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Comparison of efficacy between hydrophilic and lipophilic statin treatment in patients with chronic kidney disease after acute myocardial infarction

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Objectives: Effect of statin treatment is critical to prevent major adverse cardiac and cerebrovascular events (MACEs) after acute myocardial infarction (AMI). Earlier studies demonstrated that the lipophilicity of statin did not affect prognosis in AMI patients without renal dysfunction. However, the effect of statin lipophilicity was not investigated in chronic kidney disease (CKD) patients.

Methods: We enrolled total 2,020 AMI patients with chronic kidney disease (CKD) from Korea Acute myocardial Infarction Registry between November 2011 and December 2015. CKD was defined as an eGFR <60mL/min/1.73 m². Patients were divided into three groups based; hydrophilic (n = 569), lipophilic (n = 1215) and no statin (n = 236) treatment. The primary endpoint was a combination of 2-year major MACEs after AMI occurrence.

Results: The lowest cumulative event rate of MACE and all-cause mortality was observed in patients treated with hydrophilic statin ($P < 0.001$). In multivariable Cox-regression analysis, compared to patients without statin treatment, patients treated with hydrophilic statin were associated with lower risk for composite of MACEs (HR = 0.44; 95% CI 0.44-0.75; $P < 0.001$), all-cause mortality (HR=0.55; 95% CI 0.39-0.78; $P = 0.001$) and coronary revascularization (HR = 0.52; 95% CI 0.34-0.82; $P = 0.004$). Lipophilic statin treatment showed lower risk for revascularization (HR = 0.67; 95% CI 0.46-0.97; $P = 0.032$), but not for composite of MACEs, death, recurrent MI and stroke. Compared to lipophilic statin treatment, hydrophilic statin treatment was associated with lower risk for composite of MACEs (HR 0.69; 95% CI 0.56-0.85; $P < 0.001$) and for all-cause mortality (HR = 0.60; 95% CI 0.46-0.79; $P < 0.001$).

Conclusions: Hydrophilic statin treatment was significantly better to reduce MACEs and all-cause mortality than lipophilic statins in CKD patients with AMI.