CONCLUSIONS Among the ADHF patients, LUS B-lines correlated significantly to the level of serum BNP, especially of those without left atrium dilatation; while in the group with left atrium dilatation, they have no relationship. We also observed that B-lines on the LUS is more sensitive in monitoring the recovery of the ADHF patients.

GW26-e2143
Analysis of the Relationship Between Reverse Ductus Arteriosus Flow and Pulmonary Development of Fetal with Right Ventricular Obstructive Lesions
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OBJECTIVES To investigate the relationship between reversed ductus arteriosus flow and pulmonary development of fetals with right ventricular obstructive lesions.

METHODS Among 4,006 cases, 75 cases were prenatal diagnosed of pulmonary stenosis or pulmonary atresia by fetal echocardiography, and divided into positive perfusion group (case group 1) and reverse perfusion group (case group 2). We also selected 100 normal fetuses with matched gestational as control group. The parameters, included pulmonary / aortic annulus diameter (PA/AO), McGoon index and ductus arteriosus / descending aorta diameter (DA/DAO), were compared between two groups.

RESULTS PA / AO in patients (case group 1 and group 2) were lower than the control group, the difference was statistically significant. McGoon ratio in case group close to normal control group, the difference was not statistically significant; McGoon ratio in case group 2 was significantly lower than the control group, the difference was statistically significant. DA / DAO index in case group (group 1 and group 2) and normal control group showed no significant difference.

CONCLUSIONS The finding of reversed flow by fetal echocardiograph provides a key to subsequent accurate diagnosis and denotes severe right heart malformations and pulmonary vascular dysplasia with a very poor prognosis.

GW26-e2475
Prediction of Coronary Heart Disease Using the Standard Deviation of Carotid Young's Modulus and Presence or Absence of Plaque
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OBJECTIVES Large artery stiffness and the presence or absence of plaques is associated with coronary heart disease (CHD). Because arterial walls are biologically heterogeneous, the standard deviation of Young's modulus (YM-standard) of the large arteries may better predict coronary atherosclerosis. However, the role of YM-standard in the occurrence of coronary events has not been addressed so far. Therefore, this study investigated whether the carotid YM-standard and the presence or absence of plaque improved CHD risk prediction.

METHODS Forty-six patients with CHD (age 64 ±10 years) and 105 patients at high risk of atherosclerosis (age 61±7 years) were recruited. Carotid YM was measured by vessel texture matching method, and YM-standard was calculated. Carotid intima-media thickness was measured by B-mode ultrasound.

RESULTS Compared with non-CHD subjects, the CHD patients showed an increase in YM(828 ± 276 versus 941 ± 200 kPa, p = 0.006) and YM-standard (146.0 ± 92.7 versus 203.1 ± 88.7 kPa, p = 0.001). In logistic regression analysis, YM-standard (OR = 1.01; 95% CI = 1.002-1.017), carotid plaque (OR = 13.691; 95% CI = 2.257-89.025) and YM-standard plus plaque (OR = 0.991; 95% CI = 0.982-1.000) were independent predictors of CHD. The traditional risk factors (TRF) plus YM-standard plus plaque model provided the most improvement in AUC, which increased from 0.679 (TRF only) to 0.772 (95% CI for the difference in adjusted AUC: 0.015 to 0.170).

CONCLUSIONS Carotid YM-standard is a powerful independent predictor of CHD. Adding plaque and YM-standard to TRF improves CHD risk prediction.

GW26-e2505
The contrast of radiation dose with three scan modes in 320-slice dynamic volume computed tomography angiography compared with selective coronary angiography
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OBJECTIVES To contrast the radiation dose with three scan modes in 320-slice dynamic volume CT (DVCT) coronary angiography in comparison of selective coronary angiography.

METHODS The study included 192 patients (118 males, 65.9 ± 11.2 years) with suspected coronary artery disease who were referred for 320-slice DVCT coronary angiography (Aquilion One, Toshiba Medical) followed by selective catheter coronary angiography. Three scan modes were performed in 320 CT scanner. 123 patients with Pre-emptive scanning (group A1), 51 patients with CT coronary artery imaging/ cardiac function analysis scanning (group A2), 18 patients with calcification integral scanning (group A3). The selective coronary angiographic studies were performed via radial or femoral arterial puncture (group B). The radiation dose of four groups were calculated.

RESULTS The radiation dose of group A1 has statistically significant with that of group A2 (6.34 ± 0.54 vs 12.67 ± 1.58, mSv, P < 0.05) and that of group A3 (6.34 ± 0.54 vs 15.12 ± 1.46, mSv, P > 0.05). The radiation dose of group A1 has no statistically significant with that of group B (6.34 ± 0.54 vs 6.67 ± 2.54, mSv, P > 0.05).

