TCT-670

Uniform Vessel Healing after Everolimus-eluting Stent implantation: Detailed Comparison with Paclitaxel-eluting Stent by Optical Coherence Tomography

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Background: Recent studies have reported favorable angiographic and clinical outcomes after everolimus-eluting stent (EES) implantation. There are, however, few in vivo studies assessing detailed arterial healing status after EES implantation.

Methods: A total of 75 patients (87 lesions) treated either with EES (n=43) or paclitaxel-eluting stent (PES: n=44) who underwent 8-month follow-up OCT were enrolled. In addition to the standard OCT variables, variability of neointima thickness (NIT) was also evaluated in 3-dimensions. To this end, neointimal area was partitioned into 360 equally-spaced radial sectors. Then, mean NIT within 360 each sector was computed on every 1-mm cross-section along the stented segment. Subsequently, the variability of NIT within a whole stent was evaluated by standard deviation (SD) of NIT computed from each sector along the entire stented segment.

Results: EES showed a significantly thinner mean NIT with comparable % uncovered struts than PES. The absolute variability of neointima distribution, assessed by SD of NIT within each stent, was significantly smaller with EES compared with PES The incidence of intracoronary thrombus and struts with peri-strut low intensity area (PLIA), a finding suggestive of delayed arterial healing, were significantly lower in EES-treated lesions than in PES-treated lesions.

Conclusion: EES offered a significant reduction of neointimal proliferation without sacrificing strut surface coverage than PES. A consistent attenuation of neointimal proliferation with improved arterial healing was observed spatially across the full length of EES in contrast to PES.

TCT-671

Can Metabolic Syndrome Predict the Vulnerable Plaque in Patients with Stable Angina Pectoris?: Virtual Histology-Intravascular Ultrasound Analysis

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Background: Vulnerable plaque (VP) in coronary artery can progress to plaque rupture and thrombosis, and have a strong potential to induce acute coronary syndrome. Many studies have demonstrated that metabolic syndrome (MS) is associated with increased risk for cardiovascular diseases and related mortalities. This study aimed to determine the predictive value of MS on VP in the patients with stable angina pectoris (SAP).

Methods: From September 2007 to June 2010, a total of 239 patients with SAP who underwent coronary angiogram and intravascular ultrasound were categorized into two groups: MS group (n = 100, 56 men, 64.7 ± 9.5 years) and non-MS group (n = 139, 98 men, 60.2 ± 8.4 years). National Cholesterol Education Program-Adult Treatment Panel III guideline was used to determine the presence of MS and diverse variables containing IVUS findings were compared between two groups.

Results: MS group were older age and more likely to be women than non-MS group (P < 0.001, P = 0.021, respectively). MS group showed more frequent multivessel involvement (P = 0.026) and had more distal target vessel in coronary artery (P = 0.005) than non-MS group, but IVUS finding containing the plaque burden showed no significant difference between two groups. In addition, low high density lipoprotein (HDL) cholesterol level as the criteria of MS (<40 mg/dl, female <50 mg/dl) was observed in VP group more than stable plaque group (P = 0.020), but the prevalence of MS and other components of MS were not different between two groups. Multivariate analysis using logistic regression for the presence of VP showed that the independent predictor is the low HDL cholesterol level (odds ratio = 3.563, 95% confidence interval = 1.370-9.269, p = 0.009).

Conclusion: Low HDL cholesterol level, but not MS, is the independent predictor of VP as a culprit lesion in SAP patients.