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Revascularization of cardiogenic shock complicating acute myocardial infarction.

Even in the thrombolytic era, cardiogenic shock is seen in 5% to 10% of patients with acute myocardial infarction (AMI), which has a mortality of up to 80% by one year.¹

Historical reviews of unrandomized retrospective data, on the effects of early revascularization (RV) in patients with post-myocardial infarction cardiogenic shock, found reduced mortality following coronary artery bypass graft surgery (CABG) or percutaneous transluminal coronary angioplasty (PTCA) to 33% and 42%, respectively.² Recently, some prospective randomized trials have been performed to compare early RV with a policy of initial vigorous medical stabilization comprising thrombolysis, intravenous inotropes, and intra-aortic balloon counterpulsation (IABP), with the option of delayed RV. For several reasons, recruitment into these trials was slow and difficult, resulting in premature discontinuation of most.² A summary of these randomized trials is shown in the *Table* below.

Trial	Comparison	N	Outcome
SHOCK	Early RV vs initial medical Rx + late RV	302	Early RV better at 6 month and 1 year but not at 3 months
SMASH	Emergency RV vs medical Rx	55	No difference in the 2 strategies Stopped early (slow recruitment)
HEROICS	Medical Rx vs RV vs IABP + thrombolysis		Stopped early—poor recruitment
TACTICS	RV vs IABP-assisted thrombolysis		Stopped early—poor recruitment

Table. Results of randomized trials. IABP, intra-aortic balloon counterpulsation; Rx, treatment; RV, revascularization.

The Swiss Multicentre trial of Angioplasty for SHock (SMASH) found no survival benefit from emergency RV compared with medically treated patients.³ Patients in this trial were randomized within 48 hours of AMI onset to emergency RV or medical treatment at a median time of 3.3 hours. RV was performed in 28 of the 32 patients in this arm. The 30-day mortality was 69% in the revascularized group versus 78% in the group treated medically (relative risk 0.88; 95% confidence interval 0.6-1.2). However, only 55 patients were randomized in this small study before it was stopped early due to slow recruitment. It was therefore unable to detect a clinically meaningful result.

The How Effective are Revascularization Options In Cardiogenic Shock (HEROICS) trial was discontinued prematurely because of poor recruitment. It set out to randomize 100 patients to one of 3 treatment strategies (medical treatment, RV, or thrombolysis augmented by IABP) and look at the 30-day mortality rates.⁴ The

Thrombolysis And Counterpulsation To Improve Cardiogenic Shock survival (TACTICS) trial was similarly discontinued due to recruitment problems, but also addressed the value of IABP-assisted thrombolysis.⁵ Currently, only one completed randomized trial is available to guide therapy in cardiogenic shock. The Should We Emergently Revascularize Occluded Coronaries For Shock (SHOCK) trial¹ randomized 302 patients over a period of 5 years to receive either early RV with PTCA or CABG (within 6 hours of randomization) or initial medical stabilization (thrombolysis, inotropes, IABP) with the option of late RV. Although emergency RV did not significantly reduce 30-day mortality (46% in the revascularized group vs 56% in the medically treated group, $P=0.11$), after 6 months there was a significant survival benefit with RV (mortality 50% with RV vs 63% with medical therapy, $P=0.027$), which extended to 1 year (mortality 66% vs 53%, $P<0.03$). Subgroup analysis suggested that patients <75 years specifically benefited from RV both at 30 days and 6 months. 30 days, mortality with RV was lower (41%) than those treated medically (57%, $P=0.01$); this was also the case at 12 months (48% in the revascularized group vs 67% in the medically treated group, $P=0.01$). Compared with historical data, the mortality in the conservatively treated group was low, which might suggest benefit with an aggressive medical strategy on its own.

Evidence from the SHOCK trial suggests that it would be reasonable to consider a more proactive approach with early IABP-assisted RV in younger (<75 years) patients with shock complicating AMI. Where this may not be feasible, medical stabilization with thrombolysis, inotropic agents, and IABP may be initially valuable allowing time to consider the option of delayed RV. A selective approach may be advocated for the elderly. □

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Coversyl is a long-acting ACE inhibitor. **International nonproprietary name:** Perindopril. **Indications:** Essential hypertension. Congestive heart failure (adjunctive therapy). **Dosage and administration:** Hypertension: 4 mg once a day in the morning. If necessary, the dose may be increased to 8 mg after 1 month of treatment. Coversyl should be taken before food. Congestive heart failure: Coversyl should be started under close medical supervision at a starting dose of 2 mg in the morning. This may be increased to 4 mg once blood pressure acceptability has been demonstrated. Elderly patients: start treatment at 2 mg daily. **Contraindications:** Children. Pregnancy. Lactation. Patients with a history of hypersensitivity to Coversyl. **Precautions:** Assess renal function before and during treatment where appropriate. Renovascular hypertension. Surgery/anesthesia. Renal failure: the dose should be cautiously adjusted in accordance with the creatinine clearance (refer to complete data sheet). Symptomatic hypotension is rarely seen, but is more likely in volume-depleted patients, those receiving diuretics, or with the first two doses. In diuretic-treated patients, stop the diuretic 3 days before starting Coversyl. A diuretic may later be given in combination if necessary; potassium-sparing diuretics are not recommended. Combination with neuroleptics or insipiramine-type drugs may increase the hypotensive effect. Serum lithium concentrations may rise during lithium therapy. **Side effects:** Rare and mild, usually at the start of treatment. Cough, fatigue, asthenia, headache, disturbances of mood and/or sleep have been reported. Less often, taste impairment, epigastric discomfort, nausea, abdominal pain, and rash. Reversible increases in blood urea and creatinine may be observed. Proteinuria has occurred in some patients. Rarely, angioneurotic edema and decreases in hemoglobin, red cells, and platelets have been reported. **Composition:** Each tablet contains 4 mg of the terbutylamine salt of perindopril. **Presentation:** Packs of 30 tablets of Coversyl 4 mg (scored). **As prescribing information may vary from country to country, please refer to the complete data sheet supplied in your country.** Les Laboratoires Servier - France. **SERVIER**

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