Sat. Jul 8, 2017

Poster Presentation Area

JCK Poster

JCK Poster 1 (II-JCKP1)

Basics/New Insights/Others

Chair:Tran Cong Bao Phung(Cardiology Department, Children Hospital 1, Ho Chi Minh City, VietNam)
6:15 PM - 7:15 PM Poster Presentation Area (Exhibition and Event Hall)

[II-JCKP1-01] Is younger the better for cardiac remodeling with transcatheter ASD closure in adult patients regardless of diastolic dysfunction?

○Lucy Youngmin Eun, Eui Young Choi, Young Won Yoon, Jae Young Choi （Department of Pediatric Cardiology, Yonsei University, Seoul, Korea）

6:15 PM - 7:15 PM

[II-JCKP1-02] Establish Heparin / Collagen-REDV selective active interface on ePTFE to promote endothelialization

○Yaping Shan, Bing Jia （Department of Children's Hospital ,FUDan University, Shanghai,China）

6:15 PM - 7:15 PM

[II-JCKP1-03] Vegfa signaling regulates diverse artery/vein formation in vertebrate vasculatures

○Diqi Zhu[1], Daqing Jin[2], Yabo Fang[2], Yiwei Chen[1], Weijun Pan[3], Dong Liu[4],Fen Li[1], Tao Zhong[2], （1.Department of Pediatric Cardiology , Shanghai Children's Medical Center Affiliated to Shanghai Jiaotong University School of Medicine, Shanghai, China, 2.State Key Laboratory of Genetic Engineering, Zhong Shan Hospital, School of Life Sciences, Fudan University, Shanghai, China, 3.Institute of Health Sciences, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China, 4.Co-innovation Center of Neuroregeneration, Jiangsu Key Laboratory of Neuroregeneration, Nantong University, Nantong, China）

6:15 PM - 7:15 PM

[II-JCKP1-04] Efficacy of a Special 6-Dose Palivizumab Prophylaxis Protocol for Respiratory Syncytial Virus Infection in Congenital Heart Disease in Subtropical Areas

○Yu Chuan Hua[1], Shuenn Nan Chiu[2], Jou Kou Wang[2] （1.Cardiac Children's Foundation, Taipei, Taiwan, 2.Department of Pediatrics, National Taiwan University Hospital and Medical College, National Taiwan University, Taipei, Taiwan）

6:15 PM - 7:15 PM

[II-JCKP1-05] Assessment of Right Ventricular Systolic Function in Patients after Repair of Tetralogy of Fallot with Various Degrees of Pulmonary Regurgitation

○Manatomo Toyono[1], Shunsuke Yamada[1], Mieko Aoki-Okazaki[2], Tsutomu Takahashi[1] （1.Department of Pediatrics, Akita University, Akita, Japan, 2.Interconnected Medical Education and Support Systems, Akita University, Akita, Japan）

6:15 PM - 7:15 PM

[II-JCKP1-06] TGF-β/Smad3 signaling promotes collagen synthesis in PASMC through down-regulating miR-29b

○Ting Ting Xiao, Juan Chen （Department of Cardiology,Shanghai Children's Hosptial, Shanghai, China）

6:15 PM - 7:15 PM

[II-JCKP1-07] T-VDCC CaV3.1 and CaV3.2 involves in pulmonary hypertension

○Jie Shen[1], Zixu Huang[2], Yuanyang Wang[2] （1.Department of Cardiology, Shanghai Children's Medical Center affiliated to Shanghai Jiaotong University School of Medicine, China, 2.Department of Cardiology, Shanghai Children's Hospital, Shanghai Jiaotong University, China）

6:15 PM - 7:15 PM

[II-JCKP1-08] Pleural effusion as complication of middle aortic syndrome treated by stent implantation

○Tran Cong Bao Phung, Vu Minh Phuc, Do Nguyen Tin, Nguyen Tri Hao, Phan Hoang Yen, Phan Tien Loi （Cardiology Department , Children Hospital 1, Ho Chi Minh City, VietNam）

6:15 PM - 7:15 PM

[II-JCKP1-09] Effects of respiratory ciliary dysfunction on increased postoperative respiratory complications in congenital heart disease patients with heterotaxy

○Weicheng Chen, Shuolin Li, Sida Liu, Guoying Huang, Bing Jia （Heart Center, Children's Hospital of Fudan University, Shanghai, China）

6:15 PM - 7:15 PM

[II-JCKP1-10] Successful double intraventricular reroutings and Dams Kaye Stansel anastomosis as Rastelli modification for rare formed double outlet right ventricle

○Takaya Hoashi[1], Isao Shiraishi[2], Kenichi Kurosaki[2], Masatoshi Shimada[1], Hajime Ichikawa[1] （1.Department of Pediatric Cardiovascular Surgery, National Cerebral and Cardiovascular Center, Suita, Japan, 2.Department of Pediatric Cardiology, National Cerebral and Cardiovascular Center, Suita, Japan）

6:15 PM - 7:15 PM

JCK Poster

JCK Poster 2 (II-JCKP2)
Kawasaki Disease/General Cardiology/Adult Congenital Heart Disease

Chair:Kaiyu Zhou(Department of Pediatric Cardiology, West China Second University Hospital, Sichuan University, Chengdu, Sichuan, China)

6:15 PM - 7:15 PM Poster Presentation Area (Exhibition and Event Hall)

[II-JCKP2-01] Progressive Coronary Dilatation for Eighteen Months in Kawasaki Disease: A Case Report

○CHIAHUI WU, Ming-Tai Lin, Jou-Kou Wang, Mei-Hwan Wu （Department of Pediatrics, National Taiwan University Hospital, Taipei, Taiwan）

6:15 PM - 7:15 PM

[II-JCKP2-02] Shock as prominent early manifestation of kawasaki disease in Children

○Kaiyu Zhou, Wang Chuan, Yimin Hua, Yifei Li （Department of Pediatric Cardiology, West China Second University Hospital, Sichuan University, Chengdu, Sichuan, China）

6:15 PM - 7:15 PM

[II-JCKP2-03] The level of serum TNF-a in intravenous immunoglobulin non-responsive children with Kawasaki disease

○Wang Yun[1], Cui Dai[2] （1.Department of pediatrics, Beijing new century women's and children's hospital, Beijing, China, 2.Children's Hospital Affiliated to Capital Institute of Pediatrics, Beijing, China）

6:15 PM - 7:15 PM

[II-JCKP2-04] Clinical features of Kawasaki Disease children with urinary tract involvement

○Wang Yang[1], Wang Yun[2], Zhou Nan[3], Chen Jia Jia[3], Chen Li[3], Tang Xiao Lei[3] （1.Department of Pediatrics,Beijing New Centery International Children's Hospital, Beijing, China, 2.Beijing New Century Women's and Children's Hospital, China, 3.Beijing Children's Hospital, China）

6:15 PM - 7:15 PM

[II-JCKP2-05] The increased serum levels of Interleukin-21 in Kawasaki disease

○Hae Yong Lee （Department of Pediatric Cardiology, Yonsei University,Wonju, Korea）

6:15 PM - 7:15 PM

[II-JCKP2-06] The relationship between children metabolic syndrome and target organ damage of essential hypertension

○Yao Lin, Lin Shi, Jie Mi, Yang Liu （Department of Cardiology, Capital Institute of Pediatrics, Beijing, China）

6:15 PM - 7:15 PM

[II-JCKP2-07] The effect of mother's social support on children with congenital heart disease and mother-child interaction on children's problem behavior.

○Ju Ryoung Moon[1,4,5,6], Jinyoung Song[1,2,4,5,6,7], June Huh[1,2,4,5,6,7], I-Seok Kang[1,2,4,5,6,7], Ji-Hyuk Yang[1,3,4,5,6,7], Tae-Gook Jun[1,3,4,5,6,7] （1.Grown-Up Congenital Heart Clinic, 2.Department of Pediatrics, 3.Department of Thoracic &Cardiovascular Surgery, 4.Cardiac Center, 5.Heart Vascular and Stroke Institute, 6.Samsung Medical Center, 7.Sungkyunkwan University School of Medicine）

6:15 PM - 7:15 PM

[II-JCKP2-08] Changes of content of circulating

endothelial cells and endothelial progenitor cells in patients with primary hypertension in peripheral blood

○Lin Shi, Yuanyuan Zhang, Yao Lin, Yang Liu （Department of Cardiology,Capital Institute of Pediatrics, Beijing, China）

6:15 PM - 7:15 PM

[II-JCKP2-09] Role of Cardiopulmonary Exercise Testing for Prediction of Pregnancy Outcome in Women with Congenital Heart Disease

○Midori Fukuyama, Hideo Ohuchi, Chizuko Kamiya, Mitsuhiro Fujino, Kenichi Kurosaki, Jun Yoshimatsu （National Cerebral and Cardiovascular Center, Japan）

6:15 PM - 7:15 PM

[II-JCKP2-10] Myocardial Perfusion Abnormality by SPECT Imaging Correlates with Systemic Ventricular Property in Adults with Congenital Heart Disease

○Mitsuhiro Fujino, Hideo Ouch, Yosuke Hayama, Tohru Iwata, Jun Negishi, Aya Miyazaki, Etsuko Tsuda, Kenichi Kurosaki, （Department of Pediatric Cardiology, National Cerebral and Cardiovascular Center, Osaka, Japan）

6:15 PM - 7:15 PM

Sun. Jul 9, 2017

Poster Presentation Area

JCK Poster

JCK Poster 3 (III-JCKP3)

Fetal and Neonatal Cardiology/Others

Chair:Han Zhang(Department of Cardiology, Shanghai Children's Hospital, Shanghai, China)
1:00 PM - 2:00 PM Poster Presentation Area (Exhibition and Event Hall)

[III-JCKP3-01] Experience of cases demonstrating the difficulties in fetal TAPVC diagnosis

○Yukiko Kawazu[1,2], Noboru Inamura[3]
（1.Department of Pediatrics, Toyonaka Municipal Hospital, Japan, 2.Department of Pediatric Cardiology, Osaka Medical Center for Maternal and Child Health, Japan, 3.Department of Pediatrics, Kindai University, Japan）

1:00 PM - 2:00 PM

[III-JCKP3-02] A neonatal refractory A neonatal respiratory distress associated with case presentation and literature review: pulmonary artery sling

○Han Zhang, Lijian Xie, Min Huang
（Department of Cardiology, Shanghai Children's Hospital, Shanghai, China）

1:00 PM - 2:00 PM

[III-JCKP3-04] Assessment of Longitudinal Systolic Ventricular Dysfunction and Asynchrony Using Velocity Vector Imaging in Children With a Single Right Ventricle

○Yurong Wu, Liqing Zhao （Pediatric Cardiology, Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China）

1:00 PM - 2:00 PM

[III-JCKP3-05] The study on diagnostic value of 4D echocardiogrphy in prenatal diagnosis of congenital heart diseases

○LiQing Zhao, YuRong Wu, Sun Chen, Qing Wang, Qian Ying, XianTing Jiao, Kun Sun
（Department of Pediatric Cardiology, Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine,Shanghai, China）

1:00 PM - 2:00 PM

[III-JCKP3-06] Evaluation of Referral Indications for Fetal Echocardiography, Prenatal Diagnosis, and Outcomes

