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Epidemiology and Prevention of CV Disease

Study on the smoking status of the elderly population in Beijing

Lina Ma

Xuanwu Hospital, Capital University of Medical Science, Beijing 100000, China

Objective To explore the smoking status of the elderly population in Beijing.

Methods 1826 elderly people in community were selected to participate in the questionnaire survey.

Results The proportion of smokers in rural was significantly higher than in urban(40.2% vs 30.0%), the smoking rate of the illiterate was higher than literate(39.1% vs. 30.7%), the proportion of smokers with event was higher than those without life event(40.8% vs 31.6%), the proportion of smokers with cerebrovascular disease was higher than those without cerebrovascular disease(39.3% vs. 33.2%); Logistic regression analysis indicated that the elderly who were male, mateless, had life event, and had cerebrovascular disease were prone to be smokers.

Conclusions Smoking control is our long term goal, health education and smoking prohibition in public places should be addressed to reduce the smoking rate.

Short-term effects of fish oil supplementation on heart rate variability in humans: a meta-analysis of randomized controlled trials

Wei Xin, Xiaoying Li

First Department of Geriatric Cardiology, Chinese PLA General Hospital, Beijing 100853, China

Background Effects of fish oil on heart rate variability, an index of autonomic function in humans, remain controversial. We performed a meta-analysis to investigate the influence of fish oil on parameters of heart rate variability.

Methods Human intervention studies were identified by systematic search of Medline, Embase, Cochrane's library and references of related reviews and studies through March 2012. Random-effect model was applied to estimate the pooled results. Prespecified subgroup analyses were performed to explore the influence of study characteristics on the overall outcomes.

Results A total of seventeen studies were reviewed. Meta-analysis results showed that standard deviation of normal-to-normal interval (SMD = 0.10, 95% CI -0.11 to 0.30, $p = 0.35$) and root mean square of successive differences (SMD = 0.05, 95% CI -0.18 to 0.27, $p = 0.35$), two of the time domain parameters of heart rate variability, were not significantly influenced by fish oil supplementation. For frequency domain parameters, by fish oil supplementation, the high-frequency power, a surrogate of vagal function, was significantly increased (SMD = 0.34, 95% CI 0.10 to 0.58, $p = 0.005$), the low-frequency power was not significantly affected (SMD = 0.00, 95% CI -0.24 to 0.24, $p = 0.99$), and the ratio between the low and high-frequency power showed a trend of reduction (SMD = -0.22, 95% CI -0.47 to 0.03, $p = 0.08$). Subgroup analyses according to predefined study characteristics, such as mean age, gender and healthy status of the participants, total dose and ratio between EPA and DHA, follow-up duration, β -blocker usage and Jadad scores, retrieved no significant results.

Conclusions Short-term fish oil supplementation may favorably influence the frequency domain parameters of heart rate variability, indicating enhancement of vagal tone may be an important mechanism underlying the antiarrhythmic effect of fish oil. Large scale clinical trials with adequate statistical power are needed to confirm these effects and their clinical relevance in the future.

Association between *RANTES* -403G/A and *CCR5* Delta32 polymorphisms and coronary artery disease: A meta-analysis

Yanmei Cheng, Naqiang Lu, Aimin Dang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Introduction Regulated on activated normal T-cell expressed and secreted (*RANTES/CCL5*) is a chemokine. *CCR5* is the receptor for *CCL5*. Recent studies suggested a possible role for *CCL5* and *CCR5* in atherogenesis and gene encoding *RANTES* and *CCR5* might potentially modulate the atherosclerotic pathogenesis. However studies exploring the association between *RANTES* -403G/A and *CCR5* Delta32 (Δ *CCR5*) polymorphisms and CAD were conflicting. Here we did a meta-analysis to fully evaluate these associations.

Methods We systematically searched PUBMED and EMBASE to get related genetic association studies. Odds ratio (OR) with 95% confidence interval (CI) of each study were calculated. Cochran's Q test was used to evaluate the between-study heterogeneity. Egger's test and Funnel plots were used to assess publication bias.

Results Totally seven eligible studies covering 4121 cases and 2042 controls were included in *RANTES* -403G/A analysis. Seven studies with 4874 cases and 2185 controls were included in *CCR5* Δ *CCR5* polymorphism analysis. The pooled OR of -403A allele compared to -403G was 1.02 (0.82, 1.26) in dominant model, 1.04 (0.91, 1.18) in additive model, and 1.14 (0.77, 1.67) in recessive model, respectively. However, subgroup analysis of Caucasian indicated an increased risk for CAD with combined ORs 1.22 (1.06, 1.40) and 1.26 (1.10, 1.44) in dominant and additive models, respectively, with a higher risk 1.52 (0.79, 1.59) in recessive model although not reaching statistical significance. The pooled OR of Δ *CCR5* allele compared to non- Δ *CCR5* allele was 1.03 (0.89, 1.20) in dominant model, 0.77 (0.42, 1.40) in recessive model and 1.02 (0.87, 1.18) in additive model. No publication bias was found except that a slight publication bias in -403G/A recessive model.

Conclusions The results showed that -403A might be a potential risk factor for CAD in Caucasian. However, no association was found between *CCR5* Δ *CCR5* polymorphisms and CAD.

Relation between serum C-Reactive protein and lipid profiles on the risk of hypertension and prehypertension in Mongolian adults of inner Mongolia, china

Shihui Zhang¹, Hongmin Lu², Tan Xu¹, Yonghong Zhang¹

1 Department of Epidemiology, School of Public Health, Medical College of Soochow University, Suzhou, China

2 Department of anesthesiology, Tongliao Municipal Hospital, Inner Mongolia, Tongliao Nei Mongol, China

Objective To investigate the relation between C-reactive protein(CRP) and lipid profiles on the risk of hypertension and prehypertension in Mongolian adults of Inner Mongolia.

Methods The systolic and diastolic blood pressure, height, weight and waist circumference(WC) were measured and factors such as smoking, alcohol intake, family history of hypertension, etc. were investigated and CRP, low-density lipoprotein cholesterol(LDL-C), triglycerides(TG) were tested for 2589 adults aged ≥ 20 years who lived in Kezuohou Banner and Naiman Banner in Inner Mongolia. The risk of hypertension and prehypertension according to CRP and LDL-C (TG) were analyzed by univariate and multivariate analysis.

Results Among hypertensives, prehypertensives and normotensives, hypertensives had highest levels of CRP, LDL-C and TG while normotensives had the lowest levels of the three indices. According to CRP and LDL-C, when subjects had high levels of CRP and LDL-C, the prevalence of hypertension(prehypertension) was the highest among four subgroups and the adjusted OR of hypertension(prehypertension) was 1.756(1.242,2.484)[1.770(1.321,2.372)] , the highest among subgroups, too. Meanwhile, subjects with high level of CRP and low level of LDL-C had higher risk of hypertension (prehypertension) than subjects with low level of CRP and high level of LDL-C. According to CRP and TG, subjects with high levels of CRP and TG also had highest prevalence of hypertension (prehypertension) and adjusted ORs. Subjects with higher TG and lower CRP had higher risk of hypertension than subjects with lower TG and higher CRP, whereas for the risk of prehypertension, the result was opposite.

Conclusions Subjects with high levels of CRP and LDL-C(TG) had higher risk of hypertension and prehypertension in comparison to subjects with isolate high level of CRP or LDL-C(TG) among Mongolian residents of Inner Mongolia. This study suggests the existence of combined action for CRP and LDL-C(TG) and that CRP is stronger to predict future hypertension than LDL-C and TG.

The effect of lead at right high-septum of ventricular and right ventricular apex on cardiac function with 3-year follow-up implanted with VVI permanent artificial pacemaker

Xukai Wang, Qiao Chen, Chunjiang Fu, Li Yang, Wei Wang

The Cardiovascular Dept. Daping Hospital, the 3rd Military University

Objective To determine the effect of lead at right high-septum ventricular (RHVS) and right ventricular apex (RVA) on cardiac function.

Methods 104 cases with 3-year follow-up implanted with VVI permanent artificial pace maker from February, 2006 to May, 2008, average age of 64.5 years old, including 54 cases of lead right at RHVS and 50 cases of lead at RVA. The cardiac function was measured with the same pacing frequency (60 bpm) at the time of 1 week, 6 months, 1 year and 3 years post-implantation. Left ventricular ejection fraction (LVEF), fractional shortening (FS), cardiac output (CO) were measured with echocardiogram and brain sodium peptide (BNP) was also detected.

Results and Conclusions 1. Lead at RHVS did not significantly affect the cardiac function (LVEF and BNP); 2. Lead at the RVA deteriorates cardiac function (LVEF decreased: 0.60, 0.54 at 6 months and 3 years, BNP increased: 96.51ng/L, 168.33ng/L at 6 months and 3 years). Conclusion: Pacing at RHVS is superior to pacing at RVA.

Blood pressure and its relationship with overweight, obesity in aged 7 to 18 Mongolian children and adolescent from 1985 ~2010

Zeyu Huang¹, Gaowa Hasen², Zhe Lin¹, Batu BuRen², Yongshan Li³, Zhuangwei Zhang⁴, Weijun Tong¹

1 Department of Epidemiology and Health Statistics of Public Health, Soochow university

2 Tongliao municipal Center for Disease Control and Prevention, Inner Mongolia Autonomous Region

3 Kezuohouqi Center for Disease Control and Prevention, Tongliao municipal , Inner Mongolia Autonomous Region

4 Kezuozhongqi Center for Disease Control and Prevention, Tongliao municipal, Inner Mongolia Autonomous Region

Objective To learn the incidence of hypertension during 25 years in Mongolian children and adolescents, and to identify the relationship between raised blood pressure, overweight and obesity so as to provide the evidences for early prevention of hypertension.

Methods Data of 18 366 students of Mongolian aged 7 to 18 years old were collected from National Surveys on Chinese Students' Constitution and Health which were carried out in 1985, 2000 and 2010. The diagnose criterion of hypertension was recommended by Hypertension Prevention Guide 2010, China. The category criterion of overweight and obesity was recommended by WGOC. Statistical analysis system include Chi-square test, partial correlation coefficients and non- conditional logistic multiple regression.

Results During 25 years, for aged 7 to 18 years old Mongolian children and adolescents, the detection rate of hypertension in 1985, 2000 and 2010 were 12.17%, 17.88% and 19.10% respectively, the overall trend was increasing year by year ($p < 0.0001$); there, the detection rate of hypertension in Mongolian boys in 1985, 2000 and 2010 were 10.40%, 18.69% and 19.38% respectively, in Mongolian girls were 14.09%, 17.05% and 18.83% respectively. Body mass index (BMI) positively independent collected with SBP and DBP after adjusted age, gender and urban-rural ($p < 0.0001$), the partial regression coefficient between BMI and SBP and DBP were 0.1373 and 0.0825. The detection rate of hypertension in overweight and obese group respectively in Mongolian boys and girls were 26.08%, 35.65%, 26.54% and 26.97%, the detection rates of hypertension were obese group significantly more than overweight group, while overweight group more than normal weight group ($p < 0.0001$); compared with normal weight group, after adjusted gender, age and urban-rural factors, the non- conditional logistic multiple regression results showed that overweight and obesity group were more susceptible to have hypertension (respectively, OR = 2.049, 95% CI: 1.777 ~ 2.063; OR = 2.712, 95% CI: 2.270 ~ 3.240).

Conclusions The detection rate of hypertension in Mongolian children and adolescent in each monitoring year were higher than the national average rate, and there continue on the rise during 25 years. Overweight and obesity are strongly related to blood pressure in Mongolian children and adolescents, taking effective measures to prevent and control overweight and obesity are necessary.

Prevalence of overweight and obesity among preschool children in southeast China, 1998-2005

Yanyu Lu^{1,2}, Ling Hao², Zhu Li²

1 Capital Institute of Pediatrics

2 School of Public Health, Peking University

Objective To examine the trends in overweight and obesity among preschool children enrolled in a population-based Child Health Care Surveillance System(CHCSS) from 1998 through 2005 in southeast China.

Methods Data from eight counties and one city in southeast China were examined in CHCSS established by China-US Collaborative Project for Neural Tube Defect Prevention Project. 327,782 children were included. Overweight was defined as weight-for-height Z score ≥ 2 and obesity was defined as weight-for-height Z score ≥ 3 based on WHO-child-growth-standards for 0-5 years in 2006. We randomly selected one visit per child per calendar year to avoid double counting of children who visit the program more than once in a calendar year. We computed age-adjusted and sex-adjusted prevalence for each year, assuming a uniform age distribution and 50% boys and 50% girls. To do all this adjustments, we calculated the rate for each age in month by sex and year with a large sample size.

Results The prevalence of overweight increased from 3.75% in 1998 to 4.59% in 2005 and the prevalence of obesity from 0.53% to 0.62% for the same period, relatively increasing by 22.32% and 10.90% over eight years, respectively. Analyses by each age, gender, and residence(urban and rural) showed that increases in the prevalence of overweight and obesity were seen significantly among all age groups of children except infants

Conclusions Prevalences of overweight and obesity are increasing among preschool children in southeast China from 1998 to 2005, with a larger growth after 2 years old. Extra research is needed to find the cause of the trend observed and to establish effective strategies for overweight and obesity prevention beginning in the early life.

Association of the C681G polymorphism in PPAR γ 3 and Pro12Ala and C1431T polymorphism in PPAR γ 2 with essential hypertension

Shujun Gu, Mengmeng Liu, Zhirong Guo, Ming Wu, Qiu Chen, Zhengyuan Zhou, Yi Ding, Wenshu Luo, Jingchao Liu

Department of Public Health, Soochow University, Suzhou 215123, China

Objective To investigate the association of the C681G polymorphism in PPAR γ 3 and Pro12Ala and C1431T polymorphism in PPAR γ 2 with Essential hypertension (EH).

Methods 820 subjects (270 males, 550 females) were randomly selected from the Prevention of Multiple Metabolic Disorders and MS in JiangsuProvincecohort populations. The genotypes of C681G, Pro12Ala and C1431T polymorphism were identified by TaqMan PCR. The Logistic regression model was used to examine the association between these polymorphisms and EH. Multiple linear regression model was used to examine the association between these polymorphisms and SBP, DBP. Generalized multifactor dimensionality reduction (GMDR) was used to explore the gene-gene interaction. Then we chose the polymorphisms in significant GMDR model to make haplotype.

Results After adjustment for age, sex, smoking, alcohol consumption, the G allele (CG+GG) of C681G were associated with a statistically significant increased risk of EH (OR=1.54, 95%CI: 1.14~2.09, P=0.005), and its systolic blood pressure (SBP) increased 2.70mmHg (95%CI: 0.02~5.38, P=0.049). The A allele (PA+PP) of Pro12Ala were associated with a statistically significant decreased risk of EH (OR=0.70, 95%CI: 0.52~0.95, P=0.02), and its SBP decreased 2.70mmHg (95%CI: 0.02~5.38, P=0.049) as well as its diastolic blood pressure (DBP) decreased 1.61mmHg (95%CI: -3.06 ~ -0.16, P=0.030). But C1431T was not significantly associated with EH, SBP or DBP. GMDR analysis showed that there was a potential gene-gene interaction among C681G and Pro12Ala (P=0.0107). The G-P haplotype (established by C681G, Pro12Ala) was associated with a statistically significant increased risk of EH (OR=1.53, 95%CI: 1.13-2.07, P=0.0056), and its SBP and DBP increased 4.69mmHg (95%CI: 2.13~7.25, P=0.0035), 1.57mmHg (95%CI: 0.35~3.16, P=0.015), respectively.

Conclusions C681G, Pro12Ala and their haplotypes G-P may associate with the susceptibility of EH in the Chinese Han population.

Effect of oral public acid supplementation on oxidative stress, insulin resistance and body weight in overweight adults-- double-blind, randomized placebo-controlled cross-over clinical trial

Weili Yan^{1,2}, Xiaojuan Hu³, Nong Li³, Yongdi Huang², Weiguo Zhang², Qian Wang², Chenchen Wang², Xiaohu Zhai², Ruiwei Xu², Kai Yan², Xiaoling Wang⁴

1 Department of clinical epidemiology, Childrens Hospital of Fudan University, Shanghai 201102, China

2 Department of epidemiology and biostatistics, Urumqi 830011, China

3 Peoples Hospital of Kelamayi City, Kelamayi city 834000, China

4 Georgia Prevention Institute, Georgia Health Sciences University, GA 30912, USA

Objective To assess whether oral ALA supplementation will decrease the levels of oxidative stress (indexed by OxLDL and 8-iso-PGF2a) and CVD and T2D risk (indexed by insulin sensitivity), and reduce body weight in overweight/obese adults.

Studydesign Double-blind, placebo-controlled cross-over randomized clinical trial.

Setting& Participants 103 overweight subjects (BMI \geq 25 kg/m²) with at least one of the following risk factors were recruited: borderline hypertension (130mmHg \leq SBP<140mmHg or 85 mmHg \leq DBP<90mmHg), dyslipidemia (fasting total cholesterol \geq 240mg/dl or HDL-C<40mg/dl), or impaired fasting glucose (fasting glucose levels between 6.1 and 7.0mmol/L). Baseline information including demographics, anthropometrics, blood pressure, biochemicals in blood (including insulin, oxidative stress and inflammation markers), and diet (by food frequency questionnaire and 24 hour diet recall) were collected before randomization. Block randomization was performed with block size of 2, stratified by sex.

Intervention Group 1 (n=51) received 8-week placebo followed by oral ALA intervention (1200mg/day) for 8-week, while Group 2 (n=52) received 8-week ALA followed by placebo for 8-week (Glucotize and placebo supplied by Medical Research Institute). A washout period of 4 weeks followed completion of the ALA/placebo period.

Outcome Measurements Plasma OxLDL and 8-iso-PGF2a, fasting glucose and insulin, anthropometrics were measured at endpoints (4 visits) . Data were analyzed using the mixed-effect statistical model by STATA 11.0.

Results In total, 92 subjects of the placebo arm and 94 subjects from the ALA arm completed the trial. There was no significant difference in HOMA-IR (ALA versus placebo, beta=0.464, $P=0.173$), OxLDL (ALA versus placebo, beta=0.257, $P=0.272$) or 8-iso-PGF2a (ALA versus placebo, beta=2.804, $P=0.627$) after 8 weeks with ALA compared with placebo. Regardless of the initial treatment period, there was an overall decrease in HOMA-IR at the end of the study compared with study entry (period 2 versus period 1, beta=-0.337, $P=0.003$). A period effect was also observed for both OxLDL and 8-iso-PGF2a with the levels of period 2 higher than period 1. We observed that treatment of ALA was associated with significant lower BMI, weight and waist circumference after 8 weeks (BMI, ALA versus placebo, beta=-0.337, $P=0.004$; Weight, beta=-1.06, $P=0.001$; Waist circumference, beta=-1.03, $P=0.028$). The rates of treatment-emergent adverse events were 13 (14%) in the placebo arm and 9 (20%) in the ALA arm ($P=0.33$ vs. placebo).

Conclusions Oral ALA supplementation, 1200mg/day for 8-week did not alter oxidative stress or insulin sensitivity biomarkers in overweight subjects but has some effect in losing weight.

Biomarkers of inflammation and insulin sensitivity index in adults of inner Mongolia, China

Ke Wang, Yonghong Zhang

Department of Epidemiology, School of Public Health, Medical College of Soochow University, Suzhou, China.

Objective To explore the association between the biomarkers of inflammation and insulin sensitivity index in adults of Inner Mongolia.

Methods Total 32 villiages in Kezuohou Banner and Naiman in Inner Mongolia were selected as study field and residents aged 20 and above were served as study subjects. Demographic data were investigated by the questionnaire, and their height, weight, insulin, blood glucose and a series of index were measured by standardized methods. Overnight fasting blood samples were obtained to measure the plasma glucose, serum insulin and biomarkers including C-reactive protein (CRP), soluble inter-cellular adhesion molecule-1 (sICAM-1), soluble E-selectin (sE-selectin). Multivariate logistic regression analysis was used to evaluate the correlation between the biomarkers of inflammation and insulin sensitivity index.

Results Among the residents of Inner Mongolia, levels of CRP (8.59 versus 11.35), soluble E-selectin (20.59 versus 23.37) and angiotensin II (62.85 versus 68.73) were all significantly higher in individuals with a lower ISI than in those with higher ISI. According to the quartiles of the three biomarkers of inflammation, a gradual decline of ISI along with the increase of the markers was observed after the coariance analysis. The risk of ISI in the fourth quartile of CRP and sE-seletin were significantly higher than in the fist quartile, the odds ratio (95% CI) was 2.082(1.610, 2.693) and 2.446(1.861, 3.216) , when we adjusted for gender and age. Lower ISI was also positively and significantly ($P = 0.0268$) associated with higher C-reactive protein (odds ratio 1.324, 95% confidence interval 0.990, 1.771), when we adjusted for multivariables, but the OR (95% CI) of sE-seletin was 1.986(1.486-2.654) ($P = 0.1167$). In addition, the risk of ISI in the fourth quartile of sICAM-1 was not significantly higher than in the fist quartile, when we adjusted for either single factor or multivariables, and the OR (95% CI) of sICAM-1 was 0.958(0.725-1.265) ($P = 0.9506$).

Conclusions Elevated C-reactive protein and sE-selectin were associated with lower ISI among residents of Inner Mongolia, sICAM-1 was not related yet.

Relationship between inflammation and endothelial function among Mongolians

Xiaolin Wei, Yonghong Zhang

Department of Epidemiology, School of Public Health, Medical College of Soochow University, Suzhou 215325, China

Objective To explore the relationship between inflammation and endothelial function among Mongolians.

Methods Based on a cross sectional study on hypertension, biomarkers of inflammation (CRP, sE-selectin, sICAM-1), biomarkers of endothelial function (PRA and Ang II) were tested for 2589 study subjects. Epidata 3 software was used to setup databank, and SPSS 16.0 Microsoft was used to analyze the data. The participants were divided into normal PRA and abnormal PRA groups, normal Ang II and abnormal Ang II groups. Distributions of basic characteristics and risk factors were described. Single and multiple logistic regression analysis were used to calculate odds ratios(ORs) and 95% confident intervals(95%CI) of abnormal endothelial function associated with the levels of various inflammation biomarkers, and tendency test was conducted.

Results There were no significant differences in CRP and sICAM-1 levels between subjects with abnormal PRA and normal PRA ($P>0.05$); The average level of sE-selectin was significantly higher in abnormal PRA compared to normal PRA participants (18.9 vs. 17.5 ng/ml, $P<0.001$). The multivariate logistic analysis showed that the odds ratios of CRP, sICAM-1 levels for abnormal PRA were not significant, but for sE-selectin, were significant. Compared to the lowest quartile of sE-selectin, the multivariable-adjusted odds ratio (95% CI) of abnormal PRA for the highest quartile was 1.42(1.08-1.87). By trend test, there was a tendency that risk of abnormal PRA increased with sE-selectin level, $P<0.05$. There was no significant difference in sE-selectin level between subjects with abnormal Ang II and normal Ang II ($P>0.05$); The average levels of CRP and sICAM-1 were both significantly higher in abnormal Ang II compared to normal Ang II participants (6.3 VS 5.5 mg/L, 335.3 VS 314.4 ng/ml, $P<0.001$). The multivariate logistic analysis showed that the odds ratios of sE-selectin level for abnormal Ang II were not significant, but for CRP and sICAM-1, were significant. Compared to the lowest quartile of CRP, the multivariable-adjusted odds ratio (95% CI) of abnormal Ang II for the highest quartile was 1.94(1.44-2.60); By trend test, there was a tendency that risk of abnormal Ang II increased with CRP level, $P<0.05$. Compared to the lowest quartile of sICAM-1, the multivariable-adjusted odds ratio (95% CI) of abnormal Ang II for the highest quartile was 1.44(1.11-1.87), tendency test was not significant.

Conclusions Inflammation is associated with abnormality of endothelial function.

Low vaspin plasma concentration: a predictor for poor prognosis in patients with acute myocardial infarction

**Baowei Zhang, Wenhui Peng, Hailing Li, Qi Li, Yawei Xu
Shanghai 10th Peoples Hospital, Shanghai, 200072, China**

Vaspin is an adipocytokine showed effects in improving insulin sensitivity. Our prior study found a negative correlation between vaspin plasma concentration and plaque vulnerability in patients with coronary artery disease. We also found there was a decreased vaspin plasma concentration in patients with acute myocardial infarction (AMI). However, the association between vaspin plasma concentration and the prognosis in patients with AMI is unclear. Our study is to investigate the role of vaspin plasma concentration in evaluating the prognosis in patients with AMI.

A total of 66 patients with AMI were enrolled in this study. Circulating vaspin was assayed by means of ELISA. Other clinical parameters were also recorded. The patients were followed up for 1 year for the major cardiac events (AMCE).

During the follow-up, there were 32 patients with MACE in our study. There was a significant difference between patients with and without MACE ($0.076 \pm 0.052 \text{ug/L}$ vs. $0.134 \pm 0.114 \text{ug/L}$, $p=0.041$). Construction of receiver operating characteristic (ROC) curves showed that vaspin plasma concentration significantly predicted MACE in patients with AMI (AUC=0.647, $p=0.041$), and the cutoff value of vaspin for MACE was 0.0785ug/L . There were 42 patients with $\text{vaspin} < 0.0785 \text{ug/L}$ and 24 patients with $\text{vaspin} \geq 0.0785 \text{ug/L}$. The patients with $\text{vaspin} < 0.0785 \text{ug/L}$ had longer staying in hospital and more frequent incidence of MACE than patients with higher vaspin plasma concentration. Kaplan-Meier curve also showed patients with lower vaspin plasma concentration had lower rate of no MACE during the follow-up.

Vaspin plasma concentration was close to the prognosis of acute myocardial infarction. Low vaspin plasma concentration was a predictor for poor prognosis in patients with acute myocardial infarction.

Vaspin plasma concentration in patients with acute coronary syndrome

Baowei Zhang, Wenhui Peng, Hailing Li, Qi Li, Yawei Xu

Shanghai 10th Peoples Hospital, Shanghai 200072, China

Vaspin is an adipocytokine showed effects in improving insulin sensitivity. Our prior study found a negative correction between vaspin plasma concentration and severity of coronary artery disease. However, the association between vaspin plasma concentration and the vulnerable plaque is unclear. Our study is to investigate the vaspin plasma concentration in patients with acute coronary syndrome (ACS).

A total of 107 patients with acute coronary syndrome and 47 patients with stable angina pectoris (SAP group) were enrolled in this study. The patients with acute coronary syndrome were divided into unstable angina pectoris group (UAP, n=41) and acute myocardial infarction group (AMI group, n=66) according to the troponin T concentration. Circulating vaspin was assayed by means of ELISA. Other clinical parameters were also recorded. The vaspin plasma concentration in AMI group was lower than it in UAP group and SAP group (AMI 0.106 ± 0.094 ug/L, UAP 0.433 ± 0.388 ug/L and SAP 0.906 ± 0.954 ug/L, $P < 0.001$ for AMI vs UAP, $P = 0.024$ for UAP and SAP). There was also a negative correction between vaspin plasma concentration and the diseased vessels in our study (1-vessel: 0.975 ± 0.937 ug/L, 2-vessel: 0.277 ± 0.382 ug/L, ≥ 3 -vessel: 0.193 ± 0.204 ug/L, $P < 0.01$). Construction of receiver operating characteristic (ROC) curves showed that vaspin plasma concentration significantly differentiated ACS patients (AUC=0.773, $P < 0.001$) and AMI patients (AUC=0.837, $P < 0.001$). Vaspin plasma concentration in patients with ACS was decreased, and a lower vaspin plasma concentration might be a predictor for vulnerable plaque in patients with coronary artery disease.

Association of biomarkers of inflammation with dyslipidemia and its components among Mongolians in China

Lingyan Tang, Yonghong Zhang

Department of Epidemiology, School of Radiation Medicine and Public Health, Medical College of Soochow University, Suzhou, China.

Objective We examined the association between inflammatory biomarkers and dyslipidemia and its components among Mongolians in China.

Methods A cross-sectional study was conducted among 2589 Mongolians aged 20 years and older in Inner Mongolia, China. Data on demographic characteristics, lifestyle risk factors, family history of cardiovascular disease were obtained, blood pressure, body weight, height and waist circumference were measured. Overnight fasting blood samples were obtained to measure plasma concentrations of total cholesterol (TC), triglycerides (TG), low density lipoprotein cholesterol (LDL-c), high density lipoprotein cholesterol (HDL-c) and inflammatory biomarkers including high sensitivity C-reactive protein (hsCRP), soluble intercellular adhesion molecule-1 (sICAM-1) and soluble E-selectin (sE-selectin). The associations between inflammatory biomarkers and dyslipidemia and its components were analyzed by univariate and multivariate analysis.

Results Individuals with dyslipidemia had higher levels of hsCRP (8.07 vs. 5.13mg/l), sICAM-1 (346.29 vs. 316.75ng/ml) and sE-selectin (19.90 vs. 17.80ng/ml) than those without dyslipidemia (all P value <0.001). Compared to the lowest quartile, the multivariable-adjusted odds ratios (95% confidence interval) of dyslipidemia for the highest quartile were 2.740 (2.128-3.527) for hsCRP, 1.571 (1.242-1.987) for sICAM-1 and 1.360 (1.080-1.712) for sE-selectin, respectively. Moreover, hsCRP was associated with all the components of dyslipidemia (p-value for linear trend <0.001 for all components); sICAM-1 had a linear association with low density lipoprotein cholesterol (p-value = 0.007 for linear trend) and total cholesterol (p-value = 0.044 for linear trend); soluble E-selectin was linearly associated with triglycerides (p-value < 0.002 for linear trend).

Conclusions Our study indicated that elevated plasma levels of hsCRP, sICAM-1 and sE-selectin were positively and significantly associated with the risk of dyslipidemia among Mongolian residents of Inner Mongolia. However, the associations were not uniform for the different inflammatory biomarkers with the components of dyslipidemia. Our results suggest that different inflammatory biomarkers may have distinct mechanisms in the pathogenesis of lipoprotein subclass abnormalities.

Maternal overweight, gestational weight gain, elevated fasting plasma glucose and their association with macrosomia in Kunshan, China, 2006-2010

Peng Shi¹, Wenhong Yang², Qian Yu², Qian Zhao¹, Chunying Li², Xiaoling Ma², Lihua Jin², Xia Han², Yi Zhang¹, Weili Yan¹

1 Department of Clinical Epidemiology, Children's Hospital of Fudan University, Shanghai 201102, China

2 Kunshan Maternal and Child Health Care Hospital, Kunshan 215301, China

Objective To report the distribution and trends in maternal overweight, gestational weight gain (GWG) and elevated fasting plasma glucose (FPG) among pregnant women and investigate their association with fetal macrosomia in Kunshan, a county-level city in the east of China, from 2006 to 2010.

Methods A population-based retrospective study was conducted. We used the routine data of prenatal examination and pregnant outcomes from Kunshan Maternal and Child Health Care Hospital from 2006 to 2010. The distribution of maternal overweight (BMI: 25.0~29.9 kg/m²), elevated FPG (≥ 5.1 mmol/L), and GWG were described among 27322 pregnant women (18~45 years) with full-term delivery. The magnitude, direction and significance of changes were assessed using trend analysis. A multiple logistic regression was used to analyze OR (95% CI) between these metabolic risk factors and macrosomia.

Results The mean of maternal age at first visit was 27.3 ± 4.2 years. The overall prevalence of pregnant women with overweight, elevated FPG at first visit was 9.8%, 19.4%, respectively, and 8.6% of their newborns were macrosomia. The trends of maternal overweight and elevated FPG increased ($P_{\text{trend}} < 0.001$), whereas macrosomia decreased ($P_{\text{trend}} = 0.0261$). The mean of GWG was 14.7 ± 4.6 kg. According to the Institute of Medicine (IOM) guidelines for weight gain during pregnancy, the mean of weight gain was 15.4 ± 4.1 , 14.8 ± 4.6 , 12.2 ± 5.3 , 10.2 ± 5.0 kg for underweight, normal-weight, overweight and obese pregnant women, respectively. The trends of weight gain decreased during the same period ($P_{\text{trend}} < 0.0001$). Multiple logistic regression showed maternal overweight (OR=2.48, 95% CI: 1.53, 4.04), GWG (OR=1.15, 95% CI: 1.10, 1.20) and elevated FPG (OR=1.65, 95% CI: 1.16, 2.35) during pregnancy were positively significant associated with macrosomia after adjusting for maternal age and gestational age at delivery.

Conclusions Maternal overweight, excessive weight gain, elevated FPG are common in Chinese pregnant population in Kunshan and are significantly associated with macrosomia. The increasing trends of maternal overweight and elevated FPG raise the public concern that glucose monitoring and prepregnancy weight control are priorities at the early stage of pregnancy. Maternal weight gain should be under control according to IOM guidelines. Further well-designed studies with strictly sampling and better quality control in Chinese population are expected to provide evidence for public policy decision making.

The risks of exercise stress test for hypertensive patients

Chen Liang, Yun Ma, Lihong Sang, Can Gao, Yunfei Bai, Min Yang

National Research Institute of Sports Medicine

Objective To investigate the risks of exercise stress test for hypertensive patients.

Methods Data of ninety eight hypertensive patients who performed graded exercise test on treadmill were retrospectively analyzed. The patients were divided into habitual exercise group (n=52) and lack exercise group (less than 3 times per a week, NE, n = 46) according to their daily activity. Meanwhile the patients were categorized as SBP exaggerated response group (the SBP during exercise test ≥ 220 mmHg, n=28) and normal SBP response group (n=70), exaggerated DBP response group (the DBP during exercise test ≥ 110 mmHg, n=30) and normal DBP response group (n=68), depressed ST segment group (the ST segment depression during exercise test ≥ 1 mm, n=20) and normal ST segment group (n=78).

Results (1) The DBP before exercise and the maximum DBP during exercise in group E were significantly lower than in group NE (P = 0.019, P = 0.029). (2) The DBP before exercise in the SBP exaggerated response group and the DBP exaggerated response group were significantly higher than in the respective control group (P = 0.00, P = 0.00). The average values of the DBP before exercise in SBP exaggerated response group and in DBP exaggerated response group was abnormal (≥ 90 mmHg). (3) The SBP 2 minute after exercise in the group ST was significantly higher than in respective control group (P = 0.006).

Conclusions (1) The hypertensive patients with habitual exercise have lower DBP at rest and the lower DBP response during exercise test. (2) The hypertensive patients with higher resting DBP could be at higher risks during exercise test. (3) The SBP 2 minutes after exercise test could be used as a risks indicator for hypertensive patients.

Effect of fish oil supplementation on fasting vascular endothelial function in humans: a meta-analysis of randomized controlled trials

Wei Xin, Wei Wei, Xiaoying Li

First Department of Geriatric Cardiology, Chinese PLA General Hospital

Background Effect of fish oil supplementation on flow-mediated dilation, an index of endothelial function in humans, remains controversial. We performed a meta-analysis to determine whether fish oil supplementation could improve endothelial function.

Methods Human intervention studies were identified by systematic search of Medline, Embase, Cochrane's library and references of related reviews and studies through February 2012. Random-effect model was applied to estimate the pooled results. Meta-regression and subgroup analyses were performed to evaluate the impact of study characteristics on the effect of fish oil supplementation on flow-mediated dilation.

Results A total of sixteen records with 1385 subjects were reviewed. The results of the pooled analysis showed that fish oil supplementation significantly improved flow-mediated dilation (WMD: 1.49%, 95% CI 0.48% to 2.50%, $p = 0.004$). Meta-regression and subgroup analysis suggested that the quality of included studies were inversely related to the overall effect (regression coefficient = -1.60, $p = 0.04$), and the significance of the effect was mainly driven by the studies with relatively poor quality. Sensitivity analysis including only double-blind, placebo-controlled studies indicated fish oil supplementation has no significant effect of on endothelial function (WMD: 0.54%, 95% CI -0.25% to 1.33%, $p = 0.18$). Besides, percentage of patients with diabetes (regression coefficient = -0.017, $p = 0.10$) and mean baseline DBP (regression coefficient = -0.20, $p = 0.14$) both showed trends of inverse association with the FMD improvement induced by fish oil supplementation. Subgroup analyses also suggested that normoglycemic subjects or participants with lower diastolic blood pressure seemed to be associated with remarkable improvement of endothelial function after fish oil supplementation.

Conclusions Although current evidence suggested a possible role of fish oil in improving endothelial function, large scale and high quality clinical trials are needed to evaluate these effects before we can come to a definite conclusion.

Clinical analysis of acute myocardial infarction in patient with essential thrombocythemia

Haitao Lu, Yan Zhou, Hangyuan Guo, Yufang Qiu, Yangbo Xing, Fang Peng,

Biao Yang

Shaoxing Peoples Hospital

Essential thrombocythemia (ET) is an acquired clonal hematological stem-cell disorder that is characterized by a persistent increase in platelet count over 600,000/ μ l and elevated megakaryocyte levels in the bone marrow^[1]. ET can cause systemic vascular thrombosis but rarely cause obstruction of coronary arteries or acute myocardial infarction (AMI). Rossi C et al.^[2] have followed 170 patients with ET for 10 years. Only 9.4% of these patients had a MI during the follow-up period and 75% of the ET patients who suffered a myocardial infarction had additionally cardiovascular risk factors. We report ten illustrative cases with ET and AMI illustrating the clinical characteristics and therapeutic strategies of these patients.

We have reviewed Clinical data and coronary angiography results of 10 AMI patients with ET who received the diagnosis from March 2009 to September 2009 and have a follow-up of 6 months. During follow-up, 4 patients who were given cytoreductive therapy (platelet count were kept in the normal range during six months) did not experience relapse of AMI; for the remaining 6 patients without treated with cytoreductive therapy, 3 patients experienced recurrence of AMI, 2 patients occurred gastrointestinal bleeding, 1 patient experienced lower extremity arterial thrombosis. The aim of this case review is to discuss the clinical characteristics and therapeutic strategies of AMI in patient with ET.

Cardiometabolic disorders in early pregnancy and neonatal macrosomia

Qian Zhao^{1,2}, Wenghong Yang³, Qian Yu³, Chunying Li³, Xiaoling Ma³, Lihua Jin³, Xia Han³, Peng Shi¹, Weili Yan¹

1 Department of Clinical Epidemiology, Children's Hospital of Fudan University, Shanghai 201102, China

2 Department of Epidemiology and Biostatistics, Xinjiang Medical University, Urumqi 830011, China

3 Kunshan Maternal and Child Health Care Hospital, Kunshan 215300, China

Objective This study aims at investigating the prevalence of metabolic syndrome (MS) and components among pregnant women in early gestation and evaluating the associations with macrosomia.

Methods A population-based routine data from Kunshan Maternal and Child Health Care Hospital from 2009 to 2010 were retrospectively analyzed. The prenatal information were analyzed among pregnant women who taken the first prenatal examination less than 20 gestation weeks, including maternal anthropometrics and blood pressure at the first prenatal visit, fasting plasma glucose and serum lipids examined in the first trimester. Birth weight and gestational age were obtained from neonates' medical records in the hospital. MS was defined according to the International Diabetes Federation (IDF) criteria in 2005. Owing to waist circumferences during pregnancy was imprecise, body mass index (BMI) ≥ 24 kg/m² in first prenatal visit was used to define overweight.

Results Statistical analyses were performed among 1405 subjects with complete prenatal data. The mean of maternal age and BMI at the first prenatal visit was 26.5 ± 3.2 years and 20.8 ± 2.7 kg/m². The mean of triglyceride, HDL-C and fasting glucose was 2.4 ± 1.0 mmol/L, 2.0 ± 0.4 mmol/L and 4.5 ± 0.5 mmol/L, respectively. The mean of SBP and DBP was 107.7 ± 10.0 and 69.3 ± 7.0 mmHg. The overall prevalence of MS, overweight, elevated triglyceride, reduced HDL-C, raised blood pressure and raised glucose among pregnant women in early gestation was 1.8%, 12.0%, 82.0%, 2.7%, 2.6% and 2.3%, respectively. The mean of the birth weight and gestational age was 3365.0 ± 418.6 g and 39.0 ± 1.6 weeks with the incidence of macrosomia being 7.0%. Stepwise multiple logistic regressions including 497 subjects with first prenatal visit within 20 gestational weeks and complete prenatal and neonatal birth weight showed in early gestation maternal overweight/obesity (OR=2.3, 95%CI: 1.0~5.5) and gestational age at delivery (OR=1.8, 95% CI: 1.3~2.6) significantly increased the risk of macrosomia. There was no significant difference in the proportion of maternal overweight in early gestation between analyzed subjects and those with missing birth weight data by using Person's chi-square tests.

Conclusions About 1.8% of Chinese pregnant women meet the criteria of MS in early gestation. The commonest components of MS including raised triglyceride (82%) and overweight (12%), was the most important risk factors for macrosomia. The findings call for the urgent need for early and throughout management of metabolic risks among pregnant women in order to control the adverse gestation outcomes.

Mortality in person's with impaired glucose tolerance and newly diagnosed diabetes in China: 23-year follow-up of the Da Qing IGT and diabetes study

Guangwei Li¹, Ping Zhang¹, Jinping Wang¹, Yali An¹, Qihong Gong¹, Edward Gregg¹, Gojka Roglic¹, Wenying Yang¹, Bo Zhang¹, Micheal Engelgau¹, Yinghua Hu¹, Peter Bennett¹

1 State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Daqing First Hospital, Heilongjiang 163001, China

3 Centers for Disease Control and Prevotion, USA

4 World Health Organizations, Switzerland

5 China-Japan Friendship Hospital, Beijing 100029, China

6 National Institutes of Health, China

Background Despite the growing prevalence of diabetes and pre-diabetes in China, the magnitude of excess mortality associated with elevated glucose levels is unclear. We compared mortality rates among a population-based sample of persons with newly diagnosed diabetes (NDM), impaired glucose tolerance (IGT), and normal glucose tolerances (NGT) who were followed 23years.

Methods In 1986, 110,600 people aged 25-74 years in Da Qing, China, were screened for diabetes and IGT. 630 persons with NDM and 576 with IGT were identified. For comparison, a sample of 519 persons were selected to represent those with NGT. In 2009, vital status and causes of death were ascertained among 94% of the original participants.

Findings Over 23 years of follow-up, death occurred in 338 (56.5%) of those with NDM, 174 with IGT (32.1%) and 100 (20.3%) with NGT. Age-sex adjusted death rates were 28.5 per 1000 person-years (95% CI, 25.6-31.8) among those with NDMs, 18 (15.7-20.6) among those with e IGTs, and 11.2 (9.5-13.3) among those with NGTs. Hazard rate ratios (HRRs) relative to NGT were 3.3 (95% CI 2.6-4.1) for NDM and 1.8 (1.4-2.2) for IGT. Death rates in NDM were slightly higher in men than in women (30.7 vs. 26.7 /1000 person-years, P=0.1). The age-adjusted HRRs of death in NDM relative to NGT were 2.7 (95% CI 1.8-4.0) for women and 2.5 (95% CI 1.9-3.4) for men. The most frequent cause of death in the NDMs was cardiovascular disease (CVD) (49.7% in women; 47.5% in men) and of these CVD deaths, a large proportion was due to stroke (42.9 % in women and 53.9% in men). Among the NDMs, death rates were strongly and independently related to age and increasing duration of diabetes. IGT predicted increased mortality and death rates were associated with increasing age, but not with the duration of IGT.

Interpretation Diabetes leads to considerable excess mortality and stroke the most frequent cause of the CVD deaths in China. Delaying progression from IGT to diabetes, as can be gained from diabetes prevention interventions, reduces this excess mortality.

Micro-vascular disease among Chinese with newly diagnosed diabetes: a 23-year follow-up of the Da Qing diabetes study

Qihong Gong¹, Ping Zhang¹, Jinping Wang¹, Yali An¹, Edward Gregg¹, Gojka Roglic¹, Wenying Yang¹, Bo Zhang¹, Yanyan Chen¹, Yinghua Hu¹, Peter Bennett¹, Guangwei Li¹

1 State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Daqing First Hospital, Heilongjiang 163001, China

3 Centers for Disease Control and Prevention, USA

4. World Health Organization, Switzerland

5 China-Japan Friendship Hospital, Beijing 100029, China

6 National Institutes of Health, USA

Among the estimated 100 million persons with diabetes in China, little is known about the occurrence of micro-vascular complications and their natural history.

We sought to document the incidence of micro-vascular disease (retinopathy, nephropathy and neuropathy) in the 630 persons with newly diagnosed diabetes (NDMs), and in a sample of 519 with normal glucose tolerance (NGT), who had been identified initially in 1986 by screening 50% of the Da Qing population aged 25 years and over. In 2009 among those with NDM, 593 (94%), and 491 (95%) with NGT, were traced. Clinically significant micro-vascular disease was ascertained by direct or proxy interviews and review of medical records up to the time of death, loss to follow-up or December 31st, 2009, and among the survivors 252/260 (97%) of the NDMs and 374/392 (95%) of the NGTs were examined.

Among the NDMs over the 23-year follow-up period, severe retinopathy, defined as proliferative retinopathy, having received retinal photocoagulation, or blindness, was identified in 24.9% (95%CI 21.4%-28.4%), and severe nephropathy, defined as receiving renal replacement therapy or with urinary albumin/creatinine ratio(ACR) \geq 300 mg/g at the follow-up examination, had developed in 24.8% (95%CI 19.3%-30.3%). Both the severe retinopathy and nephropathy developed mainly after 10 or more years duration of diabetes. Among the NDM survivors, 22.7% had ACR \geq 300 mg/g, and 27.3% (95%CI 21.4%-33.2%) had evidence of neuropathy (10gmonofilament test) at the follow-up examination. In the NGT group, only 3.9% (95%CI 2.2%-5.6%) had severe retinopathy, 3.1% (95%CI 1.2%-4.0%) severe nephropathy, and 11.2% (95%CI 7.7%-14.7%) had neuropathy at the 2009 follow-up examination.

Severe diabetic retinopathy and nephropathy are common long-term complications of type 2 diabetes in China, which, given the huge numbers of persons with recent onset diabetes, will lead to major medical and economic challenges to the country in the future.

Associations of dietary glycemic index and glycemic load with the risk of coronary heart disease, stroke, and stroke mortality: a meta-analysis of prospective studies
Jingyao Fan, Yuyao Wang, Rutai Hui, Weili Zhang
Sino-German Laboratory for Molecular Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Excessive consumption of carbohydrates in diet can increase plasma triglyceride levels, reduce high-density lipoprotein (HDL) cholesterol levels, and increase blood glucose and insulin levels, thereby creating a potential worries to increase the risk of cardiovascular diseases. Moreover, emerging evidence showed that postprandial glycemia is an independent risk factor for cardiovascular disease. Dietary Glycemic index (GI) and glycemic load (GL) have been used to quantify the glycemic burden of carbohydrate from foods. To assess whether high levels of GI and GL increase the risk of coronary heart disease (CHD), stroke, and stroke mortality, we summarized the results of prospective cohort studies in a meta-analysis.

Methods We searched the Pubmed and Embase databases (up to January 2012) and included all prospective studies which provided a relative risk (RR) and 95% confidence interval (CI) for coronary heart disease, stroke and stroke-related mortality in relation to dietary GI and dietary GL. Pooled RRs and 95% CIs of these outcomes were estimated by meta-analysis. Heterogeneity among studies was evaluated using *Q* test.

Results We identified 14 prospective studies including 437,427 individuals in whom 9,330 CHD cases, 2,214 stroke cases, and 342 deaths from stroke. Higher dietary GI levels were associated with 1.13-fold risk for CHD (RR=1.13; 95% CI, 1.04-1.22; $P=0.005$), while higher dietary GL levels was associated with 1.28-fold risk for CHD (RR=1.28; 95%CI, 1.15-1.43; $P<0.0001$). Moreover, we observed a sex-specific effect on the association between GI/GL levels and CHD risk. For dietary GI, the pooled RRs were 1.19 (95% CI, 1.00-1.43; $P=0.05$) among women, and 0.99 (95%CI, 0.87-1.12; $P=0.83$) among men. For dietary GL, thepooled RRs among women were 1.49 (95%CI, 1.27-1.73; $P<0.0001$), while among men were 1.09 (95%CI, 0.92-1.28; $P=0.34$). The meta-analysis showed there are no significant associations between higher dietary glycemic index and the risk of stroke (RR=1.09; 95% CI, 0.94-1.26; $P=0.25$) or stroke mortality (RR=1.43; 95%CI, 0.98-2.09; $P=0.065$). However, there is a weak association between high level of dietary glycemic load and risk of stroke (RR=1.19; 95% CI, 1.00-1.43; $P=0.05$).

Conclusions These results suggest that higher levels of dietary GI and dietary GL are associated with increased risk for CHD, particularly among women. In addition, subjects with higher dietary GL have increased risk for stroke. But the associations of dietary GI levels with stroke risk and stroke-related death are not observed.

Cigarette smoking and risk of type 2 diabetes mellitus among adult men and women in China: a prospective cohort study

Dianjiang Li¹, Jichun Chen¹, Ying Li¹, Liancheng Zhao¹, Jie Cao¹, Jianfeng Huang¹, Dongfeng Gu¹

1 State Key Laboratory of Cardiovascular Diseases and Department of Evidence Based Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective We examined sex-specific relationships of smoking with risk of type 2 diabetes mellitus (T2DM) in the Chinese adult population.

Methods Data on cigarette smoking from two study cohorts were obtained at baseline examinations in 1998 and during 2000-2001, separately. A total of 27020 Chinese adults who were aged 35 to 74 years at their baseline examination were followed up in 2007-2008, with a response rate of 79.78%. After excluding those with diabetes, coronary heart disease and stroke at baseline and those with incomplete cigarette smoking information, 7695 men and 8524 women were included in the study. Incident diabetes was ascertained by fasting glucose assays (FBG \geq 126mg/dl), self-report of physician diagnosis, current use of hypoglycemic medications or death certificate listing diabetes as an underlying or contributing cause of death. Cox proportional hazards models were used to evaluate the multivariate-adjusted relationship of cigarette smoking with the incidence of T2DM.

Results During an average of 8.1 years follow-up, a total of 1075 T2DM events (524 men and 551 women) were observed. The multivariate-adjusted hazard ratio (HR, [95% confidence interval, 95%CI]) of T2DM associated with current smoking was 1.24 (1.007-1.54) in men and 1.90 (1.30-2.77) in women, respectively. The corresponding population attributable risk percent was 12.61% in men and 3.23% in women. For men, compared with never-smokers, the multivariate-adjusted HR(95%CI) for T2DM was 1.26 (0.94-1.68) for former smokers, 1.03 (0.80-1.34) for persons who smoked 1 to 19 cigarettes/d, 1.42(1.13-1.79) for those who smoked 20 or more cigarettes/d (P for trend for current smokers only =0.003); and the multivariate-adjusted HR (95% CI) of T2DM was 0.99 (0.77-1.27), 1.42(1.10-1.82) and 1.79 (1.26-2.54) for those who smoked 0.1-20, 20.1-40, and >40 pack-years, respectively (P for trend for current smokers <0.001). While in women, contrast to never-smokers, the multivariate-adjusted HR of T2DM (95% CI) was 0.88(0.41-1.89), 1.60(0.98-2.63) and 2.52(1.44-4.42) for former smokers, persons who smoked 1-9 cigarettes /d, and those who smoked \geq 10 cigarettes /d; and 1.57 (0.96-2.57) and 2.76 (1.57-4.85) for those who smoked 0.1-10, and >10.1 pack-years, respectively (both p for trends for current smokers only<0.001).

Conclusions Our study demonstrates that cigarette smoking is independently associated with increased risk of T2DM among adult men and women in China, consistent with a dose-response relationship.

Blood pressure lowering among patients with stroke/TIA for the prevention of stroke recurrence

Zengwu Wang, Zuo Chen, Xian Li, Xin Wang, Lisheng Liu

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To investigate the effects of antihypertensive drug treatment on recurrent stroke in patients with a previous history of cerebrovascular disease.

Methods Original randomized clinical trial research papers published between Jan. 2000-Jan. 2009, which focused on prevention of stroke recurrence by lowering blood pressure, were searched through PubMed database, EMBase, Cochrane library, Chinese biomedical literature database, CNKI, VIP. The qualified data, which were accessed using Downs & Black Score, were processed with a meta-analysis. Data from trials that used a diuretic as opposed to renin system inhibitors as the mainstay of active treatment were compared for subgroup analyses.

Results Ten randomized controlled trials were eligible for analysis, including 38,227 patients together. The pooled odds ratio for the prevention was 0.78 (95% *CI* 0.68 to 0.90; $P=0.007$), 0.63 (*CI* 0.54 to 0.73; $P<0.01$) for trials involving a diuretic as a component of experimental therapy, and 0.93 (*CI* 0.87 to 1.01; $P=0.086$) in the trials in which the mainstay of treatment consisted of inhibition of the renin system. The *P*-value for heterogeneity between studies involving diuretics as compared with renin system inhibitors was less than 0.0001. There was also heterogeneity in the odds ratios among all trials ($P<0.01$). The blood pressure reduction averaged 5.1/2.5 mm Hg of systolic/diastolic in all studies, 8.5/3.6 mm Hg in the trials of diuretics, 4.0 /2.1 mm Hg in the studies of renin system inhibitors. The correlation between the odds of stroke recurrence and the reduction in systolic blood pressure approached significance.

Conclusions Blood pressure lowering reduced the risk of recurrent stroke significantly.

The relationship between inflammatory biomarkers and hypertension subtypes

Xiaoqing Bu, Ke Wang, Lingyan Tang, Xiaolin Wei, Yonghong Zhang

Department of Epidemiology, School of Public Health, Medical College of Soochow University, Suzhou 215123, China

Objective To examine the association between inflammatory biomarkers and hypertension subtypes among Inner Mongolians in China.

Methods We conducted a cross-sectional study among 2584 Mongolians aged 20 years and older, without antihypertensive medications. High sensitivity C-reactive protein (hsCRP), soluble intracellular adhesion molecule 1 (sICAM-1) and soluble E-selectin (sE-selectin) were examined. Analysis of variance and covariance were used to examine the relationship between inflammatory biomarkers and hypertension subtypes. Hypertension subtypes were defined as combined systolic and diastolic hypertension (SDH: SBP \geq 140 and DBP \geq 90 mm Hg), isolated systolic hypertension (ISH: SBP \geq 140 and DBP $<$ 90 mmHg), isolated diastolic hypertension (IDH: SBP $<$ 140 and DBP \geq 90 mm Hg).

Results Among the 2589 participants 968 were diagnosed as hypertension (SDH:59.4%, ISH:12.5%, IDH:28.1%). The analysis of variance and covariance showed that, compared with normal group, all hypertension subtypes had higher levels of hsCRP. After adjustment for age and gender, the variance remained significant. However, after adjustment for age, gender and other important covariables, only SDH had higher levels of hsCRP than normal group [Ln(hsCRP)(95%CI):1.95(1.89-2.02)vs1.86(1.83-1.90)], $P<0.05$. Using the same statistical analysis method, we compared the levels of sICAM-1 and sE-selectin between hypertension subtypes and normal group. After adjustment for age and gender, IDH and SDH both had higher levels of sICAM-1 than normal group. After further adjustment for other important covariables, IDH had lower level of sICAM-1 than normal group [sICAM-1:313.21(301.16-325.26) vs.328.65 (323.68-333.61)ug/l], $P<0.05$. For sE-selectin, the analysis of covariance indicated that it was significantly higher in IDH than in normal group. After adjustment for age, gender and other important covariables, it remained higher in IDH [Ln(sE-selectin) (95%CI):3.03(2.98-3.08) vs. 2.96 (2.94-2.98)], $P<0.05$.

Conclusions Our study identified that, compared with normal group, SDH was significantly associated with higher plasma level of hsCRP, IDH was associated with higher level of sE-selectin and lower level of sICAM-1. Further studies testing the relationship between sICAM-1 and IDH were needed, which may be helpful to elucidate the mechanisms of the only arteriolar resistance in IDH.

Cross-sectional study of ACEI/ARB Use among patients with coronary heart disease in China

Jiamin Liu¹, Lei Ge¹, Jing Li¹, Xi Li¹, Fang Feng¹, Haibo Zhang¹, Yan Gao¹, Wuh-anbilige Hundei¹, Xin Pang¹, Yiping Chen², Zhengming Chen², Martin Landray², Jane Armitage², Lixin Jiang¹

1 China Oxford Centre for International Health Research, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Clinical Trial Service Unit, Oxford University, Oxford, OX3 7LF, UK.

Objective This study investigated how widely ACEI/ARB were being used and analyzed factors influencing the usage among patients with coronary heart disease (CHD) in China.

Methods A cross-sectional survey was done between Jun to Dec 2007 and May to Nov 2009 among potential participants of a large clinical trial with established CHD. The characteristics of these patients were collected by electronic questionnaire, described and analyzed. A total of 51 hospitals in 14 cities participated in this study.

Results Only 45.8% CHD patients were using ACEI/ARB and the usage decreased significantly with time from initial diagnosis. About 46.1% patients with diabetes mellitus (DM) and 56.3% patients of those with hypertension were using ACEI/ARB. In logistic regression analysis, comorbid hypertension was the strongest factor associated with ACEI/ARB usage. In addition, male sex, history of myocardial infarction (MI), PCI and the time from initial diagnosis were associated with the use of ACEI/ARB. Among the different ACEI/ARB treatments, captopril was the most commonly prescribed.

Conclusions ACEI/ARB are underused in secondary prevention among CHD patients in China. It remains a major challenge for healthcare professionals and policy makers to narrow the gap between evidence and practice.

Long-term management of patients with different types of atherosclerotic vascular disease in China: findings from a survey of 16,860 patients

Jing Li¹, Xi Li¹, Zhengming Chen², Jane Armitage², Fang Feng¹, Jiamin Liu¹, Yan Gao¹,

Haibo Zhang¹, Dan Zhang¹, Wuhanbilige Hundei¹, Yiping Chen², Fang Chen¹, Jemma Hopewell², Elsa Valdes-Marquez², Martin Landray², Lixin Jiang¹

1 China Oxford Centre for International Health Research, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Clinical Trial Service Unit, Oxford University, Oxford, OX3 7LF, UK

Objective To assess the long-term secondary preventive treatment pattern among patients with atherosclerotic vascular disease in China, with particular reference to statin therapy.

Background Little is known about long-term treatment pattern among patients with various atherosclerotic vascular conditions in China

Methods Between June 2007 and October 2009, 16,860 patients aged 50-80 years with a history of atherosclerotic vascular disease (i.e., CHD, atherosclerotic CVD, or PAD) from 51 hospitals in 14 cities of China were screened for a large trial. Use of statin and various other treatments was analyzed by prior diseases history, adjusting for various baseline characteristics.

Results Of the 16,860 patients, the mean age was 63 years and 74% were male. Overall, 78% of the patients had documented CHD, 40% had CVD, 5% had PAD and 21% had more than one condition, and the median duration from diagnosis to screen was 18 months. At screening, the proportions who took various treatments were 83% for antiplatelet agents, 28% for ACEI, 49% for beta-blockers, 47% for statins. The proportion who were treated with statin was much higher in CHD compared with CVD and PAD (61% vs. 10% vs. 22%) and decreased significantly with increased years from initial diagnosis. About half of the statin used involved simvastatin (20 mg) and atorvastatin (10 mg)

Conclusions In China, statin therapy is substantially underused among patients with atherosclerotic vascular disease, particularly patients with ischemic stroke.

Hemoglobin A1c level and mortality in advanced coronary artery disease a systematic review and meta-analysis

Yao Liu, Yan-min Yang, Jun Zhu, Hui-qiong Tan, Yan Liang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background The prognostic value of hemoglobin A1c(HbA1c) in coronary artery disease (CAD) is controversial. We conducted a systematic review to quantify the association between elevated HbA1c level and all-cause mortality among patients hospitalized with CAD.

Methods A systematic search of electronic databases (PubMed, EMBASE, OVID, Web of Science, and The Cochrane Library) for studies published from 1970 to May 2011 was conducted. Cohort, case-control studies, and randomized controlled trials that examined the effect of HbA1c on all-cause mortality were included.

Results Twenty studies met final inclusion criteria (total n=13,224). From the pooled analysis, elevated HbA1c level was significantly associated with increased short-term (OR 2.32, 95% CI, 1.61 to 3.35) and long-term (OR 1.54, 95% CI, 1.23 to 1.94) mortality risk. Subgroup analysis suggested elevated HbA1c level predicted higher mortality risk in patients without diabetes (OR 1.84, 95% CI, 1.51 to 2.24). In contrast, in patients with diabetes, elevated HbA1c level was not associated with increased risk of mortality (OR 0.95, 95% CI, 0.70 to 1.28). In a risk-adjusted sensitivity analysis, elevated HbA1c was also associated with a significantly high risk of adjusted mortality in patients without diabetes (adjusted OR 1.49, 95% CI, 1.24 to 1.79), but had a borderline effect in patients with diabetes (adjusted OR 1.05, 95% CI, 1.00 to 1.11).

Conclusions Our findings demonstrate that elevated HbA1c level is an independent risk factor for mortality in CAD patients without diabetes, but not in patients with established diabetes. Prospective studies should further investigate whether glycemic control might improve outcomes in CAD patients without previously known diabetes.

Effects of dynamic hyperinflation on body composition, exercise capacity and quality of Life in COPD patients

Li Zhao¹, Xiaoning Bu¹, Chen Wang¹

1 Beijing Chaoyang Hospital-Beijing Institute of Respiratory Medicine, Capital Medical University, Beijing 100020, China

2 Beijing Institute of Respiratory Medicine, Capital Medical University, Beijing 100020, China

Objective To investigate the effects of dynamic hyperinflation on body composition, exercise capacity and quality of life in stable COPD patients.

Methods 58 stable COPD patients were recruited from September 2011 to February 2012. All subjects were measured pulmonary function, exercise capacity [measured by symptom-limited cardiopulmonary exercise testing (CPET) and 6-minute walk test] and body composition [including fat mass index (FMI) and fat-free mass index (FFMI) assessed by bioelectrical impedance analysis]. The Chinese translation of COPD assessment test (CAT) was used to assess quality of life. End-expiratory lung volume/total lung capacity ratio (EELV_{max}/TLC) was evaluated when all subjects reached the peak exercise status during CPET, and EELV_{max}/TLC ≥ 75% was defined “heavy dynamic hyperinflation (HDH+)”.

Results 1. Patients of HDH+ and HDH- group were age and sex matched, as well as baseline pulmonary function. 2. Heavy dynamic hyperinflation (EELV_{max}/TLC ≥ 75%) presented only in one half of the sample during CPET, and EELV_{max}/TLC ratio had no association with FEV₁%pred, FEV₁/FVC, FEV₃/FVC, IC/TLC and DL_{co}/VA. 3. Patients with a peak exercise EELV_{max}/TLC ≥ 75% had significantly lower maximal workload, VO_{2max}, VCO_{2max} and VEmax compared to those with EELV_{max}/TLC < 75%. Furthermore, the increase in EELV_{max}/TLC ratio correlated inversely with the above mentioned variables ($r = -0.300 \sim -0.351$, $p < 0.05$). 4. No differences were observed in FMI, FFMI and 6-min walk distance, but patients with a peak exercise EELV_{max}/TLC ≥ 75% tend to have higher CAT score, meaning worse quality of life.

Conclusions Dynamic hyperinflation develops variably during cardiopulmonary exercise test in COPD patients, even in those with the same extent of pulmonary function impairment at rest. Dynamic hyperinflation has a greater impact on maximal exercise capacity than 6MWD. As a marker of heavy dynamic hyperinflation during exercise, EELV_{max}/TLC ≥ 75% may reflect maximal exercise capacity of COPD patients.

Dose cigarette smoking exacerbate the effect of blood pressure on the risk of cardiovascular and all-cause mortality among hypertensive patients

Zeng Ge, Yongchen Hao, Jie Cao, Jianxin Li, Jichun Chen, Jianfeng Huang, Xigui Wu, Dongfeng Gu

State Key Laboratory of Cardiovascular Diseases, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences, Peking Union Medical College, Beijing 100037, China

Objective To examine the risk of cigarette smoking on cardiovascular disease (CVD) and all-cause mortality among hypertensive patients.

Methods We conducted a prospective cohort study among 36 943 hypertensive patients aged 40 years and older. Data on smoking and other variables were obtained at a baseline examination in 1991 and follow-up evaluation was conducted in 1999-2000 using standard protocols. Cox proportional hazards models were used to estimate relative risks (RRs) and 95% confidence intervals (CIs).

Results During a median follow-up of 8.2 years (276653 person-years), we documented 7194 deaths. Compared with never smokers, the overall multivariate-adjusted MRRs (95% CIs) of smokers were 1.28 (1.18, 1.37) and 1.31 (1.24, 1.38) for CVD and all-cause mortality. Compared with never smokers, the MRRs (95% CIs) for CVD mortality were 1.19 (1.07, 1.31) and 1.33 (1.23, 1.45) for those who smoked 0.1-19 pack-years and ≥ 20 pack-years (P values for linear trends < 0.001 for all), respectively. A similar pattern was observed for all-cause mortality. For example, the MRRs (95% CIs) for all-cause mortality were 1.23 (1.14, 1.32) and 1.36 (1.28, 1.45) for those who smoked 0.1-19 pack-years and ≥ 20 pack-years compared with never smokers (P values for linear trends < 0.001 for all), respectively. In addition, long term smoking exposure (≥ 20 pack-years smoked) was associated with a greater risk of CVD and all-cause mortality compared with those who were with short term smoking exposure (0.1-19 pack-years smoked). In subgroup analyses, among the systolic blood pressure groups (140-159, 160-179, and ≥ 180 mmHg), diastolic blood pressure groups (< 90 , 90-94, and 100-109 mmHg), and pulse pressure groups (50-59, 60-69, and ≥ 70 mmHg), we observed a dose response association between pack-years smoked and risk of CVD and all-cause mortality (all $P \leq 0.01$). In addition, compared to never smokers with stage 1 hypertension, MRRs of CVD and all-cause mortality for those who smoked ≥ 20 pack-years with stage 3 hypertension were 3.06 (2.65, 3.55) and 2.51 (2.24, 2.81), respectively.

Conclusions Cigarette smoking not only significantly increased the risk of CVD and all-cause mortality among hypertensive groups, but the synergistic effect on the risk of CVD and all-cause mortality existed between cigarette smoking and blood pressure category. Besides hypertension management, smoking cessation should be an essential component for preventing deaths related to smoking.

Higher concentrations of serum phosphorus within the normal range could be associated with more serious stenosis of the coronary artery in diabetic patients

Ximei Wang, Yongjian Wu, Yuejin Yang, Guangyuan Song, Hanjun Pei, Zhenyan Zhao
State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective High serum phosphorus levels have been associated with mortality and cardiovascular events in patients with chronic kidney disease. In addition, high phosphorus levels have been shown to induce vascular calcification and endothelial dysfunction. The aim of this study is to evaluate the relation of phosphorus and coronary stenosis in diabetic patients.

Methods The study included a retrospective analysis of 1011 stable coronary artery disease patients who were admitted to fuwai hospital from January 2008 to May 2008. The severity of coronary artery stenosis was quantified by Gensini score. Age, sex, previous diabetes and hypertension, systolic and diastolic blood pressure, serum concentrations of creatinine, calcium, phosphorus, glucose etc. were recorded. we divided subjects into 4 groups on the basis of their serum phosphorus concentrations (≤ 3.3 , > 3.3 to ≤ 3.6 , > 3.6 to ≤ 3.9 , and > 3.9 mg/dL). Data are expressed as mean \pm SD or frequency. Baseline clinical characteristics were compared by the chi-square test for categorical variables and the analysis of variance test for continuous variables. The unadjusted association between groups of serum phosphorus and coronary Gensini score was tested with the variance test. All $p < 0.05$ were considered statistically significant. Analyses were done using the statistical software SPSS 17.0.

Results We studied 1011 stable coronary artery disease patients, of which DM are 324 cases (32%), and non-DM are 687 cases. Serum phosphorus in DM Group is 3.8 ± 0.6 (mg /dL), while mean serum phosphorus in non-DM group is 3.6 ± 0.5 (mg /dL). Higher serum phosphorus was significantly associated with coronary Gensini score ($P = 0.02$) in diabetes, but not in non-DM patients ($P = 0.73$). And Women ($P = 0.004$) and old age ($P = 0.021$) had significantly higher serum phosphorus concentrations. A linear relationship between serum phosphorus and coronary Gensini score was analyzed by bivariate pearson correlation analysis. And the result showed that a positive correlation between serum phosphorus and coronary Gensini score existed in diabetic patients.

Conclutions Higher concentrations of serum phosphorus within the normal range could be associated with more serious stenosis of the coronary artery in diabetic patients. And there is a positive correlation between serum phosphorus and coronary Gensini score in diabetic patients.

In-hospital mortality and two-year survival after therapy with type a aortic dissection
Xiang Ma, Qinghua Yuan, Yitong Ma
Department of coronary heart disease, the first hospital of Xinjiang Medical University,
Urumqi 830054, China

Objective In order to gain more insight into the situation we investigated predictors of inhospital mortality of surgically or medicines treated type A aortic dissection patients and assessed two-year survival.

Methods 131 consecutive patients undergoing surgery or drug therapy for type A aortic dissection in a 6-year period (2005-2011) were evaluated. Preoperative and intraoperative variables were analysed to identify predictors of early mortality. Between the case fatality ratio of clinical linear relationship, using Cox regression analysis.

Results The characteristics and follow up outcomes were compared between the groups or subgroups. 131 patients have Stanford An aortic dissection, 41 patients have Aorta sandwich separation. Marfan syndrome was present in five patients and four patients had a bicuspid aortic valve. In-hospital mortality was 33.6%. Effect factors of in hospital mortality for patients with type A AD included stay in hospital time, gender, type A grade, therapy, use ACEI drugs, use beta blocker drugs, use CCB drugs; Multifactor COX regression revealed stay in hospital time, (risk ratio RR=0.828; 95%Confidence interval CI (0.764,0.896), P=0.000); the length of ICU stay (RR=1.204; 95%Confidence interval CI (1.085,1.336), P=0.000); gender (RR=0.287; 95%Confidence interval CI (0.114,0.680), P=0.005), symptom (RR=0.695; 95%Confidence interval CI (0.569,0.850), P=0.000); use beta blockers (RR=0.338; 95%Confidence interval CI (0.177,0.643), P=0.001); to be the only independent predictor of in-hospital mortality. Two-year survival was (60/131, 54.2%) (Including hospital mortality).

Conclusions The grade and therapy of type A aortic dissection Obvious influence short-term and long-term results. Chronic type A aortic dissection have lower in hospital mortality compare to acute aortic dissection, and be surgery patients have had higher survival rate than people with medical therapy. We need long-term, large sample data to predict type an aortic dissection in the hospital death and long-term survival risk factors.

Serum phosphorus and in-hospital outcomes in diabetic and non-diabetic coronary artery disease patients with normal renal function

Ximei Wang, Yongjian Wu, Yuejin Yang, Guangyuan Song, Hanjun Pei, Zhenyan Zhao
State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Dysfunction of mineral metabolism are involved in the pathogenesis of cardiovascular diseases. And high serum phosphorus has long been associated with increased mortality and cardiovascular events in patients with chronic kidney disease. The aim of this study is to evaluate the relationship between serum phosphorus and in-hospital outcomes in diabetic and non-diabetic coronary artery disease patients with normal renal function.

Methods The study included a retrospective analysis of 823 stable coronary artery disease patients with normal renal function who were admitted to fuwai hospital from January 2008 to May 2008. The normal renal function was defined by estimated Glomerular Filtration rate (eGFR) ≥ 90 ml/min/1.73 m², as calculated by the Modification of Diet in Renal Disease formula. And in-hospital events include death, heart failure, recurrent angina, ventricular fibrillation, atrial fibrillation. Age, sex, previous diabetes and hypertension, systolic and diastolic blood pressure, serum concentrations of creatinine, calcium, phosphorus, glucose etc were recorded. we divided subjects into 4 groups on the basis of their serum phosphorus concentrations (≤ 3.3 , >3.3 to ≤ 3.6 , > 3.6 to ≤ 3.9 , and > 3.9 mg/dL). Data are expressed as mean \pm SD or frequency. Baseline clinical characteristics were compared by the chi-square test for categorical variables and the analysis of variance test for continuous variables. The association between groups of serum phosphorus and in-hospital outcomes was tested with the chi-square test. All $p < 0.05$ were considered statistically significant. Analyses were done using the statistical software SPSS 17.0.

Results We studied 823 stable coronary artery disease patients with normal renal function, including serum phosphorus ≤ 3.3 mg/dL group 170 patients (20.6%), serum phosphorus > 3.3 to ≤ 3.6 mg/dL group 258 patients (31.3%), serum phosphorus > 3.6 to ≤ 3.9 mg/dL group 275 cases (33.4%), and serum phosphorus > 3.9 mg/dL group 120 patients (14.7%). The result showed there are no significant differences in in-hospital outcomes ($P = 0.67$) among different serum phosphorus groups for all patients. While there are no association between serum phosphorus and in-hospital outcomes not only in diabetic ($P = 0.53$), but also in non-diabetic patients ($P = 0.86$).

Conclutions Serum phosphorus is not associated with in-hospital outcomes in diabetic and non-diabetic coronary artery disease patients with normal renal function.

Circulating miR-133a reflect early myocardial injury and recovery after heart transplantation

Enshi Wang¹, Yu Nie¹, Zhe Zheng¹, Jie Huang², Shengshou Hu¹

1 State Key Laboratory of Cardiovascular Diseases, Fuwai Hospital & Cardiovascular Institute, Chinese Academy of Medical Sciences & Peking Union Medical College, National Center for Cardiovascular Diseases

2 Heart Transplantation Center, Fuwai Hospital & Cardiovascular Institute, Chinese Academy of Medical Sciences & Peking Union Medical College, National Center for Cardiovascular Diseases

Objective To monitor early myocardial injury and recovery after heart transplantation by circulating muscle-specific miR-133a.

Methods From July 6th to 27th, 2011, 7 consecutive patients undergoing heart transplantation in Fuwai hospital were included in our study. All patients were male, aged between 33-62 years (46.71 ± 12.31 years), among of whom 2 patients received ECMO support after transplantation. Serum CTnI concentrations were measured in peripheral blood obtained from patients at the day just after transplantation, the 1st day, 2nd day, and 3rd day after transplantation separately. Peripheral plasma were obtained at the 4 time point plus 7th and 14th day after transplantation for measuring miR-133a by RT-PCR. miRNA plasma concentration were calculated by absolute quantification method. Variation curve of miRNA plasma concentration were described. Correlation analysis were done between miR-133 and CTnI, as well as each of them with ischemia time and bypass time. CTnI and miR-133a concentration were compared between patients with or without ECMO support.

Results miR-133a concentration was shown change from high to low concentration early after operation. miR-133a correlated with CTnI significantly ($r=0.672$, $p<0.01$) ; It is not significant in correlation among warm ischemia time, cold ischemia time, bypass time, occlusion time and miR-133a plasma concentration, but CTnI value at 1st and 2nd day after transplantation correlated with bypass time($r=0.868$, $p<0.05$; $r=0.962$, $p<0.01$) ; Patients received ECMO showed higher miR-133a and CTnI concentration.

Conclusions The dynamic change in circulating muscle-specific miR-133a can reflect early myocardial injury and recovery after heart transplantation, which show us a new way for study in the donor heart injury.

Epidemiological evidence for the links between sleep duration and high blood pressure: a systematic review and meta-analysis

Xiaofan Guo¹, Liqiang Zheng^{2, 2}, Jun Wang¹, Yang Li¹, Yingxian Sun¹

1 Department of Cardiology, the First Affiliated Hospital of China Medical University

2 Department of clinical epidemiology, Library, Shengjing Hospital of China Medical University

Background Recent evidence-based studies suggest a U-shaped relationship between sleep duration and diabetes, cardiovascular diseases and all-cause mortality. The association between habitual sleep duration and hypertension is under discussion. We aim to assess whether the relationship between short or long sleep duration and hypertension is present from epidemiologic evidence, and investigate the relationship quantitatively.

Methods We performed a comprehensive search of cross-sectional and longitudinal studies using PubMed and the Cochrane Library through February 2012. This was supplemented by review of reference lists of original and relevant reviews. After the related data were extracted by two investigators independently, pooled odds ratios (ORs) or relative risks (RRs) were estimated using a random-effects model or a fixed-effects model. Publication bias was evaluated, and sensitivity and meta-regression analyses were performed.

