BACKGROUND While second generation drug-eluting stents (DES) promote more favorable vascular healing, biodegradable polymer containing stents might have a yield in terms of duration of dual antiplatelet therapy (DAPT) than durable polymer stents. We aimed to test whether 6-month DAPT would be non-inferior 12-month clinical and angiographic outcome to 12-month DAPT with second generation DES, such as biolimus-eluting stent (BES) and Zotarolimus-eluting stent (ZES).

METHODS We compare clinical events and angiographic data between 6- and 12-month DAPT, and between BES and ZES stents. Finally, 1,368 patients were randomly assigned. Optical coherence tomography (OCT) at 6 month was performed in 30 patients of each DES group. The primary end point was major adverse cardiac event (MACE) at 12 months. The secondary end points are target vessel failure, in-segment late loss (LL) at 12 months, and neointimal hyperplasia (NIH) and uncovered stent strut (USS) by OCT at 6 month.

RESULTS n = 72 patients. The primary end point was not statistically different between the 6- and 12-month DAPT (MACE: 3.5 vs. 2.5%; p = 0.33), between BES and ZES (MACE: 3.0 vs. 3.0%; p = 1.00). The secondary end points also were not significantly different between the 6- and 12-month DAPT in target vessel failure (1.3 vs. 0.6%; p = 0.25), LL (mm) at 12 months (0.30 ± 0.29 vs. 0.31 ± 0.28, p = 0.61). Similar results showed between BES and ZES in target vessel failure (0.8 vs. 1.1%; p = 0.58), LL (mm) at 12 months (0.32 ± 0.29 vs. 0.31 ± 0.27, p = 0.61). OCT at 6 month revealed that mean NIH thickness (μm) of BES and ZES were 81.6 ± 57.1, 61.9 ± 39.6, respectively (p = 0.13), and USS percentage (%) of BES and ZES were quite few, as 2.4 ± 15.3, 3.0 ± 5.2, respectively (p = 0.64).

CONCLUSION We suggest that 6 month DAPT might be suggestively safe after 2nd generation DES implantation based on clinical, angiographic, and favorable result of 6 month OCT sub-study.

LATE BREAKING CLINICAL TRIALS

Antiplatelet Agents and Anticoagulants (TCTAP A-001)

Outcomes of 6 Months Versus 12 Months Dual Antiplatelet Therapy After Implantation of Biodegradable Polymer Biolimus or Durable Polymer Zotarolimus-eluting Stents: OPTIMTCTAP A-C Study and Optical Coherence Tomography Sub-study

Hyuck Moon Kwon, Byoung Kwon Lee, Tae Soo Kang, Young Won Yoon, PD-Ki Min, Bum-Kee Hong, Byeong-Keuk Kim, Myeong-Ki Hong, Yangsoo Jang, Woong Chol Kang, Byung Ok Kim, Dong Woon Jeon, Yong Hoon Kim

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Automated Lipid-rich Plaque Detection with a Novel Optical Coherence Tomography System

Aiko Shimokado, Yosuke Katayama, Takashi Kubo, Yasutugu Shiono, Makoto Orti, Takashi Yamano, Tomoyuki Yamaguchi, Yoshihi Matsuo, Yasushi Ino, Atsushi Tanaka, Takashi Akasaka

BACKGROUND A large lipid core is one of characteristics of vulnerable coronary plaque. Although optical coherence tomography (OCT) is a very high resolution imaging device, OCT does not facilitate detection of a lipid plaque. The reason is that while commercially-available OCT systems use near-infrared light at 1,300 nm wavelengths, lipid shows characteristic absorption at 1,700 nm, not at 1,300 nm (Figure). Therefore, we developed OCT, short wavelength infrared OCT for identification of lipid tissue within coronary plaques. The aim of the present study is to investigate the accuracy of SWIR-OCT for identification of lipid tissue within coronary plaques.

Invasive Coronary Imaging: IVUS, OCT, Spectroscopy, and Other (TCTAP A-003)

TCTAP A-003

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TCTAP A-002

Long Term Safety and Performance of Absorb Bioresorbable Vascular Scaffold in Treating De Novo Native Coronary Lesions: Report on 3-year Clinical Outcomes from the First 450 Patients in ABSORB EXTEND

Chiung-Jen Wu, Paul Hsien-Li Kao

BACKGROUND The safety and performance of the Absorb Biodegradable Vascular Scaffolding (Absorb Vascular, Santa Clara, CA) have been demonstrated in the ABSORB Cohort A, B, and EXTEND trials. Results from the ABSORB Cohort B trial showed 4-year MACE of 10.1%, with no scaffold thrombosis reported. ABSORB EXTEND sought to gain experience with the Absorb in a large population and in different geographies, including the AsTCTAP A-Pacific region.

METHODS ABSORB EXTEND is a prospective, single-arm, open-label clinical study that enrolled a total of 812 subjects from 56 global sites. Patients with lesions ≤ 28 mm in length and reference vessel diameter of 2.0 - 3.8 mm (as assessed by on-line QCA or IVUS) were included.

Methods Twenty-nine coronary arteries from 10 cadavers were examined by SWIR-OCT to investigate the effect of physiological pressure, and the images were acquired at 94 frames/s and digitally archived. SWIR-OCT generated gray-scale cross sectional images and color tissue maps of a plaque by calculating the obtained spectrum with an original lipid analysis algorithm. After SWIR-OCT imaging, the arteries were pressured fixed, sliced by a cryostat and stained with H&E and Oil Red O, and then corresponding histology was collected in matched images. Regions of interest, selected from histology, were 108 lipidic and 16 non-lipidic regions. Lipid-enhanced images generated by SWIR-OCT were validated by comparison with histology via selected regions.

RESULTS SWIR-OCT showed high sensitivity (90%) and specificity (94%) for identifying lipid tissue within coronary plaques. The positive predictive value and negative predictive value were 99% and 58%, respectively.

CONCLUSION SWIR-OCT has improved the ability to detect lipid tissue in coronary autopsy specimens compared with conventional OCT. This new technique may hold promise for identifying histopathological feature of coronary plaques at risk for rupture.