

stents were excluded from analysis. Dose-length product (DLP) and effective dose were estimated. Results: Segment-based analysis revealed that assessability of coronary segments in helical CTCA was 89.3%(267/299) in Group-F, 86.1%(881/1023) in Group-M, 87.7%(419/478) in Group-L, respectively. In assessable segments, positive and negative prediction values for significant stenoses were 87%(40/46) and 99%(219/221) in Group-F, 86%(119/139) and 99%(738/742) in Group-M, 82%(36/44) and 99%(373/375) in Group-L, respectively, demonstrating similar values. DLP and effective dose in Group-F, Group-M and Group-L were 2270 ± 477 mGy-cm and 38.6 ± 8.1 mSv, 1413 ± 438 mGy-cm and 24.0 ± 7.4 mSv (38% reduction vs. Group-F), 859 ± 226 mGy-cm and 14.6 ± 3.8 mSv (39% reduction vs. Group-M), respectively. Conclusion: Dose modulation and low kilovoltage decrease radiation dose with similar diagnostic values in helical CTCA.

PJ-208

The Incidence of Abnormal Extra-cardiac Findings Encountered in Routine Coronary Computed Tomography Angiography

¹Masahiro Obana

²Shozo Nomura, ¹Keizo Kimura, ¹Hiroyuki Ohshika,

³Takashi Akasaka

¹Division of Cardiology, Saiseikai Wakayama Hospital, Wakayama, ²Division of Radiology, Saiseikai Wakayama Hospital, Wakayama, ³Department of Cardiovascular Medicine, Wakayama Medical University, Wakayama

Background: Coronary computed tomography angiography (CCTA) provides the images of adjacent organs (e.g. lung) as well as the coronary artery. The aim of this study was to examine the incidence of abnormal extra-cardiac findings in routine CCTA. **Methods:** This prospective study comprised 100 consecutive patients (male/female=62/38, age 35-81years) with suspected coronary artery disease. All the patients underwent CCTA: The plain scan was taken within the chest region of the usual clinical setting including a part of lower neck and upper abdominal area, and the contrast-enhanced scan was taken within the heart region alone. The chest axial images were reconstructed with 5mm-slice thickness. Curved multiplanar reconstruction images of the major coronary artery branches were obtained using GE medical systems workstation. Two reviewers independently assessed these images. **Results:** Thirty-three patients (33%) had significant coronary artery stenoses. Abnormal extra-cardiac findings were found in 59 patients(59%): thyroid gland:1%, mediastinum:5%, lung:32%, pleural membranes:19%, liver:14%, gall bladder:8%, pancreas:1%, kidney:4%. Further examinations for extra-cardiac findings were required in 18 patients; 2 patients(2%) turned out to be diagnosed as malignant (one was lung cancer and the other was carcinoma of the papilla of Vater). **Conclusion:** The incidence of extra-cardiac findings in patients with suspected coronary artery disease was relatively high. In routine CCTA, not only coronary artery disease but also the abnormal extra-cardiac findings should be fully investigated.

PJ-209

Measurements of Plasma Proinflammatory Molecules and Coronary Artery Calcification by MDCT could be Useful as Evaluating Coronary Risk Stratification Noninvasively

¹Hidehito Funahashi

²Hideo Izawa, ¹Ken Harada, ¹Kosuke Arai, ¹Koji Okada,

¹Masaki Sakakibara, ¹Hideki Ishii, ¹Akihiro Hirashiki,

¹Takao Nishizawa, ¹Xianwu Cheng, ¹Kenji Okumura,

¹Toyoaki Murohara

¹Department of Cardiology, Nagoya University Graduate School of Medicine, Nagoya, ²Fujita Health University Bunbantan Hotokukai Hospital, Nagoya

Purpose: To evaluate the association between the number of coronary arteries in which plaque was present, measured by Multi Detector Computed Tomography (MDCT) and plasma levels of proinflammatory molecules, or area of visceral fat by MDCT. **Methods:** 80 patients (63 men, 17 women, average age; 64.7 ± 9.0 years old) were examined their coronary arteries by MDCT. We measured the plasma levels of high sensitive C-reactive protein (hs-CRP), interleukin-6 (IL-6), adiponectin, plasminogen activator inhibitor 1 (PAI-1) and vascular endothelial growth factor (VEGF). Moreover we measured both coronary artery calcification score (CACS) in each coronary artery and the area of visceral fat by MDCT. **Results:** A positive correlation between the number of coronary arteries in which plaque was present and log-transformed values of plasma IL-6 levels ($r^2=0.206$; $p<0.01$), log-transformed values of plasma hs-CRP levels ($r^2=0.142$; $p<0.01$), or CACS ($r^2=0.281$; $p<0.01$) were confirmed. But we did not find correlation between the number of coronary arteries in which plaque was present and plasma levels of adiponectin, PAI-1 and VEGF or the area of visceral fat by MDCT. **Conclusion:** We demonstrated that plasma

levels of IL-6 and hs-CRP, and CACS predict the number of atherosclerotic coronary arteries. These results suggest that measurements of plasma levels of IL-6 and hs-CRP, and CACS by MDCT could be useful as evaluating coronary risk stratification noninvasively.

