Randomized Multicenter Trial Comparing Percutaneous Transluminal Coronary Angioplasty Versus Medical Therapy For Single-Vessel Coronary Artery Disease And Stable Angina Pectoris

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A. Purpose

Angiography plays a pivotal role in a rationale to the advisability and need for revascularization. Confirmation of significant epicardial coronary stenosis helps to define patient risk and guide therapeutic decision making. If the patient falls into a high-risk anatomic subset where surgical revascularization is known to improve prognosis, then the course of action is relatively clear. For patients with angina who require myocardial revascularization, several randomized trials comparing percutaneous transluminal coronary angioplasty (PTCA) and coronary artery bypass surgery have yielded important information for management. Smaller trials have also compared the effects of PTCA and medical treatment for patients in whom revascularization is not essential. In patients with single-vessel disease who are known to have a low risk of mortality and subsequent myocardial infarction, the ACME trial compared PTCA randomized with step-care medical therapy in 212 patients with stable angina and single-vessel coronary disease. The primary endpoints at 6 months were exercise tolerance, angina frequency, and nitroglycerin use: exercise improved 2.1 minutes over baseline in the PTCA group and 0.5 minutes in the medical therapy group ($P < 0.0001$), there were 15 fewer episodes of angina per month in the PTCA group and 7 fewer episodes in the medical therapy group ($P = 0.06$), and there was a non-significant difference in the reduction in nitroglycerin consumption. There was no difference between groups in the frequency of myocardial infarction or death, however, the trial did not have the power to compare the two strategies for these endpoints.

This study is designed to compare the effects of initial strategies of PTCA and medical therapy over 5 years of follow-up in patients with single-vessel coronary artery disease judged to be suitable for either treatment.

B. Design

Patients will be recruited at 20 centers in the United States. Prior to randomization, the coronary arteriograms of eligible patients will be reviewed by an interventional cardiologist who must identify at least one significant coronary lesion in a major epicardial. vessel which would be dilated if the patient were assigned to treatment by angioplasty. A significant coronary lesion is defined as a 50% or greater diameter stenosis in at least two radiographic projections or 70% diameter stenosis in one projection. Major coronary vessels are defined as the left anterior descending artery or large diagonal branches, the circumflex artery or large obtuse marginal branches, and a dominant right coronary artery. Patients who satisfy the eligibility criteria and provide informed consent to participate in the trial will be randomized by the method of permuted blocks within strata defined by the center. The primary endpoint is defined as the combined frequency of death from all causes and definite non-fatal myocardial infarction. An independent committee will review all deaths and reported myocardial infarctions, blind to the patient's assigned treatment. An accrual target of 1400 patients is calculated on the basis of previous reports which suggest that the combined 5-year rate of death and definite non-fatal myocardial infarction in the trial would be about 15%. A trial of this size would have 80% power to detect a one-third reduction in the event rate in one treatment arm compared with the other at 5% significance. All data will be analyzed according to the original treatment assignment (intention-to-treat).

C. Study Subjects

Patients with single-vessel coronary artery disease proven arteriographically that appears technically amenable to balloon dilatation.

D. Recruitment Method

Potential subjects will be patients undergoing coronary arteriography for any reason.

E. Study Procedures

Patients assigned to PTCA must undergo dilatation of the prospectively identified stenosis or stenoses within 3 months of randomization. In all cases the intended strategy is based on conventional balloon dilatation, but stents and other coronary interventional techniques are permissible if the initial angioplasty result is unsatisfactory. Following intervention, medication is determined by individual clinical circumstances, but clinicians are encouraged to discontinue antianginal drugs for patients without angina.

Patients assigned to initial medical therapy will be prescribed antianginal medication for symptom relief Myocardial revascularization procedures are reserved for patients whose symptoms are not adequately controlled by optimal medical therapy, which will include a B-adrenoreceptor blocker and long-acting nitrate in maximally tolerated doses.

During the study, all patients will be treated with aspirin unless contraindicated.