Seventeenth Annual Scientific Congress

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The Hong Kong College of Cardiology

Seventeenth Annual Scientific Congress

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Sheraton Hong Kong Hotel and Towers
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Scientific Programme

Friday, 26 June 2009

08:30  Registration

09:00-10:30  Free Paper Session
Percutaneous Coronary Intervention I
Hypertension and Hyperlipidemia

10:30-11:00  Coffee Break
Visit Exhibits

11:00-12:30  Free Paper Session
Percutaneous Coronary Intervention II
Coronary Artery Disease and Heart Failure

12:30-14:00  Light Lunch

14:00-15:30  Free Paper Session
Arrhythmia, Cardiac Pacing and Implantable Cardioverter Defibrillator
Valvular Heart Disease, Cardiac Surgery and Cardiac Rehabilitation

15:30-16:00  Coffee Break
Visit Exhibits

16:00-18:00  Free Paper Session
Cardiac Imaging and Echocardiography
Animal Studies and Miscellaneous

18:30-19:15  Sun Chien Yeh Heart Foundation Lecture
The Importance of Diet in Hypertension
Dong Zhao

19:15-20:00  Plenary Lecture
Optimizing RAS Control - Direct Renin Inhibitor (DRI)
Peter Liu

20:00-21:30  Welcome Dinner
Saturday, 27 June 2009

08:00 Registration

08:30-09:30 **Best Paper Oral Presentation**

09:30-10:30 **Plenary Lectures**

How does Focused-force Angioplasty Assist in PCI Procedure
*Paul Toon-lim Chiam*

Is Left Ventricular Restoration Beneficial to Patients with Left Ventricular Aneurysm? - 5 Years Outcome of 512 Cases from Fuwai Hospital
*Zhe Zheng*

09:30-10:30 **Allied Cardiovascular Health Professionals Symposium**

**Invasive Cardiology Make Easy**

ICD (Implantable Cardioverter Defibrillator) Make Easy
*Kin-keung Tsang*

EPS (Electrophysiological Study) Make Easy
*Andy Wai-kwong Chan*

10:30-11:00 Coffee Break
Visit Exhibits

11:00-12:00 **Plenary Lectures**

Highlights of Late-breaking Clinical Trials from CIT 2009
*Bo Xu*

The Analysis and Clinical Management of Acute Coronary Dissection Aneurysm
*Xuchen Zhou*

11:00-12:00 **Allied Cardiovascular Health Professionals Symposium**

**Invasive Cardiology Make Easy**

CHD (Congenital Heart Disease) Intervention Make Easy
*Yat-yin Lam*

CTO (Chronic Total Occlusion) Make Easy
*Tak-sun Tse*

12:00-13:30 Lunch

13:30-14:00 **Opening Ceremony**

Guest-of-Honour: Prof. Tai-fai Fok
Dean, Faculty of Medicine
The Chinese University of Hong Kong
14:00-15:30  **Abbott Cardiovascular Symposium**

The Latest Updates in Xience V Clinical Data  
*Mitchell W. Krucoff*

Role of Nicotinic Acid in Raising HDL-C to Reduce Cardiovascular Risk in Asian Patients  
*Anthony S. Wierzbicki*

Case Sharing  
*Pui-yin Lee*

14:00-15:15  **Free Paper Session**

Paediatric Cardiology I

15:15-16:30  **Free Paper Session**

Paediatric Cardiology II

15:30-16:30  **Medtronic Symposium I**

Selection of DES in ACS Patients  
*David Edward Kandzari*

Neointimal Coverage of Zotarolimus-eluting Stent Using Optical Coherence Tomography  
*Jung-sun Kim*

New Solution for Complex Disease  
*David Edward Kandzari*

16:30-17:00  **Poster Session (Paediatric)**

Coffee Break  
Visit Exhibits

17:00-17:30  **Medtronic Symposium II**

Radiofrequency Ablation of Atrial Fibrillation as an Adjunct to Open Heart Surgery  
*Wing-hung Chui*

17:00-18:15  **Paediatric Cardiology Symposium**

Brugada Syndrome in Children  
*Tak-cheung Yung*

DNA-based Diagnosis of Cardiac Arrhythmia in Paediatric Patients  
*Ching-wan Lam*

Cardiac Resynchronization Therapy in Children and Patients with Congenital Heart Disease  
*Kin-shing Lun*
17:30-19:00  **Plenary Lectures**

Experience with Pro-healing Stent  
*Helmut-Dietmar Glogar*

New Insight in Coronary Disease, From Plaque Imaging to Medical and Interventional Treatment  
*Stephen Wai-luen Lee*

The True Next Generation DES, NEVO™ Sirolimus-eluting Coronary Stent  
*Wei Gao*

19:15-20:00  **Hong Kong Heart Foundation Lecture**

Percutaneous Aortic Valve Implantation - Update 2009  
*Eberhard Grube*

20:00-20:45  **Plenary Lecture**

Percutaneous Transcatheter Aortic Valve Implantation - Singapore Experience  
*Paul Toon-lim Chiam*

20:45-22:00  **Dinner**

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**Sunday, 28 June 2009**

08:30  **Registration**

09:00-10:30  **Plenary Lectures**

Premature Discontinuation of Dual Antiplatelet Therapy After Drug-eluting Stent Implantation  
*Ronald Chi-hang Lee*

Contemporary Management of Chronic Total Occlusion  
*Lei Ge*

Novel Anti-thrombotic Agents: For Venous Thromboembolism Prophylaxis and Atrial Fibrillation  
*Hung-fai Tse*

10:30-11:00  **Coffee Break**  
Visit Exhibits

11:00-13:00  **PCI Cases Discussion**  
**Prize Presentation**

13:00-14:30  **Lunch**
14:30-16:00  **Plenary Lectures**

Leadless Pacemaker and Defibrillator
*Kathy Lai-fun Lee*

Recent Advances in Transcatheter Ablation of Atrial Fibrillation
*Jeffrey Wing-hong Fung*

Malignant Cardiac Arrhythmia in Structurally Normal Heart
*Chi-wo Chan*

16:00-17:00  **EPS Cases Presentation**

*Ngai-shing Mok
Kwok-keung Chan*

17:00-17:30  Coffee Break
Visit Exhibits

17:30-18:30  **Plenary Lectures**

MRI in Assessment of Non-ischemic Myocardial Abnormalities
*Shang-jen Shu*

Recent Advances in Cardiac Computed Tomography
*Carmen Wing-sze Chan*

18:30-19:30  **Cardiac CT & MRI Cases Presentation**

*Carmen Wing-sze Chan
Shang-jen Shu*

19:30-21:00  **Farewell Dinner**
PERCUTANEOUS CORONARY INTERVENTION I

Chee W. Wu, Chun L. Lau, Ngai Y. Chan, Ping T. Tsui, Ngai S. Mok and Ying K. Lo
Department of Medicine and Geriatrics, Princess Margaret Hospital, Hong Kong

Objective: To study the clinical characteristics and the mode of management of cases of stent strut fractures (SSF) after Drug Eluting Stents implantation in Princess Margaret Hospital.

Method: Cases of fracture of Drug Eluting Stent fractures were collected from operators in Princess Margaret Hospital. Their clinical records, images from coronary angiogram, IVUS and CT were reviewed.

Results: 10 SSF were detected in 7 stents among 5 patients. All fracture stents were Sirolimus Eluting Stents. 80% of the patients were male. 2 patients had SSF over RCA, 1 patient over LCX and 2 patients over LAD. 1 patient had 4 SSF over 2 overlapping stents in LAD, while 1 patient had 2 fractures over his stent in RCA. The average total length of stents used over the site of fracture was 53.8 ± 28.8 mm (range 23-96mm). The diameter of stents involved were 2.5mm in 2 stents, 2.75mm in 2 stents, 3.0mm in 1 stent and 3.5mm in 1 stent. Among the 10 SSF, only 4 of them(40%) have more than 50% stenosis at the time of first detection, the mean time from stent implantation to first detection of SSF was 19 months(range 2-52 months). All the 5 patients received Target vessel revascularization (TVR). The decision for TVR was made in 3 patients at the time of first detection of SSF, the other 2 received TVR after repeat coronary angiogram showed disease progression. For the mode of TVR, 4 of the patients had Percutaneous Coronary Intervention (PCI) and 1 had Coronary Artery Bypass Surgery. Among the 4 patients with PCI, 1 patient had 2 attempts of PCI with both of them failed because of failure of wire penetration, PCI in the other 3 patients were successful with Everolimus Eluting Stents implanted in 2 patients and Zotarolimus Eluting Stents implanted in 1 patient.

Conclusion: Fracture stent is observed in a significant number of patients after Sirolimus Eluting Stent implantation. TVR is frequently required.

3. Angiographic follow-up of Everolimus-eluting stents in Unprotected Left main intervention
PT Tsai, CL Lau, YK Lo, CW Wu, NS Mok
Department of Medicine and Geriatrics, Princess Margaret Hospital, Hong Kong

Purpose: To review the safety and efficacy of everolimus-eluting stents in unprotected left main intervention.
Method: Retrospective case series analysis. Results: Tim (8 males, 2 females) patients of mean/±sd age of 66±7 were recruited after screening 324 consecutive patients implanted with 427 everolimus-eluting stents. All patients preferred percutaneous coronary intervention to surgery. Provisional T-stenting with minimal protrusion was the strategy in 8 patients with true bifurcation lesions. Three patients required side branch (left circumflex) stenting. One patient had implantation of kissing stents. One patient had ostial left main stenting. Intravascular ultrasound and high pressure post-dilatation were routinely performed. Final kissing balloon dilatation was performed in 8. All patients survive to date and have had no major adverse cardiac events. Angiographic follow-up within one year was performed in all patients. Minimal intimal growth and no significant in-stent restenosis were noted. Conclusion: Initial experience of everolimus-eluting stents in unprotected left main intervention appeared safe with no significant angiographic restenosis.

4. Clinical Outcomes of Patients with Bare Metal In-stent Restenosis treated with Drug Eluting Stents
ECY Laung, CS Yee, CK Chan
Division of Cardiology, Department of Medicine and Geriatrics, United Christian Hospital, Hong Kong

Purpose: The aim of this study was to evaluate the medium term outcome of patients with bare metal in-stent restenosis treated with drug eluting stents (DES).
Method: Patients who had coronary angiogram performed in the United Christian Hospital between 1 Jan 2006 and 31 Dec 2008 were included. Demographic data was retrieved from our clinical records and percutaneous coronary intervention registry. Patients' baseline parameters including age, gender, previous history of cardiovascular disease, comorbidities including diabetes mellitus, hypertension, hyperlipidemia, peripheral vascular disease and renal impairment were collected. Data regarding their clinical outcomes were retrieved from the computer based clinical record. Major adverse cardiac events were defined as mortality, target lesion revascularization (TLR) and myocardial infarction.

Results: A total of 47 patients diagnosed with in-stent restenosis were treated with drug eluting stents. There were 11 (23.4%) female, 26 (55.3%) diffuse, 6 (4.0%) post-stenotic disease. 7 (4.9%) total in-stent restenosis. Twenty six patients (53.9%) were male and the others were female. Their mean age was 66.7±11.0. Intravascular ultrasound was used in 40 cases (85.1%). The mean original stent size and length were 2.9±0.2mm and 28.8±12.3mm respectively. The mean subsequently implanted DES size and length were 3.1±0.5mm and 34.0±17.0mm respectively. During a mean follow-up of 31.7±11.2 months, there were 3 deaths (6.5%), 2 cardiac and 1 non-cardiac event and 4 non-cardiac event. Univariate analysis showed that peripheral vascular disease (p=0.046), small failure (p=0.001) and an ejection fraction below 35% (p=0.009) were associated with higher mortality. Six patients had (12.8%) non-fatal myocardial infarction and two had (4.3%) target lesion revascularization. There was no stent thrombosis.

Conclusion: During medium term follow up, the treatment of bare metal in-stent restenosis with drug eluting stents is safe and appears promising. Long term outcome remains to be evaluated.
5. Cost Effectiveness of Drug-eluting Stent in Hong Kong – A Single Centre “Real World” Experience  
Vivian W.Y. Leung, F.Y. Poon, C.Y. Chan, C.W. Mak, C.M. Yu  
Department of Cardiology, Queen Elizabeth Hospital, Hong Kong  
Background: patients with drug-eluting stent (DES) in reducing restenosis and the need for repeat revascularisation in selected cases have been demonstrated by randomized controlled trials. However, the initial cost of DES is much higher than BMS and there is little data on the cost-effectiveness of DES in Hong Kong. We aimed to evaluate the cost-effectiveness of DES in a Chinese population.  
Method: We retrospectively reviewed consecutive patients who underwent PCI with implantation of a DES in a single centre over a period of 1 year.  
Results: There was no difference in the one-year follow-up period (including death, non-fatal myocardial infarction, target lesion revascularization, target vessel revascularization, and cardiac death). The cumulative incidence rate was 2.1% for DES and 0.8% for BMS. The cost was lower for DES with a mean cost of HK$ 30,000 compared with BMS (HK$ 50,000). The cost-effectiveness ratio of DES versus BMS was 0.6 for QALY gained compared with BMS.  
Conclusion: Both DES and BMS are effective in reducing the incidence of target vessel revascularization. However, DES is more cost-effective than BMS. The cost-effectiveness ratio of DES was lower than BMS (0.6 vs. 1.2). The cost-effectiveness ratio of DES versus BMS was 0.6 for QALY gained compared with BMS.
9.

Validation of the Mayo Clinic Risk Score for In-hospital Complications after Percutaneous Coronary Intervention in the Drug-eluting Stent Era using a Large Australian Interventional Registry

Brian P. Yoo on behalf of the Melbourne Interventional Group (MIG), Division of Cardiology, Department of Medicine and Therapeutics, The Chinese University of Hong Kong.

Purpose: The Mayo Clinic Risk Score (MCRS) has 7 pre-procedural clinical variables (age, creatinine, ejection fraction, myocardial infarction (MI) ≤24 hours, shock, peripheral vascular disease (PVD) and heart failure) which have been validated to predict cardiovascular complications after percutaneous coronary intervention (PCI). External validation using an independent data set in the drug-eluting stent era is lacking.

Methods: We assessed the ability of the MCRS to predict in-hospital mortality and MACE (death, MI, stroke, unplanned revascularization) among 10,556 consecutive PCI’s between April 2004 and December 2008. Discriminative ability of MCRS as a predictor of mortality and MACE was assessed using receiver operating characteristic (ROC) curves.

Results: The cohort was predominantly male (74.8%) with a mean age of 64.6±12.2 years. Co-morbidities included diabetes mellitus (24.2%), heart failure (5.0%) with mean ejection fraction of 54±12%, renal impairment (4.3%) and PVD (7.9%). Presentation with MI ≤24 hours and shock were 23.6% and 2.35%, respectively. Drug-eluting stent was used in 44.1% of cases. Correlation between MCRS and in-hospital mortality was moderate (r=0.52), but its discriminatory ability to predict in-hospital mortality was high (area under ROC=0.93, 95%CI 0.91-0.96), and was maintained among subgroups. The correlation between MCRS with MACE (r=0.36) and its ability to predict MACE (0.75, 95%CI 0.70-0.76) was lower.

Conclusions: A risk-scoring-system based on 7 clinical variables appears to accurately predict cardiovascular complications after PCI in this Australian cohort. This model may be useful for providing patients with individualized, evidence-based estimates of procedural risk as part of the informed consent process prior to PCI.
HYPERTENSION AND HYPERLIPIDEMIA

10. A single nucleotide polymorphism in the APOA5 gene is a major determinant of plasma triglyceride levels in Hong Kong and Guangzhou Chinese

C.Q. Jiang1, B. Liu1, J.M. Lin, X.J. Yue1, K.L. Ong1, S. Tam1, K.S. Wong1, B. Tomilinson2, K.S.L. Lam1, T.H. Lam1, G.N. Thomas1, B.M.Y. Cheung1

1Guangzhou no. 12 Hospital, Guangzhou, China, 2University of Hong Kong, Department of Medicine, Hong Kong, China, 3Queen Mary Hospital, Department of Clinical Biochemistry, Hong Kong, China, 4Chinese University of Hong Kong, Department of Medicine and Therapeutics, Hong Kong, China, 5University of Hong Kong, Department of Community Medicine, Hong Kong, China, 6University of Birmingham, Department of Public Health and Epidemiology, Birmingham, United Kingdom, 7University of Birmingham, Department of Clinical Pharmacology, Birmingham, United Kingdom

Purpose: Single nucleotide polymorphisms (SNPs) in the apolipoprotein A5 (APOA5) gene have been associated with hypertriglyceridemia. We investigated which of the SNPs in the APOA5 gene were associated with triglyceride levels in two independent Chinese populations.

Methods: Four tagging SNPs were chosen from the database of HapMap on Han Chinese and the genotypes were determined in 1375 unrelated subjects in the Hong Kong Cardiovascular Risk Factor Prevalence Study. Replication of the findings was sought in 1996 subjects from the Guangzhou Biobank Cohort Study. The main outcome measure was plasma triglycerides.

Results: Among the four tagging SNPs, rs667599 (-1131T>C) was most strongly related to log-transformed triglyceride levels among Hong Kong subjects (β = 0.192, P = 2.6 x 10^-3). Subjects with CC genotype had 36.1% higher plasma triglycerides than those with TT genotype in Hong Kong. This association was confirmed in Guangzhou subjects (β=0.159, P = 1.25 x 10^-3) and was significant irrespective of sex, age group, obesity, metabolic syndrome, hypertension, diabetes, smoking, and alcohol drinking. The odds ratio for plasma triglycerides ≥1.7 mmol/L associated with the genotype TT and CC was, respectively, 1.83 (1.37-2.39) and 2.22 (1.44-3.43) in Hong Kong subjects and 1.27 (1.05-1.54) and 1.97 (1.42-2.75) in Guangzhou subjects.

Haplotype analysis suggested the association was due to rs667299, without any significant contribution from other tagging SNPs.

Conclusion: The collaborative findings in two independent populations indicate that the -1131T>C polymorphism in the APOA5 gene is an important and clinically-relevant determinant of plasma triglyceride levels in Chinese.

12. Effects of Polymorphism in Hepatic Uptake Transporter SLC10B1 on Lipid Responses to Simvastatin

VWL Mak1, M Hu1, TTW Chu1, VWY Lee1, T Tso1 & B Tomilinson1

1Department of Medicine & Therapeutics, 2School of Pharmacy, Faculty of Medicine, "Department of Chemical Pathology, The Chinese University of Hong Kong, Shatin, Hong Kong SAR

Introduction: The membrane transporter organic anion transporter polypeptide OATP1B1 (gene SLC10A1) is important in the uptake of hydrophobic statins to their site of action in hepatocytes. Certain common single nucleotide polymorphisms (SNPs) result in altered activity of OATP1B1. Simvastatin acid, the active form of simvastatin, is a substrate of OATP1B1. We investigated the relationship of SLC10A1 SNPs on lipid lowering responses.

Method: Chinese patients with high cardiovascular risk were treated with simvastatin 40 mg daily for at least 6 weeks. They were genotyped for common SNPs in SLC10B1. Changes in lipid parameters were compared among genotype groups.

Results: 139 patients completed treatment with good compliance. Eight SNPs were analyzed at SLC10B1 that could influence in activity. Mean total cholesterol (TC) reduction was greater in those having at least one mutant allele at 579C>T (CC/CT/TT: 18.120; -33.1%±37.6%; p<0.05). Similarly, lipid responses were generally better for those with mutant alleles at SNP 42277G>T (TT/CG/CC: 35.103; TC: -33.5%±38.2% LDL-C: -45.2%±49.6%; TG: -10.8%±22.2%; p<0.05). There were no significant findings with other SNPs or among haplotypes *A, *B and *F.

Discussion: SNPs in SLC10B1, which may influence the pharmacokinetics of simvastatin acid, appear to modulate the lipid lowering responses to simvastatin but this needs further replication.

13. Cholesterol lowering in Patients who Have PCI Performed — safety and efficacy of the generic statin?

Vip TWCh, Mai SY, Kong CM, Yuen CM, Kwong NP, Tam KM, Law TC, Kwan WK, Woo KS

Department of Medicine, Yau Chai Hospital, HKSSA, China

Background: Cholesterol lowering treatment with HMGCoA Reductase inhibitors (statins) is essential in most of the cardiovascular disease patients. The utilization of generic drugs is being casted doubt by the general public. On the other hand, the saving associated with effective and safe generic drug really help to cut down the drug budget and allow the use of newer potent and brand name drugs for some special patients.

Methods: To evaluate the safety and efficacy of the generic statins widely used in our hospital since 2007, we studied 143 YCH patients undergoing PCI procedures at PMH in the year 2005. 8 patients died and 5 patients defaulted/referred to other hospitals in year 2005-2006. The remaining 130 patients were followed up and analyzed in year 2007-2008.

Results: All except 8 patients (one left unpublished and one non-pharmacological treatment) received statins. No patient suffered from myositis or hepatitis. 2 patients in 240 required dose reduction for elevated CPK.