○Lee Voon Chu[1], Wai Lin Ang[2], Ching Kit Chen[2] （1.Yong Loo Lin School of Medicine, National University of Singapore, Singapore, 2.Cardiology Service, Department of Paediatric Subspecialties, KK Women's and Children's Hospital, Singapore）

1:00 PM - 2:00 PM

[III-JCKP3-08] Cardiac Resynchronization Therapy in an Infant with Tetralogy of Fallot and Mechanical Dyssynchrony

○Geena Kim[1], Hyoung Doo Lee[1], Hoon Ko[1], Si Chan Sung[2], Hyungtae Kim[2], Kwang Ho Choi[2]
（1.Department of Pediatrics, Pusan National University Children's Hospital, Pusan National University School of Medicine, Yangsan, Korea, 2.Department of Cardiothoracic Surgery, Pusan National University School of Medicine, Yangsan, Korea）

1:00 PM - 2:00 PM

JCK Poster

JCK Poster 4 (III-JCKP4)

Cardiac Surgery

Chair:Khang Dang Cao(Department of Cardiovascular Surgery, University Medical Center, Vietnam)
1:00 PM - 2:00 PM Poster Presentation Area (Exhibition and Event Hall)

[III-JCKP4-01] Extracardiac total cavopulmonary connection for patients with "apicobicaval" juxtaposition

○Tomohiro Nakata[1], Tadashi Ikeda[1], Shiro Baba[2], Takuya Hirata[2], Kenji Minatoya[1]
（1.Department of Cardiovascular Surgery, Kyoto University Graduate School of Medicine, Kyoto, Japan, 2.Department of Pediatrics, Kyoto University Graduate School of Medicine, Kyoto, Japan）

1:00 PM - 2:00 PM

[III-JCKP4-02] Yasui operation after Norwood procedure for VSD with aortic atresia or interrupted aortic arch

○Shu-Chien Huang, Yih-Sharng Chen
（National Taiwan University Hospital, Taiwan）

1:00 PM - 2:00 PM

[III-JCKP4-03] Unusual association of systemic semilunar valve stenosis in double outlet right ventricle with pulmonary semilunar valve atresia: *a case report*

○Akio Inage[1], Naokazu Mizuno[2], Yukihiro Takahashi[3] (1.Division of Pediatric Cardiology, Sakakibara Heart Institute, Japan, 2.Department of Radiology, Sakakibara Heart Institute, Japan, 3.Division of Cardiovascular Surgery, Sakakibara Heart Institute, Japan)

1:00 PM - 2:00 PM

[III-JCKP4-04] Impact of Truncal valve stenoinsufficiency on the late outcomes after surgical interventions for Persistent Truncus Arteriosus

○Won Young Lee, Won Kyoun Park, Chun Soo Park, Tae-Jin Yun (Department of Thoracic and Cardiovascular Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea)

1:00 PM - 2:00 PM

[III-JCKP4-05] Reconstruction of Pulmonary Arteries after Neonatal Ductus Arteriosus Stenting: Techniques and Results

○Khang Dong Cao, Khoi Minh Le, Hieu Cong Luong, Huy Quoc Tuan Ngo, Dinh Hoang Nguyen (Department of Cardiovascular Surgery, University Medical Center, Vietnam)

1:00 PM - 2:00 PM

[III-JCKP4-07] A case of successful resolution of protein-losing enteropathy after conversion to pulsatile bidirectional cavopulmonary shunt from Fontan procedure.

○Seulgi Cha[1], Mi Kyung Song[1], Gi Beom Kim[1], Eun Jung Bae[1], Chung Il Noh[1], Woong Han Kim[2] (1.Department of Pediatrics, Seoul National University Children's Hospital, Seoul, South Korea, 2.Thoracic and Cardiovascular Surgery, Seoul National University Children's Hospital, Seoul, South Korea)

1:00 PM - 2:00 PM

[III-JCKP4-08] The dynamic changes of mitral valve after surgical repair of mitral regurgitation in patients with atrial septal defect

○Yi-Seul Kim[1], Heirim Lee[1], June Huh[1], I-Seok Kang[1], Ji-Hyuk Yang[2], Tae-Gook Jun[2],Jinyoung Song[1], (1.Department of Pediatrics, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, 2.Department of Thoracic and Cardiovascular Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea)

1:00 PM - 2:00 PM

[III-JCKP4-09] Early surgical occlusion of patent ductus arteriosus in preterm neonates

○Yoonjin Kang, Jae Gun Kwak, Eung Rae Kim, Jeong Ryul Lee, Woong-Han Kim (Department of Thoracic and Cardiovascular Surgery, Seoul National University Hospital, Korea)

1:00 PM - 2:00 PM

[III-JCKP4-10] Risk factors for systemic outflow relief operation in Double inlet left ventricle or tricuspid atresia with transposition of the great arteries

○Won Young Lee, Won Kyoun Park, Chun Soo Park, Tae-Jin Yun (Department of Thoracic and Cardiovascular Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea)

1:00 PM - 2:00 PM

JCK Poster

JCK Poster 1 (II-JCKP1)

Basics/New Insights/Others

Chair:Tran Cong Bao Phung(Cardiology Department, Children Hospital 1, Ho Chi Minh City, VietNam)
Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area (Exhibition and Event Hall)

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[II-JCKP1-03] Vegfa signaling regulates diverse artery/vein formation in vertebrate vasculatures

○Diqi Zhu[1], Daqing Jin[2], Yabo Fang[2], Yiwei Chen[1], Weijun Pan[3], Dong Liu[4],Fen Li[1], Tao Zhong[2], （1.Department of Pediatric Cardiology , Shanghai Children's Medical Center Affiliated to Shanghai Jiaotong University School of Medicine, Shanghai, China, 2.State Key Laboratory of Genetic Engineering, Zhong Shan Hospital, School of Life Sciences, Fudan University, Shanghai, China, 3.Institute of Health Sciences, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China, 4.Co-innovation Center of Neuroregeneration, Jiangsu Key Laboratory of Neuroregeneration, Nantong University, Nantong, China）

6:15 PM - 7:15 PM

[II-JCKP1-04] Efficacy of a Special 6-Dose Palivizumab Prophylaxis Protocol for Respiratory Syncytial Virus Infection in Congenital Heart Disease in Subtropical Areas

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6:15 PM - 7:15 PM

[II-JCKP1-05] Assessment of Right Ventricular Systolic Function in Patients after Repair of Tetralogy of Fallot with Various Degrees of Pulmonary Regurgitation

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○Ting Ting Xiao, Juan Chen （Department of Cardiology,Shanghai Children's Hosptial,

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[II-JCKP1-07] T-VDCC CaV3.1 and CaV3.2 involves in pulmonary hypertension

○Jie Shen[1], Zixu Huang[2], Yuanyang Wang[2] （1.Department of Cardiology, Shanghai Children's Medical Center affiliated to Shanghai Jiaotong University School of Medicine, China, 2.Department of Cardiology, Shanghai Children's Hospital, Shanghai Jiaotong University, China）

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[II-JCKP1-08] Pleural effusion as complication of middle aortic syndrome treated by stent implantation

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[II-JCKP1-10] Successful double intraventricular reroutings and Dams Kaye Stansel anastomosis as Rastelli modification for rare formed double outlet right ventricle

○Takaya Hoashi[1], Isao Shiraishi[2], Kenichi Kurosaki[2], Masatoshi Shimada[1], Hajime Ichikawa[1] （1.Department of Pediatric Cardiovascular Surgery, National Cerebral and Cardiovascular Center, Suita, Japan, 2.Department of Pediatric Cardiology, National Cerebral and Cardiovascular Center, Suita, Japan）

6:15 PM - 7:15 PM

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-01] Is younger the better for cardiac remodeling with transcatheter ASD closure in adult patients regardless of diastolic dysfunction?

○Lucy Youngmin Eun, Eui Young Choi, Young Won Yoon, Jae Young Choi （Department of Pediatric Cardiology, Yonsei University, Seoul, Korea）

Background: With the transcatheter closure of atrial septal defect (ASD), it is noticeable for the change of left atrium and left ventricle at longterm follow-up. The purpose of this study was to assess the cardiac remodeling with the aspect of diastolic function in adult ASD patients.
Methods and results: Asymptomatic thirty eight patients(48.6±17.1 years) on the diagnosis of ASD from health check-up who underwent ASD device closure were enrolled. The defect size was 21.77+6.79 mm. The medical records were reviewed and divided into two groups : I <50year old (33.06±9.43), II≥ 50 year old(62.55±7.54). The echocardiographic data in between pre-closure and follow-up showed significant differences at LVEDD(40.76±3.28 vs 43.39±3.52, p<0.001), LV mass(99.64±28.81 vs 116.57±32.03, p <0.01), and RV pressure(36.88±12.20 vs 31.81±11.11, p=0.04). Then, at post-closure follow-up, tissue Doppler measurements were significantly decreased and E/E'(8.79+3.19 vs 11.58±4.80, p<0.005) was more elevated than pre-closure. Between the two groups, mitral A, tissue Doppler E', A', S' were all decreased, and E/E'(pre : 7.41±1.42 vs 9.60±5.15, p<0.003, post : 10.49±3.95 vs 13.03+4.05, p<0.02) was much higher at group II at both pre-closure and longterm follow up as well.
Conclusion: After the transcatheter ASD closure in adults, it might be masked for severe diastolic deterioration. Relative younger age might be better for the remodeling to protect myocardial function after transcatheter closure of ASD. Thus, it may benefit to close ASD as earlier age as possible in adults.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-02] Establish Heparin / Collagen-REDV selective active interface on ePTFE to promote endothelialization

○Yaping Shan, Bing Jia （Department of Children's Hospital ,FUDan University, Shanghai,China）

Objective To construct heparin / collagen-REDV selective active interface on the surface of expanded polytetrafluoroethylene, and observe the endothelialization level and cell activity on the surface of ePTFE in vitro. **Methods** Five layers of heparin and collagen combined coating [$(HEP/COL)_5$] were prepared on the surface of 0.1mm ePTFE membrane by layer by layer self-assembly technique, and REDV peptides were coated on its surface ,then a selective active interface on ePTFE was obtained. Unmodified ePTFE、$(HEP / COL)_5$ modified ePTFE、$(HEP/COL)_5$-REDV modified ePTFE and $(HEP/COL)_5$-REVD modified ePTFE were co-cultured with umbilical vein endothelial cells for 24 hours to 72 hours , observed the endothelialization level and cell activity on ePTFE. **Results** Co-culture 1h and 6h, the number of endothelial cells adherent on $(HEP/COL)_5$-REDV modified ePTFE was more than other groups(P<0.05); Co-culture 24h、48h、72h,the endothelial cells on modified ePTFE were significantly more than unmodified , the endothelial cell number and cell activity was highest in $(HEP/COL)_5$-REDV modified ePTFE group(P<0.05). **Conclusions** Using layers by layer self-assembly technique to build a selective active interface on ePTFE surface can promote endothelial cells adherent to ePTFE , as well as

promote cell proliferation and improve cell activity.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-03] Vegfa signaling regulates diverse artery/vein formation in vertebrate vasculatures

○Diqi Zhu[1], Daqing Jin[2], Yabo Fang[2], Yiwei Chen[1], Weijun Pan[3], Dong Liu[4],Fen Li[1], Tao Zhong[2], （1.Department of Pediatric Cardiology , Shanghai Children's Medical Center Affiliated to Shanghai Jiaotong University School of Medicine, Shanghai, China, 2.State Key Laboratory of Genetic Engineering, Zhong Shan Hospital, School of Life Sciences, Fudan University, Shanghai, China, 3.Institute of Health Sciences, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China, 4.Co-innovation Center of Neuroregeneration, Jiangsu Key Laboratory of Neuroregeneration, Nantong University, Nantong, China）

Objective— Vascular endothelial growth factor A (Vegfa) signaling regulates vascular development during embryogenesis and organ formation. However, the signaling mechanisms that govern formation of arteries and veins in various tissues are incompletely understood. We aimed to understand differential functions and mechanisms of Vegfa signaling during formation of diverse arteries/veins in zebrafish trunk and head vasculatures.