Results Thirty-two articles met our inclusion criteria (24 studies among adults and 8 among children and adolescents), with age ranging from 3 to 106 years. Twenty-one adult studies involving 225858 subjects were included in the meta-analysis. The pooled result from cross-sectional studies showed that short sleep duration was associated with a greater risk of hypertension (OR: 1.21; 95% CI: 1.09 to 1.34, $P < 0.001$), and long sleep duration also increased the risk of hypertension (OR: 1.11; 95% CI: 1.04 to 1.18, $P=0.003$). There was no evidence of publication bias. Pooled analysis from longitudinal studies indicated a significant association between short sleep duration and hypertension (RR: 1.23; 95% CI: 1.06 to 1.42, $P=0.005$), but an insignificant relationship between long sleep duration and hypertension (RR: 1.02; 95% CI: 0.91 to 1.14, $P=0.732$). The effects of sleep duration differed by gender, location of the populations and definitions of short or long sleep duration. Meta-regression analysis including seven variables did not find the sources of heterogeneity. After a descriptive analysis of related studies among children and adolescents, we found this association was controversial.

Conclusions Among adults, a U-shaped relationship between habitual sleep duration and hypertension was found in a cross-sectional level. Short sleep duration was associated with a higher risk of hypertension even longitudinally. More attention needs to be paid to this lifestyle factor.

Blood pressure/height ratio: a new method for diagnosing pediatric hypertension

Xiaofan Guo¹, Liqiang Zheng², Yang Li¹, Xingang Zhang¹, Shasha Yu¹, Yingxian Sun¹

1 Department of Cardiology, the First Affiliated Hospital of China Medical University, Shenyang 110001, China

2 Department of clinical epidemiology, Library, Shengjing Hospital of China Medical University, Shenyang 110004, China

Objective A new method using systolic blood pressure-to-height ratio (SBPHR) and diastolic blood pressure-to-height ratio (DBPHR) for diagnosing hypertension in adolescents has been raised recently. We aimed to further confirm these criteria and examine whether it is applicable in children.

Methods We conducted a cross-sectional study consisted of 6837 children and adolescents aged 5-18 years. Blood pressure was measured by well-trained personnel and classified using the population-based percentiles.

Results The prevalence of hypertension and prehypertension were 20.4% and 14.9%, respectively. Areas under the receiver-operating characteristic (ROC) curve of SBPHR and DBPHR were all >0.9 across all ages except for that identifying the level of SBP between 90th and 95th percentile. For adolescents, similar cutoff points for diagnosing hypertension were found compared to previous study with high sensitivities and specificities, especially for stage 2 hypertension (all >95%). Among children, good diagnostic value was observed although the specificities were a bit lower (approximate 81-87%) with cutoff points 0.868/0.633 in boys and 0.872/0.585 in girls for stage 2 hypertension, and 0.836/0.54 in boys and 0.83/0.531 in girls for hypertension (stage 1 and 2).

Conclusions SBPHR and DBPHR were simple and practical for detecting hypertension, particularly stage 2 hypertension among adolescents and children if confirmed by further investigations.

Metabolic syndrome and incidence of hypertension in Beijing suburb women

Hongye Zhang¹, Wei Wei², Fuliang Xing³, Fengming Li², Quanliang Zheng³

1 Beijing Hypertension League Institute, Beijing 100043, China

2 Beijing Shahezhen Community Health Center, Beijing 102211, China

3 Beijing Shahe Hospital, Beijing 102206, China

Objective The purpose of our study was to explore the relationship between the metabolic syndrome (MS) and incidence of hypertension in Beijing suburb women residents.

Methods The prospective study was started in 2006 in Beijing Shahe down women. Totally 1548 women with normal blood pressure (<140/90 mmHg) at baseline were take part in the reexamination in 2009. The standardized epidemiological methods were used, baseline survey included interview, BP measurement, body mass index (BMI), family history of hypertension and fasting blood samples. The average of three blood pressure readings was used for data analysis. The definition of MS was according to criteria by IDF in 2005.

Results The baseline screen showed that the prevalence of metabolic syndrome was 14% in the 1458 women with age 40+-7yr. The mean of serum total cholesterol, triglycerids, Glucose Body mass index was significantly higher in MS group than it in non-MS group. The incidence of hypertension during 3 years was 14.9%, .12.3% and 30.9% for total population, non-MS group and MS group respectively. Logistic regression analysis showed that the MS was significantly increasing the incidence of hypertension (OR 2.5, 95% CI 1.773-3.527) after adjusted age and family history of hypertension.

Conclusions Our study supported that the MS was a independently risk factor for incidence of hypertension. It is suggested that the management of MS (multiple risk factors intervention) play an important role for community control of hypertension.

Research on the application of aerobic training and CPET in early rehabilitation after reconstruction of cruciate ligaments of knee joint

Yunfei Bai¹, Yun Ma¹, Chen Liang¹, Min Yang²

1 National Research Institute of Sports Medicine, Beijing 100763, China

2 Physical Education College of Shanghai University, Shanghai 200444, China

Objective This research intention to developed the effective programme of evaluated and maintained or improved cardiorespiratory adaptation of patients after reconstruction of cruciate ligaments of knee joint by CPET and the Upper extremity ergometry aerobic training during early rehabilitation (early 4 weeks).

Methods 16 patients (18-35ys) were divided into the control group and the training group respectively, then control groups exercised by general training prescription after operation, and training groups added aerobic training for 4 weeks. All subjects tested the CPET and serum VEGF, BFGF before and after 4 weeks of rehabilitation training.

Results 1. Control group displayed significant reduction ($p < 0.05$) of VO_2 peak, VO_2 peak/Kg, MET, O_2 Plus, SV, RQ, VT, and $Ca(a-v)O_2$, while significant increase ($p < 0.05$) of BR after 4 weeks training. And aerobic training groups showed increased markedly ($p < 0.05$) of VO_2 peak, VO_2 peak/Kg, MET, O_2 Plus, SV, $Ca(a-v)$, O_2 and V_E , while significantly reduction of VO_2 /WR. 2. The serum VEGF, BFGF significantly increased after 4 weeks training.

Conclusions 1. Cardiopulmonary adaptation is significantly reduced after 4 weeks general aerobic training, while it is significant increase after added aerobic exercise. 2. After 4 weeks of aerobic training the serum VEGF, BFGF expression showed highly level, which indicates aerobic training played a positive role on repair tendons ligaments.

Total cholesterol and risk of stroke among Chinese women

Huan Zhang¹, Jichun Chen¹, Ying Li², Jie Cao¹, Jianxin Li¹, Dongfeng Gu¹

1 Department of Evidence Based Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China

2 Department of Epidemiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China

Objective The relationship between total cholesterol (TC) and coronary heart disease is well established. However, the association between TC level and risk of stroke is less clear. We choose the female participants from a cohort study to explore the impact of baseline TC level on the risks of total stroke, ischaemic and haemorrhagic stroke in Chinese women.

Materials and Methods Of 13 957 women aged 35 to 74 at baseline, 11 197 participants have completed the follow-up survey and 10 329 participants with full information were analyzed in this study. Risks of total stroke, ischaemic and haemorrhagic stroke for each 1-mmol/L increase in TC level were evaluated using COX regression models.

Results Over the course of 82 079.92 person-years of follow-up, a total of 162 incident strokes were collected, including 100 ischaemic strokes, 54 haemorrhagic strokes and 8 unclassified strokes. The mean age was 48.1 years and mean TC was 4.85 mmol/L. After adjustment for age, hypertension, diabetes, overweight, cigarette smoking, alcohol drinking, region and urban, each 1-mmol/L increase in TC was significantly associated with a 13% and 18% higher risk of total stroke (HR=1.13, 95% CI:1.00, 1.28) and ischemic stroke (HR=1.18, 95% CI:1.00, 1.39), respectively. The multivariate-adjusted HR (95% CI) for haemorrhagic stroke was 1.06(0.86, 1.31).

Conclusions Higher TC level seems to be associated with increased risk of total stroke and ischaemic stroke in Chinese women. Large cohort studies are needed to confirm the relationship between TC levels and haemorrhagic stroke.

Effect of drinking on risk of all-cause mortality in women compared with men: a systematic review and meta-analysis of cohort studies

Chao Wang, Haifeng Xue, Qianqian Wang, Jichun Chen, Xigui Wu, Dongfeng Gu
Department of Evidence Based Medicine and Division of Population Genetics, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences, Peking Union Medical College, Beijing, 100037, Peoples Republic of China

Objective Although moderate alcohol consumption may lower risk for cardiovascular disease, alcohol consumption can increase the risk of cancer and injury. However, the results of studies which suggest on the different effect of drinking between men and women are not consistent. Therefore, we conducted this meta-analysis to summarize the effect of drinking on the risk of all-cause mortality in women compared with men.

Methods We pooled relative risk (RR) estimates (assuming a relationship of all cause mortality for drinkers versus non-drinkers by sex-stratified) from each study. Sex-specific RR and 95% CIs were used to estimate the female-to-male ratio of RR (RRR) and 95% CIs. Pooled estimates of RRR across studies were obtained by means of fixed-effect model. Nonetheless, the RRR was pooled using the random-effects model if heterogeneity was detected. Heterogeneity among studies was evaluated using Q test and I^2 statistic. Publication bias was estimated using modified Egger's linear regression test.

Results Twenty four cohort studies were considered eligible, which involved in 2,424,964 participants (male:1,473,899; female:951,065) and a total of 123,878 deaths (male:76,362; female:47,516) and reported multiple-adjusted and sex-stratified RR estimates of drinkers compared with non-drinkers. The risk of alcohol on total mortality in women and men is 0.92 (0.86, 0.99) and 0.88 (0.83, 0.93), respectively. RRR was combined using a fixed-effect model was 1.07 (95% CI: 1.02, 1.12; $p=0.004$) with no evidence of between-study heterogeneity ($I^2=26.7%$, $p=0.110$), which indication that women was at higher risk than men for the same amount of alcohol. Egger's test suggests that there was none publication bias ($p=0.929$). We used meta-regression to assess the contribution to heterogeneity of mean duration of study follow-up, sex ratio, prevalence of drinking in men or women. There were no significant impacts for outcome. Sensitivity analyses was calculated RRR and 95% CI comparing drinkers with life-time abstainers (RRR=1.06, 95% CI: 0.98, 1.14; $p=0.167$). Moreover, eleven studies reported multiple-adjusted and sex-stratified RR estimates of ex-drinkers compared with life-time abstainers. The pooled adjusted female-to-male RRR of ex-drinkers compared with life-time abstainers for all-cause mortality was 1.08 (95%CI: 0.92, 1.26; $p=0.339$).

Conclusions Women have an increased risk for mortality conferred by drinking compared with men by multiple-adjusted.

The impact of alcohol consumption on the risk of all-cause and cancer mortality in Chinese adults

Qianqian Wang¹, Jianxin Li¹, Jie Cao¹, Jichun Chen¹, Jianfeng Huang¹, Xigui Wu¹,
Xiufang Duan¹, Kristi Reynolds², Jiang He¹, Dongfeng Gu¹

1 Department of Evidence Based Medicine, Cardiovascular Institute and Fu Wai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China

2 Department of Epidemiology, Tulane University School of Public Health and Tropical Medicine, New Orleans, Louisiana, USA

Objective Moderate alcohol consumption is associated with decreased risk of coronary heart disease. However, excessive alcohol consumption might lead to addiction, traffic accidents and potential fatal medical problems. It was estimated that mortality attributable to excessive alcohol intake was equivalent to that attributable to tobacco. In China, drinking alcoholic beverages is a common feature of social gatherings and the prevalence of drinking keeps increasing, especially in women and adolescents. However, the relationships between alcohol consumption and all-cause and all-cancer mortality have not been well established in Chinese population.

Methods We assessed the effects of alcohol consumption on the risk of all-cause and all-cancer mortality in a large, prospective cohort study with nationally representative sample of 169,871 Chinese adults aged 40 years or older. The survey was initiated in 1991, and investigators for China National Hypertension Survey collected data on alcohol consumption and other risk factors at a baseline examination using a standard protocol. Follow-up evaluation was conducted in 1999 and 2000. Alcohol consumption was defined as having drunk alcohol at least 12 times during the past year. It was assumed that 12.5 gram of ethanol was one drink. Participants were classified into different groups by the amount of alcohol consumed per week (drinks/week). Light to moderate drinkers were stratified into <14.0 drinks/week in men and <7.0 drinks/week in women. Cox proportional hazard regression model was used for estimation of relative risks (RRs) and corresponding confidence intervals (CIs).

Results During an average 8.3 years of follow-up (1,055,739 person-years), 17,493 participants (9,815 men and 7,678 women) died, 3,803 of which died from cancer (2,376 men and 1,427 women). After adjusted for baseline age, systolic blood pressure cigarette smoking, body mass index, high school education, physical inactivity, geographic region and urbanization, U-shaped relationship was found between alcohol consumption and all-cancer mortality in men (*P* for nonlinear trend: <0.0001). The lowest all-cause mortality in men occurred with light to moderate alcohol consumption (<14.0 drinks/week), with corresponding RRs (95% CIs) of 0.85 (0.80 to 0.91). Alcohol consumption was linearly associated with total death in women (*P* for linear trend: 0.012). No benefit from light to moderate alcohol intake against all-cause mortality was observed in women, with RRs (95% CIs) of 1.21(1.04, 1.41). Causes of death associated with heavy drinking (≥ 35.0 drinks/week for men and ≥ 7.0 drinks/week for women) were total cancers, liver cancer, lung cancer, liver cirrhosis and unexpected death in men; and all-cause mortality, digestive cancer and stroke in women. In addition, increased risk was observed in the participants who started drinking in their early life. The protective effect of alcohol intake was not restricted to any specific type for all-cause mortality in men. Estimates of linear relative model suggested that greater drinks/day for a shorter duration was more deleterious than fewer drinks/day for a longer duration. Finally, we found that 4.0% of all-cancer deaths in men and 6.5% all-cause deaths in women were attributable to heavy drinking in China.

Conclusions Although the net benefit of moderate alcohol consumption for total mortality was observed in men, drinking of alcohol should be deliberated in public health implication considering the gender difference in alcohol metabolism and adverse effect of heavy drinking on the health of total population.

Routine upstream initiation versus deferred provisional tirofiban in acute coronary syndromes

You Zhang, Chuanyu Gao, Hongzhi Liu, Xianpei Wang, Honghui Yang, Muwei Li, Xianqing Wang, Zhongyu Zhu

Henan Provincial People's Hospital, Henan 450003, China

Our randomized multicenter trial aimed to determine the optimal timing of tirofiban administration in patients with moderate- or high-risk non-ST-segment elevated acute coronary syndromes (nSTE ACS). We randomized 302 consecutive eligible ACS patients into an early group routinely initiated with tirofiban ≥ 4 hours prior to angiography or into the downstream control group where tirofiban was administered only for bailout post-PCI. The primary efficacy composite end point was death from any cause, myocardial infarction (MI) or target vessel revascularization (TVR) at 30 days. The secondary efficacy end points were occurrence of thrombotic complications, and a composite of death or myocardial infarction at 7 days, 30 days and 6 months. Key safety end points were bleeding complications and thrombocytopenia. 286 patients were included in the intention-to-treat population. In the upstream group, tirofiban was administered a median of 5.75 (3.75, 7.83) hours earlier than in the downstream group. The primary efficacy end point at 30 days occurred in 1.4% of patients in the upstream tirofiban group vs. 3.7% in the deferred provisional tirofiban group ($p = 0.427$). The occurrence of thrombotic complications in upstream group was significantly lower (5.0% vs. 33.1%, $p < 0.0001$). The two groups showed no significant differences in other key second efficacy end points; although upstream tirofiban correlated with a non-significant increase in the rates of slight bleeding and thrombocytopenia. In conclusion, in patients with moderate- or high-risk nSTE ACS, routine upstream administration of tirofiban combined with aspirin and clopidogrel did not improve the 30 days efficacy composite end point significantly. Despite a lower prevalence of thrombotic complications during PCI, no beneficial effect on the clinical outcomes at 7 days, 30 days or 6 months, no increase of slight bleeding or thrombocytopenia was found, as compared to downstream provisional tirofiban.

Effects of obstructive sleep apnea and its treatment of cardiovascular risk in CAD patients

Qing Zhao¹, Zhihong Liu¹, Zhihui Zhao¹, Qin Luo¹, R.Doug McEvoy², Hongliang Zhang¹, Yong Wang¹, Xiuping Ma¹

1 State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Adelaide Institute for Sleep Health, Repatriation General Hospital, Daws Road, Daw Park SA 5041, Australia

Objective This study, in optimally treated CAD patients with newly diagnosed OSA, focused on (1) The relationships between OSA and serum biomarkers of four potential pathways of cardiovascular injury in OSA: high-sensitivity C-reactive protein (hs-CRP), endothelin-1 (ET-1), N terminal proB type natriuretic peptide (NT-proBNP) and fibrinogen; and (2) The effect of continuous positive airway pressure (CPAP) therapy on these markers.

Methods 151 Chinese patients with proven CAD and standard medication were enrolled. After polysomnography, patients were classified into four groups according to apnea-hypopnea index (AHI): no OSA (n Z 25); mild OSA (n Z 50); moderate OSA (n Z 43); severe OSA (n Z 33). Morning levels of hs-CRP, ET-1, NT-proBNP and fibrinogen were assayed and repeated in severe OSA patients after 3-months CPAP treatment.

Results Hs-CRP was greater in patients with severe OSA than those with no OSA or mild OSA (P Z 0.001, P Z 0.003; respectively). After adjustment for confounders, the hs-CRP levels correlated most strongly with AHI and oxygen desaturation index (ODI) (r Z 0.439, P < 0.001; r Z 0.445, P < 0.001; respectively). In stepwise multiple linear regressions, the strongest predictor of hs-CRP levels were ODI (P < 0.001). After 3 months of CPAP treatment, the hs-CRP levels decreased (P Z 0.005) in CAD patients with severe OSA.

Conclusions In CAD patients on current optimal medications, hs-CRP is significantly correlated with the severity of OSA, and the elevated hs-CRP levels can be decreased by CPAP. This suggests that OSA could activate vascular inflammation in CAD patients despite current best practice medications.

Genetic variants of ADH gene family are associated with drinking behavior in Han Chinese
Xueli Yang, Yongchen Hao, Xiangfeng Lu, Laiyuan Wang, Hongfan Li, Shufeng Chen,
Dongfeng Gu

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The harmful use of alcohol leads to ~2.5 million deaths each year in the world, and alcohol consumption is moderately heritable. Alcohol is converted to acetaldehyde by alcohol dehydrogenase (ADH) in the body. We performed this study to examine the genetic effects of variants in *ADH* gene family (*ADH1A*, *ADH1B*, *ADH1C*) on drinking behavior in Han Chinese.

Methods This study recruited 3990 subjects (993 drinkers and 2997 non-drinkers) aged 35-74 years, who completed an interview-based questionnaire that assessed demographic information, medical histories, and lifestyles including current alcohol intake and cigarette smoking. Participants were asked whether they drank ≥ 12 drinks in the previous year, and individuals who gave the positive answer were defined as drinkers. A total of 149 SNPs in or near *ADH1A*, *ADH1B* and *ADH1C* were selected to conduct association analyses. The association between these variants and drinking behavior was evaluated under additive genetic model, using logistic regression analyses with the adjustment of age, gender and smoke status.

Results We found that there were suggestive associations between drinking behavior and 8 common variants in the non-coding region of *ADH1A-ADH1B* ($P < 0.05$). In the linkage disequilibrium (LD) analysis, these variants showed in high LD with pairwise r^2 from 0.73 to 1.00, according to HapMap CHB data. Further, we performed epistatic analysis to test SNP-SNP interaction in the region of interest, but did not observed significant association.

Conclusions These results of genetic effects for common variants in *ADH* gene family may contribute to individualized prevention and control of alcohol-associated diseases in China.

Risk factors for elevated blood pressure surge in over-weight population with primary hypertension

Fangchao Liu, Yongchen Hao, Chen Huang, Xueli Yang, Jianfeng Huang

Function Testing Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To investigate risk factors for elevated blood pressure in over-weight population with primary hypertension.

Methods All the participants with body mass index (BMI) not less than 24 kg/m^2 were given 24 hour ambulatory blood pressure monitoring in 2005 and they all have taken anti-hypertensive drugs. 410 participants (245 males and 165 females) with age between 18-91 years were divided into morning surge (MS) group and non-morning (non-MS) surge group according to the 75% percentile (30mmHg) of systolic blood pressure morning surge. Binary logistics regression analysis was used to investigate the relationship between elevated morning surge and age, gender, BMI and blood pressure.

Results (1) The prevalence rate of elevated morning surge significantly increased with the rising of blood pressure ($P=0.013$). (2) Clinic systolic blood pressure were (151.8 ± 19.9)mmHg and (140.9 ± 22.8)mmHg, clinic diastolic blood pressure were (87.7 ± 13.8)mmHg and (82.9 ± 14.8)mmHg and clinic mean arterial pressure were (109.1 ± 13.3)mmHg and (102.2 ± 15.0)mmHg in MS group and non-MS group respectively, and the differences were statistically significant ($P < 0.01$). (3) Nighttime systolic blood pressure were (118.2 ± 16.0)mmHg and (123.5 ± 18.1)mmHg, nighttime diastolic blood pressure were (67.4 ± 10.3)mmHg and (72.0 ± 10.4) mmHg, nighttime mean arterial pressure were (84.3 ± 10.6)mmHg and (89.1 ± 11.3)mmHg and heart rate were in MS group and non-MS group respectively, and all the above parameters in MS group were higher than those in non-MS group ($P < 0.01$). Heart rate in MS group were (60.1 ± 7.9)bpm which was significantly lower than that of (62.7 ± 8.0)bpm in non-MS group ($P < 0.01$). (4) Binary logistics regression analysis found that compared with patients with normal blood pressure level after treatment, OR for patients with SBP between 160 and 179 mmHg and /or DBP between 100 and 109 mmHg was 1.79 (95% CI, 1.09-2.92; $P=0.02$) and OR for patients with SBP ≥ 180 mmHg and/or DBP ≥ 110 mmHg was 2.32 (95% CI, 1.22-4.42; $P=0.01$) respectively. In addition, the risk of female for elevated morning surge was 1.63 times that of male (OR, 1.63; 95% CI, 1.02-2.59; $P=0.04$).

Conclusions The risk for elevated morning surge increases in over-weight population with primary hypertension whose SBP ≥ 160 mmHg and/or DBP ≥ 100 mmHg. Therefore, reducing blood pressure is beneficial for controlling of morning surge which would decrease the incidence of cardiovascular events. Moreover, female over-weight population should be given more attention to.

Prognostic value of hemoglobin A1c in patients undergoing primary percutaneous coronary intervention for Acute myocardial infarction

Li Tian

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objectives We sought to evaluate the effect of hemoglobin A1c (HbA1c) level on the outcomes of primary percutaneous coronary intervention (PCI) for ST-segment elevation myocardial infarction (STEMI).

Methods A total of 608 consecutive patients with STEMI (mean age: 61.4 ±11.4 years, 481 men), undergoing primary PCI between June 2001 and July 2004, were prospectively enrolled in this study. Blood samples for HbA1c were obtained on the first 24 h after admission. Thirty days from admission to hospital follow-up was performed. By using new ADA criteria, patients were classified into three groups: group I (HbA1c ≤5.5%, n= 262); group II (HbA1c: 5.6–6.4%, n= 182); and group III (HbA1c ≥6.5%, n= 164).

Results Thirty days mortality was comparable among group I (3.8%), group II (2.2%) and group III (1.2%;P = 0.241). Major adverse cardiac events during follow-up did not differentiate significantly from group I (6.9%) to group II (4.4%) and group III (4.9%;P =0.481). Rates of target vessel revascularization and rehospitalisation were also consistent among three groups. After adjusting the baseline characteristics, anterior myocardial infarction, previous myocardial infarction, Beta-blocker and cardiogenic shock remained strong independent predictors of the short-term mortality. But HbA1c was not the independent predictor of short-term mortality (odds ratio: 0.577; 95% confidence interval: 0.306–1.088, P = 0.089). A total of 256 (50.2%) patients without a history of diabetes mellitus had elevated HbA1c of more than or equal to 5.6%, with 100 (19.6%) of them having HbA1c of more than or equal to 6.5%.

Conclusions Anterior myocardial infarction, previous myocardial infarction, Beta-blocker and cardiogenic shock are independent prognostic markers for short-term mortality; While HbA1c is not an independent predictor of the Short-term mortality in STEMI treated with primary PCI. Hemoglobin A1c level is associated with DM.

Alcohol consumption and the incidence of central obesity in Chinese cohort study
Wenwei Qi, Haifeng Xue, Jianxin Li, Jie Cao, Jichun Chen, Jianfeng Huang
State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for
Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical
College, Beijing 100037, China

Objective To examine the relationship between alcohol consumption and the incidence of central obesity in Chinese adults .

Methods We conducted a prospective cohort study among 27020 Chinese adults aged 35-74 years. Frequency and types of alcohol consumption and waist circumference were collected at the baseline examination in 1998 and 2000 using a standard protocol, respectively. Follow-up study was conducted during 2007 -2008. Alcohol consumption was defined as drinking alcohol at least once/week in the past year of the baseline survey. Central obesity was defined by the International Diabetes Federation (IDF). Logistic regression models were used to adjust for baseline covariables, and compute relative risk (RR) of central obesity associated with alcohol consumption.

Results Over an average follow-up period of 7.9 years, 3201 patients with central obesity were identified among 12911 individuals met the requirements for the final analysis. After adjustment for age, geographic variation (north vs. south), urbanization (urban vs. rural), education, physical activity and cigarette smoking, compared with nondrinkers, relative risks [RR (95% confidence interval)] of central obesity were 1.27(1.12~1.45) and 1.27(1.01~1.60) for male and female drinkers, respectively. The RRs (95% CI) of central obesity were 1.42 (1.10~1.83), 1.34(1.08~1.67) and 1.57 (1.31~1.89) for male drinkers consuming alcohol 10.1~20g/day, 20.1~40g/day, and >40g/day, respectively. The RRs (95% CI) of central obesity were 1.45 (1.17~1.80) for males drinking 2~5 times/week and 1.26(1.08~1.48) for males drinking ≥ 6 times/week. The RRs (95% CI) of central obesity were 1.48(1.02~2.13), 1.23(1.00~1.50), 1.39 (1.19~1.61) and 0.52(0.33~0.80) for male drinkers consuming beer-only, liquor-only, combination of beer and liquor and rice wine-only. The RRs of incident central obesity (95% CI) were 3.71(1.92~7.14), 1.62 (1.11~2.34) and 1.67(1.09~2.56) for female drinkers consuming alcohol 20.1~40g/day, drinking ≥ 6 times/week, and beer-only consumers, respectively.

Conclusions Drinking alcohol more than 10g/day in men and 20.1~40g/day in women are associated with an increased risk of incident central obesity. Drinking not less than twice per week in men and not less than six times per week in women can significantly increase the risk of central obesity. Drinkers consuming beer-only, liquor-only and combination of beer and liquor in men and beer-only in women can also raise the risk of central obesity. However, rice wine-only consumption can decrease the risk of central obesity in men.

The health economical values of the congenital heart disease prevention/treatment network in Guangdong province

He Li, Jian Zhuang, Meiling Shi, Mulan Deng, Xiaxing Jiang, Yifeng Cai, Jimei Chen, Shaoyi Zheng

Guangdong Cardiovascular Institute, Guangzhou 510080, China

Objective To analyze the health economical values of the congenital heart diseases (CHDs) prevention/treatment network in Guangdong Province for the control of direct medical economic burden (DMEB) and direct non-medical economic burden (DNMEB).

Methods The 196 CHD cases, been operated in Guangdong General Hospital in the year 2011, 89 of them (age 3.56 ± 2.15 , male 51 and female 38) in network group and 107 (age 3.23 ± 2.26 , male 61 and female 46) in non-network group, were investigated with the self-designed questionnaire including the items of the DMEB and DNMEB. The questionnaire was finished by the patient's parents or with the doctor's help after the informed consent. The congenital heart disease prevention/treatment network in Guangdong Province was set up in 2004, for early finding, diagnosis and treatment of the CHD patients, for the building of the green channels to CHD patients, for the approaching of "one station service" for CHD patients. The DMEB and DNMEB covered the total cost of the former hospitalizations or outpatients-therapy due to the CHD, before the current hospitalization and heart surgical operation. The DMEB included patient's costs of former medical examinations, medications and bedding and nursing while former hospitalizations, and so on. The DNMEB included family members' costs due to transportation, food and accommodation, waste time, and so on, while accompanying the patient. All the statistics was finished with SAS 9.2, the median (inter-quartile range) and mean \pm standard deviation (SD) were presented for the data central tendency, Wilcoxon rank sum test and t' -test for the significant difference tests.

Results The medians and inter-quartile ranges of DMEB relative to hospitalizations were 32367 (25981 - 35437) RMB-yuan in network group and 29125(24612 - 34765) in non-network group, respectively, with significant difference (Sum-rank test $Z=2.52$, $P<0.05$). The medians and inter-quartile ranges of DNMEB relative to hospitalizations were 1576 (815 - 2243) RMB-yuan in network group and 1231(734 - 1976) in non-network group, respectively, respectively, with significant difference (Sum-rank test $Z=2.21$, $P<0.05$). The mean \pm standard deviation(SD) of DMEB relative to hospitalizations were 34932 ± 13897 RMB-yuan in network group and 29871 ± 10432 in non-network group, respectively, with significant difference ($t' = 2.90897$, $P<0.05$). The result showed that the DMEB in the network group could be decreased 16.94%. The mean \pm standard deviation (SD) of DNMEB relative to hospitalizations were 1737 ± 1183 RMB-yuan in network group and 1421 ± 1012 in non-network group, respectively, with significant difference ($t' = 2.01544$, $P<0.05$). The result showed that the DNMEB in the network group could be decreased 22.24%. The medians and inter-quartile ranges of DMEB relative to out-patients were 6123 (4317 - 7123) RMB-yuan in network group and 5815 (4327 - 6854) in non-network group, respectively, with significant difference (Sum-rank test $Z=2.12$, $P<0.05$). The medians and inter-quartile ranges of DNMEB relative to out-patients were 1576 (815 - 2243) RMB-yuan in network group and 1231(734 - 1976) in non-network group, respectively, respectively, with significant difference (Sum-rank test $Z=1.46$, $P>0.05$). The mean \pm standard deviation (SD) of DMEB relative to out-patients were 8721 ± 4467 RMB-yuan in network group and 7145 ± 4356 in non-network group, respectively, with significant difference ($t' = 2.64894$, $P<0.05$). The result showed that the DMEB in the network group could be decreased 22.0574%. The mean \pm standard deviation (SD) of DNMEB relative to out-patients were 981 ± 632 RMB-yuan in network group and 842 ± 587 in non-network group, respectively, with significant difference ($t' = 1.69541$, $P>0.05$). The result showed that the DNMEB in the network group could be decreased 16.5083%. The results indicated that the relative ratio of DNMEB vs. DMEB relative to former hospitalizations was less than 5% and the relative ratio of

DNMEB vs. DMEB relative to outpatients-therapy was less than 12%.

Conclusions The direct economic burden (DEB) on CHD patients, including the DMEB and DNMEB, is still a heavy burden on the CHD patient and his/her family. The DMEB plays a much great role in the DEB. The relative ratio of DMEB vs. DNMEB was more than 95% for the former hospitalizations, and 88% for the former outpatients-therapy. It was noticed that significant difference was found in DMEB and DNMEB between the network group and non-network group. The results showed that the DMEB could be decreased 16.94% and the DNMEB be decreased 22.24% relative to former hospitalizations, and the DMEB could be decreased 22.0574% and the DNMEB be decreased 16.5083% relative to out-patients in the network group, which might be due to the decrease of visiting times to hospital in the network group. The results founded that the relative ratio of DNMEB to DMEB relative to former hospitalizations was less than 5% and the relative ratio of DNMEB to DMEB relative to former out-patients-therapy was less than 12%, so to decrease DMEB further will be an effective way to control DEB on the CHDs, or the more powerful social security system would be established for it.

A cross-sectional community-based study on integrated prevention and control of non-communicable chronic diseases in southern China

Jiaji Wang¹, Haoxiang Wang¹, Zhiheng Zhou¹, Fangjian Li¹

1 School of Public Health and General Practice, Guangzhou Medical University, China

2 School of Public Health and Primary Care, Faculty of Medicine, the Chinese University of Hong Kong

Background and Objectives Chinese government is now extending policy efforts into the establishment of an integrated network based on community health centers for the population-based prevention and control of non-communicable chronic disease (NCDs), as it is a major contributor to the burden of disease among Chinese population. This study aimed to investigate the current situation and distribution of NCDs among residents in the community and also to explore the associated factors to provide policy implications on prevention and control of NCDs.

Methods A cross-sectional community-based survey was conducted in Guangzhou in southern China from early 2009 to 2010. Multistage cluster random sampling method was adopted and 5% of adult residents with a “Hukou” household registry in each of the sampling units were randomly sampled to ensure the sample in the study was as representative of the general population as possible. All the statistical analysis were performed by SPSS 16.0 (Chicago, Illinois). Binary logistic regression models were constructed and p values ≤ 0.05 were regarded as statistically significant.

Results A total of 24,012 residents were sampled and residents aged above 60 years account for 13.98%. The majority (67.4%) had secondary education or below. Obesity (11.1%), hypertension (7.8%), chronic gastritis (3.2%), dyslipidemia (2.3%), and diabetes mellitus (1.8%) are the top five major NCDs among the residents in the community. Older age ($p=0.022$), physical inactivity ($p=0.035$), unhealthy diet ($p<0.001$), tobacco use ($p<0.001$), and inappropriate use of alcohol ($p=0.088$) are significantly associated with all major NCDs, whereas educational level ($p=0.306$) and household income ($p=0.716$) are not significantly associated factors.

Conclusions Risk factors for NCDs including high blood cholesterol, high blood pressure, obesity, physical inactivity, unhealthy diet, tobacco use and inappropriate use of alcohol are all preventable and modifiable. There is a high need to raise awareness for NCDs among Chinese population and to ensure that the prevention and control of NCDs is included in and placed on top of the agenda of health care strategic policies. The enforcement of industrial guidance and the guarantee of funding support also bear a high level of significance. Efforts need to put the policy into practice on the health promotion and sustainable modification of lifestyle risk factors associated with the identified major NCDs.

Application and analysis of grade criterion for hypertension management in Zhaohui community

Tianwu Jiang

Hangzhou city, Zhejiang 310014, China

Objective To analysis the role of hypertension control of community through the Grade Criterion for hypertension Management.

Methods In this study, Using cluster sampling method, we collected about community-based information of hypertension management of the residents in 2009 on the Zhaohui community compare to the information 2 years later.

Results In 2009, the management rate of patients with hypertension was 9.76%, standardized management rate was 94.46%, community residents of hypertension awareness, treatment and control rates were 68.70%, 85.69% and 54.45%, Until the end of 2011, the management rate of patients with hypertension was 12.93%, standardized management rate was 97.79%, residents of hypertension awareness, treatment and control rates were 80.51%, 87.34% and 57.50%, acute cerebrovascular and cardiovascular event rate were down as well.

Conclusions The intervention of Grade Criterion for hypertension Management made positive role in community residents of hypertension awareness, treatment and control rates.

VE/VCO₂ slope in patients with chronic heart failure and prognostic values

Yuqin Shen, Xiaoyu Zhang, Haoming Song, Lemin Wang, Lin Che, Jinfa Jiang, Wenjun Xu, Xiuqing Qi, Wenlin Ma, Hongbao Wang, Jiahong Xu, Wenwen Yan, Qiping Zhang, Guanghe Li

Department of cardiology, Tongji Hospital Affiliated to Tongji University, Shanghai 20065, China

Objective To evaluate the minute ventilation (VE)/carbon dioxide production (VCO₂) slope by CPET in patients with CHF and the prognostic value.

Methods Cardiopulmonary exercise testing on the bicycle ergometer were performed in 80 patients with LVEF <0.49 for CHF group, 59 age and gender and BMI matched control group (healthy people), CPET were documented. Receiver Operation Characteristic analysis (ROC analysis) of VE/VCO₂ slope for prognosis in patients with CHF due to cardiovascular reasons after mean 28.9±9.5 months follow up..

Results (1) The difference of VE/VCO₂ slope between patients with CHF and control group was statistically significant [(39.0±4.0) vs. (28.2±4.2) , $P < 0.001$], ROC analysis for predicting re-hospitalization in patients with CHF due to cardiovascular reasons, The AUC of Peak CPO is 0.838 ($P < 0.05$), and the sensitivity is 0.720 and the specificity is 0.860, The optimal threshold values of VE/VCO₂ slope predicting re-hospitalization in patients with CHF due to cardiovascular reasons was ≥ 32.9 .

Conclusions Ventilatory inefficiency in patients with CHF, VE/VCO₂ slope is a predictor of re-hospitalization due to cardiovascular reasons in patients with CHF.

Cardiac output response against exercise in patients with chronic heart failure and prognostic values

Yuqin Shen, Jinfa Jiang, Lemin Wang, Lin Che, Wenjun Xu, Haoming Song, Wenlin Ma, Hongbao Wang, Jiahong Xu, Wenwen Yan, Xiaoyu Zhang, Qiping Zhang, Guanghe Li
Department of cardiology, Tongji Hospital Affiliated to Tongji University, Shanghai 20065, China

Objective To evaluate the resting cardiac output (CO), PeakCO, Δ CO(change between Peak CO and CO),Peak CPO by CPET in patients with CHF and the prognostic values of these parameters.

Methods Cardiopulmonary exercise testing on the bicycle ergometer were performed in 80 patients with LVEF <0.49 for CHF group, 59 age and gender and BMI matched control group(healthy people), CO, peak CO, Δ CO, peakCPO were in both groups were documented and calculated by CPET. Receiver Operation Characteristic analysis(ROC analysis) of CO, Peak CO, Δ CO, Peak CPO for prognosis in patients with CHF due to cardiovascular reasons after mean 28.9 ± 9.5 months follow up..

Results (1) The difference of CO between patients with CHF and control group was not statistically significant ($P > 0.05$);Peak CO, Δ CO, Peak CPO were reduced significantly compared with the control group($P < 0.01$), ROC analysis for predicting re-hospitalization in patients with CHF due to cardiovascular reasons, The AUC of Peak CPO is 0.871 (P sensitivity is 0.800 and the specificity is 0.828,no significant differences about the AUC of CO, Peak CO ($P > 0.05$), The optimal threshold values of Peak CPO predicting re-hospitalization in patients with CHF due to cardiovascular reasons was ≤ 1.45 watts.

Conclusions CPET can be used as one of methods to detect exercise cardiac output in patients with CHF, Peak CPO ≤ 1.45 watts is a predictor of re-hospitalization due to cardiovascular reasons in patients with CHF,and the prognostic value of Peak CPO is moderate.

Gas exchange abnormality during cardiopulmonary exercise test in patients with primary pulmonary hypertension

Xiaoyue Tan, Yan Zhang, Wenlan Yang, Jinming Liu

Department of Respiratory Medicine, Shanghai Pulmonary Hospital Affiliated to Tongji University, Shanghai 200433, China

Background Decline in ventilation and oxygen uptake efficiency is found in patients with primary pulmonary hypertension. Such reduction may sustain from rest to exercise. Our primary hypothesis was that ratio of ventilation to CO₂ output (VE/VCO₂) and ratio of O₂ uptake to ventilation (VO₂/VE) would differ between normal subjects and patients during cardiopulmonary exercise testing (CPET).

Methods We administered incremental cycle ergometry tests to 20 normal subjects and 20 patients. We compared ratio of ventilation to CO₂ output (VE/VCO₂) and ratio of O₂ uptake to ventilation (VO₂/VE) at rest, unloaded pedaling, anaerobic threshold, and peak exercise.

Results Patients had distinguished decreased peak O₂ uptake ($P < 0.001$). The levels and patterns of change for two groups for VE/VCO₂ and VO₂/VE were significantly distinctive. As hypothesized, the patient group always had markedly higher VE/VCO₂ and lower VO₂/VE than normal subject group ($P < 0.001$). In addition, the fall in VE/VCO₂ between rest and peak exercise was slight for patients. In the contrast, the VE/VCO₂ distinguishably decreased with exercise for normal subjects ($P < 0.001$). At the same time, patients had slightly higher VO₂/VE at anaerobic threshold than rest. Comparatively, the VO₂/VE greatly increased at anaerobic threshold for normal subjects ($P < 0.001$).

Conclusions The levels and changes in VE/VCO₂ and VO₂/VE during CPET are distinctive for patients with primary pulmonary hypertension. CPET provides valuable information for diagnosis and evaluation for primary pulmonary hypertension.

The changing characteristics of cardiopulmonary exercise test in chronic obstructive pulmonary diseases patients

Hao Wu, Zhcai Zhou, Feng Xi, Guangsheng Qi, Wenlan Yang, Jinming Liu

Dept of Respiratory Medicine, New Pudong District People hospital, Shanghai 201299, China

Objective To study the changing characteristics of cardiopulmonary exercise test (CPET) in chronic obstructive pulmonary diseases (COPD) patients.

Methods 108 stable COPD male patients and 35 healthy men underwent pulmonary function test and CPET. The parameters of pulmonary function test included FVC、FVC %pred、FEV1、FEV1%pred、FEV1/FVC% and MVV%pred. The parameters of CPET included peakLoad、peakLoad %pred、peakVO₂ %pred、peakVO₂/kg、peakVE、peakHR and peakO₂ pulse. We compared these results between different stages of COPD group and control group.

Results There was a significant reduction in peakLoad of patients in mild COPD group in comparison to the control group; the peakLoad、peakLoad%pred、peakVO₂/kg、peakVE and peakHR of patients in moderate COPD were significantly reduced compared with those in control group; And all the parameters of CPET were significantly reduced in severe COPD group than those in control group.

Conclusions The variations of CEPT parameters in peak excising COPD patients were not identical. The perfection of CPET parameters could improve the existing classification of the COPD condition evaluation, as well as helps the doctors to master patients' conditions more thoroughly and find complications earlier. It has great significance in the guidance of patients' future treatment.

Study on the effect of sub-maximal exercise rehabilitation in community with chronic obstructive pulmonary disease patients

Hao Wu, Zhicai Zhou, Xingguo Sun, Guangsheng Qi, Wenlan Yang, Jinming Liu
Shanghai Pudong New Area People's Hospital, Shanghai 201200, China

Objective To study the effects of sub-maximal exercise rehabilitation in community with COPD patients.

Methods 28 severe COPD outpatients were entered the study and assigned to either the rehabilitation group(n= 15) or the control group(n= 13) randomly. Assessments included lung function test, cardiopulmonary exercise test, blood gas analysis, Borg dyspnea scale, COPD assessment Test (CAT) and Self-reporting Inventory (SCL-90) were performed before and after the rehabilitation program. Exercise trainings included jogging and climbing the stairs in community were conducted 30 minutes for three times each week in 12 weeks. We compared the effects of two groups after rehabilitation.

Results The rehabilitation group showed a significant improvement in peakLoad%pred and peakVO₂ %pred after rehabilitation, with the former increase from (63.5±13.8)% to (75.2±11.5)%, and the latter increase from (58.1±12.3)% to (64.7±10.0)%. The Borg dyspnea scales in both the rehabilitation group and the control group were ameliorated but the difference was not significant. Both the groups showed significant better in the CAT scores. The SCL-90 score in the rehabilitation group was significantly decreased from 191.7±13.9 to 163.4±15.4, which was not modified in the control group.

Conclusions The sub-maximal exercise rehabilitation in community had significant improvements in exercise capacity and dyspnea with severe COPD patients, and ameliorated the mental health furthermore.

The initial evaluation of monitoring activated clotting times during atrial fibrillation ablation

Bailing Dai

Dalian medical university hospital affiliated first heart medicine, Liaoning 116011, China

Objectives To evaluate the efficacy of empirical anticoagulation during AF ablation.

Methods 87 consecutive AF patients in our hospital were involved in this study. All patients underwent AF ablation. Based on our experiences, every patient received an intravenous heparin bolus 100 U/kg immediately after the initial transseptal access, followed by additional heparin 1000 U per hour until finishing procedures. ACT was measured 15 minutes after the initial transseptal puncture, then measured every 30 minutes during the whole procedure. $ACT \geq 250$ seconds was regarded as effective anticoagulation. Observe hemorrhagic and thrombotic events during the procedure and 1 month after procedures.

Results Effective anticoagulation based on empirical administer of heparin was 74.1%. No thromboembolic or hemorrhagic events occurred.

Conclusions Empirically administered of heparin during AF ablation procedure is effective and safe. It may be an alternative anticoagulation in AF ablation.

The effective assessment on community of fatty liver disease in middle-aged population

Yingwei Duan

ZhanLanLu Community Health Service Center, Beijing 100037, China

Objective Explore the community effective prevention of fatty liver in middle-aged population,

Methods Select 400 middle-aged patients managed by ZhanLanLu Community Health Service Center from October 2009 to October 2010, Through community health promotion networks, to fully use our existing community health resources, on the selected personnel with non-pharmacological intervention、 prevention-based community comprehensive prevention and control, Comparison of before and after intervention the relevant knowledge of fatty liver、 fatty liver risk factors and symptoms control in fatty liver patients.

Results The fatty liver-related knowledge is statistically significant difference before and after intervention ($P<0.001$).,there are significant differences in risk factors such as high-fat diet, excessive drinking, little movement etc. before and after Intervention($P<0.001$). Fatty liver is relieved than before.

Conclusions Through the community health promotion networks, Make full use of the existing health resources, to middle-aged people fatty liver community comprehensive prevention and control is effective.

Impact of completeness of percutaneous coronary intervention revascularization on peak oxygen uptake early after acute ST-elevation myocardial infarction

Wei Zhao, Jin Bai, Fuchun Zhang, Hongyan Wang, Wei Gao

Department of Cardiology, Peking University Third Hospital; Key Laboratory of Cardiovascular Molecular Biology and Regulatory peptides, Ministry of Health; Key Laboratory of Molecular Cardiovascular Sciences, Ministry of Education, Beijing 100191, China

Background The importance of completeness of revascularization by percutaneous coronary intervention (PCI) in patients with acute myocardial infarction is unclear in that there is little information on the impact of incomplete revascularization outside of randomized trials.

Objective The objective of this study is to compare peak oxygen uptake early after acute ST-elevation myocardial infarction (STEMI) for percutaneous coronary intervention patients receiving stents who were completely revascularized (CR) with those who were incompletely revascularized (IR).

Methods We retrospectively reviewed 176 patients with multivessel coronary heart disease (CR group, 93 patients; IR group, 83 patients) who underwent cardiopulmonary exercise testing (CPET) early after STEMI in a single exercise laboratory. Demographic data, presence of concomitant diseases, characteristics of STEMI, echocardiography and angiography findings were evaluated.

Results There is no significant difference between patients of CR and IR in Vo_{2peak} early after STEMI ($P=0.211$). After adjusted by subject demographic features, clinical characteristics and cardiovascular risk factors, Vo_{2peak} of IR is still not inferior to that of CR.

Conclusions In conclusion, the exercise tolerance early after STEMI for IR was not inferior to that for CR in patients with multivessel coronary heart disease undergoing successful PCI.

The effect of rehabilitation exercise on sport endurance of elder patients with coronary artery disease after PCI

Liyue Zhu, Yan Wang, Aihua Ren

Rehabilitation Center, Zhejiang Hospital, Hangzhou, Zhejiang 310013, China

Objective To evaluate the effects of rehabilitation exercise on sport endurance of elder patients with coronary artery disease after PCI with 6-minute walking test.

Methods 42 elder CHD patients with coronary artery disease after PCI were divided into two groups, 21 patients in rehabilitation group and control group respectively. The patients in rehabilitation group participated in rehabilitation exercise for 3 months. Two groups were measured in six minute walking test with COSMED K4b² to observe the change of VO₂max, HRmax, METsmax, maximal walking distance and VO₂/HR at the beginning and the end of the test.

Results The VO₂max, METsmax and maximal walking distance were significantly increased in rehabilitation group after 3 months rehabilitation(*ppp*)

Conclusions Rehabilitation exercise was beneficial to improve heart function and sport endurance of elder patients with coronary artery disease after PCI.

The predictive value of inspiratory fraction to exercise capacity in patients with stable moderate to severe chronic obstructive pulmonary disease

Yan Zhang¹, Jinming Liu³, Wenlan Yang³, Xiaoyue Tan³, Xingguo Sun²

1 SooChow University/ Department of Respiratory Medicine, Shanghai Pulmonary Hospital affiliated to Tongji University, 215006, China

2 Los Angeles Biomedical Research Institute at Harbor-UCLA Medical Center, St.John

3 Department of Respiratory Medicine, Shanghai Pulmonary Hospital affiliated to Tongji University, Shanghai 200433, China

Objective To study the relationship between inspiratory-to-total lung capacity ratio or inspiratory fraction to exercise capacity in patients with stable moderate to severe chronic obstructive pulmonary disease.

Methods Pulmonary lung function test(PFT) and Cardiopulmonary exercise testing(CPET) were tested in 50 patients with stable moderate to severe chronic obstructive pulmonary disease and 34 controls, and measured the parameters of ventilation and gas exchange. The stopped reasons at the end of exercise testing were being noted.

Results (1)IF was significant associated with peak $VO_2\%pred$ ($r=0.52, p<0.001$) in COPD and remained as independent predictor in the final model: $peak\ VO_2\%pred = 65.9IF + 0.45FEV_1\%pred + 35.8$

($R_c^2=0.39, p<0.001$) ,the sensitivity and specificity of IF for predicting exercise capacity were both better than $FEV_1\%pred$, (2)The patients with $IF<0.23$ had lower peak VE and lower peak VT than the patients with $IF\geq 0.23$, and their peak breath frequencies had no significant difference.

Conclusions Inspiratory fraction provides the efficient information to reflect lung hyperinflation and to estimate the exercise capacity in patients with stable moderate to severe chronic obstructive pulmonary disease, and its predictive value is better than $FEV_1\%pred$.

The relationship between anxiety and depression and muscle wasting and the exercise cardiopulmonary responses in patients with chronic obstructive pulmonary disease

Liyue Peng¹, Kewu Huang¹, Xingguo Sun¹

1 Beijing Chaoyang Hospital, Department of Anesthesiology, Beijing 100020, China

2 State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Anxiety and depression could impair the health status of patients with chronic obstructive pulmonary disease in many ways. This study was to discuss the relationship between anxiety and depression and muscle wasting and the exercise cardiopulmonary responses in COPD patients through the assessment of emotional status, muscle mass, inflammation level and cardiopulmonary exercise testing.

Methods We recruited 62 patients with COPD who were in the stable conditions. After signed the consent form, Demographic data would be collected. All subjects would be divided into 2 groups by Hospital Anxiety and Depression Scale, (HADS), the AD+ group (HADS-A and/or HADS-D \geq 8) and the AD- group (HADS-A and HADS-D $<$ 8). Then, we performed spirometry, color doppler echocardiography examination and estimated the muscle mass by bioelectrical impedance analysis method (BIA). We also detected the level of serum TNF- α , before the cardiopulmonary exercise testing.

Results 1 The fat free mass index of AD+ group was significantly lower than the AD- group (FFMI, 16.4 ± 1.6 kg/m² vs. 18.6 ± 1.9 kg/m², $P = 0.008$). 2 The level of serum TNF- α was significantly higher in AD+ group than AD- group (3.1 ± 0.7 pg/ml vs. 2.9 ± 0.7 pg/ml, $P = 0.046$), and the TNF- α was correlated with FFMI ($r = -0.423$, $P = 0.032$), even after control the age and FEV₁%. 3 Wmax%pred and VO₂max%pred was much lower in AD+ group ($53.5 \pm 17.1\%$ vs. $67.5 \pm 16.4\%$, $P = 0.048$, $53.7 \pm 12.2\%$ vs. $68.3 \pm 12.1\%$, $P = 0.001$). 4 RR and Δ RR were higher, Tx was shorten in patients with anxiety or depression (0.9 ± 0.2 s vs. 1.3 ± 0.3 s, $P = 0.033$), while the V_E max%, was lower ($41.0 \pm 13.9\%$ vs. $50.6 \pm 11.2\%$, $P = 0.031$) and the EELV/TLC was higher ($78.8 \pm 5.0\%$ vs. $75.0 \pm 5.4\%$, $P < 0.001$) in AD+ group after maximal exercise. There was no difference in maximal O₂ pulse, cardiac function and spirometry.

Conclusions Our study found that the COPD patients with anxiety or depression had more muscle wasting, which was associated with the systemic inflammatory level. Patients with anxiety and depression had worse exercise performance and abnormal breath pattern during maximal exercise testing, reflected by the increasing of RRmax, the shortness of Tx max, the lower of V_E max% and the worsening of dynamic hyperinflation. However, there was no difference in the baseline cardiopulmonary function and the cardiac response during exercise between these 2 groups.

Development of mechanical right ventricular support – current status and future outlook

Po-Lin Hsu¹, Jack Parker², Christina Egger¹, Rüdiger Autschbach², Ulrich Steinseifer¹

1 Department of Cardiovascular Engineering, Institute of Applied Medical Engineering, Helmholtz

2 Department of Cardiothoracic and Vascular Surgery, University Hospital Aachen, Aachen, Germany

The increasing global prevalence of congestive heart failure is a major healthcare concern for high patients that has a poor prognosis and is associated with a greater than 70% mortality rate. When heart failure has gone beyond the treatment capacity of drug therapy and in light of the shortage of suitable donors for heart transplantation, mechanical cardiac assistance in the form of ventricular assist devices (VADs) has become accepted as a therapeutic solution for end-stage patients.

However, right ventricular assist devices (RVADs) are still in the early development phase when compared to left ventricular assistance. To date, most clinically available RVADs are extracorporeal and only available for short-term use. They are associated with complications such as poor blood compatibility and high infection rates. Some paracorporeal and implantable devices provide mid- to long-term support but the invasive procedure required means they are usually offered to the critically ill patients.

Current RVAD systems, clinically available and under development, are reviewed and categorized according to their functionality, type of support, and target therapies. Clinical RVADs include the extracorporeal pulsatile Abiomed BVS 5000 and AB 5000, Thoratec PVAD, MEDOS VAD, BerlinHeart Excor, the percutaneous continuous flow CentriMag and TendemHeart systems, and the implantable Thoratec IVAD. Devices on the horizon, including the wear-free implantable DexAide and the minimally invasive Impella RV, are reviewed. Several evolving technologies in blood pump applications hold the potential to provide the best possible RVAD system are discussed, including foldable pump structure, miniature drive technology, contactless bearing system, transcutaneous energy supply, and adaptive physiological controller.

There remains a definite need for a RVAD which can be implanted with minimally invasive (surgical and imaging) techniques to offer more flexible therapy for wider range of patients. In developing novel approaches to mechanically support the pulmonary circulation, criteria and aims to overcome the significant limitations and bridge the unmet needs of current RVAD technologies are identified. The successful fulfillment of the requirements will allow the augmentation of cardiovascular performance in order to allow recovery and offer a significant boost in quality of life.

Observation on effect of trimetazidine in treating unstable angina pectoris

Guizhou Tao

Liaoning medical school affiliated hospital heart medicine first, Liaoning 121001, China

Objective To observe the clinical efficacy, the effect to CRP and safety of trimetazidine combined with traditional drugs in patients with UA.

Methods 50 cases with UA were randomly divided into 2 groups: the control group. The treatment group, each with 25 cases. The angina attack times, the duration of angina pectoris, the dose of nitroglycerin, main clinical symptoms of angina, angina pectoris classification, ECG, heart rate, blood pressure and CRP changes of the 2 groups before and after treatment were recorded.

Results After treatment, the attack of angina frequency, duration time of per day and nitroglycerin dose of both group were smaller than those of pre-treatment. The difference between the treatment group and the control group is statically significant ($P < 0.05$).

Conclusions Trimetazidine combined with traditional drugs can significantly improve the clinical symptoms and myocardia ischemia and decrease inflammatory active levels in UA patients.

Right ventricular dysfunction in adult patients after repair of tetralogy of fallot

Huangfei Qiong, Tanju Le

Cardiology Department

Background After repair of Tetralogy of Fallot (TOF), dilation and dysfunction of the right ventricle (RV) due to chronic pulmonary regurgitation is very common. The manifestations of RV dysfunction include abnormalities of both systolic and diastolic function. Global and regional systolic RV functions are well documented, but a few studies focused on early diastolic dysfunction of RV. We aim to assess the RV dysfunction defined as delayed onset of the tricuspid annulus velocities after TOF repair.

Methods 52 patients with repaired TOF (mean age: 41 ± 18.5 y, male: 28) who underwent echocardiography were involved in our study. The time intervals of R wave on ECG to the onset of tricuspid annulus velocities (R-RV S', R-RV E', R-RV A'), septal, mitral annulus velocities (R-LV S', R-LV E', R-LV A') and lateral wall of left ventricular velocities (R-LV I S', R-I E', R-I A') were recorded.

Results R-RV S' and R-RV E' increased significantly in comparison to the LVseptal and lateral wall. See Table 1. R-RV E' was correlated significantly with the severity of pulmonary regurgitation ($p < 0.01$).

Conclusions There is a significant difference in the RV and LVtime intervals between the onset of electrical conduction and mechanical activity both in systole as well as early diastole. This is a further reflection of the interventricular dyssynchrony both in systole and diastole in patients post TOF repair. The severity of pulmonary regurgitation may affect the timing of RV relaxation.

Analysis and evaluation of China chronic non communicable diseases prevention and treatment guidelines status

Haiqin Tang, Lin Ding

Department of Geriatric Cardiovascular Diseases, the First Affiliated Hospital of Anhui Medical University, Hefei 230032, China

Objective Analyze the present situation of China NCD' prevention and treatment guidelines .to provide the proper evidence-based technology for China NCD' prevention and cure.

Methods Describe and analyze the guidelines' name、published year、development method、references' number, etc. Use AGREE tools (an evidence-based tools to evaluate clinical guidelines) evaluate the latest version of China NCD' clinical guidelines.

Results ①China NCD guidelines retrieve eight in total: The china hypertension prevention and cure guideline(2009-for Grassroots)、Guidelines for Prevention and Treatment of Hypertension in China(2010)、China T-2DM Prevention and Cure Guideline(2010)、Clinical Guidelines for Self-monitoring of Blood Glucose in China(2011)、Guidelines for China Ischemic Stroke 's Prevention and treatment(2010)、The guideline of COPD's diagnosis and cure(2007)、The guideline of Chronic stable angina's diagnosis and treatment(2007)、The guideline of Chronic heart failure's diagnosis and treatment(2007). Among them, The grassroots version have HBP 2009 only. ②.The score average in six fields of the eight guidelines is 89.6%、51.8%、55.7%、85.1%、55.9%、37.5%.Among them, These guidelines(HBP2009、HBP2010、T-2DM2010、Ischemic Stroke 2010、blood glucose 2011) are positive recommended guidelines. Angina guideline 2007 and Heart-failure guideline 2007 are recommended guidelines.

Conclusions ①.Overall, guidelines of China NCD' prevention and treatment have higher quality, but still have many defects. And these defects have a lot common. ②There are still less suitable NCD' basic unit guidelines in China, we need to develop more NCD' guidelines in line with grassroots realities of China.

Relationship between carotid atherosclerosis and PAI-1、 Fg in patients with type 2 diabetes mellitus

Zhenci Li, Yi Luo, Yang Yang, Guihong Gong, Wenxia Huang

Department of Cardiology, the First Municipal People's Hospital of Guangzhou, Guangzhou Medical College, Guangzhou 510180, China

Objective To research the correlation of inflammatory markers plasminogen activator inhibitor-1 (PAI-1) 、 fibrinogen (Fg) with carotid atherosclerosis in Patients with Type 2 Diabetes Mellitus(T2DM)

Methods 200 subjects were enrolled, including 158 in-patients from Department of Cardiology and 42 health residents. All subjects received clinical measures included systolic blood pressure (SBP), diastolic pressure (DBP), waist circumference (WC), body mass index (BMI, kg/m^2) was calculated based on height and weight. Plasma fasting blood glucose (FPG), fasting insulin, lipids, uric acid (UA) and the blood levels of PAI-1、 Fg were also measured respectively. Correlation of PAI-1、 Fg levels in T2DM patients with carotid atherosclerosis was analyzed.

Results 1. The blood levels of PAI-1、 Fg in patients with T2DM were higher than those health residents($P<0.05$). The PAI-1、 Fg levels in T2DM patients with carotid atherosclerosis were significantly higher than those in T2DM patients without carotid atherosclerosis($P<0.05$).2. The stepwise regression analysis showed that The blood levels of PAI-1、 Fg was independently associated with the carotid IMT.

Conclusions T2DM with carotid atherosclerosis may be correlated with the high levels of PAI-1、 Fg, which may be risk factors of T2DM with macroangiopathy.

Cardiovascular Imaging and Laboratory Medicine

The relationship between myocardial viability and discrepancies of left ventricular volumes and ejection fraction assessed by gated SPECT and gated PET in patients with left ventricular aneurysm

Congna Tian¹, Minjie Lu², Hongxing Wei¹, Yueqin Tian¹, Shihua Zhao², Zuoxiang He¹, Xiaoli Zhang¹

1 Department of Nuclear Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Department of Radiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To investigate the relationship between myocardial viability and the difference of left ventricular volumes and left ventricular ejection fraction (LVEF) measured by gated SPECT (g-SPECT) and gated PET (g-PET) in patients with left ventricular aneurysm.

Methods Forty-nine patients with left ventricular aneurysm diagnosed by MRI were examined using ^{99m}Tc-MIBI g-SPECT and ¹⁸F-FDG g-PET. MRI was performed within 2 weeks. End diastolic and systolic volumes (EDV,

ESV), and LVEF were assessed using QGS. The differences of EDV, ESV and LVEF between g-SPECT and g-PET were calculated. Then, the correlation between the differences and all the parameters were analyzed, which including summed rest score (SRS), summed FDG score (SFS), mismatch score (MMS, SRS-SFS), viable segments (MMS \geq 1), scar segments, dyskinetic segments (wall motion score \geq 4 or wall thickening (WT) score=3).

Results For EDV and ESV, correlation was high between g-SPECT and g-PET ($r=0.90, 0.91$, SEE=38,37ml). For LVEF, correlation was moderate between g-SPECT and g-PET ($r=0.80$, SEE=10%). Compared with MRI (31 \pm 10%), LVEF were underestimated by g-SPECT (28 \pm 8%, $P<0.01$), but overestimated by g-PET (35 \pm 12%, $P<0.01$) and delta-EF was negatively related to the dyskinetic segments by WT ($r=-0.44, -0.43$, $P<0.01$). No any parameters were related to delta-EF between g-PET and g-SPECT, whereas delta-EDV was related to SRS, SFS, the scar segments, the dyskinetic segments by both wall motion and WT ($r: 0.53, 0.54, 0.4, 0.37, 0.37$, respectively, $P<0.05$). Delta-ESV between g-SPECT and g-PET was related to the dyskinetic segments by both wall motion and WT ($r=0.38, 0.46$, $P<0.01$).

Conclusions In patients with left ventricular aneurysm, the difference of EF between g-SPECT and g-PET was unrelated to myocardial viability, but differences of volumes were related to the scar segments. g-SPECT and g-PET seem not to be interchangeable for LVEF and volumes.

Evaluation of remifentanil anesthesia for off-pump coronary artery bypass grafting surgery by heart rate variability

Aihua Shu

The First Peoples Hospital of Yichang, Hubei Province, Yichang 443000, China

Objective Use heart rate variability to evaluate the value of a target-controlled manner, compared with a constant rate manner, during remifentanil anesthesia for off-pump coronary artery bypass grafting (OP-CABG) surgery.

Subjects 55 ASA physical status II and III patients, aged 60-85 years, scheduled for OP-CABG in our hospital between June 2008 and May 2010.

Methods All patients received intramuscular 10 mg morphine and 0.3 mg scopolamine premedication. In group I, remifentanil was infused in a target-controlled manner at 1.5–5.0 ng/mL, and in group II, remifentanil was infused at a constant rate of 0.05–1.0 $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ and at additional single increments of 1 $\mu\text{g}/\text{kg}$ remifentanil when appropriate.

Results The heart rate (HR) and other hemodynamic monitoring indices, including mean arterial pressure, central venous pressure, pulmonary artery pressure, and pulmonary capillary wedge pressure, were monitored before induction (T0), at extubation (performed intraoperatively; T7), and at 24 h after surgery. HRV indices, including TP, LF, and LF/HF, decreased after induction at T0 and remained low at 24 h after operation. At T5 (right coronary or left circumflex artery anastomosis) and T7 (tracheal extubation), all HRV indices, except for the high frequency power, were significantly increased ($p < 0.05$). Additionally, the TP, LF, and LF/HF in group II were higher than those in group I at T5 ($p < 0.05$).

Conclusions The remifentanil target-controlled infusion is superior to constant-speed infusion in suppressing the stress response during OP-CABG, maintaining the balance of the cardiac autonomic nervous system, and promoting the recovery of the autonomic function after surgery.

Accuracy of gated ^{99}Tcm -MIBI SPECT for determination of left ventricular function in patients with left ventricular aneurysm: comparison with MRI

Congna Tian, Minjie Lu, Hongxing Wei, Yueqin Tian, Shihua Zhao, Zuoxiang He, Xiaoli Zhang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The clinical value of gated SPECT in patients with severe left ventricular (LV) remodeling wasn't determined. To evaluate the value of gated SPECT (QGS) in assessing LV end-diastolic and end-systolic volumes (EDV, ESV) and ejection fraction (LVEF) in patients with LV aneurysm, using MRI as a reference.

Methods Seventy-nine patients with previous myocardial infarction (anterior 76; inferior 1; lateral 1) and LV aneurysm were examined using gated ^{99}mTc -MIBI SPECT. EDV, ESV and LVEF were calculated using QGS, and segments with absent uptake (activity $\leq 30\%$) were analyzed using QPS and a 17-segment model. MRI was performed within 2 weeks.

Results Good correlation was observed between gated SPECT and MRI for EDV ($r=0.85$, $\text{SEE}=37\text{ml}$), ESV ($r=0.88$, $\text{SEE}=32\text{ml}$) and LVEF ($r=0.78$, $\text{SEE}=7\%$). LVEF were underestimated by QGS ($28\pm 8\%$ vs. $30\pm 10\%$, $P<0.01$), whereas EDV and ESV did not differ compared with cMRI (EDV: $197\pm 71\text{ml}$ vs. $194\pm 60\text{ml}$, ESV: $145\pm 64\text{ml}$ vs. $138\pm 57\text{ml}$, all $P=\text{NS}$). Patients were subgrouped into Group 1 with <3 segments of absent uptake and Group 2 with ≥ 3 segments of absent uptake. In Group 1, correlation between QGS and cMRI was high for all parameters (EDV: $r=0.90$, $\text{SEE}=28\text{ml}$; ESV: $r=0.92$, $\text{SEE}=23\text{ml}$; LVEF: $r=0.84$, $\text{SEE}=6\%$). EDV was slightly underestimated by QGS ($175\pm 62\text{ml}$ vs. $185\pm 54\text{ml}$, $P=0.049$), while ESV and LVEF didn't differ significantly. In Group 2, correlation between QGS and cMRI was high for EDV ($r=0.83$, $\text{SEE}=41\text{ml}$), ESV ($r=0.88$, $\text{SEE}=34\text{ml}$), but moderate for LVEF ($r=0.75$, $\text{SEE}=7\%$). ESV was overestimated by QGS ($157\pm 66\text{ml}$ vs. $143\pm 59\text{ml}$, $P<0.01$), and LVEF was underestimated by QGS ($27\pm 8\%$ vs. $30\pm 9\%$, $P<0.01$).

Conclusions Although with severe left ventricular remodeling in patients with LV aneurysm, the correlation between gated SPECT and MRI was good for EDV, ESV and LVEF, especially in patients with less extent of severe perfusion defects.

The role of the intravascular ultrasound in PCI

Minghui Wang, Xiong Huang, Jun Luo, Xuebin Cao

NO. 252 PLA Hospital Heart Center, Baoding, Hebei Province 071000, China

Objective The aim of this study was to show the important supplementary role of intravascular ultrasound in PCI. Patients underwent coronary angiography accepted intravascular ultrasound (IVUS) check to help the diagnosis and the choice of stents, as well as to determine the degree and character of lesions in patients of borderline lesions and complex coronary lesions.

Methods IVUS check underwent in 50 cases, including 73 vessels, who accepted coronary angiography during Jun 2010 to April 2011 in our hospital. 38 cases were male, 12 cases were female, average ages were 57.13 ± 13.21 years. 5 cases were follow-up post implantment of stent, and post operation range was 2-25 months, average 11.8 ± 9.33 months. Borderline lesions (coronary artery stenosis between 50-75% confirmed by coronary arteriography) were 19 cases, 25 cases were complex coronary lesions, including right coronary artery lesions 3 cases, left anterior descending artery lesions 9 cases, left main branch lesions 12 cases, acute myocardial infarction secondary to chest trauma 1 case. The intravascular ultrasound instrument was supplied by Volcano Corp. American. The frequency of ultrasound probe was 20 MHz. Auto pullback system was used. The pullback rate was 0.5-1 mm/s. We measured the minimum lumen diameter, the maximum lumen diameter, the minimum extra-elastic membrane (EEM), the maximum EEM, the EEM-CSA, the plaque burden, the lumen CSA and the lumen area stenosis of the stenosis segment, and the minimum lumen diameter, the maximum lumen diameter of the reference segment. In the cases of borderline lesions, the standards of intervention under the guided of IVUS were 1) The minimal lumen area (MLA) of the infarction related artery (IRA) except left main artery $\leq 4.0 \text{ mm}^2$ or area stenosis rate $\geq 60\%$ shown by IVUS received percutaneous coronary intervention (PCI); 2) The minimal lumen area (MLA) of the infarction related left main artery $\leq 6.0 \text{ mm}^2$ or area stenosis rate $\geq 50\%$ shown by IVUS received percutaneous coronary intervention (PCI). The efficacy of intervention therapy guided by IVUS: 1) stent sufficient adherence; 2) stent sufficient expansion; 3) stent expand shapely; 4) cover the lesion sufficiently. IVUS were performed before and after stent implantation, to assist the choice of stents size, and to evaluate the outcome of stent with adherence or expansion. All the patients were followed up for 1-8 months after the procedure to collect the date of angina recurrence, myocardial infarction, revascularization, sudden death.

Results All the patients underwent IVUS check successfully. Only 1 case appeared thrombus in distant coronary during IVUS process. The thrombus was disappeared after giving tirofiban hydrochloride into distant coronary. Others had no complications. The total stents implanted were 46. 7 cases were found myocardial, all lay at left anterior descending artery, incident rate was 14%; 5 post-stent follow-up cases, 2 cases had no restenosis, unimplanted stent, 2 cases occurred restenosis, and need reimplanted stents again, 1 case had no restenosis, stenosis occurred in other area, reimplanted stent; 17 cases of borderline, 28 vessels, underwent IVUS, 10 cases need not stent implantation, 1 case need implant stent, but had not suitable stent to implant. In 25 cases of complex coronary lesions, complex coronary lesions including left main artery, implanted stents successfully. IVUS check was performed after stent implantment. Stent malapposition 19 cases, incident rate was 40.9%; late incomplete stent apposition 10 cases, incident rate was 22.72%. After high pressure balloon dilation, 5 cases had late incomplete stent apposition, 1 case had stent underexpansion, 1 case had insufficient adherence. Followed up for 1-8 months, all the patients had no harmful clinical events occurred.

Conclusions IVUS is the most important supplementary means during PCI. IVUS can more effectively guide the choice of stents in borderline lesions and assess the immediate efficacy of the stent implantation. IVUS-guided PCI can make up for the shortcomings of PCI, and can further improve the procedural results.

Study of correlationship between impaired glucose regulation and heart rate turbulence
Zhendong Liu, Fanghong Lu, Yingxin Zhao, Shangwen Sun
Cardiovascular Disease Rresearch Center, Shandong Academy of Medical Sciences, Jinan
250062, Shandong, China

Objects To explore the association between impaired glucose regulation and heart rate turbulence.

Methods According to the results of oral glucose tolerance test and the guide of International Diabetes Federation in 2007, 254 cases of participant were divided into three groups, namely control group, impaired glucose regulation group and new diagnosed diabetes group. 24h Holter was performed in all participants.

Results Although turbulence onset and 24h total number of premature ventricular contraction were lower, and turbulence slope and the standard deviations of all normal RR intervals were higher in impaired glucose regulation group than those in new diagnosed diabetes group ($P < 0.05$, respectively), turbulence onset and 24h total number of premature ventricular contraction were significant elevated, and turbulence slope and the standard deviations of all normal RR intervals were remarkable decreased in impaired glucose regulation group compared with control group ($P < 0.05$, respectively). Pearson analysis shown, fasting glucose levels positively correlated with turbulence onset and 24h total number of premature ventricular contraction (correlation coefficient were 0.5347 and 0.3419, $P < 0.001$, respectively), and negatively correlated with turbulence slope and the standard deviations of all normal RR intervals (correlation coefficient were -0.4633 and -0.3682, $P < 0.001$, respectively).

Conclusions There was correlation between impaired glucose regulation and heart rate turbulence. Function of cardiac autonomic nervous system has impaired in subjects with impaired glucose regulation.

Prediction of sudden cardiac death in patients after acute myocardial infarction using T-wave alternans: a prospective study

Yu Hou, Pihua Fang, Xiaofeng Li, Sen Lei, Jun Liu, Jiqiang Hu, Shu zhang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background We assessed the value of T-wave alternans (TWA) in prediction of sudden cardiac death (SCD) in patients suffering from acute myocardial infarction (AMI).

Methods Consecutive patients (N=289) were enrolled and were monitored with 24-hour ambulatory ECG within 1 to 15 days after AMI. TWA was identified by modified moving average (MMA) algorithm computer software. The primary endpoint was SCD or lethal ventricular arrhythmia. We analyzed hazard ratios using the previously determined 47 μ V TWA cutpoint.

Results During 16 \pm 7-month follow-up, 10 (4.4%) patients died suddenly. TWA \geq 47 μ V predicted SCD [Hazard ratio =15.07 (95% confidence interval CI, 2.88 to 78.68), p=0.001]. Moreover, patients with \geq 5 TWA episodes \geq 47 μ V were at higher risk for SCD [Hazard ratio = 18.24 (95% CI, 4.20 to 83.68), p=0.0004].

Conclusions TWA (\geq 47 μ V) monitored at 1-15 days after AMI predicted heightened risk of SCD. Prediction is improved when the frequency of TWA episodes \geq 47 μ V is analyzed.

The prediction value of BNP, NT-proBNP and their ratio for in-hospital and long-term outcomes in congestive heart failure

Yuxiang Dai^{1,2}, Takagi Atsutoshi², Konishi Hakuoh², Miyazaki Tetsuro², Hiroshi Masuda², Shimada Kazunori², Miyauchi Katsumi², Ohsaka Akimichi², Daida Hiroyuki²

1 Department of Cardiology, Zhongshan Hospital Fundan University, Shanghai 200030, China

2 Department of Cardiology, Juntendo University Hospital

Objective BNP and NT-proBNP are important cardiac biomarkers for the diagnosis and prognosis of congestive heart failure (CHF). However, the prognosis value of their ratio in patients with CHF remained uncertain. The goal of this study was to examine the predictive value of BNP, NT-proBNP and their ratio for in-hospital and long-term outcomes in patients with CHF.

Methods In this observational study, patients who were admitted to the cardiac care unit in Juntendo University Hospital due to acute onset of CHF were consecutively enrolled from January to December in 2009. We measured serum levels of BNP and NT-proBNP immediately after admission, and other biomarkers and clinical data were also collected.

Results A total of 195 patients were enrolled with a median age of 73 [65-80] years old. Sixteen patients (8.2%) died in hospital. After a median follow-up time of 14 (8-20) months, 124 patients (69.3%) had an endpoint of death or readmission for recurrence of CHF. BNP, NT-proBNP, and the ratio of NT-proBNP to BNP were significantly higher in the in-hospital death group than that in the in-hospital alive group (700.0 [331.2-1465.9] pg/ml vs. 1613.7 [997.6-1981.4] pg/ml, $P < 0.05$, 5358 [1525-14169] pg/ml vs. 18449 [9068-41093] pg/ml, $P < 0.05$, 8.4 [5.0-12.3] vs. 17.6 [7.3-28.3], $P < 0.001$, respectively). Logistic regression analysis revealed that NT-proBNP/BNP was an independent predictor for both in-hospital mortality and long-term outcomes whereas BNP and NT-proBNP did not predict short and long-term outcomes. Multiple linear regression analysis showed that BMI, LDL-C, Hgb, eGFR and CRP were correlated with NT-proBNP/BNP.

