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Editorial

Clinical Significance of Newly Diagnosed Diabetes Mellitus in the Era of DES for Acute Myocardial Infarction

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▸ See the article "Long-term Prognosis and Clinical Characteristics of Patients with Newly Diagnosed Diabetes Mellitus Detected after First Acute Myocardial Infarction: from KAMIR-NIH Registry" in volume 48 on page 134.

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Diabetes mellitus (DM) was an important independent predictor of mortality in patients with acute myocardial infarction (AMI), even after revascularization.[1),2)] However, DM status is an important factor affecting the risk of cardiovascular events in patients with AMI, controversy remains as to the exact role and extent of this influence. Especially, new onset diabetes is now major concern in preventive cardiology and diabetology to reduce cardiovascular risk for primary or secondary prevention. In the current issue of the *Korean Circulation Journal*, the authors reported long-term prognosis and clinical characteristics of patients with new-DM detected after the first AMI from the KAMIR-NIH registry.[3)] This multicenter nationwide prospective registry study was initiated in November 2011 and enrolled 10,455 patients with AMI and included in 6,236 patients with non-DM, 659 patients with new-DM, and 3,560 patients with known-DM, respectively. As a result, new-DM patients had a similar risk of cardiac events to that of non-DM patients, although known-DM patients showed a significantly higher risk of cardiac events than non-DM patients. These findings are different from the VALsartan In Acute myocardial iNfarcTion (VALIANT) trial,[4)] a multicenter large-population (n=14,703) prospective random study, which showed that the patients with previously known (n=3,400) and newly diagnosed diabetes (n=580) had similarly increased adjusted risks of mortality and cardiovascular events. Harmonizing Outcomes with RevascularizatiON and Stents in Acute Myocardial Infarction (HORIZONS-AMI) sub-study (n=3,599) also showed that those with DM (n=593) and new-DM (n=130) had higher 3-year rates of death and major adverse cardiac events compared with nondiabetics.[5)]

We can estimate the reasons why clinical significance of new-DM was different from VALIANT or HORIZONS-AMI trials: 1) introduction of new anti-diabetic drugs and intensive strategy of glucose control, 2) advanced stent platforms and percutaneous coronary intervention (PCI) techniques, and 3) other risk controls of coronary artery disease (CAD), such as hypertension, dyslipidemia, and obesity. New anti-diabetic drugs include dipeptidyl peptidase 4 (DPP-4) inhibitors (2006), sodium-glucose cotransporter (SGLT2) inhibitors (2013), and glucagon-like peptide-1 receptor (GLP-1R) agonists (2010).[6)] Current guideline directed that the patients should be motivated to initiate pharmacotherapy without delaying when glycemic control is not achieved or if glycated hemoglobin (HbA1C) rises to 6.5% after 2–3 months of lifestyle intervention. If the HbA1C level rises to 7.5% while on medication or if the initial HbA1C is ≥9%, combination therapy with two oral agents, or with insulin, may be considered.[7)] Patients with DM have a higher burden of atherosclerosis, smaller coronary arteries, and a higher risk of repeat revascularization after stent implantation. Drug-eluting stents (DES) have been

widely tested in patients with diabetes and have consistently reduced the rate of restenosis, as compared with bare-metal stents.[8] Early-generation DES released sirolimus or paclitaxel and had stainless-steel platforms, whereas new-generation DES release everolimus or zotarolimus and feature cobalt-chrome or platinum-chrome platforms with thinner strut thickness and more biocompatible, durable polymer coatings.[9] Therefore, these advanced stent platforms can also contribute to reduce major adverse cardiovascular events (MACEs) in AMI patients with DM and these beneficial effects might be more remarkable in new-DM patients as expected with less comorbidities and lower extent of CAD.[10]

In conclusion, even though it was a registry-based study with several limitations such as lack in follow-up glucose status and medication compliance, this article showed that new-DM was not associated with increased risk of death or adverse cardiovascular events compared to the risk noted for non-DM. These findings may reflect the impact of recent update of the treatment guideline of diabetic patients and advanced intervention skills with new generation DES in patients with AMI and DM.

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