Revascularization, stenting and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock

Over the past decade, alongside the increased use of coronary revascularization,[1-3] improved outcomes have been reported in patients with AMI complicated by cardiogenic shock.[1,4] In the SHOCK study, patients with shock who underwent early revascularization had better outcomes than those who were treated with a more conservative strategy.[5] Since the SHOCK study was published, the practice of PCI has changed,[6] and two recent registry studies[7,8] have suggested survival benefits in shock patients who have undergone coronary stenting.

The objective of the present study is to evaluate the use of coronary stenting and revascularization in relation to hospital outcomes in an unselected cohort of patients with AMI complicated by cardiogenic shock.

Results

Data from 583 patients with AMI complicated by cardiogenic shock were analyzed. The median age was 71.8 years, 38% were women and the median duration of prehospital delay was 2.7 hours. The most common clinical presentation was STEMI. Approximately half of all AMI patients in cardiogenic shock underwent cardiac catheterization or revascularization during their index hospitalization. Between one-fifth and two-fifths of patients received fibrinolytic treatment.

The hospital mortality rate for patients with AMI complicated by cardiogenic shock was 59%. Univariate predictors of mortality were older age, shock developing after presentation for AMI, and a history of diabetes mellitus, hypertension, and renal insufficiency. The hospital mortality rate was significantly reduced in patients who underwent revascularization (45%) compared with those who underwent conservative treatment (69%, P<0.001). One-third of patients treated with PCI with stenting died, compared with three-quarters of those who did not undergo cardiac catheterization (Figure 1).

Multivariable regression analysis was used to identify independent predictors of hospital survival. A history of diabetes mellitus and older age were found to be negative predictors of survival whereas presentation with cardiogenic shock and use of PCI with stenting were positive predictors of survival (Figure 2).

Discussion

Almost 60% of patients with AMI complicated by cardiogenic shock died while in hospital. Despite recent improvements in the treatment of AMI, such as the routine use of GP IIb/IIIa inhibitors and coronary stenting in high-risk patients,[6,9] and improved techniques for PCI,[10] this figure mirrors those reported in the GUSTO-I trial shock analysis and the SHOCK trial registry, and is
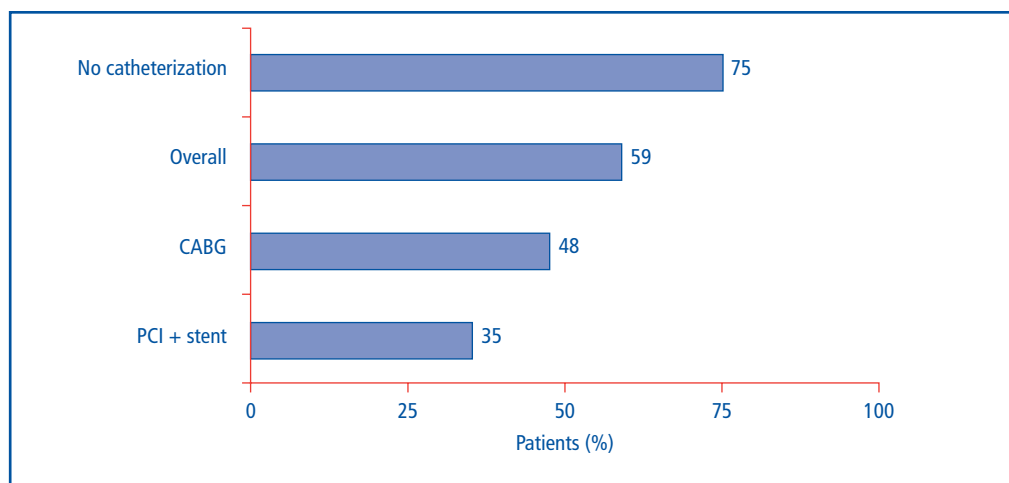

Figure 1.

Mortality rates for patients with AMI complicated by cardiogenic shock. Adapted from H.L. Dauerman et al. Am J Cardiology 2002; 9: 838–42

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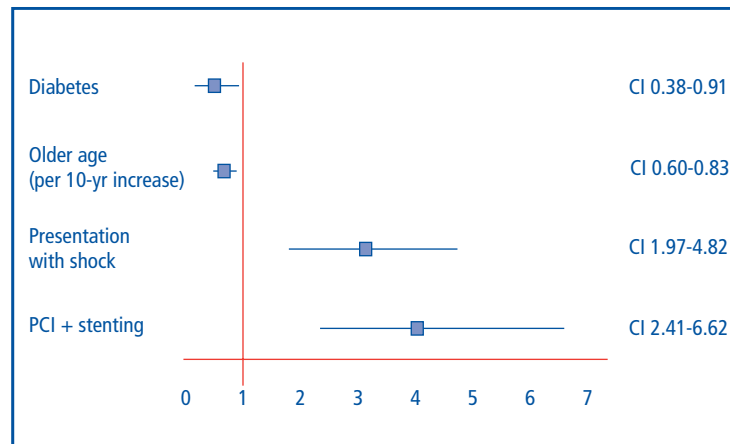***University of Vermont College of Medicine, Fletcher Allen Health Care, Burlington, Vermont, USA**

Figure 2.

Independent predictors of hospital survival

slightly higher than that reported in the randomized early revascularization cohort of the SHOCK trial.[5,11,12]

Findings from randomized clinical trials, which have strict selection criteria, failed to show any reduction in hospital death rates for patients undergoing stenting compared with those undergoing balloon angioplasty alone.[13] By contrast, the results from the present study and from two recent registry studies suggest a significant early reduction in mortality for stenting in patients with cardiogenic shock when compared with balloon angioplasty.[7,8]

The persisting high mortality rate reported in the present study reinforces the need for further research into cardiogenic shock. Further investigation into the role of early revascularization in elderly patients is also needed in this high-risk AMI subgroup.

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