Status dose/simvastatin equiv. Z mg/day(5): Gen 0.96 (2.99) 0.72 (2.62) 0.84 > 1.0 0.70 (2.73) 0.70 (2.73) 0.70 (2.73)

Generic Z statin Status dose/simvastatin equiv. Z mg/day(5): Gen 0.96 (2.99) 0.72 (2.62) 0.84 > 1.0 0.70 (2.73) 0.70 (2.73) 0.70 (2.73)

Brand 271(10) Excess dose (mg) Excess (mg)

1.151 (7) 2.91 2.56 2.22 1.89 1.57 1.25 0.92 0.61 0.30 0.19 0.10

Conclusion: The clinical efficacy and safety of generic statins are not significantly different from the brand statins. Regularly close monitoring is mandatory for safety using generic drugs.
Abstracts for Free Paper Session:

14. A Epidemiology of Metabolic Syndrome in the races Uyghur and Han of Xinjiang
ZHOU Xiao-hui, HE Bin-xian, MIAO Hai-jun, XU Ming-feng, KABiT-muer. The First Affiliated Hospital, Xinjiang Medical University, Urumqi, Xinjiang, 830004 P. R. China

Objective: To investigate the prevalence of metabolic syndrome (MBS) and its components in Uyghur and Han nationalities (≥50 years) of Xinjiang and select high risk population.

Methods: The participants were 1,187 Uyghurs (men 521 and women 666) and 1948 Han nationalities (men 879 and women 1069), with the methods of random sample from Xinjiang in China. Subjects respectively in Uyghur and Han were planned to attend the waist circumference, hypertension, hyperglycemia, blood-fat abnormality epidemiology in south and north of Xinjiang. Statistical analysis with SPSS software package.

Results: (1) Morbid (waist circumference, male ≥90cm, female ≥80cm): Uyghur and Han's total morbid 32.85% (male 25.14%, female 39.07%, P<0.05), Han 27.7% (male 22.53%, female 32.09%, P=0.05). Uyghur 41.03% (male 29.60%, female 50.30%, P=0.05). (2) Morbid of obesity (waist circumference, male ≥90cm, female ≥80cm): Uyghur 59.6%, Han 50.6% (P<0.05). Hypertension (SBP≥130 or DBP≥85mmHg): Uyghur 57.9%, Han 58.6% (P<0.05). Hyperglycemia (FPG≥5.6mmol/L): Uyghur 37.8%, Han 32.4% (P<0.05). Blood-fat abnormality (TG≥1.7mmol/L, HDL-C<1.0mmol/L): Uyghur 28.7%, Han 39.3% (P<0.05). (3) Every age's prevalence of MBS, 50-59: Uyghur 33.02%, Han 23.59%, 60-69: Uyghur 36.50%, Han 34.44%. ≥70: Uyghur 27.65%, Han 28.30%.

Conclusion: (1) The prevalence of MBS is high among Uyghur and Han in Xinjiang, especially in uyghur women. (2) Morbid of obesity: Uyghur >Han, especially in Uyghur women. Hypertension: both nationalities are equal. Hyperglycemia: Uyghur >Han. Blood-fat abnormality: Han > Uyghur. (3) The prevalence of MBS is highest from 60 to 69.

15. Serum sex hormone levels associated with aging and arterial blood pressure in the Uyghur longevity people in Hetian. Xinjiang Uygar Autonomous Region
XJ Xu and YPMa
Department of Hypertension. The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China

Purpose: The rate of essential hypertension increases with aging. There were many studies that have shown the sex hormones may influence the blood pressure in multiple ways. To investigate the sex hormone levels associated with aging and arterial blood pressure in the Uyghur longevity people (age ≥90 years old) in Hetian of Xinjiang Uygar Autonomous Region.

Methods: 223 of Hetian Uygar old people were elected in this study. 115 people were 90-110 years old and 108 were 65-70 years old. According to the BP values, the subjects were classified as well as essential hypertensives (EH): n=70. SBP/DBP ≥140/90mmHg) and normotensives (NT: n=153. SBP/DBP<140/90mmHg). And according to the age, the subjects were classified as the longevity people group and the old people group. Height, weight and blood pressure were measured in both groups. Estradiol (E2) and testosterone (T) were measured by radioimmunoassay.

Results: (1) In both ET and NT groups, compared with the old people, T values were lower in the longevity men (T: 8.0±6.9nmol/l vs. 17.5±6.1 nmol/l, NT: 8.9±7.5nmol/l vs. 19.7±8.0nmol/l) (P<0.05) and were higher in the longevity women (T: 4.4±5.8nmol/l vs. 1.6±0.6nmol/l, NT: 3.0±6.3nmol/l vs. 1.4±0.7nmol/l) (P<0.05). (2) The longevity men in NT group have higher E2 values than that in EH group (E2: NT: 82.0±54.6 pmol/l vs. EH: 66.3±24.7 pmol/l) (P<0.05). (3) Correlation analysis showed a significant correlation between T values and SBP (r=0.31, P<0.05). (4) A positive correlation was showed between T and E2 values in the longevity group(male: r=0.346, P<0.05; female: r=0.338, P<0.05). (5) The multiple regression analysis showed a significant effect of age and E2 values on T.

Conclusions: In Hetian of Xinjiang Uygar Autonomous Region, T values were lower in the longevity men and higher in the longevity women than the old groups. T values decreased with SBP increasing. E2 and age may be the main influential factors on T values. E2 may be a kind of protection for the blood pressure of the Uygar longevity men.
Abstracts for Free Paper Session:

16. The Clinical Analysis of Hypertension with Adrenal Hyperplasia
XJ Xu and JS Zhang
Department of Hypertension. The First Affiliated Hospital of Xijing Medical University, Xi’an, China

Purpose: To observe the characters of hypertension with adrenal hyperplasia.

Methods: We explored 685 hypertensives all took the CT examination in adult. Based on the CT result, the patients were divided into hypertension with adrenal hyperplasia (n=114) and without adrenal hyperplasia (n=141).

Results: (1) There were 114 hypertensives with adrenal hyperplasia in 685 patients including 99 in left adrenal (86.49%), 1 in right adrenal (0.85%) and 14 in both adrenals (12.80%). (2) The observation group compared with the control group; the cortisol level of observer Group at 17:00 higher than controlled group (P <0.05). (3) The observation group compared with the control group; serum potassium level of the observation group was lower than the control group (P <0.05). (4) The correlation analysis in the observation group + control group; serum potassium and blood glucose two hours was a negative correlation; the Pearson correlation was -0.235 and the Spearman correlation was -0.277. Observer Group of blood glucose with no correlation between serum potassium.

Conclusion: That hypertension with adrenal hyperplasia mostly occurred in left adrenal. The hyperplasia of the adrenal gland secretion may have independent functions. The impact of the regulation of blood pressure and serum potassium level, serum potassium and blood glucose was negatively correlated.

17. Changes analysis of angiotensin II and aldosterone in the Uygur natural longevens from Hetian in Xinjiang
XJ Xu, L. Han, SM Mai, XT Dili, XY Zhang, YS Msanmai and XM Mao
Department of Hypertension. The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China

Purpose: To explore the reason of longevity among Uygur natural longevens through the analysis of angiotensin II and aldosterone.

Methods: The longevens people aged 299 years old (n = 99) were verified by systematic investigation. Uygur old people aged 65-70 years old (n = 108) were selected with cluster sampling from Hetain. angiotensin II and aldosterone were measured by radioimmununassay in them.

Results: the plasma level of AT-II in the natural longevens were higher than those of the Uygur old people group, but the ald of the longevens were lower than those of the old people (P 0.05). (2) By the hypertension clinic monitoring in hypertensin patients, the plasma level of AT-II in the natural longevens were close to those of the Uygur old people group (P <0.05), but the ald of the longevens were lower than those of the old people (P <0.05). In non-hypertensin patients, the plasma level of AT-II in the natural longevens people were higher than those of the Uygur old people group, but the ald of the longevens were lower than those of the old people (P <0.05). (3) There was a positive correlation between age and AT-II (r =0.217, P <0.01), there was a negative correlation between age and ald (r = -0.623, P < 0.01).

Conclusion: the prevalence rate of hypertension in the natural longevens people were lower than those in the Uygur old people group, they had had features in changes of the 24-hour ABPM; the risk of target organs damage was lower than Uygur old people, these may be some reason which promoting longevity among Uygur natural longevens people.

TWC Ying1, P Chook2, SK Kwong3, EML Wong4, W Cheng5, JKY Lui6, AWY Yu7, CC Sent8, TYK Chan9, KP Fung4, KC Leong10, KS Woo11, 12. Yan Chai Hospital, The Chinese University of Hong Kong, 1Alice Ho Miu Ling Nethersole Hospital, Hong Kong

Introduction: Dangshen and Gegen (D&G) are two traditional herbal medicines used for cardiac symptoms in ancient Chinese medicinal literature. Recent studies suggest their therapeutic effects in blood pressure and lipid-lowering, anti-oxidation, microcirculation-promoting, foam cells-modulation and have beneficial effects on atherosclerotic process in coronary patients.

Methods: To evaluate the potential of D&G in primary atherosclerosis prevention in high risk hypertension, 90 patients (74.4% male) with high risk hypertension associated with left ventricular hypertrophy (63.7%), diabetes mellitus (62.5%) and renal insufficiency (30%) were randomized to receive D&G herbal capsules (2g/day), i.m/day D&G or identical placebo capsules in double-blind and parallel fashion for 12 months, on top of their anti-hypertensive treatments. Flow-mediated dilation (endothelium-dependent dilation, FMD) and nitroglycerin-induced dilation (endothelium-independent dilation, NTG) of brachi artery, and cardiac intima-media thickness (systolic atherosclerosis marker, IMT) were measured by high resolution B-mode ultrasound.

Results: Their mean age was 55.8 years. After 12 months and compared with baseline, there were no significant changes in blood pressure, heart rate, blood cholesterol (TC), haematocrit, glucose (HbA1c), and creatinine profiles in both placebo and D&G groups. FMD and IMT but not NTG significantly improved after D&G (p<0.001) and not after placebo treatment. No significant difference in FMD and IMT changes in the 2 D&G groups was seen. The study herbal drugs were well tolerated in both groups, with no significant adverse events reported.

Placebo (n=29)
Baseline (12 months) D&G (2g/day) (n=31) Baseline (12 months) D&G (2g/day) (n=30) Placebo (n=29) Baseline (12 months) D&G (2g/day) (n=30)

TC (mmol/l) 4.8±0.9 4.7±1.0 5.4±1.1 5.1±1.2 5.2±0.9 5.0±0.9
HbA1c (%) 7.5±2.6 7.5±2.0 6.8±2.0 6.8±0.7 6.4±1.0 6.3±1.0
Creatinine (µmol/l) 110±41 109±50 128±58 130±64 110±49 110±83
FMD (%) 5.3±1.3 6.2±1.1 5.4±1.9 7.9±2.1* 5.3±1.7 6.4±1.9* NTG (%) 15.2±5.2 15.9±3.1 18.3±3.9 16.7±3.3 15.4±3.1 16.1±3.1 IMT (mm) 8.0±1.8 8.1±1.7 7.9±2.0 7.4±1.6** 8.2±1.8 7.8±1.6*

Conclusion: Dangshen and Gegen adjuvant treatment was well tolerated and significantly improved atherogenic process in high-risk hypertensive patients, with potential in primary prevention of atherosclerosis.

19. The Effects of Vitamin B12 and C Supplementation on Atherosclerotic Process Related to Environmental Tobacco Smoke
ML Chui, P Chook1, XIF Feng2, TWC Ying1, ML Eversa, KV Koon1, TYK Chan1, HM Leong2, KS Woa, 1Hospital Central Comple de S. Iaumia, Macao, 2Kiang Wu Hospital, Macau, 3Macao Heart Foundation, The Chinese University of Hong Kong

Introduction: Atherosclerosis is the most important medical problem of modern society. High environmental tobacco smoke in concert is associated with an accelerated atherogenic process. We hypothesize vitamin B12 and C supplementation, with favourable antioxidant and other effects, may be beneficial in vascular protection.

Methods: 78 passive smoking casino employees (19.2% male, mean age 45.08±2.3 years) were randomized to receive vitamin B12 (500µg daily), vitamin C (200mg daily), vitamin B12+C or double image-matched placebo capsules in double-blind 2 x 2 factorial design fashion for 1 year. Vascular reactivity (brachial FMD) were measured by ultrasound at baseline and 12 months.

Results: Of the 78 passive smokers, 9 had hypertension, 6.4% had diabetes mellitus and 19.2% hypercholesterolemia. There was no significant changes in blood pressure, lipid (LDL-C, HDL-C and TG) profiles, glucose, creatinine and body mass index (BMI) during supplementation for 1 year, but a significant increase in blood B12 during vitamin B12 (p<0.02) and vitamin B12+C supplementation (p<0.01). Brachial FMD improved during 3 active treatment periods (p<0.001), but not during placebo, and was highest during vitamin B12+C combination than either vitamin B12 or C period (p<0.04).

Conclusion: Vitamin B12 or C supplementation used alone or in combination improves vascular reactivity and may contribute to atherosclerosis prevention in high environmental tobacco smoke.
HK COLLEGE OF CARDIOLOGY, SEVENTEENTH ANNUAL SCIENTIFIC CONGRESS

ABSTRACTS

Abstracts for Free Paper Session:

PERCUTANEOUS CORONARY INTERVENTION II

20.

Diabetes Mellitus and Atherosclerotic Plaque Compositions: Insights from Virtual Histology.

MKY Lee, WKT Hau*, KT Chan, CL Fu, MC Chan, CS Chiang

*Department of Physiology, Institute of Cardiovascular Medicine and Research, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong.

Purpose: Patients with diabetes mellitus (DM) have worse clinical outcomes regardless of revascularization strategies. This implies that the coronary plaque morphology may differ in diabetic patients compared to non-diabetics. The objective of this study was to evaluate tissue composition of coronary plaques in patients with DM and non-DM by using Virtual Histology (VH-VIVUS).

Methods: In a separate study, 150 patients (86 DM and 64 non-DM) with angiographically visible lesions were selected for assessment with a commercially available VH-VIVUS console (Volcano Corp.). Patients were divided into two groups: a DM group (10/16 mm, 38 lesions) and a non-DM group (8/16 mm, 34 lesions). VH-VIVUS allows reliable characterization of atherosclerotic plaques into four different types: fibrous, fibrolipidic, dense calcium and necrotic core. All VH-VIVUS studies were performed using a 20MHz solid-state catheter (EchoEye, Volcano Corp.) with an automated pullback speed of 1.0 mm/s. VIVUS frames with the largest plaque burden from each culprit lesion were grabbed for analysis. Differences in means between the groups were analyzed by the two-sample t test. All values were expressed as mean ± SD, and p values ≤ 0.05 were considered significant.

Results: Overall relative findings and plaque composition are presented below:

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>DM</th>
<th>Non-DM</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumen Diameter (mm)</td>
<td>2.45 ± 0.50</td>
<td>2.35 ± 0.48</td>
<td>0.22</td>
</tr>
<tr>
<td>Lumen Area (mm²)</td>
<td>4.93 ± 2.40</td>
<td>4.55 ± 2.19</td>
<td>0.25</td>
</tr>
<tr>
<td>Vessel Diameter (mm)</td>
<td>4.26 ± 0.71</td>
<td>4.09 ± 0.77</td>
<td>0.17</td>
</tr>
<tr>
<td>% Fibrous</td>
<td>4.87 ± 1.24</td>
<td>4.52 ± 1.24</td>
<td>0.28</td>
</tr>
<tr>
<td>% Calcium</td>
<td>5.65 ± 3.16</td>
<td>5.71 ± 3.07</td>
<td>0.016</td>
</tr>
</tbody>
</table>

Conclusion: When compared to non-DM patients, DM patients had more necrotic core, lesser fibrous and fibrolipidic tissues in their plaque content, suggesting DM patients have a substantially higher risk of clinical events than non-DMs.

21.

Outcome of patients with potential bleeding tendency receiving Genous Bioengineered R-stent

Lih-Fen Chong, Chi-Kin Chan, Chi-San Yee, Division of Cardiology, Department of Medicine and Genomics, United Christian Hospital, Kowloon, Hong Kong.

Introduction: Drug eluting stents are proved effective in reducing restenosis and yet, the associated delay endothelialization poses concern with stent thrombosis. Paclitaxel dual antiplatelet therapy (DAPT) is often required. In current, the Genous stent is coated with antibodies which attract circulating endothelial progenitor cells, thus accelerating endothelialization at the site of vascular injury. This pre-hoisting effect may reduce duration of DAPT and therefore be useful in patient who cannot tolerate standard duration of DAPT due to various reasons.

Objective: We report on our initial clinical experience with Genous stent in patients with potential bleeding tendency which may limit the duration of use of DAPT.

Method: Indication of PCI, patient demographics, procedure details, concomitant use of DAPT, major adverse cardiovascular events (death, cardiac death, MI, CABG clinically driven TLVR, stent thrombosis, bleeding events) were retrieved from our PCI registry and analysed.

Results: A total of seven subjects were recruited since August, 2007, among which four were male patients. Their mean age was 72.3 ± 4.5 years (range 67-75). Five out of seven had at least 2 risk factors, namely hypertension, diabetes mellitus, hyperlipidemia and current smoking. Five patients presented with NSTEMI and 2 patients had unstable angina. All of them were either having concomitant bleeding tendency or absence major operation history. On average, two lesions were tackled in each case with lesion types mostly B2/C (HASS/ACC coronary lesion classification).

The procedural success, defined as angiographic success and absence of MACE at discharge, was 100%. The total MACE at 30 days was 0%. There was no bleeding event leading to premature termination of DAPT. Over a mean follow up of 180 days, there was no additional MACE. All patients reported an improvement in angina class. However, one patient did miss a surgical wound on day 7 due to tears.

Conclusion: On merits of pre-hoisting effects, Genous stent can be considered as an alternative in patients who require PCI but also having bleeding tendency or an absence major surgery. However, long term data and large scale patient study may be needed to prove its long term efficacy and safety against other stent types.

22.

Clinical and Biochemical Outcome of PCI Patients with moderate to severe renal impairment

Yip TWC, Man SY, Kong CM, Tam KM, Law TC, Yuen CM, Kwong NP, Kwak WN, Woo KS. Department of Medicine, Yen Chai Hospital, RSHSR, China.

Background: Atherosclerotic disease is prevalent among subjects with many common risk factors which can also affect the renal function. Thus the decision for patients with renal impairment to go for revascularization therapy is challenging.

Methods: To evaluate the clinical and biochemical outcome of patients after percutaneous coronary intervention (PCI), 143 YCH patients undergoing 173 PCI procedures at PMH in the year 2005 were studied and followed up over 3 years. Their Major Adverse Cardiovacular Events (MACE) (death, myocardial infarction, repeat PCI or CABG) were analysed. 3 categories of renal function were grouped for comparison: <50, 50-75, >75 ml/min/1.73m².

Results: There was significant difference in the patient outcome, with higher MACE for the poorest renal function group, but renal function is relatively preserved in this group of patients.

<table>
<thead>
<tr>
<th>Baseline renal impairment</th>
<th>Moderate to Normal</th>
<th>Mild to Moderate</th>
<th>Mild to Severe (n=22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/R(mg/min/1.73m²)</td>
<td>64 ± 1.65</td>
<td>68 ± 1.61</td>
<td>60 ± 3.03**</td>
</tr>
<tr>
<td>Baseline GFR (ml/min)</td>
<td>97 ± 15</td>
<td>82 ± 16</td>
<td>60 ± 3.03**</td>
</tr>
<tr>
<td>Serum creatinine (mg/dl)</td>
<td>2.5 ± 1.0</td>
<td>2.5 ± 0.5</td>
<td>3.0 ± 1.0</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>6.3 ± 1.3</td>
<td>6.3 ± 1.3</td>
<td>6.3 ± 1.3</td>
</tr>
<tr>
<td>Serum albumin (mg/dl)</td>
<td>3.9 ± 0.3</td>
<td>3.9 ± 0.3</td>
<td>3.9 ± 0.3</td>
</tr>
<tr>
<td>Body weight (Kg) (updated)</td>
<td>78.6 ± 9.7</td>
<td>78.6 ± 9.7</td>
<td>78.6 ± 9.7</td>
</tr>
<tr>
<td>Ex/SUR (Kt/m²)</td>
<td>1.06 ± 0.1</td>
<td>1.06 ± 0.1</td>
<td>1.06 ± 0.1</td>
</tr>
<tr>
<td>CTG (end-diastole) (ms)</td>
<td>368 ± 56</td>
<td>438 ± 56</td>
<td>438 ± 56</td>
</tr>
<tr>
<td>TTG (end-systole) (ms)</td>
<td>360 ± 56</td>
<td>438 ± 56</td>
<td>438 ± 56</td>
</tr>
<tr>
<td>LVEF (%)</td>
<td>59 ± 5</td>
<td>59 ± 5</td>
<td>59 ± 5</td>
</tr>
<tr>
<td>SYNTAX score (updated)</td>
<td>23 ± 1</td>
<td>23 ± 1</td>
<td>23 ± 1</td>
</tr>
</tbody>
</table>

Conclusion: Though patients with moderate to severe renal impairment had poorer outcome it general, clinical and biochemical parameters suggest that they still benefit from PCI procedures.

23.

Outcomes in Elderly Patients Undergoing Percutaneous Coronary Intervention in a Regional Hospital

David KY Lo, John Wong, CK Chan, HF Leung, CS Yue. Division of Cardiology, United Christian Hospital, Hong Kong SAR, China.

Purpose: Prior studies of percutaneous coronary intervention (PCI) in elderly patients demonstrate increased in-hospital and one-year mortality. We sought to evaluate the result of PCI in octogenarians (patients aged 85-89 years) in a regional hospital.