CONCLUSIONS The prospective scan mode in 320-slice DVCT angiography can obviously decrease the radiation dose of patients and should be adopted as much as possible.

GW26-e2957
Age-Related Variation in Flow Blood Fields of The Aortic Arch by Vector Flow Mapping
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OBJECTIVES To investigate age-related changes in blood flow fields through the aortic arch using velocity distribution, vortex formation, energy loss at different cardiac cycle.

METHODS One hundred and seven healthy subjects (49males) were divided into four groups according to age: <18 years (group A, n=22), 18-39 years (group B, n=31) , 40-59 years (group C, n=34) and >60 years (group D, n=20). VFM analysis were performed on prospect F7S Hitachi-Aloka Medical (Tokyo, Japan) and included the two-dimen- sional echocardiography imaging focused on the ascending aorta, 4-cm below the opening of the brachiocephalic trunk, as well as the descending aorta, 4-cm below the left subclavian artery. Both of them were divided into three different sections equally: the proximal section, the middle and the distal section.

RESULTS The following developmental changes were observed: 1. Except no significant difference between group C and D, a lower peak velocity (Vp) as age increasing through the entire aortic arch was significantly recognized in other groups. There was no obvious relationship between age and Vp distribution. 2. The vortex formation and distribution have no significant relationship with age. 3. Energy loss of the blood flow in the entire aortic arch had reflected quite distinct variations in some extent, which of group A was definitely higher compared with the other three groups throughout the entire cardiac cycle, meanwhile, which of group B was higher than group C and D in systole and early diastole simply.

CONCLUSIONS The Vp in different sections and the EL in aortic arch had certain correlation with age. The reference values for Vp and EL can be used in future studies examining patients with aortic arch diseases.

GW26-e3524
Value of the left atrial function index for assessing left atrial function in patients with atrial fibrillation
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OBJECTIVES To evaluate the left atrial function with the left atrial function index in patients with atrial fibrillation using echocardiography.
METHODS. 57 patients with atrial fibrillation and 20 normal controls were selected. All patients with atrial fibrillation were divided into two groups: paroxysmal atrial fibrillation group (34 cases) and persistent atrial fibrillation group (23 cases). Height and weight were recorded for each study participant, and body surface area (BSA) were calculated. The diameter of left atrium (LAD) and left atrial area (LAA) were measured by two-dimensional echocardiography. The peak E wave velocity of transmural flow (VE) and the velocity time integral of the left ventricular outflow tract were measured by pulsed wave Doppler. Left atrial maximum volume (LAVmax) and left atrial minimum volume (LAVmin) were measured using real-time three-dimensional echocardiography (RT-3DE). The left atrial emptying fraction (LAEF) and left atrial function index (LAFI) were calculated.

RESULTS. The LAD, LAA, LAVmax, LAVmin and VE in all atrial fibrillation patients were significantly higher than that in normal controls (P < 0.05). And the LAFI in all atrial fibrillation patients were lower than that in normal controls (P < 0.05). Among atrial fibrillation patients, the LAFI were lower in persistent atrial fibrillation patients than that in paroxysmal atrial fibrillation patients (0.12 ± 0.05 vs 0.28 ± 0.22 respectively, P < 0.05). On the contrary, the LAFI was increased in patients with persistent atrial fibrillation (P < 0.05).

CONCLUSIONS. The left atrial function index depresses in the patients with atrial fibrillation, and left atrial dysfunction is more serious in persistent atrial fibrillation patients. LAFI is a significant indicator in detecting the left atrial function.

GW26-e1404
Use of vector flow mapping to detect changes in left ventricular blood flow in patients with decompenated liver cirrhosis
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OBJECTIVES. We assessed the accuracy of vector flow mapping (VFM) to study changes in left ventricular blood flow field parameters in patients with decompenated liver cirrhosis.

