Editor's Page

Expanding the Boundaries of Interventional Cardiology

CHRISTODOULOS I. STEFANADIS

1st Department of Cardiology, University of Athens Medical School, Hippokration Hospital, Athens, Greece

It is beyond any doubt that interventional cardiology has made huge advances and major improvements in the treatment of coronary as well as structural heart disease. As a result, areas that were exclusively thought to belong to the surgical arena are questioned and challenged by interventional cardiologists. Among the fields where cardiac surgery and interventional cardiology have started to overlap are the treatment of multi-vessel coronary artery disease and valvular heart disease. Recently, studies that reinforce this opinion have been reported in the literature, while others are under way or have started enrolment.

Indeed, the report of the SYNTAX randomised trial,[1] comparing drug-eluting stents (DES) to coronary artery bypass graft (CABG) surgery, established some of the advantages of percutaneous coronary intervention (PCI) over CABG in patients with 3-vessel disease or left main and 1- to 3-vessel disease, showing a lower incidence of stroke (0.6% vs. 2.2%) and shorter hospitalisation (7 vs. 14 days) at 1-year follow up. In addition, competitive results were reported when treating patients with left main and/or 1-vessel disease with PCI. Although the non-inferiority criterion was not met by PCI in this study, this was due mainly to a higher revascularisation rate in the PCI group, whereas all-cause death, cerebrovascular events, myocardial infarction up to 12 months, or death alone, were not significantly different between the two treatment arms. It was also reassuring concerning DES safety that symptomatic graft occlusion (3.4%) was identical to stent thrombosis (3.3%) in a 12-month period.

In agreement with the changing landscape in the field of coronary intervention comes the report of the CARDia study.[2] CARDia was a randomised trial of diabetic patients with multi-vessel disease amenable to both CABG and PCI. The hypothesis was that optimal PCI would not be inferior to up-to-date CABG. The results documented that no apparent difference between PCI and CABG was found at one year, either in death or in the composite endpoint of death, myocardial infarction and stroke. However, more repeat revascularisations were observed in the PCI group. Considering the results of this study, PCI may now be considered a reasonable strategy in diabetic patients with multi-vessel disease, especially if a longer follow up confirms these results.

Aortic stenosis is one of the most common valvular heart lesions in Europe and the United States. There is no question that surgical aortic valve replacement remains at this point in time the treatment of choice for degenerative, symptomatic severe aortic stenosis, with a low operative risk. This procedure has excellent long-term results as far as survival and symptom improvement. However, advanced age and comorbid conditions render this procedure inapplicable for about one third of patients who would benefit from valve replacement. This reality has resulted in the natural expansion of the field of interventional cardiology to find innovative percutaneous means for treating this disease. Two types of valves for aortic valve stenosis have received the CE mark in Europe for percutaneous insertion. They are both currently implanted in patients with a high surgical risk who are enrolled in registries that will provide us with the evidence of the long-term benefits, as well as of the potential risks of this procedure when applied in the clinical arena. Despite our enthusiasm about these innovative procedures, we must confine ourselves to high-risk patients until strong evidence concerning

non high-risk patients, with a long term follow-up, is provided by randomised clinical trials.

To move away from the currently available and time-proven valid surgical aortic valve replacement is not justified at this point in time. The new devices will remain a niche for the time being, and will only be used in patients who are at high risk for surgery or inoperable. On the other hand, it is our belief that in the future, with the availability of retrievable and repositionable, lower profile, percutaneously introduced aortic valves, the number of patients who are treated percutaneously will increase. Along with the ongoing technical refinements, increasing experience from large randomised trials and improvement in long term outcomes, we believe that percutaneous aortic valve implantation will become an important tool for the treatment of lower surgical risk patients who suffer from severe symptomatic aortic stenosis.

References

1. Serruys PW, Morice MC, Kappetein AP, et al; SYNTAX Investigators. Percutaneous coronary intervention versus coronary-artery bypass grafting for severe coronary artery disease. N Engl J Med. 2009; 360: 961-972.
2. Coronary Artery Revascularization in Diabetes Trial (CARDia). Presented at ESC 2008.