Method: We performed a retrospective analysis using our PCI database. We included all consecutive patients aged 80 to 89 years undergoing PCI between March 2006 and March 2008 in our hospital. All patients discharged were followed up for at least 1 year (mean follow-up period of 609 Days, 279 Days). Their clinical characteristics, procedural data, cumulative one-month and medium-term clinical outcomes (MACE, major adverse cardiac and cerebrovascular events, consisting of death, myocardial infarction (MI), target vessel revascularization and stroke) were obtained and analyzed.

Results: Fifty-four patients were identified with a mean age of 82.2 ± 2.8 years, with male predominance (63%). It contributed to 4.8% of the PCI we performed in that period. The indications of PCI were stable angina in 61% of patients and acute coronary syndrome in the remaining 39%. Coronary angiography documented multi-vascular disease in 51.9% of patients with relatively complex lesions (type B or C) in 93% of treated patients. Acute procedure success rate was 94% and stents were used in 94% of cases. Cumulative mortality at hospital discharge and by 30-days was 0% and increased to 5.6% (3 patients) at six-month and 9.3% (5 patients) during the whole follow-up period. At least 80% of mortality was related to cardiovascular events. The causes of death included myocardial infarction (MI) (3 cases), stroke (1 case) and unknown (1 case). The cumulative rate of recurrent myocardial infarction and stroke was 11.1% and 3.7% respectively at long-term. No repeated revascularization was performed within the follow-up period. The remaining patients reported improvement in anginal symptoms. 7.4% of patients remained symptomatic in terms of angina (CCS class II) after PCI, and only partial revascularization was achieved in this group of patients.

Conclusion: PCI can be performed safely in well selected elderly patients, with good procedural success rate and acceptable short-term mortality. Moreover, most patients reported improvement in angina status after PCI.
Abstracts for Free Paper Session:

24. Long Term Clinical Outcomes after Deployment of Femoral Vascular Closure Devices in Coronary Angiography and Percutaneous Coronary Intervention
Lee Wai Lam, Stephen FRCP, Ho Huy Hue MRCP, Kong Shun Long MSc, Lam Yui Ming, MRCP, Shui Chong Wah MRCP, Miu Kin Man MRCP, Linda Lam FRCP, Chan Hon Wah FRCP, Cardiology, Department of Medicine, Queen Mary Hospital, The University of Hong Kong.

Background: We evaluated the long term clinical outcomes of femoral vascular closure devices following its deployment in coronary angiography and percutaneous coronary intervention procedures.

Methods: From June 2000 to September 2004, 265 patients who received femoral vascular closure devices after coronary angiography and percutaneous coronary interventions were enrolled into the study. Patients' medical records were reviewed and vascular complications within one year of follow-up period were recorded. Rutherford's categories of claudication were used to quantify different degrees of claudication and leg ischemia. Duplex ultrasonography of both femoral arteries (using the non-accessed site as control) was performed at one year after deployment of vascular closure devices. Vessel diameter and flow velocities for both common femoral arteries were obtained.

Results: There was no occurrence of late vascular complications like arteriovenous fistula, pseudoaneurysm, surgical repair of access site complications, late groin bleeding and infection. By Rutherford's categories of claudication, 99.2% of patients had Grade 0 claudication while the remaining 0.8% was in Grade 1.

By arterial Duplex ultrasonography, the peak systolic velocity of the accessed femoral artery (predominantly right side) was nonsignificantly higher, 9.4 ± 26.0 cm/s when compared to 9.15 ± 24.8 cm/s in the control site (p=0.12). As for vessel diameter, no significant difference was found in the mean end-diastolic vessel diameter 8.8 ± 1.3mm (puncture site) versus 8.7 ± 4.4 mm (control site) (p=0.72).

Conclusion: We found that the use of femoral closure devices was safe and it was not associated with any adverse long-term vascular complications.

25. The characteristics and outcome of patients taking dual anti-platelet therapy who subsequently required endovascular procedures after percutaneous coronary intervention
Dr. Aji T. Wang, Dr. C.S. Yuen. Division of Cardiology, United Christian Hospital, Kwan Tong, HK SAR.

Introduction: Although the usage of dual anti-platelet therapy (DAT) is mandatory in patients who had coronary stent implantation for the prevention of new thrombosis - a potentially fatal complication of percutaneous coronary intervention (PCI), such combination is known to increase gastrointestinal (GI) bleeding events. This study was to present relevant data regarding the characteristics and outcomes of patients taking DAT who required endovascular procedures (EVP) after PCI.

Methods: All patients who had undergone PCI with concomitant using of United Christian Hospital (UCH) during Jan - Dec 2008 and subsequently required EVP for various reasons were included for analysis.

Results: Twelve patients were included during the above period and the mean follow-up time was 206 ± 16.3 days. Their mean age was 73.3 years and most of them were males (92% ± 11 patients). Four patients were deemed high risk for GI events before they were put on DAT, namely history of peptic ulcer disease; and only one of them was on PPI for GI protection. The various indications for performing EVPs were as follows: stent restenosis (4 patients), epicardial vein puncture (2 patients), moderate (1 patient) and severe (1 patient) and one patient required for repeat percutaneous interventions (1 patient). Only half of these patients had GI symptoms. All one out patient had indications for EVP while on DAT, and the mean time from their index PCI to their index EVP was 12.8 ± 4.6 days. Only one third of these patients (4 patients) were found in their index EVPs to have had GI events (defined as gastric or duodenal ulcer or any other finding with signs of more significant bleeding), the rest had other major GI events including gastric (5 patients), gastric erosion (1 patient), duodenal ulcer (1 patient) and both gastritis and duodenitis (1 patient), or normal findings (2 patients).

One patient had a past episode of either of their DAT stopped for some period of time and all except one patient were subsequently treated by PPI. None of these patients had developed adverse cardiovascular (CV) events while withholding DAT during their EVPs.

Conclusion: This is a retrospective study, very few patients (~1%) taking DAT after PCI would require EVP. Only 4 patients were found to have had GI events which can be studied treated by addition of PPI. Fortunately, none of these patients developed adverse CV events as a consequence. It is interesting to know that whether the need of EVPs and the incidence of GI complications will be substantially reduced after the implementation of consensus recommendation of PPI prophylaxis for all patients in DAT after PCI in future.

26. Feasibility and Safety of Day-case Coronary Angiography Using the Transradial Approach
KM Liu, CK Chan, CS Yua, NC Chan and PL Njan
Department of Medicine and Geriatrics, United Christian Hospital, Hong Kong.

Introduction: Coronary angiography (CA) was traditionally performed via the femoral route and usually required admission for 2 to 3 days. In recent years, day-case based CA is increasingly performed and transradial approach is getting more popular. We sought to review the feasibility and safety of transradial CA as a day-procedure in our ambulatory day care centre.

Method: We retrospectively included all consecutive patients undergoing elective CA in our day care centre from Jan to Dec 2008. Patients who are eligible for day case procedures should meet our standard pre-defined selection criteria. Major exclusion criteria include patients with age greater than 80, chronic renal impairment, poorly controlled heart failure or arrhythmias cognitive impairment. All patients need to attend a pre-procedure education lecture arranged on a separate day when their essential blood tests, ECG or CXR will be screened for their readiness and suitability. All day case patients will be scheduled as the first morning cases. If feasible, transradial approach is the preferred route. Patients will be discharged around 6 hours after their procedures.

Results: 122 patients underwent CA during the study period. 85% was successfully performed via the transradial route and 15% via the femoral route. Overall, 96% of the patients (117/122) could be discharged on the same afternoon after the procedure. 5 patients (4%) were found to have significant coronary artery disease and therefore required admission for further management. At 30 day follow up either in the clinic or by phone follow up, there was no major adverse effects in terms of death, myocardial infarction, stroke or major wound complications. Comparing the transradial with transfemoral patient groups, the radial group reported better post procedure comfort and earlier mobilization. Patients could be discharged around 6 hours as an average after the procedure. A projected 234 hospital days had been saved with this strategy given that 117 patients were successfully discharged on the same day.

Conclusion: Day-case CA using the transradial approach is safe, practicable and cost effective in carefully selected patients.

27. Quality of Life after Percutaneous Coronary Intervention in Acute Coronary Syndrome Patients
8. Li, Shuyi Yap, M. Zhang, Q. Zhang, Q. Gabriel, W.K. Yip, M. Dong, D. Ding, C.M. Yu
Institute of Vascular Medicine and Division of Cardiology, Prince of Wales Hospital, The Chinese University of Hong Kong.

Purpose: Percutaneous coronary intervention (PCI) is associated with reduction in adverse events in Acute Coronary Syndrome (ACS) patients. However, there is limited data on health related quality of life (HRQoL) in ACS patients after PCI.

Methods: We prospectively enrolled 126 patients admitted to our institution with ACS from Feb '06 to May '08. Short Form (SF)-36 health survey was used to assess physical and mental health status at baseline & 6 months. Baseline characteristics and HRQoL (physical- & mental- & MCS component scores) were compared between patients who underwent PCI with patients treated conservatively. Un- and multi-variable analysis was performed to independent predictors of improvement in HRQoL at 6 months. Propensity score of probability in undergoing PCI was used to adjust for potential bias in treatment selection.

Results: PCI was performed in 77 (59%) and 44 (35%) were treated conservatively. Of these patients, 31 (1 in PCI vs 30 in no PCI, p<0.01) died before interview on 6 months. Patients undergoing PCI were younger (44±1.1 vs 7.5±2.1, p=0.01), more likely to be male (56% vs 65%, p=0.30) and more likely to present with STEMI (41 vs 22%, p=0.01). The group who underwent PCI also had higher PCI at baseline and experienced more improvements in physical health status compared with patients treated conservatively (Table). There were no significant differences in mental health status at baseline or follow-up between treatment groups. These findings were maintained in multivariable models correcting for propensity score of undergoing PCI.

<table>
<thead>
<tr>
<th>Table</th>
<th>Physical and Mental Component Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HRQoL*</td>
</tr>
<tr>
<td>PCS</td>
<td>Baseline</td>
</tr>
<tr>
<td>6 Month</td>
<td>41.8±12.9</td>
</tr>
<tr>
<td>MCS</td>
<td>Baseline</td>
</tr>
<tr>
<td>6 Month</td>
<td>55±10.1</td>
</tr>
</tbody>
</table>

* p<0.001, paired t-test.
30. Do differences exist in the risk factors, complications and initial treatment modality between Chinese men and women with ST elevation myocardial infarction in Hong Kong?

Wai Kwan, KT Chan, M Cheng, SF Chu, KC Chan, LC Chan, CY Wong, HS Ma, CL Fu, CW Chan, KYLeung, CCShah, Division of Cardiology, Department of Medicine, Queen Elizabeth Hospital, Hong Kong

Purpose: Gender-specific issues in ischemic heart disease are vastly investigated in many large scale international research studies. However, recent similar studies in Chinese population are scarce. This study is to analyze whether difference in risk factors, complications and initial treatment modality exist between Chinese men and women in STEMI. Reasons of discrepancy in initial treatment modality are also reviewed.

Methods: A retrospective study to compare the risk factors, complications, initial treatment modality of Chinese men and women presented with STEMI admitted to Queen Elizabeth Hospital between January 2007 to December 2008. The records of 136 men and 54 women presented to the hospital were successfully retrieved, reviewed and were statistically compared.

Results:

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Male (n=136)</th>
<th>Female (n=54)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>62.25 ± 13.48</td>
<td>74.11 ± 9.36</td>
</tr>
<tr>
<td>FVD</td>
<td>2 (1.47%)</td>
<td>1 (1.85%)</td>
</tr>
<tr>
<td>CVA</td>
<td>14 (10.29%)</td>
<td>7 (13.00%)</td>
</tr>
<tr>
<td>DM</td>
<td>35 (25.74%)</td>
<td>25 (46.3%)</td>
</tr>
<tr>
<td>HFr</td>
<td>47 (34.55%)</td>
<td>34 (62.96%)</td>
</tr>
<tr>
<td>Smoking</td>
<td>58 (42.90%)</td>
<td>47 (87.03%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>63 (46.75%)</td>
<td>15 (27.78%)</td>
</tr>
<tr>
<td>Prior PCI</td>
<td>13 (9.59%)</td>
<td>5 (9.26%)</td>
</tr>
<tr>
<td>Complications</td>
<td>Men (n=136)</td>
<td>Women (n=54)</td>
</tr>
<tr>
<td>Stroke</td>
<td>24 (17.85%)</td>
<td>15 (27.78%)</td>
</tr>
<tr>
<td>Acute pulmonary edema</td>
<td>8 (5.88%)</td>
<td>11 (20.37%)</td>
</tr>
<tr>
<td>Arterithymia</td>
<td>17 (12.5%)</td>
<td>11 (20.37%)</td>
</tr>
<tr>
<td>Mechanical compl.</td>
<td>1 (0.74%)</td>
<td>3 (5.56%)</td>
</tr>
<tr>
<td>Inital Treatment</td>
<td>Men (n=136)</td>
<td>Women (n=54)</td>
</tr>
<tr>
<td>Thrombolysis or primary PCI</td>
<td>128 (94.2%)</td>
<td>46 (84.8%)</td>
</tr>
<tr>
<td>Delay presentation (≤12 hrs) or unknown onset</td>
<td>2 (1.47%)</td>
<td>5 (9.26%)</td>
</tr>
<tr>
<td>Contradication to thrombolysis or Primary PCI</td>
<td>6 (4.41%)</td>
<td>2 (3.73%)</td>
</tr>
</tbody>
</table>
| Conclusion: In patients with STEMI, there were more women with DM and hypertension, whereas more men were smoker. Among all the complications, women were more likely to suffer from APO from STEMI. Significantly fewer women were not given either thrombolytic therapy or primary PCI as a initial treatment due to delay presentation or unknown onset. Patient education and public awareness especially to our female population is needed for early recognition of symptoms, so that they can receive prompt treatment.

31. The Improvement of Managing Chest Pain Patients with the Implementation of Chest Pain Observation Unit (CPOU) in A&E

KK Lam', HW Ng', FL Lau', KF Leung', CS Yiu', WK Chan' 1. Accident & Emergency Department, United Christian Hospital 2. Division of Cardiology, Medicine and Geriatrics Department, United Christian Hospital

Purpose: To assess the effectiveness of CPOU in A&E in managing chest pain patients.

Methods: A prospective descriptive study was conducted from 22 May 2006 to 4 December 2008. A&E patients with possible ischaemic heart disease (IHID) or low risk acute coronary syndrome (ACSy) that might require admission into medical wards were recruited into the CPOU programme. Those with high risk ACs or having alternative causes of chest pain were excluded. The patients were managed according to the CPOU protocol. They had 3 electrocardiograms (ECGs) at 1, 2, 4 hours, and two blood tests for Troponin I (on admission and 8-6.8 hours later). For the discharged cases, they were followed up in the A&E outpatient clinic after fast-track treadmill investigations. The end-points for improvement were the reduction of admission, and mortality and myocardial infarct within one month for the discharged cases. The data were collected from AESS and ePR system, and then analysed by using SPSS version 12.0.

Results: Data were analysed for the 101 patients recruited. The male to female ratio was 70:31 (69.3% Vs 30.7%). The age ranged from 29 to 81, with a mean 57.0 years old. 95 (94.1%) of CPOU patients were discharged home, and 6 (5.9%) were admitted into hospital. Among the 95 patients who were discharged home after CPOU programme, none had myocardial infarct or death within one month of discharge, and 3 of them re-attended A&E for chest pain within 30 days.

Conclusion: The CPOU in A&E is effective to reduce 94% hospital admission of those patients presented to A&E with possible IHID or low risk ACS. There was no mortality or myocardial infarct for those patients discharged from CPOU.
32. Diagnostic Value of N-Terminal Pro-B-Type Natriuretic Peptide in Chinese Patients with Stable Coronary Artery Disease

D.C. Wang 1, M.S. Yan 1, L.M. Sun 2, M. Ji 3, C.H. Wang 4, M.S. Yan 5, T.X. Zhang 6, M. Shi 7, M.S. Shi 8

Objective: The aim of this study was to evaluate the diagnostic value of NT-proBNP in Chinese patients with stable coronary artery disease.

Methods: This was a prospective, observational, single-center study. The study population consisted of 100 consecutive patients with stable coronary artery disease, including 50 patients with stable angina pectoris and 50 patients with stable ischemic heart disease. NT-proBNP levels were measured at baseline and 6 months follow-up.

Results: The median NT-proBNP level at baseline was 34.5 (IQR 15.3-76.1) ng/mL. At 6 months follow-up, the median NT-proBNP level was 33.9 (IQR 14.7-68.8) ng/mL. The difference between the two time points was not statistically significant (p = 0.72).

Conclusion: NT-proBNP may be a useful biomarker for the diagnosis of stable coronary artery disease in Chinese patients.
36.
Outcome of Out-patients Referred for Cardiac Transplantation Evaluation – Impact of Device-based Heart Failure Therapy
K Fan, E Chau, YM Lam, WH Chow, C Ho*, WH Chu*, T Au*, LC Cheng*. Cardiac Medical Unit, Grantham Hospital and *Cardiothoracic Surgical Department, Queen Mary Hospital

Purpose: Cardiac transplantation (CT) is an accepted treatment for selected patients (pts) with end-stage heart failure (HF). Access to CT is limited owing to organ shortage, which has forced the implementation of strict guidelines for accepting as transplant candidate. Little is known about outcome of HF pts who receive alternative treatment strategy while on waiting list.

Methods: A retrospective analysis of all outpatients with advanced HF who were referred between January 2005 and December 2008 for consideration of CT was performed. Only pts evaluated in an outpatient setting were included in this study. All pts were assessed by specialist cardiologists before presentation to the transplant selection committee for final deposition.

Results: A total of 72 pts (mean age 41±11 years; 67% men) were evaluated during the study period. Five pts were referred for high risk aortic valve replacement (n=3) and coronary interventions (n=2) respectively with satisfactory outcome. Forty-two (58%) pts were enlisted for CT and only 13 (18%) of pts initially referred have been transplanted to date. Nine pts (12%) died waiting and 15 (21%) have been delisted: 13 pts improved after implantation and/or optimization of cardiac resynchronization (CRT) devices and 2 pts requested delisting. Despite significant clinical improvement in the 13 CRT responders, 2 pts with CRT died from sudden cardiac death. Another 5 pts were CRT “non-responder”: 3 pts underwent CT and 2 pts died waiting.

Conclusions: This report illustrates the limitation of CT as treatment for advanced HF and the benefits of identifying potential candidates for alternative effective strategies. Vigilant follow-up including risk stratification for sudden cardiac death and optimization of HF therapy/devices are important.
ARRHYTHMIA, CARDIAC PACING AND IMPLANTABLE CARDIOVERTER DEFIBRILLATOR

37. Early Pacing Induced Systolic Dysfunction and Long-term Left Ventricular Adverse Remodeling in Patients with Preserved Ejection Fraction Receiving Right Ventricular Apical Pacing – A Prospective Study

Eung E., Chen Joseph V.S., Zhang Q., Yip Gabriel W.K., Xue X., Lam Y.Y., Ma C.Y., Yu C.M.
Institute of Vascular Medicine and Division of Cardiology, Prince of Wales Hospital, The Chinese University of Hong Kong

Purpose: It was aimed to examine if the long-term adverse left ventricular (LV) remodeling occurs after right ventricular apical (RVA) pacing and its relation with pacing induced LV systolic dysfunction.

Methods: This study prospectively recruited 62 patients with preserved LV ejection fraction (LVEF) > 50% who received RVA pacing. Real-time 3D echocardiography (RT3DE) and tissue Doppler imaging (TDI) (HDI, Philips) were performed at baseline, 1 month and 1 year. LV remodeling was defined as an increase in LV end-systolic volume of ≥15% at 1 year while pacing induced systolic dysfunction at 1 month was assessed by RT3DE (Tmax16-SD ≥17mm) and TDI (Tdi-SD ≥ 0.33mm/s).

Results: Pacing induced systolic dysfunction was present in 30 patients when assessed by RT3DE and 30 patients by TDI at 1 month after RVA pacing. The concordant rate of the two methods was 82%. By using either method to define systolic dysfunction, the increase in LV volume with decline in ejection fraction at 1 year was only observed in the group with dysfunction (Table). At 1 year, LV adverse remodeling was observed in 30 patients (49%), which was also more prevalent in the group with dysfunction (by RT3DE: 70% vs 26%, p=0.001; by TDI: 76% vs 19%, p=0.001). In addition, Tmax16-SD (p=0.04) and Tdi-SD (p=0.03) at 1 month independently predicted LV adverse remodeling at 1 year (both p<0.05), using multiple regression analysis.

Conclusion: Long-term detrimental remodeling occurred in all but nearly half of the patients who received RVA pacing. This was predominant in those who developed early evidence of LV systolic dysfunction as evidenced by either RT3DE or TDI.

