CONCLUSIONS A right-sided EIF may carry a higher risk of cardiac anomalies than a left-sided or bilateral EIF in our study. We recommended that fetuses should be offered a careful echocardiography as soon as right-sided EIF was showed.

GW26-e2135 Prenatal diagnosis of absent pulmonary valve syndrome
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OBJECTIVES To analyze the echocardiographic features of absent pulmonary valve syndrome (APVS).

METHODS The echocardiographic findings were retrospectively analyzed in seven fetuses with APVS and the echocardiographic features of APVS were summarized.

RESULTS Of all seven fetuses with APVS, all of which demonstrated cardiac enlargement, the axis of the heart was to the left and the main pulmonary artery or branches were significantly dilated. The pulmonary valve was absent or rudimentary. Color Doppler flow imaging demonstrated severe pulmonary regurgitation. Spectral Doppler imaging showed stenosis of the pulmonary annulus. Four fetuses associated with atresia of mitral valve, right-ventricle type single ventricle. One fetus associated with double outlet of right ventricle. One fetus associated with ventricular septal defect. Three fetuses associated with absent ductus arteriosus.

CONCLUSIONS The fetal echocardiographic findings of the APVS are characteristic and the APVS should be considered when markedly dilated right ventricle and dilated pulmonary arteries in combine with the stenosis and severe regurgitation of the pulmonary annulus. Identifying whether or not the ductus arteriosus is present can help in evaluating the prognosis.

GW26-e2142 Agenesia of the ductus venosus associated with abnormal umbilical vein connection: fetal echocardiography characteristic and prenatal diagnosis value
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OBJECTIVES To summarize the fetal echocardiography characteristic and the APVS shou ld be considered when markedly dilated right ventricle and dilated pulmonary arteries in combine with the stenosis and severe regurgitation of the pulmonary annulus. Identifying whether or not the ductus arteriosus is present can help in evaluating the prognosis.

METHODS Totally ninety-eight subjects were enrolled in this study, including 38 healthy people, 33 patients with cardiovascular risk factors but no coronary disease or heart failure (high-risk group) and 27 patients with heart failure. Using layer-specific strain imaging, peak longitudinal strain (PLS) and peak circumferential strain (PCS) of all three layers myocardium were measured in the three groups Thirty-eight healthy subjects, thirty-three patients with cardiovascular risk factors whose coronary angiogram is negative (group A), and twenty-seven patients with heart failure were enrolled in this study. By using layer-specific strain imaging, Peak longitudinal strain (PLS) and peak circumferential strain (PCS) of all three layers’ myocardium were measured in three groups.

RESULTS The PLS and PCS of endo-, mid-, and epi-myocardium (PLSendo, PLSmyo, PLSepi; PCSendo, PCSmyo, PCSepi) decreased gradually in all three groups (P < 0.001). The PLS and PCS of all the three layers were significantly lower in group with heart failure than in other two groups (P < 0.001). These were no significantly differences in PLSendo, PLSmid, and PCSendo between healthy subjects and high-risk group. But the strain gradient among the three layers (PLSendo-myo, PLSmyo-epi, PCSendo-epi) had statistically significant differences in three groups (healthy subjects > risk group > heart failure group) (l p < 0.001).

CONCLUSIONS There is a gradient of myocardial strain in PLS and PCS, both of which decrease gradually in the order of endo-, mid- and epi-myocardial strain in all groups., Compared with peak myocardial strain, differences of gradient in layer strain are more sensitive to detect early myocardial injury than peak myocardial strain.

GW26-e2879 Side Effects of Adenosine Triphosphate Stress in Pharmacological Stress Myocardial Perfusion Imaging
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OBJECTIVES Pharmacological stress with adenosine triphosphate (ATP) for myocardial perfusion imaging (MPI) has been used for many years. However, the incidence of their side effects reported are different. The purpose of this study is to investigate prospectively the incidence of chest pain, dyspnea and headache, the most common three symptoms during ATP infusion.

