Impact of renal function on silent myocardial ischemia and long-term outcomes in asymptomatic patients with diabetes mellitus

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Introduction
Coronary artery disease (CAD) is a major cause of the morbidity and mortality in diabetic patients, however aggressive screening for CAD in asymptomatic patients is not recommended in guidelines. Chronic kidney disease (CKD) is one of serious co-morbidity and such patients especially tends to be observed without angiography to avoid contrast induced nephropathy. It is well known that systemic atherosclerosis worsens renal function. Thus, chronic kidney disease (CKD) may be associated with potential myocardial ischemia and worse clinical outcomes in asymptomatic DM patients.

Purpose
to determine the impact of CKD on the incidence of silent myocardial ischemia (SMI) and the long-term outcomes in asymptomatic patients with DM.

Methods
A total of 461 consecutive patients with DM were prospectively studied from July 2011 to August 2017. All patients were asymptomatic and self-sufficient in daily life. They underwent the ergometer exercise test. Coronary angiography was performed when the stress test was positive, or the patients did not achieve 90% of target heart rate. Primary end point was major adverse cardiac and cerebrovascular events (MACCE) including death, non-fatal myocardial infarction and stroke.

Results
SMI was diagnosed in 81 patients. The incidence of SMI increased with higher stage of CKD as shown in Figure. The median follow-up duration from diagnosis was 35 (15–57) months in the overall cohort of 461 diabetic patients. SMI patients had worse clinical outcomes (Figure). Among 81 patients with SMI, severe CKD group (= stage 3a) had worse long-term outcomes. After adjustment of age, gender and coronary risk factors, eGFR was independently associated with MACCE in diabetic patients with SMI [HR0.96, 95%CI(0.923-0.996), p = 0.028].

Conclusions
The incidence of potential CAD was high in CKD and the long-term outcomes of those patients were poor in asymptomatic DM. CKD patients should be aggressively screened for CAD and more intensively treated in our daily practice of DM.
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MACCE major adverse cardiac and cerebrovascular events (death, non-fatal myocardial infarction and stroke); SMI silent myocardial ischemia; CKD chronic kidney disease