

Drug-eluting stent in diabetes

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EDITORIAL

Long-term evaluation of cardiovascular risk among diabetic patients has shown that the incidence of death due to myocardial infarction among these patients is 20%, whereas among nondiabetic patients it is only 3.5%. Such observations have led to classifying diabetes as a risk that is equivalent to established coronary artery disease.¹ Among patients with established coronary artery disease, the presence of diabetes has been found to increase the five-year mortality rate to more than twice what is seen for nondiabetic patients.² The long-term outcome for patients with diabetes following revascularization is also adverse. Increased postprocedure mortality among angioplasty patients with diabetes has been documented (3.2% *versus* 0.5%).³ Diabetes also confers a worse long-term outcome among patients undergoing bypass surgery. The Society of Thoracic Surgeons' database shows that the surgical risk for diabetic patients is greater than for nondiabetic patients: 3.7% *versus* 2.7%, with greater risk for those requiring insulin.⁴

Diabetes gives rise to a number of metabolic disturbances that result in progression of atherosclerosis and occurrence of cardiac events. The presence of hyperglycemia, abnormal lipid metabolism and insulin resistance, together with occurrences of hypertension, all result in acceleration of the atherosclerotic process. Increased oxidative stress results from decreased nitric oxide production, which is caused by altered endothelial cell function due to hyperglycemia.⁵ Release of free fatty acids from adipose tissue due to insulin resistance leads to oxidative stress and decreased nitric oxide production.⁶ Increased endothelin production in diabetic patients also results in vasoconstriction. Platelet function is also altered in diabetes cases.⁷ Lipid abnormalities may result in elevated triglyceride levels with decreased high density lipoprotein (HDL) levels.⁸ Hypertension may be associated with diabetes and renal dysfunction. Rapid progression of atherosclerosis and a greater tendency towards unstable platelets result in cardiac events.

Whenever a promising study does not produce the intended solution, there is a tendency towards focusing it on a subgroup of more fragile patients, who are therefore more likely to respond well to the treatment in question. This happens particularly with studies on diabetes because of the destructive power of this disease in relation to vascular capability. Whereas physiopathological reasoning is elegant, its verification is shaky.

Thus, despite many studies of high methodological quality looking for the best evidence regarding the effectiveness of drug-eluting stents in coronary diseases among subgroups of diabetic patients,⁹⁻²⁶ there have not been any data from randomized controlled trials that could be used in meta-analyses. This seems to us to be a deliberate omission of data without statistical significance, although some studies make reference to diabetes in their presentations of results. On the other hand, these trials have frequently presented separate comments referring to diabetic patients.

A recently published systematic review²⁷ compared drug-eluting stents and bare-metal stents, and additionally compared sirolimus-eluting stents *versus* paclitaxel-eluting stents. Five aims were defined for the study, and stent type in relation to diabetes was not among these aims, even though that review cited three studies²⁸⁻³⁰ in which 100% of the patients were diabetic. The discussion in that review makes contradictory statements regarding diabetic patients, while seeming to take a position in favor of bare-metal stents.

To date, there has not been any evidence that drug-eluting stents are preferable for treating diabetic patients with coronary disease. The data omissions in the published studies make this statement clear. As can be seen from the main studies, there have not been any data supporting the effectiveness of drug-eluting stents and consequently their use as the preferential treatment for coronary disease in diabetic patients. Many revascularization results have been given without specifying whether the revascularization was surgical or percutaneous. This lack of precision in defining outcomes has caused many misleading conclusions in the medical literature in this field.

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