Conclusions The ratio of NT-proBNP to BNP is a good predictor for in-hospital outcomes whereas BNP or NT-proBNP alone did not predict in patients with congestive heart failure.

A study of the location of coronary artery in the aortic valve stenosis by the real time three dimensional transesophageal echocardiography

Lingqiu Kong¹, Ben Ren², Yu Kang³, Xin Wei¹, Haibo Song⁴, Hong Tang¹

1 Department of Cardiology, West China Hospital of Sichuan University, Sichuan 610041, China

2 Erasmus University Medical Center

3 Department of Ultrasound, Teaching Hospital of Chengdu University of T.C.M, Sichuan 610072, China

4 Department of Anesthesia, West China Hospital of Sichuan University, Sichuan 610041, China

Objective To study the feasibility of real-time 3D transesophageal echocardiography (RT 3D of TEE) to measure the distance between the coronary artery and the junction of left ventricle and artery.

Methods The RT 3D TEE image of the aortic root was collected intraoperative in 65 cases who were referred to our center for valve replacement. The reconstruction of the aortic annulus was done in the QLAB quantitative analysis software and the height parameter of the annulus could be generated. Meanwhile observing the coronary artery position and measure the distance between the coronary artery and the junction of left ventricle and artery respectively.

Results In the 65 cases, 49 cases clearly show bilateral coronary artery, three cases only show the left coronary artery, six cases can only show the right coronary artery, seven cases of both sides of the coronary artery are unclear. The shows rate of right coronary artery was 84.61% (55/65), with the left coronary artery 81.54% (52/65). The measured value of the L-AA in systole and diastole were $15.5 \pm 1.9\text{mm}$, $12.8 \pm 1.5\text{mm}$; the R-AA systole and diastole measured values were $13.7 \pm 1.8\text{mm}$, $12.4 \pm 1.7\text{mm}$. There was significant difference between systole and diastole respectively. The aortic annulus height (H) got by 3D reconstruction of the aortic annulus was lower than ventricular - arterial junction to the coronary artery distance in both systole and diastole.

Conclusions Not only can RT 3D TEE and the quantitative analysis software reconstructe three-dimensional shape of the aortic annulus, but also can show and measure the distance between the coronary artery and the junction of left ventricle and artery respectively.

Comparison of ^{99m}Tc -MIBI SPECT/ ^{18}F -FDG PET imaging and cardiac magnetic resonance imaging in patients with idiopathic dilated cardiomyopathy: assessment of cardiac function and myocardial injury

Lei Wang¹, Chaowu Yan², Zuoxiang He¹, Shihua Zhao², Wei Fang¹

1 Department of Nuclear Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Department of Radiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective This study was to evaluate the agreement between myocardial ^{18}F -FDG PET imaging and cardiac magnetic resonance imaging (cMRI) in assessing cardiac function and relationship of cMRI late-gadolinium enhancement (cMRI-LGE) and myocardial perfusion-metabolism pattern in patients with idiopathic dilated cardiomyopathy (IDCM).

Methods 42 consecutive patients diagnosed with IDCM were enrolled. All patients underwent ^{99m}Tc -MIBI SPECT, gated ^{18}F -FDG PET imaging and cMRI within 3-7 days. Cardiac function parameters were calculated using PET and cMRI. The segments analysis was performed using 17-segment model. Patterns of perfusion/metabolism were classified as normal, mismatch, mild-to-moderate match and severe match, and cMRI-LGE was classified into 3 categories (non-LGE, mid-wall LGE and transmural LGE).

Results The correlation between gated PET and cMRI was excellent for EDV ($r=0.948$, $P<0.001$), ESV ($r=0.939$, $P<0.001$) and LVEF ($r=0.685$, $P<0.001$). EDV and ESV were underestimated, whereas LVEF was slightly overestimated by gated PET in comparison to cMRI. Among the 42 patients enrolled in our study, LGEs were present in 18 patients. Of which 17 (94.4%) with abnormal myocardial perfusion/metabolism patterns, whereas, only 8/24 (33.3%) patients without LGE had abnormal myocardial perfusion/ metabolism patterns ($\chi^2=15.944$, $P<0.001$). Perfusion/metabolism patterns varied in three different categories of non-LGE, mid-wall LGE and transmural LGE ($\chi^2=14.276$, $P<0.001$). 70.1% (44/62) segments with mid-wall LGE had normal perfusion/metabolism patterns, and 75.9% (62/82) perfusion/metabolism mismatch segments were shown non-LGE. The incidence of LGE was significantly higher in segments with severe match than other 3 segment groups.

Conclusions There is an excellent agreement between gated PET and cMRI in assessment of cardiac function. The LGE-cMRI is much more sensitive in detecting moderate fibrosis, while PET could detect more impaired but viable myocardium. Combining the two imaging modalities is useful for providing more comprehensive evaluations of myocardial injury in patients with IDCM.

Echocardiographic study for the children with transposition of the great arteries with intact ventricular septum after neonatal period

Yisheng Shi

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The standard 2-dimension echocardiography and speckle tracking imaging (STI) techniques were applied for the late referred children with transposition of great arteries with intact ventricular septum (TGA-IVS). We aimed to identify the suitable echocardiographic predictor for surgical management of TGA-IVS after neonatal period.

Methods 22 children with TGA-IVS after neonatal period were enrolled. According to the intraoperative left ventricle (LV)/right ventricle systolic pressure ratio, they received pulmonary artery banding (PAB group, n=10) or arterial switch operation (ASO group, n=12). 15 body surface area matched healthy children were served as control group. Standard echocardiography was performed. Using the STI technique, the rotation curves at apex and base was analyzed.

Results All the patients discharged eventually. The patients had a right to left bulging of the ventricular septum. There were no differences in wall thickness and ejection fraction between control, PAB and ASO group. The end diastolic diameter, end diastolic volume and indexed LV mass in PAB and ASO group was significantly reduced, however, no difference in the end diastolic diameter and volume and LV mass was observed between the PAB and ASO group. Compared with the control group, the hypoplasia of LV in PAB and ASO group was associated with an extended time to peak basal rotation and reduced basal rotation and global torsion. Furthermore, the shorter time to peak apical rotation and reduced apical rotation and global torsion were only observed in PAB group.

Conclusions The standard echocardiography could be useful for the initial evaluation for regressed LV of the children with TGA-IVS. However, it cannot provide the precious index for the decision of surgical management. STI was much more precious to evaluate the LV development after neonatal period. The apical rotation and global torsion might be the valuable predictor to identify the borderline or regressed LV for the surgical management for the older children with TGA-IVS.

Effect of atorvastatin on left atrial function of the patients with paroxysmal atrial fibrillation

Yaodong Li

First Affiliated Hospital of Xinjiang Medical University, Urumqi, Xinjiang 830054, China

Objective To evaluate the effects of atorvastatin for paroxysmal atrial fibrillation (PAF) in patients on left atrial (LA) function.

Methods Fifty eight PAF patients were divided into two groups (treatment and controlled groups). The echocardiography parameters including LA active emptying volume (LAAEV), LA active emptying fraction (LAAEF), LA maximum volume(LAVmax), LA total emptying volume (LATEV), LA total emptying fraction (LATEF), and LA ejection force (LAEF) were measured before treatment, twelve months and eighteen months after treatment.

Results Compared with those before treatment, the parameters reflecting LA pump function such as LAAEV and LAEF were decreased significantly on treatment group twelve months after treatment ($P<0.05$), LAAEV and LAEF were significantly increased eighteen months after treatment ($P<0.05$), and the indicators reflecting LA reservoir function such as LAVmax、LATEV and LATEF were increased significantly eighteen months after treatment ($P<0.05$). Compared with those before treatment, LAAEV and LAEF were decreased significantly eighteen months after treatment on the control group ($P<0.05$).

Conclusions Long-term atorvastatin treatment can ameliorate the function of atria sinistrum.

Applying of transthoracic coronary echocardiography in diagnosing of coronary heart disease

Puzhong Huang, Xiaonang Wang, Sheng Xu

Liaoning Jinqiu hospital, Liaoning 110015, china

Purposes To study clinical value in diagnosing of (CAD) with transthoracic echocardiography (TTE), explore routine application of CAD screening .

Objective and Methods There were 2152 cases whose ages ranged from 35-92 years. Using TTE routine examination coronary artery in clinic. Scan LM, RM and LAD, LCX, PRD of coronary artery, show them in two dimension (2D) image or color flow image, then measure flow velocities, and compared between each of them .The results of examination were compared with between TTE and coronary angiography or computed tomography . The 2D image characteristics of coronary artery atherosclerosis (CAA) were analyzed. Those cases that were verified negative by coronary angiography or computed tomography were regarded as normal group, and those positive by coronary angiography or computed tomography were considered as abnormal group. All the cases were divided into two groups: normal group and coronary artery stenosis (CAS) group.

Results Flow velocity of coronary was 20-40cm/s in normal group , there was no significant difference between proximal and distal segment in the same vessel. Flow velocity range was 45-201cm/s in CAS group. There was significant statistical difference between the normal group and the CAS group. The 2D image of coronary atherosclerosis mostly manifests: thickening of local vessel wall, maculation fine particles, goblet, irregular or regular in appearance, sliver plaque echo enhancement and wall thickening, diffuse sclerosis, and irregularly the vessel wall. The coincidence rate of TTE with coronary angiography or computed tomography was 82% (159/194) in detecting obvious stenosis in the CAS group. In CAS group, flow velocity of CAS was measured; whose characteristics were increment of flow velocity in stenotic segments.

Conclusions This study showed that TTE could determine CAS of LAD, LCX, and PRD with measuring the flow velocities. Increment of local flow velocity was a sensitive index to CAS, 2D image can show CAA, analyze size, shape and natures of the plaques further. The results showed that CAA could be detected early by TTE. Extents of CAS could be judged further according to increment degrees of local flow velocities. Valuable messages could be offered for clinical diagnosis of CAD, including whether intervention treatments are needed or not. TTE should be regarded as a routine examination method in clinic, and TTE had practical value, which will play an important role in CAD screening.

Observation of de-adaption changes in cardiac function for population return to low altitude after short-term exposure to high altitudes

Qiquan Zhou¹, Shengyue Yang², Yushu Qi², Zifu Shi³, Yong Fan¹

1 Department of High Altitude disease, College of High Altitude Military Medicine, The Third Military Medical University

2 Department of Respiratory Medicine, Fourth Hospital of PLA, Xining, 810007, China

3 The 68303 military hospital of PLA, Wuwei, Gansu, 733000, China

Background and Objective The high-altitude hypoxia effects on human cardiac function have been a few reports, but no study reported short-term exposure to high altitude with heavy manual labor impact on cardiac function and recovery changes after return to low altitude. To observe de-adaption change at heart function for population return to low altitude areas after short-term exposure to high altitude.

Methods select 96 young males who from low-altitude rapid access to high altitude (3700 m) and in heavy physical labor, they were exposed to 50d after the earthquake in Yushu Qinghai Province, after exposure to high altitude 50d and return to low altitude (1500 m) after 12 h, 15 d, serum creatine kinase isoenzyme (CK-MB), lactate dehydrogenase isoenzyme (LDH-1), Tei index, left ventricular ejection fraction (LVEF) and left ventricular short axis shortening (LVFS) were measured, compared with low-altitude (1500 m) 50 healthy young men.

Results 96 cases with high altitude acute mountain sickness (AHAR) 71 cases (74.0%), and its mild in 25 cases (35.2%), moderate in 22 cases (31.0%), severe in 24 patients (33.8%). Severe AHAR serum CK-MB, LDH-1 level, Tei index was significantly higher than mild to moderate AHAR group, no AHAR group and control group, LVEF, LVFS was significantly lower than mild to moderate AHAR group, no AHAR group and control group (all $P < 0.01$), mild moderate group and the non-AHAR AHAR between groups, no AHAR between the control group there was significant difference (all $P < 0.01$). Altitude of 3700 m50d, serum CK-MB, LDH-1 and the Tei index was significantly positively correlated (respectively $r = 0.625, 0.598$), and LVEF, LVFS was significantly negatively correlated (respectively $r = -0.716, -0.658, -0.639, -0.727$) (all $P < 0.01$). Altitude of 3700 m50 d, serum CK-MB, LDH-1 level, Tei index was significantly higher than the altitude of 1500 m12 h, 15 d and the control group, LVEF, LVFS was significantly lower than the altitude of 1500 m12 h, 15 d and the control group (all $P < 0.01$), altitude 1500 m12 h and 15 d were significantly different (all $P < 0.01$), altitude 1500 m15 d with the control group no significant difference between ($P > 0.05$).

Conclusions The troops who Short-term exposure to high altitude have obvious damage in cardiac function, 12 h after return to low altitude have significantly improved, 15 d recovered to normal levels.

Cardiac morphology 、 function and hemodynamic changes of de-adaptation stage after return to plain for crowd short-term exposure to high altitude

Qiquan Zhou¹, Yali Xu², Zhongxiong Zhuo², Zifu Shi³, Han Luo¹

1. Department of High Altitude disease, College of High Altitude Military Medicine, The Third Military Medical University; Key Laboratory of High Altitude Medicine, Ministry of Education and Key Laboratory of High Altitude Medicine, PLA; Chongqing, 400038, China
2. Department of Ultrasound, Xinqiao Hospital, Third Military Medical University, Chongqing 400037, China
3. The 68303 military hospital of PLA, Wuwei, Gansu, 733000, China

Objective To explore the changes of the cardiac morphology, hemodynamic and systolic function of the soldiers with echocardiography who de-acclimation to high altitude after stayed for 70 days in high altitude areas compared to the control group.

Methods There were 237 soldiers who stayed at an altitude of 3700m for 50 days and 15 days returned to 1500m, 77 soldiers who were stayed at the base was set as the control group. The two groups were performed echocardiography and detected with 2D, CDFI and Doppler echocardiography. Diastolic diameter of LV(LVD), superior inferior diameter of RV(RV1), diameter of RV (RV2) , diameter of RA (RAD) ,heart rate(HR),right ventricular ejecting time(RVET), velocity of pulmonary regurgitation(PRV),fractional shortening(FS) and ejection fraction(EF) were acquired.

Results The differences of all the parameters were significant in the control and de-acclimation to high altitude group except for pulmonary artery diameter, pulmonary velocity and velocity of regurgitation. LVD (48.95 ± 2.89 mm & 46.99 ± 2.48 mm), RVD1 (37.47 ± 2.13 mm & 36.53 ± 2.34 mm), RVD2 (52.28 ± 5.52 mm & 46.79 ± 5.0 mm) were enlarged and all the $P < 0.01$. There were significant differences of RAD and HR, $P < 0.05$. Both FS and EF were significantly decreased ($P < 0.01$).

Conclusions After stayed in the high altitude area for a short time, left and right ventricle enlarged, pulmonary pressure enhanced and systolic function of LV decreased, but all these parameters keep within norm, diastolic diameter of LV(LVD),RV2,right ventricular ejecting time(RVET), velocity of pulmonary regurgitation(PRV),fractional shortening (FS) and ejection fraction(EF) were sensitive parameters, which avail in the early alerting of the change of cardiac morphology, the happen and progress of pulmonary hypertension and systolic function in the period of de-acclimation to high altitude .

Comparison of consistency in measurements of central aortic pressure between two non-invasive devices

Meng Peng, Xiongjing Jiang, Ting Guan, Wenjun Ma, Hui Dong, Wei Ji, Haiying Wu, Rutai Hui

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The purpose of this study was to compare the consistency in measurements of the central blood pressure (CBP) between two non-invasive devices (the Omron-HEM9000AI and the SphygmoCor).

Methods A total of 43 coronary artery disease inpatients [aged 40~80 (60.5±9.4) years, including 32 (74.4%) males] in Fuwai Hospital from Aug. 2010 to Sep. 2010 were recruited. CBP of each patient was recorded respectively by the two non-invasive devices. Pearson correlation analysis, paired t-test, and Bland-Altman plot were applied to evaluate the correlation and consistency in CBP measured by the two devices.

Results Pearson correlation analysis showed that central systolic blood pressure (cSBP) measured by the two devices was positively correlated with the brachial systolic blood pressure ($r=0.942, 0.971$, both $P<0.01$), and there were positive correlations between cSBP ($r=0.972, P<0.01$) and radial artery augmentation index (AI) ($r=0.663, P<0.01$) measured by the two non-invasive devices. Paired t-test showed there were statistically significant differences between cSBP [$(119.0±25.1)$ vs. $(106.1±21.2)$ mm Hg, $P<0.01$] and AI [$(73.5%±15.4\%)$ vs. $(67.1%±22.5\%)$, $P=0.03$] measured by these two non-invasive devices. Bland-Altman plot suggested that the differences in the cSBP and AI measured by these two non-invasive devices were respectively $(13.3±6.7)$ mm Hg and $(6.3%±16.8\%)$. Within the boundaries of the consistency, the maximum modulus of the difference value were respectively 23.5 mm Hg and 36.5% without strong correlation.

Conclusions The correlation in cSBP and AI is strong between the two non-invasive devices, but the consistency is poor. It is doubtful to use these two devices to measure CBP interchangeably in the clinical setting.

Differentiating arrhythmogenic right ventricular cardiomyopathy from right ventricular outflow tract ventricular tachycardia with electrocardiographic indexes

Lan Ren, Yuhe Jia, Zheng Liu, Yingjie Zhao, Jianmin Chu, Pihua Fang, Shu Zhang
State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The purpose of this study was to compare the electrocardiographic characteristics of ventricular arrhythmias between arrhythmogenic right ventricular cardiomyopathy (ARVC) and right ventricular outflow tract tachycardia (RVOT-VT) in order to find out some indexes to differentiate them.

Methods 17 ARVC patients and 24 RVOT-VT patients with structurally normal hearts who underwent radio frequency catheter ablation were involved (16 of them origin from the septum of RVOT, 8 from the free-wall). We compared the electrocardiographic morphology of ventricular tachycardia or premature ventricular contraction with left bundle branch block/inferior axis pattern. Precordial R-to-S wave transition lead, mean QRS duration and QRS notching in each lead were measured.

Results Comparing with RVOT-VT, the mean QRS duration were longer in ARVC patients in each lead, significant difference existed in Lead I, III, aVL, aVF, V1 and V2 ($P < 0.05$), Lead I had the largest mean difference (29.64 ± 8.542 ms, $P = 0.001$). Lead I QRS duration ≥ 129 ms had a sensitivity of 94%, specificity 54% for ARVC (59% positive predictive value, and 93% negative predictive value).

ARVC patients had more R wave transition in Lead V5 or later (54.5% vs. 4.2%, $P = 0.014$), 96% specificity value. QRS notching in each lead was not different between groups. In multivariate analysis, QRS duration in lead I of 129 ms (odds ratio [OR]: 35.5, $p = 0.035$), a transition of V5 or later (OR: 12.2, $p = 0.044$), each predicted the presence of ARVC.

Conclusions Several electrographic morphology differences existed between right ventricular outflow tract arrhythmias originating from ARVC and RVOT-VT, which can be used to differentiate the two tachycardia substrates.

Observation of myocardial enzymes and cardiac function changes in de-adaptation phase after returned to plain for plateau construction population

Qiquan Zhou¹, Shengyue Yang¹, Zifu Shi¹, Han Luo¹

1 Department of High Altitude disease, College of High Altitude Military Medicine, The Third Military Medical University; Key Laboratory of High Altitude Medicine, Ministry of Education and Key Laboratory of High Altitude Medicine, PLA; Chongqing, 400038, China.

2 Department of Respiratory Medicine, Fourth Hospital of PLA, Xining, 810007, China.

3 The 68303 military hospital of PLA, Wuwei, Gansu, 733000, China.

Objective To study the changes of heart function and myocardial enzymes of returned to plain after plateau short-term exposure.

Methods Random selection by number table for rapid entering high altitude (3700m) engaged in heavy manual labor of 96 man soldiers, in During the retreat before and return to the original resident by car in 2d, 15d respectively, determinating mean pulmonary artery pressure (mPAP), left ventricular ejection fraction (LVEF), left ventricular short axis ratio (LVFS), cardiac index (Tei index), serum creatine kinase isoenzyme (CK-MB), lactate dehydrogenase isoenzyme (LDH-1), to observe its heart adapt to change in different time after return to low altitude area.

Results High altitude exposure can cause myocardial enzyme activity generally increases, the high altitude reaction degree higher and myocardial enzyme activity level higher, a parallel relationship between them, The high altitude response heavier the myocardial damage more serious, myocardial enzyme activity increased more obviously.

activity of myocardial enzyme CK-MB and LDH-1 after return to low altitude area from plateau were decreased rapidly, after return to 15 days the myocardial enzyme activity decreased to control group level. High altitude exposure can cause heart the work capacity drops, heart function is generally lower, The decline in the extent and degree of high altitude reaction in parallel relationship, high altitude reaction more serious and heart function is decreased more obviously, cardiac function LVEF and LVFS increases rapidly after return low altitude area from the plateau, returned to plain 15 days after, the LVEF and LVFS were increased to plain population group level.

Conclusions The myocardial injury and cardiac function can be quickly restored to plain group level after returned to plain in high altitude (3700m) short-term exposure, the recovery period is General about half a month.

Clinical utility of diameter of ventricular septal defect/diameter of aorta root ratio for the early childhood development and lung infection in isolated ventricular septal defect

Yang Xu, Sirui Yang, Congcong Liu

Department of Pediatric Cardiovascular, the First Affiliated Bethune Hospital

Ventricular septal defect (VSD) is the most common type of congenital heart disease. Conventional methods to evaluate VSD size and severity were either invasive or cumbersome to operate in clinical practice. In the present study, we recruit 987 children with isolated VSD of either sex, calculate the ratio between defect diameter and the aortic root diameter (D_{VSD}/D_{AR}) by color Doppler echocardiogram technology and determine its application to evaluate children's growth and infection conditions. Compared with control group, height and weight values of each age subgroup were decreased with the increases of D_{VSD}/D_{AR} ratio, which were significantly reduced in group C and group D; infection scores of group A and group B were significantly increased only in one-year age subgroup and were significantly increased in group C and group D of each subgroup. In addition, linear regression analysis showed that D_{VSD}/D_{AR} ratio was negatively correlated with height and weight and was positively correlated with Q_p/Q_s and infection score. These results suggested that D_{VSD}/D_{AR} ratio could reflect the growth and pulmonary infection condition of VSD children, which can be used as one additional reference index to determine the size of the ventricular septal defect.

The prognostic value of 320-slice computed tomography coronary angiography in patients with suspected coronary artery disease

Xianguan Yu, Baoshun Hao, Yong Liu, Jieming Zhu, Zhaojun Xiong, Bin Zhou, Lin Wu, Min Wang, Lin Chen, Xiaoxian Qian

Department of cardiovascular medicine, the third affiliated hospital of Sun Yat-sen university, Guangzhou 510630, China

Objective The accuracy and safety of 320-slice coronary computed tomography angiogram (CCTA) have been confirmed, but the study of its prognostic value is lack. The purpose of this study was to assess the prognostic value of 320-slice CCTA in patients with suspected but not documented coronary artery disease.

Methods The suspected CAD patients from inpatient department of the third affiliated hospital of Sun Yat-sen university, who accepted the 320-slice CCTA test for typical or atypical angina pectoris, abnormal noninvasive cardiovascular examinations or multiple CAD risk factors from 2008 to 2010, were enrolled in this research if they agreed to be followed up. CCTA diagnosis and the baseline information including gender, age, symptoms of angina, smoking, blood pressure, blood glucose, blood lipids and therapy were recorded, and echocardiography, carotid artery ultrasound examination if available. Patients were followed up by screening the hospital records system and by telephone call for end-point events, including all-cause mortality, survival acute myocardial infarction (AMI), unstable angina requiring hospitalization and revascularizations based on the ischemic symptoms or examinations (at least 3 months after CCTA test). Kaplan-Meier survival curves and Cox proportional hazards regression model was performed to determine the prognostic value of CCTA.

Results 489 individuals accepted 320-slice CCTA examination were collected. 163 patients were excluded for documented CAD, unsatisfied CTA reports, lack of important information, out of or refused contact. Totally 326 individuals (mean age 66.6 years, standard deviation was 11.8 years, 43.6% male) were followed up for the median time of 26.5 months, interquartile range 16.2 to 35.3 months. 32 individuals were lost to be followed up, and the rate of lost follow-up was 9.8%. There were 46% patients with one or more obstructive lesions (stenosis $\geq 50\%$) on 320-slice CCTA, which were showed as follow: Stenosis $\geq 50\%$ in one vessel, two vessels, three vessels were 28.8%, 11.3%, 5.8% of all. And there were 26.4% patients with obstructive stenosis of LM or proximal part of LAD. During follow-up, there were 44 patients with end-point events, including 6 deaths, 5 survival AMI, 23 hospitalizations for unstable angina pectoris and 10 accepted PCI for ischemia. There were 34 hard cardiac events (cardiac death, non-fatal AMI and hospitalization for unstable angina). Multivariate Cox proportional hazards regression analysis adjusted by clinical risk factors with statistic significance during univariable analysis showed that, patients with stenosis $\geq 50\%$ in one or more vessels, obstruction (stenosis $\geq 50\%$) of LM or proximal LAD, segmental stenosis score (SSS) > 5 or detection of mixed plaques have increasing rate for end-point events (RR=2.69, 95%CI (1.35, 5.38); RR=2.34, 95%CI (1.28, 4.30); RR=2.01, 95%CI (1.04, 3.86); RR=2.36, 95%CI (1.26, 4.43) respectively). There were 59 patients with normal coronary artery on CCTA, 96.5% of who were free from events during follow up. The difference between the survival curves of patients with solely myocardial bridges and those with normal coronary arteries had no statistic significance ($p > 0.5$).

Conclusions 320-slice CCTA provides prognostic information in patients with suspected but no documented CAD. Patients with one or more obstructive vessels, LM/LAD proximal obstructed, segmental stenosis score (SSS) > 5 or mixed plaques on CCTA have unfavorable prognosis. Patient with solely myocardial bridge has favorable prognosis as that with normal coronary artery.

Magnetic resonance imaging features of vulnerable plaques in an atherosclerotic rabbit model

Quanming Zhao, Tingting Feng, Xin Zhao, Mingdu Zhang, Xucui Zhuang, Xuecheng Zhao

Beijing Anzhen Hospital, Capital Medical University, Beijing 100029, China

Background Noninvasive detection of vulnerable plaque has a significant implication for prevention and treatment of atherosclerotic diseases. The aim of this study is to investigate the difference between vulnerable plaques and stable plaques in MR images.

Methods Atherosclerosis was induced in twenty male New Zealand White rabbits by high cholesterol diet and balloon injury of the abdominal aorta. After baseline pre-triggering MRI scan, the rabbits underwent 2 pharmaceutical triggering with Russell's viper venom and histamine to induce atherothrombosis, followed by another MRI scans 48 hours later post-triggering. Rabbits were euthanized to obtain data of pathology and histology. The results of MRI were compared with those of pathology and histology.

Results MRI showed that abdominal aorta of the rabbits had pathological change of atherosclerosis in different degrees. 75 plaques were analyzed, 14 (18.67%) had thrombi (vulnerable) and 61 did not (stable) (81.33%). Thrombosis was identified in 7 of 11 rabbits by post-triggering MRI, the sensitivity and *K* value of MR for vulnerable plaque detection was 71.43% and 0.803 ($P < 0.05$). MR data significantly correlated with the histopathological data in fibrous cap thickness ($r = 0.749$, $P < 0.05$), plaque area ($r = 0.853$, $P < 0.05$), lipid core area ($r = 0.9$, $P < 0.05$). Compared with stable plaques, vulnerable plaques had a thinner fibrous cap (0.58 ± 0.27 mm versus 0.95 ± 0.22 mm; $P < 0.05$), larger lipid core area (7.56 ± 2.78 mm² versus 3.29 ± 1.75 mm²; $P < 0.05$), and a higher ratio of lipid core area/plaque area ($54.62 \pm 16.29\%$ versus $27.26 \pm 16.60\%$; $P < 0.05$), but plaque area was comparable in two groups on MRI. Especially, the ratio of lipid core area/plaque area was a strong predictor of vulnerable plaques.

Conclusions It is suggested that MR imaging can distinguish vulnerable plaques from stable plaques in an animal model of atherothrombosis. These findings suggest that MRI may be used as an ideal noninvasive modality for detection of vulnerable plaques.

As reflect early myocardial injury and recovery after heart transplantation

Enshi Wang¹, Yu Nie¹, Zhe Zheng¹, Jie Huang¹, Shengshou Hu¹

1 State Key Laboratory of Cardiovascular Diseases, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Heart transplantation Center, Fuwai State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To monitor early myocardial injury and recovery after heart transplantation by circulating muscle-specific miR-133a, miR-133b and miR-208a.

Methods From July 6th to 27th, 2011, 7 consecutive patients undergoing heart transplantation in Fuwai hospital were included in our study. All patients were male, aged between 33-62 years (46.71±12.31 years), among of whom 2 patients received ECMO support after transplantation. Serum CTnI concentrations were measured in peripheral blood obtained from patients at the day just after transplantation, the 1st day, 2nd day, and 3rd day after transplantation separately. Peripheral plasma were obtained at the 4 time point plus 7th and 14th day after transplantation for measuring miR-133a, miR-133b and miR-208a by RT-PCR. miRNA plasma concentration were calculated by absolute quantification method. Variation curve of miRNA plasma concentration were described. Correlation analysis were done between miR-133 and CTnI, as well as each of them with ischemia time and bypass time. CTnI and miRNA concentration were compared between patients with or without ECMO support.

Results miR-133a, miR-133b and miR-208a were all shown change from high to low concentration early after operation, but miR-133b and miR-208a were only detected in part of samples. Correlation between miR-133b and CTnI concentration were significantly high ($r=0.958, p<0.01$), and miR-133a concentration correlated with CTnI value significantly ($r=0.672, p<0.01$), but miR-208a had no correlation with CTnI. miRNA correlated well with each other ($p<0.01$); It is not significant in correlation among warm ischemia time, cold ischemia time, bypass time, occlusion time and miRNA plasma concentration, but CTnI value at 1st and 2nd day after transplantation correlated with bypass time ($r=0.868, p<0.05; r=0.962, p<0.01$); Patients received ECMO showed higher miR-133a and CTnI concentration.

Conclusions The dynamic change in circulating muscle-specific miR-133a, miR-133b can reflect early myocardial injury and recovery after heart transplantation, which show us a new way for study in the donor heart injury.

Evaluation of right ventricular volume and ejection fraction by gated PET in patients with pulmonary hypertension: comparison with cardiac MRI and CT

Lei Wang¹, Yan Zhang², Chaowu Yan², Jianguo He³, Changming Xiong³, Wei Fang¹

1. Department of Nuclear Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China
2. Department of Radiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China
3. Center for Diagnosis and Management of Pulmonary Vascular Diseases, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background Right ventricular function is a powerful predictor of survival in patients with pulmonary hypertension, but noninvasively assessing right ventricular function remains a challenge. The aim of this study was to prospectively compare gated ¹⁸F-FDG PET myocardial imaging (GPET), cardiac magnetic resonance (CMR) and cardiac computed tomography (CCT) for the assessment of right ventricular volume and ejection fraction in patients with pulmonary hypertension.

Methods Twenty-three consecutive patients aged over 16 years diagnosed with pulmonary hypertension were included. All patients underwent GPET, CMR and CCT within 7 days. RV EDV, RV ESV and RVEF were calculated by three imaging modalities.

Results GPET showed a moderate correlation for RV EDV ($r=0.680$, $P<0.001$), good correlation for RV ESV ($r=0.757$, $P<0.001$) and RVEF ($r=0.788$, $P<0.001$) with CMR, and good correlation for RV EDV, RV ESV and RVEF with CCT ($r=0.767$, 0.757 and 0.730 respectively, all were $P<0.001$). Bland-Altman analysis revealed systematic underestimation of RV EDV and RV ESV and overestimation of RVEF with GPET compared with CMR and CCT.

The correlation between RV EDV, RV ESV and RVEF of CMR and those of CCT was excellent ($r=0.863$, 0.903 and 0.853 respectively, all were $P<0.001$), Bland-Altman analysis showed only a slight systematic variation between CMR and CCT.

Conclusions GPET had a good correlation with CMR and CCT in assessment of RV volume and ejection fraction. It is an available method for simultaneous assessing of RV function and myocardial metabolic characteristics in patients with pulmonary hypertension.

Investigation and analysis of animal experiment ethics cognition for cardiovascular disease researchers

Yue Tang, Yongchun Cui, Zhong Tian, Xiaopeng Liu

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To identify cardiovascular disease researchers' knowledge level of animal experiment ethics and provide new strategies for training.

Methods Self-designed questionnaire was used to investigate among a total of 100 researchers by cluster sampling who performed animal experiments in animal experimental center, Fuwai Hospital from January 1, 2009 to April 30, 2012.

Results All of the subjects believed that animal experiment ethics is necessary for animal s' health and happiness. For animal welfare and ethical knowledge score, 67% good, 25% qualified and 8% unqualified. All the unqualified are graduate students of 20-30 years old and without animal experiment research experience. Age, education, religion, training, and scientific research experience are the independent factors influencing animal experiment ethics cognition.

Conclusions It is necessary to strengthen the training on experimental animal ethics, especially for those graduate students who would take part in animal experiments.

Single center experiences of cardiac resynchronization therapy in patients with right bundle branch block

Ligang Ding, Wei Hua, Huang Wang, Jing Wang, Keping Chen, Shu Zhang
State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The study aimed to retrospectively analyze the effectiveness of cardiac resynchronization therapy (CRT) in the patients with right bundle branch block (RBBB) in Fuwai Hospital.

Methods We retrospectively analyze the data of CRT-P/D implanted patients with RBBB from January 2008 to December 2010. All the patients received regular follow-ups every 3 to 6 months, including NYHA class, 6 minute wall distance, cardiac ultrasound test, Minnesotascoring and device interrogation.

Results Seven patients with RBBB (6 males, mean age 57 ± 19 years, NYHA class 3.3 ± 0.5 , Minnesota score 49 ± 23 , 6 minute wall distance 335 ± 172 meters, QRS duration 163.9 ± 19.9 ms) who underwent successful implantation of a CRT system were included in this study. After a mean 17.6 ± 6.7 (0.3-43) months of follow-up, 6 non-responders were identified (no improvement in NYHA class (n=2), heart failure hospitalization (n=1) and death due to progressive heart failure (n=3)).

Conclusions No clinical benefit was observed in patients with right bundle-branch block. Further studies in RBBB patients with CRT are needed to verify the outcomes.

Characteristics of adult patients with patent ductus arteriosus in echocardiography and pulmonary pressure estimation

Rui Fan, Hong Lin, Cui-ling Li, Li-hong Wu, Feng-juan Yao, Kun Lu

Department of Ultrasonography, the First Affiliated Hospital of Sun Yat-sen University, Guangzhou 510080, China

Objective To summarize the characteristics of adult patients with patent ductus arteriosus in echocardiography, reduce misdiagnosis and missed diagnosis, improve the detection of pulmonary artery hypertension.

Methods 128 adult patients with patent ductus arteriosus, including 55 cases with assessed pulmonary artery systolic pressure (PASP) which were divided into four groups according to PASP and left ventricular size: moderate to severe pulmonary hypertension with left ventricular enlargement group: 15 patients; severe pulmonary hypertension with normal left ventricular diameter: 12 patients; mild pulmonary arterial hypertension group: 14 patients; no pulmonary hypertension group with 14 patients. 85 healthy adult subjects as control group.

Results The pulmonary hypertension groups compared with no pulmonary hypertension group, shunt beam width, systolic V_{max} and PGs, diastolic V_{min} and PGd, and V_{max} / V_{min} , the difference was statistically significant. In moderate to severe pulmonary hypertension group, 95% V_{max} was less than 3.80 m/s, 95% V_{min} was less than 1.75 m/s, 95% V_{max} / V_{min} greater than 2.05; the maximal of V_{min} was 2.4 m/s, the minimum of V_{max} / V_{min} was 2.0; V_{max} was 5.2 m/s in one patients with hypertension. In mild pulmonary hypertension group, 95% V_{max} / V_{min} greater than 1.52, and the minimum is 1.38. Shunt beam width greater than 5 mm in all patients with pulmonary arterial hypertension, especially in moderate to severe pulmonary hypertension group, more than 95% patients' shunt beam width greater than 10.74 mm. In 73 patients without estimation of pulmonary artery systolic pressure, 12 patients predicted with moderate to severe pulmonary hypertension, and 19 with mild pulmonary hypertension, and 42 patients without pulmonary arterial hypertension.

Conclusions Adult patent ductus arteriosus patients often combined with pulmonary artery hypertension, indexes of shunt spectrum: V_{max} , V_{min} and V_{max} / V_{min} may be used to assist in estimating pulmonary artery hypertension noninvasively. In addition to pulmonary regurgitation and tricuspid regurgitation.

Clinical study of left ventricular function of patients with pulmonary hypertension

Yu Liang¹, Xiuzhang Lu¹, Fujian Duan¹, Qizhe Cai¹, Jingjin Wang¹, Jianguo He¹

1 Department of Echocardiography, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2 Center for Diagnosis and Management of Pulmonary Vascular Diseases, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To evaluate left ventricular (LV) geometry and function in patients with pulmonary hypertension (PH) by means of echocardiography and speckle tracking imaging (STI).

Methods Thirty-nine patients [age, 18-62 (33.2±10.6) years; 66.7% women] with pulmonary hypertension (PH) were prospectively collected, and patients with intrinsic LV diseases were excluded. All the patients included underwent echocardiography. In addition, thirty-five of these patients underwent right heart catheterization (RHC) examination within one week. Twenty-seven age- and gender-matched healthy subjects were included as control group. Thirty-nine patients with PH and 27 healthy subjects underwent detailed echocardiography examination. Right ventricular function, left ventricular diastolic function and left ventricular systolic function were evaluated. Parasternal mid short axis view, apical four-chamber view were obtained. Global circumferential systolic strain (GCSS), global radial systolic strain (GRSS), global longitudinal systolic strain (GLSS) were calculated with software of speckle tracking imaging. Systolic circumferential strain (CS), radial strain (RS), longitudinal strain (LS) of interventricular septal (IVS) and LV lateral wall (LAT) were also calculated. The differences between two groups were compared. Association between echocardiography indices of LV diastolic function and RHC-derived hemodynamic indices were evaluated.

Results Right ventricular dysfunction happened in PH group. Left ventricular diastolic dysfunction also happened in PH group. E , E/A , E' , E'/A' were positively correlated with RHC-derived CI. E/A , E'/A' were negatively correlated with RAMP. E' was negatively correlated with PCWP. There was no significant difference in left ventricular ejection fraction (LVEF) between normal subjects and patients with PH (66.48% ± 6.38% vs. 65.26% ± 4.01%, $P > 0.05$), however, the GCSS (−15.66% ± 3.67% vs. −18.56% ± 2.16%, $P < 0.01$), GRSS (15.54% ± 5.35% vs. 30.03% ± 9.64%, $P < 0.01$) and GLSS (−16.18% ± 4.35% vs. −20.91% ± 2.96%, $P < 0.01$) were lower than normal subjects. Not only systolic IVS CS, RS, LS reduced, but also LV systolic lateral wall CS (−14.44% ± 3.57% vs. −18.76% ± 3.23%, $P < 0.01$), RS (18.56% ± 7.90% vs. 32.78% ± 13.45%, $P < 0.01$) and LS (−17.89% ± 5.54% vs. −22.41% ± 4.44%, $P < 0.01$) were lower than normal subjects.

Conclusions Chronic RV pressure overload directly affects RV geometry and function, further influences LV geometry and impairs LV function of patients with PH. Left ventricular diastolic dysfunction happens in moderate or severe patients with PH. The LV diastolic dysfunction is correlated with severity of right ventricular dysfunction. Although LVEF is normal, LV myocardial dysfunction happens.

Dobutamine stress echocardiography in low flow, low gradient aortic stenosis patients referred for transcatheter aortic valve implantation
Hanjun Pei, Yongjian Wu, Yuejin Yang
State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background Patients with severe left ventricular dysfunction and low-flow, low-gradient (LFLG) aortic stenosis (AS) generally have a poor prognosis with conservative therapy but a high operative mortality if treated surgically. Transcatheter aortic valve implantation (TAVI) might offer an alternative for this patients group. However, the benefit of TAVI in these patients may be different according to different contractile reserve levels on dobutamine stress echocardiography (DSE).

Objective This study aimed to assess feasibility and safety of DSE in patients with severe left ventricular dysfunction and LFLG AS that were referred for TAVI.

Methods In October 2010, we started the China Aortic Stenosis Cohort Study (CASCS), and there have been 28 consecutive patients referred for TAVI, of which 12 with symptomatic calcified LFLG AS (valve area $\leq 1\text{cm}^2$, left ventricular ejection fraction $\leq 40\%$, mean pressure gradient $\leq 40\text{mmHg}$) underwent DSE in the echocardiography laboratory. A dobutamine infusion was begun at 5mg/kg body weight per min, titrated upward in steps of 2.5mg/kg per min every 5 min. The predetermined end points were a maximal dose of 20mg/kg body weight per min, mean gradient $>40\text{mmHg}$, 50% increase in the cardiac output, heart rate >140 beats per minute, intolerable symptoms or side effects. Contractile reserve during DSE was defined as an increase in stroke volume of $\geq 20\%$. The procedure was finished by experienced cardiologists.

Results The study population included 5 women and 7 men with a mean age of 78 ± 6 years (62-86). In all patients, 8 (67%) had New York heart Association class III and IV symptoms, 5 (42%) had hypertension, 4 (33%) had coronary heart disease, 2 (17%) had stroke. Baseline left ventricular ejection fraction, aortic valve area, and mean pressure gradient (MPG) were $31 \pm 7\%$, $0.7\text{cm}^2 \pm 0.2$, 34.6 ± 4.0 . Four (33%) patients had an MPG $\leq 30\text{mmHg}$, and 6 (50%) patients had an EF $\leq 30\%$. Dobutamine peak dose was 12.3 ± 3.4 , peak LVEF was $42 \pm 6\%$ and stroke volume increase was $22 \pm 15\%$. During the procedure, no patient died 5 patients with ventricular premature beat and 3 patients with transient palpitation recovered quickly after infusion stopped, and there was no representation of clinical deterioration.

Conclusions DSE can be helpful to detect the presence of contractile reserve which has the potential to stratify operative risk and predict the long-term prognosis after surgery, but in China, it was not systematically performed in the high risk AS patients with left ventricular dysfunction and LFLG. This study showed DSE was safe and feasible for this Chinese patients group in TAVI era, and may indicate that the patients with contractile reserve on DSE can take more advantage from TAVI.

Upregulation of miR-196b confers a poor prognosis in glioblastoma patients via inducing a proliferative phenotype

Ruimin Ma¹, Wei Yan², Guojun Zhang¹, Hong Lv¹, Zhizhong Liu¹, Fang Fang¹,
Wei Zhang², Junxia Zhang³, Tao Tao³, Yongping You³, Tao Jiang², Xixiong Kang¹

1 Laboratory Diagnosis Center, Beijing Tiantan Hospital, Capital Medical University,
Beijing 100050, China

2 Department of Neurosurgery, Beijing Tiantan Hospital, Capital Medical University,
Beijing 100050, China

3 Department of Neurosurgery, The First Affiliated Hospital of Nanjing Medical University,
Nanjing 210029, China

Objective To explore the expression pattern, prognostic value and functional role of miR-196b in glioblastoma (GBM) patients using large cohorts.

Methods MiR-196b expression was measured using the Human v2.0 miRNA Expression BeadChip (Illumina) in 198 frozen glioma tissues. The expression levels of miR-196b were also validated in an independent cohort containing 128 formalin-fixed paraffin-embedded (FFPE) glioma samples using qRT-PCR. The presence of other molecular prognostic indicators was assessed centrally in the glioma samples. Whole genome gene profiling was performed to investigate the underlying biological behavior. MiR-196b functional analyses were performed in U87 and U251 cell lines.

Results The expression levels of miR-196b were inversely correlated with overall survival in GBM patients. Gene set enrichment analysis (GSEA) showed that the gene sets relating to cell cycle was significantly enriched in the cases with miR-196b overexpression. Functional analyses in U87 and U251 cells revealed that miR-196b was involved in cell proliferation.

Conclusions MiR-196b is overexpressed and confers a poor prognosis via promoting cellular proliferation in GBM patients.

Left ventricular functional changes after adenosine vasodilator stress by GSPECT**Ling Zhang¹, Yueqin Tian¹, Ping Zheng¹, Xiaoli Zhang¹, Xiaoxi Sun¹, Feng Guo¹, Hongxing Wei¹, Yingying Xu¹, Zuoxiang He¹****1 Department of Cardiovascular Nuclear Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China****2 Department of Ultrasound in Cardiovascular Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background Gated SPECT myocardial perfusion imaging has demonstrated to be useful in assessing left ventricular myocardial perfusion and function.

Methods We studied 70 patients referred for indicated adenosine and rest gated SPECT. Semi-quantity assessment of perfusion was analyzed in 17 left ventricular segments of left ventricular, segmental uptake scores were added to produce SRS, SSS and SDS. The left ventricular function parameters were quantified by QGS.

Results All patients were divided into 2 groups: group 1 included 16 patients with a decrease in LVEF of 5% or greater from rest to post-stress, and the other 54 patients made up group 2. Compared with group 2, the patients in group 1 had a significantly higher SSS and SDS (6.0 ± 4.5 vs. 2.5 ± 2 , 3.6 ± 3.9 vs. 1.4 ± 1.3 , $P < 0.05$), and the severity of coronary artery stenosis was more serious ($P < 0.05$).

Conclusions Adenosine-induced a decrease in LVEF of 5% or greater as shown by gated SPECT, is a valuable nonperfusion marker of CAD and prognosis.

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Clinical experience of early anticoagulant therapy after endovascular stent-graft exclusion for Stanford B type aortic dissection

Zhaolei Jiang, Ju Mei, Fangbao Ding, Chunrong Bao, Min Tang, Jiaquan Zhu, Nan Ma, Jianbing Huang, Hao Liu, Junwen Zhang, Qi Yang

Department of Cardiothoracic Surgery, Xinhua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai 200092, China

Objective To summarize the preliminary experience of early anticoagulant therapy after endovascular stent-graft exclusion for Stanford B type aortic dissection.

Methods From June 2006 to June 2011, 75 patients [65 males, 10 females, mean age (59.1±13.5) years, range 22–81 years] underwent endovascular stent-graft exclusion for Stanford B type aortic dissection in Shanghai Xinhua Hospital. Computed Tomography Angiography (CTA) was used to evaluate the lesions of aortic dissection before endovascular stent-graft exclusion. The descending thoracic aortic diameters were 22mm to 42mm [mean (30.3±4.0) mm]. The distance from the breakage of dissection to the left vertebral artery (LSA) was longer than 1.5mm in 29 cases, and shorter than 1.5cm in 46 cases. During the operation, left subclavian artery revascularization was performed to patient, whose left vertebral artery was advantage and needs to be fully or partially covered. From the second day after operation, aspirin was given to patient, whose left subclavian artery was fully or partially covered by endovascular stent-graft (no endoleak and residual distal tear). Early anticoagulant therapy lasted 3 months. The symptoms or signs about nervous system were observed in the early stage of post-operation, and the CTA was examined at postoperative 3 months.

Results The operation succeeded in 75 patients. The diameters of aortic stent were 26mm to 46mm [mean (34.3±4.0) mm]. Left subclavian artery revascularization was carried out for 2 cases of all patients. The left subclavian artery was fully or partially covered in 58 patients (fully covered in 19 cases, 2/3 covered in 15 cases, 1/2 covered in 24 cases), and 56 patients (no endoleak and residual distal tear) were given anticoagulant therapy to prevent vertebral artery thrombosis. 2 patients (2.7%) died in the early stage after operation. 1 patient died of renal failure, 1 patient died of dissection rupture. The duration of hospitalization was 4 to 19 days [mean (7.9±3.5) days]. No neurological complications occurred in hospital. The follow-up period was 6 to 66 months. 1 patient died during the follow-up, 1 patient had recurrence of Stanford a type aortic dissection and was cured by ascending aorta and aortic arch replacement, and 1 patient had recurrence of Stanford B type aortic dissection and was cured by second endovascular stent-graft exclusion. All patients had no neurological complications, such as cerebral infarction and paraplegia.

Conclusions Early anticoagulant therapy could safely and effectively prevent the neurological complications (such as cerebral infarction and paraplegia) related to vertebral artery thrombosis for Stanford B type aortic dissection patients whose left subclavian artery was fully or partially covered by endovascular stent-graft.

Early routine post-fibrinolysis angioplasty compared to primary angioplasty in patients with acute myocardial infarction and ST-segment elevation

Xianzhi He, Xinhong Wan, Haiyu Wang, Qinhua Zhong, Shenxian Fang, Wenjun Peng, ShenGuo, Jianfang Xue

Department of Cardiology, Longgang District Central Hospital of Shen Zhen, Guang Dong Province, Shen Zhen 518116, China

Objective Patients with acute myocardial infarction and ST-segment elevation (STEMI), primary angioplasty is frequently not available or performed beyond the recommended time limit. We designed a randomized, controlled study to evaluate whether lytic-based early routine angioplasty represents a reasonable reperfusion option for victims of STEMI irrespective of geographic or logistical barriers.

Methods A total of 234 STEMI patients were randomized to full Urokinase followed by stenting within 3-12 h of randomization (early routine post-fibrinolysis angioplasty; 118 patients), or to undergo primary stenting within 3 h of randomization (primary angioplasty; 116 patients). The primary endpoints were epicardial reperfusion and no-reflow, the extent of myocardial damage, determined by means of the infarct size and the extent of left ventricular myocardial damage, determined by means of the left ventricular function. The secondary endpoints were the acute incidence of bleeding and the 6-month composite incidence of death, reinfarction, stroke, or revascularization.

Results Early routine post-fibrinolysis angioplasty resulted in higher frequency ($P < 0.01$) of complete epicardial reperfusion (TIMI 3 epicardial flow) following angioplasty. The primary angioplasty group resulted in higher frequency ($P < 0.01$) of no-reflow. Both groups were similar regarding infarct size (the level of TroponinT (cTnT), $P > 0.05$); 6-week left ventricular function (ejection fraction, $P > 0.05$); major bleeding ($P > 0.05$) and 6-month cumulative incidence of the clinical endpoint ($P > 0.05$).

Conclusion Early routine post-fibrinolysis angioplasty safely results in better epicardial perfusion and lower no-reflow than primary angioplasty. Despite its later application, this approach seems to be equivalent to primary angioplasty in limiting infarct size and preserving left ventricular function.

Addition of cilostazol to conventional dual antiplatelet therapy reducing the risk of cardiac events and restenosis after drug-eluting stent implantation: a meta-analysis

Zhangwei Chen, Juying Qian, Jianying Ma, Junbo Ge

Department of Cardiology, Shanghai Institute of Cardiovascular Diseases, Zhongshan Hospital, Fudan University, Shanghai 200032, China

Backgrounds Relative efficacy and safety of triple antiplatelet therapy (TAT, addition of cilostazol to aspirin and clopidogrel) compared with conventional dual antiplatelet therapy (DAT, aspirin and clopidogrel) remained controversial.

Objective This meta-analysis was performed to compare the risk of cardiac events and restenosis of TAT versus DAT in drug-eluting stents (DES) implantation patients.

Methods We performed PUBMED, MEDLINE, EMBASE and Cochrane CENTRAL searches for randomized clinical trials of TAT versus DAT in patients after DES implantation. Five clinical trials (3,526 patients) were involved in the meta-analysis. Period of clinical follow-up ranged from 9 to 12 months.

Results TAT was associated with a 36% reduction in major adverse cardiac events (MACE) (odds ratio=0.64; 95% CI=0.51-0.81, $P<0.01$), a 40% reduction (OR=0.60, 95% CI=0.44-0.80; $P<0.01$) in target vessel revascularization (TVR), a 44% reduction (OR=0.56, 95% CI=0.34-0.91; $P=0.02$) in target lesion revascularization (TLR) and a 47%/44% reduction in in-segment/in-stent restenosis ($P<0.01$) and lower in-segment/in-stent late loss ($P<0.01$). As regards to the safety assessment, there was no significant difference about the risk of stent thrombosis (OR=1.0, $P=1.0$) and bleeding (OR=1.18, $P=0.49$) between TAT and DAT group, while the risk of gastrointestinal trouble was significantly higher in TAT group (OR=2.46, 95% CI=1.25-4.86; $P<0.01$).

Conclusions Addition of cilostazol to conventional DAT reduced the incidence of MACE, TVR and TLR in patients after DES implantation. TAT also reduced the risk of angiographic restenosis and late loss in patients after DES implantation.

Probucol preserves atrial structure and function by attenuates oxidative stress and increases stability of vulnerable atrial fibrillation in alloxan-induced diabetic rabbits**Huaying Fu, Tong Liu, Changle Liu, Jian Li, Lijun Cheng, Wansong Yang, Guangping Li****The second hospital of Tianjin medical university, Tianjin, 300211, China**

Introduction Diabetes mellitus (DM) is an independent risk factor for atrial fibrillation (AF), oxidative stress play critical roles in the pathophysiology of DM and the development of vascular complications, which may also play an important role in the development of AF. Probucol is a diphenolic compound with anti-oxidant and anti-inflammatory properties that reduces atherosclerosis and restenosis. The benefit of probucol on AF inducibility in the setting of diabetes is presently unclear. The aim of this study was to investigate whether the daily administration of probucol during 8 weeks increases stability of vulnerable atrial fibrillation in alloxan-induced diabetic rabbits.

Methods Experimental rabbits (n = 32) were divided into four groups: Control (Group C), DM (Group D), probucol-treated DM (Group DP) and probucol-treated Control (Group CP). Diabetes was induced by the administration of 120 mg/kg alloxan intravenously via the marginal ear vein. Probucol was applied at a dose of 1000 mg/d in the diet for 8 weeks. Atrial mechanical function and atrial electromechanical coupling start intervals (Pstart) and P-a' peak intervals (Papeak) by 2D and Doppler tissue echocardiography. Systemic oxidative stress has been evaluated by measuring plasma malonaldehyde (MDA), superoxide dismutase (SOD), medullary oxide enzyme (MPO) and catalase (CAT). Western blotting was performed with left atrial tissues for heat shock protein (HSP70). Isolated Langendorff perfused rabbit hearts were used to evaluate interatrial conduction time (IACT) and vulnerability to AF which examined by burst pacing.

Results The probucol-treated diabetic rabbits exhibited alleviation of oxidative stress displayed as decreased plasma MDA, MPO and increased plasma SOD compared with Group D. When Group D was compared with other groups, HSP 70 protein expression was more increased in atrial tissues and inducibility of AF was significant higher, probucol administration decreased HSP 70 protein expression and increases stability of vulnerable atrial fibrillation in Group DP ($P < 0.05$). Histological analysis revealed suppression of DM-related histological changes (interstitial fibrosis) by probucol.

Conclusion Probucol through its powerful antioxidant activity preserves the structural integrity of atrial tissues and increases stability of vulnerable atrial fibrillation in alloxan-induced diabetic rabbits.

Observation on effect of Trimetazidine in treating unstable angina pectoris**Guizhou Tao, Fangming Wang****First Affiliated Hospital of Liaoning Medical University**

Objective To observe the clinical efficacy, the effect to CRP and safety of trimetazidine combined with traditional drugs in patients with UA.

Methods 50 cases with UA were randomly divided into 2 groups: the control group, the treatment group, each with 25 cases. The angina attack times, the duration of angina pectoris, the dose of nitroglycerin, main clinical symptoms of angina, angina pectoris classification, ECG, heart rate, blood pressure and CRP changes of the 2 groups before and after treatment were recorded.

Results After treatment, the attack of angina frequency, duration time of per day and nitroglycerin dose of both groups were smaller than those of pre-treatment. The difference between the treatment group and the control group is statistically significant ($P < 0.05$).

Conclusion Trimetazidine combined with traditional drugs can significantly improve the clinical symptoms and myocardia ischemia and decrease inflammatory active levels in UA patients.

The initial evaluation of monitoring activated clotting times during atrial fibrillation ablation**Bailing Dai, Lianjun Gao, Dong Chang, Xiaomeng Yin, Rongfeng Zhang, Yingxue Dong, Yunlong Xia, Shulong Zhang, Yanzong Yang****First Affiliated Hospital of Dalian Medical University****Objectives** To evaluate the efficacy of empirical anticoagulation during AF ablation.**Methods** 87 consecutive AF patients in our hospital were involved in this study. All patients underwent AF ablation. Based on our experiences, every patient received an intravenous heparin bolus 100 U/kg immediately after the initial transseptal access, followed by additional heparin 1000 U per hour until finishing procedures. ACT was measured 15 minutes after the initial transseptal puncture, and then measured every 30 minutes during the whole procedure. $ACT \geq 250$ seconds was regarded as effective anticoagulation. Observe hemorrhagic and thrombotic events during the procedure and 1 month after procedures.**Results** Effective anticoagulation based on empirical administer of heparin was 74.1%. No thromboembolic or hemorrhagic events occurred.**Conclusions** Empirically administered of heparin during AF ablation procedure is effective and safe. It may be an alternative anticoagulation in AF ablation.

The features of ambulatory blood pressure in the very elderly**Lirui Yang, Huimin Zhang****Ward 7, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China**

Objective To explore the clinical significance of ambulatory blood pressure by monitoring in the very elderly.

Methods The very elderly people aged ≥ 80 were verified by systematic investigation and accepted 24h ambulatory blood pressure monitoring, and then analyze the related parameters.

Results There are 112 subjects (91.80%, 112/122) whose blood pressure is non-scope and 10 subjects (8.20%, 10/122) whose blood pressure is scope. The mean systolic blood pressure of 24h is (126.37 \pm 14.78) mmHg, while daytime (127.69 \pm 14.72) mmHg, and nighttime (123.72 \pm 17.96) mmHg. The mean diastolic blood pressure of 24h, daytime and nighttime is (66.35 \pm 8.32) mmHg, (67.75 \pm 8.58) mmHg, (63.54 \pm 9.29) mmHg, respectively. The 24h ambulatory pulse pressure is 60.02mmHg. The percentage decaying of nighttime systolic blood pressure is 3.11%, while the diastolic blood pressure is 6.21%. There are no significant differences between men and women in the features of ambulatory blood pressure.

Conclusion The features of the ambulatory blood pressure in the very elderly include non-scoop blood pressure and 24h ambulatory pulse pressure raised obviously than the normal pulse pressure.

Effects of Fish Oil Supplementation on Cardiac Function in Chronic Heart Failure: A Meta-analysis of Randomized Controlled Trials

Wei Xin , Xiaoying Li

Department of Geriatric Cardiology, The general hospital of Chinese People's Liberation Army, Beijing 100853, China

Background Effects of fish oil on cardiac function, ventricular remodeling and functional capacity in patients with chronic heart failure (CHF) remain controversial. We performed a meta-analysis to evaluate effects of additional fish oil supplementation on these parameters in these patients.

Methods Randomized controlled trials of fish oil supplementation on cardiac function in patients with CHF were identified by systematic search of Pubmed, embase, the Cochrane Library, as well as the reference lists related to the studies and reviews of interest through November 2011. Either a fixed-effect model or, in the presence of heterogeneity, a random-effect model was used to estimate the combined effects.

Results A total of seven trials with 825 participants were included. Meta-analysis results showed left ventricular ejection fraction was significantly increased (WMD = 2.25 %, 95% CI 0.66 to 3.83, $p = 0.005$), and left ventricular end-systolic volume was significantly decreased (WMD = -7.85 ml, 95% CI -15.57 to -0.12, $p = 0.05$) in fish oil group compared with placebo, although the left ventricular end-diastolic volume (WMD = -4.44 ml, 95% CI -14.52 to 5.65, $p = 0.39$) was not significantly affected. Meta-regression and subgroup analysis indicated improvement of left ventricular systolic function was more remarkable in patients with non-ischemic heart failure (WMD = 4.07 %, 95% CI 2.38 to 5.76, $p < 0.00001$). Besides, fish oil supplementation also improved the New York Heart Association functional classification (WMD = -0.58, 95% CI -0.75 to -0.41, $p < 0.00001$) and peak oxygen consumption (WMD = 1.68 ml/kg min, 95% CI 0.52 to 2.84, $p = 0.005$) in patients with non-ischemic heart failure. No significant publication bias was detected by Egger test ($p = 0.302$).

Conclusion Improvement of cardiac functions, remodeling and functional capacity may be important mechanisms underlying the potential therapeutic role of fish oil for patients with chronic heart failure. These effects might be more remarkable in patients with non-ischemic heart failure.

Effects of Fish Oil Supplementation on Inflammatory Markers in Chronic Heart Failure: A Meta-analysis of Randomized Controlled Trials

Wei Xin, Xiaoying Li

Department of Geriatric Cardiology, The general hospital of Chinese People's Liberation Army, Beijing 100853, China

Background Effects of additional fish oil supplementation on systematic inflammation in patients with chronic heart failure (CHF) remain controversial. We performed a meta-analysis to evaluate effects of oral fish oil intake on circulating levels of inflammatory markers in patients with CHF.

Methods Human intervention studies evaluating fish oil supplementation in CHF patients were identified by systematic search of Medline, Embase, Cochrane's library and references cited in related reviews and studies through November 2011. Either a fixed-effect model or, in the presence of heterogeneity, a random-effect model was used to estimate the combined effects.

Results A total of seven trials were reviewed. Meta-analysis results showed circulating levels of tumor necrosis factor α (SMD = -0.62, 95% CI -1.08 to -0.16, $p = 0.009$), interleukin 1 (SMD = -1.24, 95% CI -1.56 to -0.91, $p < 0.001$) and interleukin 6 (SMD = -0.81, 95% CI -1.48 to -0.14, $p = 0.02$) were significantly reduced in fish oil group compared with placebo; however, circulating levels of high sensitivity C reactive protein (SMD = -0.02, 95% CI -0.26 to 0.21, $p = 0.84$), soluble intracellular adhesion molecular 1 (SMD = -0.19, 95% CI -0.97 to 0.58, $p = 0.63$) and vascular cell adhesion molecular 1 (SMD = -0.06, 95% CI -0.33 to 0.21, $p = 0.65$) remained unchanged. Meta-regression and subgroup analysis indicated the differences in dose of fish oil and follow-up duration might influence the effects of fish oil on the inflammatory markers significantly. Greater reduction of these inflammatory markers might be identified in patients taken higher dose of fish oil (over 1000 mg/day) for a longer duration (over 4 months).

Conclusions Anti-inflammation may be a possible mechanism underlying the potential therapeutic role of fish oil for patients with chronic heart failure who were already on current optimal medications. These effects seem to be more remarkable in patients who took fish oil in a higher dose and for a longer duration.

The BNP role in heart failure**Deshui Wang, Yu Chang****Beijing University of Technology, Beijing 100124, China**

Since the first time the BNP (Brain natriuretic peptide) was found, it has become the focus of the scientific research on cardiovascular diseases. With their joint efforts, we can get more and more understanding about the BNP, we can make use of it fully. At present, the BNP was used in almost every field in the heart failure, including the heart failure risk stratification, the heart failure diagnosis, the heart failure treatment, the heart failure prognosis. The BNP showed many advantages in the diagnosis, prognosis of heart failure compared to the traditional methods in heart failure, the plasma BNP level can help distinguish some non-heart failure diseases from the real heart failure; different plasma BNP levels may predict different prognosis of heart failure...; the BNP even can be used to treat the heart failure. Combining with the previous researches on BNP, The article reviews the role of BNP in diagnosis and prognosis of heart failure, it discusses the limits in the BNP application, and it also discusses some prospects of BNP in heart failure in the future.

Coronary artery involvement in Takayasu's arteritis: report of 45 Chinese patients**Teng Sun, Huimin Zhang, Wenjun Ma, Lirui Yang, Xiongjing Jiang, Haiying Wu, Rutai Hui, Deyu Zheng****Department of Hypertension, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To investigate the clinical characteristics, potential difficulties in diagnosis and therapy of coronary involvement in Takayasu's arteritis (TA).

Methods Of 587 consecutive hospitalized patients with TA from 1998 to 2011, the patients, who were found to have more than 50% diameter reduction of coronary artery by angiography, were studied retrospectively. The clinical features, treatment and follow-up outcomes were summarized.

Results A total of 45 patients with coronary involvement were identified, accounted for 7.7% (45/587) of all the hospitalized patients with TA. The average age at onset of cardiac symptoms was 40.3 ± 12.8 years (15-64 years), and 36 were female. 40 patients had typical angina, and 15 patients had a history of myocardial infarction. The other main symptoms included peripheral vascular murmur, pulseless and hypertension. The erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) levels were elevated in 27 (60%) and 23 patients (51.1%), respectively. The ostia (37.4%) and proximal segment (33.3%) of coronary was most frequently involved. One lady suffered sudden death during the angiography. 10 patients received stents implantation, and 13 received coronary artery bypass grafting (CABG). 8 patients died during a mean follow-up period of 5.8 ± 4.5 years.

Conclusion Coronary involvement in Takayasu's arteritis, which may lead to significant cardiovascular events, is not rare. It is necessary to make diagnosis and therapy in early phase because coronary ischemia is the main causes of death.

High dose rosuvastatin loading therapy before PCI reduces periprocedural myocardial injury and levels of inflammatory markers in patients with acute coronary syndrome**Jiang Li, Jun Luo, Xiangqian Shen, Xinqun Hu, Zhenfei fang, Shenghua Zhou****Department of Cardiology, The Second Xiangya Hospital of Central South University, Hunan Province, Changsha 410011, China**

Background Beyond lipid lowering, statins are known to possess anti-inflammatory properties. Recent studies suggested an association between statins and early reduction in periprocedural myocardial infarction (PMI) and mortality after percutaneous coronary interventions (PCIs). We sought to examine the interrelationship between early statin loading therapy, inflammation response and PCI outcomes.

Methods A total of 78 patients with non-ST-segment elevation acute coronary syndrome (ACS) were randomized to pretreatment with rosuvastatin (20mg 12h before PCI, with a further 20mg 2h pre-procedure dose [n=31]) or control (no statins drug use in study period [n=36]). Cardiac troponin I (cTnI), vascular cell adhesion molecule-1 (VCAM-1) and matrix metalloproteinase-9 (MMP-9) were evaluated immediately before PCI and after 24h. The 30-day incidence of major adverse cardiac events (MACE, including death, myocardial infarction, unplanned revascularization, ischemic stroke or stent thrombosis) was evaluated in both groups.

Results: There were no significant differences in clinical characteristics between the two groups. After PCI, incidence of periprocedural myocardial injury was higher in control than in rosuvastatin group (30.6% versus 9.7%, $p=0.036$). VCAM-1 and MMP-9 levels were not different before intervention in either group. At 24h, significant attenuation of VCAM-1 and MMP-9 elevation occurred in the rosuvastatin group than control group (231 ± 60 vs. 262 ± 53 ng/ml, $P=0.031$ and 199 ± 54 vs. 240 ± 59 ng/ml, $P=0.005$). The 30-day incidence of MACE occurred in 36.1% of patients treated with rosuvastatin reload and in 12.9% in the placebo arm ($p=0.030$).

Conclusion: High dose rosuvastatin loading therapy prior to PCI reduces PMI and improves outcomes in patients with ACS. The reduction of PMI is associated with attenuation of the endothelial inflammatory response. Thus, reduction of endothelial inflammatory response may partly explain this protective effect of statins.

Influence of off-pump technique on diabetic patients undergoing coronary artery bypass grafting

Heng Zhang, Dejing Meng, Xin Yuan, Huawei Gao, Chenfei Rao, Zhe Zheng

Department of Cardiovascular Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background Diabetes is commonly considered to be an independent risk factor which influences both short- and long-term prognosis of coronary artery bypass grafting (CABG). Off-pump coronary artery bypass grafting (OPCAB) could reduce postoperative complications and improve late outcome. The influence of off-pump technique and diabetes mellitus on CABG is not well known.

Methods A retrospective review of prospectively collected data of 10,557 patients who had undergone isolated coronary bypass operations in our institution between 1999 and 2008 was analyzed. 3,098 of them were diabetic (1464 received CCABG and 1634 received OPCAB) while 7,459 were not (3614 were CCABG and 3845 were OPCAB). Average follow-up period was 43.2 months and was 97.6% complete. The four groups were compared in terms of short- and long-term prognosis after coronary artery bypass grafting, including the direct hospital costs. Results No matter whether the patients had diabetes, OPCAB could reduce perioperative blood product use demand (OPCAB-NDM, OR 0.171, $P < 0.001$; OPCAB-DM, OR 0.187, $P < 0.001$). However, OPCAB might increase the direct hospital costs for both diabetic and non-diabetic (CCABG-NDM, $P = 0.003$; CCABG-DM, $P = 0.001$). In the long run, compared with CCABG-NDM patients (33.9%), the adjusted Hazard Ratio for mortality in OPCAB-NDM (36.7%), CCABG-DM (13.8%), OPCAB-DM (15.6%) patients were 1.802 ($P < 0.001$), 1.471 ($P = 0.016$) and 2.627 ($P < 0.001$), respectively. And the adjusted Hazard Ratio for major adverse cardiovascular and cerebrovascular events (MACCE) were 1.786 ($P < 0.001$), 1.386 ($P < 0.001$) and 2.482 ($P < 0.001$).

Conclusion Overall, the diabetic accounts for nearly 30% of the total CABG patients. To a certain extent OPCAB can improve the short-term prognosis of the patients with diabetes, but may increase the economic burden of patients. In the long run, non-diabetic patients who receive OPCAB share similar risk of death and MACCE with diabetic patients who receive CCABG. Diabetic patients who undergo OPCAB have nearly 2.5-fold risk of death, myocardial infarction, stroke and revascularization compared with non-diabetic CCABG patients. Patients with diabetes mellitus may not be suitable for OPCAB surgery.

Effect of traditional Chinese medicine patent Prescription of Su Xiao Jiuxin Wan (SXJXW) on Vulnerable Plaque of Patients with Intermediate Coronary Stenosis

Li Ren, Jie Wang, Ling Feng, Jiliang Fang, Shuli Wang, Haibin Tong
Anzhen Hospital, Beijing 100029, China

Objective To observe the effect of SuXiao Jiuxin Wan (SXJXW), one of Traditional Chinese Medicine patent prescriptions of activating blood circulation to dissipate blood stasis on vulnerable plaque of patients with Intermediate Coronary Stenosis (ICS).

Methods This was a prospective, randomized, and comparative study with SXJXW using contrast-enhanced multidetector computed tomography angiography (MDCTA) (baseline and 6-month follow-up). A total of 110 patients with ICS (at least one segment of coronary diameter stenosis 50%–70%) of blood stasis syndrome confirmed by MDCTA were enrolled, and assigned to the treated group (treated with SXJXW, aspirin, and placebo of isosorbide dinitrate tablet) and the control group (treated with isosorbide dinitrate tablet, aspirin and placebo of SXJXW), by the use of the PROCPLAN of the SPSS 17.0 software. The plaque composition remodeling index (RI) confirmed by MDCTA and serum matrix metalloproteinase 9 (MMP-9), soluble CD40 Ligand (sCD40L), high sensitive C reactive protein (hsCRP) as the observation indices to evaluate the interventional effect of SXJXW on Plaque of Patients with ICS.

Result After six months of treatment, the number of the calcified was significant difference between the treatment group and the control group (the mean rank of the treatment and the control groups: 44.81 vs. 32.63, $P < 0.05$). Besides, the number of calcified of the treatment group during the six-months follow-up period was higher than its baseline, the number of mixed of the treatment group after treatment was lower than its baseline (both $P < 0.05$). The RI was no significant difference between the treatment and the control group after treatment (1.46 ± 0.66 vs. 1.72 ± 0.72 , $P > 0.05$). However, the RI of the treatment group during the six-month follow-up was much lesser than its baseline RI (1.46 ± 0.66 vs. 1.68 ± 0.8 , $P < 0.05$). The Serum MMP-9, sCD40L, hsCRP after treatment was no significant difference between the treatment and the control group (MMP-9: 622.36 ± 384.83 vs. 924.58 ± 728.11 , $P > 0.05$; sCD40L: 2.24 ± 1.12 vs. 2.30 ± 1.30 , $P > 0.05$; the mean rank of the treatment and the control group: 44.06 vs. 46.21, $P > 0.05$).

Conclusion SXJXW might stabilize the plaque of patients with ICS of blood stasis by increasing the number of calcified and decreasing the number of mixed, alleviating coronary remodeling.

Correlation analysis between red cell distribution width and patients' conditions and prognosis in idiopathic pulmonary arterial hypertension**Zhennan Li, Zhihong Liu, Qing Gu, Xinhai Ni, Xiansheng Cheng, Jianguo He, Changming Xiong****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To explore the relationship between circulating red cell distribution width (RDW) and patients' conditions and prognosis in idiopathic pulmonary arterial hypertension (IPAH).

Methods Patients with IPAH confirmed by right heart catheterization were enrolled consecutively in this study. Their baseline data were recorded and were followed up at the endpoint all-cause death. Baseline data were analyzed by Spearman's rank test and independent t-test; follow-up outcomes were analyzed with receiver operating characteristic (ROC) curves and Kaplan-Meier plots.

Results 76 patients (27 male cases and 49 female cases) with the mean age of (29.7 ± 9.7) were enrolled. The correlation analysis indicated that circulating RDW levels correlate positively with WHO functional class, right ventricular diameter, NT-ProBNP, endothelin-1 ($r = 0.4, p < 0.001$; $r = 0.29, p = 0.013$; $r = 0.36, p = 0.002$; $r = -0.31, p = 0.012$), and correlate negatively with 6-MWD, left ventricular diameter, CI ($r = -0.3, p = 0.029$; $r = -0.3, p = 0.01$; $r = -0.27, p = 0.019$). ROC curve analysis of 2 year all-cause mortality confirmed that only RDW was the strong performer in this analysis ($P = 0.003$), with an area under the curve of 0.766, a highly sensitive cut-off value 13.5% was derived to predict mortality with a sensitivity of 88.9% and a specialty of 66.7%. Survival analysis indicated that circulating RDW levels can strongly predict survival in patients with IPAH over time; high level RDW performed a poor prognosis. Independent t-test results suggested that the high level RDW group ($RDW \geq 13.5\%$) have a relative higher level of WHO functional class, NT-ProBNP and endothelin-1, indicating more serious conditions and prognosis.

Conclusion Circulating RDW levels correlate significantly with patients' conditions and prognosis in IPAH. Higher level of RDW indicates worse conditions and prognosis, high level RDW is a risk factor for adverse event in IPAH.

Rare case of multiple pulmonary artery aneurysms with mural thrombus and right ventricle capillary hemangioma**Zhennan Li, Zhihong Liu, Xinhai Ni, Jianguo He, Zhihui Zhao, Qing Gu, Xiansheng Cheng, Changming Xiong****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Multiple pulmonary artery aneurysms are extremely rare condition. Vasculitis in Behcet's disease is the most common cause. Here we report an extremely rare case of multiple pulmonary artery aneurysms combined with right ventricle capillary hemangioma, which, to our knowledge, has never been reported in the literature. A 17-year -old boy presenting with recurrent cough and hemoptysis was admitted to our pulmonary vascular disease centre. The computed tomography showed multiple pulmonary aneurysms with mural thrombus and space occupying lesion in the right ventricle without obstruction of the outflow-tract. A diagnosis of right ventricle capillary hemangioma was made with echocardiography and magnetic resonance imaging. However, pathological diagnosis of the space occupying lesion in right ventricle was indefinite, and the cause of the multiple pulmonary artery aneurysms is equivocal. A discussion about this extremely rare condition is provided in this article.

Everolimus versus Sirolimus-Eluting Stents for the Treatment of Sirolimus-Eluting Stent Restenosis

Rongqiang Yan, Jilin Chen, Lijian Gao, Bo Xu, Yuejin Yang, Runlin Gao

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background The widespread adoption of sirolimus-eluting stents (SES) in clinical practice led to an absolute number of patients with SES restenosis. Outcomes in patients with SES restenosis treated with newer generation everolimus-eluting stents (EES) or first generation SES were less certain.

Methods From May 2005 to January 2011, a total of 156 patients with 157 SES restenosis lesions were investigated. Among 156 patients, 39 patients (39 lesions) were treated with EES and 117 with SES (118 lesions). The primary outcome was a composite of death, myocardial infarction (MI) and target lesion revascularization (TLR) at 12 months.