Echo / Doppler (New Technology) 3 (I)

PJ036

March 20 (Fri)

Poster Presentation Room 1 (Osaka International Convention Center 3F Event Hall)

15 : 30 – 16 : 15

PJ-210

Detection of the Deteriorated Left Atrial Function Reserve in Patients with Hypertrophic Cardiomyopathy Using 2D Tissue Tracking Technique

Gen Ukai

Tomotsugu Tabata, Hiroatsu Yokoi, Hideo Izawa, Wakaya Fujiwara, Daisuke Mukaide, Osamu Inami, Kousuke Kinoshita, Yoshinori Sugishita, Masataka Yoshinaga, Tomohito Kamata, Masanori Nomura

Division of Cardiology, Fujita Health Science University Second Hospital, Nagoya

Background: Left atrial volume (LAV) loop can be automatically obtained by 2D tissue tracking technique. We can assess the LA function reserve by preload increase using the lower body positive pressure (LBPP). **Purpose:** To evaluate the LA function reserve in patients with asymmetric septal hypertrophic cardiomyopathy (HCM) by analyzing LAV loop during LBPP. **Methods:** Subjects consisted of 14 patients with HCM, 19 with hypertensive heart disease (HHD) and 21 normal controls. The LBPP was performed in all the subjects and image clips of the apical four chamber view were stored into EUB-6500 before and during LBPP. LAV loop was automatically constructed using E-tool Viewer. We measured maximal and minimal LAVI. The passive and active emptying volume were calculated. The early and late diastolic LA emptying rates were calculated. **Results:** During LBPP, 1) the $LAVI_{max}$ and $LAVI_{min}$ increased significantly in the N and HHD, however no change was observed in HCM. 2) the $LAVI_{act}$ and $LAVI_{pass}$ increased significantly in the H and HHD, whereas the $LAVI_{pass}$ significantly increased with no change in the $LAVI_{act}$ in the HCM. 3) the dV/dt_e in HCM significantly increased with rather decrease in the dV/dt_a . **Conclusions:** Deteriorated LA compliance and pump functions and impaired LA function reserve in HCM were detected by the LAV loop using 2D tissue tracking technique.

PJ-211

Left Atrial Appendage Function and Left Atrial Function by Velocity Vector Imaging as New Predictor for Thrombus in Atrial Fibrillation

¹Koji Ono

¹Ryuhei Tanaka, ²Takatomo Watanabe, ¹Shintaro Abe,

¹Reiko Matsuoka, ¹Tomoko Hirose, ¹Takashi Katou,

¹Shunichiro Warita, ¹Tai Kojima, ¹Makoto Iwama, ¹Takeshi Hirose,

¹Shinichiro Tanaka, ¹Haruki Takahashi, ¹Tomonori Segawa,

¹Toshiyuki Noda, ¹Sachiro Watanabe, ²Masanori Kawasaki,

²Shinya Minatoguchi

¹Department of Cardiology, Gifu Prefectural General Medical Center, Gifu, ²Gifu University Graduate School of Medicine, Gifu

Background: We hypothesized that left atrial appendage (LAA) and left atrial (LA) ejection fraction (EF) could be useful predictors for thrombus in atrial fibrillation (AF). **Methods:** Using velocity vector imaging (VVI), time-LAA or LA volume curve can be automatically provided. We measured LAAEF and LAEF by VVI and compared those with manual tracing method using transesophageal (TEE) and transthoracic (TTE) echocardiography in 82 patients with nonvalvular AF: AF with LAA thrombus ($n=25$, age 71 ± 8) and AF without thrombus ($n=57$, age 65 ± 11). Moreover, LAA velocity (LAAV) and

