Editor's Page

Are All Drug-Eluting Stents the Same?

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The invention of stents dramatically reduced the incidence of restenosis in patients treated with coronary angioplasty, eliminating two of the three restenosis factors: negative remodelling and elastic recoil. Further, the use of drug-eluting stents (DES) dealt with the problem of restenosis by reducing intimal cell proliferation in the vessel where the angioplasty was performed. First generation DES, sirolimus-eluting (SES) and paclitaxel-eluting (PES) stents, were more effective than bare metal stents, but raised the question of safety because of their higher rate of thrombosis. For that reason, the second generation stents, everolimus-eluting (EES) and zotarolimus-eluting (ZES) stents, were developed and exhibit clearly lower thrombosis rates. Today, in the hail of new DES varieties and new clinical studies, it remains undetermined whether among all these commercially available products there are significant clinical differences and whether the differences in safety and efficacy amount to a class effect.

Data concerning the efficacy of second-generation DES come mainly from retrospective studies. One such study was the X-SEARCH study in Holland, which compared the outcomes of patients treated with EES with outcomes of patients in the RESEARCH and T-SEARCH studies who were treated with SES and PES, respectively. This study found no differences with regard to deaths, re-infarction or stent thrombosis. The SPIRIT III study was the first randomised trial to show the superiority of second-generation over first-generation DES, demonstrating a lower mortality and re-infarction rate for EES compared to PES in patients who were followed for three years. The largest randomised trial of DES was SPIRIT IV, which compared 2416 patients with EES and 1229 patients with PES and concluded that EES were associated with a lower rate of target vessel revascularisation and a lower incidence of stent thrombosis. These findings were confirmed by the COMPARE study, which included patients whose clinical characteristics were representative of daily clinical practice. Similar differences between EES and SES were evaluated in a subanalysis of the ISAR-TEST 4 study, which after following patients for one year found no differences with regard to safety. The ENDEAVOR III and IV studies compared ZES to SES and PES, respectively, and found similar safety in both first- and second-generation DES. Contradictory data from the SORT-OUT III study and the Western Denmark Heart Registry indicated that ZES had a higher rate of culprit lesion revascularisation compared to SES. Finally, the only study to date that directly compared two second-generation DES found that there were no material differences between them in terms of clinically directed need for revascularisation after a 13-month follow up.

There are ample data from the international literature showing the efficacy of the newest stents, as well as the continuing battle between them for a foothold in interventional cardiology. Sure conclusions about which stent is the best and safest cannot be drawn; however, it is clear that the choice must be individualised, guided solely by the benefit to the patient. Even in these troubled economic times, the interventionalist cardiologist must have the latest and most effective means to hand, so that decisions may be based on scientific data and not on the microeconomic needs of an employer, whether the latter be the state or some private body.