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The predictive role of serum triglyceride to high-density lipoprotein cholesterol ratio according to renal function in patients with acute myocardial infarction

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Background: High serum triglyceride to high-density lipoprotein cholesterol (TG/HDL-C) ratio has been reported as an independent predictor for cardiovascular events in the general population. However, the prognostic effect of the TG/HDL-C ratio on patients with renal dysfunction is unclear. We examined the association of TG/HDL-C ratio and major adverse cardiovascular events (MACEs) according to kidney function in patients with acute myocardial infarction (AMI).

Methods: This study was based on a retrospective cohort, the Korea Acute Myocardial Infarction Registry (KAMIR) database. Among 13,897 patients who diagnosed AMI from November 2005 to July 2008, we studied 8,225 patients who had baseline TG/HDL-C ratio. Patients were stratified into three groups by estimated glomerular filtration (eGFR) and the TG/HDL-C ratio was categorized into tertiles based on the quantity of the study population and the distribution of TG/HDL-C ratio. We investigated the 12-month MACEs, including cardiac death, MI, and repeated percutaneous coronary intervention or coronary artery bypass grafting.

Results: During 12-month follow up period, 686 patients (8.3%) had MACEs. The log-rank test identified a significant association between the TG/HDL-C ratio and MACEs ($p < 0.001$) in the whole study cohort. In patients with normal renal function ($eGFR \geq 90 \text{ ml/min per } 1.73 \text{ m}^2$) and mildly reduced renal function ($eGFR = 60-89 \text{ ml/min per } 1.73 \text{ m}^2$), higher TG/HDL-C ratio was significantly associated with increased risk of MACEs (hazard ratio [HR] 1.65, 95% confidence interval [CI] 1.01-2.69, $p = 0.018$; HR 1.46, 95% CI 1.06-1.99, $p = 0.02$, respectively). However, in patients with moderately reduced renal function ($eGFR < 60 \text{ ml/min per } 1.73 \text{ m}^2$), higher TG/HDL-C ratio did not associated with increased risk of MACEs (HR 1.42, 95% CI 0.93-2.17, $p = 0.104$).

Conclusion: A higher serum TG/HDL-C ratio was an independent predictor for occurrence of MACEs in patients with normal and mildly reduced renal function. However, in patients with moderately reduced renal function, the TG/HDL-C ratio did not showed significant association with occurrence of MACEs.

Keywords: major adverse cardiovascular events, renal dysfunction, triglyceride to HDL cholesterol ratio