Revascularization versus medical therapy for the treatment of cardiogenic shock

Timothy Ho

Comments

The need to reduce the high death rates associated with cardiogenic shock is clear. The perception that acute revascularization is superior needed to be tested, because a commitment to it would require a large financial and organisational input. As stated in the paper, the conclusions of the study are hampered by the failure to recruit sufficient patients to achieve the desired statistical power. The fact that six month mortality is significantly better in the revascularization group suggests that acute differences in intervention strategies may not be as important as the longer term importance of restoring normal coronary flow following recovery from the initial myocardial insult.

Introduction

Cardiogenic shock remains the major cause of death following acute myocardial infarction, complicating 1 in 10 cases. Preliminary studies have suggested that acute revascularization (angioplasty or coronary artery bypass graft [CABG] surgery) may improve outcome from this condition.

Aims

To compare best medical care versus early revascularization in patients suffering myocardial infarction who subsequently develop cardiogenic shock.

Methods

A multicentre randomized trial was designed, allocating patients into two groups:

(A) early revascularization (CABG or angioplasty); ie within 6 h of randomization.

(B) best medical care, including thrombolysis and intra-aortic balloon pumping. Delayed revascularization was permitted in the latter group (after 54 h had elapsed following randomization) if so indicated.

Standard criteria for defining myocardial infarction were used. Clinical and physiological criteria were employed to define cardiogenic shock. The primary end point was mortality at 30 days. The secondary end point was defined as mortality at six months. From 1492 screened patients, 302 patients were randomized . A target of 328 patients had been calculated as the number necessary to achieve a 90% power to detect a 20% difference.

Results

Both trial groups achieved protocol compliance of 97% or better. Two-thirds of patients in the revascularization group had angioplasty as their initial means of revascularization; those undergoing surgery were more likely to have left main coronary artery disease and/or triple vessel disease. Additional cardiovascular treatments between the groups were otherwise similar. Thirty day mortality was similar in both groups (46.7% in group A vs 56%, $P = 0.11$). Six month mortality was significantly lower in the revascularization group (50.3% vs 63.1%, $P = 0.027$). Subgroup analysis indicated that patients under 75 years of age in the revascularization group may benefit significantly at both end points.

Discussion

Although 30 day mortality was not significantly different between the two groups, six month mortality was. This is in contrast to results comparing revascularization and thrombolysis in non-shocked patients, where converging survival curves are seen. However the data are consistent with data comparing survival of patients with normal coronary flow and those with abnormal coronary flow, following myocardial infarction.

Mortality rates in study patients undergoing angioplasty were similar to those seen in other trials. This study was limited by insufficient patient numbers to achieve adequate power to detect a 20% difference in mortality. Consequently caveats also exist about subgroup survival analysis showing trends towards improved survival in patients less than 75 years old in the revascularization group.

References

1. Hochman JS, Sleeper LA, Webb JG, Sanborn TA, White HD, Talley JD, Buller CE, Jacobs AK, Slater JN, Col J, McKinlay SM, LeJemtel TH: Early revascularization in acute myocardial infarction complicated by cardiogenic shock. N Engl J Med. 1999, 341: 625-633.

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