R2=0.995, p<0.001 vs y=1.04x-0.11, R2=0.97, p<0.001), and it was much more sensitive in detecting tissue prolapsed (100 vs 14 %, p<0.01), thrombus (7 vs 0 %, p<0.01), dissection, mal-apposition qualitatively compared with IVUS.

Conclusions: This prospective multicenter study demonstrates that much more precise evaluation can be expected in coronary lesion by OCT compared with IVUS even in vivo in human. FD-OCT should be more reliable and feasible in the assessment of coronary lesion morphology more than IVUS qualitatively and quantitatively in the clinical setting.

TCT-243

Comparison of Neointimal Coverage of Everolimus-Eluting Stents and Sirolimus-Eluting Stents: Optical Coherence Tomography Subanalysis from the RESET Trial

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Background: Confirming complete neointimal coverage after implantation of a drug-eluting stent is clinically important because incomplete stent coverage is responsible for late thrombosis and sudden cardiac death. Optical coherence tomography (OCT) is emerging as a promising endovascular imaging tool for the evaluation of neointimal response after drug-eluting stent implantation. This study used OCT to compare neointimal response between Everolimus-eluting stents (EESs) and Sirolimus-eluting stents (SESs).

Methods: RESET trial was a prospective dual-arm randomized trial of EESs and SESs in 3197 patients with coronary artery disease. From the RESET trial, 90 patients (EES = 54, SES = 55) with 1-year follow-up OCT were investigated. Image analysis was performed at 1-mm intervals.

Results: OCT identified 9591 struts in EESs and 9425 struts in SESs. The frequency of stent struts with neointimal coverage was significantly higher in EESs compared with SESs (89% vs. 83%, p < 0.001). The frequency of malapposed stent struts was significantly lower in EESs compared with SESs (0.01% vs. 1%, p < 0.001). Averaged neointimal thickness (128 +/− 53 μm vs. 124 +/− 73 μm, p = 0.751) and neointimal volume (25.71 +/− 14.11 mm^3 vs. 23.90 +/− 17.56 mm^3, p = 0.555) was similar in EESs and SESs. Thrombus was observed in 2% of EESs and 11% of SESs (p = 0.113).

Conclusions: In this OCT subanalysis from RESET trial, neointimal coverage was incomplete in both EESs and SESs at 1-year after stent implantation. Uncovered struts and malapposed struts were less observed in EESs compared with SESs.

TCT-244

Impact of Intensive Statin Therapy on Plaque Characteristics as Assessed by Serial Optical Coherence Tomography

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Background: Recent clinical trials have demonstrated that intensive lipid-lowering therapy by statins could prevent recurrent cardiac events after acute coronary syndrome (ACS). Optical coherence tomography (OCT) is capable of estimating fibrous cap thickness (FCT) of coronary atherosclerotic plaques, which might be associated with plaque instability. This study was a prospective, randomized, open-label, dual-center study to compare the effect of intensive vs. moderate statin therapy on FCT by using OCT.

Methods: A total of 56 ACS patients with dyslipidemia [low-density lipoprotein cholesterol (LDL-C) levels >100 mg/dL] were enrolled in this study. After percutaneous coronary intervention (PCI), the patients were randomly assigned to two groups: intensive statin therapy (atorvastatin 20 mg/day, n=27) or moderate statin therapy (atorvastatin 5 mg/day, n=25). OCT was performed to measure FCT in non-culprit intermediate lesions at baseline and 12-month follow-up. Serum profiles of LDL-C, high density lipoprotein cholesterol (HDL-C), high sensitive C-reactive protein (hs-CRP), malondialdehyde LDL (MDA-LDL) and metalloproteinase-9 (MMP-9) were measured before PCI and at 12-month follow-up.

Results: Serum LDL cholesterol levels were significantly decreased in patients with intensive statin therapy (132.7 +/− 28.2 to 70.5 +/− 13.4 mg/dL, -45.4 +/− 13.0%) compared with moderate statin therapy (129.3 +/− 31.3 to 84.9 +/− 23.8 mg/dL, -33.2 +/− 18.1%) (p = 0.02). FCT was significantly increased in patients with intensive statin therapy (119.4 +/− 46.9 to 193.0 +/− 76.0 μm, 66.2 +/− 40.9%) compared with moderate statin therapy (118.0 +/− 44.3 to 142.2 +/− 69.2 μm, 19.8 +/− 32.9%) (p < 0.001). The change of FCT had a significant negative correlation with the changes in LDL-C (r = -0.49, p < 0.001) and MDA-LDL (r = -0.32, p = 0.02), while there was no correlation between the changes of FCT and HDL-C (r = 0.06, p = 0.68). Furthermore, the change in FCT showed a negative correlation with the changes in hs-CRP (r = -0.30, p = 0.03) and MMP-9 (r = -0.57, p < 0.001).

