



IMAGING AND DIAGNOSTIC TESTING

NONINVASIVE ASSESSMENT OF MORPHOLOGICAL CHANGES IN LIPID-RICH CORONARY PLAQUE AFTER STATIN TREATMENT USING DUAL-SOURCE COMPUTED TOMOGRAPHY

ACC Oral Contributions

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Background: Previous large clinical trials have revealed intensive lipid-lowering therapy with statins reduces future cardiovascular events. Recent clinical studies using invasive modality reported that statin therapy reduces luminal stenosis and stabilizes coronary plaque vulnerability. Dual-source computed tomography (DSCT) has a high temporal resolution and improves accuracy at detecting luminal stenosis, even in tachycardia patients. The purpose was to non-invasively evaluate the serial changes of morphological features in lipid-rich coronary plaque (LRCP) after intensive statin treatment in patient with acute myocardial infarction (AMI) by using DSCT.

Methods: We studied 13 non-stenotic LRCP in 11 consecutive AMI patients who were treated with rosuvastatin (2.5-12.5 mg/day). Target LRCPs were evaluated by DSCT before and 24 weeks after treatment. LRCP was defined as a plaque containing area of CT value less than 30 HU (lipid core).

Results: After 24-weeks rosuvastatin treatment, LDL cholesterol was decreased from 151.6±28.9 mg/dl to 82.7±23.3 mg/dl (P<0.0001), and HDL cholesterol increased from 43.3±11.6 mg/dl to 48.6±12.3 mg/dl (P=0.0093). Comparing with the baseline values, minimal lumen diameter and longitudinal length of LRCP did not change after treatment. By contrast, the ratio of lipid core volume / LRCP volume significantly decreased from 48.0±9.9 to 43.7±10.6% (P=0.024), respectively) and plaque volume tended to reduced from 144.5±85.5 mm³ to 119.8±78.0 mm³ (P=0.067). Remodeling index of target LRCP significantly decreased from 1.16±0.10 to 1.06±0.12 (P=0.018). Mean CT values of both lipid core and LRCP significantly increased from 7.8±19.3 HU to 33.8±22.3 HU (P=0.016) and from 59.5±17.2 HU to 82.4±27.7 HU (P=0.013), respectively.

Conclusions: Intensive LDL cholesterol lowering therapy with rosuvastatin reduces volume of lipid core and LRCP, and increased CT value of LRCP. DSCT is effective modality for non-invasive assessment of LRCP in patients with AMI.