Treatment of complex coronary artery disease in patients with diabetes mellitus and chronic kidney disease: 10-year results comparing outcomes of CABG and PCI in the SYNTAXES trial

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Background: The SYNTAX Extended Survival (SYNTAXES) study is an investigator-driven extension of follow-up of the SYNTAX trial, which was a non-inferiority trial that compared percutaneous coronary intervention (PCI) using first-generation paclitaxel-eluting stents with coronary artery bypass grafting (CABG) in patients with de-novo three-vessel and left main coronary artery disease. The SYNTAXES study is the first randomized trial that reported the complete 10-year data on all-cause death in patients with complex coronary artery disease.

Purpose: Patients with coronary artery disease (CAD) and concomitant diabetes mellitus (DM) or chronic kidney disease (CKD) are more susceptible to major adverse cardiovascular and cerebrovascular events. However, to date, the long-term prognosis and which revascularization strategy was associated with better clinical outcomes for patients with complex coronary artery disease and concomitant with DM and CKD have not been documented.

Methods: In this sub-analysis of the SYNTAXES trial, a total of 1,638 patients were classified into four subgroups according to the DM and CKD status: DM–/CKD– (n=999, 60.1%), DM+/CKD– (n=323, 19.7%), DM–/CKD+ (n=231, 14.1%), and DM+/CKD+ (n=85, 5.2%). The treatment effects of PCI and CABG were analyzed in each subgroup. The primary endpoint was all-cause death at 10 years.

Results: Compared with the DM–/CKD– patients, patients with DM+/CKD+ were older, more often had a history of stroke, hypertension, heart failure, and were more frequently presented with total occlusion, bifurcation lesion and three-vessel disease. At 10 years, patients with DM+/CKD+ had a 3.94-fold higher incidence of all-cause mortality compared with DM–/CKD– individuals (54.1% versus 18.9%, 95% CI [2.85–5.44]). Patients with DM–/CKD+ (38.1%, HR 2.36; 95% CI [1.83–5.44]) or DM+/CKD– (28.2%, HR 1.61; 95% CI [1.26–2.07]) had intermediate risk profile. For DM+/CKD+ patients, compared with PCI, those who underwent CABG were associated with lower incidence of all-cause mortality (64.3% versus 44.2%, adjusted HR 0.52; 95% CI [0.27–0.99], p=0.047, pinteraction=0.443). The number of needed-to-treat to reduce mortality for CABG was 12.

Conclusion: In the SYNTAX population, patients with DM and CKD are at markedly increased risk of long-term mortality rate compared with patients one or neither of these risk factors. For patients with both comorbidities, CABG was associated with better clinical outcome compared with PCI. These findings should be interpreted as hypothesis-generating.

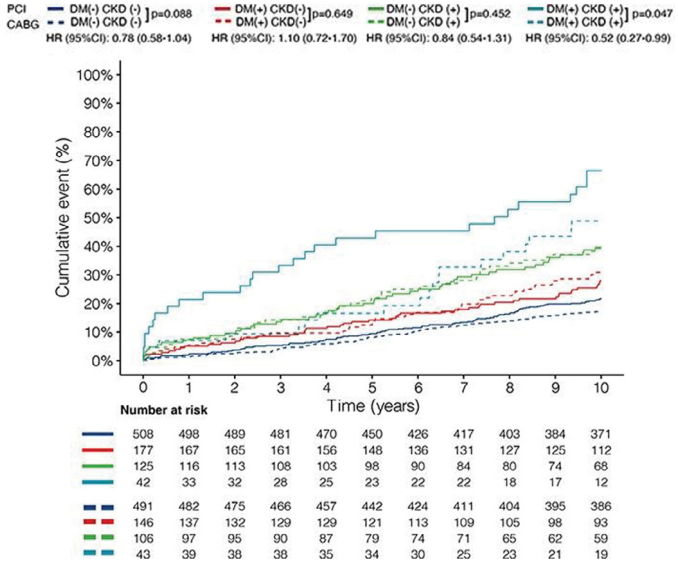

Figure 1. Kaplan-Meier curves showing the clinical events according to treatment and DM/CKD status.