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Selecting the most appropriate reperfusion therapy for acute myocardial infarction. How useful are guidelines?

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Widely different therapies are currently being given to patients with an acute myocardial infarction. For those presenting with ST segment elevations or new bundle branch block within 6 to 12 h from the onset of symptoms, pharmacological and mechanical reperfusion strategies can be considered. For both strategies, impressive survival advantages have been demonstrated in clinical trials.[1, 2] Based on the clinical condition of the patient and, perhaps even more, on non-medical considerations, simple treatment with aspirin and streptokinase, or very aggressive and complicated treatment consisting of direct angioplasty followed by stent deployment associated with aPTT-adjusted heparin, aspirin and ticlopidin, may be chosen. Obviously, the efficacy of early reperfusion, the clinical benefit/risk ratio and the cost-effectiveness of these treatments differ enormously.

The increasing availability of catheterization laboratories providing 24 h service for emergency coronary artery interventions and the growing number of thrombolytic regimens with which reperfusion can be obtained pharmacologically, on the one hand, and the increasing constraints on health care expenses on the other, make it very difficult for the practising physician to choose. Boersma et al., in this issue offer a number of guidelines to select the most appropriate reperfusion strategy for an individual patient.[3]. They developed a model to calculate the expected gain in life expectancy by reperfusion therapy based on patients’ characteristics (of which age is by far the most important factor), predicted infarct size (using the amount of ST-segment elevations) and time to treatment. The expected benefits range from less than one month to more than 3 years. These data (which can be printed on a card) are very helpful for the physician who is often confronted with budgetary and organizational constraints and who has to select, on the spot, the best available treatment. Perhaps these guidelines are even more valuable for health authorities who have to take decisions on reimbursement policies for new reperfusion techniques. Indeed, the times are over when the medical community takes only a limited interest in the costs of a new therapy leading to a survival advantage.

Using these tables for their own patients, the authors recommend not giving any reperfusion therapy to 5 or 10% of patients in whom the estimated gain is negligible, and to perform direct angioplasty in the 5 or 10% with the highest expected gain in life expectancy or with a markedly increased risk for cerebral bleeding. For half of the remaining 80 or 90% of patients with the highest expected clinical benefit, front-loaded rt-PA is recommended and for the other half, streptokinase.

Obviously these practical recommendations are very arbitrary and are not useful in every hospital: a 24 h service for direct angioplasty is available in only a limited number of hospitals throughout the world and in countries with very limited resources for health care even rt-PA is out of the question. Furthermore, the decision
made by the individual clinician will not be based only on life expectancy calculations and risk of cerebral bleeding. Other clinical information (such as previous history of angioplasty or bypass surgery, previous administration of streptokinase, recent surgery, anticipated problems with vascular access etc.), patient’s preference and many practical considerations (such as, for example, ongoing procedures in the catheterization laboratory) will also influence the decision. As always, guidelines or practical recommendations have to be interpreted within the proper clinical context. If not, they may become dangerous, as put forward by Wood in 1950[4]: ‘Yet there is plenty of evidence to show that we are in danger of losing our clinical heritage and pinning too much faith in figures thrown up by a machine. Medicine must suffer if this tendency is not checked.’

Thus, Boersma et al. are to be congratulated for synthesizing available survival data from clinical trials into useful tables. These tables will have to be updated when the results of newer and better reperfusion therapies become available, and their practical use for selecting the most appropriate therapy will always have to be adjusted to the local hospital situation and to the complex clinical presentation of the individual patient who needs reperfusion. They can then provide a sensible framework with which to make treatment decisions in a consistent manner.

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References

Using exercise endpoints in heart failure trials: design considerations

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Over the last decade exercise testing has been used as a tool to evaluate the efficacy of various treatments for heart failure. This approach has been based upon the expectation that changes in exercise time are a more objective way of assessing functional status, compared to a subjective assessment of symptoms, and that there is a relationship between changes in exercise time and changes in morbidity and mortality. These general considerations, as well as specific aspects of study design of exercise trials which may yield a more reliable result, can be evaluated by reviewing trials of various interventions in heart failure.

The assumption that an exercise test is more ‘objective’ than reports from a patient of improved symptoms or increased activity has not been subjected to rigorous, blinded evaluation. Furthermore, improvements in symptoms themselves may have a mood elevating effect which could affect exercise tolerance independent of physical changes in cardiopulmonary function. The analysis by Narang et al. based on the angiotensin converting enzyme (ACE) inhibitor trials indicates a high degree of concordance between exercise tolerance and improvements in New York Heart Association Functional Class (NYHA-FC), a global and simple measure based upon symptoms at various activity levels[1]. Similar results have been seen in trials of other interventions such as digoxin. It could also be reasonably argued that there is no need to perform exercise tests and that careful and unbiased documentation of symptomatic improvement may be all that is needed. It is, however, likely that both exercise tests and symptomatic functional status provide complementary information, but reflect different domains of patient status, since both appear to be independent predictors of morbidity and mortality[4]. Given the importance of this issue, a formal evaluation of this question in a careful prospective study is needed.