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Predicting myocardial recovery following CABG

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Keywords

Cardiac function, revascularisation

Comments

The aim of Coronary Artery Bypass Grafting (CABG) is to relieve the symptoms of angina and reverse the left ventricular dysfunction brought about by ischaemic heart disease (IHD). At present the functional response to revascularisation cannot be predicted. This study suggests that changes in regional wall motion abnormality after commencement of dobutamine will distinguish between infaracted sections of the myocardium and those sections which are hibernating, which are potentially salvagable, and reflect the changes after surgery. Pre-CABG dobutamine studies would allow identification of segments of myocardium that have not improved as predicted and so may prompt surgical revision. This technique may also improve a surgeon's ability to target viable tissues and not divert blood flow to infarcted myocardium.

Introduction

The authors hypothesised that functional changes following low dose dobutamine therapy would determine areas of hibernating myocardium and would enable a prediction of the response to surgery.

Methods

- 40 patients with IHD for elective CABG were studied
- Standardised anaesthetic and perfusion techniques were used
- Transoesphageal echocardiography (TOE) was performed after induction, after starting dobutamine (5 µg/kg/min), after separation from cardiopulmonary bypass and after administration of protamine

- TOE images were assessed for wall motion abnormalities by blinded observers

Results

In total, 560 segments (14 from each partner) were available for analysis. Low dose dobutamine was a highly predictive indicator for early and late changes in myocardial function after surgery ($P < 0.0001$) with a positive predictive score of 0.86-0.96 depending on pre-operative variables such as betablockade and diabetes. If there was an improvement with dobutamine, there was a 20-fold increase in the chance of improvement after CABG. This chance was higher in non-diabetic than diabetic patients. Response to dobutamine was also highly predictive of improvement in the late phase. There were 290 abnormal segments, 205 of which were improved with dobutamine. Negative predictive valves were not as good (0.69) for late changes. There was an 89% agreement by two observers of the TOE scores. Unreadable segments accounted for 1.5% of the total.

References

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