Multidetector computed tomography (MDCT) enables visualization of the origin and course of coronary arteries. The objective of this study was to investigate the prevalence of origin and termination coronary artery anomalies and the course of these anomalies in patients in a single center in Korea.

METHODS To diagnose coronary anomalies, the angiographic data of 8,864 consecutive patients undergoing 64- or 320-MDCT from September 2005 to November 2011 were analyzed retrospectively.

RESULTS Among the 8,864 patients, 103 (1.16%) had coronary anomalies. Ninety (87.4%) patients had origin and distribution anomalies, and 13 (12.6%) patients had a coronary artery fistula. The most common anomaly (41, 39.8%) was an anomalous origin of the right coronary artery (RCA). Of these, three patients received a coronary artery bypass graft.

CONCLUSIONS The prevalence of coronary anomalies in a single center of Korea was 1.16%. The incidence and patterns of coronary artery anomalies in our patient population were similar to those of previous studies.

GW27-e0183
Differences in haematological indices in chinese patients with an ischaemic stroke between those with and without a high risk patent

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OBJECTIVES Whilst a patent foramen ovale (PFO) is commonly found in patients with crytogenic stroke (CS) causative mechanisms remain speculative and deep venous thrombosis is rarely found.

So the purpose to compare demographic, haemodynamic and haematological indices between patients of ischaemic stroke (IS) without PFO and those of CS with a high risk PFO.

METHODS All patients were less than 60 years. The study group was CS patients with a high risk PFO [PFO≥4 mm with big amount right to left shunt (RLS)], combined ≥1 high risk factors]had a high risk PFO], whilst the control group was IS patients without PFO. Venous blood samples were obtained before administration of any anticoagulation (3 subjects on aspirin). All patients underwent brain CT and 2D echocardiography. Measurements of full blood count, inflammatory markers, clotting parameters were made.

RESULTS Patients without PFO were older (50±1 vs 44±2 years) and had higher systolic (138±4 vs 119±2) and diastolic blood pressure (87±2 vs 76±1 mmHg). Gender distribution was similar. Haematological parameters differed between the groups. In multiple regression analyses including age, significant differences were found for WBC, %monocytes, %lymphocytes, aPPT, PT, INR and fibrinogen. For patients aged 50 to 60 years significant differences in SBP, DBP, WBC, PT, TT, and fibrinogen were found between those with (n=29) and without (n=28) PFO.

CONCLUSIONS Patients presenting with CS and high risk PFO are younger, have lower blood pressure and differ in a number of haematological variables. Differences are not accounted for by age and may indicate differences in stroke aetiology.

GW27-e0246
3D printing for coarctation of the aorta

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OBJECTIVES Coarctation of the aorta (CoA) represents a birth defect in which the aorta is narrow. If CoA is severe, the baby needs surgery. Three-dimensional printing (3D printing) is commonly used as a means of rapidly producing prototypes for manufacturing technology [1, 2]. The 3D printed heart model has accurate anatomical structure of the heart.

METHODS Eight babies diagnosed of CoA were enrolled and scanner by 3D contrast-enhanced MR angiogram. Four are in control group, and the other four are in test group of 3D printing model. For the former group, the MR angiograms are offered to both cardiothoracic surgeons and patients' parents via displays of image workstation. For the latter group, an experienced cardiologist segments the region-of-interest manually. Postprocessing was performed to remove noises and smoothness. Mimics v14.01was used to segment heart and vessels, and then to create 3D surface models in STL format. Then, we input the STL file to a 3D-printer. The printed models are available to both cardiothoracic surgeons and patients' parents. We invite them to answer a questionnare to evaluate the two kinds of treatments.

RESULTS This statistics of questionnaire show that the cardiothoracic surgeons have a positive impression to use 3D printed model, mainly because the 3D printing sharply reduce the time needed for making surgery plans compared to the control group. The cardiothoracic surgeons also report the 3D printed model can show the heart structure in a more clearly way than the display, and it can show the detail of the CoA.

For the parents, they appraise the use of 3D printed model, since the preoperative communication time of 3D printing groups is significantly reduced compared to control group. They also report they understand the operative plans more easily.

CONCLUSIONS The 3D printing do benefits for both surgeons and patient's parents related to coarctation of the aorta.

GW27-e0323
Echocardiography in the Demonstration of Fetal Congenital Cardiovascular Disease

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OBJECTIVES To compare the demonstration accuracy of fetal cardiac chambers and great vessels by cardiovascular casting and prenatal echocardiography.

METHODS From March 2014 to June 2015, 18 fetal specimens prenatally diagnosed with congenital cardiovascular disease were enrolled in this study. Prenatal echocardiography findings of these 18 cases were reviewed and analyzed. Fetal cardiovascular cast models were made by injecting ABS perfusate via umbilical vein. All the cast models were carefully observed and analyzed, and cast findings were compared with prenatal diagnosis in overall level, atrioventricular level and great vascular level.

RESULTS In 18 cases, 94 abnormalities were diagnosed by prenatal echocardiography, including 48 atrioventricular abnormalities and 46 great vascular abnormalities. 18 fetal specimens were all successfully made into cast models. A total of 117 anomalies were detected in cast models, including 35 anomalies in atrioventricular level and 82 anomalies in great vascular level. When comparing the sonographic results and cast findings, we found 65 abnormalities were identified by both methods, including 29 and 36 abnormalities in atrioventricular and great vascular level, separately. There were 65 misdiagnosis in prenatal echocardiographic findings, which were corrected or added by casts, including 12 atrioventricular abnormalities and 53 great vascular abnormalities. However, there were also 18 malformations observed by fetal echocardiography could not be demonstrated in the cast models, including 16 atrioventricular malformations and 2 great vascular malformations.

CONCLUSIONS Fetal cardiovascular cast has more advantages in demonstrating anomalies of great vessels and their branches, but has some limitations in displaying intracardiac abnormalities. Cast models may help to understand the anatomic structure and spatial relationship of fetal congenital cardiovascular disease, which plays a vital role in prenatal diagnosis and clinical management.

GW27-e0375
Anomalous pulmonary venous connections: Comparison of the diagnostic accuracy by echocardiography versus surgery at a single medical center

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OBJECTIVES We sought to evaluate the value of echocardiography in the diagnosis of different types of anomalous pulmonary venous connections (APVC) and summarize the diagnostic experience.

METHODS Eight-four patients with APVC underwent surgical correction or computerized tomography angiography in the last 6 years (2008-2014) at the Wuhan Union Hospital.