TCT-400

Patients with High LCBI and Ruptured Plaque at Culprit Lesion were High-Risk Patients of Distal Embolization

Koshi Matsuo1, Yasunori Ueda1, Yuji Nishimoto2
1Osaka Police Hospital, Osaka, Japan, 2Osaka Police Hospital, Osaka-shi, Osaka

Background: Lipid-rich coronary plaques can be detected by both intracoronary near-infrared spectroscopy and angioscopy. Patients with ruptured plaques detected by angioscopy have been reported at high risk of distal embolization. Patients with large lipid core burden index (LCBI) detected by near-infrared spectroscopy (maxLCBI4mm/C21500) were reported at high risk of peri-procedural myocardial infarction. Therefore, we examined the association between the presence of ruptured plaque with large LCBI and distal embolization.

Methods: Near-infrared spectroscopy and angioscopy were performed to evaluate the target lesion in 29 consecutive patients with stable coronary artery disease who received coronary intervention with filter-type distal protection device (Filtrap). Angioscopy evaluated yellow plaques by the grading of yellow color intensity and the presence of plaque rupture. Near-infrared spectroscopy (InfraRedx) measured LCBI. Distal embolization of thrombus and plaque debris was examined by the captured material in Filtrap. Filter slow/no flow was defined angiographically.

Results: Distal embolization of plaque debris (70% vs. 11%, P=0.001) and filter slow/no flow (60% vs. 11%, P=0.005) occurred more frequently in the patients with large LCBI (maxLCBI4mm≥500) than in those without. Filter slow/no flow occurred in 100% of patients with both ruptured plaque and large LCBI at target lesion.

Conclusions: Large LCBI was a sign of high-risk of distal embolization. The patients with both large LCBI and ruptured plaque were at extremely high risk of distal embolization.

TCT-401

Detection by Intracoronary Near-infrared Spectroscopy of Lipid-rich Plaques within Remotely Implanted Stents

Mustafa Husaini1, David Klungle2, Mohsin Khan2, Stacie M. Vanoosterhout2, Margaret Chi1, Zaahir Turfe3, Sarah Dionne3, Andrew Schmale3, Ryan D. Madder2
1University of Rochester, Rochester, NY, 2Frederik Meijer Heart & Vascular Institute, Spectrum Health, Grand Rapids, MI, 3Michigan State University College of Human Medicine, Grand Rapids, MI

Background: There is emerging pathologic evidence of late formation of lipid-rich plaque (LRP) in remotely implanted coronary stents. This phenomenon, termed neoatherosclerosis, may be a risk factor for late stent failure, yet methods to detect neoatherosclerosis in vivo are lacking. The present study examines if intracoronary near-infrared spectroscopy (NIRS) can detect LRP in remotely implanted stents.

Methods: We identified consecutive patients in a single-center prospective observational registry that had NIRS imaging performed in a remotely implanted stent. Stented segments were scrutinized for LRP, defined as ≥1 orange or yellow block on the NIRS block chemogram. In-stent lipid burden was quantified as the maximum lipid core burden index in 4-mm (maxLCBI4mm).

Results: NIRS imaging was performed in 39 remotely stented coronary segments in which stents were implanted 58.6 ± 49.0 months previously. NIRS detected in-stent LRP in 59.1% (maxLCBI4mm 221 ± 196), including in 3 of 6 (50.0%) bare-metal stents and in 19 of 33 (57.6%) drug-eluting stents. In 6 (13.6%) cases, NIRS detected a large in-stent LRP with a maxLCBI4mm ≥400, similar to NIRS findings previously described at STEMI culprit sites. In one such case, the large in-stent LRP was associated with very late stent thrombosis several years after stent implantation (Figure).

Conclusions: The present observations demonstrate that NIRS can detect LRP in remotely implanted stents, a finding that may in some cases represent neoatherosclerosis. Further study is needed to determine if in-stent LRP is a risk factor for late stent failure.