<table>
<thead>
<tr>
<th>Baseline</th>
<th>1 year</th>
<th>p</th>
<th>Baseline</th>
<th>1 year</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV end-diastolic volume, ml</td>
<td>66±16</td>
<td>64±15</td>
<td>NS</td>
<td>75±19</td>
<td>81±27</td>
</tr>
<tr>
<td>LV end-systolic volume, ml</td>
<td>25±9</td>
<td>25±9</td>
<td>NS</td>
<td>32±12</td>
<td>43±19</td>
</tr>
<tr>
<td>LV ejection fraction%</td>
<td>61±6</td>
<td>60±7</td>
<td>NS</td>
<td>58±10</td>
<td>49±9</td>
</tr>
<tr>
<td>LV end-diastolic volume, ml</td>
<td>65±16</td>
<td>65±15</td>
<td>NS</td>
<td>74±20</td>
<td>80±28</td>
</tr>
<tr>
<td>LV end-systolic volume, ml</td>
<td>27±9</td>
<td>26±9</td>
<td>NS</td>
<td>31±13</td>
<td>42±20</td>
</tr>
<tr>
<td>LV ejection fraction%</td>
<td>63±7</td>
<td>61±7</td>
<td>NS</td>
<td>59±9</td>
<td>48±9</td>
</tr>
</tbody>
</table>

*p < 0.001; t < 0.01 vs. the group without dysfunction.

38. Left Ventricular Apical Aneurysm Induced by Permanent Right Ventricular Apical Pacing: Clinical Characteristics and Long-term Outcomes

KH Yu, XH Zhang, CW Siu, HW Chan, S Lee, CP Lau and HF Tsie
Department of Medicine, Queen Mary Hospital, Hong Kong

Background: Right ventricular apical (RVA) pacing can induce left ventricular (LV) dysynchrony and impairment of LV function. We report the prevalence, clinical characteristics and outcomes in a cohort of patients who developed LV apical aneurysm after permanent RVA pacing.

Methods: We studied 368 consecutive patients with permanent RVA pacing for high degree atrioventricular block without pre-existing structural heart diseases follow-up in our clinic. LV apical aneurysm was identified by cardiac catheterization in those patients developed new-onset heart failure, chest pain or ventricular arrhythmia after RVA pacing.

Results: Among 368 patients (mean age 69±14, in male 52±32), 32 of them underwent cardiac catheterization. Ten patients with normal coronary angiogram were noted to have LV apical aneurysm demonstrated by left ventriculogram and have a lower LV ejection fraction (40.7±15.1 vs. 54.3±5.7, p=0.04) compared to those without. After a mean follow up of 7.5 years, 3 pts with RVA pacing induced LV apical aneurysm developed ventricular arrhythmia and cardiovascular mortality occurred more commonly in this group of pts compared to those without (30% vs. 6.3%, p=0.027). Cox-regression multivariate analysis revealed that age (Hazard Ratio [HR]=1.05, p=0.03), new onset heart failure (HR=2.84, p=0.01), and RVA pacing induced LV apical aneurysm (HR=3.59, p=0.05) were independent predictors of cardiovascular mortality.

Conclusion: We hereby describe the clinical features of a novel syndrome with left ventricular apical aneurysm induced by right ventricular apical pacing. Patients with this entity have a high cardiovascular mortality and therefore early recognition may alter clinical practice and surveillance.

39. Role of Functional Mitral Regurgitation in Left Ventricular Reverse Remodeling after Cardiac Resynchronization Therapy

Y.J. Liang, Q. Zhang, Jeffery W.H. Fung, Joseph Y.S. Chan, Gabriel W.K. Yip, Y.Y. Lam, Q. Zhang, C.M. Yu
Institute of Vascular Medicine and Division of Cardiology, Department of Medicine and Therapeutics, Prince of Wales Hospital, the Chinese University of Hong Kong, Hong Kong

Objective: To evaluate the existence of pre-pacing functional mitral regurgitation (MR) and its improvement would affect the extent of left ventricular (LV) reverse remodeling after cardiac resynchronization therapy (CRT).

Methods: This study consisted of 83 patients, of whom 48 patients had more than mild MR and 35 showed no MR at baseline. Echocardiography was performed at baseline and 3 months during LV reverse remodeling. MR volume was compared by the continuity equation method.

Results: At 3 months after CRT, there was reduction in MR volume (38±42 vs. 33±41) ml. LV reverse remodeling was observed with decreases in LV end-systolic volume (LVESV) (234±48 vs. 204±50, p<0.001). The changes in MR volume (n=64, p<0.001) was significantly correlated with changes in LVESV. The improvement in total MR volume of ±15% predicted LV reverse remodeling with a sensitivity of 90% and a specificity of 80% (AUC 0.85, p<0.001), which was also significant in multivariate analysis. When compared for the extent of reduction in LVESV, it was greatest in patients with significant reduction in MR (defined as ±15% reduction in LVESV) was 91.3%, 20.4% and 54.3% respectively in the 3 groups (p=0.04, p<0.001).

Conclusion: The extent of LV reverse remodeling is dependent on whether patients had pre-implantation MR. Also, reduction of functional MR contributed to LV reverse remodeling after CRT.

40. Left Ventricular Reverse Remodeling Achieved by Cardiac Contractility Modulation – A Comparative Study with Cardiac Resynchronization Therapy in Different QRS Durations

Institute of Vascular Medicine and Division of Cardiology, Department of Medicine and Therapeutics, Prince of Wales Hospital, the Chinese University of Hong Kong, Hong Kong

Purpose: Cardiac contractility modulation (CCM) is a new form of device-based therapy for patients with advanced heart failure with normal QRS duration and therefore not candidates for cardiac resynchronization therapy (CRT). Left ventricular (LV) reverse remodeling has been reported in both therapies, however, it is unknown if the extent of response is similar between CCM and CRT.

Methods: This study recruited 120 patients with NYHA class III or IV heart failure and LV ejection fraction ≤ 45% despite optimal medical therapy. Group 1: QRS≤120ms received CCM. Group 2: QRS>120ms received CRT. Group 3: QRS 120-150ms received CRT. Group 4: QRS>150ms with typical LBBB received CRT. The CRT groups were matched with the CCM group in age, gender and etiology of heart failure. Echocardiography was performed at baseline and 3 months.

Results: As shown in table, a significant LV reverse remodeling was observed in all the 4 groups with reduction in LV end-systolic volume (LVEDV). However, the favorable change was the greatest in Group 4 but similar in the other 3 groups. By using reduction of LVEDV≤10%, responder rate was the highest in Group 4, but not different among the other 3 groups.

Conclusion: CCM appears to exist similar LV reverse remodeling response to CRT in normal and mildly prolonged QRS durations, but less effective than CRT in very wide QRS with LBBB.

<table>
<thead>
<tr>
<th>Gp 1</th>
<th>CCM</th>
<th>Gp 2</th>
<th>CRT</th>
<th>Gp 3</th>
<th>CRT</th>
<th>Gp 4</th>
<th>CRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal QRS</td>
<td>30(26)</td>
<td>30(23)</td>
<td>30(18)</td>
<td>30(21)</td>
<td>30(20)</td>
<td>30(17)</td>
<td>30(20)</td>
</tr>
<tr>
<td>Normal QRS</td>
<td>30(26)</td>
<td>30(23)</td>
<td>30(18)</td>
<td>30(21)</td>
<td>30(20)</td>
<td>30(17)</td>
<td>30(20)</td>
</tr>
<tr>
<td>Normal QRS</td>
<td>30(26)</td>
<td>30(23)</td>
<td>30(18)</td>
<td>30(21)</td>
<td>30(20)</td>
<td>30(17)</td>
<td>30(20)</td>
</tr>
<tr>
<td>Normal QRS</td>
<td>30(26)</td>
<td>30(23)</td>
<td>30(18)</td>
<td>30(21)</td>
<td>30(20)</td>
<td>30(17)</td>
<td>30(20)</td>
</tr>
</tbody>
</table>

* p=0.05, t=0.01 vs Group 1; t=0.05 vs Group 2; *p=0.05 vs Group 3.
Abstracts for Free Paper Session:

41. Hospital based CPR training is an effective as advanced cardiac life support training (ACLS) - A retrospective review of resuscitation outcome in a tertiary referral, university affiliated hospital in Hong Kong

W.C. Li, C.K. Chi, C.K. Chan WM, SWL Lee, K Lee
Department of Medicine, Queen Mary Hospital, Hong Kong

Purpose: In-hospital cardiopulmonary resuscitation (CPR) providers are not always qualified ACLS provider. A hospital-based CPR training program based on the revised American Heart Association guideline in resuscitation published in 2005 was developed which targeted on medical staff. The purpose of the study is to compare the performance of this program with ACLS training.

Methods: The stated hospital-based CPR training started from January 2007. All episodes of CPR performed in medical ward since the implementation of the program were reviewed. Only the first arrest episode was analyzed for patients who had more than one arrest during the same hospital admission. The primary outcomes were differences in restoration of spontaneous circulation (ROSC) and survival rate between categories of ACLS trained CPR leader and hospital trained CPR leader.

Results: 264 CPR episodes were analyzed. The hospital discharge rate is 3% (8/264). Eleven per cent (50/264) of CPRs were performed by ACLS CPR team and 28.8% (55/264) CPRs were performed by Hospital training CPR team. The performance of both group was similar in terms of ROSC rate (ACLS 40% (12/30) vs Hospital training 29% (16/55), p=0.59). CPR response time (0 minutes vs 0 minutes, p=0.29), first defibrillation in case of VT or VF (2.5 (5/24) vs 12 minutes (22/4), p=0.77), first medication (2.5 vs 4 minutes, p=0.53) and time for intubation (13 vs 13 minutes p=0.64).

Conclusion: The sample size remains small. However, based on the available data, CPR provider with hospital training performed comparable CPR standard as ACLS provider, as evidenced by their similar CPR behaviors (defibrillation, intubation and administration of resuscitation medication) and short term survival. Quality hospital-based intensive training in resuscitation may be a reasonable alternative to ACLS training.

42. Clinical profile for patients having Implantable cardioverter defibrillator for primary prevention of Sudden Cardiac Death

T.S. Chung, C.S. Yue
Cardiac Division, Medical Department, United Christian Hospital

Background: Implantable cardioverter defibrillator (ICD) as primary prevention for sudden cardiac death (SCD) is not uncommon among high risk cardiac patients. The prevalence of ICD therapy and outcome of patients having this treatment needs to be addressed in Hong Kong. In this study, we aim to look into these issues from our ICD registry.

Method: Patients having ICD for primary prevention were included. Their demographics, indications, co-morbidities and cardiac function were reviewed and analysed. The first ICD event was recorded and the causes for ICD firing were reviewed.

Result: There were totally 16 patients received ICD for primary prevention from November 2005 to November 2008. Their mean age was 65.5 years (range 33-78 years). Twelve patients were male (75%). The duration of follow up was up to 39.5 months. Ten patients (62.5%) had history of myocardial infarct or ischaemic heart disease, four patients (25%) had dilated cardiomyopathy (DCM), two patients (12.5%) had hypertrophic cardiomyopathy (HCM). Their mean ejection fraction by echo was 32% (range 14-83%). Totally 5 patients had ICD firing during the follow up period. Two of the 5 patients had true firing for the first recorded events. Both of which were classified as ventricular tachycardia (VT). The remaining 3 patients, two had atrial fibrillation (AF) and one had supraventricular tachycardia (SVT). Four patients died during the follow up period, renal failure in 2, refractory heart failure (EF < 14%) in 1 and pneumonia in 1. The 2 patients who died of renal failure had recorded ICD firing before death and both had VT recorded. The patient who died of refractory heart failure had 1 ICD shock due to VT before death. The patient died of pneumonia had 4 episodes of firing recorded from ICD. This patient had HCM and had history of SCD and his EF was 50%. Nine patients had electrophysiological study (EPS) done before ICD insertion. None of those patients had inducible VT/VT.

Conclusion: ICD is effective for primary prevention of SCD in selected high risk patients. SVT and fast AF are common causes of inappropriate ICD discharge. EPS has limited role for the prediction of ICD therapy and risk stratification in this patient population.

43. Sudden Death in Hong Kong: An Analysis Using Press Information

K. Wong
Department of Intensive Care Unit, North District Hospital

Purpose: Sudden death is a devastating form of condition that affect all age of people in Hong Kong but an effective tracking system is lacking and data is scarce. Newspaper coverage of sudden death cases can be utilised as a source of information for analysis.

Methods: Using the web search function of a local newspaper, the Apple Daily, the term “猝死” was used to search for matches from 2002 to 2005. Coverage of local cases of sudden death of subjects 1 to <80 year old were reviewed. Subject with congenital disease, other active severe or terminal diseases, illicit drug use, relating to extreme hot or cold weather were excluded.

Results: There were 219 relevant cases from year 2002 to 2005, 85% were male. 35% did not have any history of preceding illness. However, 17% were associated with upper respiratory tract symptom or gastroenteritis or fever. 10% were grossly obese (>20%b) and 8% had alcohol drinking. Most common site was at home (44%), and 35% happened while subjects were sleeping or resting. And about 21% happened during or after exercise, others activities included TV game, betting, sauna or commercial sex.

Conclusion: Press coverage of sudden death in local community can be utilised to obtain demographic and clinical information, but a robust community wide tracking system is needed to yield useful clinical data for intervention and prevention purpose.
ABSTRACTS

Abstracts for Free Paper Session:

44. Specialized Anticoagulation Management Service for patients with valvular heart disease
SWK Lau1, F Wong2, C. Mo3, L Chow4, P Che5, KF Tan6, CS Lam7, PW Yam1, ML Wong1, WC Ko1, WK Chan1, KC Ko1, YH Chan1, WF Leung1, KL Chiu1, H Lam1, LL Ip1, 1Department of Medicine & Geriatrics, 2Department of Pharmacy, Tuen Mun Hospital.

Background: Warfarin is an essential medication for patients with mechanical heart valve or other conditions subject to high risk of thromboembolism. However, the dose response varies among different patients due to various factors. Besides, it has narrow therapeutic windows and is subjected to interactions with drugs and diet. Specialized anti-coagulation management service had been shown to improve anti-coagulation control. Method: Anticoagulation clinic run by pharmacists with support from physicians was set up in Tuen Mun Hospital in February 2008. All patients were asked to have regular INR monitoring every 4 weeks. The outcome including anti-coagulation control and adverse event till Jan 2009 were studied. Result: Altogether there were 74 patients. 34 (45.9%) patients were male with mean age of 51 ± 11 year. Indications for warfarin treatment include 64 (85.5%) patients with mechanical heart valve, and 10 (3.5%) patients with atrial fibrillation and high risk of thromboembolism. 33 (44.6%) patients belongs to low intensity INR (LI) group (INR 2.0-3.0) and 39 (55.4%) belongs to high intensity (HI) group (INR 2.5-3.5). Their mean follow up interval were 17.5 ± 4.3 weeks. Overall, the percentage time in therapeutic range (TTR) was 73.3%. In the LI group, the TTR was 75.5% whereas in the HI group, the TTR was 66.7%. Altogether, there were 58 minor bleeding episodes including cutaneous bruising, translating into 1.25 per patient-year, and 2 patients had major bleeding due to hematuria and required hospital admission, translating into 0.4 per patient-year. There was no thromboembolic event. Conclusion: Specialized anti-coagulation clinic offers good anticoagulation control with high percentage of TTR and low bleeding risk.

45. Infective endocarditis: Analysis of pathogenic bacteria and the clinical feature in prosthetic valve and native valve
XI Sun and GG Wang
Department of Cardiology, Fuwai Cardiovascular Hospital, Peking Union Medical College and Chinese Academy of Medical Science, Beijing

Purpose: To analysis the epidemiological characteristic and pathogenic bacterium of infective endocarditis (IE), and to compare the pathogenic microorganism and vegetation localization between the prosthetic valve endocarditis (PVE) and the native valve endocarditis (NVE).

Methods: The data were collected from in-patient who fulfilled Duke Criteria for IE from May 2005 to May 2008 in Fuwai hospital. The demographics, clinical data of 266 cases with IE were analyzed retrospectively.

Result: Among the 266 patients with IE, the mean age of patients was 39.5±16.7 years, and the male gender predominated with a sex ratio of 1.96:1. One hundred and one patients (38.5%) suffered from congenial heart disease, 62 patients (23.3%) suffered from rheumatic heart disease, and 77 patients (28.9%) suffered from non-rheumatic valvar heart disease. The congenital heart disease was increased, while rheumatic heart disease was decreasing. Two hundred and eighteen patients (82%) with vegetation were identified, and the most common vegetation localization was aortic valve, mitral valve, and aortic plus mitral valve in turn. Bacterial cultures were positive in 49.5 percent of patients. There wasn't marked change in the proportion of viridans streptococcus and staphylococcus aureus in pathogen of IE, but the proportion of Gram-Negative bacteria and fungi had risen. The PVE group was 37 patients (13.9%), and the NVE group was 229 patients (86.1%). Detection rate of vegetation was lower in PVE group (P<0.01), however the positive rate of bacterial cultures was higher (P<0.01). Streptococcus, coagulase negative staphylococcus, gram-negative bacteria showed significant difference between the two groups (P<0.01). The spectrum of microorganism was different between the early and the late PVE. The in-hospital mortality rate of PVE is higher than NVE.

Conclusion: The epidemiological feature and pathogenic bacterium of IE has changed obviously during the past years. Early diagnosis, promptly bacterial cultures, the effectively usage of antibacterial, and actively prevention of nosocomial infection seem to be effective.

46. The Interaction of Human Urotensin II and Vasodilator Agents in Human Internal Mammary Artery: Clinical Implications
Xiao-Yan Bai1, Xiao-Cheng Liu1, Wen-Bin Jing1, Qin Yang1, & Guo-Wei He2
1Taida International Cardiovascular Hospital & Medical College, NanKai University, Tianjin, China, & 2The Chinese University of Hong Kong, Hong Kong SAR

Purpose: Graft spasm of the internal mammary artery (IMA) may occur after coronary artery bypass grafting (CABG) and reversal of spasm is still challenging. Human urotensin II (Hu-II) is a cyclic peptide recently cloned in humans and present in human cardiac tissue and arteries, but its effects on IMA are still unclear. The purpose of this study was to investigate the in vitro vascular contractile properties of Hu-II and the effect of calcium antagonists and glyceryl trinitrate (GTN) in IMA.

Methods: We studied 102 IMA rings from 46 patients undergoing CABG with organ bath technique. The interaction between Hu-II and various calcium antagonists was investigated in two ways: relaxing effect of vasodilators on the Hu-II-induced precontraction and the depressing effect of vasodilator agents on the contraction caused by pretreatment with Hu-II.

Results: Hu-II caused contractile response in all human IMA. Nifedipine induced full relaxation in potassium chloride-contracted (98.2±3.9%, n=6) and nearly full relaxation in Hu-II contracted IMA rings (90.6±4.6%, n=6). Dilazem nearly fully relaxed those IMA precontracted with potassium chloride and Hu-II (92.7±6.9%, n=6; 95.1±2.1%, n=6). In potassium chloride-precontracted IMA rings, nifedipine was 18.6-fold more potent than dilazem (EC50 -8.01±0.20 vs. -6.74±0.22 log M, p<0.01); in Hu-II-precontracted IMA rings, nifedipine was 6.2-fold more potent than dilazem (EC50 -7.23±0.23 vs. -6.66±0.18 log M, p<0.05). GTN caused nearly full relaxation (95.4±3.8%, n=6) but pretreatment with GTN failed to alter, while dilazem and nifedipine pretreatment reduced subsequent contraction to Hu-II.

Conclusion: The results suggested that Hu-II is a potent vasoconstrictor and possibly quasagon in human IMA and that calcium antagonists and GTN relax the contraction caused by Hu-II with different potencies. However, calcium antagonists are more effective in preventing the contraction induced by Hu-II than GTN.

47. Dual Actions of Clindamycin in Human Arteries - Inhibition of Calcium Channels and Enhancement of Endothelial Nitric Oxide Synthase
Li Pan1, Xiao-Qiu Xiao2, Kevin L. Groves3, Yu Huang4, Qin Yang1, Zhi-Wu Chen1, Anthony Furnary3, Guo-Wei He2
1Cardiovascular Research, Starr Academic Center, Providence Heart & Vascular Institute, Department of Surgery, Oregon Health & Science University, Portland, Oregon, 97223, USA, 2Department of Pharmacology, Anshui Medical University, Hefei, Anhui, China, 3Division of Neuroscience, Oregon National Primate Research Center, Oregon Health & Science University, Beaverton, Oregon, 97006, USA, 4Department of Physiology, the Chinese University of Hong Kong, Shatin, N.T., Hong Kong

Objectives: Clindamycin is a novel, long-action L-type dihydropyridine calcium channel blocker that has recently been used for antihypertensive therapy. We investigated the vasorelaxation effect of clindamycin with regard to its calcium channel blockade and nitric oxide (NO)-cyclic guanosine monophosphate (cGMP) dependent mechanism in human internal mammary artery (IMA).

Methods: Fresh human IMA taken from discarded tissues of patients undergoing coronary artery bypass surgery. Concentration-relaxation curves to clindamycin in comparison to nifedipine were studied. The expression level of eNOS mRNA was analysed by quantitative Real-Time PCR (qRT-PCR) and the phosphorylation of eNOS at Ser1177 was determined by Western blotting analysis.

Results: Clindamycin and nifedipine caused nearly full relaxation in potassium-precontracted IMA. Pretreatment with clindamycin at the clinical plasma concentration significantly depressed the maximal contraction. Endothelin-1-induced (47.7±7.0%, p<0.05) and inhibition of eNOS (48.6±6.1%, p<0.05) or cGMP (41.6±3.8%, p<0.01) significantly reduced the clindamycin-induced endothelium-dependent relaxation (73.9±6.4%). Clindamycin increased the expression of eNOS mRNA by 42.4% (p<0.05) and enhanced phosphorylation level of eNOS at Ser1177 by 37.9% (p<0.05).

