

Effect of Intensity of Statin on Clinical Outcome in Korean Patients with AMI undergoing PCI

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Background: High intensity statin therapy has been advocated for the patients with coronary artery disease. However, it is still debatable whether high intensity statin therapy provides incremental clinical benefits over lesser intensity statin therapy in Asian people. **Objectives:** We sought to evaluate the impact of intensity of statin therapy on patients with acute myocardial infarction (AMI) undergoing percutaneous coronary intervention (PCI) in Korea. **Methods:** From national health insurance claims data in Korea, 33,390 patients aged 18 years or older without known history of coronary artery disease, who underwent PCI as a diagnosis of AMI between 2009 and 2013, were enrolled. According to the post-discharge statin therapy, patients were categorized into low and moderate intensity (group 1) or high intensity statin therapy groups (group 2). Clinical outcomes were compared between two groups. **Results:** The average age of study participants was 62.1 years and 16,331 (74.8 %) were men. During the follow-up period (median, 2.4 years), there was no significant difference in the incidence of all-cause death between both groups (adjusted hazard ratio [aHR] of group 2, 0.899; 95% confidence interval [CI]: 0.722-1.119; $p=0.341$). **Conclusions:** High intensity statin therapy did not provide incremental benefits on the clinical outcomes in Korean patients with AMI undergoing PCI.

Table 1. Baseline Characteristics of Patients with AMI Undergoing PCI in South Korea

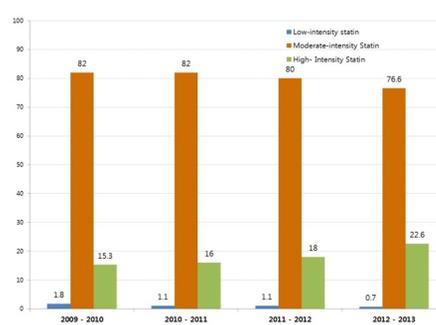
	July 2009 to June 2010	July 2010 to June 2011	July 2011 to June 2012	July 2012 to June 2013
Number of patients	6,743	8,286	8,687	9,674
Age	61.4 ± 12.6	62.0 ± 12.6	62.5 ± 12.8	62.4 ± 12.8
Male gender	5,012 (74.3%)	6,191 (74.7%)	6,410 (73.8%)	7,234 (74.8%)
Comorbid conditions				
Diabetes	1,279 (19.0%)	1,587 (19.2%)	1,772 (20.4%)	2,043 (21.1%)
Diabetes with chronic complications	733 (10.9%)	849 (10.3%)	848 (9.8%)	903 (9.3%)
Hyperlipidemia	1,296 (19.2%)	1,632 (19.7%)	1,861 (21.4%)	2,223 (23.0%)
Hypertension	2,690 (39.9%)	3,309 (39.9%)	3,596 (41.4%)	4,007 (41.4%)
Congestive heart failure	248 (3.7%)	266 (3.2%)	273 (3.1%)	348 (3.6%)
Atrial fibrillation	189 (2.8%)	215 (2.6%)	254 (2.9%)	263 (2.7%)
Valvular disease	19 (0.3%)	29 (0.4%)	36 (0.4%)	24 (0.3%)
Peripheral vascular disease	658 (9.8%)	813 (9.8%)	826 (9.5%)	976 (10.1%)
Cerebrovascular disease	670 (9.9%)	792 (9.6%)	842 (9.7%)	938 (9.7%)
Chronic pulmonary disease	1,021 (15.4%)	1,308 (15.8%)	1,413 (16.3%)	1,757 (18.2%)
Moderate to severe liver disease	31 (0.5%)	33 (0.4%)	16 (0.2%)	20 (0.2%)
Renal disease	126 (1.9%)	159 (1.9%)	162 (1.9%)	218 (2.3%)
Cancer	209 (3.1%)	285 (3.4%)	303 (3.5%)	386 (4.0%)
Rheumatic disease	147 (2.2%)	168 (2.0%)	169 (2.0%)	231 (2.4%)

Table 2. Clinical outcomes according to the intensity of statin

Multivariate analysis	High vs Low + Moderate intensity statin therapy HR (95%)	P-value
Clinical outcomes		
All-cause death	0.899 (0.722-1.119)	0.3412
Recurrent revascularization :PCI	0.970 (0.869-1.082)	0.5857
CAD-related hospitalization	1.012 (0.964-1.063)	0.6207
CHF-related hospitalization	1.019 (0.906-1.145)	0.7575

PCI, percutaneous coronary intervention, CAD: coronary artery disease, CHF: congestive heart

Figure 1. Trends of the use of different intensity of statin therapy



Epicardial fat thickness and neutrophil to lymphocyte ratio are increased in the non-dipper pattern

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Background: Liver fat and visceral adiposity are involved in the development of the metabolic syndrome (MetS), and epicardial adipose tissue reflects visceral fat deposit which affects the cardiac autonomic system. The aim of this study was to determine if, and to what extent, epicardial fat thickness (EFT) and non-alcoholic fatty liver disease (NAFLD) are related to heart rate recovery (HRR) as a simple cardiac autonomic indicator in patients with MetS. **Methods:** A total of 772 consecutive patients in health screening center who underwent abdominal ultrasound, echocardiography and a treadmill test were enrolled. Echocardiographic EFT and HRR, defined as peak heart rate minus heart rate after a 1-minute recovery time, were measured. Patients were classified according to the presence of metabolic syndrome and NAFLD. **Results:** EFT was significantly higher and HRR was significantly lower in NAFLD patients, especially in the MetS with NAFLD, compared to the non-MetS without NAFLD (MetS with NAFLD, EFT 7.5±4.4 mm and HRR 31.9±12.7; MetS without NAFLD, EFT 4.9±3.0 mm and HRR 39.5±11.1; non-MetS with NAFLD, EFT 5.9±3.6 mm and HRR 36.6±12.7; non-MetS without NAFLD, EFT 4.4±3.5 mm and HRR 43.4±14.5; $p<0.001$). Patients with severe ($n=24$, ultrasound score 3) showed significantly higher EFT than those with moderate liver steatosis ($n=123$, score 2) (EFT, 14.2±2.0 vs. 7.5±3.1 mm, $P's <0.001$), and EFT was positively correlated with the severity of liver steatosis ($r=0.431$, $p<0.001$). Moreover, HRR was significantly correlated with EFT ($r=-0.386$, $p<0.001$) and the severity of liver steatosis ($r=-0.324$, $p<0.001$). **Conclusions:** EFT and NAFLD were significantly correlated with HRR in patients with MetS, and therefore may be best related to cardiovascular increased risk. Our result suggests a cross-link between epicardial fat, NAFLD and autonomic dysregulation in MetS.