Results The primary outcome occurred in 7.7% of patients treated with EES and 10.3% of those treated with SES ($P = 0.763$). Three patients (7.7%) treated with EES and 11 patients (9.4%) with SES had ischemia-driven TLR ($P = 1.000$). One patient (2.6%) treated with EES was in need of bypass surgery as compared with 2 patients (1.7%) with SES. With respect to safety end point, 2 patients (1.7%) treated with SES died compared to no patients with EES. There was no patients experienced MI in the groups. The rate of definite thrombosis was similar between groups (EES 0 vs. SES 0.9%; $P = 1.000$).

Conclusions EES and SES showed favorable performance and had no significant differences in MI, death, TLR or stent thrombosis for SES restenosis.

Hyperuricemia was not associated with intermediate coronary lesions progression: a retrospective study**Rongqiang Yan, Jilin Chen, Lijian Gao****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background Hyperuricemia was a traditional risk factor of coronary heart disease. However, the status of hyperuricemia was not fully evaluated in intermediate coronary lesions progression.

Methods Four hundred and seventy-five patients with intermediate coronary lesions were retrospectively studied and divided into the hyperuricemia group (46 patients) and the control group (429 patients) according to whether having a history of hyperuricemia. Target lesion revascularization rate was compared between the groups.

Results The mean angiogram follow up period was 493 ± 353 days. The diameter stenosis (%) was 54.4 ± 10.7 in the hyperuricemia group, compared with 55.2 ± 10.2 in the control group ($P=0.544$). There was no significant difference between groups with respect to progression of diameter stenosis (12.8% vs. 13.1%, $P=0.111$). Twelve patients (26.1%) in the hyperuricemia group were required target lesion revascularization, compared with 148 patients (34.5%) in the control group ($P=0.251$).

Conclusions Hyperuricemia seemed not to be associated with intermediate coronary lesions progression.

Clinical impact of intracoronary versus intravenous glycoprotein IIb/IIIa inhibitors in patients with acute coronary syndromes undergoing percutaneous coronary intervention: a meta-analysis of nine randomized studies

Rongqiang Yan, Jilin Chen, Lijian Gao

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background It was unknown whether intracoronary (IC) bolus administration of glycoprotein IIb/IIIa inhibitors (GPIs) during percutaneous coronary intervention (PCI) in patients with acute coronary syndromes (ACS) is superior to intravenous (IV) administration. The aim of this meta-analysis was to compare the clinical outcomes of PCI in ACS patients randomized to IC versus IV administration of GP IIb/IIIa inhibitors.

Methods We scanned the literature from January 2002 to May 2012 to identify all randomized trials comparing IC versus IV administration of GP IIb/IIIa inhibitors in patients with ACS undergoing PCI. Only studies reported clinical outcomes were included in this analysis.

Results Nine RCTs involving 3253 patients met our inclusion criteria. Compared to the IV administration, IC administration was associated with a non-significant decrease in mortality (RR: 0.87, 95% CI: 0.62-1.23, P=0.44), target vessel revascularization (RR: 0.69, 95% CI: 0.44-1.09, P=0.11), myocardial infarction (RR: 0.69, 95% CI: 0.44-1.07, P=0.10), and bleeding (RR: 0.97, 95% CI: 0.81-1.17, P=0.76). However, IC administration was associated with a significant decrease in major adverse cardiovascular events (RR 0.75, 95% CI: 0.60 to 0.95, P=0.02)

Conclusions In patients with acute coronary syndromes undergoing PCI, IC administration of GP IIb/IIIa inhibitors was safe and associated with a significant decrease in major adverse cardiovascular events.

Clinical Analysis of Arrhythmia in 297 Ebsteins Anomaly Patients**Yu Hou, Pihua Fang, Jun Liu, Sen Lei, Jiqiang Hu, Jun Yu, Shu Zhang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective This study investigated the type, mechanism and incidence of Ebstein's anomaly combined arrhythmia through analyzing the characteristics of the ECG of 297 patients with Ebstein's anomaly and the electrophysiological reports in some patients.

Methods 297 patients who were diagnosed as Ebstein's anomaly and admitted in our hospital over the past 10 years were consecutively enrolled in this research, involving 131 male and aged 5 months old to 74 years (mean 21 ± 16 years old). Every type of arrhythmia was recorded through analyzing the patient ECG and cardiac electrophysiology study reports, and arrhythmic events in this group were counted.

Results In these 297 patients with Ebstein's anomaly, 194 patients had complete or incomplete right bundle branch block (65%); 14 patients had left branch block (4.7%); 42 patients had first-degree atrioventricular block (14%); 3 patients had third-degree atrioventricular block; 19 patients had Wolff–Parkinson–White (WPW) syndrome (6.3%); 31 patients had paroxysmal supraventricular tachycardia (10.4%), 20 patients had paroxysmal atrial fibrillation; 8 patients had paroxysmal atrial tachycardia; 13 patients had paroxysmal or persistent atrial flutter. 35 patients with supraventricular tachycardia, aged from 12 to 61 years, underwent electrophysiological study and radiofrequency ablation, including 1 case of typical atrial flutter, 4 cases of scar atrial flutter after surgical correction, 2 cases of atrioventricular nodal reentrant tachycardia, and 28 cases of atrioventricular reentrant tachycardia. Electrophysiological study revealed that: 31 APs were located along the tricuspid annulus, 2 APs were located along the mitral annulus. 281 patients were completely followed-up (14 lost), with average follow-up of 5 ± 3 years, 26 (9.2%) patients had emerging arrhythmias such as atrial fibrillation, atrial flutter and atrial tachycardia, and 1 patient had three degree atrioventricular block.

Conclusion Ebstein's anomaly patients are prone to be combined with arrhythmia; the common types were right bundle branch block, first degree atrioventricular block, atrioventricular reentrant tachycardia and paroxysmal atrial fibrillation. Intracardiac electrophysiological study confirmed that Ebste

The effect of therapeutic lifestyle intervention on ambulatory blood pressure**Xiaolin Liu, Fanghong Lu, Zhendong Liu****Department of Cardiology Cardio-Cerebra Vascular and Research Center, Institute of Basic Medicine, Shandong Academy of Medical Sciences, Shandong Province, Jinan 250022, China**

Objective To investigate the effect of therapeutic lifestyle intervention on ambulatory blood pressure in essential hypertension.

Methods 200 hypertensive patients were randomly divided into two groups: therapeutic lifestyle intervention group and control group. All subjects were given antihypertensive agents, strict therapeutic lifestyle intervention (low-salt dietary, exercise, et al) were given to intervention group, while routine lifestyle intervention were given to control group. 24-hour ambulatory blood pressure monitoring (ABPM) was performed before and after one year treatment.

Results The clinical and ABPM index had no statistical significance between the two groups. With one year treatment, the decreased level of 24h、 nighttime blood pressure in intervention group were significantly higher compared to control group (24hSBP (14.5±5.8) % vs. (10.2±5.3) %、 nSBP (9.9±7.2) %vs. (4.1±7.4) %、 24hDBP (11.7±4.5) %vs. (7.2±6.1) %、 nDBP (7.4±8.5) %vs. (3.0±8.5) %， P<0.05)。 The decreased level of daytime and nighttime systolic blood pressure load in intervention group were significantly higher compared to control group ((29.8 ± 13.9)vs.(24.8 ± 14.0), (42.6 ± 23.6)vs.(31.3 ± 17.9), P <0.05).The outcome rate of dipping blood pressure in intervention group was significantly higher compared to control group (27% to 8%, P <0.05).

Conclusion The combination of antihypertensive and lifestyle interventions can significantly lower the blood pressure and the systolic blood pressure load of essential hypertension. Therapeutic lifestyle interventions may have beneficial effects on restored of circadian rhythm of ambulatory blood pressure.

Atorvastatin in pulmonary arterial hypertension (Apath) Study

Weijie Zeng

1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**2. The First Affiliated Hospital of Jinan University, Guangzhou 510630, China**

Background Statins have been shown to both prevent and attenuate pulmonary hypertension in animal models. This study investigates the potential therapeutic benefits of atorvastatin as an affordable treatment for pulmonary hypertension patients.

Methods Two hundred and twenty patients with pulmonary arterial hypertension (PAH) or chronic thromboembolic pulmonary hypertension (CTEPH) were randomized, double-blind, to receive atorvastatin 10 mg daily or matching placebo in addition to supportive care.

Results At 6 months, 6-minute walk distance decreased by 16.6m in the atorvastatin group and 14.1m in the placebo group. The mean placebo-corrected treatment effect was -2.5 m (95% confidence interval: -38 to 33 ; $p=1.0$), based on intention to treat. A small non-significant increase in pulmonary vascular resistance and fall in cardiac output was seen in both treatment groups. There was no significant difference in the proportion of patients who improved, remained stable or showed deterioration in WHO functional class between atorvastatin and placebo treatments. Nine patients died in the atorvastatin group and 11 in the placebo group. Serum cholesterol levels fell significantly on atorvastatin treatment. Discontinuation rates were 23.2% and 26.9% on atorvastatin and placebo respectively.

Conclusion Atorvastatin 10 mg daily has no beneficial effect on the natural history of PAH or CTEPH over 6 months.

The Analysis of the Diagnosis and Treatment on Aortic Dissection in 2011**Mei Yang, Yingkai Cui, Jianguang Zhou, Chao Qi, Gang Zhang, Xuebin Cao****Geriatric Cardiovascular Disease Center, PLA 252 hospital of Cancer Treatment Center, Hebei Province, Baoding 071051, China**

Objective To investigate the clinical characteristics, clinical diagnosis, erroneous diagnosis and prognosis.

Methods The clinical data of 25 patients with aortic dissection by our hospital from January 1 2011 to December 31 2011 were reviewed.

Result Along the 25 patients, 18 cases are male and 7 are female, with the ratio of male to female is 2.57:1. Among them, the least is 37 years old and the oldest is 82, with the average age of 52.6. Among the 25 cases, there is no significant difference in risk factor between age groups. Pain is the main clinical performance, which is the first symptom in 20 of the 25 patients. 11 patients were definitely diagnosed on the first diagnosis, with the rate of 44%, and the error diagnosis patients were 7 with error diagnosis rate 28%. As long as age distribution is concerned, the older the age, the diagnosis ratio or suspected diagnosis ratio the higher, while error diagnosis lower. 320 row helical CT is the main diagnosis method and enhanced CT is the second. Among the 25 cases, 17 have accepted conservative treatment with drugs and 5 of them transfer to another hospital and 3 had an operation. There is only one death with death rate is 4%.

Conclusion Recognition on aortic dissection has obviously improved in our hospital, and error diagnosis has decreased. However, error diagnosis on youth patient is still relating high. 320 rows helical CT has high specialty and sensibility bears in diagnosis of aortic dissection. Cardiac ultrasonic and enhanced CT also had significance in early diagnosis.

Effects of exercise therapy at the intensity of anaerobic threshold for cardiopulmonary function in patients with AMI after percutaneous coronary intervention

Lin Che, Leming Wang, Jinfa Jiang, Wenju Xu, Jiahong Xu, Wenwen Yan

Department of Cardiology, Shanghai Tongji hospital Affiliated to Tongji University, Shanghai 200065, China

Objective The purpose is to investigate the feasibility and safety of aerobic exercise prescription from the individually-based results of cardiopulmonary exercise test (CPET) and influence of aerobic exercise training for cardiopulmonary function in patients with acute myocardial infarction (AMI) after percutaneous coronary intervention (PCI)

Methods 147 consecutive patients with AMI after PCI were divided into exercise group and control group, who finished twice times CPET and followed their rehabilitation program for 3 months. Patients in the exercise group finished their aerobic exercise therapy based on their individually anaerobic threshold. CPET was measured at the time of discharge, at the end of three months, including ventilatory response to exercise and cardiac output changes during exercise.

Results Their heart rate at AT intensity [92 ± 10 beat min^{-1}] was lower than their traditional minimal target heart rate [105 ± 6 beat $\cdot \text{min}^{-1}$] following the exercise test. The abnormal CO response at exercising was found in 38.7% patients with AMI after PCI, which the CO was maxim when exercising at AT (AT: anaerobic threshold) load and was decreasing after the load was far exceeded the AT load. The O_2 consumption (14.0 ± 4.0 ml $\text{min}^{-1} \text{kg}^{-1}$ and 20.0 ± 4.0 ml $\text{min}^{-1} \text{kg}^{-1}$) and workload (64.2 ± 20.2 J s^{-1} and 91.0 ± 15.3 J s^{-1}) at peak level and the O_2 consumption (10.1 ± 2.4 ml $\text{min}^{-1} \text{kg}^{-1}$ and 12.6 ± 2.9 ml $\text{min}^{-1} \text{kg}^{-1}$) and workload (35.4 ± 18.6 J s^{-1} and 42.7 ± 16.8 J s^{-1}) at AT level markedly increased than before 3 months in exercise group, and the O_2 consumption (14.9 ± 3.1 ml $\text{min}^{-1} \text{kg}^{-1}$ and 18.3 ± 2.0 ml $\text{min}^{-1} \text{kg}^{-1}$) and workload (64.7 ± 23.2 J s^{-1} and 79.2 ± 16.1 J s^{-1}) at peak level increased than before 3 months in control group, but their O_2 consumption (10.7 ± 2.4 ml $\text{min}^{-1} \text{kg}^{-1}$ and 11.0 ± 2.3 ml $\text{min}^{-1} \text{kg}^{-1}$) and workload (36.7 ± 21.2 J s^{-1} and 38.1 ± 21.2 J s^{-1}) at AT level had not obvious change ($p > 0.05$). After three months aerobic exercise therapy, patients with abnormal CO response during exercising recovered normal exercise CO response in exercise group (12 patients recovered normal exercise CO response in 17 patients with primitively abnormal CO response) and control group (2 patients recovered in 14 patients with abnormal CO response) ($\chi^2 = 9.827$, $p = 0.002$).

Conclusions AT exercise intensity is safe and scientific and effective. Exercise therapy at the intensity of anaerobic threshold can improve oxygen capacity and exercise endurance and correct abnormal exercise CO response, which is safe and effective and should be better recommended for patients with AMI after PCI.

The effect of exercise training on chronic systolic heart failure**Mei Li, Lan Guo****Guangdong Academy of Medical Sciences Guangdong General Hospital, Guangdong 510080, China**

Objectives To evaluate what the effects of exercise training on patients with chronic systolic heart failure who have received regular pharmacotherapy are, and whether it is safe for these patients.

Subjects and Methods We screened 40 out-patients (Heart Function NYHA II-III) with CHF, admitted between January 2011 and December 2011, to the Cardiology outpatient service of Guangdong General Hospital, who have received regular drug treatment according to guidelines of CHF for at least 4 weeks. After initial measurements of heart function, 6-minute walk test, the bicycle exercise test, the score of Minnesota living with heart failure questionnaire, and the score of self-Rating Depression Scale, patients were randomized into two groups, trained group (n=20) and control group (n=20). Two groups were both received health education and counseling about HF and psychological counseling. The trained group was received rehabilitating exercise program three times a week for 12 weeks, while control group had no training program. After the training program was completed, all measurements above were repeated in both groups. At the same time compare the differences of improvement of all measurements before and after training between two groups and observe the incidence rate of adverse events (arrhythmia, angina, aggravate heart failure, sudden death and so on) during exercise training.

Results No significant differences were found between groups at baseline. After 12-week exercise training, NYHA functional class, the distance of six-minute walk test, work load on the bicycle exercise test, finished time on the bicycle exercise test were all improved significantly from baseline in trained group ($P < 0.01$). And at 12 weeks, the distance of six-minute walk test and finished time on the bicycle exercise test were all improved from baseline in control group ($P < 0.01$ or 0.05), but these were improved much more significantly in the trained group than the control group ($P < 0.01$ or 0.05). There were no improvements in classification of heart function and work load on the bicycle exercise test in the control group ($P > 0.05$). The score of Minnesota living with heart failure questionnaire were decreased significantly in both groups ($P < 0.01$), but there was no significant difference between them. No training related adverse events (arrhythmia, angina, aggravate heart failure, sudden death and so on) were reported.

Conclusion Exercise training as used in this study appears to be safe for patients with CHF who had received regular pharmacotherapy in NYHA class II or III, even for those with CRT. Exercise training can significantly improve heart function and functional capacity. However, no significant improvement was found in quality of life.

Electrical storm after percutaneous transluminal septal myocardial ablation on hypertrophic obstructive cardiomyopathy: a case report

Yiping He, Hangyuan Guo, Yufang Qiu, Fang Peng, Biao Yang
Shaoxing Provincial People's hospital, Zhejiang, 312020, China

We describe a 62-year-old male patient. He had been diagnosed with hypertrophic obstructive cardiomyopathy and was refractory to medical treatments. He was admitted to our hospital for percutaneous transluminal septal myocardial ablation (PTSMA). Temporary cardiac pacemaker was inserted before the injection of ethanol. Completely atrial ventricular block happened soon after PTSMA. One hour after PTSMA, Ventricular arrhythmia storms occurred. They were refractory to lidocaine, amiodarone and magnesium sulfate injection, six times of electrical conversions and defibrillations were performed. The ventricular fibrillations did not stop until the injection of esmolol hydrochloride. Completely atrial-ventricular block disappeared 36 hours after PTSMA. Transthoracic echocardiography (TTE) was performed before and 1-week after PTSMA. The left ventricular outflow-tract pressure gradient (LVOTG) was much lower than that of Pre-PTSMA, with 25mmHg vs. 53 mmHg. TTE was performed 3 months after PTSMA, it showed sustained improved in LVOTG (13 mmHg). Patient's symptoms improved, and electrocardiograph showed that atrial ventricular block and ventricular arrhythmias didn't occur anymore. In conclusion, PTSMA is effective in reducing the left ventricular outflow tract pressure gradient in this patient with HOCM. However, it resulted severe arrhythmias such as complete AV-block and ventricular electrical storm. In this case we found that esmolol is rather effective than lidocaine and amiodarone in the treatment of ventricular electrical storm.

Progress in relationship between pacemaker current and atrial fibrillation

Juan Wang, Yanmin Yang

Department of Emergency State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Aims The pacemaker current(abbreviated as 'I_f') is the major current in the action potential phase 4 auto-depolarization process, It played a key role in the formation and maintenance of heart rhythm. Atrial fibrillation is the most common arrhythmia in clinic, and the pathogenesis of atrial fibrillation was complex. We conducted a review to understand the relationship between the pacemaker current and atrial fibrillation.

Methods A systematic search of electronic databases (PubMed,EMBASE, Google Scholar) for studies published from 1970 to March 2012 was performed. Clinic animal studies that related to the pacemaker current on the mechanism of the atrial fibrillation were included.

Results The pacemaker current was coded by the hyperpolarization-activated cyclic nucleotide cation gated channel(HCN)gene family. So far, it was known four members in HCN family: HCN1-4, and HCN1, 2, 4 were the major types expressed in the mammalian heart. The clinic researches have shown that the messenger ribonucleic acid (mRNA) of HCNs in the atrial tissue of atrial fibrillation patients was increased indicated that the overexpress of HCN gene may regulate the generation of atrial fibrillation. The animal model of paroxysmal atrial fibrillation experiments also suggest that the pacemaker current may lead to the increase of the pulmonary vein (PV) sleeves ectopic self-regulation, and involve in the start mechanism of atrial fibrillation. Some studies demonstrated that ivabradine (an I_f blocker) decreased the spontaneous activity in PV cardiomyocytes through an inhibition of the I_f, which may imply the potential use for treatingatrial fibrillation.

Conclusions The pacemaker current may involve in the genesis and maintain of atrial fibrillation. However, the exact mechanism of the occurrence and development of the pacemaker current in atrial fibrillation is still need for further researches to confirm.

The short-term effects of different time to elective percutaneous coronary intervention on left ventricular remodeling and prognosis for patients with acute ST segment elevation myocardial infarction

Xiaokun Zhang, Fan Liu, Wei Cui, Ruiqin Xie, Jingchao Lu, Weina Pei

Department of Cardiology, the Second Hospital of Hebei Medical University, Hebei 050000, China

Objective To study the short-time effects of different time to elective PCI on left ventricular remodeling and prognosis for patients with STEMI, and to analyze the short-time effects of different infarct position and the value of creatine kinase on left ventricular remodeling, and to investigate if patients with STEMI who have lost the best time of treatment can benefit from elective PCI.

Methods We selected 61 cases of patients who accepted elective PCI after STEMI. All patients were TIMI grade 0~1 and were divided into 2 groups according to the time from onset of AMI to elective PCI: shorter than 7 days and longer than 7 days, according to the infarct position all patients were divided into anterior group and non-anterior group, according to the value of creatine kinase all patients were divided into less than 1000U/L group, 1000U/L~2000U/L group and more than 2000U/L group. Echocardiography was performed before elective PCI and was reviewed 1 and 3 months after elective PCI. According to comparing all indicators and major adverse cardiac events during 3 months follow-up, we evaluated the short effects of different time to elective PCI on left ventricular remodeling and prognosis. According to comparing all indicators of anterior group and non-anterior group, we evaluated the short-time effects of different infarct position on left ventricular remodeling, and according to comparing all indicators of different value of creatine kinase groups we evaluated the short-time effects of different value of creatine kinase on left ventricular remodeling.

Results The basic conditions in two groups before elective PCI were not different statistically. ($P>0.05$). LVEDVI and LVESVI in both two groups 3 months after elective PCI were significantly smaller than that before elective PCI and 1 month after elective PCI ($P<0.05$). The major adverse cardiac events (including angina, heart failure, re-myocardial infarction, death) were not different significantly in two groups during 3 months following-up ($P>0.05$). LVEDVI in anterior group was significantly larger than non-anterior group 3 months after elective PCI ($P<0.05$); LVEDVI and LVESVI in both anterior group and non-anterior group 3 months after elective PCI were significantly smaller than that before elective PCI and 1 month after elective PCI ($P<0.05$), LVEDVI and LVESVI in three value of creatine kinase groups 3 months after elective PCI were significantly smaller than that before elective PCI and 1 month after elective PCI ($P<0.05$).

Conclusion The elective PCI which is done both shorter than 7 days and longer than 7 days after the onset of STEMI can inhibit left ventricular remodeling significantly. The effect of elective PCI on left ventricular remodeling and short-term prognosis is not different significantly between the two stages. The degree of left ventricular remodeling in anterior myocardial infarction was more serious 3 month after elective PCI in patients with STEMI, but the different effects on left ventricular remodeling after elective PCI between different values of creatine kinase were not different significantly. Patients with primary acute STEMI and TIMI grade 0~1 who have lost the best time of treatment can benefit 3 months after elective PCI.

The Relationship between serum uric acid levels and patients' conditions and prognosis in idiopathic pulmonary arterial hypertension

Zhennan Li, Zhihong Liu, Qing Gu, Xinhai Ni, Xiansheng Cheng, Jianguo He, Changming Xiong

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To explore the relationship between serum uric acid levels and patients' conditions and prognosis in idiopathic pulmonary arterial hypertension (IPAH).

Methods Patients with IPAH conformed by right heart catheterization were enrolled consecutively in this study. Their baseline data were recorded and were followed up at the endpoint all-cause death. Baseline data were analyzed by Spearman's rank test and independent t-test; follow-up outcomes were analyzed with Kaplan-Meier plots.

Results 76 patients (27 male cases and 49 female cases) with the mean age of (29.7 ± 9.7) were enrolled. There were 28 Patients with WHO functional class II, 45 patients with WHO functional class III, and 3 patients with WHO functional class IV. Their baseline mean pulmonary artery pressure was (64.7 ± 16) mmHg, pulmonary vascular resistance (1676.9 ± 669) dyn \cdot s \cdot cm $^{-5}$, Pulmonary Capillary Wedge Pressure (9.6 ± 4.97) mmHg, mean right atrial pressure (9.79 ± 6.1) mmHg cardiac index (2.07 ± 0.57) L \cdot min $^{-1}\cdot$ m $^{-2}$, serum uric acid (390.9 ± 103) μ mol/L. The correlation analysis indicated that serum uric acid levels correlate positively with right ventricular diameter ($r = 0.28$, $p = 0.018$), and correlate negatively with CI ($r = -0.34$, $p = 0.003$). Independent t-test results suggested that the higher level uric acid group (serum uric acid $> 416.5 \mu\text{mol/L}$) have a relative higher level of WHO functional class, NT-ProBNP and endothelin-1, lower level of CI, indicating more serious conditions and prognosis. Survival analysis indicated that serum uric acid levels can strongly predict survival in patients with IPAH over time, high level of uric acid performed a poor prognosis.

Conclusion serum uric acid levels correlate significantly with patients' conditions and prognosis in IPAH. Higher level of serum uric acid indicates worse conditions and prognosis. Uric acid can be considered as a useful marker for IPAH.

Arterial switch operation for transposition of the great arteries, unrestrictive ventricular septal defect, and pulmonary arterial hypertension**Kai Ma, Shoujun Li****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective Our objective was to evaluate the early and midterm outcomes of arterial switch operation in transposition of the great arteries, unrestrictive ventricular septal defect, and pulmonary arterial hypertension.

Methods Between March 1999 and 2011, the arterial switch operation was performed in 84 patients with a mean age of 31.2 ± 9.3 months. Median preoperative values for systolic pulmonary arterial pressure were 84 mmHg (25-100 mmHg), respectively. Follow up was 100% complete. Mean follow-up was 2.4 years (1 to 6 years).

Results Early mortality was 7.1%. The main cause of early death was low cardiac output. Mean pulmonary arterial pressure decreased from 52.5 ± 6.5 to 31.6 ± 8.7 mmHg. Three late deaths occurred within one year after surgery because of progressive heart failure in 2 and sudden death in 1. All the survivors were in New York Heart Association functional class I or II.

Conclusions The arterial switch operation significantly improved the quality of life and possibly life expectancy in patients with transposition of the great arteries, unrestrictive ventricular septal defect, and pulmonary arterial hypertension. The midterm and longterm result were acceptable, which need closely monitoring.

Simultaneous Hybrid Versus Staged Revascularization by Carotid Artery Stenting and Off-pump Coronary Artery Bypass: Immediate and Long-Term Results

Tao Yang, Lefeng Zhang, Hansong Sun

Department of Adult Cardiac Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To evaluate the efficacy and safety of both simultaneous hybrid and staged revascularization by carotid artery stenting (CAS) and off-pump coronary artery bypass (OPCAB) in the treatment of coronary artery disease associated with severe carotid artery stenosis.

Methods Between December 2005 and July 2011, 59 consecutive patients with severe carotid and coronary artery disease who underwent simultaneous hybrid CAS-OPCAB or staged CAS-OPCAB procedure were enrolled. Carotid artery stenting was performed before coronary artery bypass surgery in both groups. The periprocedural and long-term outcomes of these patients who underwent hybrid or staged CAS-OPCAB were analyzed. The composite endpoint of our interest was defined as operative mortality, perioperative myocardial infarction and permanent stroke.

Results There were no deaths in both groups. Two patients (10%) in hybrid group suffered from stroke. In staged group, acute renal failure occurred in 1 patient (2.6%). Stroke, atrial fibrillation and reoperation for bleeding occurred each in 2 patients (5.1%), respectively. The in-hospital combined incidence of death, stroke and myocardial infarction (MI) in two groups was 6.8%. There was no statistical difference found between hybrid and staged groups in the ventilation time (23.8 ± 17.3 versus 18.4 ± 12.8 hours; $P = 0.187$), the volume of pleural drainage (901 ± 273 versus 756 ± 285 ml; $P = 0.084$). Compared with staged CAS-OPCAB, patients undergoing hybrid CAS-OPCAB had a shorter hospital stay (9.8 ± 3.3 vs 18.2 ± 6.8 days, $P < 0.001$), thus their total hospitalization cost was decreased by 15.2%. The mean follow-up duration was 27 ± 17 (range 3 to 70) months, during which five patients (8%) were lost to follow-up. In hybrid group, 1 patient (5.6%) suffered from a nonfatal stroke and another (5.6%) had a femoral artery stent implanted. In staged group, right carotid endarterectomy was done in 1 patient (2.8%). MI and cancer occurred each in 1 patient (2.8%), respectively. The overall 5-year combined incidence of death, stroke and MI was 3.7%.

Conclusions Our findings indicate that in high-risk patients with coronary artery disease suitable for OPCAB and carotid artery stenosis, both simultaneous hybrid and staged revascularization by CAS and OPCAB are promising, feasible and less invasive therapeutic strategies with good immediate and long-term clinical outcomes. Further follow-up and experience is warranted before the final conclusions regarding potential benefits of this approach for hybrid or staged CAS-OPCAB procedures can be made.

Aortic stenosis: an under recognized common threat to elderly

Yong G. Peng

University of Florida, Gainesville, FL 32611, USA

Aortic stenosis is the most prevalent valvular heart disease in elderly; it predominantly affects the population after the age of 60's. However, patient's underlying aortic stenosis can be overlooked if it has vague clinical presentation and less through diagnostic evaluation. With the decrease in prevalence of rheumatic heart disease, most advanced aortic stenosis has shifted its etiology to degenerative or calcifications with aging population in the developed countries. Among all the valvular diseases, aortic stenosis is still considered to be the most pathophysiological deleterious valvular lesion in elderly. It has important impact during perioperative management for those patients undergoing for cardiac and non-cardiac surgery. Due to its unique pathophysiological alteration on the patient's heart, there is an increased perioperative risk that can lead to adverse postoperative outcome. A current ACC/AHA guideline on perioperative cardiovascular evaluation and care for non-cardiac surgery has recommended evaluation and therapeutic intervention for patients prior to an elective non-cardiac surgery. Many elderly patients with symptomatic aortic stenosis and multiple comorbidities have chosen to give up the surgical option of aortic valve replacement due to the concerning the potential high risk morbidity and mortality associated with surgical procedure. However, the mortality for patient with severe aortic stenosis if it left untreated will be more than 50% after symptoms presentation at two years. In addition, there is little information to guide perioperative management for sub-group elderly patients who have severe aortic stenosis were clinically asymptomatic. The dilemma becomes: Whether asymptomatic patients with severe aortic stenosis first should undergo aortic valve intervention prior to non-cardiac surgery? What should compose of the best perioperative management options for the elderly who has aortic stenosis require an emergent non-cardiac surgery?

Aortic stenosis in elderly presents a myriad of potential complications during perioperative management for cardiac and noncardiac surgery. A thorough understanding of the pathophysiology of aortic stenosis with its potential adverse effects during the perioperative period is absolutely crucial in preventing undesirable outcomes. The decision of whether to perform prophylactic surgical aortic valve replacement on an asymptomatic patient with severe aortic stenosis to reduce the perioperative risk of noncardiac surgery is complicated, particularly for elderly patients who have multiple comorbidities. It is essential to develop alternative approach or innovated techniques to treat aortic stenosis patients who possess high surgical risk factors. The current result of TAVI may be encouraging, long term safety and outcome of this procedure need to be investigated.

Twelve years' experience of arterial switch operation for transposition of the great arteries**Shoujun Li, Kai Ma****Department of Cardiac Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objectives We reviewed our 12 years' experience of arterial switch operation (ASO) for transposition of the great arteries to investigate short-term result of this procedure.

Methods From 1999 to 2011, 423 patients were included in this retrospective study. All the patient's diagnosis were D-transposition of the great arteries and all of them underwent ASO. Thirty one patients had significantly regressed left ventricle, so the two-stage ASO was performed. Eighty three patients had complex coronary artery anatomy. Sixty seven patients had a unrestrictive ventricular septal defect and pulmonary arterial hypertension. Ten patients had a concomitant aortic arch obstruction.

Results Actuarial survival was 93.9% at discharge, respectively. There were 21 early deaths and 5 late deaths. All deaths were complex TGA except 4 simple in the very early period. Mean aortic clamp time was 117.13 ± 51.13 min. Mean cardiopulmonary bypass time was 158.83 ± 72.85 min. In the complex TGA group, ECMO was used in 4 patients, delayed sternal closure was performed in 22 patients and intra-operative coronary events were found in 9 patients.

Conclusions Simple ASO was performed with satisfied results in overall survival and functional status. The result of Complex ASO was acceptable but the patients need closely follow up.

Clinical and angiographic correlates of Left ventricular dysfunction in patients with three vessel coronary disease

Zhan Gao¹, Bo Xu¹, Yuejin Yang¹, Hongbin Yan¹, Jilin Chen¹, Shubin Qiao¹, Yongjian Wu¹, Xuewen Qin¹, Min Yao¹, Jinqing Yuan¹, Haibo Liu¹, Jue Chen¹, Jun Dai¹, Tao Chen¹, Siyong Teng¹, Runlin Gao¹

David E. Kandzari²,

1. Department of Cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. Piedmont Heart Institute, Atlanta, Georgia

Background Among patients with advanced multivessel coronary disease, left ventricular (LV) function is widely variable, and clinical and angiographic correlates of ventricular dysfunction remain to be defined.

Methods Among 73,339 patients undergoing diagnostic cardiac catheterization at a single center in China, patients with left ventriculographic assessment were identified with three-vessel coronary disease with or without left main involvement. Clinical and angiographic characteristics were examined among patients with normal or varying extent of LV dysfunction, and predictors of LV impairment (ejection fraction [EF] : <25%, 25-40% or ≥40%) were determined.

Results Among 11,950 patients identified with three-vessel coronary disease, the sample distribution of LVEF was ≥40%, N=10,776; 25-40%, N=948; <25%, N=226. Patients with reduced LV function (<40%) more commonly were male and had a history of myocardial infarction (MI), diabetes or unstable angina. Hypertension was more frequent in those with LVEF ≥40%. In a multivariate logistic regression analysis, prior MI (odds ratio [OR], 3.37; 95% confidence interval [CI], 2.96-3.84) was most predictive of LVEF <40%, followed by male gender, diabetes, and presentation with unstable angina. For LVEF <25%, only prior MI was identified as a significant correlate of severe LV dysfunction (OR, 4.06, 95% CI, 3.06-5.39). Following exclusion of patients with previous MI (N=7,416), male gender and diabetes were predictive of LVEF <40%, yet presentation with unstable angina was the only factor significantly associated with LVEF <25%.

Conclusion Among individuals identified with multivessel coronary disease with or without left main involvement, previous MI was the most significant risk factor of LV dysfunction.

Long-term outcomes of complete versus incomplete revascularization after drug-eluting stent implantation in patients with multivessel coronary disease**Zhan Gao, Bo Xu, Hongbin Yan, Jilin Chen, Shubin Qiao, Yongjian Wu, Xuewen Qin, Min Yao, Jinqing Yuan, Jue Chen, Haibo Liu, Jun Dai, Tao Chen, Yuejin Yang, Runlin Gao****Department of Cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background A limited number of studies on the impact of complete revascularization (CR) vs. incomplete revascularization (IR) on long-term outcomes in patients with multivessel coronary disease (MVD) in current percutaneous coronary intervention (PCI) practice have yielded inconsistent results.

Methods Between April 2004 and November 2010, 7376 consecutive patients with MVD underwent PCI at the Fuwai Hospital in Beijing, China. Patients who underwent prior CABG and those who had an acute myocardial infarction (MI) within 24 hours before revascularization or presented with cardiogenic shock were excluded.

Results Among 7065 patients with MVD undergoing PCI treatment, angiographic CR was performed in 1188 patients (16.8%), and proximal CR in 2053 patients (29.1%). The study found that either angiographic or proximal IR were associated with significantly higher estimated 3-year rate of cardiac death (2.55% vs. 1.13%, log-rank $p=0.016$; and 2.70% vs. 1.43%, log-rank $p=0.024$, respectively). After adjustment for differences in baseline characteristics between IR and CR patients, angiographic IR was associated with a significantly higher rate of cardiac death (adjusted hazards ratio [HR]: 2.56, 95% confidence interval [CI]: 1.03 to 6.41) while proximal IR was associated with a numerically higher rate of cardiac death (adjusted HR: 1.72, 95% CI: 0.93 to 3.17). For the subgroup of ≥ 2 -vessel IR with total occlusion, either angiographic or proximal IR patients had significantly higher rate of cardiac death (adjusted HR: 4.25, 95% CI: 1.50 to 12.09; and adjusted HR: 3.02, 95% CI: 1.40 to 6.52, respectively).

Conclusion Compared with IR, patients with CR had better clinical outcomes, especially when only single vessels were treated, supporting CR as first choice for patients with MVD.

Impact of depressed left ventricular function on outcomes in patients with three-vessel coronary disease undergoing percutaneous coronary intervention

Zhan Gao¹, Bo Xu¹, Yuejin Yang¹, Hongbin Yan¹, Jilin Chen¹, Shubin Qiao¹,
Yongjian Wu¹, Jinqing Yuan¹, Chen Jue¹, Runlin Gao¹
Ajay J. Kirtane²

1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. Columbia University Medical Center/New York-Presbyterian Hospital, New York

Objectives The aim of this study was to evaluate long-term outcomes of percutaneous coronary intervention (PCI) treatment in patients with multivessel coronary artery disease (CAD) and depressed left ventricular ejection fraction (LVEF).

Background Patients with multivessel CAD and depressed LVEF represent a high risk group of patients for coronary revascularization. There was limited data on PCI treatment in this population.

Methods Among a cohort of 4335 patients with three-vessel with or without LM disease undergoing PCI, 191 patients had LVEF <40% (low EF) and 4144 patients had LVEF ≥40%. In-hospital and long-term outcomes were examined according to LVEF.

Results The estimated 2-year rates of MACE, cardiac death, and MI were significantly higher in low EF group (19.64% vs. 8.73%, Log-rank test: $p < 0.01$; 10.30% vs. 1.33%, Log-rank test: $p < 0.01$ and 10.32% vs. 2.28%, Log-rank test: $p < 0.01$ respectively), and there were no difference of the rates of TVR (6.18% vs. 6.11%, Log-rank test: $p = 0.96$). Using Cox proportional hazard models, LVEF <40% was a significant risk factor of cardiac death, MI and MACE [OR (95% CI): 4.779 (2.369-9.637), 2.673(1.353-5.282) and 1.827 (1.187-2.813) respectively], but was not a statistically significant risk factor for TVR [OR (95% CI): 1.094(0.558-2.147)].

Conclusion Among patients undergoing PCI for multivessel CAD, left ventricular dysfunction remains associated with further risk of cardiac death in-hospital and during long-term follow-up for patients with severe CAD undergoing PCI therapy.

Effect of CYP2C19*2 and *3 alleles on platelet reactivity and adverse clinical events in Chinese clopidogrel-treated people undergoing percutaneous coronary intervention**Xiaofang Tang, Jinqing Yuan, Yuejin Yang, Wang Jing, Runlin Gao****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

As compared with whites, Chinese people more often carry the cytochrome P450 (CYP) 2C19 loss-of-function (LOF) allele with the CYP2C19*3 variant and less carry the cytochrome P450 (CYP) 2C19 gain-of-function (GOF) allele with the CYP2C19*17. To investigate the effect of the CYP2C19 variants on clopidogrel pharmacodynamics and long-term prognosis in these patients. Methods: Patients undergoing PCI (n=670) were enrolled in a single-center registry. Thrombelastography (TEG) was used to assess platelet reactivity (PR) at least 12 hours after 300-mg loading of clopidogrel. The definition of clopidogrel low response (CLR) was defined as 2 $\mu\text{mol/L}$ ADP-induced inhibition (TEG-ADP-Inhib) <30%. The CYP2C19*2, *3, *17 variants were determined by the Ligase Detection Reaction (LDR). The primary clinical end point was the composite of cardiovascular death, nonfatal MI, target vessel revascularization (TVR) and stent thrombosis (ST). The follow-up time is 12 months. Results: Carriage of the CYP2C19 LOF variant allele was relatively high (57.3%, n=384) and the CYP2C19 GOF variant allele was relatively low (0.925%). Platelet reactivity increased proportionally according to the number of the CYP2C19 LOF alleles. In a multivariate regression analysis, the risk of clopidogrel low response (CLR) increased depending on the number of CYP2C19 LOF allele [1 LOF allele; odds ratio (OR), 1.9; 95% confidence interval (CI), 1.2 to 3.0, P=0.008; and 2 LOF alleles; OR, 3.7; 95% CI, 2.0 to 6.8; P<0.001]. In the linear regression model, carrying LOF alleles explained only 3.6% of the observed variability in TEG inhibition values (r^2 : 0.036; $p < 0.001$). Platelet reactivity and the rate of CLR did not differ between the CYP2C19*2 versus *3 allele carriage. In addition, cardiovascular event occurrence increased according to the number of the CYP2C19 LOF allele; compared with noncarriers, carriers of 1[hazard ratio (HR),2.6; 95% CI, 0.9 to 7.3; P=0.063] and 2 CYP2C19 LOF allele(s) (HR, 5.4; 95% CI, 1.7–16.9; P<0.001) were associated with clinical end point. The clinical impact of the CYP2C19*2 versus *3 allele carriage also did not differ. Conclusion: Among Chinese patients undergoing PCI with clopidogrel, the CYP2C19 LOF allele carriage appears to affect clopidogrel pharmacodynamics and cardiovascular events according to the number of the CYP2C19 LOF allele. However, the LOF genetic variants only explained a small proportion (3.6%) of the observed variability.

In vivo survival evaluation of the ChinaHeart ventricular assist device in sheep

Xiujian Liu^{1,2}, Changyan Lin^{1,2}, Guanghui Wu^{1,2}, Chuangye Xu^{1,2}, Jing Wang^{1,2}, Xiaotong Hou¹

Haiyang Li¹, Peng Yang³, Wenbo Qu³

1. Beijing AnZhen Hospital, Capital Medical University, Beijing 100029, China

2. Beijing Institute of Hear Lung & Blood Vessel Diseases, Beijing 100029, China

3. ChinaHeart Biomedical Inc, Suzhou Jiangsu 215123, China

Aims Left ventricular assist devices (LVADs) are used in patients with end-stage heart failure to prolong life. For a LVAD, the in vivo testing of hemocompatibility and reliability is very important before clinical testing, large number of literature suggests that most domestic LVADs can lead to thromboembolism and hemolysis and have poor in vivo reliability. ChinaHeart VAD, which was developed by the China Heart Biomedical Inc, is the first case of a third generation bearingless pump wearing by using magnetic levitation in China and has good hemolysis performance in vitro testing. The aim of this study was to evaluate the hemocompatibility, reliability and end-organ effects of the China Heart VAD in a sheep model.

Methods The device was implanted in 6 healthy male sheep, with body weights ranging from 44 to 72 kg. Under anesthesia, via left lateral thoracotomy, the inflow cannula was inserted into the left ventricular apex on beating hearts, and the outflow graft was anastomosed to the descending aorta. Postoperatively, heparin was continuously infused to maintain the activated clotting time (ACT) within 120-180 s, afterward converted to oral warfarin. Routine hematologic and biochemical tests were performed preoperatively and postoperatively to evaluate peripheral organ functions. Pump operating parameters were recorded continuously until the termination of the experiment, at which time the sheep was humanely killed, and the end-organs were examined macroscopically and histopathologically.

Results Two of the six animals survived for 20 or 38 days, respectively, unfortunately, the other four died of anesthesia or blood leakage at the inflow cannula or outflow graft within the first 3 to 28 hours, respectively. For the two survival animals, hematologic and biochemical data showed no evidence of organ dysfunction during the study. Although 1 pump (20-day survival) had small thrombosis formation at the bottom housing, no other thrombosis was found in the pump interiors, inflow and outflow conduits of both two sheep. In addition, except lobular pneumonia of the left lung lobe adjacent to the pump was observed, there were no histologic changes in other major end-organs.

Conclusions The ChinaHeart VAD had exceptional hemocompatibility and reliability in sheep model.

The effect of ShenMai injection on oxidative stress, endothelial function in STEMI patients received emergency PCI

Yuyun Zheng, Ruizhen Lian, Lizhu Chen

Department of cardiology, The First Affiliated Hospital of Bao tou Medical College, Baotou. 041010, China

Objective To investigate the effect of ShenMai on oxidative stress, endothelial function in patients with STEMI received PCI.

Methods The 60 STEMI patients accepted the PCI were randomly divided into ShenMai group and control group. Arrhythmias, TIMI flow grade, 90 minute ST segment were studied immediately after PCI. Changes in serum of Nitric Oxide (NO), Maleic Dialdehyde (MDA), Superoxide Dismutase (SOD), Inducible nitric oxide synthase (iNOS), and Endothelial nitric oxide synthase (eNOS) were detected before and after PCI, The gene expression changes of eNOSmRNA and SODmRNA were observed also.

Results 1. The concentration of NO and the activity of eNOS were declined after PCI, In treated group they were higher than those of control group in postoperative 1 day and 7 day ($P < 0.01$) ; The concentration of NO and the activity of eNOS of treated group in postoperative 7 day were higher than those postoperative 1 day ($P < 0.05$, $P < 0.01$) ; The gene expression changes of eNOSmRNA were just like the activity of eNOS ; 2. The activity of iNOS were increased after PCI, In treated group they were lower than those of control group in postoperative 1 day and 7 day ($P < 0.01$) , The activity of iNOS in treated group at postoperative 7 day were lower than those in postoperative 1 day ($P < 0.01$) ; 3. The activity of SOD was declined after PCI in both groups. In treated group they were higher than those in control group at postoperative 1 day and 7day ($P < 0.01$) ; The gene expression changes of SOD were just like the activity of SOD; 4. The concentration of MDA were increased after PCI, In treated group they were lower than those in control group at postoperative 1day and 7 day ($P < 0.01$) ; 5. Incidence rate of Reperfusion arrhythmias in treated group were low ($P < 0.05$) ; 6. Percentage of slow-flow in treated group was low. 7. At 90 min after PCI , restore of ST segment in ShenMai group were more obvious ($P < 0.05$) ; 8. The incidence of heart failure in hospital was much less in the ShenMai group ($P < 0.05$).

Conclusions ShenMai could relieve ischemic reperfusion injury in STEMI patients received emergency PCI,

and the improvement of endothelial function and oxidative damage may play an important role.

Safety and short-term efficacy of renal sympathetic denervation as treatment for resistant hypertension**Tuo Liang, Hui Dong, Xiongjing Jiang, Meng Peng, Ting Guan, Wenjun Ma, Haiying Wu, Bo Xu, Runlin Gao****Department of Cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To evaluate the safety and short-term efficacy of renal sympathetic denervation#RSD# as treatment for resistant hypertension.

Methods 8 patients (6 male and 2 female) with resistant hypertension underwent renal sympathetic denervation in our hospital from 2012.2 to 2012.4, all patients were followed up at one month after the procedure. Blood pressure, usage of antihypertension drugs, renal function and complications were investigated.

Results at one month after RSD, 24-hour ambulatory blood pressure monitoring showed mean systolic blood pressure and diastolic blood pressure decreased 11.8 mmHg and 8.1 mmHg throughout 24 hours ($P < 0.05$, compared with baseline). Number of drugs reduced from 4.0 ± 0.0 to 2.8 ± 0.9 after RSD ($P < 0.01$). There is no significant change of renal function ($P > 0.05$). No complications were observed.

Conclusion This small study showed RSD was safe and efficient for treatment of resistant hypertension during one month of follow-up. But further investigation is strongly needed.

The comparison of nephrotoxicity of iodixanol in the elderly patients undergoing renal artery intervention or other peripheral intervention**Meng Peng, Hui Dong, Xiongjing Jiang, Ting Guan, Wenjun Ma, Jin Bian, Haiying Wu****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To compare the nephrotoxicity of iodixanol (visipaque) in the elderly patients undergoing renal artery intervention or other peripheral intervention.

Methods We conducted a prospective, single-center, pilot cohort study of 122 consecutive patients undergoing percutaneous transluminal renal angiography and stenting (PTRAS)(n=50) or other peripheral intervention (n=72). Iodixanol was used in all interventions. The serum creatinine (SCr) was measured at baseline and 24h, 48h, and 1 month after the intervention. Contrast-induced nephropathy (CIN) was defined as a relative increase in SCr from baseline of $\geq 25\%$ or an absolute increase of ≥ 0.5 mg/dl (≥ 44.2 $\mu\text{mol/l}$) within 2 days after intervention.

Results The demographic and other base-line characteristics were similar between the two study groups (PTRAS group VS other peripheral intervention group), including the creatinine clearance rate (65.36 \pm 24.44 ml/min VS 71.35 \pm 28.61 ml/min, P=0.27), and the dose of contrast medium (145 \pm 51.62 ml VS 160.8 \pm 52.3ml, P= 0.1). The peak increase in the serum creatinine concentration within two days after the intervention was similar in the two groups (10.85 \pm 14.3 $\mu\text{mol/l}$ VS 7.78 \pm 10.34 $\mu\text{mol/l}$, P= 0.17). An absolute increase of ≥ 0.5 mg/dL (44.2 $\mu\text{mol/L}$) in SCr wasn't observed in any patients of the two groups. The CIN occurred in 11 patients (22%) in the PTRAS group and 9 patients (12.5%) in other peripheral intervention group (P=0.16). In the overall population, the serum creatinine increased from 87.3 \pm 26.25 $\mu\text{mol/l}$ at baseline to 91.7 \pm 27.1 $\mu\text{mol/l}$ (P=0.02), and the creatinine clearance rate decreased from 70.5 \pm 21.87 ml/min at baseline to 67.13 \pm 21.43 ml/min (P=0.01) at 30 days after the intervention. But changes in serum creatinine (5.197 \pm 16.79 $\mu\text{mol/l}$ VS 3.88 \pm 14.76 $\mu\text{mol/l}$, P=0.72) or the creatinine clearance rate (-4.63 \pm 1.68 ml/min VS -2.55 \pm 1.91 ml/min, P=0.45) at 30 days after intervention was not significantly different between the PTRAS group and the other peripheral intervention group. Persistent CIN at 30 days was observed in only 2 patients (one for each group). No patient needed hemodialysis.

Conclusion The study showed the incidence of CIN after renal artery intervention was not significantly higher than that after other peripheral intervention, and indicated the application of iodixanol could be safe in the study population.

Risk factors for development of hypertension after heart transplantation**Qing Liu, Shengshou Hu, Jie Huang, Yunhu Song, Wei Wang, Zhongkai Liao, Jianli Qiu, Yong Wang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To assess the prevalence and risk factors responsible for hypertension after heart transplantation (HT) in Chinese single center.

Methods We studied 265 consecutive patients who had undergone HT between June 2004 and May 2012 and who survived for at least 6 months. Hypertension was defined as systolic pressure ≥ 140 mmHg and/or diastolic pressure ≥ 90 mmHg or the need to use drugs for its control. Univariate analysis and logistic regression analysis were used to determine preoperative and postoperative factors responsible for hypertension after HT.

Results The mean follow-up was 37 (range 6-95) months. Mean patient age was 47 (range 12-68) years, and 81.5% of the patients were men. 76.2% patients underwent HT because of cardiomyopathy, 17.7% for coronary artery disease, 1.9% for valvular heart disease, 1.9% for congenital heart disease and 2.3% for other causes. Of the patients under study, 60.4% were on cyclosporine a based immunosuppression, and 39.6% on tacrolimus. Hypertension was present in 17.4% of patients before HT and in 57.4% at some time after HT. Univariate analysis identified that the presence of post-HT hypertension correlated with male sex, BMI, history of pre-HT hypertension, serum creatinine levels at 1 month after HT and cyclosporine A based immunosuppressive therapy after HT. Logistic regression analysis confirmed male sex ([OR]: 2.27, 95%CI: 1.16-4.42, P=0.017), history of pre-HT hypertension ([OR]: 2.22, 95%CI: 1.05-4.71, P=0.037), and cyclosporine A based immunosuppressive therapy ([OR]: 2.54, 95%CI: 1.51-4.29, P<0.0001) as significant predictors of the development of post-HT hypertension.

Conclusions Hypertension is a frequent comorbidity after HT. Male sex, pre-HT hypertension, together with cyclosporine A based immunosuppressive therapy were independent predictors of the presence of post-HT hypertension.

Risk factors for development of diabetes mellitus after heart transplantation**Qing Liu, Shengshou Hu, Jie Huang, Yunhu Song, Wei Wang, Zhongkai Liao, Jianli Qiu, Yong Wang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To determine the prevalence and risk factors responsible for diabetes mellitus (DM) after heart transplantation (HT) in Chinese single center.

Methods We studied 265 consecutive patients who had undergone HT between June 2004 and May 2012 and who survived for at least 6 months. DM was defined as fasting plasma glucose level ≥ 7.0 mmol/l confirmed on at least two occasions or patients treated with an oral antidiabetic drug or insulin. Univariate analysis and logistic regression analysis were used to determine preoperative and postoperative factors responsible for DM after HT.

Results The mean follow-up was 37 (range 6-95) months. Mean patient age was 47 (range 12-68) years, and 81.5% of the patients were men. 76.2% patients underwent HT because of cardiomyopathy, 17.7% for coronary artery disease, 1.9% for valvular heart disease, 1.9% for congenital heart disease and 2.3% for other causes. Of the patients under study, 60.4% were on cyclosporine A based immunosuppression, and 39.6% on tacrolimus. 14.7% patients had DM before HT, and the prevalence of DM after HT in our study was 30.9%. Univariate analysis indicated that the development of post-HT DM associated with patient age, BMI, history of pre-HT hypertension and DM, preoperative total cholesterol levels, total cholesterol levels and LDL levels 1 month after HT, post-HT renal dysfunction. Independent predictors of post-HT DM were patient age ([OR]: 1.03, 95%CI: 1.00-1.06, P=0.048), pre-HT hypertension ([OR]: 2.77, 95%CI: 1.23-6.27, P=0.014), pre-HT DM ([OR]: 5.70, 95%CI: 2.40-13.55, P<0.0001) and preoperative total cholesterol levels ([OR]: 1.56, 95%CI: 1.23-1.98, P<0.0001).

Conclusions DM is one of the common complications after HT. The risk for developing post-HT DM is greatest among older age, pre-HT hypertension, pre-HT DM and high preoperative total cholesterol levels.

The classification of aortic dissection**Lirui Yang, Huimin Zhang****Ward 7, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Aortic dissection is one of the most common aortic diseases that has many risk factors. It is part of the acute aortic syndrome and is widely recognized as a rapid progressing, life-threatening condition. Aortic [dissection](#) can occur in any age and any site of the aorta. Identifying the site of dissection plays an important role in the determination of diagnosis and management strategy. DeBakey classification and Stanford classification are traditional classifications of aortic dissection based on the location and extent of dissection. The modified classification of the Stanford classification provides a guidance to determine the indication, optimal operative procedures, plan and the estimation of the prognosis. Svensson classification can be recognized as the subtype of DeBakey and Stanford classification and all classes of dissection can be seen in their acute and chronic stages. It doesn't matter which classification you choose, but it is of great significance to identify patients with dissection of the ascending aorta (DeBakey type I or type II or Stanford type A), as emergency cardiac surgery is recommended for this type of dissection. Usually, the Standard scheme is widely used because of its simplicity and practicability.

The clinical study about the change of FIB in patients with deep vein thrombosis pre-therapy between post-therapy**Zhiyong Guo, Zhitao Teng, Peiyong Zhao, Aining Cai, Yanfei Pan****Weihai Municipal Hospital, Shandong Province, Weihai 264200, China**

Object To study about the change of FIB in patients with deep vein thrombosis pre therapy between post therapy.

Method Thirty-seven patients with deep vein thrombosis accept interventional thrombolytic therapy, all patients are tested PT, APTT, FIB, D-dimer, FDP before therapy and 8 hours after therapy, 24 hours after therapy, 48 hours after therapy, 72 hours after therapy test again. Changing drug dose according to APTT and FIB.

Results Heparin dose are connected with APTT; Urokinase dose are connected with FIB. When FIB decrease above 40%, vein thrombosis are decreased totally. When FIB decrease to 1.0g/L, patients have higher bleeding rate.

Conclusion The FIB decrease in patients with deep vein thrombosis after interventional thrombolytic therapy; FIB decrease is connected with vein thrombosis decrease. Probably therapy can improve these patients survival.

Effects of atorvastatin and simvastatin on ventricular arrhythmias induced by ischemia-reperfusion in rabbit heart wedge

Lei Ruan¹, Yong Ren^{1,2}, Wenwei liu^{1,2}, Cuntai zhang¹

1. Department of Gerontology, Tongji Hospital, Tongji Medical College Huazhong University of Science and Technology, Wuhan 430030, China

2. Department of Cardiology, Xiangyang Hospital, Xiangyang 441021, China

Objective To evaluate the effect of atorvastatin and simvastatin on electric physiological parameters and ventricular arrhythmias induced by ischemia reperfusion in rabbit heart's wedge.

Methods Thirty-six rabbits were randomly divided into control, ischemia reperfusion, atorvastatin and simvastatin groups, 9 in each group. Arterially perfused rabbit left ventricular models were made by standard method, and transmural ECG as well as action potentials from both endocardium and epicardium were simultaneously recorded. QT interval, transmural dispersion of repolarization (TDR), action potentials from epicardium and endocardium and incidence of ventricular arrhythmia were recorded after the condition of ischemia for 30 min and reperfusion with 15 min.

Results Compared with control group, the QT interval, action potential duration 90% (APD₉₀) of epicardium and endocardium were significantly reduced in ischemia and reperfusion group. (all $p < 0.05$). The electric physiological parameters were increased in reperfusion condition compared with ischemia condition, especially the Tp-e/QT was recovery ($p < 0.01$). The electric physiological parameters were not changed in atorvastatin and simvastatin groups, compared with ischemia and reperfusion group (all $p > 0.05$). There was no ventricular arrhythmia in control group. However, ventricular arrhythmias were induced in other groups, under the condition of ischemia there are no significant difference, but in reperfusion station the incidence of ventricular arrhythmias were reduced in atorvastatin and simvastatin groups compared with ischemia and reperfusion group (0, 1/9 vs. 5/9, $p < 0.01$).

Conclusion The incidence of ventricular arrhythmia of ischemia-reperfusion can be reduced by perfused with atorvastatin and simvastatin.

Effects of nasal continuous positive airway pressure treatment on insulin resistance and ghrelin levels in non-diabetic apneic patients with coronary heart disease**Dan Yang, Zhihong Liu, Qing Zhao, Qin Luo****Center for Pulmonary Vascular Disease Diagnosis and Treatment, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective Given that obesity is a common risk factor for several diseases, obesity-related hormone and increased insulin resistance may contribute to the effects of OSA on cardiovascular consequences. Thus, the aim of this study was to investigate ghrelin and insulin resistance in non-diabetic apneic patients with coronary heart disease (CHD) and assess the effects of CPAP treatment on these parameters.

Methods Plasma ghrelin, homeostasis model assessment insulin resistance (HOMA-IR), insulin sensitivity (%S) and β -cell function (% β) were determined in 15 patients with CPAP and 15 matched controls without CPAP at baseline and 3 months.

Results At 3-month follow-up, plasma ghrelin levels in CPAP group were decreased ($P=0.024$) while those in control group increased ($P=0.075$). HOMA-IR, HOMA-S and HOMA- β were unchanged, however, correlations were found between ghrelin vs. HOMA-S in both the groups ($r = 0.71$, $P = 0.003$ and $r = 0.52$, $P = 0.047$, respectively) and ghrelin vs. HOMA IR only after CPAP treatment ($r = -0.54$, $P = 0.040$).

Conclusions Plasma ghrelin decreased after 3 months of effective CPAP, while IR was unchanged. In addition, correlations were found between ghrelin vs. HOMA-S in both groups and ghrelin vs. HOMA-IR only after CPAP treatment. Further large-scale randomized controlled trials are warranted to ascertain these findings.

The effect of ghrelin on inflammatory markers in apneic patients with/without coronary heart disease

Dan Yang, Zhihong Liu, Qin Luo

Center for Pulmonary Vascular Disease Diagnosis and Treatment, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Inflammation is proven to be associated with obstructive sleep apnea (OSA), as well as coronary heart disease (CHD). Ghrelin, as an anti-inflammatory factor, may play a key role in mediating the inflammation in apneic patients with/without CHD. Therefore, the aim of this study was to investigate ghrelin and pro-inflammatory cytokines in apneic patients with/without CHD and assess the effects of ghrelin on these cytokines.

Methods Plasma levels of ghrelin, interleukin-6(IL-6) and tumor necrosis factor alpha (TNF- α) were measured in 63 patients with newly diagnosed OSA and/or CHD. These patients were classified into three groups (21 with OSA, 21 with OSA and CHD, and 21 with CHD), matched for age, sex, body mass index, and the severity of OSA or CHD.

Results Plasma ghrelin levels were increased, while IL-6 and TNF- α were decreased in OSA patients with or without CHD, when compared with similar clinical characteristics CHD controls. Specifically, the differences were statistically significant between patients with OSA alone and CHD alone ($P < 0.05$). Furthermore, plasma ghrelin levels were positively correlated with AHI and negatively correlated with plasma TNF- α ($P < 0.05$). These correlations remained after adjustment for waist and neck circumferences. However, there was no significant correlation between ghrelin and IL-6 ($P < 0.05$).

Conclusions In conclusion, our study found that increased plasma ghrelin levels might be associated with decreased TNF- α , independent of body fat distribution, suggesting that higher ghrelin may partially negate the pro-inflammatory effects of OSA. Further large-scale and prospective studies are needed to confirm these effects.

A DNA enzyme targeting Egr-1 inhibits neointimal hyperplasia after rat carotid injury through the regulation of Egr-1-dependent proteins

Tairan Wang, Guinan Liu

The First Hospital of China Medical University, Shenyang 110001, China

Objective To observe the effects of the DNA enzyme targeting Egr-1 mRNA (ED5) on neointimal formation and detect the expression of Egr-1 dominated gene—PDGF-BB、CyclinD1、CDK4、MCP-1 and ICAM-1 after artery balloon injury, and explore its possible mechanism of inhibiting neointimal formation.

Methods Ninety-six male wista rats were randomly divided into four groups: sham-group, MgCl₂ group, FuGene6 group and FuGene6 +ED5 group. Six rats of each group were killed on the 3rd, 7th, 14th, 21th day after balloon injury. Changes in the hyperplasia of the arterial intima was evaluated by hematoxylin-eosin (HE) staining. Changes in the expression of Egr-1、PDGF-BB、CyclinD1、CDK4、MCP-1 and ICAM-1 were detected by Immunohistochemical real-time RT-PCR and western blot.

Results 1. The thickening of intima began on the day after injury, and became more significant on the 14th and 21th day. 2. The level of Egr-1 mRNA and protein began to increase on the 3th day and peaked on the 21th day, PDGF-BB peaked on the 14th day, ICAM-1、CyclinD1 and CDK4 mRNA and protein peaked on the 7 day, MCP-1 peaked on the 3th day. 3. Compared with the MgCl₂ group and FuGene6 group, NH was decreased significantly in ED5-treated rats ($p < 0.05$). Both mRNA and protein expression of Egr-1、PDGF-BB、CyclinD1、CDK4、MCP-1 and ICAM-1 in the ED5 group were decreased at each time point ($p < 0.05$).

Conclusion ED5 transfection inhibit Egr-1 gene expression and attenuate neointimal hyperplasia after balloon injury in rats; the latter effect may be mediated by a down-regulation of gene expression and protein production of Egr-1-dependent genes such as PDGF-BB, Cyclin D1, CDK4, MCP-1 and ICAM-1.

Improve the transvenous extraction of cardiac implantable electronic devices lead success rate by the ablation catheter through femoral approach**Xianhui Zhou¹, Jinxin Li¹, Yaodong Li¹, Yu Zhang¹, Yanyi Zhang¹, Bapeng Tang¹
Jian Ma²,****1 Department of Cardiology, the First Affiliated Hospital, Xinjiang Medical University, Xinjiang Province, Urumqi 830011, China****2 State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective Complete extraction the cardiac implantable electronic devices (CIED) lead systems remains a complex procedure. This retrospective study was conducted to describe the safety and effectiveness of a modified extracting transvenous lead technique.

Methods The purpose of this study was to determine the effectiveness and safety for modified extraction of transvenous lead techniques by ablation catheter.

Results Total 151 patients, 97 males and 54 females, with CIED related infections were retrospective enrolled in this study. There were 75 patients with CIED lead extraction using standard techniques and equipment, the other 76 patients with CIED lead extraction using a modified extraction transvenous lead techniques. There were no significant differences in the age, gender, NYHA functional class in two groups. The lead extraction time, procedure time and fluoroscopy exposure time shows significant reduction (lead extraction time from 33 ± 8 min to 22 ± 7 min, $p < 0.001$; procedure time from 64 ± 18 min to 47 ± 19 min, $p < 0.001$ and fluorocopy exposure time from 36 ± 7 min to 24 ± 6 min. $p < 0.001$). There was significant improvement in cumulative successive rate of lead extraction from 69 of 75 (92%) patients by using the standard technique and equipments, to 73 of 76 (96.1%) patients by the modified extraction of transvenous lead techniques. ($P=0.03$)

Conclusion It is effective and safe extraction CIED lead through femoral approach by the modified extraction of transvenous lead techniques for ablation catheter.

Improving effects of traditional Chinese medicine preparation Shenqi pollen tablet on heart function of high altitude de-adaptation patients

Qiquan Zhou¹, Shengyue Yang¹, Zifu Shi¹, Han Luo¹

1. Department of High Altitude disease, College of High Altitude Military Medicine, The Third Military Medical University; Key Laboratory of High Altitude Medicine, Ministry of Education and Key Laboratory of High Altitude Medicine, PLA; Chongqing, 400038, China.

2. Department of Respiratory Medicine, Fourth Hospital of PLA, Xining, 810007, China.

3. The 68303 military hospital of PLA, Wuwei, Gansu, 733000, China.

Objective To investigate the improvement effect of traditional Chinese medicine compound preparation----Shenqi pollen tablet on heart function of de-adaption patients after returned to plain from high altitude for plateau emigrants

Methods Choice soldiers of high altitude de-adaptation symptoms appear after returned to plain from plateau were used as observation objects, using a randomized, double blind, placebo controlled trial, will plateau returned to plains appear high altitude deadaptation reaction of 258 soldiers using digital randomly divided into Shenqi pollen tablets treatment group and placebo group, 15 days after taking the score of symptomatic for two groups, and using color Doppler ultrasound heartbeat drawing instrument for determination of left ventricular end-diastolic volume, end-systolic volume, each Bo volume, ejection fraction, cardiac output, fractional shortening, mean pulmonary arterial pressure and cardiac index, evaluating the cardiac function.

Results the medication after 15d, in 147 cases of take Shenqi pollen tablet group, remarkable effect in 48 cases, effective in 53 cases, ineffective in 46 cases, the total effective rate was 68.9%; in the control group, remarkable effect 13 cases, effective in 34 cases, ineffective in 66 cases, the total effective rate was 41.2%. Compared with the control group, there was significant improvement ($P < 0.01$). Compared with the control group, the Shenqi pollen tablets treatment group, the vertigo, fatigue, fatigue, sleepiness, bosom frowsty, flustered, cough, expectoration, sore throat, dizziness, attention, memory loss, unresponsive, weight loss, numbness in the hands and feet, and other symptoms improved significantly than the control group. 15 days after taking examination revealed, left ventricular end-systolic volume, ejection fraction and Tei index is reduced significantly, end-diastolic volume, each Bo, each distraction output displacement, fractional shortening rate increase, right ventricular end-diastolic volume, right ventricular diameter and right ventricular length significantly decreased, lung arterial pressure of taking Shenqi pollen tablet group decreased significantly, compared with the control group, there was significant difference ($P < 0.01$).

Conclusion Chinese herbs compound preparation--Shenqi pollen tablet on plateau de-adaption patients after returned to plain from plateau can obviously improve clinical symptoms, and can obviously reduce the pulmonary artery pressure, improve left and right ventricular function, plays a significant protection role on myocardial.

Surgical strategies of straddling tricuspid valve with ventricular septal defect**Yijie Hu, Qianjing Zhong, Zhiping Li, Jianming Chen, Cheng Shen, Yi Song****Department of Cardiology, Daping Hospital, Research Institute of Surgery Third Military Medical University, Chongqing 400042, China**

A patient suffered from straddling tricuspid valve (TV) associated with ventricular septal defect (VSD) was presented who was diagnosed as VSD with pulmonary hypertension but not diagnosed as straddling TV preoperatively. It was confirmed in the operation that VSD was A-V canal type and anomalous chordae of TV crossed through the VSD and attached to the middle part on the left side of ventricular septum (type B) and to the posterior wall of left ventricle (type C) respectively, without involvement of mitral apparatus. We performed a modified repair technique and introduced the approach to choosing the strategy for straddling TV. The most appropriate surgical strategy should be chosen based on the unique characteristics of the straddling TV.

Long-term outcomes following drug-eluting stent implantation in the treatment of small coronary vessel lesions: comparison of safety and efficacy between FIREBIRD sirolimus- and TAXUS paclitaxel- eluting stent

Dong Zhang, Ke-Fei Dou, Dong Yin, Yuan Wu, Yue-Jin Yang, Bo Xu, Yu Chen, Ha i-Bo Liu, Min Yao, Xue-Wen Qin, Yong-Jian Wu, Jian-Jun Li, Shu-Bin Qiao, Shi-Jie You, Ji-Lin Chen, Run-Lin Gao, Zai-Jia Chen

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background Small coronary vessel lesion has been proved to be an independent predictor of poorer clinical outcomes after intervention. Recent studies have showed that drug eluting stent (DES) implantation improved clinical outcome compared to baremetal stent (BMS) implantation and sirolimus-eluting stent (SES) seemed superior to paclitaxel-eluting stent (PES) in improving the clinical outcomes. FIREBIRD is the most widely used SES in China. However, long-term comparison of safety and efficacy between FIREBIRD SES and TAXUS PES in the treatment of small coronary vessel lesions is still not available. The present study seeks to compare the safety and efficacy at 24 months after successful implantation of FIREBIRD SES and TAXUS PES on small coronary vessel lesions.

Methods The study comprises 741 patients with at least one lesion diameter ≤ 2.5 mm who underwent successful DES implantation (FIREBIRD:608; TAXUS:133) from April 2004 to December 2006. Death, myocardial infarction, TLR, TVR, MACE (includes death, MI, TVR), all ARC definition thrombosis at 24 months were compared between the two groups.

Results Baseline characteristics were similar between the two groups except less chronic total occlusion lesion in FIREBIRD SES group (10.66% vs 19.55%, $p=0.0002$). There were less definite thrombosis rate at 24 months in FIREBIRD group (0% vs 0.75%, $p=0.0325$). All thrombosis and definite/possible thrombosis were comparable between the two groups (table 1). After adjusting baseline difference especially the lesion length and vessel diameter between the two groups by COX regression analysis, all the endpoints concerning efficacy and safety were comparable in FIREBIRD and TAXUS group (table 2).

Conclusions Compared with TAXUS PES, FIREBIRD SES implantation in small coronary vessel lesions appears to be same on efficacy at 24 months. Meanwhile FIREBIRD is related to lower definite thrombosis rate.

Table 1 Thrombosis at 2 years

	FIREBIRD (n=608)	TAXUS(n=133)	<i>P</i>
Definite thrombosis (%)	0.00	0.75	0.033
Definite+Probable thrombosis (%)	0.82	1.50	0.462
All thrombosis (%)	0.99	2.26	0.227

Table 2. Propensity score adjusted hazard ratio of all events at 2yrs (FIREBIRD vs. TAXUS)

	HR	95%CI	<i>P</i>
All cause mortality	1.067	0.211-5.392	0.938
MI	1.134	0.208-6.168	0.885

All cause mortality/MI	0.834	0.255-2.722	0.764
TLR	0.945	0.307-2.909	0.922
TVR	0.867	0.372-2.020	0.741
MACE	1.313	0.710-2.429	0.385

Treatment of multilesion coronary artery disease with drug-eluting combined with bare-metal stent implantation: 24-month clinical follow-up.**Dong Zhang, Kefei Dou, Dong Yin, Yuan Wu, Yuejin Yang, Bo Xu, Yu Chen, Haibo Liu,****Min Yao, Xuwen Qin, Yongjian Wu, Jian-Jun Li, Shubin Qiao, Shijie You, Jilin Chen, Runlin Gao, Zaijia Chen****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background Few data are available about the safety and efficacy of the practice namely called “hybrid PCI”-drug-eluting stent(DES) combined with bare metal stent (BMS) are implanted for patients undergoing multilesion PCI. The aim of this research was to compare the safety and efficacy at 24 months after the successful hybrid PCI and exclusive DES implantation.

Methods A cohort of 6,495 patients who underwent PCI (exclusive DES implantation: 5647; hybrid PCI: 848) were enrolled in the study. Patients in both groups were followed clinically up to 24 months. We obtained 24-month clinical outcome including death, myocardial infarction (MI), thrombosis, target lesion revascularization (TLR), target vessel revascularization (TVR), and major adverse cardiac events (MACE, the composite of death, MI, and TVR). We used Cox’s proportional-hazard models to assess relative risks of all the outcome measures after propensity match.

Results At 24 months, patients in DES group showed a significant lower risk of TLR (before matching: hazard ratio (HR) 0.40, 95%CI: 0.30-0.53; after matching: HR 0.42, 95%CI: 0.27-0.66), TVR (before matching: HR 0.45, 95%CI: 0.36-0.57; after matching: HR 0.62, 95%CI: 0.44-0.87) and MACE (before matching: HR 0.60, 95%CI: 0.48-0.73; after matching: HR 0.73, 95%CI: 0.54-0.98). No significant difference was apparent in terms of mortality, MI, thrombosis and mortality/MI.

Conclusion In patients with multilesion coronary artery disease, the strategy of hybrid PCI is associated with long-term significant increasing in the risk of TLR, TVR and MACE. And the hybrid PCI approach was not superior to exclusive DES implantation regarding safety issue.

Redundant Crest of Bifurcation Inducing Pulmonary Artery Stenosis**Yijie Hu¹, Qianjin Zhong¹, Rongxin Lu¹, Zhiping Li¹, Jianming Chen¹, Cheng Shen¹, Yi Song¹, Xiuqin Xiong², Wenhua Du²****Department of Cardiovascular Surgery, Daping Hospital, Research Institute of Surgery Third Military Medical University, Chongqing 400042, China****2. Department of Ultrasonic Diagnosis, Daping Hospital, Research Institute of Surgery Third Military Medical University, Chongqing 400042, China**

Pulmonary stenosis is a common congenital abnormality, occurring alone or in association with other cardiac anomalies. Here we reported the first case of supravulvar pulmonary stenosis induced by redundant crest of pulmonary bifurcation. It is prone to be misdiagnosed with membranous stenosis above the pulmonary valve. Recognition of the special type and multiple aspects of ultrasonic view are helpful for the right diagnosis. The treatment was based on the severity of PS and combined cardiac diseases.

The safety and influencing factors of carotid artery stenting before open heart surgery**Hui Dong, Xiongjing Jiang, Yubao Zhou, Wei Ji, Meng Peng, Haiying Wu, Yuejin Yang****Department of cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective Whether or not symptomatic of carotid atherosclerosis, patients with significant carotid stenosis undergoing open heart surgery (OHS) face a higher risk of perioperative stroke than patients without carotid disease. Therefore, how to plan appropriate treatment for severe carotid stenosis before OHS has become an important clinical issue. The aim of this study to evaluate the safety and its influencing factors of carotid artery stenting (CAS) before OHS.

Methods This prospective cohort study was performed in Fuwai Hospital from January 2005 to December 2009. Indication for CAS was defined as carotid artery diameter reduction of >60 % (symptomatic) or >80 % (asymptomatic) while indication for OHS included symptomatic severe coronary artery disease not eligible for percutaneous revascularization and symptomatic valvular heart disease. The primary end point was a composite of major stroke and neurological deaths from CAS to 30 days after OHS. The secondary end points included a composite of major stroke, myocardial infarction and any death, minor stroke and acute kidney injury (AKI) from CAS to 30 days after OHS.

Results A total of 120 consecutive in-patients scheduled for CAS and OHS, mean age 65.6 ± 10.9 years, male 81.7%, were recruited. The procedural success rate of CAS was 99.2%. Cerebral protection devices were used in 118 patients (99.3%). Among them, 12(10.0%) patients received bilateral CAS and 15(12.5%) patients underwent the left subclavian artery stenting simultaneously. Incidence of the primary end point, a composite of major stroke, myocardial infarction and any death, minor stroke and AKI from time of CAS to 30 days after OHS was 4.2%, 7.5%, 2.5% and 16.7% respectively. Multivariate logistic regression analysis revealed that only interval time of CAS and OHS ≤ 5 days could independently predict the incidence of the primary end points (OR, 13.04, 95% CI, 1.40-121.65; $P=0.024$). Moreover, congestive heart failure and the interval time of CAS and OHS ≤ 5 days were identified as independent risk factors of a composite of major stroke, myocardial infarction and any death from CAS to 30 days after OHS.