spontaneous echo contrast (SEC) were measured. Average values of 3 cardiac cycles were analyzed. **Results:** There was excellent correlation between VVI and manual in LAAEF and LAEF ($r=0.99$, $r=0.94$, $p<0.0001$). LAAEF and LAEF in AF with thrombus were reduced compared with those in AF without thrombus (17.0 ± 3.3 vs $28.4 \pm 8.8\%$, $p<0.0001$, 17.7 ± 3.5 vs $25.6 \pm 7.0\%$, $p<0.0001$). There was significant difference in LAAV and SEC between two groups ($p<0.0001$, $p<0.001$). Using 20% of LAAEF as cutoff value, sensitivity was 92% and specificity was 91% for thrombus. Using 21% of LAEF, sensitivity was 88% and specificity was 70%. Using 20cm/sec of LAAV, sensitivity was 84% and specificity was 60%. **Conclusions:** LAAEF and LAEF can be evaluated by VVI in AF. LAA function by TEE and LA function by TTE will be more useful predictors for thrombus than LAAV and SEC.

PJ-212

Three-Dimensional Transesophageal Echocardiographic Diagnosis of Left Atrial Appendage Thrombus, and Characteristics of Left Atrial Appendage Characteristics Related with Thrombus Formation

¹Masayoshi Yamamoto
¹Yoshihiro Seo, ¹Tomoko Ishizu, ²Hideki Nakajima,
¹Tomoko Machino, ¹Ryu Kawamura, ¹Shigeyuki Watanabe,
¹Kazutaka Aonuma
¹Cardiovascular Division, Graduate School of Comprehensive Human Sciences, University of Tsukuba, Ibaraki, ²Department of Clinical Laboratory, Tsukuba University Hospital, Ibaraki

Background: To assess the ability of diagnosis of left atrial appendage (LAA) thrombus by 3-dimensional transesophageal echocardiography (TEE), and to identify characteristics of LAA morphological and functional characteristics related with thrombus formation. **Methods:** Thirty-seven patients were studied by 3D-TEE to assess LA thrombus (n=30), and valvular diseases et al (n=7). 3D-LAA morphology was assessed with an off-line software GI-3DQ (Philips). LAA flow velocities and degree of smoke like echo were assessed by 2-D TEE. **Results:** In 5 patients, LAA thrombus was identified by 3D-TEE, in contrast, only two patients by 2D-TEE ($p=0.001$). The comparisons of characteristics between patients with and without LAA thrombus were summarized in Table. **Conclusion:** 3D-TEE has higher ability to identify LAA thrombus. LAA morphological assessments may provide additional information about high risk patients of LAA thrombus.

	no thrombus	thrombus	P value
Age	59.8±11.0	66.4±9.9	0.26
Degree of smoke like echo (1/2/3/4)	(21/5/4/2)	(0/0/1/4)	<0.001
LV ejection fraction (%)	63.1±12.7	48.2±12.0	0.026
LA volume (cm ³)	60.6±31.2	144.0±74.1	<0.001
LAA emptying velocity (cm/s)	40.3±20.9	29.3±17.9	0.39
LAA filling velocity (cm/s)	43.9±18.0	30.0±17.4	0.21
LAA orifice area (cm ²)	3.2±1.8	5.9±1.5	0.003
LAA orifice diameter (cm)	17.7±5.4	24.4±5.5	<0.001
LAA depth (cm)	27.1±6.5	33.0±10.4	0.22
LAA volume (cm ³)	6.0±5.0	10.0±5.7	0.003
Number of LAA lobe(1/2/3/4)	(5/18/9/0)	(0/0/4/1)	0.002

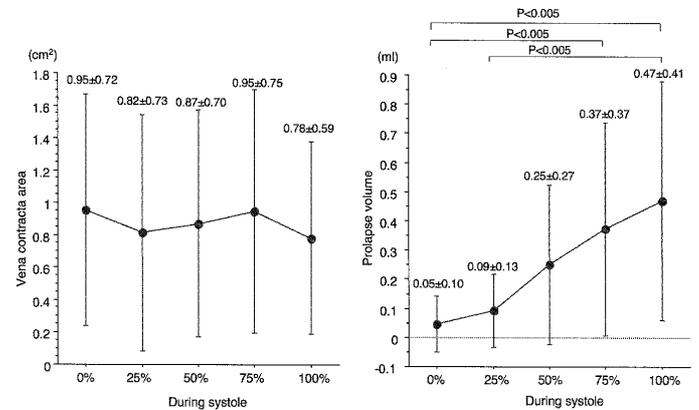
PJ-213

Direct Comparison between Vena Contracta Area and Prolapse Volume in Patients with Mitral Valve Prolapse Using Real-time 3D Transesophageal Echocardiography