Conclusion: The new generation of calcium channel antagonist clindamycin relaxes human arteries through calcium channel antagonism as well as increase of production of NO by enhancement of eNOS. The dual mechanisms of clindamycin in human arteries demonstrated in this study may prove particularly important in vasodilatory therapy in cardiovascular diseases.
ABSTRACTS

Abstracts for Free Paper Session:

48. Human Urotensin II in Internal Mammary and Radial Arteries of Patients Undergoing Coronary Surgery and Clinical Implications
Zhao Chen, MD, PHD, Qiu Yang, MD, PHD, Yu Huang, PHD, Li Fan, MD, PHD, Xiao-Wu Li, MD, PHD, & Guo-Wei He, MD, PHD, ZPL, Peking Union Medical College, Beijing, China.

Objective: The present study compared the vasoactivity of human urotensin II (Hu-II) and its receptor in the major grafts for coronary surgery - the internal mammary (IMA) and radial artery (RA) and investigated the underlying mechanism.
Methods: Fresh human IMA and RA taken from discarded tissues of patients undergoing coronary bypass surgery were studied in organ baths. The expression of urotensin II (UT) receptor was determined by RT-PCR.
Results: Hu-II contracted IMA with pD2 of 8.57 ± 0.41 and Emax of 45.4 ± 9.1% of that induced by 100 nM KCl, whereas caused less contractile responses in the RA (pD2 8.30 ± 0.79, Emax 20.4 ± 4.8%, p=0.05). Nifedipine inhibited Hu-II-contractile response in IMA. In U2047/963 (a contract uctro), Hu-II elicited comparable relaxation in the IMA (pD2 8.39 ± 0.4%, Emax 56.1 ± 4.0%) and RA (pD2 9.03 ± 0.46, Emax 65.2 ± 7.1%). The relaxation was abolished by endothelin-concentration and by indomethacin, oxadiazoloquinazolone or Nω-tert-arginine, a oxyhemoglobin, and Ca2+-activated K+ channel blockers. UT receptor mRNA was detected in both arteries.
Conclusions: Hu-II is an important spasmogen in the arterial grafts with expression of the UT receptor in IMA and RA. Hu-II elicits a significant contraction and a moderate endothelin-dependent relaxation attributable to nitric oxide, PGI2 and endothelium-derived hyperpolarizing factor and involving activation of K+ channels. The relevant response of endothelin-untact IMA and RA to Hu-II demonstrates the importance of preservation of the endothelial cells in these grafts.

49. Six months’ Outcome of patients in CHF-HOME (Congestive Heart Failure – Home Community, Monitoring and Exercise) Program
CHL Chang, T S Tsoi, TPY Lee, SF Yeung, HC Chan, Ki Wu, GSH Cheng, CY Cheng, MC Choi, KL Tsui, HY Cho, KC Chan, SK Li, Department of Medicine, Pamela Youde Nethersole Eastern Hospital.

Introduction: Congestive heart failure (CHF) is a growing public health problem in HK. In Pyneus, there is 66% of increase in admissions for CHF from 2001 to 2007. It is one of the leading causes of hospitalization in individuals who are older than 65-year-old. Readmission rate for CHF is very high, more than 50% of patients being readmitted within 6 months. Objective: To improve the clinical outcomes of patients with CHF, and reduce hospital admission and resources utilization.
Method: A multidisciplinary heart failure management team was established in October 2007 to identify, assess, intervene and monitor the selected patients who were admitted for CHF. The team provided in-patient clinical assessment, pre-discharge education and counseling, post-discharge management plan, telephone follow-up and inquiry service, early clinic follow-up. Clinical outcomes of patients being enrolled and not enrolled into this program were analyzed, i.e., 6-month readmission rate with CHF and length of stay. Clinical outcome of subgroup patients with recurrent CHF in this program was also analyzed (6 months readmission with CHF before and after program).
Results: A total of 475 patients were screened from 3rd October 2007 to 30th September 2008. 256 patients were enrolled into this program, of which 55% of them have history of recurrent hospital admission for CHF. Their mean age was 73.99 years. Clinical outcomes were as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before enrollment</th>
<th>After enrollment</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients admitted to the program</td>
<td>25%</td>
<td>30%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>6-month readmission rate for CHF</td>
<td>10%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Length of stay</td>
<td>19 days</td>
<td>14 days</td>
<td></td>
</tr>
</tbody>
</table>

Subgroup analysis: 6-month readmission rate of 141 patients with history of recurrent CHF before and after enrollment in this program

Results: Through this program, 6-month readmission rate of patients with CHF can be reduced by 37%. Length of stay for readmission with CHF can be reduced by 42%. 757 bed days were saved with this program.
Conclusion: CHF-HOME Program improves the clinical outcomes of patients with CHF, and reduces hospital admission and resources utilization.

50. Success Rate of Cardiac Patients who Referred for Smoking Cessation
YMW Mak1, WY Chan2, RF Leung3, CS Yue1. Division of Cardiology, Department of Medicine and Geriatrics, United Christian Hospital1, KEC Smoking Counselling and Cessation Centre, Tsing Kwan O Jockey Club GOPC2, Hong Kong

Purpose: To determine the cessation rate of cardiac patients who were smokers and referred to smoking counselling and cessation program (SCCP).
Method: Phone follow up were made at least 1 month after referral to SCCP. Patients self-reported their smoking habit.
Results: 58 smokers (55 males) were identified and agreed to join SCCP. Among them, 23 (40%) and 35 (60%) were referred from cardiac ward and specialty outpatient clinic, respectively. Their mean age was 58.3 (range 30–80, SD=11.4) years. Those patients had been smoking from 8 to 63 years (mean 39.4, SD=12.2) years with an average consumption of 13.5 (range 2.70, SD=10.0) cigarettes/day. Phone follow-up was failed in 13 patients. At a result, 45 patients were studied. Four patients had visited those clinics for counselling service. Eleven out of 12 patients who quitted smoking were referred in cardiac ward. They quitted smoking immediately following their discharge from hospital. Seventeen (38%) patients reported a reduction in daily cigarette consumption to 8.3±6.0 cigarettes/day. Most smokers reported that they acknowledged the hazards of smoking but preferred to reduce in consumption instead, and they sustained smoking because of negative feeling or stress. Five smokers mentioned that they would consider quitting smoking due to recent drastic tobacco tax hike.
Conclusion: The above findings showed that most patients (91%) refused to visit smoking counselling and cessation centres for counselling service. Cessation rate (11/45, 24.4%) were higher in patients following acute cardiac events. The appropriate time for referral to counselling service should be explored to improve the success rate of patients in smoking cessation.

51. Characteristics of Heart Failure Patients that Refuse Self-Monitoring Training in Heart Failure Rehabilitation Program
YMW Mak1, CY Cheo2, MY Wong3, WS Chung4, PW Wong5, YT Tsang6, HK Lee7, KC Yeung8, KH Leung8, CS Yip1. Division of Cardiology, Department of Medicine and Geriatrics9, Cardiac Specialty Ward10, Community Nursing Service11, United Christian Hospital, Hong Kong

Purpose: To review the characteristics of heart failure (HF) patients that refused to participate in self-monitoring training in heart failure rehabilitation program (HFRP).
Methods: Assessment and education were provided to HF patients during phase I HFRP. A form was designed to guide the management and record relevant data. Eligible HF patients would be provided with self-monitoring training after detailed screening. Data were analyzed for their characteristics.
Results: From June 2006 to Feb 2007, 124 (94 males), 76% HF patients were recruited into HFRP. Their mean age was 73.9 years (SD=10.2 years). Among them, 58 patients (47%) did not participate in self-monitoring training with reasons including not keen for training, unwilling to buy scale and/ or sphygmomanometer, unwilling to do home monitoring and daily record were reported in 31, 38 and 41 patients, respectively. Patients with and without training were compared in the table below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before enrollment</th>
<th>After enrollment</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training (n=66)</td>
<td>70.8 ± 10.5 years</td>
<td>75.3 ± 9.4 years</td>
<td>0.015</td>
</tr>
<tr>
<td>Refuse training (n=58)</td>
<td></td>
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<td></td>
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</table>

Conclusion: The findings showed that patients that were younger, married, with higher education level, regular exercise habit and did not smoke were more ready to accept self-monitoring training. For those who refused, alternative strategies should be explored to support them in comprehensive heart failure management.
Abstracts for Free Paper Session:

52. Explore Patients' Preferences for Programs that Sustain Cardiac Benefits in Cardiac Rehabilitation
YMW Mak,1 CS Yoo,1 LF Leung,2 WY Chu2, B Cheung1, NP Hui1, M Wun,1 EK Ng,1 KC Young1, SFE Leung1, Y Chan Wong1, MK Lee3, KS Chan4, T Chan1, P Lee3, SNA Kwok5, T Cheung6. Division of Cardiology1, Health Resource Centre2, Occupational Therapy Department2, Community Nursing Service2, Physiotherapy Department2, Cardiac Specialty Ward2, Dietetic Department2, United Christian Hospital; The Hong Kong Society for Rehabilitation; Community Rehabilitation Network3, and Christian Family Service Centre4, Hong Kong.

Purpose: Long-term maintenance of physical activities and lifestyle modification are important components to be sustained for cardiac patients having cardiac rehabilitation (CR). Despite effort dedicated to the promotion of community-based CR, the participation rate was low. A hospital-based one year follow-up plan was designed to evaluate patients' outcomes following completion of Phase II program. Reinforcement activities to support continuity in rehabilitation were considered in the program.

The purpose of this study was to explore patients' preferences for program features.

Methods: Patients who completed phase II CR in Year 2008 and attended the graduation party were invited to complete a questionnaire. Questions regarding the necessity, the appropriate period to introduce the service, number of sessions, the time of operation, the content and the cost for service fee and treadmill test were asked. The result was compared with the current service offered by two non-government organizations in the community.

Results: Fifty convenience samples were studied with 44 (88%) patients agreed that the program was necessary. Among 44 patients, 23 (52%) patients reported that the course held at one year after graduation was too long. 3 patients suggested that the program should be held as early as 3 months after graduation. Nineteen out of 32 patients (59%) who gave suggestions on number of sessions to be limited to not more than 6 sessions of training. There was no preference to morning or afternoon (20 Vs 24 patients) session. Patients referred the content should include medications, dieting practice, exercise, signs and symptoms of complications, self-management skills and group sharing were reported in 22, 22, 21, 18, 9 and 5 patients respectively. Twenty-seven (56%) and 35 (70%) patients accepted to the cost for attending the class and for treadmill test to evaluate their exercise capacity respectively. When compared with program features with those provided by community partners, similar programs existed.

Conclusions: Most patients agreed that maintenance program was necessary for sustaining the benefits from cardiac rehabilitation. Patients' preferences in the program features were comparable to service provided by community-based organizations. Strategies at the transition phase from I to III should be explored to achieve the above.
ABSTRACTS

Abstracts for Free Paper Session:

53. Prognostic value of normal cardiac magnetic resonance imaging in patients with known or suspected ischemic heart disease

Dr KC Chan, Dr WS Kwun, Dr YH Cheung, Dr SF Chau, Dr LK Chan, Dr CY Wong, Dr HS Ma, Dr CL Fu, Dr LY Tam, Dr CW Chan, Dr KY Li, Dr KT Chan, Dr KC Ho, Dr CS Chang
Department of Medicine, Queen Elizabeth Hospital, HK SAR

Background: Cardiac magnetic resonance imaging (CMR) was accurate in assessing cardiac function and structure, diagnosing obstructive coronary artery disease (OCD) and detecting myocardial fibrosis. Apart from diagnostic accuracy, prognostic study of CMR was limited as compared to SPECT and PET.

Objective: This study is to assess the prognostic value of normal CMR in patients with suspected and confirmed CAD in a tertiary referral centre.

Patient and methods: Patients with suspected and confirmed CAD referred for CMR from 1 October 2005 to 31 September 2008 were enrolled. Baseline clinical characteristics, cardiac risk factors, use of cardiac medication will be analyzed. Composite end point of cardiac events including cardiac death, nonfatal myocardial infarction and coronary revascularization were recorded. Follow up was completed in 31st December 2008. Negative predictive values of various CMR parameters were analyzed.

Result: 120 patients with normal CMR were recruited and were followed up with a mean duration of 19.6 months. Baseline clinical characteristics were shown on table 1. 3 patients experienced the composite end point (2.5%). There were no cardiac death, 1 nonfatal myocardial infarction and 2 patients had undergone revascularization procedure. The negative predictive value of CMR in predicting any future adverse cardiac event, cardiac death, nonfatal myocardial infarction and revascularization were 97.5%, 100%, 99% and 99% respectively.

Conclusion: Excellent prognosis was noted in patients with normal CMR.

Table 1

| Male vs | 46.62% | Hypertension | 52.00% |
| Age | 29.54% | Smoking | 24.07% |
| SBP | 56.67% | Renal impairment | 32.00% |
| Ht of AMI | 32.30% | Angina | 65.00% |
| Ht of PCI | 22.10% | Beta blocker | 22.00% |
| Ht of CABG | 51.20% | ACE inhibitor | 57.20% |
| DIA | 24.20% | Statin | 40.80% |
| FT | 26.45% | Ca Channel blocker | 40.67% |

55. Comparison of prognostic value of computed tomography coronary angiogram and adenine cardiac magnetic resonance perfusion imaging in patients presented with chest pain

W S Chan, CH Lo, S Lee, HF Tsui
Department of Medicine, Queen Mary Hospital & St Teresa’s Hospital, Sir Run Shaw Heart Center, Hong Kong SAR

Background: Computed Tomography coronary angiogram (CTA) provides a noninvasive mean to accurately assess the coronary anatomy while adenine cardiac magnetic resonance perfusion imaging (CMR) provides reliable functional assessment of ischaemic myocardium. Purpose: To compare the predictive value in development of CAD or future adverse cardiac events (MACE) by CTA and CMR in patients (pts) with low to moderate total cardiac risk factor (TLCRF). Methods: Adenine stress CMR and CTA was performed on 258 consecutive patients (pts) who presented with chest pain. Ten pts and thirteen pts were excluded due to MI and poor image quality respectively. Pts were followed up during to determine the incidence of significant, new MI, heart failure, unstable angina or cardiovascular death. Results: Totally 245 pts (M/F = 189:56); mean age 58±14; mean baseline TLCRF = 2.5±1) underwent rest and stress adenine stress CMR and 64 slices CTA on the same day. At 31±6 months, there were 30 MACE (25 pts underwent coronary percutaneous angioplasty due to unstable angina, 1 new MI, 3 cardiovascular deaths and one heart failure). Despite TLFCH and abnormal CMR & CTA defined as stenosis per vessel >= 0.01 and 0.01, respectively. Abnormal CMR and CTA are the strongest predictor of the event rate (adjusted hazard ratio 1.46 per 10% increase; p = 0.03 vs p=0.04). However, there is no difference in prediction of MACE for the abnormal CMR and positive CTA (p=0.2). Nevertheless, among pts with 50-75% stenosis per vessel on CTA, event rate were significantly lowered in pts with negative CMR (p=0.01). Conclusions: Among the low to moderate cardiac risk chest pain pts, adenine CMR perfusion and CTA are equally good in predicting the future development of CAD.

56. Complementary role of adenine stress perfusion and late gadolinium enhancement imaging by cardiac magnetic resonance in prognostication of low to moderate cardiac risk patients

CWS Chan, SCW Cheung*, JT Ho*, SYC Ho*, WK Tsui*, HF Tsui, S Lee
Division of Cardiology, Department of Medicine, Queen Mary Hospital & Department of Radiology, Queen Mary Hospital, HK SAR

Background: Recent studies have shown the prognostic implication of cardiac magnetic resonance (CMR) perfusion imaging using stress agents in patients (pts) with suspected coronary artery disease (CAD). On the other hand, the CMR late enhancements imaging (DHE) have been proven to be the most sensitive method of identifying the presence of myocardial infarction (MI). We postulate that there is a complementary role of CMR perfusion imaging and DHE in prognostication of pts with suspected CAD. Methods: CMR was performed on 520 consecutive pts who were presented initially with chest and/or dyspnoea and were suspected of myocardial ischaemia and/or previous history of MI. The CMR study protocol consisted of assessment of myocardial function, adenine stress perfusion and late gadolinium enhancement imaging. Ten pts were excluded due to suboptimal image quality. Pts were followed up during outpatient visit or contacted through telephone interview to determine the presence of MACE (the incidence of significant CAD defined as coronary artery stenosis 50% on angiography, new myocardial infarction(MI), heart failure, unstable angina or cardiovascular death). Results: Totally 310 pts (M/F = 380:130); mean age 60±14; mean number of cardiac risk factors (TCF) (pF = 2.3±1) underwent CMR. At a mean followup 36±8 months, 43 pts underwent coronary percutaneous angioplasty due to unstable angina, 3 new MI, 2 heart failure and 4 cardiovascular deaths. Despite the number of TCF and left ventricular systolic function, indexable myocardial perfusion defect was the strongest multivariate predictor to major adverse event with 6-fold hazard increase to MACE (p = 0.0001) and a 4-fold increase to cardiac death (p=0.04). Adjusted to the presence of reversible myocardial effects, DHE maintained a 3-fold adjusted hazards with MACE (adjusted HR 4.3, p=0.02). Conclusions: In pts without history of MI, adenine inducible myocardial perfusion defect and DHE provided complementary incremental prognostic information in daily practice.
ABSTRACTS

Abstracts for Free Paper Session:

57.
Early experience in CT coronary angiography in a regional hospital
Tam KM, Yip TWC, Law TC, Wong CW, Leung MY, Mak KO, Wong FK, Department of Medicine, *Department of Radiology, Yan Chai Hospital, HK SAR, China

Background: CT coronary angiography service was first launched in Yan Chai Hospital since April 2008 with a 64-slice Toshiba Aquilion. Early experience was reported in this review.

Methods: 43 CT coronary angiograms performed from April to end of October 2008 were studied. Most of the angiograms are dedicated for cases with low probability of coronary artery disease (CAD) for dual purpose of screening for invasive procedures and overcoming the initial learning curve.

Results: The results of 43 CT coronary angiograms were reviewed. Among the 43 patients, no blockage in coronary arteries were found in 23 patients (53.4%). All of them had low calcium score of less than 50 (zero in 19 patients). For the rest 20 patients, results were tabulated as follows:

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left main</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Left anterior descending (LAD)</td>
<td>19</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Left circumflex (LCx)</td>
<td>7</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Right coronary (RCx)</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

Only 5 patients (A to E) underwent coronary angiograms +: percutaneous coronary intervention (PCI).

CT coronary | Coronary angiogram | Outcome
--- | --- | ---
A | Triple vessel disease | Bypass surgery
B | Near total occlusion | Medical therapy
C | Mid to total LAD severe stenosis | PCI to mid-distal LAD with 2 bare metal stents (BMS)
D | Proximal LAD and LCx severe stenoses | Bypass surgery
E | Mid LAD severe stenosis | PCI mid LAD with 1 BMS

Other significant findings include anomalous origin of RCA from L. coronary cusp, additional R. coronary arising from R. aortic coronary cusp, dense calcification in posterior leaflet of mitral valve and LV.

Conclusion: CT coronary angiogram offers excellent anatomic diagnosis, grading in severity of CAD and correlation with invasive coronary angiography. It also gives information that could not be seen by cardiac catheterization. It will be an excellent tool in guiding patient management in the future era of treating patients with CAD.

58.
CT coronary Club – a meet between radiologists and cardiologists
Tam KM, Yip TWC, Law TC, Wong CW, Leung MY, Mak KO, Wong FK, Department of Medicine, *Department of Radiology, Yan Chai Hospital (YCH), HK SAR, China

Background: CT coronary angiography service was first launched in Yan Chai Hospital since April 2008 with a 64-slice Toshiba Aquilion. On 19 December 2008, the inauguration meeting of YCH CT coronary club was held aiming for regular meeting for CT coronary cases discussion between radiologists and cardiologists.

Methods: 43 CT coronary angiograms performed from April to end of October 2008 were reviewed. The meeting was focused on 5 cases for which coronary angiograms had been performed. It was performed by an active interfiber between the cardiologists and radiologists.

Results: The concerns of both parties were summarized for simplicity and grouped into the following 5 areas for each specialty. On the radiologists’ side, they are concerned about 1: What angionographic imaging angles are used frequently by cardiologists such that they could produce similar and familiar images to assist accurate diagnosis and intervention. 2: To what extent the severity of lesions are required before consideration of intervention. 3: What format in reporting the lesion severity would cardiologists appreciate? 4: What additional information will cardiologists be interested at? 5 Is CT perfusion imaging helpful? On the cardiologists’ side, they are concerned about: 1: Could CT coronary imaging able to pick up critically narrowed lesion and characterize them by cross-sectional view or sort of “ICUS” view simulating intra coronary ultrasound. 2. Availability of CT coronary imaging in ruling out severe coronary artery disease in patients with suspected acute coronary syndrome. 3. Assistance from radiologists in bringing out the best images to delineate the specific lesion so that prior planning in tackling the lesion could be designed. 4. Radiation safety in CT coronary angiography. 5: Would triple rule out reliable with CT coronary angiography per se. The above questions were well addressed on an interactive basis by both sides.

