarction, or new left bundle-branch block. {Exclusion criteria were severe systemic illness, severe valvular disease, dilated cardiomyopathy, or unsuitability for revascularization.}† 301 patients had 1-year follow-up data.

INTERVENTION

Patients were allocated to ERV (*n* = 152), with either percutaneous transluminal coronary angioplasty (PTCA) or coronary artery bypass grafting (CABG) within 6 hours of MI, or to IMS (*n* = 149), which involved thrombolysis, intra-aortic balloon counterpulsation, and revascularization ≥ 54 hours after MI if clinically indicated.

MAIN OUTCOME MEASURE

Survival at 1 year.

MAIN RESULTS

1-year survival was greater among patients who received ERV than among those who received IMS (46.7% vs 33.6%, *P* < 0.03) (mortality data are in the Table). The ERV group showed increasing survival benefit after 1 month (*P* = 0.04). Only 1 of 10 pre-specified subgroup variables showed an interaction with treatment (age < 75 vs ≥ 75 y, *P* = 0.03). Patients < 75 years of age who received ERV had an 18% absolute increase in survival compared with those who received IMS; patients ≥ 75 years of age did not differ for survival.

CONCLUSIONS

In patients with acute myocardial infarction and cardiogenic shock, early revascularization was more effective than was initial medical stabilization for improving 1-year survival. The greatest effect was seen in patients < 75 years of age.

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*See Glossary.

†**Hochman JS, Sleeper LA, Webb JG, et al.** N Engl J Med. 1999;341:625-34.

Early revascularization (ERV) vs initial medical stabilization (IMS) for acute myocardial infarction with cardiogenic shock at 1 year‡

Outcome	ERV	IMS	RRR (95% CI)	NNT (CI)
All-cause mortality	53.3%	66.4%	20% (3.4 to 34)	8 (4 to 48)

‡Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

COMMENTARY

The Should We Emergently Revascularize Occluded Coronaries for Cardiogenic Shock (SHOCK) investigators show a greater improvement in 1-year survival in patients with acute MI-CS treated with ERV than in those treated with IMS. The 13% absolute benefit far exceeds that of other MI therapies (thrombolytics, aspirin, β-blockers, and angiotensin-converting enzyme inhibitors) and puts to rest any ambiguity in the interpretation of the initial 30-day SHOCK results (1). The SHOCK trial findings are generalizable because approximately 75% of MI-CS occurrences are caused by left ventricular failure. Furthermore, treatment benefit is likely to be even greater in community settings with less aggressive comparison "medical stabilization" strategies. Beneficial revascularization therapies (CABG and PTCA) are often associated with early hazards. Despite these hazards, ERV has a sustained survival benefit consistent with other trials of early revascularization (2).

Given patient recruitment failures and obstacles in other trials, the SHOCK trial currently defines optimal treatment for MI-CS (1, 3). Subgroup analysis of 56 patients ≥ 75 years of age did not show that early revascularization was harmful in the elderly but instead suggests that more individualized therapy selection should be applied in aged or moribund patients. 1-year SHOCK trial results send a clear message that most patients with acute MI-CS should receive ERV and that surviving patients have good functional status.

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