Approach and Results— We utilized TALEN to generate zebrafish *vegfaa* mutants. *vegfaa*$^{-/-}$ embryos are embryonic lethal, and display a complete loss of the dorsal aorta and expansion of the cardinal vein. We find that activation of Vegfa signaling expands the arterial cell population at expense of venous cells during vasculogenesis of axial vessels in the trunk. Vegfa signaling regulates endothelial cell proliferation after arterial-venous specification. Formation and extension of tip cell filopodia of intersegmental vessels are significantly inhibited in both Vegfa-deficient and Vegfa-overexpressing embryos.

Conclusions— Our results indicate that Vegfa signaling induces formation of the dorsal aorta at expense of the cardinal vein during vasculogenesis, and is required for angiogenic formation of mesencephalic veins and central arteries in the brain. These findings suggest that Vegfa signaling governs formation of diverse arteries/veins by distinct cellular mechanisms in vertebrate vasculatures.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-04] Efficacy of a Special 6-Dose Palivizumab Prophylaxis Protocol for Respiratory Syncytial Virus Infection in Congenital Heart Disease in Subtropical Areas

○Yu Chuan Hua[1], Shuenn Nan Chiu[2], Jou Kou Wang[2] （1.Cardiac Children's Foundation, Taipei, Taiwan, 2.Department of Pediatrics, National Taiwan University Hospital and Medical College, National Taiwan University, Taipei, Taiwan）

Objective: Palivizumab prophylaxis for respiratory syncytial virus (RSV) infection in patients with hemodynamically significant congenital heart disease (hsCHD) has been proven to be effective in RSV

seasons in Western countries. To study the efficacy of a novel palivizumab prophylaxis protocol for hsCHD in subtropical areas without clear RSV seasonality.
Method: The Taiwan National Health Insurance has provided reimbursement for palivizumab prophylaxis with a special 6-dose monthly protocol for patients with hsCHD. We performed a study to assess the trend of RSV infection in patients .
Results: Totally, 1646 patients were enrolled: 763 in the study group and 883 in the control group. Cyanotic CHD was observed in 41.6% of the patients. After a mean of 3.9 doses of palivizumab injection, the RSV hospitalization rates and hospitalization days decreased by 50% and 54%, respectively, in the study group compared with the control group ($P = .013$ and .025, respectively), and these values decreased further by 68.7% and 70% ($P < .001$ and .003), respectively. The RSV hospitalization rates decreased from 4.4% in the pre-palivizumab period to 2% in the palivizumab period ($P = .038$). The efficacy of this protocol was prominent both in patients with cyanotic hsCHD and in those with acyanotic hsCHD. The main causes of RSV infection after the palivizumab period were noncompliance and a delayed diagnosis of CHD.
Conclusions: Palivizumab prophylaxis through the novel 6-dose monthly protocol for patients with hsCHD is effective in reducing RSV-related hospitalization, with less doses and cost.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-05] Assessment of Right Ventricular Systolic Function in Patients after Repair of Tetralogy of Fallot with Various Degrees of Pulmonary Regurgitation

○Manatomo Toyono[1], Shunsuke Yamada[1], Mieko Aoki-Okazaki[2], Tsutomu Takahashi[1] (1.Department of Pediatrics, Akita University, Akita, Japan, 2.Interconnected Medical Education and Support Systems, Akita University, Akita, Japan)

Objective: The objective of the study is to compare advantage between tricuspid annular isovolumic acceleration (IVA) and tricuspid annular plane systolic excursion (TAPSE) for stratification of impact of pulmonary regurgitation (PR) on right ventricular (RV) systolic function in patients after repair of tetralogy of Fallot (TOF).
Methods: IVA was measured by dividing the myocardial velocity during isovolumic contraction by its acceleration time. TAPSE was measured using M-mode echocardiography through the lateral annulus of tricuspid valve in the apical 4-chamber plane. PR degree was assessed by the number of correspondence to the following conditions; 1) diastolic flow reversal in the main pulmonary artery, 2) diastolic flow reversal in the branch pulmonary arteries, 3) pressure half-time of PR signal <100 msec and 4) duration of the PR signal/total duration of diastole ratio <0.77. PR degree was graded from 0 to 4.
Results: Twenty-two patients were enrolled to the study. Age, female, period after the TOF repair and body height of the patients were 11 ± 6 years, 55%, 8 ± 5 years and 137 ± 28 cm, respectively. In all the patients, IVA and TAPSE were 160 ± 27 cm/sec^2 and 12 ± 2 mm, respectively. PR degree was graded as 2, 3 and 4 in 4, 14 and 4 patients, respectively. By the Kruskal-Wallis test, only IVA showed a significant difference among the 3 PR degrees.
Conclusion: IVA can be a useful index for the stratification of RV function in patients after TOF repair with various degrees of PR.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-06] TGF-β/Smad3 signaling promotes collagen synthesis in PASMC through down-regulating miR-29b

○Ting Ting Xiao, Juan Chen （Department of Cardiology,Shanghai Children's Hosptial, Shanghai, China）

miR-29 is reported to be associated with fibrosis diseases in which collagen synthesis plays an important role and participates in the development of liver fibrosis, renal fibrosis, pulmonary fibrosis, cardiac fibrosis. Deposition of extracellular matrix (ECM), such as fibronectin and collagen, and proliferation, migration, and hypertrophy of vascular smooth muscle cells (VSMCs) result in PA hypertrophy and muscularization, leading to increased pulmonary vascular resistance in PAH. With the possible links among HPH, collagen, in this study we examined the role and therapeutic potential of miR-29 in rats model of pulmonary hypertension induced by MCT. In conclusion, miR-29b plays an important role in collagen synthesis and may be a therapeutic agent for PAH under the regulating of the TGF-β/Smad3 pathway.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-07] T-VDCC CaV3.1 and CaV3.2 involves in pulmonary hypertension

○Jie Shen[1], Zixu Huang[2], Yuanyang Wang[2] （1.Department of Cardiology, Shanghai Children's Medical Center affiliated to Shanghai Jiaotong University School of Medicine, China, 2.Department of Cardiology, Shanghai Children's Hospital, Shanghai Jiaotong University, China）

Pulmonary hypertension (PH) is associated with hyperreactivity to vasoconstrictor agents and remodelling of pulmonary arteries with proliferation and migration of pulmonary arterial smooth muscle cells (PASMCs). Intracellular Ca^{2+} regulates many cellular processes, such as cell cycle progression, proliferation and apoptosis. Voltage-dependent Ca^{2+} channels(VDCC) can regulate intracellular Ca^{2+} levels. L-, T- and P/Q-type channels have been identified in vascular smooth muscle cells. L-VDCC inhibitors are not so efficient in the treatment of PH. T-type channels have been cloned, and systematically named CaV3.1, CaV3.2 and CaV3.3 T-type channels, respectively. T-type calcium channel antagonists, mibefradil and NNC-55-0396 inhibit cell proliferation in leukemia cell lines. Chronic hypoxia selectively enhances T-VDCC activity in pulmonary artery. We hypothesize that T-VDCC could constitute an alternative therapeutic target in PH.
In our research, we find that the expression of CaV3.1 and CaV3.2 are up-regulated in MCT- or hypoxia-induced PAH. Inhibition of T-VDCC CaV3.1 and CaV3.2 suppresses the proliferation of PASMC during hypoxia by delaying the G1/S phase conversion, and inhibition of CaV3.1 and CaV3.2 alleviates progression of MCT-induced PAH in rats. Further research indicates that blockade of CaV3.1 and CaV3.2 may delay G1/S phase through p-ERK/CCND1 signaling pathway. These observations may provide new mechanistic insights into pulmonary hypertension.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-08] Pleural effusion as complication of middle aortic syndrome treated by stent implantation

○Tran Cong Bao Phung, Vu Minh Phuc, Do Nguyen Tin, Nguyen Tri Hao, Phan Hoang Yen, Phan Tien Loi (Cardiology Department , Children Hospital 1, Ho Chi Minh City, VietNam)

Objectives: describe a rare complication of stent implantation in one patient with long abdominal and thoracic aortic stenosis due to middle aortic syndrome
Methods: one case report
Result: Patient: 12 year old girl with upper limb hypertension due to long segment abdominal and thoracic aortic stenosis due to middle aortic syndrome. Intervention: Aortic radiography shows a 56mm long abdominal and thoracic aorta stenosis (about 6 cm below the aortic isthmus and 3 cm above the renal artery origin). Covered stent 61 x 12 was implanted at the lower part of the narrow segment. Aneurysm at the upper ending of stent was discovered after that. Another stent 61 x 12 was implanted to cover that aneurysm. However, a fistula between the two stent still exists. Balloon dilation at the junction site was performed. The fistula finally disappeared. There was no pressure gradient through the stent
Complication: massive right pleural effusion.
Cause:the aneurysm after first stent implantation drained into the right pleural cavity.
Conclusion:
Inflammation in Takayasu disease, long and severve stenosis are high risk factors for ruptures during stenting procedures. We suggest staged dilation by using long covered stents for those cases to prevent complications.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-09] Effects of respiratory ciliary dysfunction on increased postoperative respiratory complications in congenital heart disease patients with heterotaxy

○Weicheng Chen, Shuolin Li, Sida Liu, Guoying Huang, Bing Jia (Heart Center, Children's Hospital of Fudan University, Shanghai, China)

Ciliary motion play a critical role on both airway mucus clearance system and left-right body axis development.We investigated whether CHD-heterotaxy patients may have ciliary dysfunction(CD) and its effect on worse postsurgical outcomes.
We assessed 87 CHD patients with heterotaxy for airway CD, and 100 healthy persons were also recruited as controls. Videomicrocopy was used to examine ciliary motion in nasal tissue, and nasal nitric oxide (nNO) was measured; nNO level is typically low with Primary Ciliary Dysfunction(PCD).
40 patients (46%) exhibited CD characterized by abnormal ciliary motion among total 87 heterotaxy patients, compared with 1subject with CD among 100 health controls(1%). Among 40 heterotaxy patients with CD, 27 patients appeared below or near the PCD cutoff values, compared with all normal nNO levels in health controls. We examined postsurgical outcome in 40 heterotaxy-CHD patients with CD, compared with 32 heterotaxy-CHD patients without CD. We found mean length of postoperative

hospital stay (14.1 vs 11.2 days; OR, 2.4) and mechanical ventilation(65 vs 53 hours; OR, 2.1) were significantly increased in the heterotaxy patients with CD. Also elevated were number of reintubation(1.8 vs 1.3; OR, 3.1), salvage (11.5% vs 5.1%: OR, 2.1).
Our studies show that CHD patients with heterotaxy have substantial risk for CD and increased respiratory disease. Heterotaxy-CHD patients with CD may have increased risks for respiratory deficiencies. Overall, there was a trend toward increased mortality in CD patients with intermediate follow-up evaluation.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP1-10] Successful double intraventricular reroutings and Dams Kaye Stansel anastomosis as Rastelli modification for rare formed double outlet right ventricle