Conclusions Our findings showed that patients who underwent CAS followed by cardiac surgery experienced a low periprocedural complication rate and the interval time of CAS and OHS > 5 days could decrease the periprocedural complications, especially major strokes and neurological deaths.

Application of minimal right infra-axillary incision during cardiac surgery**Yijie Hu, Qianjin Zhong, Jianming Chen, ZHiping Li, Cheng Shen, Yi Song, Xiangli Liao, Xiaoying Zhao, Shizhi Fan****Department of Cardiovascular Surgery, Daping Hospital, Research Institute of Surgery Third Military Medical University, Chongqing 400042, China**

Objective To summarize the experience of application of minimal right infra-axillary incision during cardiac surgery.

Methods The open heart surgeries through minimal right infra-axillary incision were analyzed retrospectively.

Result A total of 83 patients (male 27, female 56) with congenital heart diseases were undertaken open heart surgeries through minimal right infra-axillary incision between January 2010 and August 2011. The age ranged from 7 months to 59 years old (mean 8.0 ± 9.1 years old). Among them there are 21 cases of atrial septal defect repair (including 18 cases of operation on beating heart, 3 cases tricuspid valve repair and one case of mitral valve repair simultaneously), 60 cases of ventricular septal defect repair (including 4 cases of correction of right ventricular outflow tract stenosis simultaneously), one case of correction of total anomaly pulmonary vein connection, and one case of correction of double-outlet right ventricle. All cases were off pump successfully. One case died of low cardiac output. No residual leak or complete atrial ventricular block was recorded in the 80 cases followed up.

Conclusion Reasonable indication, good surgical field, reliable extracorporeal circulation and excellent operative technique are important when performing cardiac surgery through the right infra-axillary incision, which could provide a safe, mini-invasive, and superior cosmetic result.

Carotid artery stenting in surgically high-risk patients: a single-center experience with up to 6 years' follow-up**Hui Dong, Xiongjing Jiang, Meng Peng, Wei Ji, Haiying Wu, Yuejin Yang, Runlin Gao****Department of Cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background and Objective Carotid stenosis is responsible for approximate 20% of all strokes in the adult population currently, treatment of carotid stenosis therefore lies in decreasing the risk of stroke or stroke related deaths. However, because surgically high-risk patients have been usually excluded from randomized trials of carotid endarterectomy (CEA) and carotid artery stenting (CAS), the management of this group of patients remains controversial. This study was aimed at evaluating the periprocedural and long-term outcomes of CAS in surgically high-risk patients.

Methods In this single-center retrospective study, we analyzed 280 consecutive surgically high-risk patients undergoing CAS from January 2005 to June 2010. Indication for CAS was defined as carotid artery diameter reduction of >80% (asymptomatic) or >60% (symptomatic). Long-term outcomes and 30-day rates of stroke, death and myocardial infarction (MI) after CAS were assessed.

Results The procedural success rate of CAS was 99.3%. Cerebral protection devices were used in 278 patients (99.3%). Among them, 43 (15.4%) received simultaneous bilateral carotid stenting. The rate of major stroke, minor stroke, MI and death from time of CAS to 30 days was 1.8%, 3.2%, 0.4% and 0.4% respectively. Multivariate logistic regression analysis revealed previous stroke, symptomatic carotid stenosis, renal insufficiency and open heart surgery within 30 days after CAS were the independent predictors for any stroke from time of CAS to 30 days (all $P < 0.05$). The rate of freedom from MACE (major stroke, MI and death) was 95.7%, 95.1%, 94.3%, 91.2%, 88.7%, 88.7% respectively, at 1-, 2-, 3-, 4-, 5-, 6-year follow-up. Moreover, previous MI (OR 3.57, 95%CI: 1.65-11.72, $P=0.044$) and symptomatic carotid stenosis (OR 3.59, 95%CI: 1.04-12.41, $P=0.003$) were identified as independent risk factors of MACE in long-term follow-up by COX regression.

Conclusions Surgically high-risk patients who underwent CAS experienced a low periprocedural complication rate. The high rate of event-free survival during the 6 years of follow-up supported the long-term durability of CAS. Our findings suggest that CAS appears to be safe and effective in surgically high-risk patients, comparable to reported results from CEA.

Hemoglobin A1c, acute hyperglycemia and short-term prognosis in patients without diabetes following acute ST-segment elevation myocardial infarction**Yao Liu, Yan-min Yang, Jun Zhu, Hui-Qiong Tan, Yan Liang****Department of Emergency State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Aims To assess the prognostic impact of HbA1c and blood glucose level in patients with acute ST segment elevation myocardial infarction and without diabetes. The relationship between HbA1c and acute hyperglycemia was also explored.

Methods and results We evaluated 4793 ST-segment elevation myocardial infarction patients with baseline HbA1c and three glucose measurements in the first 24 h. First, patients were stratified into quintiles by HbA1c and mean/admission glucose level. A total of 373 deaths (7.8%) occurred at 7 days, and 486 deaths (10.1%) occurred at 30 days. There were no significant differences in 7- and 30-day mortality, and major adverse cardiovascular event rates across HbA1c quintiles (< 5.3%, 5.3 to < 5.6%, 5.6 to < 5.9%, 5.9 to < 6.5%, and \geq 6.5%; *P* for trend > 0.05). The risks of mortality and major adverse cardiovascular events were significantly increased in patients with higher glucose quintiles and lower quintile compared with the middle quintile after multivariable adjustment (*P* < 0.001). Patients were then reclassified into four groups according to mean/admission glucose and HbA1c levels. The group with elevated glucose and non-elevated HbA1c was associated with the highest mortality and major adverse cardiovascular event risk (*P* < 0.001).

Conclusions Unlike acute hyperglycemia, an elevated HbA1c level was not a risk factor for short-term outcomes in ST-segment elevation myocardial infarction patients without diabetes. Patients with acute hyperglycemia and non-elevated HbA1c were associated with the worst prognosis. That suggests chronic glycemic control/HbA1c level may help to recognize stress-induced hyperglycemia and identify high risk patients.

The Levels of Ghrelin and N-Terminal Brain Natriuretic Peptide in Patients with Idiopathic Pulmonary Hypertension

Dan Yang, Zhihong Liu

Center for Pulmonary Vascular Disease Diagnosis and Treatment, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective This study sought to investigate the levels of ghrelin and N-terminal brain natriuretic peptide (NT-proBNP) in patients with idiopathic pulmonary arterial hypertension (IPAH).

Methods Plasma samples for ghrelin and NT-proBNP were measured, and echocardiography was performed in 16 IPAH patients and in 16 control subjects matched for age, sex, and BMI.

Results Plasma ghrelin and NT-proBNP levels were significantly higher in IPAH patients compared with values in control subjects ($P < 0.05$). In IPAH patients, plasma ghrelin correlated positively with NT-proBNP ($r = 0.534$, $P = 0.033$) and systolic pulmonary artery pressure ($r = 0.655$, $P = 0.006$). However, no significant correlation was observed between NT-proBNP and echocardiographic parameters.

Conclusions Plasma ghrelin levels are elevated in IPAH patients. Increased ghrelin levels are related to higher systolic pulmonary artery pressure in these patients.

NOYA I: a prospective randomized trial of NOYA birdlimes-eluting stent with biodegradable coating compared to FIREBIRD 2® sirolimus-eluting stent with durable coating: 9-month angiographic and 24-month clinical results

Kefei Dou¹, Yuejin Yang¹, Shuzheng Lu², Lefeng Wang³, Haichang Wang⁴, Zhanquan Li⁵, Lei Wang⁶, Yundai Chen⁷, Yong Huo⁸, Jiyan Chen⁹, Zheng Zhang¹⁰, Tiemin Jiang¹¹, Yong Wang¹², Xian Wang¹³, Bo Yu¹⁴, Shanglang Cai¹⁵, Junxia Li¹⁶

1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. An Zhen Hospital, Beijing 100029, China

3. Red Cross Chaoyang Hospital, Beijing 100020, China

4. Xijing Hospital, Xi'an 710032, China

5. The People's Hospital of Liaoning Province, Shenyang 110016, China

6. Beijing Friendship Hospital, Beijing 100050, China

7. Chinese PLA General Hospital, Beijing 100083, China

8. Peking University First Hospital, Beijing 100034, China

9. Guangdong Provincial Peoples Hospital, Guangdong 510080, China

10. The 1st Affiliated Hospital of Lanzhou University, Lanzhou 730000, China

11. Affiliated Hospital to Medical College of CAPF, Tianjin 300162, China

12. China-Japan Friendship Hospital, Beijing 100029, China

13. PLA the Military General Hospital, Beijing 100700, China

14. 2nd Affiliated Hospital of Harbin Medical University, Heilongjiang Province, Harbin 150086, China

15. Affiliated Hospital of Qingdao University, Shandong Province, Qingdao 266003, China

16. Bethune International Peace Hospital Henan Province, Zhengzhou 050082, China

Background DES has been proved to be effective in reducing restenosis rate after stent implantation by a lot of randomized trials and retrospective studies, however in-stent thrombosis is still the major concern after DES implantation. Recent studies indicated that the biocompatibility of durable polymer used in the 1st generation of DES was considered to be one of the potential reasons for delaying endothelial healing, which may induce very late stent thrombosis and biodegradable polymer coating may potentially improve endothelial healing. The present study is to evaluate the efficacy and safety of NOYA™ stent in treating coronary artery disease which consists of a Co-Cr stent platform, DL-Polylactide biodegradable polymer coated with sirolimus and manufactured by Medfavour Medical (Beijing, China).

Methods A prospective, multi-center clinical trial was designed to compare NOYA™ stent with FIREBIRD 2 stent, which is most popularly used SES with durable polymer in China and manufactured by MicroPort Medical (Shanghai, China). Totally, 300 patients, which decided by dedicated statistical method, were enrolled in the study (150 patients in each group) in 16 centers in China to demonstrate the non-inferiority of in-stent late loss with NOYA™ stent compared to FIREBIRD 2® stent in subjects with maximum of two de novo native coronary artery lesions with DS% \geq 70% by visual estimation (Age 18-75, lesion length \leq 30mm, reference vessel diameter 2.25-4.0mm). The primary end point was angiographic in-stent late loss at 9-month. The secondary end points were binary restenosis at 9-month, clinical outcomes at 24-month, major

adverse cardiac events (cardiac death, myocardial infarction, or target lesion revascularization) and stent thrombosis defined by ARC.

Results Baseline data and procedural results were comparable between the two groups. Angiographic late lumen loss at 9-month in the NOYATM group was similar to the FIREBIRD 2 group (in-stent 0.11 ± 0.18 mm vs. 0.14 ± 0.23 mm $p=0.1614$; diff [95%CI] $-0.03[-0.08, 0.01]$ non-inferiority $p=0.000000017$). The same result was found concerning in-stent binary restenosis (NOYATM 1.8% vs FIREBIRD2 0.6% $p=0.6228$). The rate of MACE, TLR, MI, death and thrombosis at 24-month follow-up were comparable between the two groups (MACE: 4.7% vs. 6.0%, $p=0.6262$; TLR: 2.0% vs. 2.7%, $p=1.0000$; MI 2.7% vs. 2.7%, $p=1.0000$; death: 0% vs 2.0% $p=0.1263$; thrombosis: 0% vs 0.7 $p=1.0000$).

Conclusions The present data indicates that the NOYATM SES is non-inferior to FIREBIRD 2 SES with respect to in-stent late loss at 9-month. The rates of in-stent binary restenosis, MACE, TLF and stent thrombosis in NOYA group are the same as that in FIREBIRD 2 group. Large scale trials and long term follow-up are needed to further evaluate the newly developed SES with biodegradable polymer coating.

TIVOLI Biodegradable-polymer-based, Sirolimus-eluting stents in treating patients with coronary artery disease: 8-month angiographic and 3-year clinical follow-up results. A prospective, parallel control, multi-center study

Kefei Dou¹, Bo Xu¹, Wei Li¹, Runlin Gao¹, Yuejin Yang¹, Yaling Han², Shuzheng Lu³, Yong Huo⁴, Lefeng Wang⁵, Yundai Chen⁶, Haichang Wang⁷, Weimin Li⁸, Jiyan Chen⁹, Lei Wang¹⁰, Yang Wang¹, Junbo Ge¹¹,

1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. The General Hospital of Shenyang Military Region, Shenyang 110016, China

3. An Zhen Hospital, Beijing 100029, China

4. Peking University First Hospital

5. Red Cross Chaoyang Hospital, Beijing 100020, China

6. Chinese PLA General Hospital, Beijing 100083, China

7. Xijing Hospital, Xi'an 710032, China

8. 1st Affiliated Hospital of Harbin Medical University

9. Guangdong Provincial Peoples Hospital, Guangdong 510080, China

10. Beijing Friendship Hospital, Beijing 100050, China

11. Zhongshan Hospital Fudan University, Shanghai 200032

Background The existing drug-eluting stents (DES) have achieved great success in reducing the restenosis rate. Recently, investigators have demonstrated that durable polymer carrier plays significant role in DES related hypersensitivity reaction and delayed vessel healing. TIVOLI™ stent (Essen Technology Beijing Co. Ltd) is a novel sirolimus-eluting coronary stent with bioabsorbable coating containing sirolimus and polylactic-co-glycolic acid (PLGA) polymer. The present study sought to evaluate efficacy and safety of TIVOLI™

Biodegradable-polymer-based, Sirolimus-eluting stents in treating patients with coronary artery disease.

Methods A prospective, multicenter clinical trial comparing TIVOLI™ bioabsorbable coated sirolimus-eluting stents with ENDEAVOR™ zotalimus-eluting stent was conducted in 324 patients (TIVOLI group: 168 patients; ENDEAVOR group: 156 patients) at 12 centers in China to demonstrate the no-inferiority of TIVOLI™ stent to the ENDEAVOR™ stent in subjects with maximum of two de novo native coronary artery lesions (lesion length ≤ 40mm; reference vessel diameter: 2.25-4.0mm). The primary end point was angiographic in-stent late loss at 8 months. The major secondary end points were clinical outcomes at 3 year, including major adverse cardiac events (cardiac death, myocardial infarction, target lesion revascularization) and stent thrombosis.

Results Angiographic late lumen loss at 8 months in the Tivoli stent group was superior to the Endeavor stent group (in-stent: 0.25 ± 0.33 mm vs 0.57 ± 0.55 mm, $p < 0.0001$; in-segment: 0.25 ± 0.33 mm vs 0.42 ± 0.55 mm, $p = 0.0083$). The rate of in-stent binary restenosis at 8 months was reduced from 8.6% in the Endeavor stent group to 2.9% of the Tivoli stent group ($p = 0.0229$). The Tivoli stent compared to the Endeavor stent resulted in significant reductions in target lesion revascularization (4.8% vs 12.2%, QCA driven, $p = 0.0167$) at 3 year. The three-year major adverse cardiac events were lower for Tivoli group, but not significantly different (7.9% vs. 13.5%, $p = 0.1032$).

Conclusions Tivoli was superior to the Endeavor stent in respect to late lumen loss at 8-month; Tivoli stent shows lower binary restenosis rate at 8-months. Tivoli stent also shows lower TLR at 3-year. The MACE at 3 year is comparable to both groups.

A case of long-term survival after undergoing heart transplantation for primary cardiac pheochromocytoma.**Chunyong Han¹, Yunhu Song¹, Shengshou Hu¹, Jie Huang¹, Zhongkai Liao¹, Yong Wang¹****1. Department of Cardiovascular Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China****2. Department of End-stage Heart Failure, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

A 48 year-old woman admitted for paroxysmal palpitations had extremely elevated plasma and urine catecholamines. But no adrenal tumor was found on the abdominal CT scan. To locate this MIBG-negative tumor, somatostatin-receptor scintigraphy was performed and an intense focal uptake was seen in the middle mediastinum. PET, CT, MRI, and UCG revealed a mass at the root of the ascending aorta. Angiography found its feeding vessels from the left coronary artery. In June 2, 2005, heart transplantation was performed safely. A sessile tumor was found closely attached to the left back atrioventricular groove and the lateral wall of left ventricular. She was discharged uneventfully 20 days later. CsA was decreased gradually from 250mg/d to 150mg/d from discharge to the present. Aza 100mg/d and Prednisone 10 mg/d were routinely administrated. Routine hematology, tumor markers, biochemistry, CMV, EBV, ECG and coronary CT were regularly performed postoperatively and demonstrated no abnormal findings. Serum creatinine was 142 $\mu\text{mol/l}$ at 16 months postoperatively and was normal after treatment. Endomyocardial biopsies revealed grade I A and I A rejection at 13 days and 6 months postoperatively but subsequent biopsies were refused by this patient due to lack of money. Primary cardiac pheochromocytoma is rare clinical entity. Heart transplantation (HT) for this tumor is even more rarely reported. The major treatment is complete surgical excision or heart transplantation. Patients with unresectable and invasive cardiac pheochromocytoma and who are free of metastases may be considered for HT. The interaction between tumor biology and immunosuppression is unknown, but this patient has no evidence for tumor recurrence and metastasis at 6 years 11 months after surgery. In comparison with other HTs, there are no significant differences in cardiac function, quality of life and survival time. This implies that HT may be an effective approach and immunosuppression appears to not increase the risk of recurrence and metastasis.

A case of long-term survival after undergoing heart transplantation for cardiac mesenchymal sarcoma

Chunyong Han¹, Yunhu Song¹, Shengshou Hu¹, Jie Huang¹, Zhongkai Liao¹, Yong Wang²

1. Department of Cardiovascular Surgery, Fuwai Hospital, Peking Union Medical College, Chinese Academy of Medical Sciences

2. Department of End-stage Heart Failure, Fuwai Hospital, Peking Union Medical College, Chinese Academy of Medical Sciences

A 33 year-old man admitted for fever and chest pain had a temperature of 38.5 to 39.5°C. PET, CT, MRI, Angiography and UCG revealed an invasive mass with intensive radionuclide uptake at the atrioventricular groove, with oppression to the coronary sinus and extension to the left atria and ventricle. In May 26, 2005, heart transplantation was performed. He was discharged uneventfully 18 days later. CsA was decreased gradually from 350mg/d to 250mg/d, with MMF from 1.5 g/d to 0.5 g/d, from discharge to the present. Sirolimus was administrated and diminished from 1.5mg/d to 0.5mg/d from 29 months postoperatively to the present. Prednisone 10 mg/d was routinely administrated. Postoperative routine hematology, tumor markers, biochemistry, CMV, EBV, ECG, UCG, CT, IVUS, angiography were regularly performed and revealed no abnormal findings. He had a serum creatinine of 126.8 μmol/l and uric acid of 656.53μmol/L at 2 years follow-up and was normal after decreasing the dose of MMF and sirolimus and uric acid-lowering therapy. Triglyceride was 4.67 mmol/L and cholesterol 7.45 mmol/L at 6 years follow-up and was normal after lipid-lowering therapy. Endomyocardial biopsies revealed grade I A, I A and 0+quilty lesion type A rejection at 13 days, 5 and 11 months follow-up.

Primary cardiac sarcomas are rapidly progressive with a very low survival rate. The major treatments are surgical excision or heart transplantation (HT). Patients with unresectable cardiac sarcoma and who are free of metastases may be considered for HT. But immunosuppression may increase the risk of recurrence and metastasis. HT was performed because this patient had an extensive involvement of left heart without any evidence of metastasis. Postoperative immunosuppressors were routinely supplied without concurrent radiotherapy and chemotherapy. There is no evidence of tumor recurrence and metastasis basing on regular imaging and evaluation of tumor markers at the 6 years 11 months follow-up. So HT may be an effective approach for carefully selected patients.

Clinical evaluation of warfarin pharmacogenetics algorithms application

Dan Tan, Jianping Zeng

Xiangtan Central Hospital, Hunan Province, Xiantan 411100, China

Objective As the most commonly used oral anticoagulant for prevention and treatment of thromboembolic diseases, numerous advantages of warfarin have been universally acknowledged, such as definite effect, convenient oral medication, inexpensive medical cost, etc. However, the current status of clinical anticoagulant therapy is that the effectiveness of warfarin has not been brought into full play in China, because of that warfarin is vulnerable to hemorrhage, embolism, and other serious complications to death due to narrow safe therapeutic window and remarkable inter-individual drug dose variability.

With the rapid development of molecular biotechnology in the field of pharmacogenetics, warfarin dosing algorithm containing individual genetic information will help to rapidly reach target INR range, reduce complications and improve the actual clinical benefit of warfarin anticoagulation. Our research aimed to study the impact of CYP2C9 and VKORC1 genotypes, demographic characteristics and clinical factors on warfarin stable dose through clinically applying warfarin pharmacogenetics model, to actively explore and promote individualized treatment for patients. **Methods** 1. OBJECT: 74 cases of patients with initial warfarin anticoagulation enrolled, 1 case of Caucasian, 73 cases of Han nationality; 32 cases of males and 42 females; median age of 63.0 years, median height of 162.0cm, median weight of 61.5Kg; 41 cases with atrial fibrillation, 15 deep vein thrombosis, 4 pulmonary embolism, 14 heart valve replacement. All cases were not relatives. 2. DESIGN: A prospective cohort study with double-blind design has been taken, cases after selected were randomly assigned to Experimental or Control group: Experimental group to take predictive dose from CYP2C9 and VKORC1 genotypes and other information; while Control group to take domestically empiric initial dose. All cases received routine INR test at the 0,3,7,14,21,28,60,90 days after medication, adjust the dose medication per 0.625mg one week later based on actual INR-values comparing target range in deviations and trends.

Result 1. The characteristics of 74 cases of CYP2C9 and VKORC1 genotypes: 74 cases of CYP2C9 *2 wild-type (100.0%), 0 mutation (0.0%); 65 cases of CYP2C9 *3 wild-type (87.8%), 9 mutation (12.2%); 66 cases of VKORC1 wild-type (89.2%), 8 mutation (10.8%). 2. Comparative analysis of CYP2C9 genotype: the warfarin stable dose of CYP2C9 mutation (17.52 ± 4.35)mg/wk, wild-type (20.82 ± 4.53)mg/wk, the difference was significant ($P=0.0431$); as the aspect of indicators to efficacy and safety, the proportion of within therapeutic range of mutant CYP2C9 is lower than that of wild-type (47.4% vs. 60.8%), the incidence of adverse reactions higher than wild-type (33.3% vs 15.4%), the differences of two indicators above were significant ($P<0.05$); time span to reach therapeutic range (10.89 ± 6.17 vs. 14.52 ± 6.81)/d has no statistical difference. 3. Comparative analysis of VKORC1 genotype: the warfarin stable dose of VKORC1 mutation (26.38 ± 5.35)mg/wk, wild-type (19.70 ± 3.98)mg/wk, the difference was significant ($P=0.0001$); mutant VKORC1 is lower than that of wild-type (37.9% vs. 61.8%), the difference was significant ($P<0.01$); time span (14.38 ± 8.55 vs. 14.05 ± 6.64)/d and adverse events (25.0% vs. 16.7%) have no significant difference. 4. Comparative analysis between Experimental and Control group: Of all cases, predictive dose (20.72 ± 5.07)mg/wk has no significant difference from stable dose (19.61 ± 5.05)mg/wk; time span of Experimental group was (10.62 ± 3.37)/d, shorter than Control group (16.89 ± 7.64)/d; the proportion of within therapeutic range of experimental group is higher than Control group (69.2% vs. 51.5%), these two indicators have significant difference ($P < 0.01$), adverse events (47.4% vs. 60.8%) has no significant difference.

Conclusion 1. CYP2C9 and VKORC1 genotypes were significantly associated with warfarin inter-individual dose variability. 2. CYP2C9 and VKORC1 gene mutations have greater fluctuation than wild type in INR-values,

leading to higher risk of adverse reactions of warfarin. 3. Predictive dose from warfarin pharmacogenetics algorithm was generally consistent with clinical stable dose.4. The clinical application of warfarin pharmacogenetics algorithm can advance the efficacy, stability and safety of anticoagulation.

Pulmonary artery perfusion with HTK solution attenuates DHLF-induced immature lung injury by mediating the activities of nuclear factor- kappa B and its related cytokines in piglet model

Wenlei Li, Zhongdong Hua, Qinghua Xue, Xin Wu, Qiang Wang, De Wang, Shoujun Li

Center of Pediatric Cardiac Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background After cardiac surgery performed under deep hypothermia with low-flow (DHLF) cardiopulmonary bypass (CPB), the lung injury often becomes more severe. And the immature lungs of infants and young children after the cardiopulmonary bypass are more susceptible, which has always been a major cause of infant patients' death during the post-operation time. Previous studies reported the potential advantages of additional lung protective solution perfusion on alleviate lung injury during cardiac surgery with CPB. This study aimed to investigate possible pathogenic mechanisms of DHLF-induced pulmonary injury and to provide an experimental basis for immature lung clinical protective strategies by analyzing changes in nuclear factor-kappa B, inflammation factors in lung tissue under DHLF-CPB in piglet model.

Methods Piglets (n=15) aged 18.53 ± 1.59 days, weight 4.65 ± 1.08 kg, were randomly divided into 3 groups, with 5 piglets in each group: DHLF with HTK solution pulmonary perfusion (CPB+HTK), DHLF without pulmonary perfusion (CPB) and sham-operated group (SHAM). Cardiopulmonary bypass was routinely established in CPB and CPB+HTK group. After aortic cross-clamping, the pulmonary artery was perfused with HTK solution (20ml/kg) in CPB+HTK Group. During 2 hours of the aortic cross-clamping, the cardiopulmonary bypass were cooled to 25°C with low-flow for 60 minutes (50 ml/kg/min). Both groups had conventional CPB with 30 minutes of parallel circulation. At 2 hours after weaning from CPB, the right lower lobe was harvested. The levels of cytokine (TNF-alpha, IL-10, MPO and MDA) and the activity of NF-kappa B in lung tissue were measured by enzyme-linked immunosorbent assay (ELISA), electrophoresis mobility shift assay (EMSA), respectively. A TUNEL technique was performed to evaluate the state of apoptosis in the lungs.

Results There was a great increase in the levels of TNF-alpha in the CPB group compared with that in the SHAM group and CPB+HTK Group respectively [(36.1 ± 6.5) pg/ml versus (15.6 ± 1.5) pg/ml, (21.0 ± 3.1) pg/ml, respectively ($P < 0.05$)], increase was also found in the expression of IL-10 [(20.7 ± 1.4) pg/ml versus (17.6 ± 1.0) pg/ml, (17.2 ± 0.9) pg/ml, respectively ($P < 0.05$)]. The concentration of MPO in CPB+HTK Group was significantly lower than that in the SHAM group and CPB group [(9.0 ± 2.6) pg/ml versus (15.2 ± 3.3) pg/ml, (20.5 ± 3.8) pg/ml respectively ($P < 0.05$)]. However, there's no significant difference in the level of MDA among the three groups. On the other side, we found a decrease in the number of TUNEL-positive apoptotic cells in CPB+HTK Group lungs compared with that in CPB Group lungs ($P < 0.05$) that correlated with a strongly inhibition in the activity of NF-kappa B ($P < 0.05$).

Conclusion Pulmonary perfusion with HTK solution reduced the DHLF-induced immature pulmonary injury and apoptosis in the lungs. The reduction in cytokine expression by pulmonary perfusion with HTK solution might be mediated by inhibiting the activity of NF-kappa B.

Duration of dual antiplatelet therapy and outcomes after left main percutaneous coronary intervention

Tao Hu, Lin Tao

Department of Cardiology, Xijing Hospital, Fourth Military Medical University, Xi'an, 710032, China

Background Despite treatment recommendations for at least 12 months of dual antiplatelet therapy (DAPT) following drug-eluting stent revascularization, the optimal duration of DAPT after left main percutaneous coronary intervention remains controversial. We sought to evaluate differences in late safety outcomes relative to DAPT duration in patients treated with drug eluting stents in left main coronary artery.

Methods 216 patients undergoing successful primary percutaneous left main coronary intervention of dual antiplatelet therapy with aspirin (100mg/d) and clopidogrel (75mg/d) were eligible for enrolment in this randomized, double-blind, placebo-controlled trial from September 2008 to October 2011 at our institution. Patients were analyzed according to continuation or discontinuation of DAPT at a 12-month landmark, excluding patients with events prior to the landmark, and outcomes were followed up to 36 months after stenting. Among patients who were event-free at 12 months, clopidogrel was discontinued in 88 patients and was continued for longer than 36 months in 94 patients. The main outcome for our current analysis was Target Vessel Failure (TVF), defined as target vessel-related cardiac death or myocardial infarction and target vessel revascularization. Secondary outcomes included stent thrombosis (ST). (Un) adjusted hazard ratios (HR) for TVF were calculated with Cox regression.

Results Through 3 years, risk-adjusted ischemic event rates did not significantly differ between groups: 12 versus ≥ 36 months: death (2.6% vs. 2.3%), myocardial infarction (MI, 0.2% vs. 1.0%), and definite/probable stent thrombosis (ST, 0.2% vs. 0%). Composite events also did not statistically vary between DAPT durations. In multivariable analysis, 12-month versus longer DAPT duration was not associated with increased likelihood of thrombotic events at 3-year follow-up. Even after addition of identified independent predictors for TVF, adjusted TVF hazards were comparable. Major bleeding was negligible across groups.

Conclusion 12-month dual antiplatelet therapy seems to be feasible after left main percutaneous coronary intervention in Chinese patients.

Early extubation strategy following cardiac surgery in children**Xu Wang, Shoujun Li, Min Zeng, Yanbo Zhang, shengli Li, Leilei Duan****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To study the feasibility and safety of early extubation (EE) in children after congenital heart surgery, and the risk factors of EE treatment were also discussed.

Methods We retrospectively reviewed the medical record of 2297 children following cardiac surgery from Jan.2010 to Dec.2010 at Fu Wai Hospital. Patients with atrial septal defect, ventricular septal defect (VSD), transposition of the great arteries, total anomalous pulmonary venous connection, endocardial cushion defects, tetralogy of Fallot, pulmonary atresia, double outlet right ventricle, and coarctation with VSD were all included in this study. Early extubation was defined as to wean the ventilator within 10hrs after operation. The risk factors including the RACHS-1 risk category, diseases entity, CPB time, age and body weight were analyzed by Logistic regression method.

Results Totally 62.6% of children were successfully achieved EE treatment. The EE rates in 0-6 months group, 6-12 months, >12 months group were 6.27%、57.24% and 80.86%, and the difference among them were significant($P < 0.05$). Duration of mechanical ventilation and ICU stay were all decreased in EE group compared with non-EE group ($p < 0.001$). Logistic regression analysis indicated that high RACHS-1 risk category, diseases entity, and age were risk factors of EE treatment.

Conclusions EE treatment can be achievable for most simple cardiac cases and certain complicated cases. High RACHS-1 risk category, diseases entity, age < 6 months may be risk factors related to EE treatment.

Hydraulic property testing and hemolysis testing for FW-2 ventricular assist pump
Guangmao Liu, Jianye Zhou, Haibo Chen, Yan Zhang, Hansong Sun, Shengshou Hu
Key Laboratory of the Cardiovascular Regenerative Medicine, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To test and compare the hydraulic property parameters of FW-2 ventricular assist device (VAD) with the design parameters. Then the hydraulic characteristic curves and error range of FW-2 VAD was gained. Meanwhile to analyze the influence of life testing on the hydraulic characteristic's decline. To assess if the design and manufacture of FW-2 VAD can satisfy the clinic demands by hydraulic characteristic. The hemolysis characteristic which is important to clinic use of FW-2 VAD was gained through in vitro hemolysis testing. The blood damage caused by FW-2 VAD was measured.

Methods We tested three FW-2 VADs in the hydrodynamic characteristic testing table and obtained the data of relationship between rotate speed, flow and differential pressure of FW-2. Then we drew the hydraulic characteristic curves of FW-2 VAD and compared the curves with design curves to obtain the error range. After that we let the three VADs run for a month ceaselessly (life testing) and tested hydraulic characteristic again. Then the new hydraulic characteristic curve was drew and compared with the curves gained before life testing. The hydraulic characteristic change of FW-2 VAD after life testing was analyzed. The hemolysis characteristic was tested on in vitro hemolysis testing table when the flow was set to 5L/min and the differential pressure was set to 100mmHg. Five FW-2 VADs was tested and we computed the normalized index of hemolysis (NIH).

Results The tested hydraulic characteristic curve conformed to the design curve. The error range between actual pressure supplied by FW-2 VAD and design pressure was not more than 10 percent of design pressure in all speed and all flow range. The hydraulic characteristic of FW-2 VAD descended after life testing. In the same speed and flow, the pressure descended about 10% compared to before life testing. The NIHS of the five FW-2 VADs were 0.038 g/100L, 0.036 g/100L, 0.031 g/100L, 0.032 g/100L, 0.034 g/100L respectively. Then we computed the NIH of the FW-2 VAD to be 0.034 g/100L.

Conclusions The hydraulic characteristic of FW-2 VAD conformed to design purpose. FW-2 VAD can run for a month normally meanwhile the hydraulic characteristic doesn't change obviously nor descend. The NIH of FW-2 VAD is lower than 0.04g/100L which satisfy the clinic demands.

Clinical outcome in Chinese patients with long lesion or small vessel / multi-vessel disease receiving XIENCE V everolimus-eluting stent: 30-day results from the SEEDS study**Bo Xu¹, Yuejin Yang¹, Yaling Han², Bao Li³, Qiang Liu⁴, Guoying Zhu⁵, Junyu Cui⁶, Lang Li⁷, Shuzheng Lu⁸****1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China****2. The General Hospital of Shengyang Military Region, Shengyang 110016, China****3. Shanxi Cardiovascular Hospital, Taiyuan 030024, China****4. Shenzhen Sun Yat-Sen Cardiovascular Hospital, Guangdong Province, Shenzhen 518000, China****5. Wuhan Asia Heart Hospital, Wuhan 430022, China****6. PLA the Military General Hospital of Beijing, Beijing 100700, China****7. First Affiliated Hospital of Guangxi Medical University, Guangxi 530021, China****8. Beijing Anzhen Hospital, Beijing 100029, China**

Background The effectiveness and safety of XIENCE V[®] everolimus-eluting coronary stents (XIENCE V, Abbott Vascular, Santa Clara, CA, USA) have been demonstrated in pre-marketing and post-marketing studies with low rates of target lesion revascularization (TLR), major cardiac adverse events and stent thrombosis (ST). However, these results were mainly obtained in populations of European heritage. SEEDS is the first study in China to evaluate XIENCE V's performance in Chinese patients with complex lesions.

Methods This is a prospective, multi-center registry designed to enroll up to 1900 patients with long lesions or small vessel / multi-vessel coronary diseases at 45 sites in Mainland China, Taiwan and Macao. The primary endpoint is ischemia-driven target vessel failure (TVF) at 12-month. Clinical follow-up is at 30 days, 6, 12 and 24 months. All clinical endpoints are adjudicated by independent clinicians and 30% of data are monitored. In this analysis, descriptive statistics are provided for baseline characteristics and clinical endpoints by an independent statistical commission.

Results A total of 365 (19.21%) small vessel patients, 781 (41.11%) long lesion patients, and 754 (39.68%) multi-vessel patients with 2825 lesions were treated. Clinical, device and lesion success rates were 99.47%, 99.95%, and 99.96% respectively. The table below shows baseline characteristics and 30-day clinical outcomes.

Conclusion In this large, multicenter, real-world study of Chinese population with complex lesion subsets, XIENCE V demonstrated low rates of ST, TLR and TVF at 30-day. Long-term results will document the safety and effectiveness of XIENCE V in high risk cohorts with long lesion and small vessel / multi-vessel disease from clinical settings in China.

Table: Baseline Characteristics and 30-Day Clinical Outcome

	Baseline Characteristics			
	(N=1,900)			
Age (years)	59.59 ±9.50			
Diabetes	27.94%			
Current smoker	42.42%			
Hypertension	64.35%			
Hyperlipidemia	37.33%			
Prior MI	25.11%			
% Pts with ≥ 2 Stents / Lesion	31.22%			
Total stent length / lesion (mm)	22.50 ±5.49			
	Clinical Endpoint Results at 30 Days			
	Small Vessel	Long Lesion	Multi-vessel Disease	All
	(n=365)	(n=781)	(n=754)	(n=1,900)
Death	0.00%	0.00%	0.27%	0.11%
Cardiac death	0.00%	0.00%	0.27%	0.11%
MI	2.47%	2.56%	4.11%	3.16%
Q- wave	0.27%	0.38%	0.40%	0.37%
Non Q-wave	2.19%	2.18%	3.71%	2.79%
TLR	0.0%	0.0%	0.27%	0.11%
TVF	2.47%	2.56%	4.77%	3.42%
Acute ST (Def/Prob)	0.00%	0.26%	0.27%	0.21%
Subacute ST (Def/Prob)	0.55%	0.00%	0.40%	0.26%

The clinic and interventional therapy characteristics of coronary arteries in the elder patients with coronary heart disease

Xiaofang Tang, Jinqing Yuan, Yuejin Yang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To evaluate the clinic risk factors and interventional therapy characteristics of the elder patients with CHD, and evaluate the safety and validity of Percutaneous Coronary intervention (PCI) .

Methods We performed a retrospective cohort study of 362 (ages>70) consecutive patients who underwent PCI between 2004 and 2007. The patients were divided into two groups according to the sex. The male group is 258, and the female group is 104. To compare their clinical characteristics and interventional therapy characteristics (numbers of coronary diseased vessels and types of coronary lesions); to compare the following up about severe adverse cardiac events after six months to two years of PCI; to compare the minimum lumen diameter and stenosis in stent with Quantitative coronary Angiographic(QCA) after 1 year of PCI

Results (1)The elder patients of coronary heart disease with 2 type diabetes mellitus: the female group was more than the male group (35.6% vs. 21.3%, $P=0.005$). The male patients with smoking were more than the female group (48.4% vs. 10.6%, $P<0.001$). The others (hypertension, hyperlipidemia, family history and past medical history) were no significant difference ($P>0.05$). (2) Between the two groups, coronary artery lesions and vascular types showed no significant difference ($P>0.05$). Two-vessel lesions: male 29.5% vs. female 32.7%; triple-vessel lesions: male 36.0% vs. female 38.5%; type B2 lesions: male 43.0% vs. female 39.4%; type C lesions: male 57.0% vs. female 50.9%. (3) The six months and 2 years follow-up results (acute myocardial infarction, revascularization, late stent thrombosis and death) were no difference in the two groups, and the late stent thrombosis and mortality were very low. (4) Quantitative Coronary Angiographic (QCA) after 1year of PCI was no difference in the two groups. The minimum lumen diameter: male $2.17\pm 0.72\text{mm}$ vs female $2.11\pm 0.65\text{mm}$; stenosis in stent: male $28.52\pm 19.78\%$ vs. female $28.21\pm 19.28\%$.

Conclusions In CHD patients of elder age, 2 type diabetes mellitus is the risk factor of the female patients, and smoking is the risk factor of the male patients. The lesions are similar in two groups, both mainly the two-vessel and triple-vessel disease. The types of lesions are mainly B2 and C. The six months and 2 years follow-up results and QCA confirm the safety and efficacy of interventional therapy.

Effect of ABCB1 C3435T and PON1 Q192R alleles on platelet reactivity and adverse clinical events in Chinese clopidogrel-treated people undergoing percutaneous coronary intervention

Xiaofang Tang, Jinqing Yuan, Yuejin Yang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Introduction The influence of the ABCB1 C3435T and PON1 Q192R alleles on clopidogrel response and clinical outcome has also not been reported in Chinese clopidogrel-treated patients undergoing PCI. Therefore, the aim of our study was to investigate the effect of the ABCB1 and PON1 variants on clopidogrel pharmacodynamics and long-term prognosis in these patients.

Methods Patients undergoing PCI (n=670) were enrolled in a single-center registry. Thrombelastography (TEG) was used to assess platelet reactivity (PR) at least 6 hours after 300-mg loading of clopidogrel. The ABCB1 C3435T and PON1 Q192R variants were determined by the Ligase Detection Reaction (LDR). The primary clinical end point was the composite of cardiovascular death, nonfatal MI, target vessel revascularization (TVR) and stent thrombosis (ST). The secondary clinical end point was TIMI major or minor bleeding. The follow-up time is 12 months.

Results All SNPs were in Hardy-Weinberg equilibrium ($P>0.05$). Carriages of the ABCB1 T and PON1 Q variant alleles were 64.2% and 87.7% (n=430, CT=308, TT=122; n=587, CC=277, CT=310). Baseline characteristics had no significant differences across the ABCB1 and PON1 genotype groups. 20.7% patients met the criteria of CLR (n=139). Platelet function measurements and the prevalence of CLR were similar across the ABCB1 or PON1 genotype groups. 3.9% patients had adverse ischemia events during 12 months after PCI (n=26). The rate of the composite of cardiovascular death, nonfatal MI, and unplanned TVR did not differ according to the ABCB1 or PON1 genotype groups.

Conclusion 20.7% patients met the criteria of CLR, and 3.9% patients had adverse ischemia events during 12 months after PCI. However, neither ABCB1 nor PON-1 genotypes significantly influenced platelet reactivity or outcome.

Isolated pulmonary arteries involvement in Takayasu arteritis: a case report**Teng Sun, Huimin Zhang, Wenjun Ma, Ting Guan, Haiying Wu, Xiongjing Jiang, Xi anliang Zhou, Rutai Hui, Deyu Zheng****Hypertension Division, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Clinical Data A 20 years old female presented with dyspnea and palpitation after activities since July 2011. In March 2010, she had a history of massive hemoptysis three times without obvious incentive. Two days before admission, she had little hemoptysis twice again. Blood pressure was 96/58mmHg with no difference between the arms. Peripheral pulses were palpable above both wrists and ankles. The heart rate (HR) was 107 beats per minute (bpm). A systolic murmur was noted at pulmonary valve auscultation area. And vascular bruit was noted in the back. Laboratory tests revealed that erythrocyte sedimentation rate and C-reactive protein were normal. Partial pressure of oxygen was 68.3mmHg_l. Computed tomography angiography (CTA) revealed abnormal wall thickening and severe stenosis of the right main pulmonary artery without abnormalities of aorta and its branches. Echocardiographic examination suggested that left ventricular diameter (LV) was 38mm, right ventricular diameter (RV) was 37mm, and pulmonary artery pressure was 62 mmHg. Pulmonary angiography revealed a filiform stenosis (90%) of distal segment of the right main pulmonary artery and severe ostial stenosis (80%) of upper and lower branch. Pulmonary artery pressure was 85mmHg evaluated by cardiac catheterization and dropped to 64 mmHg after pulmonary artery balloon angioplasty. After angioplasty, her HR dropped to 70 bpm without dyspnea. Reviewed echocardiographic examination suggested that LV was 42mm, RV 29mm and pulmonary artery pressure was 39 mmHg.

Discussion Takayasu's arteritis (TA) mainly affects aorta and its major branches. Pulmonary artery involvement in TA was not rare. However this was nearly always associated with the involvement of the aorta or its branches. Isolated pulmonary artery involvement was very rare, comprising only 4% of all cases of TA. According to comprehensive analysis of the patient's clinical features and angiographic findings, TA was diagnosed. In this case, isolated balloon angioplasty had a good result in short period, while the long term prognosis needed further observation.

Procedural results and 30-days clinical events analysis following Edwards transcatheter aortic valve implantation in 48 consecutive patients: initial experience.**Quanming Zhao¹, Therese Lognone², Gilles Grollier²****1. Beijing Anzhen Hospital, Capital Medical University, 100029, Beijing, China****2. Department of Cardiology, University Hospital of Caen, Avenue Côte de Nacre, 14000, Caen, France**

Background Transcatheter aortic valve implantation (TAVI) is a rapidly evolving strategy for therapy of aortic stenosis. We presented the procedural results and analyzed the death causes of 30-days mortality and clinical events in patients who underwent TAVI with Edwards prosthetic valves in University Hospital of Caen (France).

Methods The patients with severe aortic stenosis but at high surgical risk or inoperable were considered as candidates for TAVI. 48 Patients underwent TAVI from July 2010 to September 2011 were enrolled in this registry. The Edwards prosthetic valves were solely used in this clinical trial.

Results Overall 48 patients underwent TAVI. 28 patients accepted TAVI by trans-femoral (TF) approaches, and the other 20 accepted TAVI by trans-apical approaches (TA). The mean age was 82.9 ± 7.1 years, AVA (cm²) was 0.70 ± 0.23 , LVEF (%) was 57.4 ± 7.6 , Log EuroSCORE (%) was 19.2 ± 15.8 , mean gradient (mmHg) was 47.0 ± 16.6 . There were no significant differences between TF and TA on all these baseline parameters, though AVA has a trend to be smaller in TF group (0.64 ± 0.17 cm²) than in TA group (0.77 ± 0.27 cm²) ($p=0.067$). Device success rate was 95.8%, and procedural success was 93.7% in total. Procedural mortality was 6.7% (3/48): two deaths in TA group (10%), and one death in TF group (3.6%). Forty-six Edwards valves were implanted: 10 Edwards Sapien and 36 Edwards XT. Procedure-related complications were: cardiac tamponade in 2 cases (4.2%); AMI in 1 case (2.1%); permanent pacemaker implantation in 1 case (2.1%); Life-threatening and major bleeding in 3 cases; Access site related major complication in 1 case; AKI stage 3 in 3 cases (6.3%); minor stroke in 1 case (2.1%). 30-days survival rate was 89.6%. There were 5 deaths in total (10.4%): 4 in TA group (20%) and 1 in TF group (3.6%). The statistical analysis of mortality independent variables selection did not demonstrate the traditional risk factors (such as age, EF, AVA, mean gradient, Logistic Euroscore) as predictable factors.

Conclusion The procedural success rate and 30-days mortality were acceptable in these high risk patients with Edwards prosthetic valves in the first 48 TAVI. The acute result may be improved with amelioration of device and accumulation of experiences.

Influencing factors and clinical significance of coronary collateral circulation in patients with coronary chronic total occlusion (CTO) disease**Chenguang Li, Yuxiang Dai, Xin Zhong, Zheyong Huang, Juying Qian, Lei Ge, Junbo Ge****Zhongshan Hospital, Fudan University, Shanghai 200032, China**

Objective The aim of this study was to evaluate the significance of coronary collateral circulation in patients with chronic total occluded (CTO) coronary artery disease and factors influencing collateral channel development.

Methods We identified 1485 patients with total occluded coronary artery from January 2004 to December 2008 in Zhongshan hospital. Of them, 638 patients were affirmed as the CTO. Groups were classified into two groups by the condition of collateral circulation.

Results Compared with patients of good collateral circulation, patients with bad collateral were more aged (63.6 ± 0.7 vs. 66.5 ± 11.2 , $t=3.638$, $P<0.05$) and have a history of moderate to heavy smoking (44.1% vs. 59.5% , $\chi^2=15.277$, $P<0.01$) and acute myocardial infarction (32.8% vs. 39.5% , $\chi^2=2.043$, $P<0.05$), a higher level of blood glucose (5.51 ± 1.38 mmol/L vs. 6.67 ± 1.41 mmol/L, $t=2.299$, $P<0.05$) and Uric Acid (355.79 ± 92.69 mmol/L vs. 370.94 ± 94.81 mmol/L, $t=2.697$, $P<0.05$).

And the angiographic revealed that ostial occlusion (29.8% vs. 20.7% , $\chi^2=6.927$, $P<0.01$) and excessive tortuosity (19.1% vs. 26.2% , $\chi^2=4.551$, $P<0.05$) were more common. A multiple logistic regression analysis revealed that heavy smoking history ($OR: 0.591$, $P<0.05$, $95\%CI: 0.052-0.699$) and high level of blood glucose ($OR: 0.591$, $P<0.05$, $95\%CI: 0.052-0.699$) were independent predictors of bad condition of coronary collateral circulation.

Conclusions Heavy smoking history and high level of blood glucose were independent predictors of bad condition of coronary collateral circulation while other factors like angina time and myocardial infarction were not supported to have definite influence

Mechanical heart valve replacement in children under 7 years of age**Bing Yu, Keming Yang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective: We report the early and constant-term outcome following mechanical heart valve replacement in children in Fuwai hospital.

Methods Between 2001 and 2011, 19 children (12 male, mean age 4.8 ± 1.9 years, range 1.0–7.0 years) underwent mechanical valve replacement (MVR 12 and AVR 7). Valve replacement were performed because of congenital heart disease in 17 patients, traumatic valve lesions and infective endocarditis in 1 patient, respectively. All patients received long-term anticoagulation treatment with sodium warfarin, aiming to maintain an international normalized ratio between 1.8 and 2.5.

Results The mean follow-up was 2.9 ± 2.8 years (range 0.3-10.9 years,). In-hospital mortality was 15.7% (3/19), No late deaths and reoperation occurred during the follow-up. Follow-up is 94% complete. All patients are in New York Heart Association (NYHA) class I-II. Actuarial survival after 10 years was 78.9%. Late complications included thromboembolism (1; 0.5%) and hemorrhage (3; 15.7%).

Conclusion Mechanical valve prostheses are a valuable option for heart valve replacement in children with good results. Operative mortality and the incidence of any valve-related events as thromboembolism and hemorrhage were acceptable.

Does pretreatment of bone marrow mesenchymal stem cells by 5-azacytidine or double intravenous infusion improve their therapeutic potential for dilated cardiomyopathy?

Yan Zhou, Sirui Yang, Jinhua Piao, Lianhua Jin

The First Hospital of Jilin University, Jilin 130021, China

Objective: This study is to investigate whether pretreatment of bone marrow mesenchymal stem cells (BMSCs) by 5-azacytidine (5-aza) or double intravenous infusion enhance their therapeutic potential for dilated cardiomyopathy (DCM).

Materials and methods BMSCs were cultured in the presence or absence of 5-aza and DCM serum. At 2 weeks after the establishment of DCM, BMSCs (Groups 1 and 2), 5-aza-induced BMSCs (Groups 3 and 4), and medium alone (model control) were intravenously transplanted into rat body via tail vein. Double infusion of BMSCs was achieved with one day time-interval in Groups 2 and 4. Postmortem histological analysis and evaluation of heart function were performed at four weeks post-transplantation.

Results Some transplanted BMSCs engrafted into myocardial tissue and were positive for cardiac marker troponin T. The hearts containing transplanted BMSCs secreted a larger amount of vascular endothelial growth factor (VEGF). Cardiac function parameters and serum level of brain natriuretic peptide (BNP) did not differ among Group 1, 3, and model control. As compared with model control, BMSC transplantation in Groups 2 and 4 significantly decreased the serum level of BNP and improved cardiac contractile function, as evidenced by reduced left ventricular end-diastolic and end-systolic diameter, elevated ejection fraction, and fractional shortening.

Conclusions BMSC transplantation is a promising strategy for the treatment of DCM. Pretreatment of BMSCs by 5-aza and DCM serum does not enhance their therapeutic efficacy, and double intravenous infusion of BMSCs is superior to single infusion for preserving cardiac contractile function in a rat model of DCM.

In vitro and in vivo hemolysis tests of ChinaHeart VAD

Chuangye Xu^{1,2}, Changyan Lin^{1,2}, Guanghui Wu^{1,2}, Xiujian Liu^{1,2}, Jing Wang^{1,2}, Xiaotong Hou¹, Haiyang Li¹, Peng Yang³, Wenbo Qu³

1. Beijing An Zhen Hospital, Capital Medical University

2. Beijing Institute of Heart Lung and Blood Vessel Diseases

3. ChinaHeart Biomedical Inc, Suzhou Jiangsu

Objective Ventricular Assist Device has become an effective method to treat end-stage heart failure. In clinical application, it may cause damage to blood while hemolysis is one parameter to assess the extent of damage. So it's necessary to test hemolysis characteristic for blood pump before clinical trials. ChinaHeart VAD, a third generation maglev centrifugal blood pump manufactured by ChinaHeart Biomedical Inc, may have a considerable hemolytic property theoretically. This study is to explore the hemolytic characteristic of it for further animal survival experiments.

Methods The blood pump was connected into a mock circulatory loop filled with fresh sheep blood, and generated (5 ± 0.25) L/min outflow against a head pressure of (100 ± 3) mmHg by adjusting thermistor and pump rate. Blood samples of 2 ml were drawn from the reservoir before pumping and at every hour of pumping for 4 hours for measurement of plasma free hemoglobin (FHB) and hematocrit (Hct). The normalized index of hemolysis (NIH) was evaluated by determining the values of FHB and Hct. Blood pumps were implanted into 2 healthy male Small-Tailed Han sheep via the fifth rib after anesthesia, with inflow inserted into the left ventricular apex and outflow graft anastomosed to the descending aorta, thus building a bypass for blood of the left ventricular → LVADs → descending aorta. Blood samples were drawn regularly for detecting FHB after operation.

Results: In hemolysis tests, the blood pump ran smoothly with normal temperature. By calculating the values of FHB and Hct, we obtained NIH for (0.0076 ± 0.0016) g/100L. The two sheep survived successfully for 20 and 38 days respectively. The FHB showed an ascendant trend, with the maximum value of 0.846g/L and 1.09g/L for them respectively, and then decreased to the preoperative levels gradually.

Conclusions Hemolysis tests in vitro and in vivo indicate a considerable hemolysis characteristic of ChinaHeart VAD so that it could be implanted into animals for further long-term survival experiments.

Serum phosphorus is associated with the severity of coronary stenosis in patients with normal renal function

Ximei Wang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective High phosphorus levels have been shown to induce vascular calcification and endothelial dysfunction. In addition, high-normal serum phosphorus has also been linked to the severity of coronary artery disease as seen on coronary angiography in patients with chronic kidney disease. The aim of this study is to evaluate the relationship between serum phosphorus and coronary stenosis in patients with normal renal function.

Methods The study included a retrospective analysis of 823 stable coronary artery disease patients with normal renal function who were admitted to fuwai hospital from January 2008 to May 2008. The normal renal function was defined by estimated Glomerular Filtration rate (eGFR) ≥ 90 ml/min/1.73 m² as calculated by the Modification of Diet in Renal Disease formula. The severity of coronary artery stenosis was quantified by Gensini score. Age, sex, previous diabetes and hypertension, systolic and diastolic blood pressure, serum concentrations of creatinine, calcium, phosphorus, glucose etc. were recorded. we divided subjects into 4 groups on the basis of their serum phosphorus concentrations (≤ 3.3 , > 3.3 to ≤ 3.6 , > 3.6 to ≤ 3.9 , and > 3.9 mg/dL). Data are expressed as mean \pm SD or frequency. Baseline clinical characteristics were compared by the chi-square test for categorical variables and the analysis of variance test for continuous variables. The unadjusted association between groups of serum phosphorus and coronary Gensini score was tested with the variance test. And we then constructed univariate linear regression model using phosphorus as a dependent variable to analyze the relationship between serum phosphorus and coronary Gensini score. All $p < 0.05$ were considered statistically significant. Analyses were done using the statistical software SPSS 17.0.

Results We studied 823 stable coronary artery disease patients with normal renal function, including serum phosphorus ≤ 3.3 mg/dL group 170 patients (20.6%), serum phosphorus > 3.3 to ≤ 3.6 mg/dL group 258 patients (31.3%), serum phosphorus > 3.6 to ≤ 3.9 mg/dL group 275 cases (33.4%), and serum phosphorus > 3.9 mg/dL group 120 patients (14.7%). And the average coronary Gensini score is 30.8 ± 21.5 , 36.6 ± 18.1 , 46.1 ± 22.3 , 49.6 ± 25.2 , respectively in serum phosphorus ≤ 3.3 , > 3.3 to ≤ 3.6 , > 3.6 to ≤ 3.9 , and > 3.9 mg/dL group. The result showed there are significant differences in coronary Gensini score ($P = 0.015$) among different serum phosphorus groups. While there is a positive correlation between serum phosphorus and coronary Gensini score in patients with normal renal function.

Conclusion Serum phosphorus is associated with the severity of coronary stenosis in patients with normal renal function. And there is a positive correlation between serum phosphorus and coronary Gensini score in these patients.

Surgical treatment of culture-negative infective endocarditis**Qi Miao****Peking Union Medical College Hospital, Beijing, 100005, China**

Background: Blood culture negative endocarditis was first described by Osler in 1909. Management can be optimized if an etiological diagnosis is made, but blood cultures are negative in 2.5 to 31% of patients. We retrospectively analyzed the results of operations done for culture-negative infective endocarditis at a single center over a period of 12 years.

Methods From June 2000 to May 2012, we operated on 40 patients with infective endocarditis for which the results of blood culture were negative. 29 of the patients (74.4%) were male and the patients' mean age was 43.1 ± 14.6 years (range, 15 to 71 years). 2 of the patients (5%) had a history of renal failure, and embolic complications were eventually diagnosed in 17 of the patients (42.5%). The mean duration of follow-up was 3.8 ± 4.0 years (range, 0.1 to 12 years).

Results Blood culture-negative endocarditis account for 29.9% of all cases of endocarditis undergoing cardiac surgery. 57 procedures were done on the 40 patients in the study. 24 patients (60%) undertaken mitral valve replacement and mitral valve repair, and aortic valve replacement or aortic valve repair in 21 patients (52.5%). 5 patients (8%) had concomitant procedures done on the tricuspid valve. One patient (0.25%) died during post-surgical hospital stay.

Conclusions Many factors have been suggested as responsible for the lack of isolation of microorganisms from the blood in such cases, including healed endocarditis, broad-spectrum antibiotic therapy, pathogens of low-virulence, and poor blood sampling. Some of the microorganisms that may cause endocarditis have proven diagnostically challenging in terms of growth in culture. Culture-negative infective endocarditis is a major problem in the diagnosis and treatment of a significant proportion of cases of endocarditis. These results support early surgical therapy for Culture-Negative Infective Endocarditis.

Effects of CYP2C9 genetic polymorphisms on response to Warfarin during initial anticoagulation in Chinese patients with mechanical heart valve replacement**Shuang Xie, Hong Liu, Lulu Han, Ying Lou, Li Xu, Yishi Li****Clinical Pharmacology Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To evaluate the effects of CYP2C9 genetic polymorphisms on response to Warfarin during initial anticoagulation in Chinese patients with mechanical heart valve replacement.

Methods In 254 Chinese valve replacement patients who starting warfarin therapy, we assessed CYP2C9 genotypes (CYP2C9 *1, *2, and *3), clinical characteristics, response to therapy (as determined by the international normalized ratio [INR]), and bleeding events. The study outcomes were the time to the first INR within the therapeutic range, the total warfarin dose requirement in 5 days, and INR within the therapeutic range in the day 6.

Results As compared with patients with the *1/*1 genotype, patients with the *2 or *3 genotype of CYP2C9 had a same time to the first INR within the therapeutic range ($P=0.933$) and no difference in total warfarin dose requirement ($P = 0.669$), 17.91 ± 4.61 mg and 18.18 ± 4.24 mg, Respectively. In contrast, the CYP2C9 genotype was a significant predictor of INR within the therapeutic range in the day 6 ($P = 0.006$).

Conclusion CYP2C9 genetic polymorphisms only affected INR within the therapeutic range in the day 6, not the warfarin dose and the time to the first INR within the therapeutic range in Chinese patients with mechanical heart valve replacement.

A report of twenty-two cases of fungal infective endocarditis**Xiaolu Sun, Jian Zhang****Emergency and Critical Care Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Purpose Infection of cardiac valves by fungal organisms is rare (Fungal infective endocarditis (IE) is a rare but devastating disease. Given the rarity of this infection, few studies are available on Fungal IE. Most epidemiologic data are derived from case reports. This study was conducted to explore the clinical characteristics, treatment patterns, and outcomes of patients with Fungal IE.

Methods We conducted a prospective, observational study in the Fuwai Hospital, National Center for Cardiovascular disease, including all consecutive patients with a definite diagnosis of IE admitted from January 2006 through December 2011. The overall characteristics and risk factors for death from FE were analyzed.

Result Between January 2006 and December 2011, a total of 22 patients with fungal infective endocarditis were identified. The mean age at presentation was 32 ± 6 years, with a slight male preponderance. There were 16 (78%) patients with involvement of a mechanical prosthesis; the majority (64%) had early prosthetic valve endocarditis (PVE), five cases (23%) of native valve endocarditis (NVE), one case of pacemaker endocarditis. None of them were intravenous drug users. Most patients (82%) had healthcare-associated IE. The aortic valve was most commonly affected, and the most common aetiological agent was *Candida* species, followed by *Histoplasma capsulatum*, filamentous fungi and pharyngeal *aspergillus*. The most common symptom at presentation was persistent infection (77%), followed by weight loss, major vessel embolism, and Anemia. Major complications occurring during the acute infective phase were also recorded, including renal infarction (73%), New York Heart Association class III–IV heart failure (45%), and neurological complication (36%). Initial therapy consisted of a combination of antifungals in 12 of 22 patients (55%). Eight patients (36%) underwent valve replacement. Pathological evaluation of valve material was of high yield, with organisms identified in 87% of cases who underwent valve replacement surgery. Prosthetic valve fungal endocarditis was associated with a high morbidity and mortality, with 77% of patients experiencing complications and 45% of patients dying of infection-related disease. The overall hospital mortality rate was 66.7%. A better outcome was observed in patients treated with a combined medical and surgical therapy.

Conclusion Fungal infective endocarditis is an increasingly prevalent and devastating disease in today's highly advancing medical practice. An aggressive approach should be considered in patients with prosthetic intravascular devices and significant risk factors for nosocomial fungemia. Microorganism should be investigated particularly by molecular methods on surgical specimens.

Totally thoracoscopic versus open surgery for closure of atrial septal defect: early outcomes from multi-centered registry in China

Kun Hua¹, Zhe Zheng¹, Hansong Sun¹, Xuezheng Xu², Yunge Chen³, Zengshan Ma⁴, Jihan Zhuang⁵, Xinmin Zhou⁶, Liang Tiao⁷, Baishun Gao⁸, Zhiwei Wang⁹, Shengshou Hu¹

1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. Institute of Cardiovascular Surgery, Xijing Hospital, Fourth Military Medical University, Xian, Shaanxi, China.

3. Department of Cardiovascular Surgery, No. 3 Peoples Hospital, School of Medicine, Shanghai JiaoTong University, Shanghai, China

4. Department of Cardiac Surgery, Liaocheng People s Hospital and Liaocheng Clinical School of Taishan Medical University, Liaocheng, Shandong, China

5. Department of Cardiovascular Surgery, Guangdong Provincial Cardiovascular Institute, Guangdong General Hospital, Guangdong Academy of Medical Sciences, Guangzhou, China.

6. Department of Cardiothoracic Surgery, The Second Xiangya Hospital, Central South University, Changsha, Hunan, China

7. Department of Cardiovascular Surgery, Wu Han Ya Xin Hospital, Wuhan, China

8. Department of Cardiovascular Surgery, first affiliated Hospital, Lan Zhou University, Gansu, China

9. Department of Thoracic & Cardiovascular Surgery, the Affiliated Hospital of Wu Han University, Wuhan, China

Objective The purpose of this study is to compare early clinical outcomes of surgical repair for isolated atrial septal defect (ASD) with totally thoracoscopic approach without robotic assistance and conventional open counterpart.

Methods: Between September 2010 and August 2011, 254 consecutive patients with isolated ASD underwent totally thoracoscopic surgery without robotic assistance in 43 institutions participating in the nationwide multi-centered registry in China. During the same period, these patients were matched with 254 patients who had accepted conventional open procedures through median sternotomy by using propensity score methodology. The early in-hospital outcomes in the two groups were analyzed and compared.

Results The totally thoracoscopic surgery required longer aortic clamp time (32.1 ± 17.3 vs. 28.3 ± 16.7 $p=0.001$), but shorter length of stay in intensive care unit (25.3 ± 12.2 vs. 34.8 ± 24.4 $p=0.00$), length of stay in hospital (16.5 ± 6.3 vs. 17.9 ± 6.4 $p=0.00$) and mechanical ventilation time (8.3 ± 5.0 vs. 11.4 ± 4.8 , $p=0.04$). The cardiopulmonary bypass time (62.7 ± 29.3 vs. 61.5 ± 28.0 , $p=0.64$) showed no significant difference between the two groups. The totally thoracoscopic group had significantly less chest tube drainage (322.1 ± 213.7 vs. 462.8 ± 398.4 , $p=0.00$). The intra-operative (35.4% vs. 38.6%, $p=0.46$) and post-operative blood products usages (20.9% vs. 21.3%, $p=0.91$) showed no significant difference between the two groups. In addition, there was no significant difference in the major in-hospital complications between the two groups.

Conclusions The early outcomes in totally thoracoscopic group for treatment of isolated ASD were superior to the conventional open operation performed through median sternotomy, despite longer aortic clamp time.

Influence of atorvastatin on the serum adiponectin, Leptin, resistin in the ACS patients after the PCI

Shuyan Sun

The First Affiliated Hospital of Baotou Medical College, Baotou 014010, China

Objectives To observe the changes of Serum Adiponectin, Leptin, Resistin in the ACS patients before and after the PCI and the influence of Atorvastatin.

Method 190 patients with ACS received PCI were divided randomly into group A(n=95, on a regular treatment basis , atorvastatin 20mg added, once/day), group B(n=95 , on a regular treatment basis , atorvastatin 40mg added, once/day). Group C was the 95 patients with normal coronary artery confirmed by coronary angiography. The levels of serum adiponectin, leptin and resistin were detected before and one week, one month after the PCI.

Results 1. Changes of serum adiponectin, leptin and Resistin in patients with ACS. The serum APN level of the ACS patients was lower than group C ($p<0.05$) , while level of RST, LPT was higher than group C ($p<0.05$). **2. The Influence of PCI on Serum Adiponectin, Leptin, Resistin in the ACS Patients .**The level of serum APN was decreased significantly ($p<0.05$) after PCI , and RST, APN levels significantly increased ($p<0.05$) . **3. Influence of Atorvastatin on the Serum Adiponectin, Leptin, Resistin in the ACS Patients after the PCI.** At one week and One month after surgery, the APN level in group A and group B significantly were raised($p<0.05$), RST and LPT levels were reduced significantly($p<0.05$). Compared with group B and group A, the differences of serum APN, RST, LPT were not statistically significant ($p>0.05$) before PCI. At one week and one month after surgery, the APN level of group B was significantly higher ($p<0.05$), RST and LPT levels were lower significantly than group A ($p<0.05$)

Conclusion The serum APN level of the ACS patients was lower , the levels of leptin, resistin were higher. The changes were aggravated after PCI. Atorvastatin may improve the conditions aforementioned.

Myocardial bridges in patients with dilated cardiomyopathy, is a risk factor for progression of heart failure?

Jiangping Song, Zhe Zheng, Shengshou Hu

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background Myocardial bridges may cause compression of a coronary artery, and it has been suggested that myocardial ischemia may result, especially in failing and dilated hearts. The clinical significance and prognostic value of myocardial bridges of coronary artery in patients with dilated cardiomyopathy remains controversial.

Objectives We sought to investigate the prevalence and clinical significance of myocardial bridging of the coronary artery in transplanted hearts with diagnosis of dilated cardiomyopathy that had undergone detail cardiac anatomy.

Methods Cardiac anatomy from 162 transplanted hearts with dilated cardiomyopathy were reviewed to determine whether myocardial bridging was present (including length and depth) and, if so, Adjusting for sex, age, heart weight and LVEDD (left ventricular end-diastolic diameter) with a propensity score matched 26 patients with myocardial bridge and 26 patients without as control. To assess the characteristics of myocardial ischemia, age at diagnosis and the rate freedom from cardiac transplantation or LVAD of the two groups.

Results Coronary artery bridges were common in DCM transplanted hearts (31/162, 19.1%). No multiple bridging sites were identified in this group, Bridging was located at proximal LAD in 12 (46.1%), distal or mid-LAD in 13 (50%), distal or mid-LCX in 1 (3.9%) of all 26 bridges. To make sure the relationship between myocardial bridges and ST-segment changes (ischemia), we draw the ROC for the ability of the ST-segment changes to predict the presence of myocardial bridges, the AUC of the ROC was 0.71 (95% CI, 0.71-0.85). Kaplan–Meier estimates of the proportions of patients who had not undergone cardiac transplantation or LVAD with or without MBs found that

no significant differences between subjects with and those without myocardial bridges with respect to the age at diagnosis. Rates of freedom from cardiac transplantation or LVAD (left ventricular assist device) among subjects with and those without myocardial bridges did not appear to be influenced by neither myocardial bridges present or not nor the depth ($>3\text{mm}$ or $<3\text{mm}$) of the bridges, but were influenced by the length ($>25\text{mm}$ or $<25\text{mm}$) of the myocardial bridges under the myocardium.

Conclusion MBs is a common anomaly in DCM that cannot be systematically regarded as a predictive marker for progression of heart failure due to myocardial ischemia. But the subgroup of MBs with length $>25\text{mm}$ maybe a risk factor for progression of heart failure in DCM patients.

Idiopathic right ventricular tachycardia and premature ventricular contractions: ablation strategy and a further look into pace maps guided by non-contact mapping

Fengxiang Zhang, Minglong Chen, Bing Yang, Hongwu Chen, Weizhu Ju, Jinbo Yu, Mingfang Li, Kai Gu, Kejiang Cao

Division of Cardiology, Jiangsu Province Hospital, the First Affiliated Hospital with Nanjing Medical University, Nanjing 210029, China.

Background The spatial resolution between activation and pace mapping for idiopathic ventricular arrhythmia is still controversial. In this study, we further analyzed pacemap spatial resolution and compare it to non-contact activation mapping.

Methods The earliest activation from unipolar based non-contact mapping can be classified as the earliest activation (EA) and the breakout (BO) sites. A total of 124 patients (mean age was 43.65 ± 12.74 years old) with 124 VT/PVCs, 36 male, were included in this study. A standard pace mapping at twice the diastolic threshold was applied at both EA and BO sites and the area of activated myocardium (EAA) and the area of captured myocardium (ECA) were measured based on activation and pace maps respectively. Initial ablation attempt was randomized at either the EA site or the BO site. If initial RF attempt failed, it would be followed by a crossover ablation.

Results The overall acute successful rate was 98.39% (122/124 VT/PVCs). Ablation was succeeded at the BO site in 40 (32.79%) VT/PVCs, and at the EA site in 82 (67.21%) VT/PVCs, $P < 0.01$. Pace score is similar between the EA and BO sites (22.98 ± 1.39 vs. 22.68 ± 1.52 , $P = 0.47$). The ECA at 1 ms, and 5 ms was bigger than the corresponding EAA at the EA site (4.58 ± 3.97 cm² vs. 0.03 ± 0.13 cm², 8.34 ± 4.36 cm² vs. 0.95 ± 1.41 cm², $P < 0.01$, respectively). Similarly, the ECA at 1ms, and 5ms was bigger than the corresponding EAA at the BO site (5.69 ± 5.17 cm² vs. 0.75 ± 0.50 cm², 10.89 ± 5.08 cm² vs. 8.31 ± 4.97 cm², $P < 0.05$, respectively).

Conclusion Activation mapping provides better spatial resolution than pace mapping for identifying the origin of RVOT VT/PVCs.

The safety profile of new oral P2Y12 antagonists versus clopidogrel in patients with acute coronary syndrome: a meta-analysis**Tao Chen, Ying Bai, Guangxun Feng, Yan Liang, Jun Zhu****Emergency Department, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Introduction New P2Y12 antagonists like prasugrel and ticagrelor have greatly improved prognosis of ACS patients, but more bleeding events are also observed. Henceforth, a comprehensive analysis is imperative for clinicians, researchers and patients.

Methods MEDLINE and Cochrane Controlled Trials Register databases were searched from 2000 through 2012. Randomized clinical trials that compared new oral P2Y12 inhibitors with clopidogrel in ACS patients were selected. Data from 4 studies were evaluated and analyses performed in all ACS patients and STEMI patients. TIMI bleeding criteria was study outcome.

Results A total of 33766 patients were included with 99% ACS patients. New P2Y12 inhibitors significantly increased the risk of non-CABG TIMI major bleeding compared with clopidogrel (OR: 1.27, 95% CI: 1.09-1.49, $p = 0.002$), which the difference was not significant in patients with STEMI. Other types of bleeding events like TIMI major or minor bleeding, CABG-related TIMI major bleeding, TIMI minor bleeding, and intracranial hemorrhage were not significantly between new P2Y12 antagonists groups and clopidogrel regimen. Results were confirmed in sensitivity analyses that removed the largest study.

Conclusions New oral P2Y12 antagonists only increase the risk of non-CABG TIMI major bleeding compared with clopidogrel. In selected groups, the use of new P2Y12 inhibitors is safe and effective.

Elevated N-Terminal Pro–Brain natriuretic peptide level increases the risk of recurrent thromboembolic events in patients of acute pulmonary embolism**Yong Wang, Hongliang Zhang, Zhihui Zhao, Qin Luo, Qing Zhao, Zhihong Liu****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, People's Republic of China**

Objective N-Terminal Pro–Brain Natriuretic Peptide (NTproBNP) is a predictor of adverse short-term clinical outcomes in patients with acute pulmonary embolism (APE), but its long-term prognostic value remains largely undefined. The aim of this study was to assess the value of plasma NTproBNP with regard to recurrent venous thromboembolism (VTE).

Materials and Methods NTproBNP levels were measured in 224 consecutive patients with the first episode of acute pulmonary embolism occurring from January 2005 through October 2005 through November 2010. Patients were categorized into two groups by NTproBNP reference range. Follow-ups were performed at 3, 6, and 12 months and yearly thereafter. The primary end point was symptomatic, recurrent fatal or nonfatal VTE.

Results NTproBNP was elevated in 158 (70.5%) patients and not elevated in 66 (29.5%) patients. After a mean follow-up period of 31.0 ± 19.4 months, patients with elevated NTproBNP showed an increased risk of recurrent VTE (20 patients, 12.7%) compared to those without elevated NTproBNP (only 1 patient, 1.5%) ($P=0.009$). Of the 7 deaths related to pulmonary embolism, 6 occurred in patients with elevated NTproBNP compared to patients with normal NTproBNP (1 of 7 deaths). In a multivariate analysis stratified by oral anticoagulant treatment duration, elevated NTproBNP was an independent predictor of recurrent VTE (hazard ratio, 10.50; $P=0.02$).

Conclusions Elevated NTproBNP is associated with recurrent VTE in acute pulmonary embolism patients.

Association of D-Dimer test at hospital discharge with recurrent venous thromboembolism events in patients with acute pulmonary embolism**Yong Wang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective D-dimer can be used to exclude acute pulmonary embolism (PE) for its high negative predictive value (NPV). Also, it is a predictor of recurrent venous thromboembolism (VTE) after anticoagulation withdrawal. The aim of the present study was to assess the predictive value of D-dimer for recurrent VTE when tested at hospital discharge.

Materials and Methods Plasma D-dimer levels were repeatedly measured at hospital discharge in 204 consecutive patients with the first episode of acute pulmonary embolism. Patients were categorized to two groups by D-dimer levels at hospital discharge and followed up at 3, 6, and 12 months and yearly thereafter. The primary end point was symptomatic, recurrent fatal or nonfatal VTE.

Results D-dimer levels were persistently abnormal in 66 patients (32%). The age of the study population was 60 ± 14 years (range, 19-85 years), and 119 (58%) patients were female. There were 55 (27%) acute PE patients in the study population that were considered to be provoked PE. After 31 ± 19 months follow-up, patients with persistently abnormal D-dimer level levels showed a higher rate of recurrent VTE (14 patients, 21%) compared to those with D-dimer regression (8 patients, 6%) ($P=0.001$). Major bleeding events occurred in 6 patients (3%) and 2 bleedings were fatal. At the multivariate analysis, after adjustment for other relevant factors, persistently abnormal D-dimer level levels were an independent predictor of recurrent VTE in all subjects investigated, (hazard ratio, 4.10; 95% CI, 1.61 to 10.39; $P=0.003$), especially in those with unprovoked PE (hazard ratio, 4.61; 95% CI, 1.85 to 11.49; $P=0.001$). The negative predictive value of D-dimer was 94.2% and 92.9% in all subjects or those with unprovoked PE, respectively.

Conclusions Persistently abnormal D-dimer level levels at hospital discharge have a high negative predictive value for recurrence in patients with acute pulmonary embolism, especially in subjects with an unprovoked previous event.