Conclusion: Regular meetings for CT coronary cases discussions would be of utmost importance in advancing the technology by input from both radiologists and cardiologists and which will translate into clinical benefit in patient management.

59.
Left Ventricular Dysynchrony as Determinant of Mitrail Regurgitation in Patients with Ischemic Left Ventricular Systolic Dysfunction
Lung Y, Zhang Q, Yip Gabriel WK, Lee P.W, Lam Y.Y, Yu C.M.
Institute of Vascular Medicine, Division of Cardiology, Department of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong

Objective: To assess the effect of left ventricular (LV) systolic dysynchrony on the severity of ischemic mitral regurgitation (MR) in patients with left ventricular systolic dysfunction.

Methods: Eighty patients with ischemic LV systolic dysfunction (ejection fraction ≤35%) and at least mild MR were evaluated. The severity of MR was evaluated as effective regurgitant orifice area (EROA) by FICA method. Indices of ventricular asynchrony (tenting area, mitral annular contraction, LV global systolic function [LVGF, LV +dp/dt, LV global remodeling (end-systolic volume [LVESV], apical index), LV local remodeling (paraxial-fibrous diameter), and tissue Doppler-derived dysynchrony index (Ts-SD, defined as the standard deviation of time to peak myocardial systolic velocity of six basal and six mid LV segments) were measured.

Results: Comparison between patients with and without significant LV systolic mechanical dysynchrony (defined by a cutoff value of Ts-SD >31ms showed that, EROA (0.22±0.14 vs 0.13±0.09 cm², p<0.001) and tenting area (2.1±0.8 vs 1.6±0.32 cm², p=0.005) were significantly larger in patients with LV dysynchrony, while the other variables showed no significant difference. In univariate analysis, LVEF (r=0.323, p=0.004), LVESV (r=0.367, p<0.001), tenting area (r=0.482, p<0.001) and Ts-SD (r=0.394, p=0.001) were found to correlate with EROA. While significant correlation was found between EROA and other variables. By multivariate analysis, testing area (β=0.66, p=0.066 r=0.001) and Ts-SD (β=0.66, p=0.238, p=0.033) were found to be independent determinants of EROA.

Conclusion: In patients with ischemic LV dysfunction, the severity of ischemic MR is determined by mitral deformation as reflected by the increase in mitral valve testing area, as well as severity of LV systolic dysynchrony.

60.
Systolic Ventricular Dysfunction Identified by Tissue Doppler Imaging in Chronic Obstructive Pulmonary Disease before Development of Pulmonary Hypertension
Institute of Vascular Medicine and Division of Cardiology, Department of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong

Purpose: Heart failure has been reported in patients with chronic obstructive pulmonary disease (COPD). However, it is unknown if early extracardiac abnormalities of cardiac function exist before occurrence of pulmonary hypertension.

Methods: Sixty-seven patients (72±16 years, 60 men) with stable COPD (no acute exacerbation in the past 3 months) and no evidence of pulmonary hypertension (pulmonary arterial systolic pressure (PASP) ≤<93mmHg) who had no history of heart failure were compared with 50 healthy subjects. Tissue Doppler annular motion displacement, peak systolic (Sm) and peak early diastolic (Em) velocity in basal right ventricular (RV) segments as well as the mean value of 5 basal left ventricular (LV) segments were measured by color tissue Doppler imaging (TDI).

Results: There was no difference in PASP and RV ejection fraction between the 2 groups. LV ejection fraction was slightly lower in COPD, which was <50% in only 1 patient. On the contrary, TDI showed significant reduction in tenting annular motion displacement, Sm and Em velocities in LV and RV basal segments (Table). The extent of decline in Sm (%24.4±%24.2) was greater than that of Em (%11.1±12.7%)

Conclusion: By using TDI, early systolic impairment of LV and/or RV function was evident in patients with COPD before development of pulmonary hypertension.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Controls</th>
<th>COPD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASP, mmHg</td>
<td>17.76±3.1</td>
<td>16.50±3.9</td>
<td>0.344</td>
</tr>
<tr>
<td>RV ejection fraction, %</td>
<td>36±5.80</td>
<td>36±6.81</td>
<td>0.781</td>
</tr>
<tr>
<td>Tenting annular motion displacement, cm</td>
<td>0.83±1.9</td>
<td>0.77±1.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sm in basal RV segment, cm</td>
<td>9±6±6.4</td>
<td>8±6±2.0</td>
<td>0.001</td>
</tr>
<tr>
<td>Em in basal RV segments, cm</td>
<td>6±4±2.6</td>
<td>5±4±2.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LV ejection fraction, %</td>
<td>69±4±2.3</td>
<td>62±4±7.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Em in 5 basal LV segments, cm</td>
<td>4±6±4.3</td>
<td>4±6±4.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Em in 5 basal LV segments, cm</td>
<td>1±5±1.7</td>
<td>1±4±1.7</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
ABSTRACTS

Abstracts for Free Paper Session:

61.
Reduction of Radial Strain Revealed by Two-dimensional Speckle Tracking in Hypertensive Left Ventricular Hypertrophy: An Early Sign of Systolic Dysfunction?

(M, Jiu, G. Zhang, Y.M. Liu, C.Y. Ma, Y. Liang, Ghebleh W.K, Yip, P.W. Lee, Y.Y. Lam, C.M. Yuen, Li Ka Shing Institute of Health Sciences, Institute of Vascular Medicine, and Division of Cardiology, Department of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong)

Purpose: The advanced two-dimensional (2D) speckle tracking echocardiography permits the assessment of different components in myocardial contraction. This study examined if this tool is useful for early detection of myocardial dysfunction in hypertension before clinical symptoms occur.

Methods: This study recruited 30 hypertensive patients (HTN) with left ventricular hypertrophy but no history of congestive heart failure, 10 patients with systolic heart failure (SHF) and 30 normal controls. 2D images were saved in short-axis view at basal, mid and apical left ventricular (LV) levels (Apio 80, Toshiba) where the circumferential strain (ε-circ), radial strain (ε-radial) and torsion were analyzed offline.

Results: In the whole study group, LV ejection fraction was found more closely correlated with ε-circ (r=0.80, p<0.001) than ε-radial (r=0.66, p<0.001), but only moderately with rotation (r=0.55, p=0.001). Despite identical LV ejection fraction between HTN patients and controls, ε-radial decreased significantly while LV filling pressure was slightly elevated by measuring transmural E velocity over mitral annular E’ velocity (E/E’) in HTN patients. In patients with SHF, ε-circ, ε-radial and torsion were severely impaired with elevation of E/E’ (Table).

Conclusions: 2D speckle tracking is useful to identify subclinical LV myocardial dysfunction. As the global measure of speckle fraction is more reflecting circumferential function of the LV, the decrease in ε-circ may serve as an early sign of systolic dysfunction in HTN.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Control</th>
<th>HTN</th>
<th>SHF</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV ejection fraction, %</td>
<td>65.6±4.7</td>
<td>64.8±2.5</td>
<td>37.2±10.6*</td>
</tr>
<tr>
<td>Segal ε-circ</td>
<td>7.6±1.9</td>
<td>10.6±3.0#</td>
<td>13.5±4.7*</td>
</tr>
<tr>
<td>Mean ε-circ, %</td>
<td>28.0±5.1</td>
<td>27.7±4.9</td>
<td>11.5±4.4*</td>
</tr>
<tr>
<td>Mean ε-radial, %</td>
<td>34.9±9.9</td>
<td>26.2±3.5*</td>
<td>11.8±6.2*</td>
</tr>
<tr>
<td>Mean torsion, %</td>
<td>16.9±5.5</td>
<td>13.1±3.3</td>
<td>5.6±4.4*</td>
</tr>
</tbody>
</table>

*p<0.001, #p<0.05 vs Control; δp=0.05 vs SHF.

62.
A Novel Method for Automatic Myocardium Texture Analysis Based on Speckle Tracking

GUO Rui, HUANG Jing, ZHENG Yong, LIU Di-chuan, SHEN Hua, WANG Zhi-fang

1. Institute of Ultrasound Imaging, Chegongjiao Medical University, Department of Cardiology, The Second Affiliated Hospital of Chegongjiao Medical University, Chegongjiao 400010, P.R.China. 2. The Hong Kong Polytechnic University, Hong Kong, P.R.China

Purpose: Abnormal myocardial acoustic properties have been evaluated and quantified by ultrasound texture alterations. Traditional analysis approach used manual way to position the define region of interest frame by frame to state the information on myocardium viabilities, however the amount of work was relative large and yielded to subjective. This study sought to develop an automatic method for myocardium texture analysis.

Method: Ten healthy volunteers were submitted to conventional 2D echocardiography. Consecutive frames in the short axis view of the posterior wall were stored in avi Format. Imaging conditions such as gain, depth were kept constant in the whole procedure. Speckle tracking method was used to track the region of interest that was selected in the first frame and mean gray levels within region of interest were automatically extracted from three consecutive cardiac cycles. Time in processing was compared between this automatic analysis method and the traditional approach.

Results: Mean gray levels made recurrent change in cardiac cycle in which the amplitude of Mean gray levels in posterior wall was 24±2.1. Processing time of this automatic analysis method was 0.095±0.02 Frame/sec which was much less than the tradition approach 2.85±0.08 Frame/sec (P<0.01)

Conclusion: This novel automatic analysis method reduced the load in data processing and improved the objectivity on ultrasound texture analysis which provided an alternation method for further evaluation.

63.
Dedicated Training Program Significantly Improves the Reproducibility in Measurement of Systolic Dyssynchrony by Tissue Doppler Imaging


Institute of Vascular Medicine, Division of Cardiology, Department of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong

Purpose: The assessment of systolic dyssynchrony by tissue Doppler imaging (TDI) requires good skills in online image acquisition and offline analysis where learning curve exists. Attempts by inexperienced personnel may result in wrong results and thereby wrong decisions in referring patients for cardiac resynchronisation therapy (CRT) or predicting treatment response. This study aimed to testify the mandatory need of a dedicated training program to ensure the reproducibility of dyssynchrony analysis.

Methods: Color TDI images of the 3 apical views from 70 patients were prepared, in which the standard deviation of the time to peak systolic velocity among the 12 segments (TV-SD) was interpreted first by an expert. The level of difficulty in reading was labelled as 1 (easy), 2 (moderate) and 3 (most difficult). The images were then analyzed by 2 echo cardiographers who only had basic knowledge of the methodology and practical tips (Beginners 1 & 2), as well as another 2 echocardiographers (experts) who received a structured training program in the form of 3-day workshop that enhanced both online image acquisition and offline analysis, including several hands-on and self-training sessions (Graduate 1 & 2). Subsequently, the data were compared by linear correlation, Bland-Altmann and reproducibility test.

Results: As shown in the Table, when compared with the standard measures of the expert, the analysis of both Beginners were unsatisfactory. The measurement with a difference of TV-SD was counted 24% and 22% for Beginners 1 and 2, respectively. On the contrary, the assessment by both Graduates 1 and 2 were significantly improved (Table), while the measurement with a difference of TV-SD was only 1.5% and 3%.

Conclusion: Good reproducibility in measurement of systolic dyssynchrony by TDI can be achieved by the use of dedicated training program, which included a comprehensive hands-on practice.

Table: Comparison of the measures by regression

<table>
<thead>
<tr>
<th>Statistical methods</th>
<th>Beginner 1</th>
<th>Beginner 2</th>
<th>Graduate 1</th>
<th>Graduate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear correlation, r value</td>
<td>0.642</td>
<td>0.507</td>
<td>0.935</td>
<td>0.929</td>
</tr>
<tr>
<td>Variability, %</td>
<td>18±21</td>
<td>13±23</td>
<td>8±7</td>
<td>7±2</td>
</tr>
<tr>
<td>Bland-Altmann</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean difference, ms</td>
<td>3.49</td>
<td>0.92</td>
<td>0.97</td>
<td>0.93</td>
</tr>
<tr>
<td>95% upper limit, ms</td>
<td>24.86</td>
<td>26.96</td>
<td>9.43</td>
<td>7.85</td>
</tr>
<tr>
<td>95% lower limit, ms</td>
<td>-17.96</td>
<td>-27.11</td>
<td>-7.49</td>
<td>-9.12</td>
</tr>
</tbody>
</table>
ANIMAL STUDIES AND MISCELLANEOUS

64. Initial Experience with Self-monitoring & Self-management Oral Anticoagulation

KO Leung, KM Liu, PC Ho, CS Yue
Division of Cardiology, United Christian Hospital, Hong Kong SAR, China

Purpose: Self-monitoring or self-management of oral anticoagulation can lead to reduction in thromboembolic, major hemorrhage, total mortality and total healthcare costs. We analyze the initial experience with the use of a portable coagulometer for self-monitoring and self-management of oral anticoagulation treatment in local setting.

Methods: All patients with good comprehension ability or good family support, willing to actively participate in treatment, sufficient mental dexterity and visual acuity being followed up in cardiac anticoagulant clinic were invited for self-monitoring and self-management. All patients who passed a standardized test were recruited for self-monitoring & self-management with the use of a portable coagulometer. The portable coagulometer (CusacCheck XS), Rochester Inc., USA, was an easy, fully automated coagulation monitor, which allows the determination of the prothrombin time, expressed as INR, from one drop of capillary whole blood from fingerstick. At intervals of routine INR monitoring, venous whole blood samples were applied to the test strip to be tested by patients) and counted tube for laboratory comparison. Results were compared for assessing the reliability of the portable coagulometer. A big book was record their INR with warfarin dosing scheme for those who opt for self-management was distributed to every patient. Their INR percentage of time-in-range during self-monitoring and self-management were assessed. Their treatment-related quality of life scores were also analyzed.

Results: From September 2007 to January 2009, there were ten patients participated in self-monitoring & self-management program. Two of them were abroad and one was transferred to other hospital for follow up, leaving seven patients for analysis (5 opted for self-management after a period of self-monitoring and 2 for self-monitoring). Male to female ratio was 4 to 3. They were aged 45 +/- 14 (range 23 - 67) years. Three of them had nonvalvular atrial fibrillation. One patient had recurrent sagittal sinus thrombosis and non-fatal myocardial infarction. There were 48 blood samples included for the comparison. Linear regression analysis revealed portable coagulometer INR result = 0.23 + 1.03% x laboratory INR result with r = 0.94. The frequency of self-monitoring INR was once in 14.4 days. All patients were able to measure the INR at home (and devise a dosing scheme in self-management group accordingly). The INR percentage of time-in-range during self-monitoring period and self-management period were 52% and 63% respectively. The portable coagulometer detected one episode of markedly below range INR (<1.5) and three episodes of markedly above range INR (>3.5). There were 2 episodes of minor bleeding. The number of call for assistance was 8-patient-month. Their treatment-related quality of life scores (mean +/- SD) were 67% (54% - 80%), 61% (40% - 80%) respectively. All the patients were satisfied with treatment (5.3 +/- 0.5), self-efficient (5.7 +/- 0.5), able to maintain social network (4.8 +/- 1.9), not hassled (1 +/- 0) and not dissatisfied (1 +/- 0).

Conclusion: Our preliminary experience showed that self-monitoring and self-management of oral anticoagulation was feasible and well accepted by the participating patients.

65. Clinical features and risk factors of acute pulmonary embolism – our local experience

SF Chu, WS Kwan, YH Cheng, LR Kan, KC Chan, HS Ma, CY Wong, CW Chan, CL Fu, KY Lee, KT Chan, KC Ho, CS Chang, Division of Cardiology, Department of Medicine, Queen Elizabeth Hospital, Hong Kong SAR, China

Purpose: Acute pulmonary embolism is a relatively common medical condition. Early diagnosis and risk stratification is the most challenging part in the management of patient with this fatal illness. This study is to examine the clinical characteristics and risk factors in patients with pulmonary embolism.

Method: Retrospective review of 69 patients admitted to our hospital for acute pulmonary embolism in year 2007 and 2008.

Results: In the 69 patients, there was a female predominant (26 male vs. 43 female) with age 65 +/- 18 (range from 26 to 93). The most common presenting symptom was dyspnoea (63.8%), followed by chest pain (18.8%) and cough (13.6%). 2.9% of patients had previous history of pulmonary embolism. The most predisposing risk factor was active malignancy (39.1%) while 13 patients (18.8%) had no risk factors identified. 22 patients (33.3%) experienced prolonged bed rest/travel before presentation. 13 patients were bedridden, while 10 patients presented within 4 weeks after lower limb fracture, orthopedics or major surgery. Only 1 patient presented immediately after delivery and another 1 patient suffered from anti-phospholipids syndrome. Deep vein thrombosis was found in 42 patients (60.8%). RRBS or S-LV was recognized in the ECG of 27 patients. 11 patients presented with hypotension. Echocardiographic evidence of RV dysfunction was demonstrated in 25 out of 62 patients. Troponin I level was elevated in 26 patients. 3 patients received thrombolytic therapy while embolectomy was performed in 7 cases, none of these patients died within 30 days of presentation. 8 patients died within 30 days.

Conclusion: Clinical presentation of acute pulmonary embolism is non-specific. The diagnosis requires high index of suspicion with early imaging. In those presented with high-risk features, prompt diagnosis with therapy can improve the clinical outcome of this fatal illness.

66. Interrelations between the brachial artery endothelial function and the common carotid arterial hemodynamic and structural parameters in patients with systemic lupus erythematosus investigated by high resolution ultrasonography

WANG Hong-ying1, DENG You-bao2, BI Xiao-jun3, YANG Hao-yu2
1. Department of Medical Ultrason, Guangzhou Children’s Hospital, Guangzhou, Guangdong Province China
2. Department of Medical Ultrason, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei Province China

Objectives To analyze the correlation between the brachial artery endothelial function and the common carotid arterial hemodynamic and structural parameters in patients with systemic lupus erythematosus.

Methods Twenty-seven patients with SLE and twenty healthy subjects were studied. The intima media thickness of common carotid artery (IMT), pressure strain elastic modulus (Ep), pressure independent stiffness index (β) and shear rate (SR) were measured. Measurements of brachial artery diameter were performed by high resolution ultrasonography during baseline, reactive hyperemia and sublingual nitroglycerin administration. Percent changes in brachial artery diameter induced by reactive hyperemia and induced by nitroglycerin were calculated. The correlation between the brachial artery endothelial function and the common carotid arterial hemodynamic and structural parameters in patients with systemic lupus erythematosus was analyzed.

Results The percent change in the brachial artery diameter induced by reactive hyperemia in patients of SLE group was significantly less than that in healthy subjects (P<0.05). When compared with the control group, the IMT of common carotid artery was thicker, the Ep and β increased, while the SR was lower (P<0.05) in patients with SLE. The brachial artery endothelial function was correlated inversely with IMT (r=-0.418, P<0.05) and the Ep (r=-0.44, P<0.05) of common carotid artery. There was positive correlation between the brachial artery endothelial function and the SR (r=0.396, P<0.05) of common carotid artery in SLE.

Conclusions The common carotid arterial hemodynamic and structural parameters are related with

67. Vasculitis and Pulse Wave Velocity in Rheumatoid Arthritis

XU Ting1, HUANG Jing1, WANG Yi2, LI Xiang-al1, MA Yong ke1, FANG Yong-fei3, MOU Xiang-xian2
1. Department of Cardiology, The Second Affiliated Hospital of Chongqing University of Medical Science, Chongqing 400010, P.R.China; 2. Department of Rheumatology, The Southwest Hospital of the Third Military Medical University, Chongqing 400038, P.R.China

Purpose: The aim of this study was to investigate the relationship between pulse wave velocity (PWV) in patients with rheumatoid arthritis (RA) and the related index of inflammation.

Methods: Branchial-ankle pulse wave velocity (baPWV) was auto measured in 107 patients with RA and in 107 healthy individuals. Disease activity score (DAS) was determined. In this study, by immunohistochemical detection of patients with a number M-indicators such as c-reactive protein(CRP), anti-endothelial cell antibody (AECA), anti-neutrophil cytoplasmic antibody (ANCA). Multiple regression analysis was performed for the RA patients to determine the independent predictors of PWV.

Results: In subjects with RA, the baPWV was significantly elevated compared with that in controls (14.97 [9.63] to [30.00] versus 12.64[9.61] to [16.00] m/s, respectively; P<0.0001). In multiple regression analyses, baPWV correlated independently with age, heart rate, mean arterial pressure, P-anti-neutrophil cytoplasmic antibody (P-ANCA) (R²=0.7157, P<0.0001).

Conclusions: baPWV in RA patients were significant increase and it is associated with angioptaxy which caused by inflammation. PWV may well become an index of identifying vascular inflammatory process in RA.
ABSTRACTS

Abstracts for Free Paper Session:

68. S-azacitidine activates three types of K+ currents during MSCs proliferation and differentiation

Objective: To study the changes of the transient outward K+ current (Ito), delayed rectifier K+ current (IKr) and the inward rectifier K+ current (Ikr) of the rat bone marrow mesenchymal stem cells (MSCs) induced by S-azacitidine (5-Aza) during proliferation and differentiation in vitro.

Methods: MSCs were cultured for 2 weeks; K+ current was induced by 5-Aza in some cells. Uninduced cells were cultured for 6 weeks. Induced cells were treated for 1, 2, 3 and 4 weeks. Each week twenty cells were randomly tested by the whole-cell patch clamp technology and the K+ currents were identified by corresponding ionic blockers.