○Takaya Hoashi[1], Isao Shiraishi[2], Kenichi Kurosaki[2], Masatoshi Shimada[1], Hajime Ichikawa[1]
（1.Department of Pediatric Cardiovascular Surgery, National Cerebral and Cardiovascular Center, Suita, Japan, 2.Department of Pediatric Cardiology, National Cerebral and Cardiovascular Center, Suita, Japan）

Fetus echocardiography detected her double outlet right ventricle (DORV) with subpulmonary ventricular septal defect (VSD) at the gestational age of 27 weeks. She was born at 38 weeks of gestational age by normal vaginal delivery, and the echocardiography diagnosed doubly committed VSD without pulmonary stenosis, however, multi-slice computed tomography (MSCT) suspected VSD was located at subaortic to subpulmonary area widely, but which was seemed to be divided by conus septum. Blloon atrial septectomy was preceded at the age of 11 days, then which was followed by pulmonary artery banding at the age of 15 days. MSCT was again performed at the age of 12 months, and 3D heart replica was made for surgical simulation. Aorta was located at posterior right side of pulmonary artery, so VSD must be located at subaortic area, but which was restrictive. Interestingly, large subpulmonary VSD was additionally existed and 2 VSDs were clearly divided by well-developed conus septum. After confirmation of sufficient size of both ventricular cavity at the age of 15 moths by cardiac cineangiography, intra-ventricular rerouting (IVR)s from subpulmonary VSD to native pulmonary valve and subaortic VSD to native aortic valve with expanded polytetrafluoroethylene patches, Damus-Kaye Stansel anastomosis, and placement of right ventricle to pulmonary artery conduit with 14mm Contegra® was performed as the complete biventricular repair. Postoperative course was uneventful, and echocardiography showed both ventricular functions were well preserved without both outflow tract obstructions.

JCK Poster

JCK Poster 2 (II-JCKP2)

Kawasaki Disease/General Cardiology/Adult Congenital Heart Disease

Chair:Kaiyu Zhou(Department of Pediatric Cardiology, West China Second University Hospital, Sichuan University, Chengdu, Sichuan, China)

Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area (Exhibition and Event Hall)

[II-JCKP2-01] Progressive Coronary Dilatation for Eighteen Months in Kawasaki Disease: A Case Report

○CHIAHUI WU, Ming-Tai Lin, Jou-Kou Wang, Mei-Hwan Wu （Department of Pediatrics, National Taiwan University Hospital, Taipei, Taiwan）

6:15 PM - 7:15 PM

[II-JCKP2-02] Shock as prominent early manifestation of kawasaki disease in Children

○Kaiyu Zhou, Wang Chuan, Yimin Hua, Yifei Li （Department of Pediatric Cardiology, West China Second University Hospital, Sichuan University, Chengdu, Sichuan, China）

6:15 PM - 7:15 PM

[II-JCKP2-03] The level of serum TNF-a in intravenous immunoglobulin non-responsive children with Kawasaki disease

○Wang Yun[1], Cui Dai[2] （1.Department of pediatrics, Beijing new century women's and children's hospital, Beijing, China, 2.Children’s Hospital Affiliated to Capital Institute of Pediatrics, Beijing, China）

6:15 PM - 7:15 PM

[II-JCKP2-04] Clinical features of Kawasaki Disease children with urinary tract involvement

○Wang Yang[1], Wang Yun[2], Zhou Nan[3], Chen Jia Jia[3], Chen Li[3], Tang Xiao Lei[3] （1.Department of Pediatrics,Beijing New Centery International Children's Hospital, Beijing, China, 2.Beijing New Century Women’s and Children’s Hospital, China, 3.Beijing Children’s Hospital, China）

6:15 PM - 7:15 PM

[II-JCKP2-05] The increased serum levels of Interleukin-21 in Kawasaki disease

○Hae Yong Lee （Department of Pediatric Cardiology, Yonsei University,Wonju, Korea）

6:15 PM - 7:15 PM

[II-JCKP2-06] The relationship between children metabolic syndrome and target organ damage of essential hypertension

○Yao Lin, Lin Shi, Jie Mi, Yang Liu （Department of Cardiology, Capital Institute of Pediatrics, Beijing, China）

6:15 PM - 7:15 PM

[II-JCKP2-07] The effect of mother's social support on children with congenital heart disease and mother-child interaction on children's problem behavior.

○Ju Ryoung Moon[1,4,5,6], Jinyoung Song[1,2,4,5,6,7], June Huh[1,2,4,5,6,7], I-Seok Kang[1,2,4,5,6,7], Ji-Hyuk Yang[1,3,4,5,6,7], Tae-Gook Jun[1,3,4,5,6,7] （1.Grown-Up Congenital Heart Clinic,

2.Department of Pediatrics, 3.Department of Thoracic &Cardiovascular Surgery, 4.Cardiac Center, 5.Heart Vascular and Stroke Institute, 6.Samsung Medical Center, 7.Sungkyunkwan University School of Medicine）

6:15 PM - 7:15 PM

[II-JCKP2-08] Changes of content of circulating endothelial cells and endothelial progenitor cells in patients with primary hypertension in peripheral blood

○Lin Shi, Yuanyuan Zhang, Yao Lin, Yang Liu （Department of Cardiology,Capital Institute of Pediatrics, Beijing, China）

6:15 PM - 7:15 PM

[II-JCKP2-09] Role of Cardiopulmonary Exercise Testing for Prediction of Pregnancy Outcome in Women with Congenital Heart Disease

○Midori Fukuyama, Hideo Ohuchi, Chizuko Kamiya, Mitsuhiro Fujino, Kenichi Kurosaki, Jun Yoshimatsu （National Cerebral and Cardiovascular Center, Japan）

6:15 PM - 7:15 PM

[II-JCKP2-10] Myocardial Perfusion Abnormality by SPECT Imaging Correlates with Systemic Ventricular Property in Adults with Congenital Heart Disease

○Mitsuhiro Fujino, Hideo Ouch, Yosuke Hayama, Tohru Iwata, Jun Negishi, Aya Miyazaki, Etsuko Tsuda, Kenichi Kurosaki, （Department of Pediatric Cardiology, National Cerebral and Cardiovascular Center, Osaka, Japan）

6:15 PM - 7:15 PM

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-01] Progressive Coronary Dilatation for Eighteen Months in Kawasaki Disease: A Case Report

○CHIAHUI WU, Ming-Tai Lin, Jou-Kou Wang, Mei-Hwan Wu （Department of Pediatrics, National Taiwan University Hospital, Taipei, Taiwan）

Background

Kawasaki Disease (KD) is one of the most common vasculitis in childhood and may lead to cardiac sequelae. Progressive coronary dilatation is not uncommon for KD patients with giant coronary aneurysms, but aneurysms rarely keeps enlarging one year after fever onset.

Case report

We, herein, report a 6-year-old KD girl who suffered from KD at her 4.5 years. She had immunoglobulin at 9 days after fever onset and fever subsided soon. The echocardiogram before IVIG demonstrated LMCA 2.9mm (Z-score +1.85), LAD 3.06mm (Z-score +2.18), proximal RCA giant aneurysm, 8.3mm (Z-score +6.94). Follow-up echocardiography showed her RCA gradually dilated from the initial 8.3mm to 11.2mm (4Y7M) and gradually to 16.1mm (6Y). She had aspirin, low molecular weight heparin, propranolol, atorvastatin (4Y7M-4Y9M) and captopril. At her age of six, cardiac perfusion scan didn't show any perfusion defect.

Review of Literature

We reviewed the literature and found another three similar cases. One was from Japan and his right coronary aneurysm enlarged gradually from 7.8mm to 19.5mm over the next 17 years. The third cases came from United States. She had a progressively enlarged LAD aneurysm that measured 7mm at the time of initial KD diagnosis and 25mm at the time of surgery 11 years later.

Summary

Giant coronary aneurysms with progressive coronary dilatation lasting longer than 1 year are rare. Optimal managements are still unclear in the unique subgroup of KD patients. Multi-center registry may clarify their real outcomes and suggest the future directions.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-02] Shock as prominent early manifestation of kawasaki disease in Children

○Kaiyu Zhou, Wang Chuan, Yimin Hua, Yifei Li （Department of Pediatric Cardiology, West China Second University Hospital, Sichuan University, Chengdu, Sichuan, China）

OBJECTIVEWe sought to define the characteristics that distinguish Kawasaki diseaseshock syndrome (KDSS)from hemodynamically normal Kawasaki disease. **METHODS**We collected data prospectively for all patients with Kawasaki disease whowere treated at a single institution during a 2-year period. We compared clinical and laboratory features, coronary artery measurements,and responses to therapy and analyzed indices of ventricular systolic anddiastolic function during acute and convalescent Kawasaki disease.

RESULTS Of 231 consecutive patients with Kawasaki disease, 4 met the definitionfor KDSS. All required fluid resuscitation and vasoactive infusions. Compared with patients without shock, patientswith Kawasaki disease shock syndrome were more often female,the age of patientswith KDSS was between

5.2 to 8.9 years, as well as had largerproportions of bands, higher C-reactive protein concentrations, and lower hemoglobinconcentrations and platelet counts. Evidence of consumptive coagulopathy wascommon in the KDSS group. Patients with KDSS more often had impaired left ventricular systolic function, mitralregurgitation , coronary arteryabnormalities, and intravenous immunoglobulin resistance . Impairment of ventricular relaxation and compliance persistedamong patients with KDSS after the resolution of other hemodynamic disturbances.
CONCLUSIONSPatients with KDSS may have uneven clinical course and may be misdiagnosed in thebeginning. They may have more prominent inflammatory markers in the early phase and higherrisk of coronary artery dilatation.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-03] The level of serum TNF-a in intravenous immunoglobulin non-responsive children with Kawasaki disease

○Wang Yun[1], Cui Dai[2] (1.Department of pediatrics, Beijing new century women's and children's hospital, Beijing, China, 2.Children's Hospital Affiliated to Capital Institute of Pediatrics, Beijing, China)