Down regulation of Syntaxin-4 gene expression in human pulmonary artery endothelial cells affects the cell apoptosis**Yong Wang, Hongliang Zhang, Zhihui Zhao, Qin Luo, Qing Zhao, Zhihong Liu****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, People's Republic of China**

Objective Pulmonary hypertension is a pathophysiologic syndrome with high mortality and disability. Its exact mechanism is still not clear. Pulmonary hypertension is associated with intracellular membrane trafficking in which the protein Syntaxin-4 are crucial. The aim of this study is to investigate the role of membrane trafficking associated proteins in the pathogenesis of pulmonary hypertension.

Methods We create a membrane trafficking model in HPAEC (human pulmonary artery endothelial cells) by down regulation of Syntaxin-4 gene expression. The apoptotic proteins caspase3, caspase8 and caspase9 were tested by Western Blot.

Results We create a membrane trafficking model in HPAEC successfully. In our cell model, compared to the control group, the apoptosis of endothelial cells increased significantly.

Conclusions Down regulation of Syntaxin-4 gene expression affects the apoptosis of human pulmonary artery endothelial cells. Membrane trafficking dysfunction plays an important role in the pathogenesis and progression of pulmonary hypertension.

Surgical treatment for hypertrophic obstructive cardiomyopathy complicated by infective endocarditis**Mingyao Luo, Shuiyun Wang, Chaohua Yin, Hongtao Sun, Yunhu Song, Cuntao Yu, Xiangyang Qian****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To analyze the clinical features, surgical procedures and clinical outcome for patients with hypertrophic obstructive cardiomyopathy (HOCM) complicated by infective endocarditis.

Methods From Sep, 2006 to Feb, 2012, 7 consecutive patients (5 men; mean age 39.57 ± 3.59 years, range 21~55) with HOCM complicated by infective endocarditis underwent transaortic left ventricular extended septal myectomy +valve replacement \pm valve plasty \pm coronary artery bypass grafting. Their clinical data was analyzed retrospectively. Transthoracic echocardiography was performed on all patients preoperatively and postoperatively to assess adequacy of resection, left ventricular outflow tract gradients and valves function.

Results All patients had a fever history of 1 month ~ 3 years. All had basal septal hypertrophy with a maximal depth of 26.57 ± 3.74 (22~33) mm, and left ventricular outflow tract (LVOT) obstruction with a resting peak gradient of 84.86 ± 14.61 (65~100) mmHg preoperatively. [Systolic anterior motion \(SAM\) of the anterior mitral valve leaflet](#) had been detected in all. Vegetation had been detected on the mitral leaflets (7/7), aortic leaflets (4/7) and the interventricular septum (1/7). The mitral regurgitation were mild (1/7), moderate (2/7), moderately severe (3/7) or severe (1/3). The aortic regurgitation were none (4/7), mild (1/7) or moderate (2/7). The blood culture showed *Staphylococcus aureus* (3/7), *Squirrel aureus* (1/7) or negative results (3/7).

The postoperative survival rate was 100%. As combined procedures of extended Morrow procedure and mitral valve replacement, aortic valve replacement was carried out in 3, tricuspid valve plasty in 5 and coronary artery bypass grafting in 1. The mean aortic cross-clamping time and cardiopulmonary bypass time was 128.43 ± 39.79 (68~166) and 92.43 ± 29.22 (47-131) respectively. Pre- and postoperatively, the mean diameter of the left atrium was 50.14 ± 10.68 (37~68) mm and 41.57 ± 9.03 (33~54) mm ($p=0.002$); the EF value was $76.71 \pm 6.24\%$ and $62.14 \pm 5.61\%$ ($p=0.001$); the NYHA function class was 3.00 ± 0.58 (2~4) and 1.14 ± 0.38 (1~2) ($p<0.001$). After operation, first degree atrioventricular block occurred in 2 (2/7), complete left bundle branch block in 1 (1/7), left anterior division block in 2 (2/7). All patients underwent transthoracic echocardiography at a mean follow-up of 13.00 ± 17.19 (1~49) months by outpatient service. The clinical manifestations greatly reduced in all. During follow-up, no other complication, reintervention or death was recorded.

Conclusion Transaortic left ventricular extended septal myectomy +valves replacement is a good surgical strategy for HOCM complicated by infective endocarditis, with an excellent clinical and echocardiographic outcome at early and mid-term follow-up. Sensitive antibiotics are necessary for these patients perioperatively.

Single-center experience of trans-aortic extended septal myectomy for obstructive hypertrophic cardiomyopathy: a report of 118 cases**Shuiyun Wang, Mingyao Luo, Hongtao Sun, Yunhu Song, Chaohua Yin, Liqing Wang, Rutai Hui, Shengshou Hu****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To assess the early and mid-term clinical results of trans-aortic extended septal myectomy (TAESM) on obstructive hypertrophic cardiomyopathy (HCM) in China.

Methods From Oct, 2009 to Apr, 2012, 118 consecutive patients (69 men; mean age 45.1 ± 3.9 (11~74) years) with obstructive HCM underwent TAESM in Fuwai hospital. Their clinical data was analyzed retrospectively. All patients had drug-refractory symptoms and left ventricular outflow tract (LVOT) obstruction with a resting or physically provoked gradient ≥ 50 mmHg. Preoperative transthoracic, intraoperative transesophageal and postoperative transthoracic echocardiography was performed to assess left ventricular outflow tract gradients, septal thickness, LVOT diameter, mitral valve function, etc. Systolic anterior motion (SAM) of the anterior mitral valve leaflet had been detected in all preoperatively.

Results All the surgical procedures of 118 patients were technically successful. The average length of postoperative stay was 7.6 ± 3.3 days. The 30-day and in-hospital mortality was 0.8% (1/118). Initial postoperative transesophageal echocardiography demonstrated marked reduction in LVOT gradient (89.9 ± 26.1 to 12.5 ± 13.8 mmHg, $p < 0.0005$) and significant improvement in mitral regurgitation ($p < 0.0005$). Concomitant surgical procedures were carried out in 49 (41.5%). Among them, 12 cases had MVR, of which 7 had severe severely damaged mitral valve, which could not be repaired. Complete atrioventricular block occurred in 3; complete left bundle branch block in 51, intraventricular conduction delay in 24, complete right bundle branch block in 3, transient renal dysfunction in 2, and transient intra-aortic-balloon-pumping was needed in 2. No other complication was observed during hospital stay. During a follow-up of 8.9 ± 11.9 (1~26) months, there were no readmissions or deaths, and all the patients subjectively reported obvious decrease in limiting symptoms and significant increase in physical ability. At the latest follow-up, the NYHA functional class decreased from 3.0 ± 0.6 (2~4) preoperatively to 1.1 ± 0.4 (1~2) ($p < 0.0005$); Mitral regurgitation remained absent (69) or at mild (48) to moderate (1) levels; and SAM resolved completely in 99.2% (117/118) patients.

Conclusion TAESM provides excellent relief for LVOT obstruction in HCM patients, with a conspicuous clinical and echocardiographic outcome at early and mid-term follow-up. For obstructive HCM and cardiac comorbidities, concomitant cardiac procedures with TAESM can be performed with low risk and satisfactory results.

KOR agonist attenuate diabetic vasculopathy through activating kappa opioid receptorsXuan Zhou^{1,2}, Yuyang Zhang¹, Zheng Zhang¹, Rongqing Zhang¹, Haichang Wang¹, Jin Yu¹**1. Department of Cardiovascular Medicine, Xijing Hospital, the Fourth Military Medical University, Shaanxi 710032, China****2. Department of Cardiology, Guangzhou General Hospital of Guangzhou Military Command, Guangzhou 510010, China**

Background Diabetes is one of the major threats to human health around the world. As the most important opioid receptor in vessels, Kappa Opioid Receptor (KOR) plays an important role in mediating vessel's physiological functions. We hypothesized the administration of a KOR agonist (U50, 488H, a non-peptide, kappa-opioid receptor agonist), would show therapeutic potential for the treatment of diabetic angiopathy in STZ induced diabetic rat model by decreasing chronic inflammation and improving endothelial function.

Methods Male Sprague–Dawley rats were divided into 5 groups ($n \geq 7$ per group): 1. Vehicle-Vehicle group (vehicle for 4w, then vehicle for 10d); 2. Vehicle-U50, 488H group (vehicle for 4w, then U50, 488H for 10d); 3. STZ-Vehicle group (STZ for 4w, then vehicle for 10d); 4. STZ-U50, 488H group (STZ for 4w, then U50, 488H for 10d); 5. STZ-nor BNI group (STZ for 4w, nor-BNI for 10 days). Four weeks after STZ injection, the rats with the non-fasting blood glucose of ≥ 300 mg/dl were considered diabetes. To detect KOR expression on vessels, immunohistochemical staining has been done. Additionally, to evaluate the vasomotorial function and vascular biological characteristic, mesenteric arterial rings, ELISA assay, and Western blotting analysis were performed. Electrical Microscope analysis was used to identify the ultrastructural changes in thoracic aortas.

Results The differences on maximum contractile responses to KCl and noradrenaline (NE) in the mesenteric arteries from STZ-vehicle group and Vehicle-Vehicle group were significant: the KCl-induced maximal contractile tension increased from 0.724 ± 0.040 g to 1.097 ± 0.045 g ($p < 0.01$), and the NE-induced maximal contractile tension increased from 1.548 ± 0.168 g to 2.418 ± 0.189 g ($p < 0.01$). The maximum relaxation responses induced by acetylcholine (Ach) was dramatically lower when comparing STZ-Vehicle group with Vehicle-Vehicle group, such as the Ach-induced maximal relaxation extent decreased from 68.88 ± 3.483 % to 43.06 ± 3.669 % ($p < 0.01$). Although animals from STZ-U50,488H group were still tested out positive for blood glucose, hypercontraction produced by KCl and NE were alleviated, when compared with STZ-Vehicle group: KCl-induced maximal contractile tension decreased from 1.097 ± 0.045 g to 0.889 ± 0.064 g ($p < 0.01$), and NE-induced maximal contractile tension decreased from 2.418 ± 0.189 g to 2.001 ± 0.152 g ($p < 0.01$). When comparing STZ-U50,488H group with STZ-Vehicle group, the maximum relaxation responses induced by acetylcholine (Ach) was improved, such as the Ach-induced maximal relaxation extent increased from 43.06 ± 3.67 % to 55.09 ± 3.78 % ($p < 0.01$). Compared with STZ-Vehicle group, the ultra-structure in thoracic aortas of STZ-U50, 488H group rats were changed greatly. More importantly, Elisa Assay showed a low level of serum Ang II and sICAM-1 in STZ-U50,488H group, Western Blotting showed NF- κ B protein expression were down-regulated and eNOS expression was up-regulated in Vehicle-U50,488H group and STZ-U50,488H group.

Conclusions This study has made the surprising observation that the Kappa Opioid Receptors play important roles in attenuating diabetic vasculopathy in rats by decreasing chronic inflammation and improving endothelial function. With further validation, Kappa Opioid Receptor agonist could become a valuable chemical agent for speeding up the treatment of diabetes vascular complications.

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Fish consumption and incidence of heart failure: A meta-analysis of prospective cohort studies

Yuehua Li, Chenghui Zhou, Hanjun Pei, Xianliang Zhou, Lihuan Li, Yongjian Wu, Rutai Hui

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The purpose of this meta-analysis was to evaluate the association between fish consumption and incidence of heart failure (HF).

Background The results from observational studies suggesting the association between fish intake and HF incidence are inconsistent.

Methods A systematic search of Pubmed and Embase was performed using the keywords related to fish and HF. The pooled relative risk (RR) and corresponding 95% confidence interval (CI) were calculated using a fixed or random-effects model. The generalized least squares regression model was used to quantify the dose-response relationship between fish consumption and HF incidence.

Results Five prospective cohort studies(4750 HF events of 170231 participants)were included in our meta-analysis. Compared with those who never ate fish, individuals who consumed fish once per week had a reduced incidence of HF (RR, 0.91; 95% CI, 0.84 to 0.99). An increment of 20 g of daily fish intake was related to a 6% lower risk of HF.

Conclusions The results of our meta-analysis suggest that fish consumption is inversely associated with the incidence of HF. Fish consumption once per week or more could reduce HF incidence.

Effect of n-3 polyunsaturated fatty acids on left ventricular function in patients with chronic heart failure: a meta-analysis of randomized placebo-controlled trials**Yuehua Li, Chenghui Zhou, Xianliang Zhou, Lihuan Li, Rutai Hui****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background The effect of n-3 polyunsaturated fatty acids (n-3 PUFA) on left ventricular function in patients with chronic heart failure (CHF) is controversial.

Objective The objective of this study was to assess the effect of supplementation of n-3 PUFA on left ventricular ejection fraction (LVEF), as a measure of left ventricular systolic function in heart failure patients.

Design We performed a meta-analysis of randomized, placebo-controlled trials to evaluate the effect of n-3 PUFA on left ventricular function in patients with CHF. Trials were searched in Pubmed, Embase, the Cochrane library database, reviews and reference lists of relevant articles. The weighted mean difference (WMD) was imputed for net changes of LVEF by using random effect models. Meta-regression, sub-group analysis and sensitivity analysis were performed to identify the source of heterogeneity.

Results 6 trials (9 comparisons) were included in present meta-analysis. In an overall pooled estimate, compared with placebo group, n-3 PUFA significantly increased LVEF (WMD: 3.57%; 95% CI: 1.57-5.41; P=0.0004. Heterogeneity test: $I^2 = 94%$, P<0.00001). Meta-regression showed that the effect size was not associated with age, gender, dose, duration, proportion of diabetes and atrial fibrillation, New York Heart Association class, baseline LVEF and Jadad score. However, subgroup analysis showed supplementation of n-3 PUFA was more effective with long duration (WMD: 5.06; 95% CI: 1.68, 8.44; P<0.00001) than short duration (WMD: 0.95; 95% CI: 0.07, 1.81; P=0.22) and in more diabetic heart failure patients (WMD: 2.17; 95% CI: 1.39, 2.95; P=0.23) than less ones (WMD: 8.46; 95% CI: -5.16, 22.08; P<0.00001).

Conclusion Supplementation of n-3 PUFA may improve left ventricular function in patients with CHF, especially with long duration or in diabetic subjects.

Interventional therapy for pulmonary stenosis due to Takayasu's arteritis: early and mid-term results**Qingxue Li, Xiongjing Jiang, Xinhai Ni, Yangqing Liu, Qing Gu, Changming Xiong, Zhihong Liu, Jianguo He****Department of Cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To evaluate the efficacy and safety of percutaneous intervention in treating pulmonary stenosis due to Takayasu's arteritis.

Methods Consecutive ten patients with Takayasu's arteritis from January 2009 to June 2011 in Fuwai hospital, aged 17 ~ 48(36.2±9.1)years old, had significant pulmonary stenosis and moderate to serious pulmonary hypertension

caused by Takayasu's arteritis, treated in percutaneous pulmonary angioplasty or implementation of stent.

In them, 5 patients accompanied with the involvement of the aorta and its branches, while the others only occurred isolated pulmonary stenosis. After operation, we followed up the patients, including the results of ultracardiogram, arterial blood gas analysis and some imaging examination and we compared them with the baseline status before interventions.

Results Percutaneous intervention procedure was successfully performed in 13 lesions of ten patients. Among these lesions, 9 lesions were treated by percutaneous transluminal angioplasty while the others were underwent percutaneous self-expandable stent lacement. There were all extremely significant differences in the decrease of the stenosis comparing with the baseline, the broadness of lesion diameter and decrease of pulmonary artery systolic pressure and mean pulmonary artery pressure after operation($P < 0.001$). 2 patients suffered from hemoptysis during perioperation period and recovered completely after active treatments. In a follow-up of 5~34 (20.4±10.3) months, the pulmonary artery systolic pressure and mean pulmonary arterial pressure were reduced from (92.4±17.2)mmHg to (62.7±14.5)mmHg, from (45.4±9.2)mmHg to (27.1±8.3)mmHg respectively accessed through ultrasonic cardiogram, while arterial oxygen saturation was increased from (92.3±3.7)% to (96.8±1.7) (P value for all <0.001). 1 patient died from pulmonary infection and cardiac shock after 1 year stopping corticosteroid medicine.

Conclusions Percutaneous intervention for pulmonary stenosis duo to Takayasu's arteritis was safe and effective. Future researches need more patients to observe and compare randomly the efficacy of percutaneous intervention with the medical treatment or surgical operation.

Peri-infarct zone of post-myocardial infarction in rabbits following stellate Ganglion block**Yongwei Gu, Long Wang, Xi Wang, Yanghong Tang, Feng Cao, Yongyou Fang****People's Hospital of Wuhan University, Wuhan 430060, China**

Objective The aim of this study was to investigate the characteristics of ventricular electrophysiology following stellate ganglion block at peri-infarct zone in rabbits with myocardial infarction (MI).

Methods and Results Sixty-four rabbits were randomly assigned to two groups: MI (n=32), ligation of the anterior descending coronary and sham operation (SO) (n=32), without coronary ligation. Both MI and SO groups were divided into four subgroups according to right or left SGB and corresponding control (n=8, each). After eight weeks, 90% of monophasic action potential duration (MAPD90) of epicardium, midmyocardium and endocardium; transmural dispersion of repolarization (TDR); effective refractory period (ERP); and ventricular fibrillation threshold (VFT) were measured at the infarct border zone (MI group) and corresponding zone (SO group) following stellate ganglion block (SGB). For SGB, 0.5mL of 0.25% bupivacaine was used. Compared with the corresponding control group, in both the MI and SO groups, left SGB (LSGB) prolonged the MAPD90 of the three layers, reduced TDR, and increased ERP and VFT ($P < 0.05$). However, RSGB shortened MAPD90, increased TDR, and reduced ERP and VFT ($P < 0.05$).

Conclusions The results of this study demonstrate that LSGB can increase the electrophysiological stability of ventricular myocardium.

The effect of respiratory frequency on rabbit heart rate variability**Shibiao Yan****The First Affiliated Hospital of Jinzhou Medical College, China**

Objective To observe the effects and possible mechanism of respiratory frequency (RF) on components of frequency spectra of rabbits heart rate variability (HRV).

Methods 20 healthy rabbits were selected and randomly divided into group A and B (n=10 each, Group A, bilateral vagotomy→bilateral sympathectomy in sequence; Group B, bilateral sympathectomy→bilateral vagotomy in sequence). The rabbits model of controlled respiration was established for both groups. Ventilator was used to adjust RF (tidal volume 10ml/kg, RF 40,50,60 per minute), SKY-A4 electrophysiograph was applied to record waveforms of electrocardiogram, respiration, blood pressure. HRV&BRS2.0 was used to analyse relevance of RRI and respiration, HRV spectrum and the center frequency of RSA peak.

Results (1) Group A and B, autonomic nerve intact ① RRI cyclical changes coincidence with the respiratory cycle; ② respiratory frequency have no significant impact on HRV frequency spectra compare RF 40 with 50, 60 with 50 per minute. Compare RF 60 with 40 per minute, 60 would increase HFnorm (P<0.05), other parameters have no significant difference; ③ the RSA peak would shift to right as respiratory rate increase. (2) Group A, RF 50/min, compare post with pre bilateral vagotomy. ① the coincidence of RRI cyclical changes and respiratory cycle was weakened; ② TP, HF, HFnorm were decreased, LF and Lfnorm were increased; ③ the PSA center was shifted right. (3) Group B, RF 50/min, compare post with pre bilateral sympathectomy ① coincidence of RRI cyclical changes and respiratory cycle was enhanced; ② HFnorm was reduced, no significant difference was found in other HRV spectra variations; ③ PSA center was shifted to right. (4) Group A and B, compare parameters post performance of both bilateral vagotomy and bilateral sympathectomy with that of autonomic nerve intact ① no coincidence of RRI cyclical changes and respiratory cycle difference was found; ② Lfnorm was reduced, other HRV spectra parameters were not found differentiated ③ PSA center was right shifted.

Conclusion 1. respiratory frequency have Positive correlation with center frequency of RSA peak, but have no obvious impact on HF、LF. 2. The coincidence of RRI cyclical and respiratory cycle could somehow reflect function of autonomic nerve, but could not absolutely represent function of autonomic nerve. It just reflect balance of vagus and sympathetic nerves. 3. HF could reflect sympathetic-vagal balance, but could not reflect Vagal tone. 4. Impact of respiration on HRV attribute to pulmonary stretch reflex and other factors, and influenced by sympathetic-vagal balance.

The effect of VKORC1, CYP2C9, GGCX, PROC, EPHX1 and CYP4F2 polymorphisms on Warfarin maintenance dose variation in Chinese Han population**Ying Lou, Hong Liu, lulu Han, Shuang Xie, Xiaojing Gao, Bing Duan, Xiaoyuan Guan, Yishi Li****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objectives To evaluate the effect of VKORC1, CYP2C9, GGCX, PROC, EPHX1 and CYP4F2 polymorphisms on warfarin maintenance dose variation in Chinese Han Population.

Methods 488 patients with prosthetic heart valves, atrial fibrillation or pulmonary thromboembolism were enrolled who had achieved stable warfarin dose. TaqMan Probe or direct sequencing were used to genotype VKORC1, CYP2C9, GGCX, EPHX1 and CYP4F2 polymorphisms, and the demographic characteristics, the stable therapeutic dose of warfarin and concomitant medications were collected in all 488 patients. Analysis the effect of VKORC1, CYP2C9, GGCX, PROC, EPHX1 and CYP4F2 polymorphisms, demographic characteristics and concomitant medications on warfarin maintenance daily dose by statistical method.

Results The warfarin daily maintenance doses in patients carried at least one VKORC1 -1639 G allele were higher than VKORC1-1639A/A carriers (5.53 ± 1.42 vs 3.06 ± 0.93 mg, $P < 0.001$); and the patients with at least one CYP2C9*2 or *3 allele need less warfarin daily maintenance doses than CYP2C9*1/*1 carriers (2.46 ± 1.27 vs 3.64 ± 1.39 , $P < 0.001$). The warfarin daily maintenance doses in patients with different GGCX, PROC or EPHX1 genotype had no statistical difference. Multiple linear regression outcomes showed that sex, age, height, weight, VKORC1, CYP2C9 and CYP4F2 polymorphisms could explain 1.3%, 5.4%, 3.7%, 4.6%, 46.9%, 6% and 1% warfarin dose variation in Chinese Han Population; The effect of GGCX, PROC and EPHX1 polymorphisms on warfarin maintenance dose had no statistical significance.

Conclusion VKORC1 and CYP2C9 polymorphisms are the most important polymorphisms associated with warfarin maintenance dose in Chinese Han Population; The effect of CYP4F2 polymorphisms on warfarin maintenance dose variation is much less than VKORC1 and CYP2C9 polymorphisms. GGCX, PROC and EPHX1 polymorphisms are not associated with warfarin maintenance dose in Chinese Han Population.

Clinical features of adult congenital heart disease – a Chinese institutional experience**Hong Gu, Chen Zhang, Aijie Li, Hongwei Zhang, Mengpei Chen, Xiaofeng Wang, Pei Cheng, Yinglong Liu****Beijing Anzhen Hospital Affiliated to the Capital University of Medical Science, Beijing 100029, China**

Objectives A substantial number of children with congenital heart disease (CHD) now reach adolescence and adulthood as a result of advances in pediatric cardiology, cardiac surgery and other subspecialties over the past few decades. Consequently, there has been fast development in the management of this special group of adult patients in many of the advanced countries. It remains a new phenomenon in China. We aimed to obtain information about demographic characteristics, treatment, and outcomes in adults with CHD at the pediatric cardiology department of Beijing Anzhen Hospital.

Methods Consecutive 435 patients aged 18 years or older with the diagnosis of CHD from January 2005 to March 2012 were enrolled. Patient and disease characteristics, including age, gender, diagnosis, haemodynamic indices, treatment and outcomes were recorded and analyzed.

Results The mean age of all patients was 30.1 ± 11.0 years (18 ~ 72), with female in 71%. 401 (92%) patients came as their first visit. The majority had left to right shunt defects, including atrial septal defect in 190 (44%) patients, ventricular septal defect in 94 (22%) and patent arterial duct in 78 (18%), and other defects in the remaining patients (e.g. tetralogy of Fallot, total abnormal drainage of pulmonary veins etc.). 130 patients underwent cardiac surgeries, 178 patients experienced interventions of VSD, ASD, PDA closure or PS balloon dilatating with good early outcome. There were 100 patients with severe PAH undergoing cardiac catheterization, the mean PAP was 89.9 ± 37.2 mmHg (16~142), mean PVRi was 18.40 ± 15.12 Wood Units $\cdot m^2$ (0.39~68.89), the mean RAP was 9.5 ± 2.5 mmHg (6~18), mean Qp/Qs (n=96) was 1.54 ± 1.40 (0.46 ~13.24), mean Rp/Rs (n=81) was 0.76 ± 0.46 (0.05 ~ 2.00) .

Conclusion In our center, the majority of patients were first diagnosed with CHD at adulthood, many of them were with severe pulmonary arterial hypertension and increased pulmonary vascular resistance. Most of them underwent surgical or cardiac interventional treatments, with good early outcomes. A formal organization to define treatment strategies and long term follow-up in adults with CHD are urgently needed in China.

The angiographic features and effect of drug treatment of spontaneous coronary artery dissection

Yazhong Liu

Department of Cardiology, No.252 Hospital of PLA, Geriatric cardiovascular disease center of Chinese PLA. Baoding, 071000, China;

Purpose To study the angiographic features and effects of drug treatment of spontaneous coronary artery dissection(SCAD).

Methods Data from coronary angiography performed in 2458 patients that from Department of cardiology, No 252 Hospital of PLA, were analyzed to discover SCAD. The following image changes is judged to be SCAD: 1.The translucent line image formed by intimal dissection was looked transluminal coronary, the line image parallel or spiral to the luminal; 2. Contrast agent filling the false lumen, the true lumen narrows with or without change, contrast agent emptied delay or stagnation in the false lumen; 3. The isolated intimal dissection flap swinging with the blood flow transluminal coronary. To analyze the imaging characteristics and the effect of drug treatment (including aspirin 0.1g/d, Clopidogrel 75mg/d, Low molecular weight heparin 6000U/d and so on).

Result SCAD is that without human intervention, the coronary artery intima tore spontaneously, or subintimal hematoma formation, also known as spontaneous coronary artery intimal tear. 2 cases of SCAD were discovered. The incidence was 0.81%. Mainly related to the young women that of pregnancy, puerperium, using oral contraceptive, at the age of about 30 years old, without hypertension, diabetes, hyperlipidemia, smoking, family history and other risk factors, both were acute myocardial infarction. Coronary angiography confirmed that coronary artery without significant atherosclerosis in 2 patients, the true lumen compressed not obviously, dissection occurred in the right coronary artery, blood TIMI Level 3, no stents were implanted. Myocardial enzymes elevated not obviously, clinical symptoms of the patients were significantly alleviated after aggressive antithrombotic drug therapy, myocardial enzymes returned to normal, cardiac ultrasound showed normal or mildly abnormal wall motion, discharge when the condition was stable.

Conclusion SCAD is rare, low incidence, mainly related to young women, myocardial infarction happened first in the most cases. The treatment of coronary artery dissection, there is no uniform standard currently, but there's successfully reported that the implantation of stents in the treatment of coronary artery dissection, the dissection at the edges of stents and in-stent restenosis was not completely solved, The patients which coronary angiography confirmed that coronary artery without significant atherosclerosis, the true lumen compressed not obviously, blood TIMI Level 3, drug therapy could also be used as the ideal treatment method.

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Serum transthyretin levels in patients with atrial fibrillation

Yuhe Jia

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background Serum transthyretin (TTR) levels have been reported to be reduced in Portuguese and Japanese patients with TTR V30M familial amyloidotic polyneuropathy and pre-symptomatic carriers of the allele as well as in the carriers of a number of other mutant TTRs. But there are few reports about serum transthyretin levels in patients with atrial fibrillation.

Methods and Results We compared the serum TTR levels, as determined by ELISA, in 83 AF (atrial fibrillation) patients (40 patients with persistent AF, 42 with paroxysmal AF), 43 patients with sinus rhythm as controls. Serum TTR concentrations in the controls were influenced in a statistically significant manner by age, gender and ethnicity. The serum concentrations in patients with AF did not differ from age, gender and ethnically matched controls. The AF patients had significantly lower serum TTR concentrations than appropriate controls ($P=0.033$). Thus, there is no significant difference between persistent AF patients and paroxysmal AF patients ($P=0.063$).

Conclusions Our data suggest that the lesser tendency of TTR in patients with AF may allow a greater proportion of the protein synthesised in the liver to be secreted than the patients with sinus rhythm. This may be a new marker of AF or one of the therapeutic targets in some AF patients.

Recent status of heart transplantation in Chinese multi-centersShengshou Hu¹, Chunsheng Wang², Nianguo Dong³, Liangwan Chen⁴, Xu Meng⁵**1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China****2. Zhongshan Hospital, Fudan University, Shanghai 200032, China****3. Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, 430022, China****4. Union Hospital, Fujian Medical University, Fuzhou 350001, China****5. Beijing Anzhen Hospital, Beijing 100029, China****Objective** Report recent status of heart transplantation in Chinese multi-centers.**Methods** The report data came from China heart transplant Registry database. The data of 438 cases performed heart transplantation before 2010 came from 24 centers. Moreover, the data of 149 cases from 15 centers in 2010 and 148 cases from 19 centers in 2011 were analyzed and reported.**Results** In 2010, 15 centers performed heart transplantation. Only 1 center belongs to large center volume (60 transplants per year). 3 centers belong to medium center volume (10 to 30 transplants per year). 6 centers belong to small center volume (2-8 transplants). Another 5 centers had least center volume (1 transplant per year). In 2011, 19 centers performed heart transplantation. Only 1 center belongs to large center volume (52 transplants per year). 3 centers belong to medium center volume (10 to 30 transplants per year). 5 centers belong to small center volume (2-8 transplants). Another 8 centers had least center volume (1 transplant per year). In 2010 and 2011, the median ages of heart transplant recipients were 44.6 and 42.9 years, respectively. Non-ischemic cardiomyopathy was the leading indication for heart transplantation. The median donor age in 2010 was 30.2 years, and in 2011 was 30.8 years. In 2010 and 2011, up to 99.3% and 97.3% of patients were treated with immune induction therapy, respectively. In 2010, the mortality at discharge was 10%, and in 2011 was 6%.**Conclusions** Although total volume of heart transplants is still small in recent years, the discharge survival in China is similar to ISHLT report.

Hybrid therapy for pulmonary Atresia with intact ventricular septum: growth and function of hypoplastic right ventricles and tricuspid valves

Zerui Chen, Hao Zhang, Weidan Chen, Yongqing Li, Zhongdong Hua, Shoujun Li

Department of Cardiac Surgery, Pediatric Cardiac Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Background The pulmonary atresia and intact ventricular septum (PAIVS) spectrum usually includes very hypoplastic right ventricles (RVs) and tricuspid valves (TVs) and often RV-coronary artery connections (RV-CACs). These abnormalities are often thought irreversible and typically only 30% reach a biventricular repair (BVR). In patients with PAIVS without right ventricular-dependent coronary circulation, we have concluded that periventricular balloon pulmonary valvuloplasty using a hybrid approach was safe and feasible. Our hypothesis, however, has been PAIVS is a developmental defect and catch-up growth is possible in all. To answer this question, we attempted to obtain up to 6 year echo data on RV and TV growth and function in the 31 survivors (of 37 patients).

Methods Between March 2005 and November 2011, we performed a hybrid procedure in 37 newborns and infants (age, 1 day to 48.0 months; median age, 3.3 months) with favorable anatomy. In newborns, ductal ligation was performed, followed by modified Blalock-Taussig (mBT) shunt placement. Patients aged greater than 1 month were treated mostly with ductal ligation, and an mBT shunt was inserted if severe systemic oxygen desaturation occurred after ductal ligation; bidirectional Glenn shunt placement was performed if a patient showed severe hypoplasia. We evaluated medical records, all imaging studies, and follow-up data from 37 patients with PAIVS. Serial echocardiographic measurements of right-sided cardiac structures were converted to Z values to estimate their growth relative to somatic growth.

Results The hybrid procedure was successfully performed in all patients. Patent ductus arteriosus ligation was simultaneously performed in 31 cases. 8 newborns were treated with mBT shunt placement after pulmonary valvuloplasty and patent ductus arteriosus ligation, and 4 patients aged greater than 1 month were treated with mBT shunt placement alone. Another 4 patients were selected for univentricular palliation with bidirectional Glenn procedure because of a diminutive monopartite right ventricle. No pericardial effusion or cardiac tamponade was observed. One patient in whom ductal ligation could not be performed was treated with mBT shunt placement because of hypoxemia 3 days after the hybrid procedure; the other patients were discharged without any further surgical intervention. During the follow-up period of 1.0 months to 81.0 months, 6 patients died; 31 (83.8%) survived and all were in New York Heart Association functional class 1. Saturation of peripheral oxygen in the survivors increased from median 75.0% to 94.0% ($p < 0.01$). The tricuspid valve Z value grew from median -5.0 to -0.9 over time. Two-ventricle circulation was achieved in 33 patients, whereas 4 patient had a single-ventricle pathway.

Conclusions In conclusion, through periventricular balloon pulmonary valvuloplasty using a hybrid approach, catch-up growth appears reliable in PAIVS patients when RV obstruction is relieved and TV flow is increased, and the results encourage pursuing biventricular repairs in PAIVS patients.

The influences of obstructive sleep apnea syndrome on central and peripheral blood pressure in men

Teng Sun, Huimin Zhang, Lirui Yang

Hypertension Division, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To examine the influences of obstructive sleep apnea syndrome (OSAS) on central blood pressure and peripheral blood pressure.

Methods 44 consecutive male patients who were referred to our center for screening of OSAS and free from antihypertensive drugs were enrolled in this study. According to the results of OSAS examination, they were divided into non-OSAS and OSAS group. Measurements of central blood pressure, peripheral blood pressure and brachial-ankle pulse wave velocity (ba-PWV) were performed on all patients.

Results Non-OSAS group concluded 14 patients, aged 45.1 ± 9.6 years. Their body mass index (BMI) was $26.7 \pm 3.2 \text{ kg/m}^2$. The mean apnea hypopnea index (AHI) was 2.5 ± 1.7 /h. The mean peripheral systolic blood pressure (PSBP) was 127.3 ± 10.0 mmHg, and mean peripheral diastolic blood pressure (PDBP) was 72.4 ± 6.5 mmHg. The mean central systolic blood pressure (CSBP) was 124.6 ± 10.0 mmHg. The mean PWV was 1314.3 ± 134.3 cm/s. OSAS group concluded 30 patients with BMI of $29.2 \pm 4.0 \text{ kg/m}^2$ ($P=0.049$, aged 47.6 ± 10.7 years ($P=0.469$)). The mean AHI was 21.7 ± 15.3 /h ($P<0.001$). The mean PSBP was 133.0 ± 2.0 mmHg ($P=0.132$), and mean PDBP was 81.8 ± 9.6 mmHg ($P=0.001$). The mean CSBP was 133.0 ± 2.6 mmHg ($P=0.035$). The mean PWV was 1424.8 ± 158.1 cm/s ($P=0.044$).

Conclusion The effect of OSAS on PSBP was not obvious. However, OSAS significantly elevated the level of peripheral SDBP, CSBP and ba-PWV.

The effect of atrovastatin on the QRS duration in the patients with acute anterior ST elevation myocardial infarction undergoing primary angioplasty**Bo Bian, Zheng Wan, Xuefang Yu, Qing Wang, Yuntao Bu, Chunwei Liu****Tianjin Medical University General Hospital, Tianjin 30000, China**

Aim To evaluate the value of intensive atrovastatin treatment on changes of QRS duration and ventricular arrhythmia in the patients with acute anterior ST elevation myocardial infarction undergoing primary Angioplasty.

Method From December 2009 to December 2011, 150 consecutive patients admitted to the Cardiology Department of Tianjin Medical University General Hospital with the diagnosis of acute anterior STEMI within 12 hours or if cardiogenic shock present within 24 hours from the onset of symptoms and who underwent primary angioplasty of IRA were primarily enrolled in the study. All patients got 300mg Aspirin, 600 mg clopidogrel oral loading and 20mg or 80mg atrovastatin before the interventional diagnosis and treatment. Then a routine standard procedure of coronary angiography (CAG) and percutaneous coronary intervention (PCI) was performed as soon as possible. PCI strategy was made by the individual interventional cardiologist. According to the loading dose of atrovastatin before operation, the patients were divided into 2 groups: routine dose group and intensive dose group, those having 20mg atrovastatin loading before the interventional procedure formed the routine dose group, those having 80mg atrovastatin loading before the interventional procedure constituted the intensive dose group. In routine dose group, patients took 20mg atrovastatin per day after PCI, while in intensive dose group, patients took 40mg atrovastatin per day after PCI. Pre- and postangioplasty thrombolysis in myocardial infarction (TIMI) flow grade was assessed in IRA according to the TIMI classification. The QRS duration in pre- and postangioplasty ECGs were measured manually with the help of a caliper and a magnifying lens in 3 consecutive beats for each of the infarct-related leads. Take the means of 3 consecutive beats. Electrocardiographic monitoring: Record the arrhythmia score from the onset of the operation to the end of primary PCI and from the end of primary PCI to 24hours after PCI in according with Lembeth Convention.

Result Group A: Routine dose group, n=74; Group B: Intensive dose group, n=76. There were no difference between the 2 groups for the comparison of baseline clinical characteristics adjusted for age, gender, body mass index, symptom onset to balloon time, heart rate, history of heart failure, hypertension, diabetes mellitus, smoking, left ventricular ejection fraction, beta-blocker use, calcium-blockers, or angiotensin converting enzyme (ACE) inhibitor use. There are no differences between the two groups in terms of pre-procedure QRS duration ($p > 0.05$). After intervention, QRS duration decreased from 95.93 ± 7.54 to 86.14 ± 7.22 in group A, from 96.79 ± 8.15 to 85.7 ± 8.17 in group B, paired t test showed the shorting of QRS duration after primary PCI compare to it at administraron in the two groups were significant ($p < 0.01$). Shortening of ORS duration was more evident in the intensive dose group than the routine dose group (11.09 ± 2.19 vs. 9.8 ± 2.6 , $p < 0.01$). The results showed the arrhythmia scores were 2 (1, 2) in routine dose group and 1 (0, 2) in intensive dose group in procedure. In 24 hours after procedure, the arrhythmia scores were 2 (1, 3) in routine dose group and 1 (0, 2) in intensive dose group. Mann-Whitney test showed that intensive atrovastatin therapy before interventional procedure compared with routine dose atrovastatin therapy can significantly reduce the ventricular arrhythmia score in interventional procedure ($p < 0.01$) or in 24 hours after procedure ($p < 0.01$). In routine dose group, There are 6 patients got TIMI II flow after primary PCI, and the other 68 patients got TIMI III blood flow. In intensive dose group, there are 3 patients got got TIMI II flow after primary PCI, and the other 73 patients got TIMI III blood flow. There were no significant difference ($\chi^2 = 0.531$, $p > 0.05$).

Conclusion The present study supports that intensive administration of atrovastatin in patients with STEMI undergoing primary angioplasty has more intensive effect in shorting the QRS duration and antiarrhythmic effect.

Serum cystatin C reflecting the severity of coronary artery and in-hospital outcomes in patients with normal renal function**Ximei Wang, Yongjian Wu, Yuejin Yang, Guangyuan Song, Hanjun Pei, Zhenyan Zhao****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Centre for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, China.**

Objective Serum cystatin C could predict morbidity and mortality for cardiovascular disease in patients with coronary heart disease. However, the predictive value of cystatin C for the severity of coronary artery disease in subjects with normal renal function has rarely been investigated. The aim of this study is to evaluate the relationship between serum cystatin C and the severity of coronary artery, in-hospital outcomes in stable coronary artery disease patients with normal renal function.

Methods The subjects were consecutive 265 stable coronary artery disease patients with normal renal function who were admitted to fuwai hospital from May 2010 to September 2010. The normal renal function was defined by estimated Glomerular Filtration rate (eGFR) ≥ 90 ml/min/1.73 m², as calculated by the Modification of Diet in Renal Disease formula. And the severity of coronary artery stenosis was quantified by Gensini score. While in-hospital events include death, heart failure, recurrent angina, arrhythmia. Age, sex, previous diabetes and hypertension, systolic and diastolic blood pressure, serum concentrations of creatinine, glucose etc were recorded. we divided subjects into 2 groups on the basis of their serum cystatin C concentrations (≤ 0.9 , >0.9 mg/L). Data are expressed as mean \pm SD or frequency. Baseline clinical characteristics were compared by the chi-square test for categorical variables and the analysis of student's t test for continuous variables. The association between groups of cystatin C and in-hospital outcomes was tested with the chi-square test. All $p < 0.05$ were considered statistically significant. Analyses were done using the statistical software SPSS 17.0.

Results We studied 265 stable coronary artery disease patients with normal renal function, including serum cystatin C concentrations ≤ 0.9 and >0.9 mg/L group. There are 180 cases (67.9%), 85 cases (32.1%) respectively in cystatin C concentrations ≤ 0.9 and >0.9 mg/L group. And the average coronary Gensini score is 23.5 ± 16.4 , 28.9 ± 17.2 respectively in serum cystatin C ≤ 0.9 and >0.9 mg/L group. The result showed there are significant differences in coronary Gensini score ($P = 0.026$) between two serum cystatin C groups. However, this study did not show significant differences in in-hospital outcomes ($P = 0.74$) between two groups.

Conclusion Serum cystatin C could reflect the severity of coronary artery, but is not associated with in-hospital outcomes in stable coronary artery disease patients with normal renal function.

Anti-inflammation effects of carvedilol in murin model with the coxsackievirus B3-induced viral myocarditis**Dan Wang, Yiming Chen, Jianbin Jiang, Yuanhai Zhang, Qi Chen, Zhouqing Huang, Yan Qian, Maoping Chu, Aihua Zhou, Lulu Pan****The First Affiliated Hospital to Wenzhou Medical College, Wenzhou 325000, Zhejiang, China**

Carvedilol, a nonselective β -blocker, has been shown to be cardioprotective in experimental myocarditis. However, the anti-inflammation effects of carvedilol have not been investigated in the setting of acute viral myocarditis. Therefore, this study investigated whether carvedilol protects against viral myocarditis primarily by its anti-inflammatory properties. In a coxsackievirus B3 murine myocarditis model (Balb/c), effects of carvedilol and metoprolol on myocardial histopathological changes, cytokine levels, virus titers, phosphorylation p38MAPK contents were studied. Carvedilol markedly attenuated myocardial lesions, virus titer and IL-1 β level on day 3 and 7, which increased IFN- γ production on day 3 and 7. In addition, carvedilol inhibited p38MAPK activation on day 1 and 3, which was occurred earlier than the changes of myocardial inflammation and IL-1 β . Metoprolol (as a highly selective β 1-adrenergic blocking agent) had mild effects in this model. These results indicate that the superior protection of carvedilol in this model is probably by inhibition of p38MAPK signal pathway by β 1 and β 2- adrenoceptor.

The mid-long term results of treatment with selective percutaneous stenting for renovascular hypertension caused by aortoarteritis**Wei Ji, Xiongjing Jiang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Aim To evaluate the mid-long term results of selective percutaneous stenting in patients with renovascular hypertension caused by aortoarteritis.

Methods In a retrospective cohort study in Fuwai hospital, 52 consecutive patients with renovascular hypertension caused by aortoarteritis underwent selective stenting (SS) for residual stenosis $\geq 50\%$ or dissection after plain balloon angioplasty (PTA). The patients were followed up for 6-72 months and the effects of the procedure on blood pressure, renal function and cardiovascular events were observed.

Results The lesion stenosis were reduced significantly after the procedures. During follow-up, both systolic and diastolic blood pressure were decreased significantly ($P < 0.01$), and less antihypertensive medication was taken ($P < 0.01$). Indicators of renal function such as serum creatinine and blood urea nitrogen kept normal ($P > 0.05$). At 12 months, hypertension was cured in 22 of 44 patients (50.0%).

Conclusion The SS can effectively improve the efficacy of PTA treatment of artery stenosis caused by aortoarteritis, but long-term outcomes in such patients should be investigated further.

The predictive value of ECG in ventricular arrhythmia from free wall of right ventricular outflow tract**Guodong Niu, Yan Yao, Kuijun Zhang, Wen Huang, Gang Chen, Shu Zhang****Clinical EP Lab. & Arrhythmia Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Introduction Catheter ablation of idiopathic ventricular arrhythmia from RVOT usually achieve success. But RVOT free wall is not a common site, and can be confused with from posterior septum easily. It's necessary to find some specific ECG clues to reduce the mapping time.

Methods We found that the upright morphology of QRS complex in Lead I and the late transition($R/S > 1$) till V4 on precordial leads is rather common in ventricular arrhythmia originating from RVOT free wall. Perspective clinical study was performed to evaluate the predictive value of such ECG clue, which is checked by the successful ablation target, confirmed by right ventriculography.

Results 15 patients were enrolled among 216 patients accepting catheter ablation for ventricular arrhythmia between April,2008 and November,2010. 7/15 was male. Average age was 45 ± 17 yr. 4/15 patients presented as RMVT. Successful targets were located at RVOT free wall in all patients. Other ECG characteristics includes prominent notched QRS complex at inferior leads (II, III, aVF, in 12/15 pts). Controlled group included 15 patients with ventricular arrhythmia from posterior septum. The QRS complex is positive in lead I, but the precordial shift happened before V3 in contrast. Interestingly in 2 patients with ventricular ectopy from anterior area of RVOT free wall, who were not enrolled, the QRS complex were negative in lead I, but still the precordial transition is later than V4.

Conclusions Upright QRS morphology in lead I and precordial shift later than V4 in ECG is a specific clue for ventricular arrhythmia from RVOT free wall.

Two patients undergoing heart transplantation for Behcet's disease**Chunyong Han, Yunhu Song****Department of Cardiovascular Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

A 45 and a 49 year-old man presented with 6 and 10-year history of Behcet's disease respectively. For the former patient, physical examination of showed enlargement of heart and a grade 3 diastolic murmur at aortic area. Cardiac CT, MRI, Angiography revealed changes of multiple aneurysms and large-vessel vasculitis. He also had an elevated IgA of 5.180g/l. For the latter, he had received mitral aortic valve replacement, artificial blood vessel replacement of ascending aorta. In April 26, 2011 and Sept 20, 2007, heart transplantation was performed respectively. For the former patient, triglyceride was 2.5 mmol/L and cholesterol 9.91 mmol/L 5 months follow-up and was normal after lipid-lowering therapy. Endomyocardial biopsies (EMB) revealed grade 0 rejection at 20 days follow-up. But this patient always had a elevated ESR level of 18~51mm/h. For the latter, CsA was decreased gradually from 250mg/d to 150mg/d from discharge to the present. EMB revealed grade IIIA rejection at 6 months, with grade 0 rejection at 7 months and 1 year follow-up after aggressive treatment. Triglyceride was up to 3.27mmol/L and cholesterol 6.06 mmol/L 8.5 months follow-up and was normal after lipid-lowering therapy. The uric acid was 519umol/L 10.5 months follow-up and was normal after uric acid-lowering therapy. He also always had a elevated ESR level of 18~51mm/h. Other routine tests were regularly performed and revealed no abnormal findings for both patients. Behcet's disease is a rare autoimmune disease characterized by oral and genital ulcers and vasculitis. The two patients both presented with oral and genital ulcers, aneurysms and large-vessel vasculitis as the leading cause of death. Heart transplantation for Behcet's disease was reported only in one paper. The large-vessel vasculitis increases the risk of catastrophic aortic anastomotic dehiscence, with the consideration of recurrent vasculitis. Both two patients had a normal cardiac function at 1 year and 4 years 11 months follow-up respectively.

Specific expressions of plasma miR-130a and miR-125b in Kawasaki disease**Aihua Zhou¹, Xiangyang Xue³, Yingying Zhang¹, Lulu Pan¹, Yayan Yue¹, Dan Wang¹, Yan Qian¹, Yuanhai Zhang², Rongzhou Wu², Xing Rong², Maoping Chu¹****1The Heart Center Pediatric Department of the First Affiliated Hospital of Wenzhou Medical College, Wenzhou 325000, China****2 The Cardiovascular Department of Yuying Children's Hospital of Wenzhou Medical College, Wenzhou 325000, China****3 The Microorganism and Immunology Staff Room of Wenzhou Medical College, Wenzhou 325000, China**

Recent studies have shown that certain non-coding short RNAs, called microRNAs, play an important role in Kawasaki Disease (KD). The aim of this preliminary study is to investigate the expression profile of plasma miR-130a and miR-125b in KD, and to analyze their correlations with Coronary Artery Dilatation in KD accordingly. We measured the levels of miR-130a and miR-125b in plasma samples obtained from KD patients before and after treatment besides those from normal subjects by stem loop RT-PCR. We also focused on analyzing the correlation between expressions of plasma miR-130a and miR-125b in KD and Coronary Artery Dilatation. Receiver Operating Characteristic (ROC) Curve Analysis was performed to estimate the diagnostic values of plasma miR-130a and miR-125b for discriminating KD by observing their sensitivity, specificity on determining Coronary Artery Dilatation. Our study showed that the levels ($2^{-\Delta\text{ct}}$) of Plasma miR-130a and miR-125b in patients with KD before treatment was lower than that of normal controls. Plasma miR-130a and miR-125b in patients with KD after treatment showed a significant higher relative expression levels ($2^{-\Delta\text{ct}}$) compared with that before treatment ($P < 0.05$). More importantly, we found that there was a correlation between plasma miR-130a and miR-125b in KD and Coronary Artery Dilatation. In addition, the ROC curve analysis suggested that miR-130a and miR-125b could be used as appropriate and useful evaluation indicators for Coronary Artery Dilatation in Kawasaki disease. We conclude that Plasma miR-130a and miR-125b are associated with the pathogenesis of KD and involved in its development. Therefore, miR-130a and miR-125b are important indicators in determining Coronary Artery Dilatation in terms of sensitivity and specificity, and also be used as novel noninvasive biomarkers for KD in diagnosis and prognosis.

Outcomes of heart transplantation for end-stage arrhythmogenic cardiomyopathy**Jie Huang, Shengshou Hu, Yunhu Song, Wei Wang, Zhongkai Liao, Jun Zhu, Jian Zhang, Yanmin Yang, Guogan Wang, Huiqiong Tan, Jianli Qiu, Yong Wang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective Report single center outcomes of heart transplantation (HT) for end-stage arrhythmogenic cardiomyopathy.

Methods The preoperative characters, perioperative comorbidity, long-term survival and complications of 19 HT patients with arrhythmogenic cardiomyopathy diagnosed by pathology from single center database including 301 consecutive HT patients between June 2004 and May 2012 were analyzed.

Results The mean age of our 19 patients were 37 ± 15 years. 13 men and 6 women. 4 patients (21.1%) had a family history of cardiomyopathy. 7 patients (36.8%) had stokes-adams attacks history. 2 patients (10.5%) had ICD implanted history. 10 patients (52.6%) got definite clinical diagnosis before HT. Mean NT-proBNP before HT was 2010.6 ± 1244.4 fmol/ml. 14 patients had biventricular involvement diagnosed by echocardiography : mean left ventricular end-diastolic diameter (LVEDD) was 59 ± 13 mm, mean left ventricular ejection fraction (LVEF) was $31 \pm 10\%$, and mean right ventricular end-diastolic diameter (RVEDD) was 37 ± 10 mm; 3 patients had left ventricle involvement only: mean LVEDD was 68 ± 8 mm, mean LVEF was $31 \pm 6\%$, and mean RVEDD was 20 ± 6 mm; 2 patients had right ventricle involvement only: mean LVEDD was 50 ± 3 mm, mean LVEF was $57 \pm 1\%$, and mean RVEDD was 40 ± 1 mm. ECMO was successfully used as a bridge to HT in 2 patients (10.5%) and as perioperative support in one patient (5.3%). The survival of these patients was 100%, and mean survival time was 60 ± 26 months. The post-HT incidence of long-term complications such as hypertension 26.3%, renal dysfunction 5.3% and hyperlipemia 15.8% in arrhythmogenic cardiomyopathy patients was much lower than that in dilated cardiomyopathy patients.

Conclusions HT could effectively prolong the survival of patients with end-stage arrhythmogenic cardiomyopathy

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Six-minute walk test and gas exchange of five heart transplanted patients

Guolin Zhang, Lan Guo, Zhi Liu, Guilan Wu

Guangdong Provincial People's hospital, Guangdong 510080, China

Objective Analysis of six-minute walk test (6MWT) with gas exchange of the five heart transplanted patients, to explore the trends of exercise tolerance, VO_2 , VE/VCO_2 and chronotropic.

Methods 6MWT was taken for the five 25-52 years old heart transplanted cases, the test was finished in 6-30 months after the heart transplanted. At the same time, gas exchange parameters were measured simultaneously with wireless telemetry K4B² portable gas analyzer, and 51 normal cases were finished for controls.

Results Six minutes walking distance (6MWD) was (592.6 ± 26.7) m (558 ~ 625m), a slow upward trend in heart rate was noted in the movement time, the maximum heart rate to it of the age-expected is $80 \pm 6\%$, peak VO_2/kg (21.8 ± 1.4) $ml \min^{-1} kg^{-1}$ (19.94 ~ 23.60 $ml \min^{-1} kg^{-1}$), VE/VCO_2 35.55 ± 2.10 (33.62 ~ 38.09).

Conclusion The 6MWD and peak VO_2 of the five patients reached to the normal range, but the chronotropic incompetently, and VO_2 was increased slowly, and VE/VCO_2 increased highly, which suggested that the ability to stress, outbreaks and ventilatory efficiency decreased.

Clinical Observation on efficacy and safety of telmisartan hydrochlorothiazide and telmisartan in patients with mild to moderate essential hypertension**Lirui Yang, Huimin Zhang, Wenjun Ma, Jianfeng Huang, Haiying Wu****Ward 7, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To evaluate the efficacy and safety of telmisartan+hydrochlorothiazide (T-H) and telmisartan monotherapy (T-m) in patients with mild to moderate essential hypertension.

Methods This was a multicenter, randomized, double-blind, double-dummy, comparative, controlled trial. After a 2-week, single-blind, placebo run-in period, patients with mild to moderate hypertension were eligible to enter the 4-week, single-blind treatment with telmisartan monotherapy 40mg/day. After 4 weeks, if DBP < 90mmHg, the patients will be excluded; if $90 \leq \text{DBP} < 110$ mmHg, then patients will enter the 8-week, double-blind, double-dummy therapy period and according to the randomized principle, they were divided into two groups. Study comparisons were between once-daily telmisartan + hydrochlorothiazide (1 pill) and telmisartan monotherapy (80mg). At week 8, if DBP < 90mmHg, then continue to take to the end of the study; if $\text{DBP} \geq 90$ mmHg, double the doses, that is, T-H 2Co/day, while telmisartan 160mg/day, and consecutively observing for 4 weeks. At week 4 and week 12, 42 patients were randomized selected to take the ambulatory blood pressure monitoring (ABPM). The primary endpoint was change of absolute value of DBP from week 4 to the last evaluable measurement during double-blind treatment.

Results In total, 300 patients (eight hospitals) were enrolled in this study and 213 patients completed the study. One severe adverse event—myocardial infarction— occurred in a patient, but is considered drug independent. When unblinded, it reveals that there is a significant decrease in the absolute value of DBP ($P=0.0203$). At week 12, both groups have a sharply drop of BP, but T-H provided significantly greater reductions versus T-m in BP (SBP: $P=0.0016$; DBP: $P=0.0186$), and total efficacy rate (T-H: 83.1%; T-m: 67.2%, $P<0.05$), as well as. The BP target achievement rate is higher in T-H group ($P=0.0061$). The T/P ratio is $>50\%$ in both groups. There is no significant difference between the two groups in the rate of total adverse events (T-H: 21.8%, T-m: 22.1%, $P=0.9461$) and drug-dependent adverse events (T-H: 8.1; T-m: 9.8%. $P=0.6264$).

Conclusion Telmisartan +hydrochlorothiazide and telmisartan can significantly and steadily reduce SBP and DBP and is very safe, well tolerated and accepted by patients with mild to moderate essential hypertension. T-H provides significantly greater BP lowering than T-m.

Study of axial flow blood pump with magnetic bearings**Yunpeng Zhang, Shuqin Liu, Youpeng Fan, Yong Guan****School of Electrical Engineering of Shandong University, Jinan 250061, China**

Heart failure is the serious stage in development of heart disease and life-threatening for the patients. Heart transplantation remains the most successful longterm surgical treatment option for patients with advanced heart failure refractory to medical therapy. Limitations in heart donor availability have prevented a broader application of heart transplantation for the treatment of advanced heart failure. Blood pump (or left ventricular assist device) therapy has become an established treatment modality for patients with advanced heart failure utilized as either a temporary bridge to heart transplantation or as permanent support as an alternative to heart transplantation. To date, the second generation blood pumps are used in the clinical, but their mechanical bearings will cause heat, wear, large damage to blood, hemolysis, thrombus and other problems, which limited their development and application. Magnetic bearings (MB) can support a rotor without contact. This will eliminate the mechanical friction and wear, and reduce the damage to blood and the probability of hemolysis and thrombus, and also increase the use life of blood pumps. Therefore, the 3th generation blood pump with magnetic levitation techniques become promising and attractive in the study of blood pumps.

In this paper, the levitation system with radial PMB and axial AMB for maglev blood pump is studied intensively. A prototype of maglev blood pump is designed and fabricated. Its rotor is levitated stably in five degrees of freedom (DOF). The characteristics of radial PMB and axial AMB and the coupling between them are systemically studied. Based on the coupling, the scheme of maglev blood pump combined with radial PMB and axial AMB is proposed. With the finite element model, the characteristics of capacity and stiffness of radial PMB are studied by finite element method. It is analyzed that the relationship between the stiffness of radial PMB and the relative axial displacement between the rotor ring and the stator ring of radial PMB. The mechanical characteristics of axial AMB and the coupling of magnetic force and stiffness between axial AMB and radial PMB are also studied and analyzed. The axial AMB system is designed and optimized. The problems in system design and control caused by the stiffness coupling between axial AMB and radial PMB are solved.

The whole system is optimized in detail. Based on the magnetic field coupling between magnet rings of radial PMB, axial displacement detection method based on Hall sensors is presented. Analog PID controller and linear power amplifier is designed for axial AMB. The experiments of rotor levitation and rotation of maglev blood pump prototype are carried out. Startup experiments, rotor static levitation experiments, anti-jamming experiments and rotor rotation experiments were carried out on the prototype. The prototype rotor reached the middle levitation position quickly. Axial levitation accuracy under static levitation is $1.6\mu\text{m}$. After a disturbance, rotor returns to the original levitation position rapidly after a few oscillations. Driving by permanent magnetic brushless DC motor, the rotor reached its maximum rotation speed in air, $6000\text{r}/\text{min}$ and the maximum amplitude of rotor axial vibration is less than $7\mu\text{m}$. The experimental results show that the prototype system has good performance in startup, anti-jamming with good levitation accuracy.

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Surgical treatment for hypertrophic cardiomyopathy with modified morrow procedure: China experience**Shuiyun Wang, Hongtao Sun****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective Myectomy is primary procedure for left ventricular outflow tract obstruction (LVOTO) due to hypertrophic cardiomyopathy (HCM). Transaortic left ventricular extended septal myectomy (Modified Morrow procedure) provides excellent outcomes for adults with obstructive HCM. We sought to assess the clinical result of Modified Morrow procedure on early and medium-term survival of patients with HCM. This group is the biggest group of Modified Morrow procedure in China.

Methods 74 patients underwent Modified Morrow procedure for complex HCM pathology evaluated from Oct, 2009 to Aug, 2011, male 47 and female 27. The average age of the patients was 46 years. Transesophageal echocardiography was performed on all patients preoperatively and postoperatively to assess adequacy of resection, left ventricular outflow tract gradients, and mitral valve function. The preoperative peak LVOT gradients were 52~144 mmHg, average level was 92.7 mmHg. All patients underwent transthoracic outpatient echocardiography at a mean follow-up of 11.6 months (range, 1 to 24 months). Combined procedures included: MVR in 4 cases, MVP in 4 cases; MVR+CABG in 7 cases, MVP+CABG in 2 cases, Maze procedure in 2 cases, BVR in 2 cases, VSD+AVP in 1 case, SBE/BVR in 1 case, SBE/AVR in 1 case, AVR+CABG in 1 case, AVR+CABG+MVP in 1 case.

Results There were no readmissions or death in the group. Initial postoperative transesophageal echocardiography demonstrated marked reduction in LVOTO to 15.2 mmHg ($p < 0.01$) and significant improvement in mitral regurgitation.

Conclusion Modified Morrow procedure for patients with HCM is a safe procedure with an excellent clinical and Doppler echocardiographic early and medium-term follow-up.

Identification of the breakout and origin site in idiopathic ventricular arrhythmias arising from the right ventricular outflow tract

Xiaoyan Liu, Yingjie Zhao, Jianmin Chu, Jing Wang, Wei Wei, Qi Guo, Jielin Pu, Shu Zhang

The Center for Arrhythmia Diagnosis and Treatment, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China

Background Multiple breakouts may present challenges during catheter ablation of ventricular arrhythmias (VAs, premature ventricular contractions, PVCs and/or nonsustained ventricular tachycardia, NSVT) arising from the right ventricular outflow tract septum (RVOT).

Objectives The purpose of this study was to clarify the breakout sites and origin site and investigate their electrophysiological characteristics in idiopathic VAs arising from the RVOT.

Methods Nine patients occurred second PVCs with a different morphology after ablation of target PVCs were studied. Electroanatomical mapping (EAM) was performed in RVOT during sinus rhythm. Intracardiac electrograms of successful ablation site were evaluated by local activation time (LAT) and pace mapping (PM). Electroanatomical voltage mapping (EVM) was analysed after procedure.

Results In all patients, target PVCs had narrower QRS duration than the second one ($P=0.001$), the successful target site (Ts) had later LAT and worse template-matching (TM) score than the target site (Tt) of target PVCs which determined by LAT and PM ($P<0.000$, $P=0.030$, respectively), and the stimulus to QRS interval was slightly longer during pacing at target than EVA site ($P=0.053$). The distance between the Ts site and Tt site was 19.1 ± 5.6 mm and the target site always located at the transitional-voltage zone (TVZ, 0.5-1.5mV).

Conclusion RVOT-VAs often shows multiple or deformation of QRS morphologies caused by multiple breakouts and a single origin, which may be explained by anisotropic conduction of the TVZ resulting from the complex histology characteristics of the RVOT.

Radiofrequency catheter ablation of the monomorphic ventricular premature beats originated from the left anterior fascicle

Hongyong Tan², Yingjie Zhao¹, Jianmin Chu¹, Jing Wang¹, Xiaoyan Liu¹, Qi Guo¹, Shu Zhang¹

1 Department of Cardiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China

2 Clinical institute of Jining Medical College, Jining 272067, Shandong, China

Objective To research the electro-cardiac characteristics and RFCA result of PVCs originated from left anterior fascicle.

Methods 7 patients with frequent PVCs originated from the left anterior fascicle were performed RFCA by 3-dimensional electroanatomic mapping.

Results The 12-lead ECG of PVCs originated from left anterosuperior septum in 7 patients showed RBBB morphology, qR or qRs in leads II, III, aVF, rs or rSr' in leads I, aVL and Qr in lead aVR, the QRS complex was 121 ± 17 ms. PPs were all recorded at the earliest site of ventricular activation. During 12 months follow-up period after ablation, PVCs missed completely in 6 patients, and PVCs < 1000 beats/24h in another.

Conclusion The PVCs originated from the left anterior fascicle without structural heart disease can be successfully ablated at the earliest site of ventricular activation with PP during both sinus rhythm and PVC.

Outcomes of ten patients diagnosed heart tumor combining with ventricular tachyarrhythmia

Jing Wang, Xiaoyan Liu, Jianmin Chu, Yuhe Jia, Kexiu Mao, Yingjie Zhao, Wei Wei, Wei Hua, Shu Zhang

Clinic EP lab and arrhythmia treating center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China

Objective To summarize the clinical features and prognosis data of patients diagnosed heart tumor with ventricular tachycardia as main clinical presentation.

Methods Collected 10 patients diagnosed heart tumor with ventricular tachycardia from 1992 to 2009 in our hospital, and analyzed clinical features, treatment and outcome. The diagnosis was made by cardiac MRI or pathology. **Results** All the 10 patients (5 males) had sustained or paroxysmal ventricular tachycardia as the initial clinical presentation. Among them, 5 patients had poor effects to more than 2 anti-arrhythmic agents in terminating the ventricular tachycardia; 4 patients had history of syncope and 1 suffered cardiac arrest. There were 8 patients had depression of ST segment and inversion of T wave on routine 12-lead ECG; 4 patients had normal echocardiogram result and diagnosed at last by MRI. There were 7 patients performed heart surgery; the tumor was removed totally in 5 of them who had not recurrence of arrhythmia anymore; but the other 2 patients whose tumors were not resectable and just performed decompressing surgery, had recurrence of VT almost immediately after the surgery.

Conclusion The mechanisms of the ventricular arrhythmia are valvular interference of the tumor mass or reentry about its border with the myocardium rather than the pressure. So that resecting the tumor can result in a sustained resolution of tumor associated arrhythmia.

Normalized follow-up and programming after implantation of the pacemaker

Ying Zhang, Xiaoqing Ren, Fangzheng Wang, Keping Chen, Wei Hua, Jielin Pu, Shu Zhang
Arrhythmia Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital,
National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and
Peking Union Medical College, Beijing, 100037, China

Objective To discuss how to normalize follow-up and programming after pacemaker implantation and to summarize its significance.

Methods 1278 patients with bradyarrhythmias being implanted pacemaker were given routine follow-up and programming. Programming content include parameter testing, parameter optimization, output voltage reducing, and appropriate opening of automated functions and other functions, etc. And to summarize its content and significance.

Results Normalized follow-up and programming can detect and deal with the dysfunction of the pacemaker, imitate physiological pacing, save energy, simplify operation and optimize the therapeutic effect, etc.

Conclusions Patients should be given normalized follow-up and programming after pacemaker implantation, which can improve the therapeutic effect.

Proteomic analysis of human atrial fibrillation

Yunzi Zhao¹, Yuhe Jia, Weihua Li², Hongli Wang², Wei Wei¹, Shu Zhang¹

1. Arrhythmia Center, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China
2. Academy of Military Medical Sciences Institute of Basic Medical, National Center for Biochemical Analysis

Objectives The aim of this study was to compare the 2D profiles of AF patients with the controls with sinus rhythm by serum proteomics technology.

Background Proteomics is an emerging field that has the potential to uncover new therapeutic targets for the treatment and prevention of cardiovascular disease, as well as new diagnostic biomarkers for early disease detection. We believe that the two-dimensional electrophoresis (2-DE) based serum proteome analysis can be useful in discovering new biomarkers that may aid in mechanism research and therapy of atrial fibrillation (AF).

Methods: Sera from 5 patients with atrial fibrillation and 5 controls with sinus rhythm were investigated using two-dimensional polyacrylamide gel electrophoresis (2-DE) and nanoliquid chromatography coupled to tandem mass spectrometry (nano LC-MS/MS).

Results 13 differentially expressed proteins were successfully identified, of which, transthyretin (TTR) Val30Met Variant was expressed significantly and constantly only in atrial fibrillation patients. Haptoglobin Hp2 was down-regulated in atrial fibrillation group compared with the sinus rhythm group, and serum dermcidin preproprotein and transferrin (TRF) were up-regulated in patients with rheumatic heart disease (RHD) compared the patients with non-valvular diseases. Furthermore, increased expression levels of glutathione peroxidase 3, plasma glutathione peroxidase, plasma GSHPx, peroxiredoxin-2 isoform a, complement component C4A and complement C4B precursor were observed in RHD patients compared with non-valvular diseases.

Conclusions During atrial fibrillation, TTR or TTR variant may be involved in the maintenance of atrial fibrillation. The course of rheumatic heart disease is accompanied by the oxidative stress and activation of the complement system.

Cardiac Anesthesia

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Potential role of ischemic protocol, anesthesia, and diabetes in remote preconditioning induced cardioprotection for adult cardiac surgery: a meta analysis of randomized trials

Chenghui Zhou, Shan Zhou, Gang Cheng, Huanli Li

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100037, China

Objective This meta analysis comprehensively evaluated the cardiac effect of remote ischemic preconditioning (RIPC) in adult cardiac surgery.

Methods Randomized controlled trials (RCTs) published in English were selected from PubMed, EMBase, and Cochrane Library (up to Jan 2012). Heterogeneity was explored by using I². Random-effect model was used for analysis in case of significant heterogeneity among trials (I²≥50%). Further exploration for the potential sources of significant heterogeneity was conducted by meta-regression analysis. P<0.05 (2-sided) was considered to be statistically significant. All statistical analysis was performed in Stata software (version 9.0; Stata Corporation, College Station, TX).

Results 11 Randomized controlled trials (RCTs) with 877 subjects were identified. The cardiac effect of RIPC in adult patients undergoing cardiac surgery was focused. Standardized mean difference (SMD) was used for postoperative troponin or CK-MB levels. Compared with control group, RIPC significantly reduced postoperative biomarkers of myocardial injury (SMD=-0.64; 95% CI, -1.06 to -0.22; P= 0.003; heterogeneity test: I²=88.8%, P<0.00001). Total ischemic duration and limb types were used for ischemic protocol. Anesthesia was categorized as balanced anesthesia with or without inhalational anesthetics. Further meta-regression analysis of myocardial biomarkers suggested that the major sources of significant heterogeneity were total ischemic duration (coefficient=-0.0854; 95% CI, -0.1592 to -0.0115; P=0.028) and inhalational anesthetics (coefficient=1.1849; 95% CI, 0.1744 to 2.1955; P=0.026), but not diabetes proportion (%) (Coefficient =-0.5188; 95% CI, -3.3519 to 2.3142; P=0.684).

Conclusions Our first comprehensive meta analysis suggests that remote ischemic preconditioning provides cardioprotection in adult cardiac surgery by reducing postoperative troponin or CK-MB levels. This protective potential may be more beneficial with prolonged ischemic protocol, whereas less beneficial with inhalational anesthetics and seems to remain effective in patients with diabetes status. Considerable efforts should direct at the mortality in future high-quality, large-scale clinical trials with long-term follow-up.

Transfusion conservation techniques and strategies in cardiovascular surgery

Shao Feng Zhou

The University of Texas Medical School at Houston

Patients undergoing cardiovascular surgery often require large numbers of allogeneic blood (red blood cells) and blood product transfusions (fresh frozen plasma, platelets and cryoprecipitate). In the U.S.A., surgery consumes about 15 million units of packed red blood cells each year. Cardiovascular surgery needs about 20% of these blood transfusions. Furthermore, 15 - 20 % of those patients during cardiovascular surgery consume about 80% of blood products. In Europe, nearly 50% of cardiovascular surgery patients need blood transfusions. As the population ages, the demand for allogeneic blood and blood products will increase significantly by aged patients undergoing cardiac surgery. Those aged patients are in high risk of receiving perioperative blood transfusions. Simultaneously, cardiovascular surgical procedures have become more and more complicated with its improvement and development in science and technology. The growing number of elderly patients capable of undergoing complex cardiovascular surgery has additionally increased the need of perioperative blood transfusions. However, the source of volunteer blood supply has not been increased. Thus, contradictions between demand and supply of allogeneic blood are increasingly tense. In addition, in order to increase the safety index and avoid transfusion-transmitted diseases, the need of blood and blood products screening test items and increase in medical expenses and cost of allogeneic blood transfusion therapy will continue to rise.

The most important consideration is whether blood transfusion therapy improves clinical outcome.

There is no doubt that blood and blood products transfusions can be a life-saving. However, the results of blood transfusions can also cause an increase in morbidity and mortality in cardiovascular surgery, an increase hospitalization time and increase the total cost of the treatment (Figure 1). Therefore, it is very important in the contemporary transfusion practice of medicine to be effective and reasonable use of blood supply, to enhance the awareness of the blood protection, and to actively follow the implementation of blood conservation measures for reducing blood transfusion, especially to avoid unnecessary blood transfusions. Worldwide, more and more medical workers began to attach importance to the side effects caused by transfusions which have become the focus of attention and direction around the world in recent years, especially with physicians who are involved in the management of cardiovascular surgery, such as cardiovascular anesthesiologists, cardiovascular surgeons, perfusionists and intensive care physicians and so on. Based on available evidence, people are actively seeking deferent blood conservation strategies in order to ultimately achieve the purpose of reducing blood transfusions and transfusion associated complications, decreasing health care costs and relieving the tension of allogeneic blood supply and demand. In general, the majority of elective cardiac surgery does not require blood transfusion. But the majority of aortic surgery, emergency surgery, complex cardiac surgery, redo- surgery still need blood transfusions. Thus, clinical practice guidelines for perioperative blood transfusion and blood conservation in cardiac surgery were launched in 2007 by The Society of Thoracic Surgeons (STS) and The Society of Cardiovascular Anesthesiologists (STA). It has been updated in 2011 via a special report by those societies.

The effect of extracorporeal membrane oxygenation supportive treatment on the hematological system

Guodong Gao

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective to observe the effect of Extracorporeal Membrane Oxygenation (ECMO) on the hematological system in adult and to reveal the regularity of the blood routine, the inflammatory mediators and the coagulation index during ECMO.

Methods Venous blood was drawn from 27 patients at the establishment of ECMO, 24 hours after the establishment of ECMO and before the weaning from ECMO separately to observe the blood routine. Inflammatory medium, activated coagulation time (ACT), prothrombin time (PT), activated partial thromboplastin time (APTT) and fibrinogen (FIB) were also tested before the establishment of the ECMO, 1, 6, 24, 48, 72 hours after the establishment of ECMO and before the weaning of the ECMO of the 27 patients respectively. In addition, the patients were separated into two groups according to the survival in hospital and the indexes mentioned above were compared between the groups.

Results After the establishment of ECMO, the hemoglobin changed slightly at different time points. Generally, the leukocytes and neutrophile granulocytes were increased gradually during ECMO and the leukocytes and neutrophile granulocytes were lower significantly in survival group compared with the deceased group at the beginning establishment of ECMO ($P < 0.01$). 24 hours after the ECMO establishment, lymphocytes were lower than those in the beginning of ECMO establishment, and before the weaning of ECMO, lymphocytes reached the peak, but between the survival and the deceased groups, there was no significant difference ($P > 0.05$). During the ECMO support, platelet tends to decline and there was no difference between the two groups ($P > 0.05$). The PT and APTT values were significantly higher after the establishment of ECMO than before. FIB was decreased momentarily after the establishment of ECMO and increased after 6 hours, reached the peak value before the weaning of ECMO. In the survival group, TNF- α , IL-2 and IL-6 were gradually decreased after the establishment of ECMO. Before the weaning of ECMO, the inflammatory mediators in the survival group were lower than that in the death group ($P < 0.05$).

Conclusion The cardiac shocked patients who were offered ECMO support after the cardiac operation had suffered coagulation dysfunction and inflammation. ECMO activated the white blood cells, platelet and the exterior and interior coagulation system, in the meanwhile, resulted into the systematic inflammatory reaction. In the survival group, the inflammation was extenuated with the improvement of the pathogenetic condition of the patients.

Hyperoxia management during deep hypothermia for cerebral protection in circulatory arrest rabbit model**Jiuguang yang¹, Qian Wang¹, Cun Long¹, Ju Zhao¹, Yue Li¹, Qinghua Xue², Lijian Cheng², Weiping Cheng¹****1. State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China****2. Beijing Anzhen Hospital, Capital Medical University, Beijing 100029, China**

Aortic arch surgery and complex neonatal congenital heart surgery necessitate interrupted brain perfusion and carry a risk of brain injury. In spite of the use of various brain protective techniques,^{1,2} there still remains a relatively high incidence of brain injury after aortic arch surgery.³⁻⁶ Evidences suggest that perfusing the brain is better than not perfusing it, and that this perfusion should be antegrade.

ASCP was suggested as the best method of cerebral protection during surgery of the thoracic aorta.^{2,7,8} During cooling to deep hypothermia, increasing hemoglobin (Hb) oxygen affinity causes a progressive impairment of oxygen transfer from hemoglobin to plasma, with subsequent decreases in transfer to cerebral interstitium and cells. This impairment of oxygen transport is minor at 27 °C, but can be substantial at 17 °C.⁹ This occurs in parallel with increasing oxygen solubility with gas exchange becoming more reliant on dissolved oxygen. During full-flow profound hypothermic conditions, dissolved oxygen can fully support cerebral oxygenation.¹⁰ Grist¹¹ suggested that the use of hyperoxia before DHCA cantake advantage of increasing the dissolved oxygen content of blood and loading tissues with excess oxygen. The aim of this study was to investigate the possible neuro protective effect so fhyperoxia management for ASCP combined with DHCA in a rabbit model.

