atrial fibrillation (0%, 13%, 31%; p = 0.007), left ventricular mass index (100 ± 28, 106 ± 29, 128 ± 33 g/m²; p = 0.017), estimated pulmonary artery systolic pressure (31 ± 15, 38 ± 18, 50 ± 30 mmHg; p = 0.011), LAS (29.9 ± 8.9, 25.2 ± 10.1, 18.8 ± 6.4 %; p = 0.002), LASRr (2.5 ± 0.5, 2.3 ± 0.7, 2.0 ± 0.8 s⁻¹; p = 0.055), and LASRc (-2.4 ± 0.7, -2.1 ± 0.8, -1.7 ± 0.5 s⁻¹; p = 0.015) were changed gradually in respective to NYHA functional class I to III. There were no differences in left ventricular ejection fraction, left atrial volume index, left atrial emptying fraction, effective regurgitation orifice, and regurgitation fraction of MR between NYHA functional classes. After multivariate logistic regression analysis controlling age and status of atrial fibrillation, only LAS (OR 0.891, 95% CI 0.786-0.997, p = 0.044) was an independent factor for predicting severe symptoms of heart failure (NYHA III). Furthermore, we found that age (OR 1.081, 95% CI 1.033-1.132, p = 0.001) and diabetes mellitus (OR 10.379, 95% CI 1.008-106.83, p = 0.049) were independent factors for decreased LAS in these patients.

Conclusion: Among patients with severe organic MR, LAS was correlated with severity of heart failure symptoms. Age and diabetes mellitus were independent factors for decreased LAS in these patients.

TCTAP A-092

Comparison of Coronary Plaque Characteristics in Stable Angina Patients Between Non-invasive Dual-source Computed Tomography and Invasive Intravascular Ultrasound

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Background: Intravascular ultrasound (IVUS) is now accepted as the standard of reference for detection of atheroma and provides additional information on plaque composition. Recently, virtual histology IVUS enables differentiation of the plaque components with good accuracy. Non-invasively, plaque extent and composition may be evaluated by multi-slice computed tomography (MSCT) coronary angiography. The purpose of our study was to assess MSCT and automated color-coded analysis in the quantification and classification of plaque components, using virtual IVUS as the standard of reference.

Methods: This study was approved by the institutional review board and all patients provided written informed consent. They received coronary MSCT, followed by invasive coronary angiography and IVUS. Coronary CT angiography was performed using a dual source 128-slice MSCT system (Definition, Siemens Healthcare, Germany). For each patient, well-defined plaques were selected, and plaque volume was measured with manual tracing at CT and with IVUS. Measurements were compared with paired t test and correlation analysis.

Results: 16 patients were enrolled and there were 86 coronary segments analyzed. Among these segments, we could evaluate the features of 117 coronary plaques. We could classify coronary plaques as soft, mixed, and calcified plaques. As IVUS images are regarded as a standard reference, the overall accuracy of MSCT is 94.2%. For soft plaques, the accuracy of MSCT is 95.8%; the accuracy is 82.1% for mixed plaques; the accuracy was 90% for calcified plaques. There was good correlation between plaque volumes (left anterior descending artery) quantified with MSCT and IVUS (r = 0.81, P<0.001). There was good correlation between plaque volumes (left circumflex artery) quantified with MSCT and IVUS (r = 0.90, P<0.001) Besides, there was good correlation between plaque volumes (right coronary artery) quantified with MSCT and IVUS (r = 0.93, P<0.001)

Conclusion: The non-invasive dual-source MSCT in our hospital is feasible to analyze coronary plaque characteristics and calculate plaque volume in a semi-automatic mode.

TCTAP A-093

Novel Debultking Model for Rotational Atherectomy System Named ATSUSHIKUN

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Background: Rotational Atherectomy (RA) was developed to debulk atherosclerotic plaque. It makes enable to treat the lesion which is difficult to expand with balloon catheter to modify the plaque morphology. There are some tips and techniques to use RA safely, but to learn about them with in vivo was difficult because of the lack of the good stenotic model for debulking. We invented the novel stenotic model for RA named ATSUSHIKUN and performed the training of RA in porcine model.

Methods: Making ATSUSHIKUN: A 2.75 mm Taxus Liberte stent was removed and was cut into 3-4 mm length, then were put on three folds on the center of another Taxus Liberte stent. This stenotic model was named ATSUSHIKUN. ATSUSHIKUN was delivered to coronary artery and inflated at 6 to 8 atm. Intravascular ultrasound guided post dilatation was performed at proximal site of ATSUSHIKUN to achieve adequate stent apposition.

Results: After the deployment of ATSUSHIKUN, RA was performed using 1.5mm burr followed by 2mm, 2.15mm burr. Total ablation time of RA with each burr reached more than three minutes and the feeling of burr was resembled just as severe calcified plaque.

Conclusion: ATSUSHIKUN enable to train RA in porcine model more effectively.