We propose a multi-center, randomized trial for proximal LAD lesions comparing QCA and IVUS-guided angioplasty to ascertain whether application of IVUS improves outcomes in this subset of patients.

TCTAP A-079

Vascular Edge Response After Percutaneous Coronary Intervention Using Serial Optical Coherence Tomography

Yun-Kyeong Cho,[1] Hyuck Jun Yoon,[1] Chang-Wook Nam,[1] Seung-Ho Hur,[1] Kwon-Bae Kim[1]
[1]Keimyung University Dongsan Medical Center, Korea (Republic of)

BACKGROUND The purpose of this study was to investigate the vascular response at the proximal and distal edges of the drug-eluting stent (DES) using optical coherence tomography (OCT).

METHODS A total of 40 patients with 45 lesions were examined by OCT immediately post-implantation and at follow-up. Quantitative and qualitative measurement was performed at the adjacent proximal as well as distal vessel segments to the implanted DES less than 1mm interval.

RESULTS Mean follow-up duration was 320.6 +- 95.5 days. Distal edge showed trend of decreased mean lumen area (from 6.56 +- 2.30 mm^2 to 6.25 +- 2.16 mm^2, p=0.031). At proximal edge, mean lumen area was significantly decreased at follow-up compared with post-procedure (from 9.57 +- 3.04 mm^2 to 8.77+- 3.38 mm^2, p=0.001). Compared with proximal edge, distal edge showed trend of lesser degree of lumen loss (-0.31 +- 0.95 mm^2 vs.-0.80 +- 1.54 mm^2, p=0.058). Thin-cap fibroatheroma (TCFA) was observed in 13.3% of enrolled stents (6/45) immediately after stenting, and in 8.9 %(4/45) at the follow-up (3: persistent, 1: new-onset). And edge dissection was observed in 20% (9/45) immediately after stenting, and 2.2% (1/45) at the follow-up.

CONCLUSION The OCT-based assessment of the edge response in showed lumen loss at proximal edge. While half of TCFA was remained, almost of edge dissection was healed. However, larger cohorts study will be needed to validate these preliminary results.

TCTAP A-080

Neointimal Response After Second-Generation Drug-Eluting Stent Implantation in the Left Main Trunk – The Evaluation by Optical Coherence Tomography

Seki Junya[1]
[1]Shiga Medical Center for Adults, Japan

BACKGROUND Recently, percutaneous coronary intervention (PCI) of the unprotected left main trunk (LMT) with a second-generation drug-eluting stent (DES) is increasingly performed. The objective of this study is to examine the neointimal response after LMT-PCI with a second-generation DES by FD-OCT and to evaluate the safety of the procedure.

METHODS Fifty patients who underwent PCI for LMT with a second-generation DES and were analyzed by FD-OCT 6-8 months after PCI were included in this study.

RESULTS Single stenting was performed in 39 patients (Biolimus-Eluting Stent (BES) =16, Everolimus-Eluting Stent (EES) =23), and double stenting (Culotte stenting) in 11. 1)Single-stenting group: The struts were well covered irrespective of the stent (93.2% with BES, 94.2% with EES).The rate of malapposed struts was extremely low (2.9% with BES, 1.0% with EES).The neointima on the strut was thicker with EES than BES (87±73μm vs. 72±59μm, p<0.0001). 2) Double-stenting group: Contrary to expectations, the percentage of uncovered struts was significantly lower at overlapping sites than non-overlapping sites (4.9% vs. 7.7%, p=0.04), and the frequency of malapposed struts and the neointimal thickness were similar at both sites.

CONCLUSION At 6-8 months after PCI with the second-generation DES, stents were well covered by the neointima, even at the overlapping site of culotte stenting. Satisfactory neointimal healing after LMT-PCI with a second-generation DES was observed in our study.

TCTAP A-081

Acetylcholine Provocation Test May Estimate the Intimal Coverage in Drug Eluting Stent Implanted Site

Makito Ozawa[1]
[1]Yodogawa Christian Hospital, Japan

BACKGROUND Prior studies showed the impairment of intimal function after drug eluting stent (DES) implantation caused restenosis, yet the detailed morphology of this phenomenon is still uncertain.

METHODS Optical coherence tomography (OCT) were performed in 16 stenting sites and divided into two groups based on positive and negative spasm provocation using acetylcholine. We analyze the intimal coverage, the consistency of intima including presence of peri-strut low-intensity area and hollow formation between the struts. These evaluations were performed at every slice of stent implanted site.

RESULTS The interval from index procedure to OCT analysis is not significant between the groups, 342 days in provocation positive group and 329 days in negative group (P=0.64). We examined 11 lesions (1290 slices, 9828 struts) and 5 lesions (636 slices, 4792 struts) in provocation positive and provocation negative groups respectively. The number of stent coverage was significantly lower in the provocation positive compared to the negative group (5702 versus 2162 struts, P<0.001). Peri-strut low-intensity areas were more frequently observed in the provocation positive group than the other group (440 versus 239 struts, P<0.001). The hollow formation also were observed more frequently in the positive group (181 versus 55 slices, P=0.001).

CONCLUSION The morphological characteristics of intima in the positive group were different from those in negative group. In chronic period after DES implantation, acetylcholine provocation test may estimate the intimal coverage and the delay of the fibrin absorption process around the struts.

TCTAP A-082

Impact of Lipid Rich Plaque at the Stent Edge Assessed by Optical Coherence Tomography on Edge Restenosis After EES Implantation

Yasushi Ino,[1] Takashi Kubo,[1] Keisuke Satogami,[2] Tomoko Nakamura,[1] Aiko Shimokado,[1] Yasutsugu Shiono,[1] Makoto Orii,[1] Yoshiki Matsuo,[3] Tomoyuki Yamaguchi,[1] Takashi Yamano,[1] Atsushi Tanaka,[1] Takashi Akasaka[1]
[1]Wakayama Medical University, Japan; [2]Arida Municipal Hospital, Japan; [3]Social Insurance Kinan Hospital, Japan

BACKGROUND Stent edge restenosis due to incomplete lesion coverage is one of major risk factors for stent failure after drug-eluting stent implantation. An association between plaque type at stent edge and edge restenosis has not been evaluated yet. The aim of the present study was to assess whether there is an association between plaque type assessed by optical coherence tomography (OCT) and edge restenosis after EES implantation.

METHODS In this study, 278 patients with 331 lesions who underwent OCT-guided EES implantation and 9-12 months scheduled follow-up angiography were enrolled. By using OCT, plaque type at stent edge was classified into the following 4 types: lipid rich plaque, fibrotic plaque, fibrocalcific plaque, and normal segment.

RESULTS Distal and proximal edges were visible by post stenting OCT in 323 and 318 edge segments, respectively. The proportion of plaque type at stent edge was the following, lipid rich; 21%, fibrotic; 45%, fibrocalcific; 19% and normal segment; 15%. The incidence of edge restenosis was 4.7 % (30 of 641 edge segments, 17 in proximal edge, 11 in distal edge, 1 in both edge): 12.8% in lipid rich plaque, 2.8% in in fibrotic plaque, 4.0% in fibrocalcific plaque, and 0% in normal segment, respectively (p<0.001).

CONCLUSION The present OCT study demonstrated that lipid rich plaque at the stent edge has impact on edge restenosis after EES implantation. The selection of residual plaque except for lipid rich plaque assessed by OCT as landing zone of the stent may allow us to avoid unnecessarily longer stents without increasing the incidence of edge restenosis.