Extracorporeal life support in developing China: current status and future direction**Bingyang Ji, Cun Long, Jinping Liu, Yunhu Song, Hansong Sun, Wei Wang, Hu Shengshou****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Since 1970's, prolonged extracorporeal circulation (ECC) has been first successfully used to treat a young man with acute respiratory distress syndrome (ARDS) after trauma. Over the next few years, extracorporeal membrane oxygenation (ECMO) or extracorporeal life support (ECLS) as a mean to rescue the patients with severe cardiac failure and respiratory failure were reported. In China, the heart surgery and ECC technology were developed a certain extent with the support of country in 1990's. However, due to the high cost and the limited medical resources and without homemade products, ECLS are still much behind the western countries. Currently, with the national economic increasing, more and more heart centers began to use ECLS to save patients from cardiac and respiratory function failure. Although we made some improvements and got satisfied clinical results in ECLS, we know we are still in learning curve and need to enhance our practice and theory.

Comparison of the effects of three autotransfusion devices on Erythrocyte function and clinical indicator during cardiopulmonary bypass procedure

Xiaohua Wang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective The purpose of this study was to evaluate three commercially available autotransfusion devices in terms of erythrocyte function and quality of washing during cardiopulmonary bypass (CPB).

Materials and Methods Thirty patients undergoing cardiac surgery with cardiopulmonary bypass were randomly allocated to three different cell saver devices: group C (Cell Saver 5+; Haemonetics, n=10), group M (autolog; Medtronic, n=10), and group F (CATS; Fresenius Hemo Care, n=10). Blood was collected from reservoir, and then routine cell salvage was performed according to the manufacturers' protocols and blood samples collected from transfusion bags. Reservoirs and washed RBCs were analyzed for Erythrocyte aggregation index (AI), Erythrocyte deformation index (DI) and Hematocrit adjusted viscosity (HV), 2, 3-DPG, hemotacrit (Hct), hemoglobin (Hb), glucose (Glu), lactate (Lac), Blood Urea Nitrogen (BUN) and plasma-free hemoglobin removal.

Results Group C (1.06 ± 0.31) had lowest 2,3-DPG, and reflected best 2,3-DPG reservation compared with groups M and F (2.33 ± 0.44 , 2.49 ± 0.45) ($P=0.001$, 0.001). Processing by all three cell savers significantly reduced erythrocyte deformation. After procedure, groups C and M had relatively higher erythrocyte DI (0.158 ± 0.070 , 0.152 ± 0.043) Page 2 of 24 Artificial Organs for Review Only ($P=0.026$, 0.033), while group M had the lowest HV (44.69 ± 8.50) ($P=0.022$). Group F provided the maximal concentration of Hct (57 ± 5.51) ($P=0.021$; 0.046) and Hb (17.867 ± 1.69) ($P=0.008$; 0.013). In addition, group C and had the highest removal of freeHb (freeHb) (0.258 ± 0.213) and statistical difference compared with group F (0.008 ± 0.335) ($P=0.035$).

Conclusion In conclusion, cell saving devices use the same theory of centrifugation; however, based on different designs, the function of the washed erythrocyte and undesirable content removal efficiency differs widely from one device to another.

Mild hypothermia combined with CRRT in treating severe heart failure after cardiovascular surgery

Ruonan Jiao

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To evaluate the effect and safety of Mild hypothermia (34 °C) combined with continuous renal replacement therapy(CRRT) in treating severe heart failure after cardiovascular surgery.

Methods From 2007 to 2010,8 severe heart failure patients had received this therapy, whose cardiac index were less than $2.0 \text{ L min}^{-1} \text{ m}^{-2}$, pulmonary artery wedge pressure were more than 15mmHg, mean arterial pressure were less than 70mmHg,and hemodynamics was unstable even lots of vasoactive drugs had been used. CRRT was used to reduce cardiac load and kept central blood temperature at 34°C to reduce body metabolic rate. When pulmonary artery wedge pressure stayed at about 12mmHg after mild hypothermia combined with CRRT ,we recovered central blood temperature to 36.5°C and we removed CRRT until mean arterial pressure were more than 70mmHg,cardiac output were more than 4.0 L min^{-1} .Hemodynamics of patients and organ function before CRRT and after CRRT was compared.

Results Average time of blood filter support was 146.7 hours, Central venous blood pressure declined significantly after CRRT (16.2 ± 4.5 VS 8.7 ± 1.7 mmHg, $P < 0.05$); Cardiac output and mean arterial pressure had an elevated tendency after CRRT (3.9 ± 0.7 vs. $4.5 \pm 1.1 \text{ L min}^{-1}$, 69.7 ± 7.3 vs. 77.7 ± 16.2 mmHg, $P > 0.05$); pulmonary artery wedge pressure had a declined tendency (15.5 ± 4.1 vs. 12.1 ± 0.6 mmHg, $P > 0.05$); Quantity and variety of vasoactive drugs was reduced; 1 patient died, 7 patients discharged.

Conclusions The combination of mild hypothermia and continuous renal replacement therapy could reduce heart preload and body metabolic rate ,ameliorate heart function of severe heart failure after cardiovascular surgery ,which would be a new effective treatment to improve the heart failure.

Transesophageal Echocardiography (TEE) in decision making process for mitral valve surgery**Jiapeng Huang****Jewish Hospital, University of Louisville**

The mitral valve apparatus is a complex structure consisting of cardiac skeleton, annulus, leaflets, chordate, papillary muscle and ventricular wall. TEE assessment during mitral valve surgery is mandatory for planning surgical procedure; evaluate results and predicting the long term durability of surgery. Mitral valve repair is the treatment of choice for mitral valve dysfunction from all etiologies. TEE assist addressing the reparability of the mitral valve apparatus, the necessity for other interventions and assessment of post bypass surgical procedures and complications.

Pre bypass, TEE can determine severity and mechanism of mitral valve dysfunction assess associated pathophysiology, perfusion techniques and potential post bypass complications. Post bypass, TEE can evaluate the outcome of surgical procedures and diagnose complications. Real time 3D TEE exam provides additional and intuitive information for mitral valve surgeries to complement the 2D exam.

Comparative evaluation of the hemodynamic effect of 4.2% hypertonic saline plus 7.6% hydroxyethyl starch and hydroxyethyl starch 130/0.4 solution in cardiosurgical patients

Zhaoduan Li¹, Zeyong Yang², Weifeng Yu²

1. Departments of Anesthesiology, Tianjin Nankai hospital, Tianjin 300100, China.
2. Departments of Anesthesiology, Second Military Medical University, Shanghai, China

Objective The aim of this study was to investigate the hemodynamic effect of 4.2% hypertonic saline plus 7.6% hydroxyethyl starch and hydroxyethyl starch 130/0.4 solution in cardiosurgical patients during general anesthesia induction.

Methods 72 ASA physical status I–II undergoing elective hepatobiliary surgical patients were double-blindly and randomly divided into three group(n=24):group A, group B and group C. The patients in group A received acetic acid Ringers solution (RL: 7ml/kg) before general anesthesia induction. The patients in group B received hydroxyethyl starch 130/0.4 (HES: 7ml/kg).The patients in group C received 4.2% hypertonic saline plus 7.6% hydroxyethyl starch (HHS: 4 ml/kg). Hemodynamic parameters, such as heart rate(HR), mean arterial pressure (MAP), cardiac output (CO), cardiac index (CI), stroke volume (SV), stroke volume index (SI), central venous

pressure (CVP), pulmonary artery wedge pressure(PAWP), left ventricular-stroke work (LVSW), vascular resistance(SVR), pulmonary vascular resistance(PVR) and mean pulmonary artery pressure(PAPm) were measured after Swan-Ganz catheter was cannulated into jugular vein. The hemodynamic parameters were recorded at T1(10 min after induction),T2(30min after operating),T3(60min after operating),T4(5 min after intubation),T5(10 min after intubation), T6(20 min after intubation).

Results The study showed no significant difference in hemodynamic parameters for three groups at T1. CO in group B and group C at T2 increased significantly compared with T1 ($P<0.01$), but SVR in group C decreased ($P<0.05$) at T2. Compared with group B, CO in group C was increased significantly ($P<0.05$). Compared with group A, SV at T4 ($P<0.05$), CI and SI at T2 and T4($P<0.01$)in group C increased significantly. Compared with group A, LVSW in group C decreased significantly during T6($P<0.01$) and PVR decreased significantly during T3–T6 in group C.

Conclusion We concluded that 4.2% hypertonic saline plus 7.6% hydroxyethyl starch can maintain the more stable hemodynamic effect in cardiosurgical patients.

Ulinastatin as a neuroprotective and anti-inflammatory agent in infant piglets model undergoing surgery on hypothermic low-flow cardiopulmonary bypass

Xiaocou Wang¹, Fuxia Yan¹, Qinghua Xue¹, Lihuan Li¹, Jinping Liu², Shoujun Li³, Shengshou Hu³

1. Department of Anesthesiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. Department of Cardiopulmonary Bypass, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

3. Department of Surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Infants are potentially more susceptible to brain injury mediated via cell death attributed to cardiopulmonary bypass especially with prolonged hypothermic low-flow (HLF). We hypothesized that a human urinary protease inhibitor (ulínastatin), by its anti-inflammatory effect would reduce central nervous system injury during HLF.

Methods Fifteen general-type infant piglets were randomized to ulínastatin group (Group U, n = 5), control group (Group C, n = 5) and sham operation group (Group S, n = 5). Routine CPB was established after median thoracotomy in Group U and C under anesthesia. When the temperature of infant piglets dropped down to 25 °C, low-flow CPB (50ml.kg⁻¹.min⁻¹) was instituted. After 120min of aortic cross-clamping and 20 to 30min rewarming, the aortic cross-clamp was removed and finally the piglet was weaned from CPB. Five thousand units per kg of ulínastatin and equivalently normal saline were respectively given at the beginning of and at aortic declamping in Group U and Group C. Group S just received sham median thoracotomy. Venous blood samples were taken immediately after anesthesia induction in Group S, and 120min post CPB in both Group U and C respectively; plasma markers of inflammation and central nervous system injury were compared. Pathology results of hippocampus were observed by light microscopy.

Results Statistically significant differences between group C and U were noted in the expression of inflammatory markers such as IL-6, TNF- α and neuron-specific enolase (NSE). Brain injuries were observed in both groups (index cases and controls) and were milder in group U.

Conclusions In our study, HLF cardiopulmonary bypass surgery on infant piglets resulted in brain injury, and ulínastatin might reduce the extent of such injury.

Radial artery cannulation inducing digital necrosis after cardiac surgery**Yijie Hu, Qianjin Zhong, Zhiping Li, Jianming Chen, Cheng Shen, Yi Song****Department of Cardiology, Daping Hospital, the Third Military Medical University, Chongqing 400042, China**

Hand ischemia is a rare but potentially devastating complication of radial artery cannulation perioperatively. Here we reported a case of severe hand ischemia, digital necrosis, induced by radial artery cannulation in cardiac surgery. Because of more high risk factors of hand ischemia induced by radial artery cannulation in cardiac surgery, close attention should be paid. The appropriate treatment should be chosen based on the underlying mechanism of ischemia and the specific circumstances of the patient.

Impact of acute renal failure in extracorporeal membrane oxygenation patients**Ju Zhao****Department of CPB, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Background At the beginning of ECMO treatment in 1970s, it was noticed that extracorporeal membrane oxygenation (ECMO) can support respiratory gas exchange but did not increase the probability of long term survival in patients with severe acute renal failure (ARF). Renal complication is one of the most important complications in ECMO patients at present.

Objectives This study hope to figure out the relationship between acute renal injury and ECMO mortality and the role of CRRT in ECMO patients.

Methods and Material Collected three databases based on the network across our country and ELSO Registry around the world: Fuwai ECMO data, ChECLS data and ELSO data. We summarized the morbidity of renal complications and survival of ECMO patients with ARF in these databases. The differences between three databases were used to find out the useful management of improving the outcome of patients with acute renal injury during ECMO.

Results The incidence of ARF was 24.8% in 129 ECMO patients of Fuwai data and survival of ARF was 20%. Morbidity of renal complications in ChECLS data was 39.4% and survival was 29.8%. In ELSO data of 33801 registries ECMO cases, renal complications occurred in 44.1% and 38.8% of them survived. ARF is a definite risk factor of in-hospital mortality of ECMO cardiac support based on multivariable analysis in Fuwai data. Patients using CRRT during ECMO had decreased survival in all databases.

Conclusion ECMO is a justifiable alternative treatment for refractory cardiac and/or pulmonary dysfunction which could rescue more that 50% of carefully selected patients. ARF during ECMO significantly decreased survival discharge. Higher survival rates could be achieved by preventing ECMO renal complications. Therapy of ARF still is a challenge in patients with ECMO support.

FWM solution improves the preservation of non-heart-beating donor lungs in an isolated rabbit model**Shuyi Lu, Jinxiao Hu, Bingyang Ji, Kai Liu, Cun Long****Department of CPB, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objectives The perfect preservation procedure for the non-heart-beating donor in lung transplantation remains undecided. The purpose of the study was to evaluate the effect of lung preservation provided by Histidine-tryptophan –ketoglutarate (HTK), Euro-Collins (EC), and Fu Wai Modified Solution (FWM).

Methods We divided eighteen New Zealandwhite rabbits into three groups: Group HTK, EC, and FWM. After one hour warm ischemia and four hour cold preservation (at4 °C), the lungs were reperfused in an isolated, blood-perfused, ventilated rabbit model for an hour. During the reperfusion, the blood gas analysis was observed every 15 minute. Surfactant activity was reflected by mRNA of Surfactant Protein B using reverse transcriptase PCR (rt-PCR). Wet-to-dry weight ratio (W/D ratio) was performed after reperfusion. Transmission electronic microscopy was used to observe the morphological changes of the reperfused lung.

Results During the one hour reperfusion interval group FWM and HTK lungs had remarkably higher oxygenation compared to group EC ($p < 0.05$). There was no distinguished difference between group FWM and group HTK. After reperfusion, the surfactant was well preserved in group FWM ($p < 0.05$). In addition, W/D ratio did not differ significantly between groups. However, there was a tendency toward less edema in group FWM. The morphological changes were less severe in FWM and HTK groups than the changes in the EC group.

Conclusion The results exhibited that FWM and Histidine- tryptophan –ketoglutarate (HTK) solutions have a superior preservation effect than Euro-Collins solution in non-heart-beating donor lungs. (Word count: 238)

Anesthetic consideration for transcatheter aortic valve replacement**Hong Liu****University of California Davis**

Objectives Aortic stenosis (AS) is a common and progressively serious disease affecting aged population. 1.5% of patients older than 75 years have AS. Once symptoms develop, average survival decreases to 5 years with the onset of angina, 3 years after cardiac syncope and 2 years after heart failure. Transcatheter aortic valve replacement (TAVR) was first performed in human in 2002 and FDA approved its US use in high-risk patients and patients could not tolerate open-heart surgery in 2011. The aim of this presentation is to introduce anesthetic management of TAVR perioperatively.

Methods We reviewed current literatures on this topic involve how the procedure was performed and what anesthetic considerations. We also retrospectively reviewed our own data from last year on this subject especially the lessons learned from the earlier cases.

Results The use of transesophageal echocardiography (TEE) is vital perioperatively. It can assess the left ventricular (LV) function, measure the AV annulus and diameters of left ventricular outflow track and proximal aortic sizes preoperatively. It can confirm the preoperative findings, assess the heart during rapid pacing time and confirm valve position, monitoring paravalvular and transvalvular leakages, assess LV wall motion abnormality and guide fluid and inotropic and vasoactive drug uses during the procedure. After procedure, it can assess aortic trauma and pericardial effusions. The risks and complication related to TAVR includes: increased rate of vascular complications, like hemorrhage at the cutdown sites (femoral or iliac arteries), aortic dissection, neurological complication like stroke due to disruption of atheromatous plaques, valve embolization, obstruction of coronary ostia, interference with mitral valve and contract induced renal insufficiency.

Conclusions Anesthesiologists must be familiar with and keep up with the developing technologies in this field. It is imperative to have the knowledge of this system, recognize potential complications, and formulate an anesthetic plan to provide safe patient care especially on maintenance of stable hemodynamic during induction and the rest of general anesthesia, maintenance of systemic and coronary perfusion pressure during rapid pacing period, creation of a low cardiac output status and minimization cardiac translocation during rapid pacing period and facilitate early extubation.

Anesthesia considerations for robotic-assisted minimally invasive cardiac surgery**David Yue Tang****Mercy General Hospital, Sacramento, CA, USA**

Objectives Robotic-assisted minimally invasive cardiac surgery has become more common in the world. In our institution, cardiac surgeons and anesthesiologists experienced pros and cons of the procedure during the learning curve by using Da Vinci surgical system. The aim of this presentation is to introduce anesthetic management during procedure, especially for troubleshooting the difficulties and complications intraoperatively.

Methods We reviewed current literatures on this topic involve how the procedure was performed and what anesthetic considerations. However, there are very limited reports related to anesthetic implications or complications related to the use of this technology. We also reviewed our own data from last several years on this subject.

Results In review of our early stage cases, we found out the challenges posed by the use of robotic system, including coronary sinus catheter placement, use of transesophageal echocardiography and one-lung ventilation, etc. We experienced the difficulty of coronary sinus catheter placement, failure of retrograde perfusion, coronary sinus rupture, left atrial wall dissection, hypoxia on one lung ventilation, postoperative ARDS, seizure, stroke, and death, etc. Optimizing coronary sinus catheter and endo-aortic balloon clamp, recognizing the complications, and troubleshooting will be the focus on this presentation.

Conclusions Anesthesiologists must be familiar with and keep pace with the developing technologies in this field. It is imperative to have the knowledge of this system, recognize potential complications, and formulate an anesthetic plan to provide safe patient care.

Effects of cardioprotection of sevoflurane postconditioning on rat hearts in vitro

Nengxin Fang, Yuntai Yao, Junson Gong, Lihuan Li

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective To evaluate the effects of cardioprotection with sevoflurane postconditioning on reperfused ischemic rat hearts in vitro.

Method Sixty male Wistar rat hearts were isolated, linked to a noncirculating Langendorff apparatus and randomly divided into 3 equal groups: control group (group A), ischemic group (group B) and sevoflurane postconditioning group (group C). Spontaneously beating hearts were equilibrated with modified Krebs–Henseleit(K–H) buffer for 20 min followed by 40 min global ischemia and reperfusion 60 min in both B and C group, while group A was reperfused with modified K-H buffer for 100 min after equilibration. After 40 min of test ischemia, anesthetic postconditioning was induced by sevoflurane for 15 min at 1.0 minimum alveolar concentration (MAC, 2.0 vol%) immediately at the onset of reperfusion in group C, while group B was reperfused with modified K-H buffer for 60 min alone. The left ventricular developed pressure(LVDP), the maximum rate of increase and decrease of left ventricular pressure ($\pm dP/dt_{\max}$), rat heart beats per minute and amount of coronary effluent liquid (CF) were recorded at the end of the stabilization period, and 15 min and 60 minutes after reperfusion. The lactate dehydrogenase (LDH) level, MB isoenzyme of creatine kinase(CK-MB) activity and cardiac troponin I (cTnI) level in the effluent liquid from the hearts were measured 20 minutes after the stabilization of perfusion, and 60 min after reperfusion. Infarct size was recorded by TTC staining.

Results Compared with group A, the data of hemodynamics of LVDP, $\pm dP/dt_{\max}$, CF and HR in group B and C were significantly lower during reperfusion period, but the value of biochemistry of LDH, CK-MB, and cTnI in both groups were much higher ($p < 0.05$). Compared with group B, the data of hemodynamics of LVDP, $\pm dP/dt_{\max}$, CF and HR in group C were significantly increased during reperfusion period, however, the value of biochemistry of LDH, CK-MB, and cTnI in group C were decreased ($p < 0.05$). Compared with baseline value, the data of LVDP, $\pm dP/dt_{\max}$, CF and HR were decreased significantly and the value of LDH, CK-MB, and cTnI increased significantly in both group B and C ($p < 0.05$). Compared with group B, infarct size demonstrated by TTC staining in percentage in group C was much lower ($p < 0.01$).

Conclusion Sevoflurane postconditioning has potent cardioprotective properties against ischemia/reperfusion injury in isolated rat hearts.

The involvement of mitochondrial permeability transition pore in the cardioprotective effect of sufentanil postconditioning

Lizhen Wang, Erwei Gu, Xianfu Lu, Fan Jiang, Qiaoling Chen, Lei Zhang, Bin Mei, Yuanyuan Cao

Anesthesiology, First Affiliated Hospital, Anhui Medical University, Hefei 230022, China

Objective To investigate the involvement of mitochondrial permeability transition pore (mPTP) in the cardioprotective effect of sufentanil postconditioning.

Methods Sixty male Sprague-Dawley rats, weighing 350-420g, were randomly divided into four groups (n=15 each): sham operation group (group S), ischemia-reperfusion group (group IR), cyclosporin A group (group CP) and sufentanil postconditioning group (group SP). Myocardial ischemia-reperfusion was induced by 30min occlusion of left anterior descending branch of coronary artery followed by reperfusion. In group CP or SP, cyclosporin A 5mg/kg or sufentanil 1 μ g/kg was injected intraperitoneally at 5min before reperfusion respectively while equal volume of normal saline was injected in group IR. At 10min of reperfusion, the hearts of 6 rats in each group were excised and the myocardial mitochondria were immediately isolated. The opening degree of mPTP was assayed with determination of infarct area (IS), area at risk (AAR) and IS/AAR. MAP, SBP, HR and RPP (MAP \times HR) were recorded before ischemia (T₀), 30min of ischemia (T₁) and 120min of reperfusion (T₂). Mitochondrial ultrastructure was examined by electron microscopy (n=3).

Results MAP, RPP were significantly lower, while plasma cTnI concentration and mPTP opening degree were higher during myocardial ischemia reperfusion in rats. Compared with group IR, IS, IS/AAR, plasma cTnI concentration and mPTP opening degree were decreased in group CP and group SP. Significant mitochondrial swelling, disruption and loss of cristae were shown in the IR group by electron microscopy. In the CP and SP groups, the mitochondrial structure was nearly normal, but cristae were slightly disrupted.

Conclusion Sufentanil-postconditioning can attenuate myocardial ischemia-reperfusion injury through inhibiting the mPTP opening.

The effects of sufentanil and fentanyl on blood glucose and lactate in diabetes patients undergoing coronary artery bypass graft during cardiopulmonary bypass**Gang Cheng, Lei Chen, Lihuan Li****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To compare the effects of sufentanil and fentanyl on blood glucose and lactate retrospectively in diabetes patients undergoing coronary artery bypass graft(CABG)during cardiopulmonary bypass(CPB).

Methods A total of 179 diabetes patients undergoing coronary artery bypass graft during cardiopulmonary bypass from July 2010 to June 2011 were recruited. Patients were divided into sufentanil (S) group and fentanyl (F) group according to anaesthetic method. Data on blood glucose and lactate were collected at the following points :before CPB (T1), 10min after CPB (T2), 10min after rewarming (T3), 10min after CPB(T4), reaching at intensive care unit (T5), 6h after operation(T6), 12h after operation (T7) and 24h after operation(T8).

Results: The blood glucose and lactate levels were significantly increased (except for blood glucose on T2 in F group) in S and F group as compared with T1. Blood glucose in S group were significantly lower than F group on T3 and T4 points. There was no significant difference with lactate between S and F groups.

Conclusion Comparing with fentanyl , sufentanil can significantly decreases the level of blood glucose during the CPB and is better for diabetes in coronary artery bypass graft.

The effects of sufentanil and fentanyl on blood glucose and lactate in no-diabetes patients undergoing coronary artery bypass graft during cardiopulmonary bypass**Gang Cheng, Lei Chen, Lihuan Li****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Objective To compare the effects of sufentanil and fentanyl on the blood glucose and lactate retrospectively in no-diabetes patients undergoing coronary artery bypass graft (CABG)during cardiopulmonary bypass(CPB).

Methods A total of 401 no-diabetes patients undergoing coronary artery bypass graft during cardiopulmonary bypass from July 2010 to June 2011 were recruited. Patients were divided into sufentanil (S) group and fentanyl (F) group according to anaesthetic method. Data on blood glucose and lactate were collected at the following points: before CPB (T1), 10min after CPB (T2),10min after rewarming (T3),10min after CPB(T4),reaching at intensive care unit (T5),6h after operation(T6),12h after operation (T7),and 24h after operation(T8).

Results The blood glucose and lactate levels were significantly increased (except for blood glucose on T2 in S group)in S and F group as compared with T1(P points($P<0.01$). There was no significant difference with lactate between S and F groups.

Conclusion Comparing with fentanyl, sufentanil can significantly decreases the level of blood glucose during the CPB and is better for no-diabetes patients in coronary artery bypass graft.

Anesthesia management of endovascular repair of aortic aneurysm**Hong Wang****State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China**

Anesthesia Management of Endovascular repair of Aortic Aneurysm Hong Wang M.D., Ph.D Professor Wayne State University Most aortic aneurysms can be treated by endovascular procedures if they meet the main technical criteria, including 20 mm of landing zone, distal vascular access, and limited tortuosity of the aorta. Major adverse events related to the endografts occur in 10-12% of patients in the initial 30-day perioperative period, with stroke rate between 2.5% to 8%, spinal cord ischemia in 1.5%, acute renal failure in 1.3%, and endoleaks in 10-20% of the patients. Hybrid procedures have been developed for the patients who have aortic aneurysm involving major branches. The followings are few examples. Left carotid subclavian bypass, staged elephant trunk procedures, and aortic visceral debranching Several anesthesia techniques can be used during proximal graft deployment to prevent the device malposition. The techniques include induced hypotension, rapid ventricular pacing, and induced asystole. The induced hypotension can be achieved by sodium nitroprusside, nitroglycerine, short-acting beta-blockers, or calcium channel blockers. Rapid ventricular pacing can be accomplished by either transesophageal or transvenous at the rates of 130 to 180 beats per minute to lower the systolic pressure to 50 to 60 mmHg. High-dose-adenosine-induced asystole has been used during the deployment of the graft although transient ST-segment depressions have been reported. We have successfully used this technique for the above case. Adenosine 6 mg in escalating dose to 30 mg intravenously was able to provide the period of asystole for 25 second. The patient was able to resume regular cardiac rhythm without any myocardium ischemia changes. Other less used techniques include Valsalva maneuver and induction of transient ventricular fibrillation. Spinal cord ischemia is a devastating complication after an aortic surgery and can range up to 12%. The incidence is correlated with the extents of the disease and concomitant or previous abdominal aortic aneurysm repair. During the stent placement, the intercostal arteries and arteria radicularis magna of Adamkiewicz may be sacrificed. For spinal cord protection, cerebrospinal fluid (CSF) drainage is class I indication. The recommended set pressure is 8 to 10 cm H₂O at which the CSF is to allow drain. Class II indications include optimized spinal cord perfusion pressure and moderate systemic hypothermia. However, excess spinal drain may cause subdural hematoma. Dardik reported that 230 patients who underwent thoracoabdominal aortic aneurysm (TAAA) repair with lumbar drain at the John Hopkins Hospital between 1992 and 2001 were reviewed. Eight (3.5%) patients had subdural hematomas. Seven out of these eight patients, the drains were set to allow drainage for CSF pressure greater than 5 cm H₂O. The mean amount (690 + 79 ml) of CSF removed from the patients who developed subdural hematoma was significantly greater than the amount removed from the others (359 + 24 ml). The efficacy of somatosensory (SSEP) and motor evoked potential (MEP) monitoring is undetermined. It is certainly beneficial in certain endovascular procedures such as long thoracic stent placement. MEP is more valuable in the sense of vulnerability of the posterior cord of spinal cord ischemia. SSEP loss is more reflected in a later change of the spinal cord injury. Recently, transcranial motor evoked potentials (tcMEP) has been introduced into the proximal descending aortic surgery. The tcMEP was found to be sensitive in predicting the neurological outcome within 3 to 5 minutes following the ischemia assault. Contrast induced renal failure is a serious complication for this procedure. Myoglobinuria resulted from reperfusion injury and aneurysm sac thrombosis with subsequent hemolysis can also contribute to the renal failure. The incidence of renal complications can be as high as 10%, especially in the patients with pre-existing conditions. Hydration and mannitol are Class IIb indication for the renal protection while lasix and dopamine are Class III

indications according to Guidelines for the Diagnosis and Management of Patients with Thoracic Aortic Disease: Executive Summary. The type of contrast can have different impact on the renal function. Meta-analysis had shown 50% reduction of incidents by low-osmolar agent in patients with preexisting renal insufficiency. A recent report indicated that iso-osmolar will further reduce the incidents. Controversy exists on the impact of N-acetylcysteine on the renal function. Sodium bicarbonate infusion may offer some advantages although more studies need be performed to reach the conclusion. The strategies to reduce the incidence of kidney injury should also include euvolemia, adequate perfusion pressure and cardiac output, limited contrast exposure and sufficient time interval between procedures. Recommendation Anesthesia management of endovascular aortic surgery should depend on the extents of the disease, surgical techniques, and patients' comorbidity. Each of the treatment options discussed above must be individualized. An aortic rupture, although rare, should be recognized in a timely manner and effectively treated.

Cardiopulmonary bypass in infants and neonates: how is it different?

Laurie Davies

University of Florida

Although the physiology of extracorporeal circulation is similar in adults and children, significant differences exist in technique and physiologic sequelae. (See Table)[1]. Smaller cannulas are placed in children; however, they may still obstruct venous drainage into the heart or impede arterial outflow from the CPB circuit before institution of bypass or after its discontinuation. Almost all cardiac repairs in children necessitate the use of dual venous cannulas so that all venous blood can be diverted to the bypass circuit and the heart can be opened to allow repair of the intracardiac defect.

The following topics are of particular interest when considering CPB in small children.

- 1. Profound hypothermia and total circulatory arrest.** An alternative method used in very small children with complex heart disease is profound hypothermia and total circulatory arrest.
- 2. Venous drainage.** Venous drainage problems are more common in children.
- 3. Systemic-to-PA shunt occlusion.** When CPB is first initiated, the surgeon must quickly occlude any systemic-to-PA shunts (e.g., PDA or Blalock–Taussig shunt).
- 4. Perfusion flow and pressure.** CPB flow rates are proportionately higher in infants and children than in adults, ranging from 80 to 150 mL/ (kg ·min).
- 5. Moderate hypothermia and ventricular fibrillation.** Moderate hypothermia combined with ventricular fibrillation is occasionally employed in pediatric cardiac repair
- 6. Bypass circuit volume.** The bypass circuit volume is large relative to the blood volume in infants.

Parameter	Adult	Pediatric
Hypothermic temperature	Rarely below 25 °C–32 °C	Commonly 15 °C–20 °C
Use of total circulatory arrest	Rare	Common
Pump prime		
Dilution effects on blood volume	25%–33%	200%–300%
Additional additives in pediatric primes		Blood, albumin
Perfusion pressures	Typically 50–80 mm Hg	30–50 mm Hg
Influence of pH management strategy	Minimal at moderate hypothermia	Marked at deep hypothermia
Measured P _a CO ₂ differences	30–45 mm Hg	20–80 mm Hg
Glucose regulation		
Hypoglycemia	Rare; requires significant hepatic injury	Common; reduced hepatic glycogen stores

Hyperglycemia	Frequent; generally easily controlled with insulin	Less common; rebound hypoglycemia may occur
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Modified from Kern FH, Schulman SR, Lawson DS, et al. Extracorporeal circulation and circulatory assist devices in the pediatric patient. In: Lake C, ed. *Pediatric cardiac anesthesia*, 3rd ed. Stamford, CT: Appleton & Lange, 1998:219–257.

Risk factors analysis of severe adverse outcome and temporary neurological dysfunction after aortic arch replacement

Hong Liu, Haitao Zhang

Department of cardiac surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Surgery for aortic arch disease itself is complex and is usually performed under condition of deep hypothermic and circulatory arrest. It is complicated with a high mortality and morbidity. Permanent neurological dysfunction is one of most severe complications, and temporary neurological dysfunction is one of the most common complications. Death in hospital and permanent neurological dysfunction are severe adverse outcome postoperation. The purpose of this study was to identify risk factors for postoperative adverse outcome and temporary neurological dysfunction.

Methods Data of patients receiving aortic arch replacement under deep hypothermic circulatory arrest between January 2005 and June 2011 were retrospectively analyzed. Univariate and multivariate logistic regression analysis were used to identify the risk factors to severe adverse outcome (all-cause death in hospital and permanent neurological dysfunctions) and temporary neurological dysfunction.

Results: The study included 549 cases. Severe adverse outcome occurred in 32 cases (5.8%), which included 22 cases (4.0%) of death and 12 cases (2.2%) of permanent neurological dysfunction. Temporary neurological dysfunction occurred in 80 cases (14.6%). Multiple logistic regression showed age (OR 1.069, $P=0.011$), history of stroke (OR 3.816, $P=0.031$), preoperative WBC (OR 1.154, $P=0.001$) and cardiopulmonary bypass time (OR 1.009, $P=0.001$) were independent risk factors for severe adverse outcome. Preoperative WBC (OR 1.175, $P=0.000$), serum creatinine level (OR 1.013, $P=0.001$), low-flow perfusion time (OR 1.041, $P=0.031$) and peak intraoperative glucose level (OR 1.013, $P=0.000$) were independent risk factors for temporary neurological dysfunction. Areas under receiver operating characteristic curve of WBC to adverse outcome and temporary neurological dysfunction was 0.70 ($P=0.000$) and 0.72 ($P=0.000$), respectively. Patients with peak intraoperative glucose level over 240mg/dl had a higher incidence of temporary neurological dysfunction (OR 2.451, $P=0.003$).

Conclusions Preoperative WBC, intraoperative hyperglycemia, cardiopulmonary bypass time and low-flow perfusion time were related to mortality and neurological complications. Our study suggested preoperative WBC is a predictor of operational risk and peak intraoperative glucose level over 240mg/dl is a marker of higher incidence of temporary neurological dysfunction, and by management of preoperative inflammation, intraoperative CPB, low-flow perfusion time, and intraoperative hyperglycemia, it is possible to improve the clinical outcome.

Effects of sevoflurane preconditioning and postconditioning on reperfusion arrhythmia of isolated rat hearts and electrophysiology of ventricular myocytes

Junsong Gong, Lihuan Li, Yuntai Yao, Jian Huang, Nengxin Fang

State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective 1. To investigate the effects of sevoflurane preconditioning and postconditioning on reperfusion arrhythmia. 2. To investigate the effects of sevoflurane preconditioning and postconditioning on electrophysiological characteristics of L-type calcium current ($I_{Ca,L}$) and transient outward potassium current (I_{to}) from ventricular myocytes. 3. To compare the effects of sevoflurane preconditioning and postconditioning on reperfusion arrhythmia and electrophysiology of ion channels

Methods 1. Isolated SD rat hearts were balanced with KH solution for 15 min and then randomly assigned to one of the following 4 groups (n=10): (1) Time Control (TC) group, which was perfused with Krebs-Henseleit (KH) solution for 75 min; (2) Ischemia/reperfusion (I/R) group, which was subjected to 25 min of global ischemia, followed by 30 min of reperfusion with KH solution; (3) sevoflurane preconditioning (SpreC) group, which was preconditioned with 3% sevoflurane for 15 min before 25 min of global ischemia and 30 min of reperfusion; (4) sevoflurane postconditioning (SpostC) group, which was postconditioned with 3% sevoflurane for 15 min at the onset of reperfusion. Hemodynamics, cardiac troponin I levels, infarct size, reperfusion arrhythmia, intracellular calcium and reactive oxygen species levels were compared among groups. 2. Isolated SD rat hearts were used to implement the ischemia/reperfusion protocol. The grouping was similar with part 1. After reperfusion, isolated ventricular myocytes were dissociated enzymatically for patch clamp studies. To investigate the effects of SpreC and SpostC on electrophysiology of ventricular myocytes, $I_{Ca,L}$ and I_{to} were recorded with the whole cell patch clamp techniques.

Results 1. Compared with the I/R group, SpreC and SpostC increased left ventricular developed pressure, $\pm dp/dt$, and heart rate, and decreased left ventricular end-diastolic pressure. SpreC and SpostC also decreased cardiac troponin I levels, reduced infarct size and attenuated reperfusion arrhythmia, manifested by decreased numbers of ventricular premature beats, lowered incidence of ventricular fibrillation, shortened duration of ventricular tachycardia and ventricular fibrillation, and lowered reperfusion arrhythmia score. SpreC and SpostC decreased intracellular calcium and reactive oxygen species levels. 2. Compared with the TC group, I/R lowered the peak density of $I_{Ca,L}$, decreased half inactivation voltage, moved the steady-inactivation curve to the left and increased recovery time constant. Compared with the I/R group, SpreC and SpostC increased the peak density of $I_{Ca,L}$, increased half inactivation voltage, moved steady-inactivation curve to the right, and decreased recovery time constant. Compared with the TC group, I/R injury decreased the peak density of I_{to} , increased half activation voltage and half inactivation voltage, and moved the steady-activation curve and steady-inactivation curve to the right. Compared with the I/R group, SpreC and SpostC increased the peak density of I_{to} , decreased half inactivation voltage, and moved the steady-inactivation curves to the left.

Conclusion 1. SpreC and SpostC could protect the isolated rat heart against ischemia/reperfusion injury, which may be involved in decreased intracellular calcium and reactive oxygen species levels. 2. SpreC and SpostC could increase the peak density of $I_{Ca,L}$, accelerate the inactivation of $I_{Ca,L}$ and slow the recovery of $I_{Ca,L}$, which is useful in prolonging the action potential duration of the I/R injured myocytes, resulting in lowered dispersion of repolarization. In addition, the effect of SpreC and SpostC on $I_{Ca,L}$ could help to maintain calcium homeostasis. SpreC and SpostC could increase the peak density, lower half inactivation voltage, and accelerate the inactivation

of I_{to} from I/R injured ventricular myocytes. These changes reduce the dispersion of repolarization, and reduce the I_{to} -mediated phase 2 reentry and the incidence of after depolarization, contributed to attenuated reperfusion arrhythmia.

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Diagnosis of intraoperative hypotension with transesophageal echocardiography

Jason Qu

Massachusetts General Hospital

Intraoperative hypotension is one of the most common clinical presentations during anesthesia; however, differential diagnosis can sometimes be very challenging without enough clinical data. Transesophageal echocardiography (TEE) has become one of the most important tools to provide quick information and plays important role in the diagnosis of intraoperative hypotension. More importantly, it can also provide real time information to guide the intervention.

This presentation summarizes the common causes of intraoperative hypotension and the findings on TEE.

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Evolving management of perioperative acute right ventricular failure

Wei Pan

Texas Heart Institute at St. Lukes Episcopal Hospital

Introduction Right ventricular failure (RVF) is associated with high perioperative morbidity and mortality and represents a formidable challenge for perioperative physicians. Increasing evidence suggests that the right ventricle plays a pivotal role in heart function and has unique and separate entity as compared with the left heart ventricle. There now is evidence of evolving management of perioperative RVF.

Objectives Review of current diagnosis and management of RVF

Methods I will present the followings: 1) new evidence of right ventricle structure and function; 2) Etiology and pathophysiology of perioperative RVF in cardiac surgery; 3) Intraoperative diagnosis of RVF; 4) Medical treatment of RVF. I will review details of general measures, ventilator settings, impact of anesthesia drugs, inotropes, pulmonary vascular dilators, and vasopressors. And 5) surgical approaches for RVF in cardiac surgery.

Conclusions This presentation highlights current recommendations for management of perioperative RVF.

Endothelial activation and inflammatory response in neonatal heart during cardiopulmonary bypass: HTK solution versus cold blood cardioplegia

Yan Chen¹, Jinping Liu¹, Shoujun Li², Cun Long¹, Xin Wu², Qinghua Xue³, Wenlei Li², Peng Sun¹, Huiying Wang¹

1. Department of cardiopulmonary bypass, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

2. Department of pediatric surgery, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

3. Department of anaesthesiology, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100037, China

Objective Myocardial protection during cardiopulmonary bypass (CPB) has been linked to endothelial activation and systemic inflammatory response. The aim of this study was to compare endothelial/cytokine response after using HTK solution and cold blood cardioplegia in a piglet model.

Methods Fourteen neonatal piglets were randomized to two groups: a single dose of HTK solution group (H group, n=7) and repeated cold oxygenated blood cardioplegia group (B group, n=7). All piglets were placed on moderate hypothermic CPB with 2 hours of cardiac arrest. Levels of vascular endothelial growth factor (VEGF) and monocyte chemo-attractant protein (MCP)-1 in coronary sinus blood were measured before cross-clamp and after declamping. The animals were sacrificed at 3 h after declamping, then the left ventricular myocardium were detected for the expression of endothelial nitric oxide synthase (eNOS), induced nitric oxide synthase (iNOS), tumor necrotic factor- α (TNF- α), interleukin-1 β (IL-1 β) and interleukin-2 (IL-2), by using immunohistochemical staining and enzyme linked immunosorbent assay. Electron microscopy for the ultrastructure of myocardium was also performed.

Results Rise in coronary sinus VEGF and MCP-1 levels after declamping were no significant differences between the H group and the B group ($p=0.202$ and $p=0.384$, respectively). At 3 h after declamping, the expression of eNOS, iNOS, TNF- α , IL-1 β and IL-2 in the myocardium were no significant differences between the two study groups ($p=0.124$, $p=0.224$, $p=0.801$, $p=0.518$, and $p=0.743$, respectively). No significant difference was noted in ultrastructural variations between the two groups.

Conclusions A single dose of HTK solution results in similar endothelial/cytokine response to neonatal heart for 2 hours of ischemia, as compared to repeated oxygenated cold blood cardioplegia, suggesting comparable myocardial protection in both cardioplegic techniques.

Chronic Tempol treatment reestablished redox balance and restores anesthetic preconditioning in the senescent rat heart

Lixin Liu

Department of clinical Anesthesiology, New York University at Stony Brook Medical Center, USA.

Background Aging is associated with increased oxidative stress caused by increased levels of reactive oxygen species (ROS). Our previous work has demonstrated that the cardioprotective effects of anesthetic preconditioning (APC) are lost with aging. Here, we investigated the role of oxidative stress in the age-related loss APC by chronic treatment with Tempol (4-hydroxy-2, 2, 6, 6-tetramethylpiperidine-1-oxyl) is a exogenous SOD mimetic that promotes the metabolism of many ROS and improves nitric oxide bioavailability)

Methods Senescent Male Fischer 344 rats age 22-24 mo were randomly assigned to control (vehicle i.p), or to Tempol-C (Tempol chronic treatment, 125mg/kg/day i.p. for 2 or 4 weeks), Tempol-C + ISO (isoflurane % for min prior to ischemia/reperfusion (I/R) injury) and Tempol-A (Tempol acute 125mg/kg i.p 1 hour before I/R) groups. The animals underwent 30 min ischemia following 120 min reperfusion injury to determine myocardial infarction (MI) size in vivo. In other experiments, young (4-6 mo) and old (22-24 mo) rats underwent either chronic tempol treatment or vehicle treatment and their left ventricular tissues were collected for measurement of protein oxidative damage, the levels of antioxidant enzymes, and measurement of mitochondrial Ca²⁺ uptake. In parallel experiments, ventricular myocytes isolated from chronic tempol treated or untreated old rats, and mitochondrial transition pore (mPTP) opening times (t_{mPTP}) in response to ROS were measured by laser scan confocal fluorescence microscopy.

Results Myocardial infarct size in the aged rat was significantly reduced (%) by Tempol-C (4wks) +APC compared to age-matched, control vehicle animals subjected to APC ($p < 0.05$). There were no significant differences observed between Tempol-C (2 wks) +APC, acute Tempol treatment and control groups. Tempol-C (4wks) increased superoxide dismutase (SOD) enzyme activity, increased GSH/GSSH ratios and increased Mn-SOD protein expression compared with the senescent control vehicle group. Tempol-C (4wks) significantly lengthened t_{mPTP} opening times, increased mitochondrial potential and increased capacity for mitochondrial Ca²⁺ uptake in the aged rat heart. There were no significant effects of TEMPOL-C on young rats.

Conclusions Four weeks of Tempol treatment restores APC in the aged rat heart and this is associated with decreased oxidant stress, restoration of mitochondrial Ca²⁺ uptake capacity and apparently decreased sensitivity of mPTP to ROS induced opening. The results support the idea that oxidative stress associated with aging underlies resistance of the senescent myocardium to APC.

Suxiao Jiuxin Pill on mechanism of promoting angiogenesis of myocardial infarct model in rats

Ling Feng, Jie Wang, Xiaoyun Zhu, Shuanghou Chen, Ruihua Liu

Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective Previous studies showed that Suxiao Jiuxin Pill can promote angiogenesis of ischemic myocardium of chick embryo chorioallantoic membrane models and myocardial infarct model in rats. The paper aims to further research mechanism of promoting angiogenesis in rats model with myocardial infarct treated by Suxiao Jiuxin Pill.

Methods Myocardial infarct model was established refer to literature and divided into 5 groups, including sham operation (10 cases, Group I), model group (10 cases, Group II), positive control bFGF group (12 cases, Group III), high dose group (12 cases, Group IV), low dose group (12 cases, Group V). After successful establishment of model, Group IV and V were gavaged by 2 ml Suxiao Jiuxin Pill; group II were gavaged 2 ml normal saline, 2 times a day, and treated for 8 weeks; Group I were performed open chest surgery without coronary artery ligation and forming holes one time by seamless needle in the part; Group III were performed open chest surgery with coronary artery ligation and were sprayed bFGF125AU around immediately. Animals were sacrificed after eight weeks, and cardiac specimens were sliced. Immunohistochemistry methods were used to observe protein expression of VEGF and bFGF. Total RNA was extracted from myocardial tissue, and anti-transcription was performed and expression of mRNA was observed.

Results Expression of VEGF and bFGF in Group IV and V were obviously increased, and had significantly differences compared with model group ($P < 0.01$), but there was no significant difference between group IV and Group V ($P > 0.05$). The expression of VEGF mRNA and bFGF mRNA in group IV, V and III were obviously higher than sham operation group and model group ($P < 0.01$ - $P < 0.05$), but there was no significant difference between group IV and V ($P > 0.05$), and no significant differences between group IV and III in expression of bFGF mRNA ($P > 0.05$).

Conclusion Suxiao Jiuxin Pill can obviously promote angiogenesis, and the mechanism may relates to up-regulate genes and protein expression of VEGF, bFGF.

Effect of Traditional Chinese Medicine Patent Prescription of SuXiao Jiuxin Wan (SXJXW) on Vulnerable Plaque of Patients with Intermediate Coronary Stenosis

Li Ren¹, Jie Wang¹, Ling Feng¹, Jiliang Fang², Guijian Liu³

1. Department of Cardiology Guang'anmen Hospital China Academy of Chinese Medical Sciences, Beijing 100053, China
2. Department of Radiology Guang'anmen Hospital China Academy of Chinese Medical Sciences, Beijing 100053, China
3. Clinical Laboratory Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To observe the effect of SuXiao Jiuxin Wan(SXJXW), one of Traditional Chinese Medicine patent prescriptions of activating blood circulation to dissipate blood stasis on vulnerable plaque of patients with Intermediate Coronary Stenosis(ICS).

Methods This was a prospective, randomized, and comparative study with SXJXW using contrast-enhanced multidetector computed tomography angiography (MDCTA) (baseline and 6-month follow-up) . A total of 110 patients with ICS (at least one segment of coronary diameter stenosis 50% –70%) of blood stasis syndrome confirmed by MDCTA were enrolled, and assigned to the treated group (treated with SXJXW, aspirin, and placebo of isosorbide dinitrate tablet) and the control group (treated with isosorbide dinitrate tablet, aspirin and placebo of SXJXW), by the use of the PROCPLAN of the SPSS 17.0 software. The plaque composition, Remodeling index (RI) confirmed by MDCTA and serum matrix metalloproteinase 9(MMP-9), soluble CD40Ligand (sCD40L), high sensitive C reactive protein (hsCRP) as the observation indices to evaluate the interventional effect of SXJXW on Plaque of Patients with ICS.

Result After six months of treatment, the number of the calcified was significant difference between the treatment group and the control group (the mean rank of the treatment and the control groups: 44.81 vs. 32.63, $P < 0.05$) . Besides, the number of calcified of the treatment group during the six-months follow-up period was higher than its baseline, the number of mixed of the treatment group after treatment was lower than its baseline(both $P < 0.05$).The RI was no significant difference between the treatment and the control group after treatment (1.46 ± 0.66 vs. 1.72 ± 0.72 , $P > 0.05$). However, the RI of the treatment group during the six-months follow-up was much lesser than its baseline RI (1.46 ± 0.66 vs. 1.68 ± 0.8 , $P < 0.05$). the Serum MMP-9,sCD40L, hsCRP after treatment was no significant difference between the treatment and the control group(MMP-9: 622.36 ± 384.83 vs. 924.58 ± 728.11 , $P > 0.05$; sCD40L: 2.24 ± 1.12 vs. 2.30 ± 1.30 , $P > 0.05$; the mean rank of the treatment and the control group:44.06 vs. 46.21, $P > 0.05$).

Conclusion SXJXW might stabilize the plaque of patients with ICS of blood stasis by increasing the number of calcified and decreasing the number of mixed, alleviating coronary remodeling.

Effects of Xuefuzhuyu Capsule on Apoptosis of Myocardial and the Expression of The SIRT1-mediated Signal Transduction Pathway

Fei Teng, Gui Yu, Xiaocen Yang, Jie Wang

Department of Cardiology, Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To clarify the mechanism of apoptosis signal transduction of SIRT1-mediated in Ischemic myocardial cells of IHD, and find out the reasons that ischemic heart disease which transformed to heart failure or arrhythmia. To discuss the effect of the intervention that Xuefuzhuyu capsule drive to the SIRT1-mediated suppression of apoptosis signal transduction pathway, and make the objective basis for the clinical application of Chinese medicine on Xuefuzhuyu capsule. To find evidence that Xuefuzhuyu capsule could be a new sensitizer to the SIRT1inhibition -apoptosis pathway, and make a further application for Xuefuzhuyu capsule. At the same time provide new research targets of Chinese medicine in preventing ischemic heart disease.

Methods Sixty healthy adult Wister rats were randomly divided into 6 groups, which are normal group, sham operation group, ischemia group, Xuefuzhuyu capsule group, resveratrol group and L-NAME group, 10rats in each group. Except the normal group and the sham operation group, the remaining rats were prepared to ligate the left coronary artery to make the model of myocardial ischemia, and after 30 min then release the ligature. The Sham group only wears line without ligation. The resveratrol group was administered intravenously sublingual 15min before ischemia. The L-NAME group was intraperitoneal injected at 1 day before modeling, 2mg / only, 1 time / day. The Xuefuzhuyu capsule group was given 30 mg / kg Xuefuzhuyu capsule after the success of the modeling, gavage for 4 weeks. Meanwhile the normal group, the sham operation group, and the ischemia reperfusion group were fed with the same volume of saline, gavage for 4 weeks too. At the end of the experiment all rats were sacrificed and hearts were removed quickly for the electron microscope observation and the polymerase chain reaction (PCR) test. Meanwhile we use quantitative PCR to analysis the expression of SIRT1, FOXO1, FOXO3, FOXO4.

Results Sixty rats entered the result analysis, 10 rats in each group, without any loss. The result of the electron microscope: in morphology, there is significantly difference among the 6 groups. The results of the quantitative PCR test: there was no significant difference in the expression of SIRT1, FOXO1, FOXO3, FOXO4 among normal group, sham operation group, Xuefuzhuyu capsule group and resveratrol group , ($P>0.05$) while the expression between ischemia group and L-NAME group were no significant difference too ,($P>0.05$). But compared with normal group, the expression of SIRT1, FOXO1, FOXO3, FOXO4 were significant differences, ($p<0.05$) between sham operation group, Xuefuzhuyu capsule group and resveratrol group with ischemia group and L-NAME group relatively. Compared ischemia group and L-NAME group with the normal group, sham operation group, Xuefuzhuyu capsule group and resveratrol group, the expression of SIRT1, FOXO1, FOXO3, FOXO4 were significant differences, ($p<0.05$), and the expression of gene in normal group, sham operation group, Xuefuzhuyu capsule group and resveratrol group is better than the expression of ischemic group and L-NAME group.

Conclusion The SIRT1-mediated signal transduction pathway can effectively control the downstream genes expression such as P53, (NF)- κ B, FOXO1, FOXO3, FOXO4,etc. It also could enhance these genes' expression, thereby inhibiting apoptosis of myocardial cells and reduce the number of dead cells of myocardium and improve cardiac function, which can reduce reperfusion injury of ischemic heart disease, heart failure and cardiac arrhythmias. We conclude that the SIRT1 signal pathway and the Chinese "Qu yu sheng xin" method in treating ischemic heart disease may share a common mechanism of action and targets. As the representative prescription for the "Qu yu sheng xin" method, Xuefuzhuyu capsule could be probably used as the sensitizer for SIRT1

inhibits- apoptosis pathway in future, while our research have provide a new research targets of preventing ischemic heart disease by Chinese medicine.

Research development of treating Coronary heart disease with a combination of Chinese and Western medicine

Xiaochen Yang, Jie Wang, Xingjiang Xiong, Zhenpeng Zhang

Department of Cardiology, Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Background During recent three decades, Chinese medicine and integrative medicine have made great progress in the development of treating coronary heart disease, through learning from technology and methods of modern medicine and related science. Coronary heart disease has been researched and development not only on the basis of theoretical system of TCM, such as the holistic view, the concept of syndrome differentiation and constant action, but also from levels of cellular and molecular respectively. How to establish a reasonable way for diagnosing and treatment is the key to improve the diagnosis and treatment efficacy. As two different theoretical systems, Chinese medicine and western medicine should combine with each other by the treatment model of disease combined syndrome and prescriptions corresponding to syndrome, so that to reduce the side effect of medicinal. Aims: It is improved that treating Coronary heart disease with a combination of Chinese and Western medicine has its own advantages according to researching clinical and theoretical literatures in the recent thirty years.

Methods This article provides a review of accessible evidence according to MEDLINE, Cochrane databases and search engines on the Internet, identifying literature published from 1981. Examples of keywords used were 'Traditional Chinese Medicine', 'Intergrative Medicine' and 'Coronary heart disease'.

Conclusion This paper is about discussing development of treating Coronary heart disease with combination of Chinese and Western medicine from three aspects, which are the diagnosis method of treating Coronary heart disease with a combination of Chinese and Western medicine, mutual complementarities of PCI and medicine and new drugs research and development of traditional Chinese medicine.

请冯玲主任核对作者信息

Influence of Lian-Yu Decoction on blood pressure and content of Ang II, ALD in spontaneous hypertension rats

Yuanhui Hu¹, Huaqin Wu¹, Xianzheng Bu², Jie Shi¹, Yuguang Chu³, Xiuyang Shang¹

1. Cardiology Department of Guang'anmen hospital, China Academy of Chinese Medical Sciences, Beijing(10053), China
2. China National Software & Service Company Limited (102200)

Objective To observe effects of Lian-Yu Decoction on blood pressure and content of Ang II, ALD in spontaneous hypertension rats.

Methods Twenty-four SHR were randomly divided into model group (Model)、nifedipine group (Nif)、Lian-Yu Decoction (LY), 8 normal Wky rats were used as control group (WKY), (n=8, in each group). WKY and Model group were given normal saline, nif group was given nifedipine, LY group was given Lian-Yu Oral Liquid by continuously gavages. After 4 weeks, blood pressure and content of Ang II, ALD were measured.

Results Compared with model group, blood pressure and content of ALD in LY group was significantly lower after 4 weeks ($P < 0.01$), but was no statistically difference compared with Nif group ($P > 0.05$), while the content of Ang II was decreased, and with no significant meaning compared with WKY group ($P > 0.05$).

Conclusion Lian-Yu Decoction can significantly reduce blood pressure in SHR, and the mechanism may related to reduce content of ALD and Ang II, restrain activity of RAAS.

Analysis on serum metabolomics in patients with coronary heart diseases

Yi Li¹, Yuanhui Hu², Qingqiao Son², Jie Shi², Xiuyang Shang², Huaqin Wu²

1. Wangjing Hospital of China Academy of Chinese Medical Sciences, Beijing.100102, China

2. Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing.100053, China

Objective To study serum metabolites and metabolic pattern of patients with coronary heart disease.

Methods Eighty-six patients with coronary heart disease were confirmed by coronary angiography, and 20 health people were chosen as control group. All patients were identified by nuclear magnetic resonance(¹H-NMR) and analyzed by principal component analysis(PCA) and Partial least squares discriminate analysis(PLS-DA).

Results The results showed that the content of unsaturated fatty acid (5.34), lactic acid (4.14, 4.1), alanine (1.46), glutamate (2.14), glucose(3.62), lipids(1.26, 1.3, 2.02, 2.26), low density lipoprotein and very low density lipoprotein were higher than health people; While the content of betaine (3.26), phosphocholine (3.22), taurine (3.42), choline (3.20), phosphatidylcholine (3.22) and high density lipoprotein (0.86) were lower than health people.

Conclusion The metabolic pattern of patients with coronary heart disease can be seen as unsaturated fatty acid, lactic acid, alanine, glutamate, glucose, lipids, low density lipoprotein and very low density lipoprotein, betaine, phosphocholine, taurine, choline, phosphatidylcholine, high density lipoprotein; The mechanism of coronary heart disease is closely related with energy, lipids and glycol-metabolism.

Bushen Hemai Decoction for treating senile isolated systolic hypertension

Bei Jiang, Yuanhui Hu

Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To discuss curative effects, improvement of quality of life and security of Bushen Hemai Decoction in treating senile isolated systolic hypertension (EISH) with standardized antihypertensive drugs.

Methods Sixty-five patients with grade 1 or 2 of EISH were divided into treatment group and control group, ranged the age from 60 to 79 years. Treatment group were treated by antihypertensive drugs, while placebo and standardized antihypertensive drugs was used for control group. The research was divided into two stages: import and randomized treatment period. Import period lasted for two weeks. Only taking one kinds of antihypertensive drugs entered into import period and screened; while not taking antihypertensive drugs for 4 weeks chosed into randomized treatment period. The time of randomized treatment period was 12 weeks, long-acting calcium antagonist(felodipine sustained release tablets, 50mg po qd) served as basical treatment, Bushen Hemai Decoction and placebo medicine were added. Once 2 weeks followed up, blood pressure was measured and recorded. CBP (SBP,DBP,PP) , 24hABPM(24hSBP, 24hDBP, 24hPP, 24hSBP-L, 24hDBP-L, etc),the evaluation of the life quality(WHOQOL-BREF, etc)and laboratory safety index(Blood routine and Blood Biochemistry) were detected. Effective rate and proportion of patients reached BP target according to decreasing range of 24hSBP. Reach BP target: 24hSBP <140mmHg after treatment. Decrease BP efficiently: decreasing range of 24hSBP >10mmHg after treatment. Unblinding and statistical analysis will process after finishing the whole study and tests.

Results After 12 weeks' treatment, BP in test control group was effectively controlled and steadily decreased. The effective rate of BP in test group decreased 94.3% and control group decreased 87.5%, had no significant difference ($x^2 = 1.119$, $P > 0.05$). The contrast of the proportion of patients reaching BP target between test group (88.6%) and control group (80%) showed significantly difference ($x^2 = 17.515$, $P < 0.01$). In the aspect of the decreasing range of PP, there exists remarkable difference between two group ($t = 3.248$, $P < 0.01$). No changes occurred on heart rates in control and test group after treatment ($P > 0.05$). These two groups can obviously improve quality of life. The result showed better in test group than that in control group in improving clinical symptom, such as dizzy, frequency of urination at night and dry eyes. There was no occurrence of cardiovascular, cerebral events and adverse effects such as dizzy, hypersomnia, palpitation and edema during the treatment process. Laboratory tests showed no significant differences before and after treatment ($P > 0.05$).

Conclusion 1. The results show that flexible and alterable Bushen Hemai Decoction can effectively, steadily and continuously reduce SBP and PP in patients with grade 1 and grade 2 EISH patients by standardized antihypertensive drugs. 2. Chinese formulas with standardized antihypertensive drugs can obviously improve quality of life and clinical symptoms, such as dizzy, frequency of urination at night and dry eyes. 3. Bushen Hemai Decoction has good safety and tolerance, and no side effects, also canbe serve as priority chosen drugs and combination intervention plan for antihypertensive treatment.

1H NMR-based metabonomic study on the metabolic changes in the serum of patients with hypertension

Xuanchao Feng¹, Yuanhui Hu²

1. Beijing University of Chinese Medicine, Beijing 100029, China

2. Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To study pathogenesis and of serum endogenous biomarker substances of youth essential hypertension (YEH) patients with abundant phlegm-heat syndrome from Chinese medical differential mode.

Methods Twelve male YEH patients without any treatment were randomly selected, and 12 male healthy young people were selected for control. All serum samples were detected by 1H-NMR, and research differences of metabolites by PCA and PLS-DA, then obtained scores plot and loadings plot.

Results The serum substances of YEH patients with abundant phlegm-heat syndrome and healthy people could be distinguished by 1H-NMR metabolomics methods. The serum endogenous biomarker substances of YEH patients with abundant phlegm-heat syndrome were LDL/VLDL, N-Ac, O-Ac, lipid, HDL, PtdCho, Lactate, Alanine, Cho/Pcho, GPC, Glucose, 3-HB, Citrate, Glutamine.

Conclusion There are metabolic disorders in YEH patients with abundant phlegm-heat. The content of Glucose, Lactate and Citrate in those patients are lower than health people shows the carbohydrate metabolism disorders. The content of LDL/VLDL, lipid and UFA in those patients are higher than health people, while the content of HDL, PtdCho, Cho/Pcho, GPC and 3-HB in those patients are lower than health people shows the lipid metabolic disorders. The content of Alanine and Glutamine in those patients is lower than health people, while the content of N-Ac and O-Ac in those patients is higher than health people shows the proteometabolism disorders. 1NMR-based metabonomic can provide objective basis for diagnosis of YEH patients with abundant phlegm-heat syndrome. And the present work is preliminary study and further researches with larger number of subjects are needed for limited number of subjects.

1H NMR-based metabonomic study on effect of Chinese medicine with clearing heat and resolving phelgm decoction in patients with hypertension serum of patients with hypertension

Xuanchao Feng^{1,2}, Yuanhui Hu²

- 1. Beijing University of Chinese Medicine, Beijing 100029, China**
- 2. China Academy of Chinese Medical Sciences, Beijing 100053, Guang'anmen Hospital, China**

Objective To observe curative effect of Chinese medicine clearing heat and resolving phelgm decoction, (QRHD) in youth essential hypertension (YEH) patients with abundant phlegm-heat syndrome and provide objective basis for curative effect of Chinese Medicine .

Methods Twelve male YEH patients were randomly selected and collected their serum samples before any treatment and given QRHD for 4 weeks, and collected serum samples for examination. Twelve male healthy young people were randomly selected for compare. All serum samples were detected by 1H-NMR, research the differences of metabolites by PCA and PLS-DA, and obtained scores plot and loadings plot.

Results After 4 weeks' treatment, the serum substances could be distinguished between YEH patients with abundant phlegm-heat syndrome and healthy people. The serum endogenous biomarker substances tendered to healthy people after treatment.

Conclusion Chinese medicine QRHD can effectively change metabolic disorders in YEH patients with abundant phlegm-heat. QRHD can appropriately increase content of Glueose, Lactate, Citrate, HDL, PtdCho, Cho/Pcho, GPC, 3-HB, Alanine and Glutamine. It also can appropriately decrease the content of LDL/VLDL, lipid, UFA, N-Ac and O-Ac. 1NMR-based metabonomic can provide objective basis for diagnosis of YEH patients with abundant phlegm-heat syndrome. And the present work is preliminary study and further researches with larger number of subjects are needed for limited number of subjects.

Influence of Qipo Shengmai decoction on expression of platelet P-selectin and membrane glycoprotein in patients with atrial fibrillation heart disease

Zijing Chen¹, Yuanhui Yuan², Shihan Wang², Yugang Chu², Qingqiao Song², Qing He³, Huaqin Wu²

1. Beijing IMS, Beijing 100001, China

2. Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

3. WANGFU Hospital, Beijing 100053, China

Objective To investigate effects of Qipo Shengmai decoction on expression of platelet P-selection membrane glycoprotein in patients with atrial fibrillation.

Methods Twenty-two CHD patients with atrial fibrillation were given one dose of Qipo Shengmai decoction twice a day accompanied with warm water, treated for 28 days. Fasting venous blood was collected before and after treatment, 2 ml blood were added into sodium citrate tubes and mixed gently. One sample served as control group and respectively added 10ulCD61-PerCP, PAC-1-FITC, RGDS and 1ulIgG1-PE; another tube served as test group and respectively added into 10 ulCD61-PerCP, PAC-1-FITC, CD62p and 1ul. Then 5ul whole blood were added into both tube, mixed gently and reacting in the dark for 10 min, 500ml 1%poly-formaldehydesuspension were added to fixed for 24 hours. Flowcytometry platelet P-selection (CD62p) and surface film glycoprotein GP II b / GP III a (PAC-1) in patients with atrial fibrillation were examined before and after treatment by performing CaliBRITE Beads/FACSCComp software.

Results The pre-treatment PAC-1 (47.91 ± 9.18) was obviously higher than post-treatment (14.56 ± 9.18), and had significantly differences compared with two groups ($p < 0.01$); the pre-treatment CD62p (4.2 ± 2.19) was obviously higher than post-treatment (1.70 ± 0.85), and had significantly differences compared with two groups ($p < 0.01$).

Conclusion Qipo Shengmai decoction can significantly reduce expression of CD62p and PAC-1, and has action in anti-platelet thrombosis and preventing thromboembolism.

请冯玲主任核对作者信息

Effects of Atorvastatin calcium on blood lipid and inflammatory response to apo lipoprotein E-knockout mice

Qi Shi, Yuanhui Hu, Huaqin Wu, Yuguang Chu, Lianfen Qi

- 1. Beijing University of TCM, Beijing 100029, China**
- 2. Department of Cardiology, Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China**
- 3. Department of Cardiac Function, Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China**

Objective To observe effects of Atorvastatin calcium on blood lipid and inflammatory response to apolipoprotein E-knockout (ApoE^{-/-}) mice.

Methods Thirty ApoE^{-/-} mice were randomly divided into 3 groups, 10 in model group, 10 in high dose (5.0mg/kg) of Atorvastatin calcium group, 10 in low dose (2.5mg/kg) Atorvastatin calcium group. Use 10 C57BL/6 mice as normal group. Fed the 40 mice with high-fat diet for 30 days by intragastric administration, detect lipids by enzymic and selective precipitation methods. Meanwhile, expression of TNF- α in aortal intima and plaque of the aortas and hearts tissue for immunohistochemistry stain were measured.

Results ① After 30 days' high-fat diet by intragastric administration, the serum of model group indicated that TC 26.91 ± 4.62 mmol/L, TG 2.56 ± 0.66 mmol/L, LDL 3.04 ± 1.34 mmol/L TC, the serum of normal group indicated TC 3.51 ± 0.90 , TG 1.46 ± 0.29 , LDL 0.56 ± 0.48 ; the serum of high dose (5.0mg/kg) Atorvastatin calcium group indicated TC 16.02 ± 2.34 mmol/L, TG 1.33 ± 0.28 mmol/L, LDL 0.96 ± 0.53 mmol/L; the serum of high dose (2.5mg/kg) Atorvastatin calcium group indicated TC 17.17 ± 3.49 mmol/L, TG 1.58 ± 0.50 mmol/L, LDL 1.27 ± 0.73 mmol/L. ② TG and LDL of Atorvastatin calcium groups were significantly different from that of model group ($P < 0.01$, $P < 0.05$). ③ Slice of immunohistochemistry stain showed that compared with model group, the expression of TNF- α in Atorvastatin calcium high and low groups had reduced by different degree ($P < 0.01$, $P < 0.05$).

Conclusion Atorvastatin calcium can reduce lipid of AS mice and restrain expression of TNF- α It can relieve the AS lesions by the means of inhibiting the production of inflammatory factors.

请冯玲主任核对作者信息，将上小标补充完整

Effects of Qi Jie Ru Mo Capsule on pathologic morphology and MMP-9 expression in apolipoprotein E-knockout mice

Qi Shi, Yuanhui Hu, Huaqin Wu, Yuguang Chu, Lianfen Qi

- 1. Beijing University of TCM, Beijing 100029, China**
- 2. Department of Cardiology, Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China**
- 3. Department of Cardiac Function, Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China**

Objective To observe effects of Qi Jie Ru Mo Capsule on pathologic morphology and MMP-9 expression of apolipoprotein E-knockout (ApoE^{-/-}) Mice.

Methods Thirty-three ApoE^{-/-} Mice were randomly divided into 3 groups, 11 in model group, 11 in high dose (Astragalus Polysaccharide 2g/kg; Wood Dracaena conchinchinensis 400mg/kg; Frankincense oil and Myrrh oil 300mg/kg) of Qi Jie Ru Mo capsule group, 11 in low dose (Astragalus Polysaccharide 1g/kg; Wood Dracaena conchinchinensis 200mg/kg; Frankincense oil and Myrrh oil 150mg/kg) Qi Jie Ru Mo Capsule Atorvastatin calcium group. Use 11 C57BL/6 mice as normal group. Fed the 44 mice with high-fat diet by intragastric administration for 30 days and intragastric administrate 0.9% Saline parenteral solution to the normal group and control group, intragastric administrate the different dose of Qi Jie Ru Mo capsule to the high and low dose groups respectively once a day. Take the aortas and hearts tissue for HE and immunohistochemistry stain to research the morphology. Correction area of plaque, lipid core in the plaque and the expression of MMP-9 in aortal intima and plaque were measured. Results: ① HE staining showed that aortic root of ApoE^{-/-} mice formed AS plaque, and AS plaque in high dose of Qi Jie Ru Mo Capsule groups were in stage of lesions I, II, the severity were significantly reduced compared with model group; AS plaque in low dose of Qi Jie Ru Mo Capsule groups were mainly in stage of lesions I,II, occasionally in stage III lesions, and the severity were lighter than model group. ② The correction plaque areas in high dose of Qi Jie Ru Mo Capsule groups were 10.94±6.23%, and lipid core areas in high dose group were 26.92±5.58%; while the correction plaque areas in model group were 28.51±6.33%, and lipid core areas were 42.31±5.29%; the correction plaque areas in low dose of Qi Jie Ru Mo Capsule groups were 13.95±4.0%, and lipid core areas were 34.42±5.77%; The correction plaque area and lipid core areas were reduced obviously in high dose of Qi Jie Ru Mo Capsule groups and had significant differences (P<0.01), while there was no change in low dose, but had significant differences in correction areas compared with model group(P<0.05).③ Positive expression of MMP-9 in mouse aortic intima were showed in each group. The IOD of aortic intima in high dose group was 241.27±97.77, IOD within plaque was 947.09±71.85; The IOD of aortic intima in model group was 455.55±112.54, IOD within plaque was 1465.96±258.77; The IOD of aortic intima in low dose group was 246.77±95.77, IOD within plaque was 971.94±154.41. Slice of immunohistochemistry stain shows that compared with model group, the expression of MMP-9 in Qi Jie Ru Mo capsule groups had reduced by different degree (P <0.01, P <0.05).

Conclusion Qi Jie Ru Mo Capsule can significantly reduce the plaque areas and lipid core areas, and contain the expression of MMP-9 to relieve the AS lesions of ApoE^{-/-} mice and stabilize the aortic lipid plaque.

Metabonomics study on patients with coronary heart disease and angina pectoris in different TCM syndromes

Yi Li¹, Yuanhui Hu², Yuguang Chu², Qingqiao Shong², Zijing Chen³, Qing He⁴

WANGJING Hospital, China Academy of Chinese Medical Sciences, Beijing 100124, China

Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Beijing IMS, Beijing 100001, China

WANGFU Hospital, Beijing 100053, China

Objective To study different metabolites in CHD patients with different TCM syndromes, find respective metabolic patterns and provide an objective basis for CHD syndrome. Methods: CHD patients with angiography were diagnosed by two Associate Chief Physicians, and divided into groups in which 12 cases with heart blood stasis, 20 cases with stagnation of phlegm in the vessels, 17 cases with mutual resistance of phlegm and blood stasis, 19 cases with phlegm-heat syndrome, 18 cases with qi and yin deficiency and 20 cases of health people. All serum samples were detected by ¹H-NMR and research the differences of metabolites among CHD patients, health people and CHD with different syndromes by Principal Components Analysis (PCA) and Partial Least Squares Discriminate Analysis (PLS-DA).

Results 1. The metabolites in CHD patients and health people could be obviously distinguished. The content of lactate(Lac), alanine(Ala), Glutamine(Glc), Glucose(GLC), lipids, very low /low density lipoprotein(VLDL/LDL-C), high density lipoprotein (HDL) in CHD patients are higher than healthy people, while the content of Betaine, phosphocholine (Pcho), Taurine, Glycerophosphorylcholine(GPC) are lower. 2. The metabolites among different CHD patients syndrome could be obviously distinguished and each CHD syndrome had its own metabolic patterns as follows: ① The content of Lac, lipids, GLC, Ala, Val, Ile, O-Ac, VLDL/LDL-C are higher, while the content of Glc, HDL, Pcho, Taurine, β -Glc are lower in CHD patients with Stagnation of Phlegm in the vessels syndrome; ② The content of Ala, Lac, GLC, β -GLC, lipids, unsaturated fatty acid and HDL are higher, while the content of TAMO, Val, Pcho are lower in CHD patients with Qi and yin deficiency syndrome; ③ The content of GLC, HDL, Glc, Val, α -GLC, β -GLC, Pcho are high, while the content of Ile, VLDL/LDL-C, lipids are lower in CHD patients with mutual resistance of phlegm syndrome; ④ The content of GLC, Taurine, Lac, VLDL/LDL-C, TAMO, unsaturated fatty acid, β -GLC and lipids are higher, while the content of Val, Glc, Pcho and HDL are lower in CHD patients with heart blood stasis syndrome; ⑤ The content of Lac, GLC, VLDL/LDL-C, O-Ac, Val are higher, while Taurine, TAMO, Ala, Pcho and Glc are lower in CHD patients with Phlegm-heat Syndrome.

Conclusion The metabolites in CHD patients and health people can be obviously distinguished. The content of lactate(Lac), alanine(Ala), Glutamine(Glc), Glucose(GLC), lipids, very low /low density lipoprotein (VLDL/LDL-C), high density lipoprotein (HDL) in CHD patients is higher than health people, while the content of Betaine, phosphocholine (Pcho), Taurine, Glycerophosphorylcholine (GPC) are lower. The metabolites among different CHD patients syndrome can be obviously distinguished and each CHD syndrome has its own metabolic pattern. The metabolites in those CHD patients are closely related with disorder of lipid metabolic, glycometabolism, energy metabolism and amino acid metabolism.

Effects of Qiangxin Fumai Granule on expression of pacemaker gene HCN4 mRNA and protein of rabbits with damaged sinoatrial node

Ruxiu Liu¹, Nina Wang^{1,2}, Meijing Bao^{1,2}, Huibo Li¹, Min Li¹

1. Department of Cardiology, Guang'anmen Hospital, China Academy of Chinese Medicine Sciences, Beijing 100053, China
2. Beijing University of Chinese Medicine, Beijing 100029, China

Objective To explore effects of Qiangxin Fumai Granule (QFG) on expression of hyperpolarization-activated cyclic nucleotide-gated cation channel 4 (HCN4) protein and HCN4 mRNA of the damaged sinoatrial node(SAN) in rabbits with the sick sinus syndrome(SSS).

Methods Thirty white rabbits were randomly divided into 6 groups, including normal group, model group, atropine group, high dose of QFG group(high dose group), middle dose of QFG group(middle dose group) and low dose of QFG group(the low dose group), 5 rabbits in each group. The rabbit models of SSS were established in all groups except for the normal group, by using the Formaldehyde Pinpoint Pressing Permeation method, and all the rabbits had received intragastric administration for 7 consecutive days. The changes of the expression of the pacemaker HCN4 mRNA and the channel protein of the SAN cells in each group were detected by the reverse transcription polymerase chain reaction (RT-PCR) and the immunohistochemistry as the experiment ended.

