INTRODUCTION Nanoparticles may serve as a promising means to deliver novel therapeutics to the myocardium following myocardial infarction. We assessed whether lipid-based liposomal nanoparticles specifically target injured myocardium following intravenous injection.

METHODS CD1 male mice that underwent LAD ligation surgery with 45 minutes of ischemia followed by reperfusion (I/R) and then received tail-vein injection 24 hours following surgery with either Gd-DTPA labeled, fluorescent NBD-labeled liposomes (n=7) or a saline vehicle control (n=7). The hearts were harvested 24 hours later and underwent T1 and T2-weighted ex vivo MR imaging using a 7 Tesla Bruker magnet. The hearts were sectioned for immunohistochemistry and also optical fluorescent imaging using an IVIS imaging system.

RESULTS The mean size of the liposomes was 100 nm by dynamic light scattering. T1-weighted imaging demonstrated a significant increase in signal intensity in the LAD territory vs the posterior wall with liposomes compared with control (41 ±10% vs 9 ±2%, p<0.001). Optical imaging demonstrated significant increase in the LAD territory vs the posterior wall for animals that received liposomes compared with those that received control (163±31% vs 13±14%, p<0.001). The Figure shows T1-weighted MR images and optical images below. Fluorescent microscopy demonstrated the presence of green fluorescence consistent with NBD-labeled liposomes within the infarct area of hearts from mice that received liposomes while there was no green fluorescence in the hearts of mice that received injection of saline control.

CONCLUSIONS Following a murine model of MI, liposomes traffic to the heart and preferentially home to regions of myocardial injury. These liposomes can be loaded with therapeutic agents to deliver novel agents directly to regions of myocardial injury.
METHODS AND RESULTS. Patients included in a multicenter registry at 5 centers in Italy were systematically followed for major adverse cardiac events (MACE). Clinical data were obtained for 92 patients (mean age 57.1 years, 74.0% males) with a total of 95 lesions treated with overlapping Absorb BVS. Fifty-seven (61.9%) patients underwent scaffold implantation due to acute coronary syndrome. Diabetic patients were 47.7%. Multivessel disease was present in 61.4% of patients. Treated lesions were type B1 (21.3%), type B2 (23.0%), and type C (55.7%). Mean length covered by overlapping BVS was 48.0 ± 16.6 mm. The mean number of implanted Absorb BVS was 2.25 scaffolds per lesion and 2.63 scaffolds per patient. Angiographic and procedural success occurred in all patients. At a median follow up of 10 months (interquartile range, 5.14-7.5 months), cumulative occurrence of MACE was 4.34%. Adverse events were: 1 possible late scaffold thrombosis (unexplained cardiac death occurring two months after elective recanalization), 2 TLR due to BVS restenosis (documented BVS recoil in 1 case), 1 TVR due to restenosis of drug eluting stent proximal to two overlapped scaffolds.

CONCLUSIONS. Our findings suggest that treatment of long lesions by means of overlapping Absorb BVS appears to be safe at midterm follow up.

**DRUG ELUTING STENTS**

**CRT-702**

Composite Outcomes In 2.25-mm Drug Eluting Stents: A Meta-analysis And Systematic Review

Justin Z. Lee,1 Nirmal Singh,2 See-Young Low,1 Gilbert Ortega,1 Idaya Kanakadandi,1 David Fortuin,3 Eul K. Lee,4 Eun-Gyu Lee,5 Jihun Ahn,6 Sang Yeub Lee,7 Seung-Woon Rha,1 Byoung Geol Choi,1 Se Yeon Choi,1 Ji Young Park,2 Sang-Ho Park,3 A Propensity Score-Matched Analysis Of Biolimus-eluting Stent in Patients with De Novo Coronary Artery Lesion: Comparison of Biolimus A9-eluting Stent and Platinum Chromium Alloy CRT-703

METHODS. Trials yielded 8 eligible studies studying FDA approved 2.25-mm DES. Angiographic and clinical outcome data were extracted and compared between each type of DES. Subgroup analysis comparing clinical outcome between sirolimus-eluting stents (SES) and paclitaxel-eluting stents (PES) was done using a random effects model.