METHODS Five-minutes ATP stress was performed. In brief, ATP was infused (0.16mg/kg.min) with pump for five minutes and stopped at 5 minutes; Tc-99m MIBI was injected at 3 minute during ATP infusion. The heart rate (HR) and blood pressure (BP) were taken down before and at 3 and 5 minutes during ATP infusion. The patient’s HR increased that of pre-ATP. The 3-minutes HR increased that of pre-ATP was determined as “increasing HR”. The patient’s 3-minutes systolic blood pressure (SBP) decreased 5 mmHg or more than that of pre-ATP was determined as “decreasing SBP”. Gated MPI was performed 120 minutes later.

One hundred and thirty-seven patients included in this prospective study from Feb 2014 to May 2014. Patients underwent ATP stress for suspected CAD or for differentiating CAD from other disease. Among them, 53 patients had suspected CAD, 27 patients had suspected dilated cardiomyopathy (DCM), 28 patients had joint disease of lower limbs for preoperative risk stratification, other patients had suspected myocarditis, chronic obstructive pulmonary disease (COPD), and rheumatic heart disease.

RESULTS One hundred thirty-six of the 137 included patients taken down all of the side effects. Among the 136 patients, 82 patients (60.29%) had headache, 52 (38.24%) had dyspnea and 52 (38.24%) had headache during ATP infusion. Thirteen patients were classified by four groups according to numbers of symptoms; asymptomatic patients was 14.71% (20/136), patients with one symptom was 29.41% (40/136), patients with two symptoms was 42.65% (58/136) and patients with three symptoms was 13.24% (18/136). One hundred and thirty-seven patients included in this prospective study from Feb 2014 to May 2014. Patients underwent ATP stress for suspected CAD or for differentiating CAD from other disease. Among them, 53 patients had suspected CAD, 27 patients had suspected dilated cardiomyopathy (DCM), 28 patients had joint disease of lower limbs for preoperative risk stratification, other patients had suspected myocarditis, chronic obstructive pulmonary disease (COPD), and rheumatic heart disease.

CONCLUSIONS A right-sided EIF may carry a higher risk of cardiac anomalies than a left-sided or bilateral EIF in our study. We recommended that fetuses should be offered a careful echocardiography as soon as right-sided EIF was showed.
CONCLUSIONS The incidence of side effect(s) of 5-minutes ATP stress with pump for myocardial perfusion imaging is about 85%. Chest pain, dyspnea and headache appears on about 60%, 55% and 38% of patients with ATP stress respectively. Seventy percent patients increase their heart rate and decrease their systolic blood pressure at 3 minutes during ATP infusion.

GW26-e3594 Assessment of cardiac morphological and functional abnormalities in patients with bicuspid aortic valve without significant valve dysfunction by speckle tracking echocardiography

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OBJECTIVES 1) to identify other possible morphological malformation happened to the heart with bicuspid aortic valve. 2) to assess left ventricular diastolic and systolic function in patients with bicuspid aortic valve and then to investigate its relation to aortic elasticity.

METHODS Thirty-nine patients (30M/9F; age 43.5±18.8 years; range 6 to 75 years) with or mild impaired bicuspid aortic valve were recruited in accompany with twenty-nine controls (21M/8F; age 10.6 years; range 15 to 35 years) matched for age, sex and body surface area. Conventional echocardiography and speckle-tracking imaging echocardiography were performed in all subjects. Left ventricular diastolic parameters were acquired and aortic elastic properties were derived as well. Left ventricular myocardial strain and rate, rotation and division rate, and torsion were calculated. Left ventricular diastolic and systolic parameters were compared between the patients and controls. Correlation between aortic elastic parameters and left ventricular diastolic and systolic statistically significantly parameters was also analyzed.

RESULTS In patients with bicuspid aortic valve, the height of anterior mitral leaflet (AML) were longer (22.36±4.0 vs 26.3±1.9, P<0.001) compared with the controls. E deceleration time was longer (174.26±41.2 vs 120.82±28.9, P<0.001) in the patients than that in the controls and left atrial volume index in the patients was larger (33.81±17.7 vs 22.25±7.4, P=0.001) in comparison with that in the controls. In addition, patients with bicuspid valve were found to have statistically significantly lower apical peak systolic circumferential strain (-23.26±7.0 vs -29.99±7.3, P<0.001) and strain rate (-1.81±0.4 vs -2.26±0.7, P=0.004), and middle peak systolic circumferential strain (-17.49±4.2 vs -21.4±3.5, P<0.002) compared with the healthy controls. It also documented a reduction of global circumferential strain (-19.12±4.2 vs -22.49±3.7, P=0.001) and strain rate (-1.63±0.3 vs -1.82±0.4, P=0.044) in patients with bicuspid valve. And the basal and apical rotation rate was significantly lower (-29.21±5.0 vs -67.70±21.2, P<0.001; 7.9±9.2 vs 11.1±8.2, P<0.001) in patients with bicuspid aortic valve than in controls as well. However no significant correlation were observed between aortic elastic parameters and left ventricular diastolic and systolic statistically significantly parameters in patients with bicuspid aortic valve.

