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Editorial Comment

Clinical Options in Patients With Single Vessel Coronary Artery Disease and Acute Myocardial Infarction*

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The last few years have brought about many changes in our approach to the management of an acute myocardial infarction. A number of investigators have begun to claim that certain of their research studies almost mandate a near total reorientation of our thinking as to what constitutes the best therapy for an acute myocardial ischemic event: the trend is rather unmistakably in favor of very aggressive management for patients with a fresh heart attack. Nevertheless, many believe that some of the newer, more aggressive clinical options (such as infusion of various thrombolytic agents, balloon angioplasty or even bypass surgery) should typically be reserved for patients with a life-threatening ischemic event. An uncomplicated infarction in patients with known or presumed single vessel coronary artery disease is often still thought to be best treated conservatively because of its usual association with a very low incidence of subsequent complications, reinfarction and death.

Role of conservative versus aggressive approach. In this issue of the Journal, Wilson et al. (1) report on the prognostic ramifications for patients with an acute myocardial infarction associated with single vessel coronary artery disease. Very few didactic data are available for this subset of patients, thus the importance of this contribution. We already know from the large cooperative studies such as the European Coronary Surgery Study (2) and Coronary Artery Surgery Study (CASS) (3) that the long-term prognosis of patients with single vessel disease is equally favorable for those randomized to medical or surgical therapy. Despite these convincing data, however, it is not fully (or perhaps not even partially) warranted to suggest that these findings always accurately represent the prognosis of patients who, in addition to single vessel coronary artery disease, have also had an acute myocardial infarction. On the one hand, it has been shown (4), for example, that even such relatively sophisticated noninvasive interventions as exercise thallium-201 myocardial perfusion scintigraphy are often quite limited in predicting an acute ischemic myocardial event in most patients despite a markedly positive test. It is therefore quite difficult to decide to pursue aggressive treatment in a patient with single vessel disease, a "threatened" or "consummated" recent myocardial infarction and a positive stress scintigraphic study, when the relatively low subsequent adverse event rate can be predicted with a fair amount of certainty. On the other hand, investigators conducting other noninvasive diagnostic studies, such as exercise echocardiography (5), attempting to evaluate the effects of a prior heart attack and the extent and location of coronary artery disease have concluded that these tests often accurately characterize patients with coronary artery disease, but that their sensitivity is best in patients with multivessel involvement and quite limited in those with single vessel disease. Hence, the key questions are unanswered: what sort of noninvasive (or invasive) prognostic evaluation should be used in patients with an acute myocardial infarction due to single vessel coronary artery disease, and should—or when should—further aggressive therapy (such as balloon angioplasty) be carried out?

Thus, the argument that single vessel coronary artery disease causing an acute myocardial infarction should most often (if not always) be managed conservatively, frequently without any further diagnostic or therapeutic procedures because of the good prognosis, is not entirely convincing even though the predictive indications as to which patient should be treated aggressively are still far from clear. We now have some new evidence as to why the myocardium, jeopardized by only one of its three coronary vessels, is sometimes seriously injured. A recent study (6), for instance, has shown quite persuasively that the myocardial area at risk in patients with an acute myocardial infarction is governed by variables that can cause similar sites of occlusion within a *single* coronary artery to result in a wide range of damage. Furthermore, this study maintains that "many readily available indexes"—including the coronary artery anatomy—cannot be used to accurately predict the size of the risk area. These investigators appropriately urge a development of quick and accurate approaches to the assessment of the size of the myocardial risk areas, suggesting that the tomographic imaging and radionuclide techniques may be best suited to accomplish this task.

Clinical implications of the study. The present effort by Wilson and colleagues (1) suggests that a viable modality to assess these myocardial areas at risk (and to serve as a predictor of future adverse cardiac events) may be repre-

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sented by the presence of infarct zone thallium redistribution in patients with an acute myocardial infarction and single vessel coronary disease. Because (as already stated) other studies (4) using thallium investigations seem to be much less optimistic, one must strongly endorse the authors' plea for future randomized trials targeted to assess the diagnostic and therapeutic options in patients with an acute ischemic event and single vessel disease. Such a broader effort is needed not only because of the continuing divergent therapeutic recommendations (often including a substantial proportion of patients with single vessel disease) (7), but also because certain problems in the present study may hinder interpretation of its conclusions. It is troublesome that no attempt was made in this study to standardize the medical therapy. For example, it is a relatively common practice today to treat patients with Q wave myocardial infarction with a beta-adrenergic blocker, those with a non-Q wave infarction with diltiazem or those with unstable angina with aspirin because a number of studies show that such interventions can improve prognosis. The results of this report could therefore be a bit skewed because the commonly considered "best therapy" might not have been uniformly followed and different medical approaches may have had a substantial impact on the eventual clinical outcome. Furthermore, a number of hypotheses evoked in this study are related to myocardial oxygen supply and demand. It would have been extremely useful to see if the analysis of left ventricular wall mass would further classify its subjects according to future coronary events. This is even more important now that we are beginning to recognize that increases in left ventricular mass (in patients who presumably have no coronary artery disease) predispose to significant subsequent cardiovascular morbid events (8). Unfortunately, contrast left ventriculography was not performed in this study, and these rather important ventricular wall mass data are therefore apparently unavailable.

Despite these difficulties, however, the work by Wilson et al. (1) represents a much needed first step toward a better understanding of which diagnostic evaluations give the best overview of problems confronting a patient with an acute myocardial infarction and single vessel coronary artery disease. It should form a solid basis for the next crucial step: how to use these and subsequent diagnostic data to decide which of these patients should be treated aggressively with angioplasty or surgery and which can be safely managed with a conservative approach.

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