Results Compared to the normal group, the expression of HCN4 mRNA and protein of the SAN tissues in all the other five groups decreased in varying degrees, which had significant difference statistically($P < 0.05$ or $P < 0.01$). Compared to the model group, the integrated optical density(IOD) values in all the drug administration groups increased in varying degrees, which had significant difference ($P < 0.01$), moreover, the IOD value in the high dose group was significantly higher than those of the middle dose group, the low dose group and the atropine group, which had statistical difference ($P < 0.01$), while there was no significant difference in the IOD values among the middle dose group, the low dose group and the atropine group($P > 0.05$). Compared to the model group, the expression of HCN4 mRNA of the SAN tissues increased obviously in the high dose group, which was statistically higher than those in the middle dose group, the low dose group and the atropine group ($P < 0.05$), while there was no significant difference in the HCN4 mRNA expression among the middle dose group, the low dose group and the atropine group.

Conclusion The decrease of the expression of the pacemaker gene HCN4 of the SAN cells was related to the genetic molecular mechanism of the SAN dysfunction. QFG could increase the expression of the pacemaker gene HCN4 mRNA and protein of the SAN cells to improve the pacing function of the SAN and increase the heart rate, which was one of the main molecular mechanisms for treating SSS.

Data mining for core decoction in treating coronary heart disease by Liu Zhi-ming
Ruxiu Liu, Liya Xu, Jinfeng Liu, Yanli Wang, Xuwei Wang
Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To analysis the basic prescription of Zhiming Liu's treatment for CHD and thoughts on prevention and treatment of CHD, provide theory basis for application of basic prescription.

Methods This research collected clinical information of CHD patients through individualized information acquisition platform of CHD. From 2008 to 2010, records of 112 CHD were chose, including 67 males and 45 females, ranging the age from 40 to 83 years. Colleted clinical case were typed in database and preserved in the form of electronic case in the database. Scale-free network model was used to analysis the famous TCM veteran doctors' basic prescription for treatment of CHD.

Results Complex network analysis was used to all prescription drugs' study. The results showed that 4 gout drug scale-free networks figure directly displayed the core drug and its correlation, Poria was the core drug, correlation of Poria and Bulbus Allii Macrostemi was 84, correlation of Poria and Fructus Trichosanthis was 59, correlation of Fructus Trichosanthis and Bulbus Allii Macrostemi was 69, correlation of Poria and Radix Codonopsis was 64. The results suggested that heart drugs in network was Poria, Bulbus Allii Macrostemi, Fructus Trichosanthis and Radix Codonopsis, which had effect of supplement qi and yang and dissolve phlegm. Nine gout drug scale-free networks figure directly displayed that the increase of drugs are Fructus Mort, Radix et Rhizoma Notoginseng, Radix et Rhizoma Salviae Miltiorrhizae, Radix Ophiopogonis and Radix et Rhizoma Glycyrrhizae. Fructus Mort had effect of warming the kidney, Radix et Rhizoma Notoginseng and Radix et Rhizoma Salviae Miltiorrhizae had effect of invigorate blood and dissolve stasis, and the prescription had effect of warm kidney, supplement qi and invigorate blood.

Conclusion This paper analyze famous TCM veteran doctor LIU Zhi-Ming treatment principle of CHD, which through scale-free network, is warm kidney, supplement qi and invigorate blood. It agrees with LIU Zhi-Ming's view, who think CHD happened with qi deficiency, such as bowels deficiency, qi and blood deficiency, yin and yang deficiency, and the most important is pope gas shortage, heart yang deficiency, kidney deficiency yuan, next to the development of the evil influence disease outcome also have certain effect. So the key reason is heart-kidney yang deficiency, blood stasis phlegm obstruction, and the treatment is warm kidney, supplement qi and invigorate blood. Fructus Trichosanthis and Bulbus Allii Macrostemi are monarch drug in prescription that have effect of wide chest polyester phlegm and tong yang change chaotic; Poria has effect of fortify spleen and dissolve phlegm; Radix Pseudostellariae and Radix Ophiopogonis have effect of filling the gas of the chest; Fructus Mori has effect of tonifying kidney; Radix et Rhizoma Salviae Miltiorrhizae and Radix et Rhizoma Notoginseng have effect of invigorate blood and dissolve stasis; Radix et Rhizoma Glycyrrhizae can harmonic medicinal properties. The prescription have effect of tonification and purgation in combination, but neutral supplementation is the most important.

Effects of Xinshuaikang Capsule on expression of IL-6 and IL-1 β of myocardium in rats with myocardial

Zhentaο Wang¹, Lihua Han¹, Mingjun Zhu², Xiang Li¹

Cardiovascular diseases laboratory, Henan Province Traditional Chinese Medicine Hospital, Zhengzhou 450011, Henan, China

The First Affiliated Hospital of Henan College of TCM, Zhengzhou 450008, Henan, China

Objective To study Effects of Xinshuaikang Capsule on expression of IL-6 and IL-1 β of myocardium in rats with myocardial infarction, and clarify the mechanism of left ventricular remodeling intervening by Xinshuaikang Capsule .

Methods Left coronary artery ligation of Wistar rats were establish model of myocardial infarction, and randomly divided into sham group, model group, high dosage of Xinshuaikang Capsule group, low dosage of Xinshuaikang Capsule group and captopril group. All groups were treated for 8 weeks. The content of IL-6 and IL-1 β were observed.

Results The expression of IL-6 and IL-1 β in treatment group and model group were declined ($P < 0.01$ and < 0.05); the effects of high dose group were similar to captopril group ($P > 0.05$) and had significantly differences compared with low dose group ($P < 0.01$ or < 0.05).

Conclusion Xinshuaikang Capsule can reduce level of IL-6 and IL-1 β , which may be one of the mechanism of left ventricular remodeling in rats with myocardial infarction.

Clinical research on Chinese medicine of replenishing qi, activating blood and promoting urination in intervening chronic heart failure

Yang Miao, Jian Wang

Xiyuan Hospital, China Academy of Chinese Medical Sciences, Beijing 100091, China

Objective To research clinical effects of Chinese medicine of replenishing qi, activating blood and promoting urination in treating chronic heart failure, and further study neuroendocrine mechanism of Chinese medicine on chronic heart failure.

Methods Seventy-nine patients with chronic heart failure were randomly divided into treatment group (38 cases) and control group (41 cases). Patients in control group were given routine Western treatment medicine, treatment group were divided into three patterns by syndrome differentiation as blood stasis and water stop due to deficient qi, blood stasis and water stop due to deficiency of qi and yin, blood stasis and water stop due to yang deficiency of heart and kidney. Patients of each pattern were respectively given corresponding Chinese medicine decoction on the basis of routine Western medicine, such as those of blood stasis and water stop due to deficient qi were given Baoyuan decoction and Wuling powder, those of blood stasis and water stop due to deficiency of qi and yin were given Shengmai yin and Liuweidihuang decoction, and those of blood stasis and water stop due to yang deficiency of heart and kidney were given Zhenwu decoction and Fangjihuangqi decoction. Effect was observed after two weeks' treatment. Ultrasonic heartbeat graph (left ventricular ejection fraction, left ventricular end diastolic diameter), heart rate variability indexes (SDNN, SDANN, RMSSD, PNN50), neuroendocrine factors (Pro-BNP, angiotensin II, aldosterone) and security indicators (blood, urine, liver function, kidney function, etc) before and after treatment, symptom score, improvement of heart function were respectively detected.

Results 1. Total effectiveness of heart function improvement in treatment group was 94.96%, while 90.24% in control group and there was no significant difference between two groups ($P > 0.05$). 2. Total effectiveness of syndrome score in treatment group was 97.37%, while 92.68% in control group. The improvement of syndrome score in treatment group was better than that of control group ($P < 0.05$). Compared single syndrome, treatment group was better than control group in improving of chest distress, fatigue, palpitation, swollen limbs and cyanosis ($P < 0.05$), while improvement of dyspnea, cough and expectoration, oliguria and emotional depression was not different ($P > 0.05$). 3. Left ventricular end diastolic diameter was reduced ($P < 0.05$) and left ventricular ejection fraction was increased ($P < 0.05$), but there were no differences between two groups in improvement of left ventricular end diastolic diameter and left ventricular ejection ($P > 0.05$). 4. Pro-BNP, angiotensin II and aldosterone in two groups were reduced after treatment ($P < 0.05$), but had no significant meaning ($P > 0.05$). 5. HRV: SDNN, SDANN, RMSSD and PNN50 in both groups were significantly increased ($P < 0.05$). Compared two groups, the improvement of SDNN and SDANN of treatment group were better than those of control group ($P < 0.05$), but there was no significant difference in improving RMSSD and PNN50.

Conclusion 1 The treatment of Chinese medicine for supplementing qi, activating blood and inducing diuresis based on syndrome differentiation combined with western medicine can significantly improve symptoms and life quality of patients with chronic heart failure. 2 The treatment of Chinese medicine for supplementing qi, activating blood and inducing diuresis based on syndrome differentiation combined with western medicine can significantly increase heart rate variability and improve autonomic nervous function.

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Clinical excellence of traditional Chinese medicine for stage I and II hypertension

Jingbai Zhong¹, Ruina Bai², Jing Yu³, Lin Tang⁴, Run Guo², Wei Cheng¹

Xiyuan Hospital of China Academy of Chinese Medical Sciences ()

Graduate School of of China Academy of Chinese Medical Sciences ()

Beijing University of Chinese Medicine ()

Objective To evaluate therapeutic effects and safety of Chinese medicine for stage I and II hypertension and provide clinical evidence.

Methods From October 2010 to January 2011, 95 patients with hypertension were randomly divided into two groups, treatment group (49 cases) and control group (41 cases). All patients were differentiated hyperactivity of liver-yang, yin deficiency and yang excess, disorder of Chong-ren. Treatment group was treated by Compound Huangqin decoction, Compound Niuxi decoction, Compound Xianmai decoction; Control group was treated by placebo (1/10 dosage of Chinese herb decoction). Three times per day, and the course was one month. Blood pressure (BP), clinical symptom scores and TCM syndrome scores were observed before treatment, 2 weeks and 4 weeks after treatment; SF-36 scale was used to evaluate quality of life before and after treatment. Adverse effects and clinical symptom were recorded.

Results After 4 week's treatment, the total effective rates of blood pressure was 63.27% in treatment group, while 43.48% in control group, the effects of decreasing blood pressure in treatment group was better than control group ($P>0.05$). The total effective rates of TCM syndrome was 55.1% in treatment group, while 50.00% in control group, the effects of decreasing TCM syndrome in treatment group was better than control group ($P>0.05$). Physical score was increased by 12, and mental score was increased 10.

Conclusion Traditional Chinese medicine in treating hypertension can decrease blood pressure, improve clinical symptom, physical and mental capability, and is a safety medicine.

TCM clinical characteristics between hypertension and hypertension with early renal damage

Jingbai Zhong¹, Lin Tang², Jing Yu³, Ruina Bai⁴, Run Guo⁴

1. Xiyuan Hospital, China Academy of Traditional Chinese Medicine, Beijing 100091, China
2. Beijing University of Chinese Medicine, Beijing 100029, China
3. People's Hospital of Rizhao, Rizhao 276826, Shandong, China
4. China Academy of Traditional Chinese Medicine, Beijing 100700, China

Objective To compare clinical symptoms and traditional Chinese medicine syndromes of hypertension and hypertension with early renal damage.

Methods From 2009 to 2012, 400 patients with hypertension and 114 patients with hypertension with early renal damage were collected by closed questionnaire. General data and four-diagnostic information, and syndrome factor were recorded.

Results 1. The ratio of patients with hypertension under the age of 60 was 1.1:1 and male more than female; while over 60 years, the ratio was 0.8:1. 2. The frequent symptoms of hypertension were similar to hypertension with early renal damage. The main symptoms were as following: dizziness, mouth dryness, head fullness, palpitation, neck rigidity, insomnia, spontaneous sweating, numbness of the limbs, lower back pain, fullness of chest, apnea, fatigue, forgetful, eye dryness, irritable, chest pain, tinnitus, constipation. The hypertensive patient also have: burning sensation of five centers, cold extremities, dizziness, short of breath, dizzy, depression. The hypertension with early renal damage patients also has this symptom: chest and hypochondrium pain, poor appetite, lower limbs weakness, bitter taste of mouth, night sweating.

3. 87.30% hypertensive patients had thin coating, 41.00% patients with hypertension had slight red tongue. 61.40% patients with hypertension and early renal damage had thin coating and 22.80% had slight red tongue. The normal tongue reduced in patients with hypertension and early renal damage and abnormal tongue increase. 92.50% patients with hypertension had a thread pulse and 62.50% patients with hypertension and early renal damage have taut pulse and the ratio of thread pulse decrease to 60.58%. 4. The main syndrome factors of hypertension were blood stasis (58.30%), phlegm (57.30%), yang hyperactivity (44.80%), qi deficiency (15.50%), yin deficiency (15.30%). The disease located kidney. The main syndrome factors of hypertension with early renal damage are yang hyperactivity (66.70%), heat (40.40%), blood stasis (27.20%), yin deficiency (78.10%), qi deficiency (38.60%). The disease located kidney.

Conclusion The ratio of age and gender are similar in patients with hypertension and hypertension with early renal damage. Males under the age of 40 are more than female. The pathological tongue and pulse were detected in patients' hypertension with early renal damage, and asthenia and sthenia syndrome in patients with hypertension are lower than hypertension with renal damage.

Characteristics of coronary arteries disease and risk factors of CSFP

Jun Liu¹, Changsheng Ma²

1. Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

2. Beijing Anzhen Hospital Affiliated of Medical Sciences, Beijing 100029, China

Objective To clarify the characteristics of coronary arteries disease of patients with CSFP and find out the risk factors of CSFP.

Methods The study is designed according to the proposal of case-control study. 130 succession CSFP subjects and 260 angiographically normal subjects (matched to the CSFP group in age) who are diagnosed by means of CTFC was observed to clarify the characteristics of coronary arteries disease and risk factors of patients with CSFP. SPSS15.0 for windows is used in the statistical process.

Results (1) The characteristics of coronary arteries disease and blood flow are summarized as below: Firstly, CSFP often happens in the left coronary arteries or in three ones, while rarely happens in right coronary artery (RCA). Secondly, there are 60% subjects with the phenomenon of contrast agent slow and lingering that mainly happens in the proximal and middle segments of left anterior descending coronary artery (LAD). The place with the phenomenon of contrast agent slow and lingering is often accompanied by coronary artery expansion disease, with which there are 60.3% of subjects altogether. Thirdly, there are 53.1% of subjects with coronary artery stenosis disease (all less than 40% in diameter) which occurs mostly in the proximal and middle segments of LAD. The vast majority of the coronary artery stenosis disease is in a single vessel and rarely in two or three ones. Fourthly, the rate of complications with calcification disease is 4.6% include 6 cases in total. Fifthly, the coronary artery stenosis disease has no influences on its blood flow velocity. The blood flow velocity of the coronary artery with the phenomenon of contrast agent slow and lingering in patients with CSFP become slower, but there is no statistical significance in most cases. (2) The risk factors of CSFP: The results of single factor analysis process show that there is significant difference between the CSFP group and the controlled group. CSFP can be influenced by sex, smoking, diabetes mellitus, abdomen circumference/hip circumference, hemotocrit, uric acid (UA) and Homocysteine (Hcy). Compared with the controlled group, the proportion of men, smokers and diabetes patients are more Susceptible to this disease and the level of parameters including abdomen circumference/hip circumference, hemotocrit, UA, Hcy are higher in CSFP group. The results of logistic regression analysis process in which the parameters of CSFP is taken as the dependent variable and man, smoking, diabetes mellitus, abdomen circumference/hip circumference, UA and Hcy as independent variables have shows that smoking accounting for (OR 4.963, 95% CI 2.985~8.252), diabetes mellitus (OR 3.301, 95% CI 1.758~6.200), man (OR 2.661, 95% CI 1.545 ~ 4.582) and Hcy (OR 1.165, 95% CI 1.059~1.281) can enter the regression equation ($P < 0.001$), which indicates that are the risk factors of CSFP.

Conclusion The coronary artery of patients with CSFP usually has pathological changes of atherosclerosis. Smoking, diabetes mellitus, man and high Hcy are the risk factors of CSFP.

Clinical study on Sishen Wenlv Decoction in treating premature beats

Ling Feng, Xiaokui Fu

Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, china

Objective To observe therapeutic effects of Sishen Wenlv Decoction in treating premature beats.

Methods Sixty-one patients with recurrent premature ventricular contraction or atrial premature beats diagnosed by Holter monitoring ECG and differentiated qi-ying deficiency with blood-heat syndrome. Among patients, 36 cases with premature ventricular contraction, 25 cases with supraventricular premature contraction, and including 21 males and 40 females ranging the age from 29 and 80 years old. For complication, 24 cases with coronary heart disease, 34 cases with high blood pressure, 1 case with myocardopathy, 2 cases with left ventricular false tendon, 1 case with hyperthyreosis and 9 cases with cardioneurosis. Twenty-five cases were at degree III level according to grading standard of Lown's Scales. Twenty-two cases were with diseases history from 3 months to 1 year; 26 cases from 1 year to 10 years, 13 cases over 10 years. The selected cases were all withdrawal antiarrhythmic drug, such as Propafenone, Amiodarone and so on, but still treated primary diseases. Instead, Sishen Wenlv Decoction was used, which should be taken after mixing it with water, 150ml at one time, twice a day and one month for a course of treatment. TCM syndrome, symptom points, improvement of Holter monitoring ECG after one month treatment was observed.

Results The main symptoms of 61 patients were palpitation, distraction, shortness of breath, dry mouth and insomnia. Clinical symptoms and quality of life was improved. Among 61 cases with premature beats, effective rate of TCM symptom was 88.52%, and effective rate of Holter monitoring ECG was 90.16%, in which premature ventricular contraction's and supraventricular premature contraction's respectively was 88.61% and 92.00%. The effective rate of 52 patients with premature beats was 86.54%, while total effective rate of 9 cases of cardioneurosis was 100%. Onset time was divided into less than 7d, 7d~14d and 14d~28d, and calculated, the results showed that majority of patients (48 cases) were effective in 2 weeks and 6 cases in a month.

Conclusion Sishen Wenlv Decoction has a remarkable therapeutic effects for treating premature beats.

Tongyang Huoxue therapy for the treatment of sick sinus syndrome

Jinfeng Liu, Huihui Zhang, Ruxiu Liu, Zhiming Liu

Guang An'men Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To observe clinical therapeutic of Tongyang Huoxue therapy in treating sick sinus syndrome.

Methods Two hundred and thirty-one patients with sick sinus syndrome were randomly divided into treatment group and control group. There were 150 patients in treatment group, treated by Qiangxin Fumai Mixture; while 81 patients in control group, treated by atropine. The therapeutic course for all was four weeks. The change of clinical symptoms and 24 h dynamic electrocardiogram were compared between two groups.

Results There was significantly difference between two groups in clinical symptoms ($P < 0.01$). The total effective rate of 24 h dynamic electrocardiogram respectively was 87.3% in treatment group and 35.9% in control group. The 24 h mean heart rates was increased 9/min and 4/min and has significantly difference between two groups ($P < 0.01$).

Conclusion Tongyang Huoxue therapy can improve clinical symptoms, increase heart rates, and is an effective method in treating sick sinus syndrome.

Occurrence time and severity of phlebitis caused by TCM injections

Li Li, Suqiu Zhang, Xinyuan Wu

Department of cardiology, Guang'an men Hospital, China Academy of Chinese Medical Sciences, Beijing 100053, China

Objective To explore difference of occurrence time and severity of phlebitis caused by TCM and western medicine injections.

Methods Sixty-two report of phlebitis were divided into 3 groups: 21 cases were given TCM injections; 22 cases were given Western medicine injections and 19 cases were given combination of TCM and Western medicine injections. Occurrence time and severity of phlebitis were observed and compared according to grade of phlebitis formulated by United Sates Intravenous Nurse Society.

Results Occurrence time of in Western medicine injections and combination of TCM and western medicine injections was earlier than TCM injections, and had significantly differences ($P < 0.01$). While severity in combination of TCM and Western medicine injections was more severe than Western injections and TCM injections, and had significantly differences ($P < 0.01$).

Conclusion Severe phlebitis occurs in a short time when injecting TCM and Western medicine. The results show that high-risk period of occurring after 24 hour's TCM and Western medicine injection. During this period, nurses can take actions to prevent, avoid occurrence and decrease severity of phlebitis.

Effects of Shenlijia granule on expression of EG-VEGF in rats with heart failure by protein chips

Yu Qiao, Ying Xie, Enyu Gao, Fei Chen, Fuzhen Li, Chenggang Liu, Chunhong Liu, Jiayi Chang Heilongjiang University of Chinese Medicine, Harbin 150040, Heilongjiang, China

KEYWORDS Protein Chips; Shenlijia Granule; Heart failure; EG-VEGF

Abstract Objective To assess effect of Shenlijia Granule on EG-VEGF expression in heart failure rats by protein Chips.

Methods Fifteen of seventy Wistar rats were randomly divided into blank group, others were induced by intraperitoneal injection of doxorubicin. The survival rats were randomly divided into model and treatment group, and respectively treated by saline and Chinese herb Shenlijia Granule. After model establishment, rats had been feed for 28 days, the left cardiac muscular tissue were gathered, the apical tissue was soaked in 4% paraformaldehyde for HE stain, the left was kept in liquid nitrogen for the protein Chips.

Results HE stain displayed that the blank group was normal; the myocardium of the model group was coarse, interstitial proliferation and inflammatory cells infiltration; the treatment group was no obvious and inflammatory cells infiltration. The protein Chips indicated that EG-VEGF is differentiated. Compared with blank group, the expression of EG-VEGF in model group was down; the expression of EG-VEGF in treatment group was up; there is no difference between the treatment and blank group.

Conclusion SHENLIJIA Granule improved the degrees of myocardium fibrosis and protected the heart by raising the expression of EG-VEGF.

Composing principle of treating chronic heart failure based on Traditional Chinese Medicine Inheritance System

Xin Zhao, Xiangning Cui

Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 10053, China

Objective To analyze regularity of treating chronic heart failure by using data mining technology based on traditional Chinese Medicine Inheritance System.

Methods Two hundred and seventy two case histories with chronic heart failure were collected. Data mining were performed by frequency count, advanced mutual information, complex system entropy cluster and unsupervised hierarchical clustering.

Results The higher frequency use of Chinese herb contains 78 kinds. The top-30 Chinese herb include herbs invigorating qi drug, such as *codonopsis pilosula*, *astragalus mongholicus*, *radix bupleuri*, *platycodon grandiflorum*, *rhizoma cimicifugae*; activating blood and promoting dieresis drug, such as *salvia miltiorrhiza*, peachseed, *angelica*, *ligusticum chuanxiong*, common burreed rhizome, zedoary, *herba lycopi*, *herba leonuri*, *poria cocos*, largehead *atractylodesrhizome*, *rhizoma alismatis*, pepperweed seed; tonifying yin drugs, such as dwarf lilyturf tuber, *schisandra chinensis*, *dix paeoniae alba*, *fructus corni*; phlegm-resolving drug, snake gourd fruit; and interior-warming drug, cassia twig. Frequency use of drugs suggested that medication feature of invigorating qi, activating blood and promoting dieresis, which fit for pathogenesis of chronic heart failure. Yang deficiency, yin deficiency, and phlegm syndrome were concurrence on the different stages. Commonly composition contained 32 kinds, and correlative coefficients were above 0.02. Invigorating qi drugs (*astragalus*, *codonopsis*, *cimicifuga*, *bupleurum* and *turmeric*) combined with *turmeric root-tuber*, peach seed, common burreed rhizome, *pinellia ternate* and *plantain seed* reflects mutual function of invigroting qi and activating blood and promoting dieresis, phlegm-resolving. Sixty-nine kinds combined description was evoluated, and the core combination was 26, new description was 13. Shengmai decoction, Tingli Dazao Xiefei Decoction, Mahuang Fuzi Xixin Decoction, Xiao Xianxiong Decoction, Gualou Xiebai Banxia Decoction were core decoction for treating chronic heart failure.

Conclusion Complex system entropy clustering, nonsupervision of entropy clustering for finding composing principle of chronic heart failure have a certain scientific meaning. Traditional Chinese Medicine Inheritance System is a favorite tool for entry, administration and analysis of prescriptions and has important significance for creating new prescriptions. Core combinations and optional new prescriptions for clinical or foundation provides are useful, but still need to be further evaluation through the source, clinical doctors interpretation, clinical research study.

Effects of Zhitaiqing Granule on aortic endothelial cells in rabbits with experimental atherosclerosis

Shilong Ye¹, Aiqin Liu¹, Ning Su², Yongbin Zhang²

Outpatient Medical Dept. & Docimology Dept., Shenzhen Bao'an Chinese Medical Hospital, Shenzhen 518133, Guangdong, China

Pathology Teaching and Research Unit & Experimental Animal Center, Guangzhou University of TCM, Guangdong 510405, China

Objective To investigate effects of Zhitaiqing Granule on aortic endothelial cells in rabbits with experimental atherosclerosis.

Methods Ten New Zealand rabbits were selected as blank control group and feed with normal forage, while the rest were fed with A forage of high-fat. After six weeks fed, hyperlipidemia models are formed and randomly divided into model group, Zhitaiqing Granule group, simvastatin group and hawthorn tablet group. From the 7th week, rabbits in trial and control group were fed with corresponding drugs while the blank and model groups with the same quantity of normal saline by lavage. After 11 weeks, total cholesterol (CHO), triglyceride (TG), high - density lipoprotein cholesterol (HDL-C), apolipoprotein AI (apo AI), apolipoprotein B (apo B), pathological changes of the aortic arch, thoracic aorta and abdominal aortic intima were observed.

Results The level of CHO, LDL-C, and ApoB in Zhitaiqing Granule were reduced dramatically ($P < 0.05$, $P < 0.01$), while the level of HDL-C was risen ($P < 0.05$), which can prohibit formation of atherosclerotic plaque.

Conclusion Zhitaiqing Granule can regulate lipid metabolism and prevent atherosclerosis.

Zhengan Xifeng decoction for treatment of hypertension nephrosclerosis with yin-deficiency and yang-hyperactivity syndrome

Qiang Wang, Lingling Zheng, Zhongyi Liu

Department of cardiology, First teaching hospital of Tianjin University of TCM, Tianjin 300193, China

Objective To observe therapeutic effects of Zhengan Xifeng decoction in treating hypertension nephrosclerosis (HN) with yin-deficiency and yang-hyperactivity syndrome.

Methods Sixty HN patients with yin-deficiency and yang-hyperactivity syndrome were collected. There was no significant difference among age, gender, course of disease and grade of hypertension ($P>0.05$). All patients were randomly divided into normal group and control group, 30 patients in each group. Treatment group was treated with Zhengan Xifeng decoction and fosinopril sodium tablet; Control group was treated with fosinopril sodium tablet, and the course of the treatment was 4 weeks. Clinical symptom, efficacy laboratory tests were observed before and after treatment.

Results Clinical symptom, blood pressure in treatment group was significantly improved ($P<0.05$), but index of renal injury was not changed ($P>0.05$). Zhengan Xifeng decoction with fosinopril sodium tablet can obtained good effects on treating HN patients with yin-deficiency and yang-hyperactivity syndrome. There was no side effects and adverse events of safety index, and had significant difference in safety index between two group before and after treatment ($P>0.05$).

Conclusion The effects of Zhengan Xifeng decoction with fosinopril sodium table is better than Western medicine in improving symptom and decreasing blood pressure. It is a positive, safe and effective drug and worth to using widely.

Impact of the Guizhi decoction and Huanglianjiedu decoction on myocardial basement membrane in spontaneous diabetic rats

Ping Jiang¹, Xiao Li¹

Affiliated Hospital of Shandong Traditional Chinese Medicine University, Jinan 250011, Shandong, China

Objective To observe impact of Guizhi decoction and Huanglianjiedu decoction on thickness of myocardial basement membrane and type IV collagen expression, and explore the mechanism of inflammatory injury in spontaneous diabetic rats (GK rats).

Methods Ten Wister rats were chosen in control group, while 40 GK rats were randomly divided into four groups: GK group (10), metformin group(10), Huanglianjiedu decoction group(10) and Guizhi decoction group(10). All groups were given gastric perfusion for 12 weeks. Content of blood glucose, IL-1, TNF- α , NF- κ B, positive expression degree of myocardial NF- κ B and type IV collagen and changes of thickness of basement membrane were observed.

Results Content of blood glucose, IL-1, TNF- α and NF- κ B in GK rats were increased, expression of NF- κ B was positive and expression of type IV collagen protein was enhanced, basement membrane thickness was increased. Metformin and Huanglianjiedu decoction could lower blood glucose ($P < 0.01$). Guizhi decoction and Huanglianjiedu decoction can reduce content of IL-1, TNF- α , NF- κ B and other inflammatory factors, the expression of NF- κ B and type IV collagen, and reduce basement membrane thickness ($P < 0.01$, $P < 0.05$). The effects of decreasing inflammatory factors in Huanglianjiedu decoction was better than Guizhi decoction, had significant meaning in decreasing and level of TNF- α ($P < 0.01$). Guizhi decoction was better than Huanglianjiedu decoction in inhibiting type IV collagen protein expression, thickness of basement membrane ($P < 0.01$, $P < 0.05$).

Conclusion Huanglianjiedu decoction can slightly reduce thickness of basement membrane and type IV collagen protein expression, which the mechanism may be related to reducing blood glucose and myocarditis factor content. Guizhi decoction is better than Huanglianjiedu decoction in these aspects, which shows the unique role of harmonizing Ying and Wei. The therapies of clearing heat and removing toxicity and harmonizing Ying and Wei can reduce thickness of myocardial basement membrane and improve micro vascular disease in diabetic myocardium.

Effects of Bushen Huoxue decoction on brain natrium peptide (BNP) and left ventricular ejection function of patients with chronic congestive heart failure

Jie Li, Ming Tang, Yelin Song, Jingxiang Zhou

Qingdao Haici Medical Group, Qingdao 266033, Shangdong Province, China

Objective To observe effects of Bushen Huoxue decoction on cardiac functions of the patients with chronic congestive heart failure(CHF).

Methods One hundred and six patients with CHF were randomly divided into two groups, 54 cases in treatment group and 52 cases in control group. Control group was treated with western conventional therapy (angio tension receptor blocker, nitrate medications, β -receptor blocker, diuretic, cardiotonic), while treatment group was treated with combination of western conventional therapy with Bushen Huoxue decoction, treated for 4 weeks. BNP, left ventricular end-systolic diameter(LVESD), left ventricular end-systolic volume(LVESV), stroke volume(SV) and left ventricular ejection fraction(LVEF) were observed before and after treatment, and compare therapeutic effects between groups.

Results Level of BNP was decreased in both group, and obviously in treatment group ($P<0.05$); Changes of LVESD, LVESV, SV, LVEF after treatment were better than before treatment ($P<0.05$), treatment group was superior to control group, and had statistically difference ($P<0.05$). The therapeutic effect of treatment group was superior to control. ($P<0.05$).

Conclusion Bushen Huoxue decoction can obviously reduce level of BNP, improve left ventricular ejection function, and enhances the heart functions of CHF patients.

Improving effects of traditional Chinese medicine preparation Shenqi pollen tablet on cardiac function in patients with high altitude de-adaptation

Qiquan Zhou

Department of High Altitude disease, College of High Altitude Military Medicine, The Third Military Medical University; Key Laboratory of High Altitude Medicine, Ministry of Education and Key Laboratory of High Altitude Medicine, PLA , Chongqing, 400038, China

Objective To investigate improving effects of traditional Chinese medicine compound preparation---Shenqi pollen tablet on heart function in patients with de-adaption after returned to plain from high altitude for plateau emigrants.

Methods Randomized, double blind, placebo controlled trial were used in this study, and 258 soldiers with high altitude de-adaptation symptoms were randomly divided into Shenqi pollen tablets treatment group and placebo group. After 15 days' symptomatic scoring, color Doppler ultrasound heartbeat drawing instrument was used to determine left ventricular end-diastolic volume, end-systolic volume, Bo volume, ejection fraction, cardiac output, fractional shortening, mean pulmonary arterial pressure and cardiac index, and evaluate cardiac function.

Results After 15 days' medication, 147 cases were in treatment group, and the results showed that remarkable in 48 cases, effective in 53 cases, ineffective in 46 cases, and total effective rate was 68.9%; while in control group, remarkable in 13 cases, effective in 34 cases, ineffective in 66 cases, and total effective rate was 41.2%. Compared with control group, there were significant differences ($P < 0.01$). Compared with control group, treatment group was improved more than control group in symptoms of vertigo, fatigue, fatigue, sleepiness, bosom frowsty, flustered, cough, expectoration, sore throat, dizziness, attention, memory loss, unresponsive, weight loss, numbness in the hands and feet, and other symptoms. After 15 days' examination, the results showed that left ventricular end-systolic volume, ejection fraction and Tei index was reduced significantly, while end-diastolic volume, each Bo, each distraction output displacement, fractional shortening rate was increased, right ventricular end-diastolic volume, right ventricular diameter and right ventricular length were significantly decreased, lung arterial pressure in Shenqi pollen tablet group were decreased significantly when compared with control group, and had significant difference ($P < 0.01$).

Conclusion Chinese herb compound preparation--Shenqi pollen tablet on plateau de-adaption patients after returned to plain from plateau can obviously improve clinical symptoms, reduce pulmonary artery pressure, improve left and right ventricular function, and plays a significant protection role on myocardial.

Effects of Xiaozhi Capsule on blood lipid and endothelin

Ruihong Fan

Tianjin Academy of TCM, Tianjin 30012, China

Objective To observe effects of Xiaozhi Capsule on blood lipid and endothelin, and to investigate the potential mechanism.

Methods All patients were randomly divided into treatment group and control group according to randomly digital table. Treatment group were given Xiaozhi Capsule, which composing of radix polygoni multiflori, alisma, astragalus, angelica, radix salviae miltiorrhizae, rhizoma curcumaе longae concisa, .fructus trichosanthis, rheum officinale, 0.5 grams in each piece, three times a day. While Xuezhikang capsule used in control group (3 times a day). All patients keep normal life style and diet habits. The course of disease was 8 weeks.

Results There was no significant differences in index before treatment. ① The serum level of TC, LDL-C and TG were respectively declined 25.6%, 32.9%, 33.7%, and HDL-C increased 24.2%; While, the serum level of TC, LDL-C and TG were respectively lower 24.8%, 31.3% and 33.5%, and serum level of HDL-C was significantly increased 20.9% in control group. There was no significant differences between two group ($P>0.05$). ② the level of ET in treatment group was significantly declined 11.02% than 12.05% in control group. There was no significant difference between two groups ($P>0.05$). ③ The scale scores had significantly meaning in dizziness, head heaviness, palpitation, chest tightness, tinnitus and dryness. ④ After treatment, the function of kidney and kidney was normal and no side effects were occurred.

Conclusion Xiaozhi Capsule has reliable efficacy and clinical value, plays an important role in blood liquid and endothelin, and can improve clinical symptom.

Thoughts on hypertensive with intermingled phlegm and blood stasis syndrome

Haihua Jia

Institute of Basic Theory, China Academy of Chinese Medicine Science 100700

Objective To explore relationship between hypertensive disease with intermingled mixed phlegm and blood stasis and five-zang organs.

Methods Hypertensive disease is believed to be “dizziness syndrome” in traditional Chinese medicine. All words “dizziness” and related data were picked out and input into the database. Many methods such as philology, logical thinking and integrated approach were used to analysis the data.

Result Dysfunction of five-zang organs, especially lung, spleen and kidney dysfunction could produce phlegm. Phlegm blocks in the body and superinverses with Qi, which induce in the symptom of dizziness. On the other hand, symptom of dizziness could be caused by blood stasis as well, and the blood stasis is produced when the five internal organs disorders. Based on theory of traditional Chinese medicine, heart governs blood and vessels, spleen controls blood, liver stores blood, lung governs Qi, kidney has the effects of warming. So, the five internal organs disorders, such as inability to pushing of Qi, stasis of Qi, yang deficiency producing cold, induced in blood stasis. The blood stasis is one of pathogenic factors and also results in the five internal organs disorders on the contrary. As a result, phlegm and stasis intermingles when five internal organs disorders, and also results in organs functions.

Conclusion Hypertension has a close relationship with intermingled phlegm and blood stasis, and has correlations with functions of five internal organs. So much attention should be paid on them in clinical treatment of hypertensive disease.

Serum metabolic study on hypertensive patients with hyperactivity of liver-yang syndrome and excessive phlegm-dampness

Yang Gao

Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing 10053, China

Objective To analysis serum metabolic profiles in healthy people and essential hypertensive patients with hyperactivity of liver yang, excessive phlegm-dampness syndrome by GC / MS-based metabolomics approaches and establish discriminant model, discover biomarkers (group) of each syndrome type, explore essential material basis of Traditional Chinese medicine "syndrome" theory.

Methods Outpatients with essential hypertension in Guang'anmen hospital was collected and differentiated by four diagnostic method, which including hyperactivity of liver yang type(18 cases), excessive phlegm-dampness (16 cases), as well as health volunteers(15 cases) in the first half of 2010. Selected patients with essential hypertension requirements were not taken any drugs or Chinese herbs, or stop taking various drugs over one week. Extracted Venous Blood of subjects fasting for 12 hours, and serum was separated through centrifugation and stored refrigerator at -86 °C. Endogenous metabolism in serum samples of health control group and types of syndrome were evaluated by gas chromatograph mass spectrometry (GCMS) analysis, and metabolic data were analyzed by Partial Least Squares-Discriminant Analysis, PCA was used to analyze principal component factor loadings matrix. Variable scatter plot (Loading plot), significant increase or decrease could be found from the figure. The combination of these variables was lesion biomarkers group.

Results ①The serum distribution of scatter plots in EH patients showed that healthy group and EH group, health control group and EH group with different TCM syndromes can be distinguished. ②Compared with health control group, 17 differentially expressed metabolites in essential hypertension group and can be identified ($P < 0.05$); 11 metabolites were up-regulated expression, such as uric acid, hexadecanoic acid, oleate, citrate, methionine, leucine, proline, urea, cholesterol, octadecanoic acid, lactic acid, and 6 metabolites were down-regulated expression, including octadecadienoic acid, glycerate, alanine, aspartic acid, glycine, arachidonate. ③Compared with health control group, 13 differentially expressed metabolites in EH group with hyperactivity of liver yang syndrome can be identified ($P < 0.05$). 8 metabolites were up-regulated expression, such as uric acid, citrate, octadecanoic acid, hexadecanoic acid, octadecadienoic acid, leucine, cholesterol, norvaline, and 5 metabolites were down-regulated expression, including arachidonate, oleate, alanine, aspartic acid, glycine. ④Compared with health control group, 14 differentially expressed metabolites in essential hypertension excessive phlegm-dampness syndrome group can be identified ($P < 0.05$). 9 metabolites were up-regulated expression, which was uric acid, urea, octadecadienoic acid, hexadecanoic acid, leucine, cholesterol, octadecanoic acid, glycine, lactic acid; 5 metabolites were down-regulated expression, which was arachidonate, oleate, glycerate, ethyldiethanolamine, alanine.

Conclusion ① GC/MS-based metabolomics approaches can successfully distinguish differences among EH group, EH each syndrome group and healthy control group. ②17 EH patient serum differentially expressed metabolites are EH metabolic biomarkers: uric acid, hexadecanoic acid, oleate, citrate, methionine, leucine, proline, urea, cholesterol, octadecanoic acid, lactic acid, octadecadienoic acid, glycerate, alanine, aspartic acid, glycine, arachidonate. ③13 serum differentially expressed metabolites in EH patient with hyperactivity of liver yang syndrome are uric acid, citrate, octadecanoic acid, hexadecanoic acid, octadecadienoic acid, leucine, cholesterol, norvaline, arachidonate, oleate, alanine, aspartic acid, glycine. ④14 metabolic biomarkers in EH patients with excessive phlegm-dampness syndrome are uric acid, urea, octadecadienoic acid, hexadecanoic acid, leucine, cholesterol, octadecanoic acid, glycine, lactic acid, arachidonate, oleate, glycerate, ethyldiethanolamine, alanine.

Treatment coronary heart disease with complicated and refractory arrhythmias by Gualou Xiebai Banxia Decoction in 28cases

Qinghai Li¹, Yongfei Lu¹

The Third Affiliated Hospital of Henan University of Traditional Chinese Medicine, Zhengzhou 450003, Henan, China

Objective To observe clinical efficacy and safety of Gualou Xiebai Banxia Decoction in treating coronary heart disease with complicated and refractory arrhythmia (phlegm-blood stasis) and explore a new method for prevention and treatment of coronary heart disease with complicated and refractory arrhythmia.

Methods From December 2009 to May 2012, 28 patients with coronary heart disease with complicated and refractory arrhythmia were chosen. All patients were diagnosed by 24h dynamic electrocardiogram examination and phlegm and blood stasis syndrome in TCM. Gualou Xiebai Banxia Decoction was used for treatment, 1 agents per day, and each agent is divided into 3 to 4 doses, treated for 28 days. The changes of TCM syndrome, 24h ambulatory ECG, echocardiography, doppler, carotid artery, blood and urine routine, liver function, serum lipid before and after treatment were observed to evaluate clinical efficacy and safety of Gualou Xiebai Banxia Decoction.

Results After 28 days' treatment, 4 cases were clinically cured, 9 cases were markedly effective, 12 cases were improved, and 3 cases were ineffective, total efficiency was 89.29%. No patients appeared symptoms aggravated or died. The adverse reaction, such as liver and kidney damage and other was not found during monitoring of blood and urine routine, liver and kidney function. Patients remained in stable condition, and the clinical symptoms and electrocardiographic were further improved after continue taking the medicine 3-6 months.

Conclusion Gualou Xiebai Banxia Decoction could obviously improve symptom of coronary heart disease patients with complex arrhythmias (phlegm-blood stasis), reduce episodes of atrial premature beat, number of premature ventricular and atrial fibrillation, inhibit sinus arrest and atrioventricular block. This medicine may reduce clinical symptoms, such as palpitations, chest tightness, distention and fullness, mouth sticky and sputum, thick fur greasy tongue, and is a safety Chinese herb.

Effects of Liandou Qingmai Recipe on quality of life and inflammatory reaction mechanism in patients with coronary heart disease

Hongjun Zhu¹, Shu Lu², Wei Su², Shaoyu Gong,² Zhibin Zhang³, Ping Li³

1. Nanjing University of Traditional Chinese Medicine, Nanjing 210000, Jiangsu, China
2. Department of Cardiology, Wuxi hospital Affiliated Nanjing University of Traditional Chinese Medicine, Wuxi 210000, Jiangsu, China
3. Nanjing Institute of Traditional Chinese Medicine, Wuxi 210000, China

Objective To observe correlation between Seattle Angina scale(SAQ) and inflammatory reaction, and effects of Liandou Qingmai Recipe on quality of life and inflammatory reaction in patients with coronary heart disease.

Methods Sixteen health people were collected. One hundred and one patients with coronary heart disease were randomly divided into Liandou Qingmai Recipe (treatment group,45 cases) and control group(56 cases).Both groups were treated with standard therapy, Liandou Qingmai Recipe were added in treatment group for two weeks. According to SAQ, physical limitation (PL), angina stability (AS), angina frequency(AF), treatment satisfaction (TS), disease perception(DP)were evaluated, high-sensitivity C reaction protein(hs-CRP), peripheral blood leucocyte(PBL),interleukin-6 (IL-6) and interleukin-10 (IL-10) were tested before and after treatment.

Results There was no significant difference in SAQ score between two groups before treatment ($P>0.05$); while has significance meaning in treatment group. The concentration of IL-6, IL-10 was higher than normal group (IL-6: 9.17 ± 0.18 vs 1.10 ± 0.08 ; IL-10: 1.94 ± 0.26 vs 1.09 ± 0.06 ; $P<0.05$). There was significant differences in IL-6 and IL-10, PBL after treatment ($P>0.05$). The concentration of IL-6, hs-CRP, PBL was lower than control group, and had statistical meaning.

Conclusion Inflammatory reaction correlates with SAQ in patients with coronary heart disease. Liandou Qingmai Recipe can decrease concentration of hs-CRP, PBL, IL-6, IL-10 to inhibit endothelial inflammatory response and improve the quality of life.

Treating bradyarrhythmias by supporting health qi, dredging collaterals activating blood stasis and turbid

Junzhao Liang, Fengchun Li, Yabin Li, Jianwei Dou

Xi án Traditional Chinese Medicine hospital, Xi án 710001, Shanxi, China

Objective To investigate therapeutic effects of supporting health qi, dredging collaterals, activating blood stasis and infusion turbid in treating bradyarrhythmias with yang deficiency and blood stasis syndrome.

Methods According to 3:1 ratio, 184 patients with yang deficiency and blood stasis bradyarrhythmias were randomly divided into treatment group (138 cases) and control group (46 cases). Treat group were treated by supporting health qi, dredging collaterals, activating blood stasis and infusion turbid (composing 12 kinds of Chinese herbal drugs, such as cassia twig, epimedium, brazilwood, lumbricus, pinellia tuber, forsythia, caulis spatholobi, etc.); While control group were given Xinbao pill. TCM syndrome and ECG changes were observed before and after treatment.

Results TCM syndrome in treatment group was 92.75%, 69.57% in control group, and had significantly differences between two group ($P<0.05$); the index of ECG in treatment group was 84.78% and 60.86% in control group, also had statistical meaning ($P<0.01$).

Conclusion Supporting health qi, dredging collaterals, activating blood stasis and infusion turbid for treating bradyarrhythmias with yang deficiency and blood stasis syndrome bradyarrhythmias can receive good clinical effects.

Clinical effect of Shen Qi Dan Ji Huangjing decoction on treatment of sinus bradycardia

Yujie Liu

Tangshan TCM Hospital, Tangshan 063000, China

Objective To evaluate clinical effects and therapeutic value of Shen Qi Dan Ji Huangjing decoction on treatment of sinus bradycardia and provide a new idea and method for Traditional Chinese Medicine(TCM) treatment.

Methods One hundred and twenty patients with sinus bradycardia were chosen, including 62 males and 58 females ranging the age from 18 to 78 (mean 49) years. The course of disease ranged from 3 months to 8 years with an average of 3.5 years. Among patients, 69 cases with coronary heart disease, 15 cases with pulmonary heart disease, 16 cases with myocarditis, 8 cases with cardiomyopathy and 12 cases with other disease. All patients were treated with Shen Qi Dan Ji Huangjing decoction, which was empirical formula of old famous Dr. ZHU Jin-zhong in shanxi province. Shen Qi Dan Ji Huangjing decoction composed of codonopsis pilosula 18g, astragalus mongholicus 24g, salvia miltiorrhiza 30g, caulis spatholobi 30g, rhizoma polygonati 30g, common burreed rhizome 10g, zedoary 10g, rhizoma atractylodis 10g, largehead atractylodesrhizome 10g, green tangerine peel 8g, tangerine peel 10g, radix bupleuri 10g, angelica 10g, root of rehmannia 10g, mentha haplocalyx 10g (later decocted), caulis polygoni multiflori 40g. The decoction was one dose each day, 30 doses constituting one course and decocted 200 ml medicine juice. Therapeutic effects were evaluated according to electrocardiogram efficacy criteria formulated by traditional Chinese medicine diagnosis curative standard.

Results Electrocardiogram efficacy criteria showed that 43 cases of 120 patients got effective results, 62 cases improved, 15 cases invalid, 0 cases exacerbated, and total effective rate was 87.5%. Symptomatic results showed that 50 cases got effective results, 61 cases improved, 9 cases invalid, 0 cases exacerbated, and total effective rate was 92.5%.

Conclusion Shen Qi Dan Ji Huangjing decoction, which can treatment of both specimens, deficiency and excess, is an ideal method for the treatment of sinus bradycardia and worth to use widely.

Warming-yang, invigorating-qi and resolving-phlegm for treatment of stable of angina pectoris in coronary heart disease

Fengwu Ren, Huarui Lu, Xiaoye Jiang

Heilongjiang Academy of TCM, Heilongjiang 150036, China

Objective To observe clinical effects of Warming-yang, invigorating-qi and resolving-phlegm in treating stable of angina pectoris in coronary heart disease (CHD).

Methods Sixty CHD patients with syndrome of yang deficiency and stagnation of phlegm were randomly divided into treatment group (30 cases) and control group (30 cases). Both groups were given Western medicine, while Chinese herbs were added in treatment group, Fructus trichosanthis pill were added in control group, treated for 4 weeks. TCM symptom efficacy, ECG changes, reduction of nitroglycerin rate and laboratory index changes were observed.

Results There were no significant differences in chest pain, chest tightness, palpitations, shortness of breath between two groups ($P > 0.05$), but has difference meaning in chills, and weighted body ($P < 0.05$); The total effects of TCM syndrome, reduction of nitroglycerin rate in treatment group was better than control group ($P < 0.05$); total efficiency of ECG in treatment group was 60.00%, 56.67% in control group, and has no significant differences ($P > 0.05$).

Conclusion Chinese medicine formulated by warming-yang, invigorating-qi and resolving-phlegm can obviously reduce symptoms of stable of angina pectoris coronary heart disease and improve reduction of nitroglycerin rate.

请冯玲主任核对作者信息并将作者单位补全

Effects of Tongmai Jiangzhi pill on carotid atherosclerotic plaque of patients with hypertension

Qinan Wan¹, Wei Zhao², Hanyu Xue²

1. Traditional Chinese medicine hospital in yunnan province, Kunming 65000, Yunnan, China \
- 2.

Objective To observe effects of Tongmai Jiangzhi pill on carotid atherosclerotic plaques in patients with hypertension.

Methods One hundred and thirty-two patients with carotid atherosclerotic plaques were confirmed by color doppler ultrasound , including 65 males and 67 females, ranging the age from 35 to 78 years. The course of disease was 1 month to 22 years. There were 70 cases in treatment group (elvationin blood lipids in 24 cases, normal lipid in 24 cases), 62 cases in control group (elvationin blood lipids in 20 cases, normal lipid in 42 cases), Tongmai Jiangzhi pill was used in treatment group (composing ganoderma lucidum, astragalus, panax notoginseng, motherwort, hawthorn, leeches, etc. 10g bid), and atrovastatin calcium tablets was used in control group (10 mg, qn). Conventional antihypertensive drugs were still used. The course of disease was 3 months and treated for 1 course. Blood liquids, IMT and nature of plaques were tested before and after treatment group.

Results There were significant difference in IMT, nature of plaques, total cholesterol (TC), triglycerides (TG) ($P < 0.05$), but no statistical meaning between two group after treatment group ($p > 0.05$).

Conclusion Tongmai Jiangzhi pill can decrease carotid atherosclerotic plaques, level of TC and TG, and nature of plaques, and the effect was similar to atorvastatin calcium tablet.

Efficacy of Xinjiekang program on treating acute viral myocarditis with TCM syndrome

Lihua Han

Henan Province Chinese medicine hospital, Henan450002, Zhengzhou, China

Objective To explore Xinjiekang program in treating acute viral myocarditis with different TCM syndrome.

Methods Randomized, controlled, multi-center study was used, 161 patients were randomly divided into 2 groups. Both groups were given basic treatment, treatment group added oral Xinjiekang program, control group added oral western medicine. TCM syndromes score were compared after 30 days' treatment, action of Xinjiekang program on treating acute viral myocarditis was analyzed .

Results There was no significant meaning in TCM syndrome score before and 10 days' treatment ($P>0.05$), while had statistical differences on the 20th and 30th day ($P<0.05$).The difference between each times and before treatment had statistically differences ($P<0.05$),and treatment group was better than control group ($P<0.05$),both group could improve TCM syndrome score . There was significantly meaning in TCM syndrome and total effective ($P<0.05$).

Conclusion Xinjiekang program can improve TCM syndrome of acute viral myocarditis, and its efficacy is superior to conventional western medicine treatment.

Bone marrow mesenchymal stem cells differentiation into cardiomyocyte-like cells induced by astragaloside IV combined with 5-aza in a cardiac-like microenvironment in vitro
Jinghe Sun, Shaoxiang Xian, Xiwen Huang, Lingjun Wang, Zhongqi Yang
The First Affiliated Hospital of Guangzhou University of TCM, Guangzhou 510405, Guangdong, China

Objective To observe effects of Astragaloside (AST) combined with 5-azacytidine(5-aza) in a cardiac-like microenvironment on inducing bone marrow mesenchymal stem cells (MSCs) to differentiate into cardiomyogenic cells.

Methods MSCs were isolated from adult SD rats, and cultured and cloned by density gradient method and adhesive cultivation. The cell surface antigens of CD34 and CD44 in the third generation of MSCs were detected with flow cytometer. Myocardial cells isolated from newly born rats were lysed by repeated freezing and defrosting. The MSCs were randomly assigned to five groups: Group I (cultured in basic medium under static state as the control); Group II (induced by 10 μ mol/L 5-aza, 24h later, cultured in basic medium); Group III (cultured in basic medium containing myocardial cell lysate as the cardiac-like microenvironment in vitro); Group IV (induced by 100mg/l AST and 10 μ mol/L 5-aza, 24h later, cultured in the cardiac-like microenvironment); group V (induced by 10 μ mol/L 5-aza, 24h later, cultured in the cardiac-like microenvironment). After induction, MSCs were cultured for 2 weeks and cardiomyogenic cell percentage was worked out, the expression of specific proteins of Desmin, cardiac troponin T(cTnT) and connexin43(Cx43) in cardiomyogenic cells was detected by Immunohistochemistry method. The mRNA expression of Atrial natriuretic peptide(ANP) and the content of Cyclic adenosine monophosphate(cAMP) in induced MSCs were examined by RT-PCR and ELISA respectively.

Results The expression rates of superficial symbol antigen CD34 on MSCs is 0.4% while that of CD44 is 98.5% which conform to the feature of expressions of the surface markers of MSCs. After being induced by AST combined with 5-aza in the cardiac-like microenvironment, the MSCs appeared variation in morphology. The expression of cTnT, Desmin, Cx43, ANP(mRNA) and the content of intracellular cAMP in group IV were significantly higher than that in group I, II, III, V ($P < 0.01$). The differentiation rate of cTnT, Desmin, Cx43 in group IV respectively reached 31.22%, 36.65%, 32.42%.

Conclusion In cardiac-like microenvironment AST combined with 5-aza can induce MSCs to differentiate into cardiomyogenic cells with the higher differentiation rate in-vitro. The MSCs induced by AST combined with 5-aza in cardiac-like microenvironment not only look like but also have the similar functions with cardiomyocytes. The method of combined induction by AST and 5-aza in cardiac-like microenvironment is a kind of feasible, effective induction method with certain advantages, and worth further study, popularization and application.

Correlation between II Diabetic patients with hypertension of early renal damage and TCM syndrome

Ping Yan, Ying Ye, Meihua Chen

The second affiliated hospital to Fujian University of TCM, Fujian 350003, China

Objective To explore etiology and pathogenesis of early renal damage in diabetes patients with hypertension on the basis of traditional Chinese medicine theory, and to analyze the correlation of TCM syndrome and clinical indicators such as body mass index, blood pressure, urine microalbumin, β_2 -microglobulin, creatinine, urea nitrogen, fasting blood glucose, glycosylated hemoglobin, 2-hour postprandial blood glucose, lipids in diabetes patients with hypertension of early renal damage.

Methods One hundred diabetes patients with hypertension of early renal damage were selected as trial group and 50 diabetes patients with early renal damage were chosen as control group. The general clinical data, such as general information, body mass index, blood pressure, urine microalbumin, β_2 -microglobulin, creatinine, urea nitrogen, fasting blood glucose, glycosylated hemoglobin, 2-hour postprandial blood glucose, lipids were collected and analyzed the correlation between two group.

Results ① Trial group were divided into stasis-phlegm syndrome, qi deficiency and phlegm turbidity, qi deficiency and blood stasis, yang deficiency and phlegm turbidity, yin deficiency and blood stasis, and yin deficiency causing excessive pyrexia. The major types of syndrome were phlegmatic hygro-sis, blood stasis, qi asthenia. ② The Courses of disease were more than 10 years, the age were older than 60 years, and body mass index was greater than 25kg/m². Fasting blood glucose, glycosylated hemoglobin, 2-hour postprandial blood glucose were poorly controlled. The indexes showed that the course of disease, body mass index and blood glucose levels had a certain relation with early kidney damage. ③ Urine albumin in patients with qi deficiency and blood stasis of control group was higher than that of trial group, which indicate that qi deficiency and blood stasis had greater damage. ④ Urine microalbumin, low-density lipoprotein (LDL), creatinine of diabetes patients was higher than that of diabetes patients with hypertension. It showed that diabetes patients should control blood lipids, especially LDL and urine albumin and creatinine.

Conclusion The major TCM syndrome of diabetes patients with hypertension of early renal damage is stasis-phlegm syndrome, qi deficiency and phlegm turbidity, qi deficiency and blood stasis, yang deficiency and phlegm turbidity, yin deficiency and blood stasis, and yin deficiency causing excessive pyrexia, and the pathogenesis mainly relates kidney, spleen, and asthenias of spleen and kidney caused stasis-phlegm syndrome, qi deficiency and phlegm turbidity, qi deficiency and blood stasis.

RCT study on Chinese herb with invigorating qi and activating blood in patients with CHF

Yan Zhang¹, Jiange Ren²

Affiliated hospital of Liaoning Unveristy of TCM 110032, China

Liaoning Unveristy of TCM, 110032, China

Objective To observe effects of Chinese herb with invigorating qi and activating blood on exercise tolerance and quality life in patients with CHF .

Methods Multicenter, randomized, double-blind placebo study were used in this study, 280 CHF patients with qi deficiency and blood stasis syndrome were randomly divided into trial group and control group. The walking distance within 6 min and Minnesota score were compared and had no significant difference ($P > 0.05$). Based on Western therapy (Angiotension-converting inhibitors, diuretics and digoxin, etc.) , Shencao Tongmai particles and placebo were respectively used in trial group and control group, and treated for 12 weeks. Six min walking test and Minnesota Heart Failure score were observed.

Results Two hundred and sixty-five patients were completed trial (138 cases in trial group and 127 cases in the control group). Six min walking test and Minnesota Heart Failure score after treatment in trial group were obviously better than that of in control group (Six min walking test : trial group (412.75 ± 75.54) vs control group (367.70 ± 80.32), $p < 0.05$; Minnesota Heart Failure score : trial group (28.47 ± 9.74) vs control group (35.51 ± 12.66), $p < 0.05$). The quality of life in both group were improved, but trial group was better than control group. The rate of adverse events was 0.71% (1/140).

Conclusion The trail of invigorating qi and activating blood in treating exercise tolerance and quality life in patients with CHF shows that Chinese herb can improve the quality of life and clinical symptoms. The high quality of life can fit for the satisfaction and adherence of treatment. Chinese herb play an important role in improving exercise tolerance and quality life, and demonstrate that Shencao Tongmai particles has good effect for treating CHF with qi deficiency and blood stasis.

Effects of Jiedu Huoxue recipe on IL-8 and MCP-1 in patients with acute coronary syndrome after PCI operation

Lihong Gong, Bo Yu

Affiliated Hospital of Liaoning University of Traditional Chinese Medicine, Shengyang 110032, Liaoning, China

Objective To observe effects of Jiedu Huoxue recipe on IL-8 and MCP-1 in patients with acute coronary syndromes after PCI operation.

Methods From January 2009 to January 2010, 50 patients with acute coronary syndrome after PCI operation were randomly divided into two groups, control group (25 cases) and treatment group (25 cases). Control group were received conventional western medicine, and treatment group was added Jiedu Huoxue recipe bases on conventional western medicine. The level of IL-8 and MCP-1 expression was detected before and after treatment.

Results Expression of IL-8 and MCP-1 in treatment group was significantly lower than control group ($P < 0.05$).

Conclusion Jiedu Huoxue recipe can decrease expression of IL-8 and MCP-1 in patients with acute coronary syndrome after PCI operation, and can restrain inflammatory reaction and prevent occurrence of cardiovascular events.

Study of detoxicating and activating blood method on chronic heart failure state of inflammation

Shuangwei Zhuang

Guangdong second provincial Traditional Chinese Medicine Hospital, Guangzhou 510095, Guangdong, China

Objective 1. Clinical research: To observe hairy holly and red ginseng granules on CHF state of inflammatory and clinical effect on CHF, then discuss the function detoxicating and activating blood in treat CHF. 2. Experimental research: To observe hairy holly and red ginseng granules on CHF state of inflammatory and clinical effect on CHF, and further confirm effect of hairy holly.

Methods 1. Clinical research: ①One hundred and one patients with CHF were randomly divided into 2 groups, and subdivided into qi and yin deficiency, blood stasis causing water retention, qi deficiency caused by yang deficiency. Control group (49 cases) was simply used Western treatment; Treatment group (52 cases) was used conventional treatment and Chinese medicine granule (hairy holly, red ginseng); 20 cases of healthy people served as control group. ②Urine, stool routine, liver, renal function, electrolyte, blood glucose and lipids index were observed before treatment and 4 weeks after treatment to determine toxic side effects of hairy holly, red ginseng. ③High sensitive C reactive protein (hs-CRP), tumor necrosis factor alpha (TNF alpha), interleukin 1beta (beta IL-1), nuclear factor kappa B and B type natriuretic peptide (BNP) level were detected before treatment and 4 weeks after treatment for CHF patients with inflammatory status and functional status of the heart. ④ Effect of TCM, TCM syndrome, heart function, traditional Chinese medicine curative effect clinical symptom score, Minnesota heart failure score of quality of life after 4 weeks' treatment were detected and evaluate improvement of heart function. 2. Experimental research: ①Sixty SD male rats were randomly divided into operation group (48 cases) and sham group (12 cases). Heart failure rat model was established ligation of abdominal aorta and randomly divided into 4 groups, including hairy holly low dose group, high dose group of hairy holly, captopril group and control group. ② The hairy holly low dose group was gavaged hairy holly 10g / kg / D; hairy holly high dose group was gavaged hairy holly 20g / kg / D; Western medicine group fed with captopril 100mg / kg / D; blank group and sham group were gavaged ns2ml /d. ③ The groups were gavage for 2 weeks after transthoracic ultrasound heartbeat graph, line detection, the rat arterial blood centrifuge serum, using Elisa enzyme immunoassay kit for determination of serum interleukin 1beta (beta IL-1), nuclear factor kB target and carries on the comparison, inflammatory status and effect of heart function in SD rats with CHF were observed.

Results 1. Clinical research: ① The level of hs-CRP, TNF - A, IL-1, NF Beta Kappa B and plasma BNP in patients with CHF were significantly higher than those in healthy population ($P < 0.05$), and with the severity of heart failure the index rises further. ② After treatment, level of hs-CRP, TNF - A, IL-1, NF Beta Kappa B and inflammatory factor, BNP were significantly decreased by comparing with before treatment, and the changes were statistically significant ($P < 0.05$). The level of hs-CRP, TNF - A, IL-1, NF Beta Kappa B and BNP after treatment were lower than those of before treatment and had significantly difference ($P < 0.05$). ③ The conventional Western medicine added Chinese herb holly and red hair can improve heart function, obviously reduce efficacy of Chinese medicine symptom, improve Minnesota heart failure score of quality of life, had significantly meaning ($P < 0.05$). 2. Clinical research: The level of IL-1beta, NF kappa B by gavaged Chinese medicine hairy holly in CHF rats were significantly lower than those of in control group, the difference has statistical significance ($P < 0.05$). The heart color surpasses indicated that the differences between two groups in left ventricular diastolic diameter (LVDD), left ventricular systolic diameter (LVDS), ejection fraction (EF), fractional shortening (FS) were significantly differences ($P < 0.05$).

Conclusion Inflammatory factor of hs-CRP, TNF - A, IL-1, NF kB in patients with CHF were significantly higher than normal group, and the level of inflammatory factors were higher with the degree of CHF; Hairy holly and red ginseng can improve different syndrome type of patients with CHF in cardiac function and TCM syndromes, alleviate clinical symptom; Animal experimental verification of hair Holly can relieve the inflammatory status in patients with CHF. Detoxicating and activating blood method can improve CHF state of inflammatory; improve clinical symptoms and prognosis of CHF.

Effects of eliminating blood stasis to promote regeneration of Blood on ventricular remodeling and expression of TGF- β 1/Smads after AMI

Haibin Zhao, Shuai Wang, Xiujing Zhang, Jie Tang, Wei Wang, Meng Guo

The 3rd Affiliated Hospital of Beijing University of Traditional Chinese Medicine, Beijing 100029, China

Objective To study relationship between TGF- β 1/ Smads and ventricular remodeling after acute myocardial infarction in rats treated with eliminating blood stasis to promote regeneration of blood, and investigate effects of eliminating blood stasis to promote regeneration of blood in ventricular remodeling after AMI, provide experimental basis.

Methods Fifty rats were randomly divided into five groups, including Myocardial infarction group, sham-operation group, eliminating blood stasis to promote regeneration of blood treatment group, blank group, AMD 3100 group, and 10 rats in each group. Eliminating blood stasis to promote regeneration of blood treatment group were administered 3 days before operation. The rats were sacrificed 7 days later. Level mRNA, transforming growth factor (TGF) β 1, Smad3 and Smad7 with RT-PCR, content of non infarcted myocardial collagen and H-E staining results in colon were detected.

Results The expressions of TGF- β 1 mRNA and Smad3 mRNA in model group were higher than sham group ($P < 0.05$) and the expression of Smad7 mRNA in these areas was decreased in AMI group which compared with sham group. Eliminating blood stasis to promote regeneration of blood could reduce expression of TGF- β 1 mRNA, Smad3mRNA, myocardial injury, content of non infarcted myocardial collagen and increase Smad7mRNA. There were no significant difference between AMD3100 group and eliminating blood stasis to promote regeneration of blood treatment group ($P > 0.05$)

Conclusion Eliminating blood stasis to promote regeneration of blood can inhibit ventricular remodeling after myocardial infarction.

Correlation between serum leptin levels and TCM syndrome in patients with coronary heart disease

Mingjun Zhao¹, Dongmin Liu¹, Qiang Xue²

Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang 712000, Shaanxi, China

Xijing Hospital The Fourth Military Medical University, Xian 710000, Shaanxi, China

Objective To explore variation of serum leptin in patients with coronary heart disease, reveal correlation with the traditional Chinese medicine (TCM) syndrome and provide appropriate theoretical basis for early diagnosis and prevent coronary heart disease.

Methods One hundred and twenty-two patients were divided into four groups, including stasis blockage group (25 cases), phlegm internal resistance group (35 cases), heart and kidney yin deficiency group (22 cases), yang qi virtual failure (40 cases). Twenty healthy subjects were set as control group. All subjects overnight fasted 12 hours, and were extracted with 2ml elbow blood in the early morning fasting supine. The serum samples were isolated by centrifugation, and preserved at -20 °C for inspection. The fasting serum leptin levels, blood lipids and body mass index were determined and analyzed.

Results The serum leptin values were 5.81 ± 3.36 ng/ml in control group, 14.34 ± 8.78 ng/ml in phlegm internal resistance group, 11.13 ± 5.86 ng/ml in stasis blockage group, 11.12 ± 6.93 ng/ml in Heart and kidney yin deficiency group, and 12.86 ± 6.29 ng/ml in yang qi virtual failure group. For coronary heart disease serum leptin levels and the relationship of TCM syndrome type, the results indicated that serum leptin levels in each syndrome type were higher than that in normal controls ($P < 0.01$). In addition, serum leptin levels in phlegm internal resistance group was higher than that in stasis blockage group, heart and kidney yin deficiency group and yang qi virtual failure group ($P < 0.01$). There was no difference between stasis blockage group and heart and kidney yin deficiency group ($P > 0.05$). The results suggested that serum leptin levels were significantly higher than healthy controls in coronary heart disease patients, and leptin levels in syndrome of phlegm internal resistance and yang qi virtual failure were higher than that in other syndromes, the former is particularly significant ($P < 0.01$).

Conclusion Obesity, dyslipidemia, insulin resistance, chronic inflammation within the vascular response are the risk factors for coronary heart disease. However, phlegm or sputum wet, hyperleptinemia is closely related to these important risk factors, and shows positive correlation. The paper suggest that increased serum leptin levels can be used as the indicator of the phlegm internal resistance of coronary heart disease characteristics, and also provides a new way of thinking for objective study of coronary heart disease (Chest stuffiness) TCM syndrome.

Exploring management mode of Chinese Medicine Treatment for hypertensive patients

Meisheng Zheng, Lin Zhu

Hypertension Center, Wuhu Traditional Chinese Medical Hospital, Wuhu 241000, Anhui, China

Objective Chinese medicine for hypertension prevention and control of blood pressure management program: use of traditional Chinese medicine to participate in intervention of multiple risk factors and target organ damage; Emphasis on step-down standards, focus on blood pressure variability and a smooth step-down; Reasonable choose of Chinese medicine treatment options to improve antihypertensive treatment efficacy and safety.

Methods A follow-up system of Chinese medicine treatment for hypertension were established. Unify medical records of outpatient and inpatient were managed and differentiated TCM syndrome, controlled blood pressure. In the management of organizational processes, the following methods were adopted:

1. For the newly diagnosed Out-patients, the conventional risk factors and target organ damage were investigated, conducted comprehensive risk assessment and risk stratification for patients. Formulate treatment plans were made according to tongue, pulse syndrome differentiation. And buck compliance, blood pressure variability, smooth step-down were all paid attention to.
2. Network Management: A traditional Chinese medicine treatment of hypertension Manual was designed. Establish medical records management database for referral and discharged patients to assess risk factors and treatment, focus on recorded ambulatory blood pressure and home blood pressure. Provide long-term and stable platform for managerial patients combined with blood pressure variation and comprehensive information.
3. Individualized treatment of specialist technology. Chinese medicine treatment to overall modulating for heart, brain, kidney and other complications of hypertension were used. The follow-up system for hypertensive patients focused on variety of blood pressure, morning peak phenomenon, trough / peak ratios (T/P), smoothness index (SI), and evaluate long-term and stable of Chinese medicines' buck. Benefit effect of concurrent cardiovascular disease and hypertensive kidney disease through randomized control were observed. For example, 1062 patients were collected, and randomly divided into treatment group with traditional Chinese YuXia capsule and Qinnao lowing blood tablet by contrast. The main object, study design, primary efficacy endpoint, secondary efficacy endpoint, effect of Chinese medicine on systolic blood pressure, diastolic blood pressure, 24 h ambulatory blood pressure, symptoms score, left ventricular hypertrophy, urinary microalbumin were observed and evaluated the safety of Chinese medicine.

Results 1. Chinese medicine had stable, long-lasting effect for decreasing systolic blood pressure about 10-20mmHg, diastolic blood pressure about 10mmHg. The total effective rate was as high as 92% which can improve smoothness index and trough / peak ratio for 1, 2 hypertension. 2. Chinese medicine could improve symptome of dizziness, headache, limb numbness, chest tightness, improve quality of life and could be applied to different hypertension syndrome, especially for hypertension with phlegm dampness syndrome. 3. The use of Chinese herbs with better security could effectively reduce western medicine dose and had long-term use.

Conclusion Blood pressure management for hypertensive patients including blood pressure standards and integrated control of risk factors. Post-disease clinical follow-up, real-time blood pressure, 24-hour ambulatory blood pressure monitoring and home self-test blood pressure were needed. Damage target organ is juged by status of blood pressure. Chinese medicine can improve level of glucose metabolism, hyperlipidemia, left ventricular hypertrophy, proteinuria, thickening of the carotid artery plaques, etc. Regular follow-up, let hospitalized patients directly access to TCM clinical pathway for diagnosis and treatment of hypertension, interve risk factors of hypertension and cardiology can receive a good effects.

Effects of Shengjie Tongyu Granules on treating coronary heart disease angina with qi-deficiency and blood-stasis syndrome

LI Chun-yan, WEN Chuan, JIA Hai-zhong

China-Japan Friendship Hospital, Beijing, 100029 China

Objective To observe clinical effects and safety of Shengjie Tongyu Granules(SJTY, in treating patients with coronary heart disease angina.

Methods Sixty-five patients with coronary heart disease angina with qi-deficiency and blood-stasis syndrome were randomly divided into trial (36 cases) and control (29 cases) group. The trial group was treated with SJTY, one bag each time, three times a day; while control group was treated with Tongxinluo capsule (TXL), four capsules each time, three times a day. The course of treatment lasted for 4 weeks. The therapeutic effects on angina pectoris, including the number, duration and degree of pain and the dosage of nitroglycerin used were observed, and electrocardiogram (ECG), changes in TCM syndrome, blood lipid and safety index were observed before and after treatment.

Rresults There was significant difference in total angina score between two groups before and after treatment($P < 0.01$), and the total effective rate of trial group was 77.78%, 65.52 in control group, but had no significant meaning($P > 0.05$); the total effective rate of ECG in trial group was 52.78%, 58.62% in control group, and no significant meaning between two group ($P > 0.05$); the total effective rate of TCM syndrome in trial group was 75%, 58.62% in control group, and no significant meaning between two group ($P > 0.05$); There was statistical difference in content of HDL-C ($P < 0.05$), no meaning in content of TC、TG、LDL-C($P > 0.05$). No adverse reaction occurred during the therapeutic course.

Conclusion Tongxinluo capsule(TXL) can improve total scores of angina pectoris, myocardial ischemia, TCM syndrome, increase the level of HDL-C, regulate metabolism abnormality. No side effects was occurred, which demonstrated that Tongxinluo capsule (TXL) was safety for treat coronary heart disease angina with qi-deficiency and blood-stasis syndrome.

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Investigation of nutritional status in ventricular septal defect infants and its influence factors before and after surgery

Wenjuan Jiao

Beijing union medical college, Beijing 100144, China

Objective To investigate the nutritional status in ventricular septal defect infants before and after surgery and to analyze its influence factors.

Methods A descriptive design was employed in this study. Convenient sampling was used to recruit outpatients who visit the Fu Wai hospital. Total 143 ventricular septal defect infants were recruited into an investigation of months, height and weight to assess the nutritional status with Z score method before surgery and a series of questionnaires about influence factors were filled by asking their mothers and consulting medical records. The height and weight of child, the influence factors after surgery were also investigated at three points: first month, third month and sixth month after surgery.

Results ①The average of Z score of length/height for age, Z score of weight for age, Z score of weight for length/height were (-0.76 ± 1.41) , (-1.52 ± 1.52) , (-1.29 ± 1.54) before surgery. The average of Z score of length/height for age, Z score of weight for age, Z score of weight for length/height were (-0.43 ± 1.34) , (-1.23 ± 1.57) , (-1.25 ± 1.61) first month after surgery. The average of Z score of length/height for age, Z score of weight for age, Z score of weight for length/height were (-0.17 ± 1.20) , (-0.29 ± 1.39) , (-0.23 ± 1.44) third month after surgery. The average of Z score of length/height for age, Z score of weight for age, Z score of weight for length/height were (-0.23 ± 1.06) , (-0.24 ± 1.30) , (-0.45 ± 1.41) sixth month after surgery. ②The incidence of malnutrition, acute malnutrition and chronic malnutrition were 50.3%, 44.1%, 21% before surgery; the incidence of malnutrition, acute malnutrition and chronic malnutrition were 41.8%, 38.1%, 11.2% first month after surgery, the incidence of malnutrition, acute malnutrition and chronic malnutrition were 19.4%, 17.1%, 4.7% third month after surgery; the incidence of malnutrition, acute malnutrition and chronic malnutrition were 8.7%, 6.3%, 4.0% sixth month after surgery. ③Logistic analysis showed that the influential factors of nutritional status before surgery in ventricular septal defect infants were birth weight, pulmonary artery pressures, dietary intake and acquisition of nutritional information by internet or books; the influential factors of nutritional status first month after surgery were child's age, birth weight, dietary intake and preoperative malnutrition; the influential factors of nutritional status third month after surgery were birth weight, preoperative complications, feeding activities of mothers and preoperative malnutrition; the influential factors of nutritional status sixth month after surgery were birth height and feeding difficulties after surgery.

Conclusions There is a high incidence of malnutrition in ventricular septal defect infants before surgery. After surgery the nutrition status of ventricular septal defect infants were improved significantly and were normal at sixth month after surgery. Nurses should know the nutritional status and its influence factors of VSD infants before and after surgery. Nurses could educate the malnutritional child's parents with the scientific feeding knowledge to improve the nutritional status of child before surgery, and take effective guidance to help parents improving the feeding ability and the dietary intake of infants after surgery.