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EDITORIAL COMMENT

Which Stent for Diabetic Patient With Coronary Artery Disease?*

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With the advance of stent device technologies, contemporary coronary drug-eluting stents (DES) have reduced the need for repeat revascularization and the rate of stent thrombosis (1). However, the presence of diabetes mellitus (DM) still remains a challenge because patients with DM have more severe extent of coronary artery disease at the time of percutaneous coronary intervention (PCI) and even worse outcomes after PCI (2,3).

DM is associated with disturbances that accelerate atherosclerosis progression and the proinflammatory condition that enhances the vasculo-proliferative response to stent-mediated arterial injury (4). Thus, in clinical trials evaluating the performance of DES, DM has been always a particular disease subset, and several studies were designed only for patients with DM. However, there is still limited data regarding the contemporary DES particularly for patients with DM, and the choice of optimal DES for patients with DM remains an unresolved issue. Furthermore, with several DES types available, it is a complex process to choose the optimal stent type while considering the platform, polymer, and drug along with clinical presentations or comorbidities, in a daily clinical practice.

In this issue of *JACC: Asia*, Yang et al (5) evaluated the effectiveness and safety profiles of several contemporary DES in patients with DM in a clinical setting. From a multicenter prospective registry, 7,823 patients with DM were selected who were treated with 4 contemporary DES; 2,877 with a cobalt chromium everolimus-eluting stent, 789 with a biodegradable polymer biolimus-eluting stent, 2,286 with a platinum chromium-everolimus eluting stent, and 1,871 with a resolute zotarolimus-eluting stent (Re-ZES). Mean age was 65 years and 20% presented with myocardial infarction. An average stent length per patient was 30 mm. The median follow-up duration was 2.9 years, and 3-year target-vessel failure (a composite of cardiac death, target-vessel myocardial infarction, and target-vessel revascularization) was assessed. The 3-year adjusted rates of target-vessel failure were not significantly different according to different DES types. The incidence of stent thrombosis was considerably low (<1.0%) for all types of contemporary DES. Although the target-vessel failure was significantly higher in patients with insulin-treated DM versus those with noninsulin-treated DM, the relative treatment effects for different types of DES were consistent.

The investigators should be congratulated for performing this multicenter, contemporary clinical practice registry involving unrestricted use of several second-generation DES. Their findings provide valuable insights on the relative performance between different types of contemporary DES and help to decide on DES for patients with DM in the clinical PCI setting. However, the results from this investigation need to be interpreted in the context of the following considerations.

First, this study was not a randomized study with inherent limitations, including unbalanced baseline characteristics and unmeasurable confounders.

Second, a relatively small number of patients were included. Although 24,516 patients were included in the original registry, 7,823 (32%) patients were included because diabetic patients were selected in the present study. With this number of patients, 4 types of DES were compared, resulting in a smaller number of subjects in each type of DES.

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Third, the clinical follow-up was restricted to 3 years. The median follow-up duration of 2.9 years might be too short to evaluate the safety and efficacy of the DES. Considering that the diabetic condition is highly prone to the progression of neoatherosclerosis, more long-term follow-up is necessary.

Neoatherosclerosis, which is well known as the main mechanism of very late stent thrombosis or target-lesion revascularization at the late period, is time-dependent; the frequency of neoatherosclerosis increases with stent age (6). Any repeat revascularization in the Kaplan-Meier curves started to diverge after 1 year, especially in the patients with Re-ZES, although the curves seemed to be identical within 1 year. The adjusted log-rank *P* value was 0.168, and the comparison between 2 groups (Re-ZES vs cobalt chromium everolimus-eluting stent) showed a 95% confidence interval of 1.01 to 1.53. Therefore, a larger number of patients with longer-term follow-up might lead to statistically significant difference according to the stent types.

Fourth, although medications for DM were only reported as for insulin in this study, medical therapy for DM has also evolved as much as PCI technology, and it has been shown to improve cardiovascular outcomes (7). The findings of significantly higher target-vessel failure in patients with insulin-treated DM than in those with noninsulin-treated DM also suggest the importance of systemic treatment of DM as well as locally applied treatment of coronary artery disease such as PCI.

In summary, the investigators have provided valuable clinical evidence on the choice of contemporary DES in the treatment of patients with DM from a multicenter clinical practice PCI registry. No significance between-group differences for a 3-year target vessel failure were observed in patients with DM undergoing PCI with various types of contemporary DES. Further randomized studies with adequate power and long-term follow-up are necessary to confirm these findings.

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