Conclusions: This OCT study suggests that the intensive lipid-lowering therapy with 20 mg/day of atorvastatin might be more helpful to stabilize coronary atheros.

TCT-245

IMPACT OF STATIN THERAPY ON PLAQUE MICROSTRUCTURES ON OPTICAL COHERENCE TOMOGRAPHY

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Background: Favorable effects on progression of coronary atherosclerosis contribute to the ability of statins to reduce cardiovascular events. While statins have been proposed to also stabilize atherosclerotic plaque by lowering LDL-C level and various pleiotropic effects, this has not been well established in vivo. High resolution imaging with optical coherence tomography (OCT) enables visualization of microstructures related to plaque vulnerability. Therefore, the current study investigated the impact of statin therapy on plaque microstructures by using OCT imaging.

Methods: 102 patients with coronary artery disease underwent OCT imaging of non-culprit lipid-rich plaque. Patients treated with (n=44) and without (n=58) a statin were compared with regard to clinical characteristics and OCT-derived features of plaque vulnerability including fibrous cap thickness and microchannels. The impact of low (n=18) and high-dose (n=26) statins on OCT measures was also compared.

Results: Statin-treated patients were more likely to be male (84% vs. 60%, p=0.009) and demonstrated lower leukocyte counts (7731±2900 /ul vs. 9142±3788 /ul, p=0.04) than patients without statin therapy. OCT demonstrated that statin-treated patients were less likely to exhibit microchannels (46% vs. 68%, p=0.03), in association with a greater fibrous cap thickness (86.0±49.8um vs. 72.9±43.0um, p=0.06). Especially, patients treated with high-dose statin therapy were less likely to demonstrate microchannels than patients treated with lower doses (39% vs. 59%, p=0.01).

Conclusions: In the current study, use of statin therapy is associated with less vulnerable plaque features on OCT imaging. Greater OCT evidence of plaque stabilization with high-dose statin therapy is consistent with their favorable effects on cardiovascular outcomes.

TCT-246

Comparison of intravascular ultrasound versus angiography guided drug-eluting stent implantation: a meta-analysis of randomized trials and observational studies involving 17,570 patients

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Background: The impact of intravascular ultrasound (IVUS) guided coronary drug eluting stent (DES) implantation on clinical outcomes remains controversial. A meta-analysis of the currently available clinical trials investigating IVUS guided DES implantation was undertaken.

Methods: We searched Medline, the Cochrane Library and other internet sources, without language or date restrictions for published articles comparing clinical outcomes between IVUS- and angiography-guided DES implantation. Clinical studies with both adjusted and unadjusted data were included.

Results: Nine studies were identified and included in the meta-analysis with a weighted follow-up time of 21.7±11.8 months. Compared with angiography-guidance, IVUS-guided DES implantation was associated with a reduced incidence of death (hazard ratio [HR]: 0.58, 95% confidence interval [CI]: 0.47-0.71, p<0.001), major adverse cardiac events (HR: 0.85, 95% CI: 0.76-0.95, p=0.005) and stent thrombosis (HR: 0.62, 95% CI: 0.46-0.83, p=0.002). The incidence of myocardial infarction (HR: 0.80, 95% CI: 0.59-1.07, p=0.134), target lesion (HR: 0.97, 95% CI: 0.76-1.23, p=0.782) and target vessel (HR: 0.94, 95% CI: 0.79-1.11, p=0.455) revascularization were comparable between the angiography and IVUS-guided arms. Repeat analyses in which the IVUS guided and the angiography guided groups had similar baseline characteristics (apart from older patients and more renal insufficiency in the angiography guided arm) (n=9049), and analyses with studies that were propensity matched (n=4,128), yielded broadly similar results in terms of clinical outcomes.

Conclusions: IVUS-guided coronary DES implantation is associated with a significant reduction in death, MACE and stent thrombosis compared to angiography guidance. Appropriately powered randomized trials are necessary to confirm the findings from this meta-analysis.

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