Evolving Treatment Options in Coronary Artery Disease

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Coronary artery bypass grafting (CABG) is a major surgical procedure with substantial morbidity and mortality. It is therefore not surprising that percutaneous coronary interventions (PCIs), which are much less invasive, would seem like an attractive alternative.

However, this meta-analysis of 6 randomized studies comparing CABG with PCI in patients with multivessel disease shows the clear superiority of CABG: a 27% reduction in total mortality. The value of this meta-analysis is that it was powered for comparing mortality, which was not possible for the studies individually. There was also a significant reduction in myocardial infarction and in repeat revascularization with CABG. There was a trend toward more strokes with CABG, but it did not reach statistical significance, and the absolute rate of stroke was relatively low. The meta-analysis included only those studies performed in the modern era with a high use of arterial grafts for CABG and a high use of stents for PCI. Most patients had preserved ejection fraction.

The biggest limitation of the meta-analysis is a limitation of the studies, beyond the control of the authors. Only 1 of the 6 randomized studies included a medical therapy arm, and it showed no statistical difference between CABG and medical therapy on 5-year mortality, although acute myocardial infarctions were more common in the medical therapy arm.

The fact that modern trials have been designed without a medical therapy arm makes me wonder how often that option is minimized or omitted in discussions with patients with preserved ejection fraction. This deficiency in the trial design reflects a weakness of actual practice. Although when PCI was first introduced in the 1980s it was said that it would replace CABG, in current practice, it is being used instead of medical therapy, often before medical therapy is even attempted. This is particularly problematic because some patients who are unwilling to have surgery may agree to a percutaneous procedure, even though it may have a greater mortality risk than CABG and may cause them greater harm than medical therapy. They might make a different decision if they knew that medical therapy was a viable option.

Meta-analysis is a powerful tool for combining data across studies. As is the case in this study, the larger sample sizes enable us to answer questions we otherwise could not. Now we need to ensure that our studies and our patient discussions include all the viable treatment options.