METHODS. Eighteen patients (13 men, 5 women, aged 32–60 years, mean ± standard deviation [SD] 49 ± 10 years) diagnosed with decompenated liver cirrhosis were selected as the case group. They were Child-Pugh grade B or C and had no smoking history. Twenty healthy persons (14 men, 6 women, aged 29–59 years old, mean ± SD 46 ± 10 years) were selected as the control group. All controls and subjects had normal blood tests and resting 12-lead ECGs. Neither the case group nor the control group subjects had a history of significant valvar heart disease, heart valve surgery, severe mitral annular calcification, atrial fibrillation, or used a cardiac pacemaker. Using real-time B-mode ultrasound (FU30, Hitachi-Aloka, Tokyo, Japan) with a UST-5205 cardiac probe (Hitachi-Aloka), we scanned the patients and controls after 10 minutes of rest. After a conventional echocardiography examination, an apical four-chamber view was selected to display the mitral valve. We performed color Doppler sampling, including the left ventricle, mitral valve, and part of the left atrium. Dynamic images were obtained and stored for three stable consecutive heartbeat cycles. These stored images were analyzed offline with commercial software (DAS-RS1 version 3.0, Hitachi-Aloka). We measured the maximum vortex area and maximum vortex intensity in the patients and controls during the left ventricular filling phase (including rapid filling phase and slow filling phase), the atrial systolic phase, and the left ventricular systolic phase. Data were processed using commercial software (SPSS 19.0, IBM, Armonk NY, USA). Numerical data are presented as mean ± SD. Differences between groups were compared using t-tests, with P < 0.05 being considered statistically significant.

RESULTS. Conventional parameters of left ventricle function such as ejection fraction and E/A ratio were not different between cases and controls (P > 0.05). Additionally, the maximum vortex areas in the cases and controls were not significantly different in any phase (P > 0.05). However, during the left ventricular rapid and slow filling phases, the maximum vortex intensities in the cases were significantly lower than in the controls (P = 0.01). During the atrial systolic phase and the left ventricular systolic phase, the maximum vortex intensities were significantly higher in the cases compared with the controls (24.31 ± 5.13 m2/s vs 17.26 ± 3.99 m2/s, P < 0.05) and 34.77 ± 5.38 m2/s vs 22.26 ± 4.09 m2/s, P < 0.05, respectively).

CONCLUSIONS. In patients with decompenated liver cirrhosis, VFM may detect subtle left ventricular systolic and diastolic flow abnormalities not identified with conventional echocardiography.

GW26-e2132
Myocardial dissection after acute myocardial infarction—echocardiographic features and clinical outcome
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OBJECTIVES. To retrospective the echocardiographic feature of myocardial dissection after acute myocardial infarction (AMI)

METHODS. The echocardiographic features of five cases with myocardial dissection after AMI were reviewed, and the clinical outcome were followed up

RESULTS. In 5 cases, 2 were anterior septal myocardial infarction, the myocardial dissections were from the left ventricular (LV) apex to the anterior wall of LV interventricular septum. These 2 cases were surgically repaired. Two cases were inferior and posterior LV myocardial infarction, and the myocardial dissections located LV inferior wall. These 2 patients were not managed surgically because of the regression of the myocardial dissection during follow-up. The fifth case was LV inferior and right ventricular (RV) myocardial infarction, the myocardial dissection located the RV inferior wall. This patient complicated with postero-septal ventricular rupture, tricuspid chordate rupture and renal dysfunction at the same time. The surgical repair was not undergone because of deteriorated cardiac and renal function, and patient died 22 days later.

CONCLUSIONS. Myocardial dissection is a very rare complication after AMI, the location is related to the position of AMI. Some cases can spontaneous resolution during follow up and not necessary to be repaired. But the surgical repair is necessary if complicated with ventricular rupture and other emergency conditions. Echocardiography is the most important imaging facility in such cases

GW26-e2145
The control study of right ventricular systolic function in annulus tissue displacement techniques and right cardiac catheterization intraoperative
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OBJECTIVES. Contrastive analysis the displacement of the tricuspid annulus with tissue motion annular displacement and right ventricular systolic function (RVEF) by right cardiac catheterization intraoperative measuring, looking for noninvasive and effective ultrasonic testing method to right ventricular systolic function.

METHODS. There are 18 patients in anzheng Hospital cardiac surgery, 11 males and 7 females, mean age 45.4 ± 5.1 years old, placed right heart catheterization intraoperative, and obtained right ventricular systolic function (RVEF).

RESULTS. There was significant positive correlation between the displacement and right ventricular systolic function (r = 0.910, p = 0.00). Regression equation: Y(RVEF) = −0.008 + 0.031X(S), P = 0.000 – 0.05.

CONCLUSIONS. It is very easy to get the tricuspid annulus systolic displacement of the right ventricular wall, and there have a good correlation between the systolic displacement of the tricuspid annulus and right ventricular systolic function measured as the gold standard of right cardiac catheterization. It can be used as a clinical noninvasive index to estimate right ventricular systolic function.

GW26-e2138
Assessment of ventricular global longitudinal function in hypoplastic left heart syndrome using velocity vector imaging
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OBJECTIVES. It has been a challenge to quantitatively assess global and regional ventricular function in hypoplastic left heart syndrome (HLHS), especially in fetuses. The aim of this study was to evaluate