¹Kyoko Okamoto
¹Masaaki Takeuchi, ³Lissa Sugeng, ¹Hiromi Nakai, ¹Kyoko Kaku,
¹Nobuhiko Haruki, ¹Hideyoshi Yoshitani, ²Toshiyuki Oota,
¹Yutaka Otsuji, ³Roberto M Lang
¹University of Occupational and Environmental Health, Kitakyushu, ²University of Occupational and Environmental Health, Kitakyushu, ³University of Chicago Medical Center, Chicago, United States

We aimed to determine direct comparison between vena contracta (VC) area and prolapse volume during systole in patients with mitral valve prolapse (MVP). 3D transesophageal echocardiographic gray scale and color Doppler

full-volume datasets were acquired in 13 MVP patients with > moderate MR. Mitral annulus area (MAA), prolapse volume were measured using quantitative software in each systolic frame. From color Doppler full-volume datasets, VC area was also traced in each frame. VC showed elliptical shape in all patients. Although prolapse volume increased significantly from early systole to end-systole, VC area was constant during systole. There was no significant correlation between change in VC area and change in prolapse volume and MAA. Phasic prolapse volume change does not reflect corresponding changes in VC area and MR severity.



PJ-214

Morphological Change of Left Ventricular Outflow Tract by Aging

Tai Sekine
 Masahiro Nakano, Norimasa Tonoike, Kyokushi Hou, Yuji Matsudo,
 Yoshinhide Fujimoto, Masashi Yamamoto, Toshiharu Himi
 Kimitsu Chuo Hospital, Chiba

Background: Sigmoid septum are assumed as a morphological change by aging. It is not clear that left ventricular outflow tract (LVOT) has a morphological change by aging. **Methods:** we evaluated 50 cases (mean age 61 years, 24 male) which have normal left ventricular ejection fraction with transthoracic echocardiography (iE33, PHILIPS). We recorded conventional left ventricular morphology with two dimensional echocardiography and recorded three dimensional echocardiography of parasternal long axis view and analyzed minimum LVOT area (A-LVOT) and long (D1) and short axis (D2) of LVOT diameter at end diastole with QLAB software (PHILIPS) **Results:** we obtained A-LVOT with all 50 cases. LVOT showed elliptical shape and A-LVOT was 4.4 ± 0.9 cm² for all cases. We divided these study population into 2 groups according with age. Group A was composed with less than 55 years (mean age 44 years n=19), Group B was more than 55 years (mean age 72 years n=31). A-LVOT of Group B was remarkably smaller than that of Group A (4.7 ± 0.9 cm² v.s. 4.2 ± 0.8 cm²; $p<0.05$). D2/D1 was smaller in Group B (0.8 ± 0.1 v.s. 0.6 ± 0.1 ; $p<0.01$) due to smaller D2 in Group B (2.1 ± 0.2 cm v.s. 1.8 ± 0.2 cm; $p<0.01$). D2 became smaller correlating with septal E' obtained with tissue Doppler echocardiography ($r=0.76$; $p<0.01$) **Conclusion:** LVOT showed elliptical shape and was distorted with aging. This LVOT deformation could be correlated with left ventricular diastolic dysfunction.

PJ-215

Clinical Assessment of Left Ventricular Torsion and Untwisting in Patients with Dilated Cardiomyopathy

¹Jun Kojima
²Akiko Noda, ³Akihiro Hirashiki, ³Takao Nishizawa, ²Sayuri Tsukano,
²Hiroshi Ishikawa, ²Kohzo Nagata, ³Toyoaki Murohara, ²Koike Yasuo
¹Department of Pathophysiological Laboratory Science, Nagoya University Graduate School of Medicine, Nagoya, ²Department of Medical Technology, Nagoya University School of Health Science, Nagoya, ³Department of Cardiology, Nagoya University Graduate School of Medicine, Nagoya

Background: Left ventricular (LV) torsion and subsequent untwisting velocity are novel index of LV function. We investigated the relation between LV function and torsional parameter in patients with dilated cardiomyopathy (DCM). **Methods:** We evaluated 20 consecutive patients with DCM (age 56.5 ± 11.6 years) and 15 age- and sex-matched normal controls. Standard echocardiography was performed in all subjects. Global radial and circumferential strain (Sr and Sc) were measured at the midventricular short-axis images, peak torsion and peak untwisting velocity were calculated from rotation degree and velocity of the apical and basal short-axis images using two-dimensional speckle tracking imaging. **Results:** Sr and Sc in patients with DCM were significantly re-

Poster Session (Japanese)