Objective Study TNF-a levels in 131 KD patients, help to identify risk factor of IVIG non-responsiveness, and explore further treatment. **Methods** KD patients were divided into non-responsive and sensitive group, 28 healthy and 16 fe- brile patients were also recruited. **Results** 1) Proportion of CAA (30.0% vs. 7.2%) in the non-responsive group was significantly higher than those in sensitive group ($p<0.01$); Proportion of cardiomegaly in the non-responsive group was also significantly higher than that in the sensitive group at acute phase ($p<0.01$); IVIG non-responsiveness was an independent risk factor for cardiovascular complications.2) The high TNF-a levels existed in KD, and there was a statistical difference in KD patients compared with healthy children, and febrile controls, respectively ($p<0.01$). 3) Before therapy, TNF-a was 128.65 (97.45, 251.88) pg/ml VS 44.20 (21.00, 125.78) pg/ml; there was a statistical difference within non-responsive and sensitive group ($p<0.01$). The elevation of TNF-a continually existed in the non-responsive group after initial IVIG , there was also a statistical difference between them ($p<0.05$). 4) Male, TNF-a>100 pg/ml and ALB were independent risk factors associated with IVIG re-treatment. **Conclusions** High TNF-a levels existed in KD. IVIG could allow TNF-a levels reduce, but TNF-a were continually elevated in the non-responsive group after initial IVIG. IVIG non-responsiveness was an independent risk factor for cardiovascular complications. Risk factors associated with IVIG re-treatment include Male sex and the high level of TNF-a.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-04] Clinical features of Kawasaki Disease children with urinary tract involvement

○Wang Yang[1], Wang Yun[2], Zhou Nan[3], Chen Jia Jia[3], Chen Li[3], Tang Xiao Lei[3] (1.Department of Pediatrics,Beijing New Centery International Children's Hospital, Beijing, China, 2.Beijing New Century Women's and Children's Hospital, China, 3.Beijing Children's Hospital, China)

Objective:Retrospective797 KD children, try to explore the clinical characteristics of KD children with urinary tract involvement.
105 Patients with urinary tract involvement as the study group, 98 urinary tract non-involvement as control, analyzed the clinical features, inflammatory and sensitivity to IVIG, as well as in children with different degree of urine test, within these groups .
Results: 1) 13.2% (105/797) KD children were urinary tract involvement, gender ratio was 2:1. Abnormal urine test shows that 70.5% (74/105) of urinary tract involvement KD children had the white blood cells (several ~ full vision/HP). 67 cases underwent ultrasound and showed 3 cases with bilateral renal enlargement and 5 cases with echogenicity. 2) The CRP level is significantly higher in study group than the control group, but ESR has only showed a rising trend without significant difference. 16.2% patients was not sensitive to IVIG in Urinary tract involvement group, there was no significant difference between the two groups, although 7.2% higher than that of control group. 3) 20.6% patients in hematuria and/ orproteinuria group is not sensitive to IVIG, but there was no significant difference within groups.
Conclusion: KD patients with urinary tract involvement were more common in infants and young children, white blood cells was often seen in the urine. The inflammatory indexes increased in the patients with urinary tract involvement. The percent of non-sensitive to IVIG had the higher trend in the urinary tract involvement group, especially the patients with hematuria and proteinuria.

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[II-JCKP2-05] The increased serum levels of Interleukin-21 in Kawasaki disease

○Hae Yong Lee (Department of Pediatric Cardiology, Yonsei University,Wonju, Korea)

Purpose: It has been reported that serum level of immunoglobulin E (IgE) is increased in patients with Kawasaki disease (KD) after acute phase. We investigated whether the interleukin-21 (IL-21) could be related with the high IgE in KD.
Methods: From June 2008 to June 2010, 49 patients with KD admitted in Wonju Christian Hospital and 13 controls with high fever due to unknown infection who had no history of KD were included in this study. The sera from patients and controls were collected and checked in terms of immunoglobulin E (Chemiluminescent method, Siemens, Munich, Germany) and IL-21 (ELISA, eBioscience, San Diego, USA).
Results: The group of patients with KD was composed of 39 complete KD and 10 incomplete KD. Among patients with KD, 10 patients had coronary arterial dilatation (CAD) and 39 patients had no coronary complications. The median value of IL-21 in patients with KD was significantly increased as 466 pg/mL (range: 0-1544) while that value in controls was <62.5 pg/mL (range: 0- 825 pg/mL) (P <0.01). We could not find the significant correlation between the serum level of IgE and that of IL-21 in patients with KD (Spearman R=0.2, P = 0.08) though 30% of patients with KD showed increased IgE more than 100 IU/mL. In addition, our data showed no significant difference between CAD group and non CAD group in terms of serum IL-21.
Conclusion: Our data showed that IL-21 is increased in patients with KD. There was no significant correlation between high IgE and the level of IL-21.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-06] The relationship between children metabolic syndrome and target organ damage of essential hypertension

○Yao Lin, Lin Shi, Jie Mi, Yang Liu （Department of Cardiology, Capital Institute of Pediatrics, Beijing, China）

Objective To study the relationship between metabolic syndrome and target organ damage (TOD) of essential hypertension in children.
Methods 165 children older than 10 years were retrospectively enrolled who were diagnosed as essential hypertension. All children were divided into group with metabolic syndrome (Group A) and group without metabolic syndrome (Group B). All clinical data were collected and analyzed using statistic methods.
Results In all recruited adolescents, 58 patients were diagnosed as metabolic syndrome with the rate of 35.2%. The incidence of target organ damage in Group A was significantly higher than Group B (*P*< 0.01）. The incidence of cardiovascular damage,especially left ventricular hypertrophy (LVH) in Group A was much higher than Group B (*P*<0.001,*P*<0.05）. The incidence of target organ damage in patients with impaired glucose tolerance was significantly higher than that of patients without those disorders (*P<0.05*). In particular, the high incidence of cardiac damage was significantly higher in the former (*P* <0.001). According to the results of multiple factors Logistic regression analysis, metabolic syndrome and elevated average diastolic pressure were independent risk factors for target organ damage (OR=3.538, OR=1.061).
Conclusions Essential hypertension complicated with metabolic syndrome in children had a much higher incidence of TOD than those without metabolic syndrome, especially cardiovascular damage. The examination of metabolic index is benefit for early diagnosis of target organ damage so as to take effective interference.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-07] The effect of mother's social support on children with congenital heart disease and mother-child interaction on children's problem behavior.

○Ju Ryoung Moon[1,4,5,6], Jinyoung Song[1,2,4,5,6,7], June Huh[1,2,4,5,6,7], I-Seok Kang[1,2,4,5,6,7], Ji-Hyuk Yang[1,3,4,5,6,7], Tae-Gook Jun[1,3,4,5,6,7] （1.Grown-Up Congenital Heart Clinic, 2.Department of Pediatrics, 3.Department of Thoracic &Cardiovascular Surgery, 4.Cardiac Center, 5.Heart Vascular and Stroke Institute, 6.Samsung Medical Center, 7.Sungkyunkwan University School of Medicine）

Purpose: The purpose of this study was to examine the effect of mother’ s social support on children with congenital heart disease and mother-child interaction on children’ s problem behavior.
Methods: The data was collected from the outpatient clinic of cardiac disease at the Samsung Medical Center. 250 children with congenital heart disease, aged 4-6 years old, and their mothers were recruited for the study. The home environment, activities and cognitive stimulation questionnaire for mother-child

interaction, social support and Korea-child behavior checklist were assessed and analyzed using Pearson' s correlations, stepwise multiple regressions in SPSS 22.0

Results: There were significant relationships found between age, education of mother' s demographic background, mother social support, mother-child interaction, and children' s problem behavior. Furthermore, the mother' s demographic background and mother social support indicated effective variance on mother-child interaction. Lastly, friends and colleagues of the mother and mother-child interaction were emphasized on effective variances on child problem behavior.

Conclusion : This study suggests that the mother' s social support system and environment has significant implications and should be further examined to better reduce and prevent problem behaviors in children.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-08] Changes of content of circulating endothelial cells and endothelial progenitor cells in patients with primary hypertension in peripheral blood

○Lin Shi, Yuanyuan Zhang, Yao Lin, Yang Liu （Department of Cardiology,Capital Institute of Pediatrics, Beijing, China）

Background The key mechanism of target organ damage (TOD) in primary hypertension is vascular endothelial dysfunction. Circulating endothelial cells (CECs) and endothelial progenitor cell (EPCs) count and function testing was reported a new method for endothelial function and estimation.

Objectives To observe the concentration of CECs & EPCs in children with primary hypertension and their changes before and after the treatment.

Methods 64 cases with primary hypertension and 30 cases of healthy children were enrolled, who were divided into healthy children group (n = 30), pre-hypertension group (PHP) (n = 30), and high blood pressure（ HP） group (n = 64). Clinical data were collected and recorded. CECs and EPCs counts were measured by flow cytometry. Data were analysis by software SPSS 19.0.

Result CECs counts in PHP and HP group were higher than that of healthy group (P<0.05), while EPCs was significantly lower (P<0.05). However, there was no significant difference between PHP and HP group（P >0.05）. Meanwhile, there was no significant difference between stage 1 and 2 （P>0.05）.CECs counts in children with TOD was significantly higher than those without TOD (P<0.05), while EPCs was significantly lower (P<0.05). After 6-month treatment of diet and exercise, CECs counts in children with TOD was significantly lower than before， while EPCs was not significantly different.

Conclusions There were changes of CECs and EPCs counts in children with primary hypertension, especially in children with TOD. Diet and exercise may be helpful for the improvement of endothelial function.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-09] Role of Cardiopulmonary Exercise Testing for Prediction of Pregnancy Outcome in Women with

Congenital Heart Disease

○Midori Fukuyama, Hideo Ohuchi, Chizuko Kamiya, Mitsuhiro Fujino, Kenichi Kurosaki, Jun Yoshimatsu （National Cerebral and Cardiovascular Center, Japan）

Background: Most women with congenital heart disease (WCHD) are reaching reproductive adulthood and the pregnancy-associated issues have become one of major clinical practices in a field of WCHD. Prediction of pregnancy outcome is important and helpful to guide clinicians to care of WCHD. In this regard, NYHA may determine the outcome, there have been no objective criteria for the safer pregnancy in WCHD.
Purpose: To identify major risk factors and determine referral cardiovascular variables during cardiopulmonary exercise testing (CPX) in WCHD.
Method and Results: We retrospectively reviewed pregnancy outcomes of 68 WCHDs and those compared with NYHA, CPX-derived variables (heart rate [bpm], oxygen uptake, systolic blood pressure [SBP, mmHg] at peak exercise and clinically relevant arrhythmia during CPX(Ex-Arr)).17 maternal cardiac and 26 neonatal events occurred. All variables were associated with maternal cardiac and neonatal events ($p<0.05$-0.001). Of these, peak SBP and Ex-Arr were the independent determinants of the maternal (odds ratio [OR]:0.96, 95% confidence interval [CI]: 0.92-0.99, $p<0.05$ for peak SBP) and neonatal events (OR: 0.95, 95%CI: 0.91-0.99,$p<0.01$ for peak SBP, and OR: 21.2, 95%CI: 2.1-559,$p<0.01$ for Ex-Arr), except for Ex-Arr for maternal events. The cutoff value of SBP for maternal and neonatal events was 150 and 154.
Conclusion: All major CPX-derived variables, especially, peak SBP and Ex-Arr, can predict adverse outcome during pregnancy in WCHD. Peak SBP ≥ 150 without Ex-Arr could be a reliable reference value for safer pregnancy outcome in WCHD.