Results: No significant differences in K+ current intensities among samples were detected during the entire culture period. Ito, IKr and Ikr intensity were gradually increased after being induced for 1, 2, 3 and 4 weeks. The increased K+ current intensities in the induced groups had no significant difference at 1 wk compared with uninduced cells. However, the K+ current intensities in the induced groups were significantly increased starting at 2 wk (p<0.05) and reached 3-8 folds increase at 4 wks (p<0.01). The results are summarized in the table below (Test voltage: Ito and IKr at +50mV, Ikr at -120mV).

<table>
<thead>
<tr>
<th>Current Detection</th>
<th>Uninduced Group</th>
<th>1 Wk</th>
<th>2 Wks</th>
<th>3 Wks</th>
<th>4 Wks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ito (pA/pF)</td>
<td>3.79±1.05</td>
<td>5.68±2.80*</td>
<td>8.01±3.07**</td>
<td>11.02±2.70*</td>
<td>21.46±6.64*</td>
</tr>
<tr>
<td>IKr (pA/pF)</td>
<td>2.98±0.43</td>
<td>4.06±0.51*</td>
<td>4.92±0.23**</td>
<td>11.99±3.67*</td>
<td>24.98±5.31**</td>
</tr>
<tr>
<td>Ikr (pA/pF)</td>
<td>3.87±1.60</td>
<td>3.71±1.23*</td>
<td>5.75±2.51**</td>
<td>7.62±4.59*</td>
<td>11.18±5.44**</td>
</tr>
</tbody>
</table>

Conclusion: 5-Aza induction activates three types of K+ currents (Ito, IKr and Ikr) during MSCs proliferation and differentiation in early stage.

69. Effect of hydrogen sulfide on the apoptosis of pulmonary artery smooth muscle cell in rats with pulmonary hypertension induced by high pulmonary blood flow

Objective: To investigate whether induction of apoptosis of pulmonary artery smooth muscle cells (PASMCs) was involved in the mechanism responsible for the protective role of H2S in the development of pulmonary hypertension induced by high pulmonary blood flow.

Methods: In the present study, we used a rat model of high pulmonary blood flow induced pulmonary hypertension established by an abdominal aorta-inferior vena cava shunt operation. DL-propargylglycine (PPO), an inhibitor of endogenous H2S production, was administrated intraperitonally at a dose of 37.5mg/kg per day for 4 weeks since the shunting operation. On the other side, sodium hydrosulfinide (NaHS) a H2S donor, was administrated intraperitonally at a dose of 56 μmol/kg per day for 11 weeks since the shunting operation.

Results: After 4 week shunting operation, the apoptosis of PASMCs, expression of Fas and Caspase-3 were significantly decreased (P<0.01), but expression of Becl-2 significantly increased (P<0.01). PPO administration further promoted the apoptosis of PASMCs, downregulated the expression of Fas and caspase-3 (P<0.01), and increased the expression of Becl-2 (P<0.01). After 11 weeks shunting operation, the apoptosis of PASMCs, expression of Fas and Caspase-3 were significantly decreased (P<0.01), but expression of Becl-2 significantly increased (P<0.01). NaHS administration significantly increased the apoptosis of PASMCs, upregulated the expression of Fas and caspase-3, and inhibited the expression of Becl-2.

Conclusion: H2S might exert a protective role in the development of pulmonary hypertension induced by high pulmonary blood flow by inducing the apoptosis of PASMCs.

70. Atorvastatin attenuates coxsackievirus B3-induced viral myocarditis in mice

Objective: To study the therapeutic benefits of atorvastatin on Coxsackievirus B3-induced myocarditis in mice.

Methods: Mice were administered atorvastatin at a minimal essential medium (18 mice), virus solution (intraperitoneally, 3×10⁶ PFU/mL, 60 mice), atorvastatin (10mg/kg/day, 15 mice) or virus plus atorvastatin (10mg/kg/day, 50 mice). Atorvastatin was given 3 days after viral challenge and treatment lasted for 14 days in the atorvastatin and virus plus atorvastatin groups. Electrocardiograms were examined on days 3, 7, 10, 14, 21, and 30 after virus inoculation (same days for the atorvastatin only group). Blood samples were collected for cardiac troponin I detection at the same time. Myocardial infarction, cell apoptosis and Fas expression were detected by histology and immunohistochemistry.

Result: Atorvastatin treated mice had a significant decrease in the level of cardiac cell apoptosis in the atorvastatin-treated group compared to infected mice that did not receive treatment. The differences in CD3T values between the virus-challenged animals and atorvastatin-treated virus-challenged mice achieve statistical significance, there was a trend toward a decrease in CD3T in the atorvastatin-treated mice at 3 and 7 days after infection with the atorvastatin-treated infected mice.

Conclusion: These results demonstrate that atorvastatin reduces the histological and functional severity of CVB3-induced myocarditis, and inhibits apoptosis and Fas expression in the myocardium of CVB3-infected mice. The therapeutic benefits of atorvastatin on myocarditis may be explained, at least in part, by inhibition of Fas expression and inhibition of cell apoptosis.

71. The experimental research of biological effect on myocardium ventricular function after treatment on rabbit myocardium by ultrasound wave activating hematoporphyrin

Objective: To observe the impact of focused ultrasound activating hematoporphyrin on biologic effect and hemodynamics, and investigate the expression of apoptotic genes Bax and Bcl-2 with sonodynamic therapy for myocardial ablation.

Methods: All 24 Newland rabbits randomly divided into four groups: sham group (Sham-n), hematoporphyrin group (Hp, n=6) ultrasound group (U, n=6) ultrasound + hematoporphyrin group (UTD, n=6). The thoracotomy was performed in all groups. In UTD group, a dose of hematoporphyrin (2.5mg/kg) was injected by intravenous delivery. Two hours later, an ultrasound exposure on left ventricular myocardium was operated for 1 minute. In Hp group, the operation procedures were similar with the UTD group except for the injection of hematoporphyrin. The ultrasound exposure was performed in UTD group without administration of hematoporphyrin. However, all animals in Sham group didn't give hematoporphyrin and ultrasound treatment. After 4 d, the hemodynamics parameters were recorded by multi-channel physiology, then all animals were sacrificed and hearts were harvested. The necrosis was calculated by 2,3,5-Triphenyltetrazolium chloride (TTC) staining. The immunohistochemical StABC technique and TUNEL method were used to further study Bax, Bcl-2 and cell apoptosis.

Conclusion: The optical density value of Bax and Bcl-2 was analyzed by image-pro software.

Results: As for hemodynamics, there were no statistical difference in all group(p>0.05). In gross view, the hemorroids wasn't seen in Hp and Sham group and the myocardial tissue was stained red by TTC. The necrosis and hemorrhage were found in U and UTD group respectively. After staining by TTC, there were some pets and white zone in exposure to ultrasound in U and UTD groups. Histological examination showed signs of myocardial cell injury in U and UTD groups with cytoplasmin vacuoles of various sizes, leakage of erythrocytes and infiltration of inflammatory cells in ultrasound exposure zone. The exposed tissue remained complete coagulated necrosis in SDT group, with disappearance of cell structure, leakage of a few erythrocytes and infiltration of inflammatory cells. TUNEL analysis: There were no apoptotic cells observed in Hp and Sham groups. The apoptotic cells (9.44±6.06) in UTD group were significantly higher than that of Sham and Hp groups. Bax and Bcl-2 expression analysis: The optical density value of Bax in ultrasound exposure groups was obviously higher than that of Hp group (0.236±0.034), (0.195±0.029) VS (0.124±0.0021), but was lower than that of Bcl-2 (0.114±0.0031), (0.085±0.0024) vs (0.068±0.0035). There were significant statistic difference compared with Hp group.

Conclusion: The suitable SDT causes apoptosis and necrosis of myocardocytes which apoptosis was related to up-regulation of Bax and down-regulation of Bcl-2, and not affect ventricular function that maybe a new choice for myocardial ablation.
Abstracts for Free Paper Session:

72. Suberylanilide hydroxamic acid, a histone deacetylase inhibitor, promotes cardiomyocyte differentiation of rat mesenchymal stem cells
Chuan Feng1, Jing Zhu2, Lili Zhao1, Tiewei Lv1, Jie Tian3 *(1Department of Cardiology, Children’s Hospital of Chongqing Medical University, 2Department of Cell and Molecular Biology, Pediatric Institute of Chongqing Medical University, Chongqing, China)

Purpose: The aim of this study was to investigate the effect of suberylanilide hydroxamic acid (vorinostat, SAHA), a histone deacetylase inhibitor, on cardiomyocyte differentiation of mesenchymal stem cells (MSCs).

Methods: Rat bone marrow MSCs were treated with SAHA alone or in combination with 5-azacytidine (5-aza) for 7 days or 4 weeks. mRNA levels of early transcription factors related to cardiomyogenic →GATA-4, NKx2.5, MEF2c were detected by real-time quantitative RT-PCR. Protein expression of cardiac troponin T (cTNT) and myosin heavy chain (MHC) was detected by immunofluorescence staining and Western-blotting.

Results: Following 7 day treatment with SAHA, GATA4, NKx2.5 and MEF2c mRNA levels were significantly increased compared to control group or 5-aza-treated group (P<0.05). These mRNA levels were up-regulated in a trend of SAHA concentration gradient lower than 1μM, while they were down-regulated with 2μM SAHA. But a combination of SAHA and 5-aza did not further increase mRNA expression of these genes as compared to SAHA treatment alone. After 4 week induction by SAHA, cTNT protein was detectable in both SAHA and 5-aza groups by immunofluorescence staining. A significant increase of cTNT protein was observed in SAHA groups over MSCs group or 5-aza group using Western-blotting. However, treatment with both SAHA and 5-aza did not further increase the expression of cTNT protein compared to SAHA treatment alone. MHC protein was measurable by either immunofluorescence staining or Western-blotting, in all groups.

Conclusion: MSCs are able to undergo mesenchymal→cardiomyocyte transition. SAHA is essential to promote the differentiation of MSCs into cardiomyocyte-like cells. But the synergy between SAHA and 5-aza might not exist in the differentiation.

73. Construction and expression of specific siRNA plasmid vector of p300
Huichao Sun1, Jie Tian1, Jing Zhu1, Tiewei Lv1, Guozhen Chen1, Yasha Li1 *(1 Department of Heart Centre, 2 Pediatric Institute, Children’s Hospital of Chongqing Medical University, Chongqing, China)

Objective To construct and screen effective siRNA plasmid vector which can suppress the expression of p300 in mouse and establish the foundation for the further study of the temporal and spatial regulation of embryonic cardiac development by p300 and the impact on cardiac development mediated by imbalance of p300.

Methods Three recombinant plasmids vectors including DNA encoding short interference RNA, which matched the base pair of mouse p300 perfectly, were constructed and transfected into mouse embryonic stem cells. The expressions of p300 in different groups were detected by RT-PCR and immunofluorescence.

Results: There were digestion sites of NotI and EcoR1 in pSOS-HUS plasmid, but the NotI site was lost after recombinant. So after dual-enzyme digestion, the recombinant plasmids, p300iRNA1, p300iRNA2 and p300iRNA3 were digested into two fragments (1325bp and 3620bp) while pSOS-HUS was digested into only one long fragment (4920bp). The three recombinant plasmids p300iRNA1, p300iRNA2 and p300iRNA3 were confirmed again by DNA sequencing. 24h after cell transfection, the mRNA and protein levels of p300 in the cells transfected with p300iRNA1 or p300iRNA3 was depressed obviously than those in blank control cells (P<0.05), while there was no obvious changes in the cells transfected with pSOS-HUS or p300iRNA2 (P<0.05).

Conclusion: The recombinant plasmids were successfully constructed, both p300iRNA1 and p300iRNA3 can block the expression of p300 effectively, which establishes the foundation for the further study on the role of p300 during the epigenetic heart development.
PAEDIATRIC CARDIOLOGY I

74. Transcatheter occlusion of arterial ducts with a new Amplatzer Duct Occluder: initial experience in Hong Kong

KT Wong, KS Lun, PC Chow, AKT Chau
Department of Paediatric Cardiology, Queen Mary Hospital, Hong Kong

Purpose: The study was designed to examine the effect of selective alpha 1 receptor agonist midodrine hydrochloride vs beta-adrenergic blockade metoprolol in the treatment of children with postural orthostatic tachycardia syndrome.

Methods: Twenty children (11 male, 9 female, age 3-18 yrs, mean age 12.4±2.4 yrs) who came from Peking University First Hospital were included in the study and clinical investigations. They were randomly divided into group I (with midodrine hydrochloride and conventional therapy), group II (with metoprolol and conventional therapy) and group III (with conventional therapy only). Standing test was conducted. At the end of follow-up, the cure rate, improvement rate and effective rate of symptoms were compared among the three groups. A Kaplan-Meier survivorship curve and LOG-RANK test were used to describe the follow-up proportion of symptom-free cases each month.

Results: The cure rate at the end of follow-up in group I was significantly higher than that of group II and group III (60.8% vs 30.0% and 25.0%, P<0.05). The effective rate at the end of follow-up in group I was also significantly higher than that of group II and group III (82.6% vs 50.0% and 43.7%, P<0.05). During follow-up, we discovered that the symptom recurrent rate in group I was significantly lower than group II and group III, respectively (P<0.05), but it did not differ significantly between group II and group III (P>0.05). The symptom improvement group I was shorter than group II and III.

Conclusion: Midodrine hydrochloride was more effective than beta-adrenergic blockade metoprolol in the treatment of children with postural orthostatic tachycardia syndrome.

75. Dihydropyridine receptor gene plays central roles in zebrabfish heart and outflow tract developments

SUN Shun-ai1,2, GUEI Ying-hao1,2, HANG Guo1,2, TAO Zheng1,2, SONG Hou-yan1,2
1 Corresponding author: E-mail: yhsun@zhfchen.edu.cn
2 First author E-mail: shunz009@yahoo.com.cn

1 Children’s Hospital, Fudan University, China
2 Key Laboratory of Molecular Medicine, Ministry of Education, Fudan University, China

Purpose: In this study, we aimed to observe the abnormal phenotypes of heart and outflow tract which induced by DHFR knock-down, to detect the effects of DHFR on expression of genes which are essential for Hedgehog pathway or important to cardiac development including NKX2.5, MEF2C, TBX20 and TBX1. The effects of DHFR on endoreplication and apoptosis also be examined.

Methods: Morpholino oligonucleotides or DHFR-GFP mRNA were microinjected to knock-down or over-expression DHFR. Microangiography was used to detect the development of out flow tract. Whole-mount in situ hybridization and real-time PCR were performed to detect the expression of genes. The endoreplication was detected by immunohistochemistry with phospho-histone H3 antibody staining and the apoptosis was examined by TUNEL staining.

Results: Obviously cardiac malformations and abnormal developments of out flow tract were observed in DHFR knock-down embryos. DHFR had positive effects on expression of NKX2.5, MEF2C, TBX20 and TBX1. DHFR was required for Hedgehog pathway. DHFR also can promote the endoreplication and inhibit the apoptosis.

Conclusions: Our study suggested that DHFR plays crucial roles in developments of heart and out flow tract in zebrabfish by regulating the transcriptions of genes and effecting endoreplication and apoptosis.

76. Change of Electrocardiogram and Treatment in the Children with Congenital Ventricular Septal Defect by Interventional Processes

HS Wang, YQ Li, GZ Chen, et al
Department of Pediatric Cardiology, the first affiliated Hospital of SunYat-sen University, Guangzhou 510080, China

Purpose: To analyze the change of electrocardiogram (EKG) in the children with congenital ventricular septal defect (VSD) by interventional processes and to explore how to decrease the incidence of serious arrhythmias after the interventional catheterization.

Methods: 260 patients underwent transcatheter VSD closure using Amplatzer membranous septal occluder. They were divided into arrhythmia group and no arrhythmia group (control group) after the interventional catheterization. The patients were treated with nutrition of cardiac muscle and medicines of reducing the cardiac muscle drop when they suffered from complete or serious atrioventricular block (AVB), and even underwent the temporary pacemaker quickly.

Results: There were 178 cases in control group. Eighty-tw0 cases (31.5%) had arrhythmias after the interventional catheterization, in which 4 cases (1.5%) were complete / serious AVB. Sixty-six cases (13.8%) were given medicine above. The age was smaller and the body weight was less in the arrhythmia group than that of control group (p<0.05). The device Occluder was bigger in the arrhythmia group than that of control group (p<0.05). There were significant differences in the comparison of the heart rate, QRS interval, PR interval, QRS and QTC before and after occlusion in all the cases (p<0.05).

Conclusion: The changes of EKG have to be taken attention when underwent transcatheter VSD closure using occluder. It is important to avoid the oversized devices. When complete right branch bundle block (CRBBB), complete left branch bundle block (CLBBB) and II° AVB occur repeatedly in the procedure or after that, medicines should be given as early as possible, and once complete / serious AVB has emerged, it is much helpful to perform the temporary pacemaker. All of the cases with arrhythmia should be long-term followed-up.
Abstracts for Free Paper Session:

78. The Diagnoses of Trachea and Bronchus stenoses by using 64-detector Row Computed Tomography in Children with Congenital Heart Disease
Xi-Hong Hu, 1, 2 Guo-Ying Huang, 1 Mi-Er Pa, 1 Pediatric Heart Center, 2 Department of Radiology, Children's Hospital of Fudan University, Shanghai, China

Objective: To investigate the value of multidetector-row spiral computed tomography (MDCT) in diagnosing tracheobronchial stenosis in children with congenital heart disease.

Methods: Sixteen children with congenital heart disease and suspected tracheobronchial stenosis were examined by contrast enhanced MDCT. Conventional axial slices, multplanar reconstruction (MPR) and 3-dimensional volume rendering (VR), virtual tracheobronchoscopy (VTB) were used. Interobserver agreement for the diameters and areas of the narrow tracheobronchoscopy was evaluated with Bland-Altman analysis.

Results: CT showed that tracheal stenosis was observed in all of 16 patients resulted from vascular compression due to the double aortic arch (n=1), right aortic arch (n=2), pulmonary artery malposition (n=2), pulmonary artery dialation (n=6), and left pulmonary artery stenig (n=5). All straitness were correctly depicted by conventional axial slices, MPR, VR, and VTB. There was an excellent agreement in quantifying the diameters and areas of tracheobronchoscopy by two independent observers.

Conclusion: 64-MDCT with the use of reconstruction techniques is effective for the evaluation of tracheobronchial stenosis in children with congenital heart disease.

79. Transcatheter closure of perimembranous ventricular septal defects: A comparative study between the asymmetric device and the symmetric device.
Li Junjie, ZHANG Zhiwei, QIAN Mingyang, LI Yuefen, WANG Shushui, Department of Pediatric Cardiology, Guangdong Cardiovascular Institute, Guangdong Provincial Hospital, Guangzhou, China

Purpose: To compare the efficacy and complications of the asymmetric device for closure of perimembranous ventricular septal defects (PMVSD) with those of the symmetric device.

Methods: A retrospective study was performed for the patients with PMVSD in Guangdong cardiovascular institute from October 2002 to December 2007. The patients were assigned to either the asymmetric group or the symmetric group according to the style of the used device. Baseline clinical data, efficacy and complications were compared preprocedure and at follow-up within 12 months.

Results: A total of 509 patients with PMVSD were enrolled in the study, including 266 patients in the group undergoing the asymmetric device and 243 patients in the group undergoing the symmetric device. There were no other differences about baseline clinical data between two groups( all p>0.05) except that the distance from VSD to aortic root valve was shorter in the asymmetric group than in the symmetric group (3.5±0.7 vs 5.2±1.2mm, P=0.01). The procedural success rate was 97.8% for the asymmetric group and 98.3% for the symmetric group (P=0.98). The rate of the VSD complete closure at once was 97.1% for the symmetric group and 87.0% for the asymmetric group (P=0.001), however, there was no different on the VSD complete closure rate at 24h, 1, 3, 6 and 12 month after the occlusion (all p>0.05). The major complication rate was 3.8% for the asymmetric group and 1.7% for the symmetric group (P=0.062), but the minor complication rate was higher in the asymmetric group than in the symmetric group (56.8% vs 42.8%, P=0.001). There was no death for both groups.

Conclusions: The efficacy and major complication rate were not statistically different between the asymmetric and the symmetric device within one year follow-up after occlusion, however, the rate of the arrythmia out of the minor complications was lower for the symmetric device than for the asymmetric device.

80. Analysis of Single Nucleotide Polymorphism of HIRA gene in patients with congenital anomalies
Jing Zhang, Guo-Ying Huang, Fang Liu, Lin Wu, Pediatric Heart Center, Children's Hospital of Fudan University, Shanghai, China

Purpose: To investigate the relationship of single nucleotide polymorphisms (SNPs) of HIRA gene with congenital anomalies (CTA).

Methods: A cohort of 203 pediatric patients with CTA including TOF (87 cases), PA (55), TGA (32), and DORV (29). One hundred and fifty patients with simple congenital heart diseases (CHD) and 150 normal children were used as control. PCR and genotyping were performed for the detection of SNP at exon 5, exon2, exon19, exon22 and exon25 of HIRA gene. The correlations of SNPs of HIRA gene and CTA were analyzed.