RESULTS. Of the 8 studies included in the analysis, 6 were non-randomized and 2 were randomized against bare-metal stents (BMS). A total of 1,077 patients were studied, with follow-up ranging from 1 month to 5 years. SES, PES, and everolimus-eluting stents (EES) were studied. Myocardial infarction at one year was highest in PES vs. SES and EES: 4.2% vs. 3.4% and 1.5%. Target vessel revascularization at one year was highest in PES at 4.2% vs. SES and EES (3.4% and 1.5%). Mean late lumen loss for PES, SES, and EES was 0.28 ± 0.11 mm, 0.15 ± 0.11 mm, and 0.16 ± 0.41 mm at 9 months to 1 year. Mean diameter stenosis for PES, SES and EES was 34.7 ± 4.2%, 29.5 ± 6.2%, and 20.9 ± 22.5%. Mean binary stenosis for PES, SES and EES was 26.9 ± 7.8%, 10.4 ± 6.7%, and 5.6% respectively. No 2.25-mm specific data were available for zotarolimus eluting stents, which was reported in combination with larger stent sizes.

CONCLUSION. Our composite data suggest that 2.25-mm SES and EES have superior clinical and angiographic outcomes compared with 2.25-mm PES, which has been shown to be superior to BMS in a randomized controlled study. Given the unique theoretical challenges posed by small vessel PCI, the overall lack of randomized data in this cohort needs to be addressed with future studies evaluating 2.25-mm DES in next-generation DES.

**CRA-704**

Comparison of Biolimus A9-eluting Stent and Platinum Chromium Alloy Everolimus-eluting Stent in Patients with De Novo Coronary Artery Lesion: A Propensity Score-Matched Analysis

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BACKGROUND. Percutaneous coronary intervention (PCI) of small vessels is associated with a high restenosis rate. Drug-eluting stents (DES) reduce restenosis in coronary arteries, but the role of DES in small coronary vessels has not been well defined. In our systematic review, we aim to summarize all known angiographic and clinical outcome of 2.25-mm DES, to highlight the need for specific outcome data in this cohort.

METHODS. A systematic literature search of 394 relevant citations from PubMed, EMBASE, Web of Science and the Cochrane Central Register of Controlled Trials yielded 8 eligible studies studying FDA approved 2.25-mm DES. Angiographic and clinical outcome data were extracted and compared between each type of DES. Subgroup analysis comparing clinical outcome between sirolimus-eluting stents (SES) and paclitaxel-eluting stents (PES) was done using a random effects model.

RESULTS. Of the 8 studies included in the analysis, 6 were non-randomized and 2 were randomized against bare-metal stents (BMS). A total of 1,077 patients were studied, with follow-up ranging from 1 month to 5 years. SES, PES, and everolimus-eluting stents (EES) were studied. Myocardial infarction at one year was highest in PES vs. SES and EES: 4.2% vs. 3.4% and 1.5%. Target vessel revascularization at one year was highest in PES at 4.2% vs. SES and EES (3.4% and 1.5%). Mean late lumen loss for PES, SES, and EES was 0.28 ± 0.11 mm, 0.15 ± 0.11 mm, and 0.16 ± 0.41 mm at 9 months to 1 year. Mean diameter stenosis for PES, SES and EES was 34.7 ± 4.2%, 29.5 ± 6.2%, and 20.9 ± 22.5%. Mean binary stenosis for PES, SES and EES was 26.9 ± 7.8%, 10.4 ± 6.7%, and 5.6% respectively. No 2.25-mm specific data were available for zotarolimus eluting stents, which was reported in combination with larger stent sizes.

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