6:15 PM - 7:15 PM (Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area)

[II-JCKP2-10] Myocardial Perfusion Abnormality by SPECT Imaging Correlates with Systemic Ventricular Property in Adults with Congenital Heart Disease

○Mitsuhiro Fujino, Hideo Ouch, Yosuke Hayama, Tohru Iwata, Jun Negishi, Aya Miyazaki, Etsuko Tsuda, Kenichi Kurosaki, （Department of Pediatric Cardiology, National Cerebral and Cardiovascular Center, Osaka, Japan）

【 Background】 The clinical role of myocardial perfusion imaging by single-photo emission computed tomography (SPECT-MPI) remains unclear in adults with congenital heart disease (ACHD).
【 Purpose】 This study was to clarify the clinical significance of SPECT-MPI for evaluating the mechanical function and electrical property of the systemic ventricle (SV) in ACHD patients.
【 Methods and Results】 Between August 2014 and February 2016, resting SPECT-MPI was performed in 95 ACHD patients (age: 31±10 years, biventricular physiology (BV) in 69 and Fontan physiology (Fontan) in 26). We developed MPI defect score (%D: %) as an index of severity of the SV myocardial perfusion abnormality and compared the index with plasma levels of high-sensitive troponin T (hsTnT), brain natriuretic peptide (BNP), end-diastolic volume index and ejection fraction of the SV (EF), QRS duration, and peak oxygen uptake (p VO2). In all ACHD patients, %D was 8.7±8.4. %D was independently correlated positively with QRS duration ($p<0.05$) and negatively with EF ($p<0.001$) and pVO2 ($p<0.05$),

whereas %D was not correlated with hsTnT or BNP. These associations remained significant in both ACHD patients with BV ($p<0.05$-0.001) and Fontan ($p<0.05$), except for an association of %D with EF in Fontan.

【Conclusion】 SPECT-PMI has a significant role for providing us vital information on SV myocardial perfusion abnormality which is closely associated with SV mechano-electrical property in ACHD patients regardless of the hemodynamic pathophysiology.

JCK Poster

JCK Poster 3 (III-JCKP3)

Fetal and Neonatal Cardiology/Others

Chair:Han Zhang(Department of Cardiology, Shanghai Children's Hospital, Shanghai, China)
Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area (Exhibition and Event Hall)

[III-JCKP3-01] Experience of cases demonstrating the difficulties in fetal TAPVC diagnosis

○Yukiko Kawazu[1,2], Noboru Inamura[3] (1.Department of Pediatrics, Toyonaka Municipal Hospital, Japan, 2.Department of Pediatric Cardiology, Osaka Medical Center for Maternal and Child Health, Japan, 3.Department of Pediatrics, Kindai University, Japan)

1:00 PM - 2:00 PM

[III-JCKP3-02] A neonatal refractory A neonatal respiratory distress associated with case presentation and literature review: pulmonary artery sling

○Han Zhang, Lijian Xie, Min Huang (Department of Cardiology, Shanghai Children's Hospital, Shanghai, China)

1:00 PM - 2:00 PM

[III-JCKP3-04] Assessment of Longitudinal Systolic Ventricular Dysfunction and Asynchrony Using Velocity Vector Imaging in Children With a Single Right Ventricle

○Yurong Wu, Liqing Zhao (Pediatric Cardiology, Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China)

1:00 PM - 2:00 PM

[III-JCKP3-05] The study on diagnostic value of 4D echocardiogrphy in prenatal diagnosis of congenital heart diseases

○LiQing Zhao, YuRong Wu, Sun Chen, Qing Wang, Qian Ying, XianTing Jiao, Kun Sun (Department of Pediatric Cardiology, Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine,Shanghai, China)

1:00 PM - 2:00 PM

[III-JCKP3-06] Evaluation of Referral Indications for Fetal Echocardiography, Prenatal Diagnosis, and Outcomes

○Lee Voon Chu[1], Wai Lin Ang[2], Ching Kit Chen[2] (1.Yong Loo Lin School of Medicine, National University of Singapore, Singapore, 2.Cardiology Service, Department of Paediatric Subspecialties, KK Women's and Children's Hospital, Singapore)

1:00 PM - 2:00 PM

[III-JCKP3-08] Cardiac Resynchronization Therapy in an Infant with Tetralogy of Fallot and Mechanical Dyssynchrony

○Geena Kim[1], Hyoung Doo Lee[1], Hoon Ko[1], Si Chan Sung[2], Hyungtae Kim[2], Kwang Ho Choi[2] (1.Department of Pediatrics, Pusan National University Children's Hospital, Pusan National University School of Medicine, Yangsan, Korea, 2.Department of Cardiothoracic Surgery, Pusan National University School of Medicine, Yangsan, Korea)

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1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP3-01] Experience of cases demonstrating the difficulties in fetal TAPVC diagnosis

○Yukiko Kawazu[1,2], Noboru Inamura[3] (1.Department of Pediatrics, Toyonaka Municipal Hospital, Japan, 2.Department of Pediatric Cardiology, Osaka Medical Center for Maternal and Child Health, Japan, 3.Department of Pediatrics, Kindai University, Japan)

Introduction:
We published an article showing that post LA space index (PLAS index) is useful in fetal diagnoses of TAPVC (Ultrasound Obstet Gynecol. 2014).
We report details of two cases (shown below), illustrating how PLAS index can be useful in addressing the difficulties in fetal diagnosis of TAPVC.

Case 1:
At 25 gestational weeks (GW), we performed a detailed fetal echocardiography because of suspected hypoplastic left heart syndrome. However, we diagnosed her as normal. She was born with SpO2 90% and admitted to NICU for tachypnea. On the 19th day, we diagnosed TAPVC (3) with pulmonary hypertension (PH). She showed PH crisis and underwent TAPVC repair on the 36th day. Postoperative course is good.

Case 2
At 25 GW, STIC images were analyzed by us and diagnosed as no abnormality. She was born with low SpO2 of 80% and transferred to NICU. Then, we diagnosed TAPVC (3). One day after the birth, she underwent TAPVC repair. Since she developed pulmonary vein obstruction (PVO), PVO release surgery was performed 3 month later. Postoperative course is good.

Retrospective study:
Case 1: LA wall was smooth, PV flow was abnormal, PLAS index was 1.65 (> 1.27).
Case 2: PV flow of color doppler seemed to reflux to LA. There was abnormal blood flow going downwards behind LA. PLAS index was 1.48 (> 1.27).

Summary:
Case 1 developed PH crisis before surgery, and case 2 needed postoperative PVO release. Both cases may have been affected by ' postnatal' diagnosis. Retrospectively, since PLAS index was large in both cases, we believe that PLAS index is useful in fetal TAPVC screening.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP3-02] A neonatal refractory A neonatal respiratory distress associated with case presentation and literature review: pulmonary artery sling

○Han Zhang, Lijian Xie, Min Huang (Department of Cardiology, Shanghai Children's Hospital, Shanghai, China)

In October, 2016, a 11-day-old male was admitted in our neonatal intensive care unit(NICU) as neonatal pneumonia with a 3-hour history of polypnea. Septic screen and other clinical examination were unremarkable, while the symptoms worsened on day 3 after he received antibiotics and atomization inhalation treatment. His oxygen saturation as well as heart rate couldn't maintain.
Then we used noninvasive examinations as echocardiography and computed tomography angiography(CTA) of the chest. The results turned out to be pulmonary artery sling(PAL) with compression of the distal trachea. Surgical repair of the PAS by re-implatatin of the left pulmonary artery from the main pulmonary artery was performed under cardiopulmonary bypass(CPB),and he was faring well since. This case is as a reminder to pediatric colleagues who are on the front line of diagnosis, should stay vigilant, especially when appropriate generate self-questioned clinical pictures that simply do not fit the preliminary diagnosis. The development of noninvasive imaging modalities as echocardiography and CTA has led to increased utilization of the entity. Surgical repair is the only way to release the compression of the airway due to the sling.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP3-04] Assessment of Longitudinal Systolic Ventricular Dysfunction and Asynchrony Using Velocity Vector Imaging in Children With a Single Right Ventricle

○Yurong Wu, Liqing Zhao （Pediatric Cardiology, Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China）

Assessment of ventricular dysfunction and asynchrony is very important in predicting the outcome for children with a single right ventricle. However, the assessment is inaccurate and subjective because of the unusual ventricular shape. This study aimed to evaluate the feasibility and clinical value of velocity vector imaging for assessing longitudinal systolic ventricular dysfunction and intraventricular asynchrony in children with a single right ventricle. The study enrolled 36 children with a single right ventricle and 36 age-matched children with a normal heart. Peak systolic velocity, peak displacement, strain, strain rate, time to peak systolic velocity, and time to peak sys-tolic strain were measured via velocity vector imaging using the Siemens Sequoia C512 echocardiography instrument. The maximum positive rate of ventricular pressure change (Max [dp/dt]) was obtained by cardiac catheterization for all the children with a single right ventricle. In the children with a single right ventricle, the maximal temporal differences and the standard deviations of the times to peak systolic velocity and peak systolic strain were higher (P\0.01) than in the children with a normal heart. Moreover, the strain and strain rate values were significantly lower in all six segments (P\0.05). The strain rate of the basal segment adjacent to the rudi-mentary chamber correlated best with Max (dp/dt) (r = 0.86; P\0.01). Longitudinal systolic dysfunction and intraventricular asynchrony could be assessed accurately using velocity vector imaging in children with asingle right ventricle.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP3-05] The study on diagnostic value of 4D echocardiogrphy in prenatal diagnosis of congenital heart diseases

○LiQing Zhao, YuRong Wu, Sun Chen, Qing Wang, Qian Ying, XianTing Jiao, Kun Sun （Department of Pediatric Cardiology, Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine,Shanghai, China）

Objective: The aim of this study was to find the diagnostic value of spatiotemporal image correlation (STIC) technology in prenatal diagnosis of congenital heart diseases (CHDs).**Methods:** The study was a prospective and blind study. STIC images of pregnancies met the inclusion criteria were acquired during the examination of extend cardiac echography examination (ECEE) and offline analyzed by other specialists that blind to the characteristics of pregnancies and the results of ECEE. Multi-planer rendering mode (MPR) was used for STIC diagnosis during offline analysis. All cases were followed up. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were analyzed for fetal echocardiography and STIC technology.**Results:** The proportion of termination of pregnancy (TOP) was 32.0% (54/169) in all cases and 56.8% (54/95) in the cases of CHDs. The diagnostic sensitivity and specificity of two-dimensional fetal echocardiography for prenatal diagnosis of CHDs were 100% (42/42) and 95.9% (71/74) respectively, the PPV was 93.3% (42/45) and the NPV was 100% (71/71). The sensitivity and specificity of STIC technology in prenatal diagnosis of CHDs were 92.6% (88/95) and 97.3% (72/74) respectively, the PPV was 97.8% (88/90) and the NPV was 91.1% (72/79). The area under receiver operating characteristic (ROC) curve were 0.98 and 0.95 respectively.
Conclusion: STIC technology had a high sensitivity and specificity in prenatal diagnosis of CHDs according to the present study.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP3-06] Evaluation of Referral Indications for Fetal Echocardiography, Prenatal Diagnosis, and Outcomes

○Lee Voon Chu[1], Wai Lin Ang[2], Ching Kit Chen[2] （1.Yong Loo Lin School of Medicine, National University of Singapore, Singapore, 2.Cardiology Service, Department of Paediatric Subspecialties, KK Women's and Children's Hospital, Singapore）