CONCLUSIONS This study suggested the bicuspid aortic valve disease may be a genetic disorder associated with cardiac morphological malformation and left ventricular diastolic and systolic dysfunction, which is independent of aortic elastic lesion.

GW26-e1086 Experimental study of the relationship between the content of stromal cell-derived factor-1 in different period of myocardial infarction and left ventricle function

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OBJECTIVES To investigate the relationship between the content of stromal cell-derived factor-1 (SDF-1) in myocardium after myocardial infarction in different period and left ventricular function.

METHODS Twenty-three Chinese miniature pigs were randomly divided into the experimental group and the control group. The swines in experimental group were prepared as acute myocardial infarction model by ligating anterior descending coronary artery and were divided into 6 subgroups according to the different time points after infarction. The Left ventricular end-diastolic diameter (LVDD), left ventricular ejection fraction (LVEF) and left ventricular short axis shortening rate (LVFS) were measured respectively. Global circumferential strain (GCS) and the radial strain (GRS) of left ventricle were both measured. The content of SDF-1 were also measured by real-time quantitative PCR

RESULTS Compared with the control group, SDF-1 levels were significantly elevated, and LVEF, LVFS and GRS were reduced. however, LVEDd were significantly increased. The content of SDF-1 and GCS has a negative correlation (r=-0.580, P=0.000).

CONCLUSIONS The content of SDF-1 in myocardial tissue have a certain relationship with GCS of left ventricular myocardium.

GW26-e1370 A preliminary study on carotid longitudinal modulus of elasticity using new shear wave elastography

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OBJECTIVES To evaluate the longitudinal elastic modulus in patients with acute ischemic stroke using new shear wave elastography.

METHODS There were 183 cases with acute ischemic stroke (AIS) including 111 cases with large artery atherosclerosis (LAA) and 76 cases with lacunar infarction (LAC) classified according to the TOAST classification. There were 176 age and sex-matched cases as control group. Pulse wave velocity (PWV) of bilateral carotids was measured by RF ultrasound technology. The average values of longitudinal average elastic modulus (MEmean), the maximum elastic modulus (MEMax) and minimum elastic modulus (MEmin) in the 2010±181 days. The area of superficial walls of bilateral carotids were analyzed by real-time shear wave elastography (SWE). Their related factors were analyzed.

RESULTS Compared with the control group, the PWV in patients with AIS was increased (P<0.05). The MEmax and MEmean of carotid artery in patients with AIS were more than those in the control group (P<0.05). MEMean and MEmax were positively related to Age, systolic blood pressure, CCAD, PWV, LDL, and were negatively correlated with TC (P all<0.05).

CONCLUSIONS Carotid longitudinal elastic modulus measured by SWE can evaluate the arterial stiffness.

GW26-e1405 Use of vector flow mapping to detect changes in left ventricular blood flow in patients with end stage renal disease

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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 end stage renal disease.

METHODS Thirty eight patients (30 men, 8 women, aged 21-59 years old, mean±standard deviation [SD] 37±11 years) diagnosed with end stage renal disease were selected as case group. All patients had no smoking history. Thirty three healthy persons (25 men, 8 women, aged 20-55 years old, mean±SD 39±10 years) were selected as control group. All the control group subjects had no history of heart diseases, normal blood tests and resting 12 lead ECG. Using real-time B-mode ultrasound (F75plus, Hitachi-Aloka Company, Tokyo, Japan) with a UST-52105 cardiac probe (Hitachi-Aloka). 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 off-line with commercial software (DAS-RII 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.