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Editorial

The Management of Patients with Diabetes Mellitus in Cardiology

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The clinical outcome has been improved after the onset of infarction from the beginning of Framingham Heart study and the recent mortality rate declined to one fourth since then, because of the scientific progress [1]. Early coronary intervention with stent immediately after the admission and the medications controlling the risk factors play a big role to prevent the following cardiovascular events. In recent two decade, among the drugs proving the evidence, the statin and dual antiplatelet (DAPT: aspirin and P2Y12 inhibitor) especially improved outcome as shown in SWEDHEART [2]. DAPT prevents the thrombus formation following the plaque rupture and stenting, and statin stabilize the vulnerable plaque [3] to prevent the plaque rupture.

The scientific progress also reduced the mortality in patients with diabetes mellitus (DM) and its impact was more remarkably compared to the patients without DM; however, the prognosis is still worse in patients with DM [4]. Although patients with DM were high age and had previous CV disease and comorbidities compared to patients without DM in clinical trials, the clinical outcome in DM was worse after the factors were adjusted [5].

One of the reason is the difference in plaque morphology between patients with DM and without DM. The IVUS study revealed that DM patients had a greater atheroma volume without the adequate vessel remodeling resulting in the narrow lumen compared to non-DM patients. The plaques in DM patients ware also more vulnerable compared to non-DM. The extensive atherosclerosis in DM is also difference in the response to lipid lowering therapy. The lipid lowering by statin reduced the plaque volume, but its effect was diminished by the presence of DM [6]. These morphological differences increased the recurrent myocardial infarction or stoke [5].

The other reason is the high incidence of heart failure (HF) in DM. The diastolic dysfunction observed in the early phase of DM or comorbidities might contribute to the high incidence of HF. The precise mechanism has not been clarified, but sodium glucose cotransporter 2 (SGLT) 2 inhibitor reduced the incidence of HF and improved the outcome in patients with DM [7]; however, its effect has not been proved in the patients with acute myocardial infarction. Furthermore, SGLT2 is expected to be effective for HF patients without DM. If SGLT2 reduce HF equally between DM and non-DM, the difference will still remain.

The extensive atherosclerosis and impaired cardiac function in DM has not been improved by the anti-hyperglycemic drugs. Previous clinical studies failed to improve outcome except SGLT-2 and GLP-1 receptor agonist; however, these drugs did not reduce the atherosclerotic events [7]. Only UKPDS [8] for the subjects with newly diagnosed DM reduced the CV events so far, which suggests that the intervention should be necessary to prevent CV events in the early phase of DM progression or pre-diabetic stage like as postprandial hyperglycemia [9].

Bibliography

1. Nabel EG and E Braunwald. "A tale of coronary artery disease and myocardial infarction". *New England Journal of Medicine* 366.1 (2012): 54-63.

2. Szummer K., *et al*. "Improved outcomes in patients with ST-elevation myocardial infarction during the last 20 years are related to implementation of evidence-based treatments: experiences from the SWEDEHEART registry 1995-2014". *European Heart Journal* 38.41 (2017): 3056-3065.

3. Hirayama A., *et al*. "Qualitative and quantitative changes in coronary plaque associated with atorvastatin therapy". *Circulation Journal* 73.4 (2009): 718-725.

4. Low Wang CC., *et al*. "Clinical Update: Cardiovascular Disease in Diabetes Mellitus: Atherosclerotic Cardiovascular Disease and Heart Failure in Type 2 Diabetes Mellitus - Mechanisms, Management, and Clinical Considerations". *Circulation* 133.24 (2016): 2459-502.

5. Tajik AA., *et al*. "A history of diabetes predicts outcomes following myocardial infarction: an analysis of the 28 771 patients in the High-Risk MI Database". *European Journal of Heart Failure* 19.5 (2017): 635-642.

6. Nicholls SJ., *et al*. "Effect of diabetes on progression of coronary atherosclerosis and arterial remodeling: a pooled analysis of 5 intravascular ultrasound trials". *Journal of the American College of Cardiology* 52.4 (2008): 255-262.

7. Lytvyn Y., *et al*. "Sodium Glucose Cotransporter-2 Inhibition in Heart Failure: Potential Mechanisms, Clinical Applications, and Summary of Clinical Trials". *Circulation* 136.17 (2017): 1643-1658.

8. Holman RR., *et al*. "10-year follow-up of intensive glucose control in type 2 diabetes". *New England Journal of Medicine* 359.15 (2008): 1577-1589.

9. "Glucose tolerance and mortality: comparison of WHO and American Diabetes Association diagnostic criteria. The DECODE study group European Diabetes Epidemiology Group Diabetes Epidemiology: Collaborative analysis of Diagnostic criteria in Europe". *Lancet* 354.9179 (1999): 617-621.

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