Objective This study evaluates referral indications for fetal echocardiography (FE) in a tertiary centre in Singapore, analyses which were significantly associated with detection of congenital heart disease (CHD), and generates trends between referral indications, diagnoses and fetal outcomes.
Method This was a retrospective, single-centre study reviewing medical records of 181 women over a 2-year period from July 2014 to June 2016.
Results The mean gestational age at first FE was 23±4 weeks. 156 out of 181 fetuses were diagnosed with CHD. The most common referral indications were abnormal cardiac ultrasound (104, 93% confirmed CHD) - most commonly ventricular septal defect (44, 28%), pulmonary stenosis (21, 13%) and Fallot' s tetralogy (16, 10%), abnormal cardiac rhythms (63% confirmed CHD) and intracardiac echogenic foci (71% confirmed CHD). 32 (18%) pregnancies were terminated, with the most common diagnoses being atrioventricular septal defect (10, 31%), double outlet right ventricle (4, 12.5%) and Fallot' s tetralogy (4, 12.5%). Out of 129 delivered fetuses, 112 were followed up and 87 (78%) had concordant prenatal

and postnatal diagnoses. 23 (26%) had cyanotic CHD. 30 underwent surgery (21 corrective, 9 palliative) after which 22 (73%) survived. Of 104 fetuses referred for abnormal cardiac views, 33 (32%) died. 96 (86%) out of all fetuses followed-up survived.
Conclusion Abnormal cardiac views on second-trimester ultrasound were significantly associated with postnatal diagnosis of CHD and mortality. Early detection via FE and subsequent intervention improves survival.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP3-08] Cardiac Resynchronization Therapy in an Infant with Tetralogy of Fallot and Mechanical Dyssynchrony

○Geena Kim[1], Hyoung Doo Lee[1], Hoon Ko[1], Si Chan Sung[2], Hyungtae Kim[2], Kwang Ho Choi[2] (1.Department of Pediatrics, Pusan National University Children's Hospital, Pusan National University School of Medicine, Yangsan, Korea, 2.Department of Cardiothoracic Surgery, Pusan National University School of Medicine, Yangsan, Korea)

Cardiac resynchronization therapy is rarely used in young patients with heart failure showing poor ventricular ejection fraction, and wide QRS complex. We experienced the case of a 11-month-old infant with tetralogy of fallot, postsurgical atrioventricular block after total correction, and severe heart failure for mechanical dyssynchrony. She underwent tetralogy of fallot total correction and permanent pacemaker implantation in right ventricle at her age of 5.8 months and 6 months, respectively. She gradually deteriorated during follow- up, showing poor ventricular ejection fraction under 20%, and wide QRS complex over 130 milliseconds with significant left ventricular dyssynchrony. And she was admitted to the intensive care unit requiring respiratory and inotropic intravenous support at 11 months of age. So she underwent device upgrade to CRT-p. After 2months after the cardiac resynchronization therapy, the patient showed significant clinical improvement, improved left ventricular systolic function, and decreased QRS duration.

JCK Poster

JCK Poster 4 (III-JCKP4)

Cardiac Surgery

Chair:Khang Dang Cao(Department of Cardiovascular Surgery, University Medical Center, Vietnam)
Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area (Exhibition and Event Hall)

[III-JCKP4-01] Extracardiac total cavopulmonary connection for patients with "apicobicaval" juxtaposition

○Tomohiro Nakata[1], Tadashi Ikeda[1], Shiro Baba[2], Takuya Hirata[2], Kenji Minatoya[1] （1.Department of Cardiovascular Surgery, Kyoto University Graduate School of Medicine, Kyoto, Japan, 2.Department of Pediatrics, Kyoto University Graduate School of Medicine, Kyoto, Japan）

1:00 PM - 2:00 PM

[III-JCKP4-02] Yasui operation after Norwood procedure for VSD with aortic atresia or interrupted aortic arch

○Shu-Chien Huang, Yih-Sharng Chen （National Taiwan University Hospital, Taiwan）

1:00 PM - 2:00 PM

[III-JCKP4-03] Unusual association of systemic semilunar valve stenosis in double outlet right ventricle with pulmonary semilunar valve atresia: *a case report*

○Akio Inage[1], Naokazu Mizuno[2], Yukihiro Takahashi[3] （1.Division of Pediatric Cardiology, Sakakibara Heart Institute, Japan, 2.Department of Radiology, Sakakibara Heart Institute, Japan, 3.Division of Cardiovascular Surgery, Sakakibara Heart Institute, Japan）

1:00 PM - 2:00 PM

[III-JCKP4-04] Impact of Truncal valve stenoinsufficiency on the late outcomes after surgical interventions for Persistent Truncus Arteriosus

○Won Young Lee, Won Kyoun Park, Chun Soo Park, Tae-Jin Yun （Department of Thoracic and Cardiovascular Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea）

1:00 PM - 2:00 PM

[III-JCKP4-05] Reconstruction of Pulmonary Arteries after Neonatal Ductus Arteriosus Stenting: Techniques and Results

○Khang Dong Cao, Khoi Minh Le, Hieu Cong Luong, Huy Quoc Tuan Ngo, Dinh Hoang Nguyen （Department of Cardiovascular Surgery, University Medical Center, Vietnam）

1:00 PM - 2:00 PM

[III-JCKP4-07] A case of successful resolution of protein-losing enteropathy after conversion to pulsatile bidirectional cavopulmonary shunt from Fontan procedure.

○Seulgi Cha[1], Mi Kyung Song[1], Gi Beom Kim[1], Eun Jung Bae[1], Chung Il Noh[1], Woong Han Kim[2] （1.Department of Pediatrics, Seoul National University Children's Hospital, Seoul, South Korea, 2.Thoracic and Cardiovascular Surgery, Seoul National University Children’s Hospital, Seoul, South Korea）

1:00 PM - 2:00 PM

[III-JCKP4-08] The dynamic changes of mitral valve after surgical repair of mitral regurgitation in patients with atrial septal defect

○Yi-Seul Kim[1], Heirim Lee[1], June Huh[1], I-Seok Kang[1], Ji-Hyuk Yang[2], Tae-Gook Jun[2], Jinyoung Song[1], （1.Department of Pediatrics, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, 2.Department of Thoracic and Cardiovascular Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea ）

1:00 PM - 2:00 PM

[III-JCKP4-09] Early surgical occlusion of patent ductus arteriosus in preterm neonates

○Yoonjin Kang, Jae Gun Kwak, Eung Rae Kim, Jeong Ryul Lee, Woong-Han Kim （Department of Thoracic and Cardiovascular Surgery, Seoul National University Hospital, Korea）

1:00 PM - 2:00 PM

[III-JCKP4-10] Risk factors for systemic outflow relief operation in Double inlet left ventricle or tricuspid atresia with transposition of the great arteries

○Won Young Lee, Won Kyoun Park, Chun Soo Park, Tae-Jin Yun （Department of Thoracic and Cardiovascular Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea）

1:00 PM - 2:00 PM

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-01] Extracardiac total cavopulmonary connection for patients with "apicobicaval" juxtaposition

○Tomohiro Nakata[1], Tadashi Ikeda[1], Shiro Baba[2], Takuya Hirata[2], Kenji Minatoya[1] (1.Department of Cardiovascular Surgery, Kyoto University Graduate School of Medicine, Kyoto, Japan, 2.Department of Pediatrics, Kyoto University Graduate School of Medicine, Kyoto, Japan)

Objective: The technical aspects of Fontan completion are complicated in certain situs anomalies such as both (superior and inferior) venae cavae and the apex are on the same side, which we call "apicobicaval juxtaposition" in the present study.

Methods: Three functional single ventricle patients with "apicobicaval juxtaposition" were retrospectively reviewed. The situs was inversus with both venae cavae and the apex on the same side (left) in all cases. The four pulmonary veins (PVs) normally drained into the right-sided left atrium. All patients underwent bidirectional Glenn procedure previously.

Results: All patients underwent total cavo-pulmonary connection (TCPC) at 2 years of age. During cardiopulmonary bypass, comprehensive dissection of the heart, especially between left-sided right atrium and the left PVs, reaching the Waterston groove, was performed. TCPC was completed with extracardiac conduit (16mm in size, without reinforced ring) on ipsilateral side in all patients. All patients' postoperative course was uneventful. Postoperative computed tomography and cardiac catherization demonstrated no obstruction or deformity of the conduit or the PVs. Right atrium became reduction in size and deformed to surround the straight conduit. There was no death and no reoperation.

Conclusions:
In patients with "apicobicaval" juxtaposition with normal PVs drainage, our technique makes it possible to place a short and straight extracardiac conduit between inferior vena cava to pulmonary artery without compressing the conduit or the PVs.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-02] Yasui operation after Norwood procedure for VSD with aortic atresia or interrupted aortic arch

○Shu-Chien Huang, Yih-Sharng Chen (National Taiwan University Hospital, Taiwan)

Introduction:
The Yasui operation could achieve bi-ventricular reconstruction for patients with adequate-sized ventricles and ventricular septal defect(VSD) associated with obstructions of the aortic arch and left ventricular outflow tract (LVOT). The experience of Yasui opertion following Norwood operation with RV-PA shunt were reviewed.
Material and Method:
Since 2014, 5 patients have undergone the Yasui operation at our institution. Interrupted aortic arch was present in 3 patients and coarctation of the aorta/hypoplastic arch was present in 2. Two patients had aortic stenosis, and 3 patients had aortic atresia. All patients had Norwood S1P with RV-PA shunt as

initial palliation. The mean age and body weight at the time of the Yasui operation was 17.4 ±14.2 months and 8.0 ± 2.3 kg, respectively. The ascending aorta and aortic arch requires graft interposition in 3. Right ventricle to pulmonary artery continuity was established with a valved Gortex conduit in 4 patients, and 19mm Tissue valve in one.
RESULTS: All five patients had successful Norwood palliation and survived Yasui operation. During the follow-up, there were no late death. One patient underwent re-operation for peripheral pulmonary artery stenosis and change the conduit. All the other patients had good functional outcome without LVOT obstruction.
CONCLUSIONS: The results of the Staged Norwood - Yasui operation were excellent. Low mortality and good midterm left ventricular function without outflow tract stenosis could be achieved. The long-tem follow-up is required for the patency of RVOT conduits.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-03] Unusual association of systemic semilunar valve stenosis in double outlet right ventricle with pulmonary semilunar valve atresia: *a case report*

○Akio Inage[1], Naokazu Mizuno[2], Yukihiro Takahashi[3] (1.Division of Pediatric Cardiology, Sakakibara Heart Institute, Japan, 2.Department of Radiology, Sakakibara Heart Institute, Japan, 3.Division of Cardiovascular Surgery, Sakakibara Heart Institute, Japan)

