Editorial Comment

Long-Term Ischemic Risks After Successful Thrombolysis for Acute Myocardial Infarction*

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The present study. The report by Simoons et al. (1) in this issue of the Journal on the long-term benefits of early thrombolytic therapy in acute myocardial infarction presents several important achievements in this therapeutic area of coronary artery disease: 1) Five year survival is increased in patients randomized to intracoronary streptokinase compared with patients receiving conventional therapy; 2) long-term survival is related to left ventricular function and coronary anatomy at the time of initial follow-up study; and 3) the greatest improvement in survival is observed in patients with anterior infarction, heart failure on admission, previous infarction or extensive myocardial ischemia on admission. Thus, this study extends the reassuring benefits of thrombolytic therapy in acute myocardial infarction beyond the initial hospitalization and the 1-year follow-up periods. However, it reports several unsettling observations over the 5 year period: 1) The reinfarction rate within 3 years was more frequent in the recipients of thrombolytic therapy; 2) bypass surgery and angioplasty were performed more frequently in the patients receiving thrombolytic therapy than in those treated conventionally; and 3) the frequency of myocardial infarction was similar in patients with and without signs of ischemia on exercise testing.

Identifying patients at long-term ischemic risk. Thus, this long-term study on the benefits of thrombolytic therapy raises an important question as to the optimal method for identifying patients at long-term ischemic risk. The Thrombolysis in Myocardial Infarction (TIMI) Phase II trial (2) suggested that coronary arteriography be performed only in those patients developing angina or exhibiting a positive, modified exercise test immediately after thrombolytic therapy. However, the study of Simoons et al. indicates that ischemic responses to exercise may not sufficiently identify those patients at future risk for myocardial infarction. Coronary arteriography in the current study suggested that those patients with inferior infarction and those with a >90% lesion in the infarct-related vessel are at increased risk for future myocardial infarction. A previous study by Little et al. (3) demonstrated that a coronary arteriogram obtained before subsequent myocardial infarction was not useful in predicting the angiographic site of infarction because >60% of the patients had a progressive or newly developed lesion responsible for the coronary occlusion. Finally, the pharmacologic approach to patients at long-term ischemic risk remains an issue, as shown in the current study (1), in which only 20% of the patients were taking a beta-adrenergic blocker at the end of the 1 year follow-up period and aspirin was not routinely administered.

Interestingly, in the study of Simoons et al. (1), angioplasty during the acute infarction was beneficial, and mechanical revascularization was heavily utilized in the first 3 years after successful thrombolysis. Nevertheless, this study should stimulate cardiologists to search further for means to identify the patient at risk for long-term ischemia after successful thrombolysis. Perhaps the time has arrived to translate risk characteristics such as hypertension, smoking, cholesterol level and family history into true risk factors such as coronary artery vasomotor tone, endothelial function, lipid profiles and platelet function (4-9). Although the TIMI Phase II trial recommended cautious use of coronary arteriography in patients after thrombolysis, a number of these patients will undergo catheterization to delineate coronary anatomy and ventricular function (10). In the future, measurements at the time of coronary arteriography of coronary vascular reactivity, lipid profiles and platelet function may enhance the identity of high risk patients (11-14). If such coronary vascular profiles identify individuals at long-term ischemic risk, then more vigorous therapeutic efforts can be undertaken for their future management. Currently, symptoms of myocardial ischemia, as well as a positive exercise test, best identify lesions with >70% stenosis; in the future, the focus may be on recognizing lesions at risk for accelerated growth, labile vascular reactivity and platelet aggregation (15).

Implications of the study. Thus, the impressive long-term study of Simoons et al. (1) not only documents the significant achievements of successful thrombolysis and the long-term benefits after acute myocardial infarction, but also presents future challenges in identifying patients at risk for long-term ischemic events. The opportunity is at hand to apply molecular mechanisms to clinical coronary artery disease. Even though such studies as those of Simoons et al. will require further confirmation, cardiologists cannot continue their current methods of recognition and treatment of myocardial
ischemia indefinitely. In the area of coronary artery disease, patient numbers are large and health costs are enormous, but reruns will simply not satisfy the audience.

References