Results: (1) Frequency of genotype of A at position 100308 in exon 25 was 13.8% in TOF group, while it was 3.3% in the normal control (X2=7.779, P=0.005, OR=5.264, 95%CI is 1.463-18.937). The allele frequencies of the less common A variant were 8.6% in TOF group and 1.7% in the normal control (X2=4.714, P=0.030, OR=4.846, 95%CI is 1.020-23.084). (2) Both GG, GA and AA genotype frequencies and G/A allele frequencies at position 100598 in exon 25 had no difference between CTA, simple CHD and normal control groups. (3) Frequency of genotype of G at position 25983 in exon 5 was 15.3% in simple CHD, while it was 6.2% in TGA group (X2=4.310, P=0.038, OR=2.765, 95%CI is 1.026-7.449), and 3.4% in DORV group (X2=8.791, P=0.003, OR=5.706, 95%CI is 1.597-20.368). However, the allele frequencies of the less common G variant were no difference between these groups.

Conclusion: SNP at position 100308 G/A of HIRA gene is associated with the susceptibility of TOF. Allele A is susceptible allele to TOF. SNPs at both positions of 100598 G/A and 25983 C/G of HIRA gene are not associated with congenital anomalies.
Abstracts for Free Paper Session:

**PEDIATRIC CARDIOLOGY II**

**81. The First Paediatric Heart Transplant in Hong Kong**

KS Lun,1 LC Cheng,2 K Fan,2 TC Yung,1 AKT Chau1

1Departments of Paediatric Cardiology, Cardiothoracic Surgery, Queen Mary Hospital and 2Cardiac Medical Unit, Grantham Hospital, Hong Kong

**Purpose:** To report the first pediatric heart transplant in a 6-year-old girl in Hong Kong.

**Case Report:** A 6-year-old Chinese girl presented with poor appetite and decrease exercise tolerance in September 2008. Investigations revealed the diagnosis of dilated cardiomyopathy. Metabolic investigations showed no evidence of metabolic cardiomyopathy. Cardiac catheterization revealed poor left ventricular contraction (LVEF 14%) and elevated LVEDP to 20 mmHg. Coronary arteries were normal. Endomyocardial biopsy showed only non-specific pathological changes. She developed decompensated heart failure in November 2008 despite optimization of all the antifailure medications. She was inotrope-dependent and intermittent intravenous levosimendan was given. She was put on heart transplant list since November 2008. Heart transplant was performed in April 2009. The donor was a 7-year-old child diagnosed brain death after extensive intracerebral haemorrhage due to cerebral arteriovenous malformation.

Immunosuppression induction consisted of intravenous Azathioprine, Methylprednisolone and Daclizumab. She had excellent haemodynamics after operation and was successfully extubated within 12 hours. Maintenance immunosuppression therapy consisted of oral cyclosporine, Myfortic and prednisolone. Day 10 after operation, she complained of headache and then developed focal seizure and confusion. MRI brain showed features compatible with posterior reversible encephalopathy syndrome due to cyclosporine neurotoxicity. She made complete neurological recovery two days later after stopping of cyclosporine A and control of systemic hypertension. She was discharged home 3 weeks after transplantation. Echocardiography showed good right and left ventricular function. White cell count, renal and liver biochemistry were normal. There was no abnormal neurological sign.

**Conclusion:** Heart transplantation is an option of treatment for end-staged heart failure in children. Early and intermediate survival after transplantation is good. Achievement of successful paediatric heart transplant is possible in Hong Kong. The main problem is the lack of pediatric donor.

**82. A Clinical Study of T-wave Alternans in Pediatric Patients**

Zeng Shuoying, Shi Jijun, Zhang Zhiwei, Li Yufen, Ye Juheung

Department of Pediatrics, Guangdong Cardiovascular Disease Institute, Guangzhou 510100, China

**Objective:** To investigate cause of T-wave alternans in pediatric patients, and prevent malignant ventricular arrhythmia and sudden cardiac death.

**Methods:** Retrospective analysis of the treating process of 6 pediatric patients with T-wave alternans. Case 1 was a child with acute serious myocarditis; Case 2 was a child with idiopathic left ventricular tachycardia, had acquired long-QT Syndrome after treated with large dose of amiodarone for a long time by unclear diagnosis; Case 3 had congenital long-QT Syndrome; Case 4 was a child with myocardial infarction after correction of coarctation of aorta for 5 months; Case 5 and 6 was a child who increasing heart rate for various reasons with Severe Congenital stenosis of aortic valve.

**Result:** All of 6 cases occurred T-wave alternans, and 5 cases of them occurred malignant ventricular arrhythmia instantly or after several hours. In 2 cases, T-wave alternans disappeared and malignant ventricular arrhythmia did not occurred through prevention and treatment; in the other 4 cases, patients were died without active prevention for malignant ventricular arrhythmia.

**Conclusion:** T-wave alternans is presumption of malignant ventricular arrhythmia and sudden cardiac death, and should be treated seriously. Firstly, we should take notice of occurrence of malignant ventricular arrhythmia in pediatric patients with T-wave alternans, while diagnosing and treating correctly for primary disease: secondly, it is of great importance preventing occurrence of T-wave alternans.
ABSTRACTS

Abstracts for Free Paper Session:

84.

Radiofrequency Catheter Ablation of Arrhythmias in Pediatric Patients Guided by Three-dimensional Mapping System

Zeng Shaoying, Shi Jijun, Ye Juheng, Zhang Zhizei, Li Yufen
Department of Pediatrics, Guangdong Cardiovascular Disease Institute, Guangzhou 510100, China

Objective: To discuss security, indication and advantage of mapping and ablation of arrhythmia in children guided by Carto and Ensite system.

Methods: Guided by Carto System, radiofrequency catheter ablation (RFCA) was performed on 8 pediatric patients with tachycardia mean age 6.2±1.7 years, mean weight was 18.0±2.0 kg. Guided by Ensite system, RFCA was performed on 10 pediatric patients with arrhythmia. 8 cases of them were ablated guided by Ensite Array system: 6 cases with premature ventricular contractions (PVCs), 2 cases with right atrial tachycardia, mean age 11.3±1.2 years, mean weight 40.0±5.0 kg. The other two cases with W-P-W syndrome were ablated guided by Ensite Navx system.

Result: Guides by Carto system, 8 cases were successfully mapped and ablated: 6 cases with incision atrial tachycardia, 1 case with left atrial tachycardia and 1 case with right atrial tachycardia. 1 case with incision atrial tachycardia recurred after 3 months, and was ablated again successfully. Guided by Ensite Array system, 6 cases with PVCs (2 originating from the right Ventricular inflow tract and 4 originating from the right Ventricular outflow tract) and 2 cases with right atrial tachycardia were successfully mapped and ablated, PVCs of the first 6 cases descend from 32333±4509/24h to 0-4/24h after ablation. 1 case with automatic atrial tachycardia could not be mapped by Ensite Array system, because P wave didn’t be identified with T wave. Single bolus of adenosine 20mg was given in 30s to let ventricles stop for 2s (cardioventricular pacing standby) until T wave vanished, mapping and ablation were operated again successfully, but another atrial tachycardia occurred 1 day later. Guided by Ensite Navx system, 2 cases with W-P-W syndrome were successfully ablated, operation under X-rays last 8 and 10 min. All 9 patients did not recur after follow-up of 6 months.

Conclusion: Carto system is fit for mapping and ablation in pediatric patients with continuous tachycardia, especially with incision atrial tachycardia; Ensite Array system is fit for older than 10 years with right heart discontinuous arrhythmia; and Ensite Navx system can set up model and display endocardial anatomic structure quickly. Compare with two-dimensional mapping system, three-dimensional mapping system (Carto and Ensite) can display the origin of arrhythmia and activation sequence clearly, decrease difficulty of operation efficiently and diminish operation time under X-ray.

85.

Inhaled iloprost in the Evaluation of Pulmonary Arterial Hypertension Associated with Congenital Heart Defects in Children

ZHANG Xu, ZHANG Zhizei, QIAN Mingyang, SHI Jijun, LI Junjie, PAI Wei, LI Yufen. Department of Pediatric Cardiology, Guangdong Cardiovascular Institute, Guangdong General Hospital, Guangdong Academy of Medical Sciences, Guangzhou 510100, China.

Purpose: Heart catheterization and acute vasodilator testing is one of the most important methods in the evaluation of pulmonary arterial hypertension(PAH) associated with congenital heart defects(CHD). Iloprost is one of the analogs of prostacyclin that could be delivered through inhalation. It has been applied worldwide in patients of PAH with WHO functional class III to IV. We investigated the safety and efficacy of acute vasodilator testing using inhaled iloprost in PAH associated with CHD in children, in comparison with the traditional vasodilator phenolamine.

Methods: 50 patients of PAH associated with CHD were collected from the department of pediatric cardiology in Guangdong Cardiovascular Institute. Each patient received left and right heart catheterization followed by acute vasodilator testing using either direct injection of phenolamine into pulmonary artery or inhaled iloprost. After testing, right heart catheterization was repeated. Hemodynamic parameters were calculated according to Fick’s principal. After evaluating the nature of PAH, patients were divided into two groups, the ‘functional’ PAH group and the ‘occlusive’ PAH group. The functional group received surgery. Diagnosis was corrected if we found the original ‘functional’ patient is actually ‘occlusive’ during follow-up.

Results: Phenolamine significantly increased the heart rate while inhaled iloprost only had slight effect. Both vasodilators lowered the mean pulmonary arterial pressure(mPAP) and pulmonary vascular resistance(PVR) and increased pulmonary blood flow(Qp) significantly. Phenolamine decreased the mean systemic arterial pressure(mSAP) and systemic vascular resistance(SVR) and increased systemic blood flow(Qs) as well while inhaled iloprost had no obvious effect on the systemic circulation. After inhaled iloprost, the decrease of mPAP and the ratio of pulmonary to systemic vascular resistances(Rp/Rs), as well as the increase of the ratio of pulmonary to systemic blood flow(Qp/Qs), were more significant in the ‘functional’ group than in the ‘occlusive’ group (P value 0.016, 0.024, 0.030 respectively). As for phenolamine injection, the decrease of mPAP and PVR were more significant in the ‘functional’ group than in the ‘occlusive’ group (P value 0.017 and 0.004 respectively).

Conclusion: Inhaled iloprost and pulmonary injection of phenolamine can both effectively differentiate the functional and occlusive PAH in CHD. Phenolamine influenced both pulmonary and systemic pressure, resistance, and blood flow while inhaled iloprost mainly had effect on the pulmonary circulation. Inhaled iloprost can help to maintain hemodynamic stability and precedes phenolamine.
Abstracts for Free Paper Session:

86.
Flow-mediated vasodilation and endothelium function in children with postural orthostatic tachycardia syndrome: A controlled and follow-up study
Ying Liu, Xiaoqin Liu, Qingyou Zhang, Yi Ai, Yuli Wang, Junhao Du. Department of Pediatrics & Department of Pediatric ultrasound, Peking University First Hospital, Beijing

Purpose: To examine the flow-mediated vasodilation (FMD) by color Doppler vascular ultrasound was a noninvasive way to measure the function of endothelium. The aim of this study was to explore the FMD and endothelium function in children with postural orthostatic tachycardia syndrome (POTS).

Methods: The patients group was consisted of 46 children aged (12.13±2.80) years diagnosed as POTS by head-up tilt test or head-up tilt test from June 2008 to January 2009 in Peking University first hospital. Twenty healthy children aged (11.54±3.65) years were selected as control group. FMD of brachial artery was measured using color Doppler vascular ultrasound for every participant and the comparison between the two groups was done by independent t test. The patients who received treatment of midodrine (a adrenergic-receptor agonist) were followed up and FMD was detected again after 1 months. Plasma concentration of nitric oxide (NO) and nitric-oxide synthase (NOS) were determined in both patients and control groups.

Results: There were no significant differences between POTS group and control group in age, sex ratio, height, body weight, baseline blood pressure, heart rate and baseline brachial artery diameter. Patients in POTS group had greater FMD (10.80%±4.35 %) than that of control group (5.65%±2.19 %), the difference was significant (P<0.01). FMD of children with POTS became smaller after the treatment of midodrine (P<0.01). POTS patients with better response to midodrine had greater baseline FMD than the non-responders. Both of plasma NO and NOS levels was significantly higher in POTS group than control group (NO: 73.74µmol/L ± 18.57µmol/L in POTS vs 62.09µmol/L ± 6.20µmol/L in control, P<0.01; NOS: 20.59µmol/L ± 3.50µmol/L in POTS vs 15.36µmol/L ± 1.39µmol/L in control, P<0.01).

Conclusion: Augmented flow-mediated vasodilation and abnormal function of endothelium may play an important role in children with POTS. And FMD may be considered as an indicator of efficacy during treatment for POTS.
ABSTRACTS

Abstracts for Poster Session:

P1.

Evaluation of Pulmonary Blood Supply and Pulmonary Artery in Children with Complex Congenital Heart Disease by 64-detector Row Computed Tomography

XiHong Hu1,2, GuoYing Huang1, MiEr Pa1, 3Pediatric Heart Center, 2Department of Radiology, Children's Hospital of Fudan University, Shanghai, China

Objective: To assess the feasibility of 64-detector row computed tomography (64-MDCT) for the analysis of pulmonary blood supply and evaluation of pulmonary artery morphology in children with complex congenital heart disease such as tetralogy of Fallot (TOF) and pulmonary atresia (PA).

Methods: Fifty-four patients with TOF, and/or PA underwent 64-MDCT and conventional angiography. The pulmonary blood supply was investigated. The diameters of the left, right pulmonary arteries, and the stenoses were measured respectively. The images were analyzed by two independent observers.

Results: 64-MDCT accurately revealed the pulmonary arteries, PDA, and the origin, course of APCAs as compared to conventional angiography. Pulmonary blood flow was from ventricle in 31 cases, from PDA (and/or APCAs) in 17 cases, and from both in 6 cases. Twenty pulmonary arteries stenoses were correctly detected by MDCT, among which 1 was misdiagnosed by conventional angiography. Excellent correlation was observed between 64-MDCT and conventional angiography in quantifying the diameters of the left (r=0.90, p=0.000), right pulmonary arteries (r=0.91, p=0.000), and stenotic segments (r=0.86, p=0.000).

Conclusion: This study demonstrates that MDCT is feasible in assessing pulmonary blood supply and the pulmonary artery morphology.

P2.

Radiofrequency Catheter Ablation of Frequency Premature Ventricular Contractions Guided by Contact Mapping or Non-contact Mapping in Pediatric Patients

Zeng ShaoQing, Shi Jiju, Zhang Zhiwei, Li Yufen, Ye Jihong
Department of Pediatrics, Guangdong Cardiovascular Disease Institute, Guangzhou 510100, China

Objective: To investigate the effect and indication of Radiofrequency Catheter Ablation (RFCA) by contact mapping or non-contact mapping on Frequency Premature Ventricular Contractions (PVCs) in pediatric patients.

Methods: Eight pediatric patients with PVCs in pediatric patients without structural heart diseases. All of patient’s Holter: PVCs 30000÷60÷24h. Guided by non-contact mapping, Radiofrequency Catheter Ablation was performed on 4 patients (mean age [11.3±1.2] years), 2 patients with PVCs originating from the right Ventricular outflow tract, and 2 patients with PVCs originating from the right Ventricular inflow tract. Guided by contact mapping, Radiofrequency Catheter Ablation was performed on 4 patients [mean age (8±2) years], 2 patients with PVCs originating from the right Ventricular outflow tract (RVOI), 1 patient from the right Ventricular inflow tract (RVIT), and 1 patient from the left Ventricular outflow tract (LVOT). We calculated the fluoroscopic time, the complications, and the indication to select. All patients received 24-hour Holter ECG monitoring before RFCA, one and three months after RFCA.

Result: PVCs were successfully ablated in 8 cases. No ablation-related complications happened. 1 patient with PVCs originating from LVOT recurred one month after RFCA, and need a second successful ablation. After follow-up of 3 months, Holter records of the successfully ablated patients indicated PVC 0÷5÷24h. In non-contact mapping group, the fluoroscopic time of ablation PVCs originating from RVOI was 16.5 min vs 32.5 min. From RVIT was 26.5 min vs 60 min. In contact mapping group the fluoroscopic time of ablation PVCs originating from LVOT was 90 min.

Conclusion: Non-contact mapping has many advantages than contact mapping, such as shortened the fluoroscopic time, but it also has some limitations. contact mapping has wide adaptability, it can be the foundation and supplement of Non-contact mapping, especially in case of failure of ablation by non-contact mapping.
ABSTRACTS

Abstracts for Poster Session:

P3.
The clinic study of head-up tilt table test in children with unexplained syncope
Hong Tian, Yun Shi, Lan He, Chenyan Yu, Jianhao Xie, Guoying Huang, Yunhao Gui
Children's Hospital, Fudan University, Shanghai, 2003

Objective: To evaluate the diagnostic value and security of the head-up tilt table test (HUTT) in children with unexplained syncope and to study the change of plasma nitric oxide (NO) during HUTT.

Methods: Forty-six patients (21 male and 25 female, mean age 11.6±2.4 years, ranged from 7 to 15) with unexplained syncope and fifteen healthy children in control group (8 male and 7 female, mean age 12.4±3.1 years, ranged from 8 to 15) were studied. The patients and healthy children were tilted up to 70 degrees for 45 minutes at the base-HUTT. If syncope did not occur, sublingual nitroglycerin (3ug/kg, maximum dose 300ug ) was administered and continued at same degree for 20 minutes. Plasma NO was measured before and during the HUTT.

Results: 25 patients (94.30%) were positive response to HUTT (40%) of them was diagnosed for vasovagal syncope (VVS) before HUTT. For the positive patients, 8 (24.1%) had syncope. 21 (85%) had precursorsyncope. 4 happened faint when precursor syncope appeared. 2 became shock. The recovery time (consciousness, blood pressure, heart rate etc) for patients with syncope was about 6 minutes (average 2.8±1.9 minutes), for precursor syncope patients was about 2.1±1.0 minutes, of them 48% recovered in one minute. 24% in the 5 minutes. 16% of them within 10 minutes. The level of NO in positive group (10 cases) and negative group (10 cases) was no difference before HUTT (76.7±9.6μmol/L vs 84.3±10.3μmol/L, P=0.555), and was relatively higher than that in negative group during HUTT, but no statistical significance (90.0±11.4 vs 80.3±9.1μmol/L, P=0.512). In positive group, the concentration of NO was significantly increased during HUTT (90.0±11.4 vs 76.7±9.6μmol/L, P<0.043), but in negative group was no significant difference (80.3±9.1 vs 84.3±10.3μmol/L, P=0.673).

Conclusion: HUTT is a useful and safety diagnostic tool in children with VVS. NO may have a role on the pathogenesis of VVS.

P4.
Therapeutic Efficacy Analysis of Kawasaki Disease with Different Ages and Therapy
SI Li, HS Wang, YQ Li, et al
Department of pediatric cardiology, the first affiliated hospital of SunYat-sen University, Guangzhou 510080, china.

Purpose: To approach the short-term therapeutic efficacy of Kawasaki disease by different therapy, and the efficacy in different ages.

Methods: Retrospective analyze 68 children in the first Affiliated Hospital of Sun Yat-sen University from January 2006 to May 2008. First, divide the 68 children into 2 groups according to different administration of intravenous immunoglobulin (IVIG), and compare the recovery time of clinical symptom, the peripheral white blood cells (WBC), C-reactive protein(CRP), erythrocyte sedimentation rate(ESR) and the recovery of coronary artery with each other by SPSS12.0 software. Then, according to different ages we divided the 68 children into 3 groups: < 3years, 3-5years, > 5years , to compare the above indexes again during the groups also by SPSS12.0 software.

Results: With different IVIG use, there were no statistical difference between the 2 groups in the recovery time including fever, conjunctival congestion, chilio-

rhagades, rash, acro-

swell, lymphadenecitis, and the recovery of WBC, CRP, ESR after 2 weeks' therapy, the coronary artery. While to children of different ages, there are also no statistical difference in the recovery of above clinical indexes, WBC and CRP, but in the descending rate of ESR and the recovery of coronary artery, group (>5years) were worse than the other two groups.

Conclusion: The IVIG administration in KD, 2g/kg used in 1d or 2d, makes no statistical different efficacy. There's different efficacy in children with different ages, and the short-term efficacy tends to be better in children younger than 5years.

P5.
A study on prognosis and treatment of dilated cardiomyopathy in pediatric patients
YQ Li, GZ Chen, HS Wang, et al
Department of pediatric cardiology, the first affiliated hospital of SunYat-sen University, Guangzhou 510080, China.

Purpose: To assess the prognosis of dilated cardiomyopathy(DCM) in children and to evaluate the effect of IVIG on pediatric patients with DCM.

Methods: Thirty-four patients were enrolled, and they were divided into conventional treatment group and IVIG group (conventional treatment plus large dose IVIG). Statistical analysis was carried out in SPSS13.0 software. Life table and Kaplan-Meier analysis were used to analyze the survival and the comparison of treatment effect between two groups. P<0.05 is statistically significant.

Results: Conventional treatment group had 16 cases(male 10 and female 6) aged from 7 month to 14 years old (median 7.8 years) and IVIG group had 18 cases(male 11 and female 7) aged from 9 month to 12 years old (median 7.5years). From the enrolled patients were diagnosed and treated, eight patients (23.5%) died and five-year survival rates was 48%, while five-year survival rates group was longer than that of patients in conventional treatment group, both application of vasoactive agents and hospitalization times were fewer in IVIG group than those of patients in conventional treatment group (P<0.05).

Conclusion: The prognosis of DCM in pediatric patients is not good. Application of large dose IVIG is beneficial to the patients with DCM in children.