Introduction: Systemic semilunar valve stenosis in cyanotic congenital heart disease is rare. It is difficult to plan optimal surgical strategy because there are right and left ventricular outflow tract obstructions. In this case, cardiovascular magnetic resonance was very useful for planning optimal surgical strategy.
Case: Three days old, 2,210 grams male baby was referred for evaluation of cyanotic congenital heart disease. Examination of the neonate showed mild central cyanosis, cardiomegaly, single 2nd heart sound and an ejection click followed by grade 3 ejection systolic murmur at left 2nd intercostal space. Trans-thoracic echocardiography showed situs solitus, levocardia, normal systemic and pulmonary venous connections and atrio-ventricular concordance. There was a large malaligned subarterial VSD with bidirectional shunt. One great artery was overlying VSD (50% rule) and was arising from the ventricular mass, and was continuing as the arch of aorta. The semilunar valve of this great vessel was tricuspid and markedly dysplastic with peak instantaneous gradient of 40 mmHg. The pulmonary arteries, which were confluent, arose from the undersurface of the aortic arch which is the typical location of PDA. We demonstrated the pulmonary annulus and the atretic pulmonary valve. We then diagnosed double outlet right ventricle**,** pulmonary atresia and aortic valve stenosis. We firstly performed Brock operation and PDA ligation at sixteen days, and secondly Rastelli operation and VSD closure without aortic valvuloplasty at seven months, with improvement of aortic valve stenosis.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-04] Impact of Truncal valve stenoinsufficiency on the late

outcomes after surgical interventions for Persistent Truncus Arteriosus

○Won Young Lee, Won Kyoun Park, Chun Soo Park, Tae-Jin Yun （Department of Thoracic and Cardiovascular Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea）

Objectives. We sought to determine whether truncal valve stenoinsufficiency (TVS, TVI) at initial presentation is a significant risk factor for adverse outcomes after various surgical interventions for persistent truncus arteriosus (PTA). **Methods.** Retrospective review was performed for 34 patients with PTA who underwent surgery between June 1989 and March 2017. There were 14 patients who had either significant TVI (³ II, n=3) or significant TVS (trans-valvar velocity ³ 3.0 m/s, n=9), or both (n=2). Initial surgical interventions were palliation in 13 and primary Rastelli-type repair (RTR) in 21. **Results.** Early mortality after initial operations occurred in 7 patients. Six patients underwent surgical interventions for TVI. Overall survival and freedom from death or surgical intervention for TVI at 5 years were 64.9 ± 8.8% and 48.4 ± 9.2%, respectively. On Cox proportional Hazards model, TVI at initial presentation (HR: 4.23, 95% CI: 1.22-14.88 P=0.023) was a significant risk factor for adverse outcomes. Median flow velocity across the truncal valve decreased after RTR in patients with initial TVS (3.4 m/s to 1.8 m/s, P=0.001). Among the patients with significant TVI or TVS, 5-year-survival rate seemed higher in patients with initial palliation (83%) compared to the patients with initial RTR (50%) without statistical significance (P= 0.228). **Conclusions**. While TVS regresses after RTR, TVI at initial presentation leads to adverse composite outcome. Patients with significant TVI or TVS at initial presentation may benefit from initial palliation.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-05] Reconstruction of Pulmonary Arteries after Neonatal Ductus Arteriosus Stenting: Techniques and Results

○Khang Dong Cao, Khoi Minh Le, Hieu Cong Luong, Huy Quoc Tuan Ngo, Dinh Hoang Nguyen （Department of Cardiovascular Surgery, University Medical Center, Vietnam）

Background: The ductus arteriosus (DA) stenting in neonatal period has been progressively indicated in congenital heart disease group with duct – dependent pulmonary circulation. We reported our techniques in reconstruction of pulmonary arteries after neonatal DA stenting and evaluated the results of these surgical techniques.
Methods: This research included 36 patients who underwent cardiac surgeries with pulmonary artery reconstruction after PDA stenting from May 2015 to May 2017. We described our techniques to repair and analyzed the results including hospital mortality, morbidity, survival rate during follow-up.
Results: 100% of cases need a partial removal of stent at the distal part of the PDA stent. Luminal stenosis of pulmonary branches had been resulted in most patients. The debridement of fibrous tissue or/and neo-intimal proliferation had to be done in all patients. The removal of pulmonary end of stented DA and neo-intimal cause large damage of arterial wall and need to be enlarged by patching in all cases.
Conclusions
Stenting of DA in neonatal period is helpful neonatal palliative procedure but associates frequently with intimal proliferation of pulmonary arteries. Reconstruction of pulmonary branches after DA stent

implantation demands meticulous techniques and patching enlargement of one or both pulmonary branches is always indicated.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-07] A case of successful resolution of protein-losing enteropathy after conversion to pulsatile bidirectional cavopulmonary shunt from Fontan procedure.

○Seulgi Cha[1], Mi Kyung Song[1], Gi Beom Kim[1], Eun Jung Bae[1], Chung Il Noh[1], Woong Han Kim[2]
（1.Department of Pediatrics, Seoul National University Children's Hospital, Seoul, South Korea, 2.Thoracic and Cardiovascular Surgery, Seoul National University Children's Hospital, Seoul, South Korea）

We report a case of a 14-year-old boy who had resolution of medically uncontrolled protein-losing enteropathy (PLE) as a complication of Fontan circulation, after Fontan take-down and pulsatile bidirectional cavopulmonary shunt (BCPS). On 30th April 2014, an 11-year-old boy was admitted to our hospital due to swelling of both legs and scrotum. He underwent Fontan procedure on 27th October 2004 because of functional single ventricle with left isomerism, Fallot-type double outlets from right ventricle and complete atrioventricular septal defect. His laboratory finding at admission showed hypoalbuminemia and elevation of stool alpha-1-antitrypsin. Thus, he was diagnosed as PLE. After then, he had been treated with sildenafil, steroid and unfractionated heparin, but these treatments were not effective. Follow-up echocardiography showed that there was moderate atrioventricular valve regurgitation. After careful discussion, we decided to perform pulsatile BCPS after Fontan take-down to control PLE. He underwent this operation on 2nd February 2016. After the operation, he showed lower arterial oxygen saturation, but symptoms and laboratory findings were improved. He is now on steroid, sildenafil and diuretics. This case suggest that surgical correction of high central venous pressure such as pulsatile BCPS might be an considerable option to control symptoms and laboratory findings of PLE as a complication of Fontan circulation. However, Fontan take-down and pulsatile BCPS result in lower arterial oxygen saturation. Thus, long term follow-up for this patient would be necessary.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-08] The dynamic changes of mitral valve after surgical repair of mitral regurgitation in patients with atrial septal defect

○Yi-Seul Kim[1], Heirim Lee[1], June Huh[1], I-Seok Kang[1], Ji-Hyuk Yang[2], Tae-Gook Jun[2],Jinyoung Song[1],
（1.Department of Pediatrics, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, 2.Department of Thoracic and Cardiovascular Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea ）

Objective
Even though spontaneous regression of MR after isolated ASD closure has been accepted, surgical repair

of MV has been done in selected cases. We purposed to know the outcome of surgical repair and determine factors for good results
Methods
Sixty-one patients with ASD and MR who had surgical correction at our hospital from January 2005 to December 2014 were enrolled. The MV annular diameter, lengths of leaflets, angles of leaflets on systole and motion angle of both leaflets were measure on echo. MR was graded from 1 to 4. Surgical procedures used for MR repair were evaluated.
Results
The MR severity and MVP improved after surgery from 2.3 ± 0.7 to 1.7 ± 0.9 and from 41.8% to 16.4%, respectively. Angle of both leaflets on systole and motion angle of both leaflet were changes after surgery. In patients with postoperative MR lesser than grade 2, angle of both leaflets on systole and motion angle of posterior leaflet were significantly changed and underwent operation at earlier age (28.0 ± 18.9 vs 60.3 ± 10.1) and chordae repair (70.2% vs 25.0%). But more MAZE operation in patients with postoperative MR greater than grade 2 was found (21.3%vs 87.5%).
Conclusion
Surgical MR repair performed concomitantly with ASD closure was safe and effective. Not only prolapse but also angles of both leaflets on systole and motion angle of PML were significantly improved in patients with postoperative MR less than moderate degree. Operation at early age showed better results whereas MAZE operation showed worse results.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-09] Early surgical occlusion of patent ductus arteriosus in preterm neonates

○Yoonjin Kang, Jae Gun Kwak, Eung Rae Kim, Jeong Ryul Lee, Woong-Han Kim （Department of Thoracic and Cardiovascular Surgery, Seoul National University Hospital, Korea）

Objectives
Surgical intervention of patent ductus arteriosus (PDA) is done when pharmacological treatment is contraindicated or fails; however, it remains unclear exactly when to perform surgery. We attempted to evaluate the optimal timing of surgical treatment for PDA in preterm neonates.
Methods We retrospectively evaluated 66 symptomatic preterm neonates without congenital intracardiac anomaly who underwent surgery for PDA from 2012 to 2016. The primary occlusion group underwent surgical occlusion without medical treatment. The secondary occlusion group received surgery following medical failure. We divided each group into two subgroups according to the timing of the surgery (the age at operation ≤10 days vs. >10 days). Surgical outcomes of each group were compared.
Results
The early occlusion group was associated with lower incidence of bronchopulmonary dysplasia (p=0.035) and pneumonia (p=0.036). The early occlusion was mainly performed in neonates with primary occlusion. The early primary occlusion group was significantly associated with fewer bronchopulmonary dysplasia (p=0.045) and pneumonia (p=0.004). However, morbidity rates did not differ significantly in secondary occlusion group according to the timing of the surgery. Bronchopulmonary dysplasia was one of the significant predictors of in-hospital survival (p=0.000).
Conclusion
Secondary occlusion of PDA in neonates is associated with higher incidence of bronchopulmonary

dysplasia, which is one of the predictors of survival. Early primary closure of PDA may improve respiratory outcomes of preterm neonates.

1:00 PM - 2:00 PM (Sun. Jul 9, 2017 1:00 PM - 2:00 PM Poster Presentation Area)

[III-JCKP4-10] Risk factors for systemic outflow relief operation in Double inlet left ventricle or tricuspid atresia with transposition of the great arteries

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Objectives: In patients with double inlet left ventricle (DILV) or tricuspid atresia (TA) with transposition of the great arteries (TGA), arch obstruction (AO) has been known to be the risk factor for the development of subaortic stenosis. However, patients without AO may also develop SAS in the course of Fontan palliation. **Methods**: Between January 2000 and February 2017, 28 patients with DILV with TGA or TA (IIc) underwent various systemic outflow relief operations (SORO) in the course of Fontan palliation. AO was associated in 12 patients. SORO comprises Damus-Kaye-Stansel procedure (n=9), primary Norwood-type palliation (n=5), palliative arterial switch operation (n= 1), and VSD extension (n= 3). Left ventricle outflow tract area index (LVOTAI) was measured on initial postnatal echocardiography. Cox model was fitted to identify the risk factors for decreased time to SORO. **Results**: There was one early death after initial palliation. Median LVOTAI was 161 mm^2/m^2 (26-413 mm^2/m^2). Freedom from SORO at 12 months was 46 ± 9.4 % (0% in patients with AO, 81 ± 9.8 % in patients without AO, inter-group difference: P<0.001). On Cox model, AO (HR, 17.43, 95% CI 1.9 – 158.8, P=0.011) and smaller LVOTAI (HR, 1.13, 95% CI 1.02 – 1.24, 10 mm^2/m^2 decrease, P=0.017) were identified as predictors of the need for SORO. **Conclusion**: In patients with DILV with TGA or TA (IIc), SORO was required in the majority of the patients during the course of Fontan palliation, especially when AO was initially combined. LVOTAI can be a useful parameter for the prediction of subsequent need for SORO.