

**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 tetralogy of Fallot, one case of which associated with small foci in the left ventricle and one case associated with single umbilical artery. Two fetuses associated with right aortic arch. Two fetuses associated with double outlet of right ventricle. One fetus associated with atresia of mitral valve, right-ventricle typed 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

##### Agenesis 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 prognosis in agensis of the ductus venosus (ADV) with abnormal umbilical vein connection patients.

**METHODS** Retrospective analysis of 14 fetuses with ADV by fetal echocardiography. Analysis the size of heart, changes in heart function and prognosis.

**RESULTS** Fourteen cases ADV have been detected since January 2011 to November 2014. In six of them the umbilical vein was connected to the portal vein (five to the left and one to the right), whereas of them the umbilical vein neither drained to the left portal nor right portal vein in the other eight cases. The umbilical vein connection to the extrahepatic venous system by tracking detection ( five of them the connection was directly to the right atrium, one directly to the inferior vena cava, one to the right hepatic vein and the other drained into the right atrium through coronary sinus).

**CONCLUSIONS** Prenatal ultrasound can be used to diagnose the ADV accurately. Furthermore, it can be used to observe the umbilical vein abnormal connection intrahepatic or extrahepatic and measure pipe diameter. It will help to determine the prognosis and consultation.

#### GW26-e5449

##### Left Ventricular transmural strain gradient analysis by Layer-specific Strain Imaging

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**OBJECTIVES** This study aims to validate transmural strain gradient of myocardium measured by layer-specific strain imaging in different subjects.

**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 ( ) 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 (PLS<sub>endo</sub>, PLS<sub>myo</sub>, PLS<sub>epi</sub>; PCS<sub>endo</sub>, PCS<sub>myo</sub>, PCS<sub>epi</sub>) 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 ( $P < 0.001$ ). There were no significant differences in PLS<sub>endo</sub>, PLS<sub>mid</sub>, and PCS<sub>endo</sub> between healthy subjects and high-risk group. But the strain gradient among the three layers (PLS<sub>endo</sub>-myo, PLS<sub>myo</sub>-epi, PLS<sub>endo</sub>-epi; PCS<sub>endo</sub>-myo, PCS<sub>myo</sub>-epi, PCS<sub>endo</sub>-epi) had statistically significant differences in three groups (healthy subjects > risk group > heart failure group) ( $1 p < 0.001$ ).

**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-e2979

##### 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 ATP infusion, at 3 and 5 minutes during ATP infusion. The patient's 3-minutes HR increased 5 times per minute or more than that of pre-ATP infusion was determined "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 chest pain, 76 (55.88%) had dyspnea and 52 (38.24%) had headache during ATP infusion. The 136 patients were classified 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-five patients of the 137 included patients taken down the blood pressure during ATP infusion. Ninety-five of the 135 patients (70.37%) decreased SBP ( $38.16 \pm 12.41$ mmHg) during ATP infusion. Twenty of them (22.22%) increased their SBP ( $10.75 \pm 3.49$ mmHg), and 20 patients (22.22%) changed little SBP.

We taken notes of all the heart rates of the 137 patients during the ATP infusion. Ninety-eight patient's (71.53%) HR increased ( $17.9 \pm 9.92$ ), and 14 patient's (10.22%) HR decreased ( $11.57 \pm 5.09$ ) during ATP infusion. Twenty-five (18.25%) patient's 3-minutes HR had little change during ATP infusion.