

Journal of the Hong Kong College of
CARDIOLOGY



Proceedings of
5th Asian Preventive Cardiology
and
Cardiac Rehabilitation Conference
cum
9th Certificate Course in Cardiac Rehabilitation
6-9 November 2014
Hong Kong

Journal of the Hong Kong College of Cardiology

Proceedings of 5th Asian Preventive Cardiology and Cardiac Rehabilitation Conference cum 9th Certificate Course in Cardiac Rehabilitation

6-9 November 2014
Hong Kong Convention and Exhibition Centre
Hong Kong

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- Give a running title of 3 to 6 words.
- At the bottom of the page, include information about grants, if applicable.
- Add: "Address for reprint:...", followed by full name, address, telephone and fax numbers.

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- Abstract should be after title page and numbered page 1.
- It should not exceed 250 words for major articles; case reports should have abstracts of no more than 100 words.
- At the end of the abstract, provide a maximum of 6 key words suitable for indexing.
- Abbreviations should be kept to a minimum and must be explained when they first appear; after first use, abbreviations alone may be used.
- Standard abbreviations should be used for all measurements (SI units).

Text

- The text should follow the abstract and begin on a new page, as should References, Tables, and Legends.
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- References should be cited in numerical order, as should tables and figures.

References

- Number in the order in which they appear in the text.
- Abbreviate titles of periodicals according to the style of the Index Medicus.
- Follow the format (arrangement, punctuation) shown below:

Periodicals

1. Lewis T. Paroxysmal tachycardia. *Heart* 1909;1:43-72.
(if more than three authors, please use "et al." after the third).

Books (edited by other authors of article)

2. Furman S. Pacemaker follow-up. In Barold SS, (eds): *Modern Cardiac Pacing*. Mount Kisco, New York, Futura Publishing Company, 1985, pp. 889-958.

Books (identical author and editor)

3. Chung EK. *Principles of Cardiac Arrhythmias*. Baltimore, MD, Williams & Wilkins, 1977, pp. 97-188.

Abstracts

4. Same as periodicals and followed by "(abstract)".

Tables

- Tables should supplement, but not duplicate, the text.
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- Be sure that legends and figures correspond.
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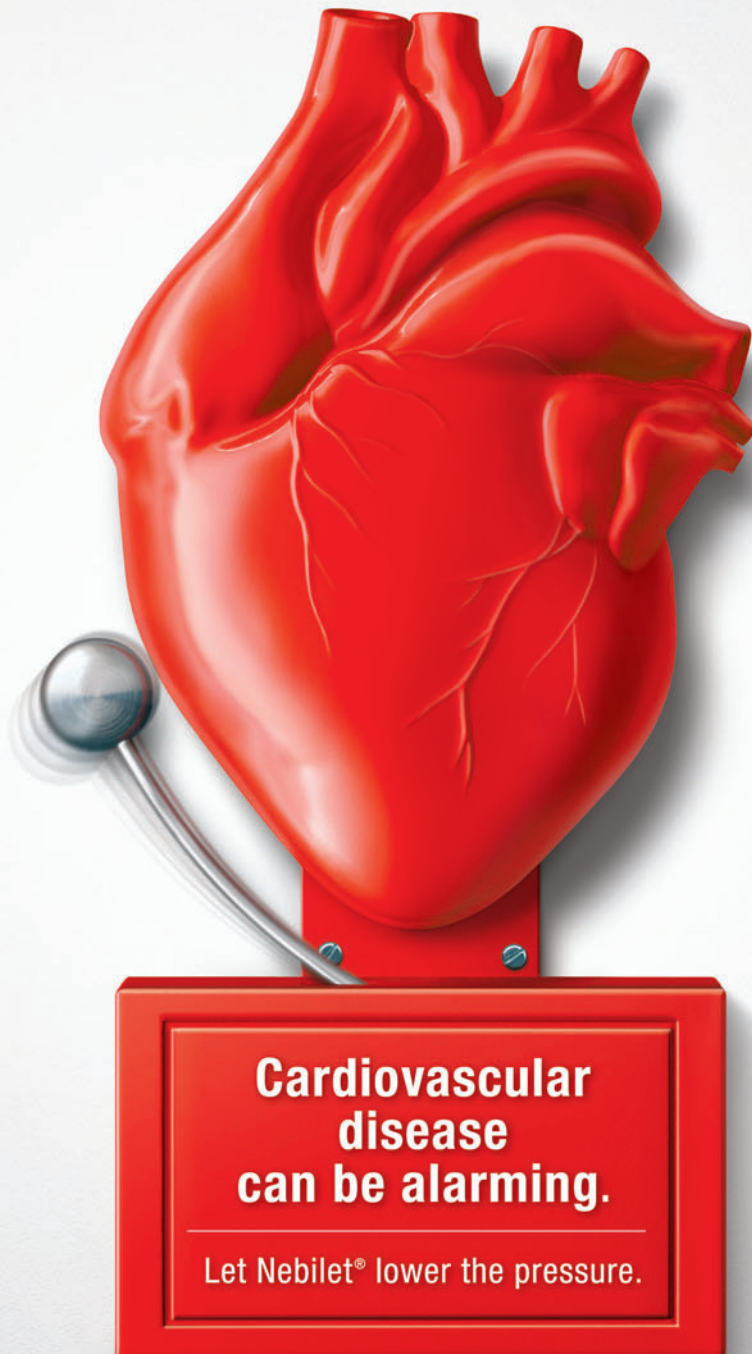
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References: 1. Ignarro LJ. Different pharmacological properties of two enantiomers in a unique β -blocker, nebivolol. *Cardiovascular Ther* 2008;26:115-134. 2. Mancia G, Laurent S, Rosei EA *et al*. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. *J Hypertension* 2009;27:2121-2158. 3. Moen MD, Wagstaff AJ. Nebivolol: a review of its use in the management of hypertension and chronic heart failure. *Drugs* 2006;66(10):1389-1409.



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5th Asian Preventive Cardiology and Cardiac Rehabilitation Conference cum 9th Certificate Course in Cardiac Rehabilitation



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Preface

It is our great pleasure to welcome you to the 5th Asian Preventive Cardiology and Cardiac Rehabilitation Conference (APCCRC) cum 9th Certificate Course in Cardiac Rehabilitation, which is a biennial scientific conference held in Hong Kong. With the concerted effort of the Hong Kong College of Cardiology and 21 supporting organizations including the government, non-government organizations, academic and patient groups, we hope to dedicate and contribute to the prevention of heart diseases in Hong Kong, Asia and other parts of the world.

The APCCRC has continued to grow in scale in past years and is now one of the major international scientific meeting in the field of preventive cardiology and cardiac rehabilitation. The central theme of our conference this year is on "Innovation to Fill the Gap of Prevention". We shall present to you a comprehensive scientific program covering different areas of preventive and rehabilitative medicine in cardiology with special emphasis on recent advancement. On the other hand, we shall bring back to you popular 2-day certificate course in cardiac rehabilitation which certainly will facilitate our colleagues to implement cardiac rehabilitation program in their centres.


The Hong Kong Heart Foundation Lecture will be delivered by Dr. C. Noel Bairey Merz from Cedars-Sinai Medical Center, USA. She will talk on "Women and Heart Disease – Detection, Evaluation and Management". This year, we have attracted a record-high submission of over 80 high quality abstracts from local and overseas colleagues from over 20 regions and countries. They will compete for the newly established Chu-Pak Lau Best Paper Award In Preventive Cardiology and Suet-Ting Lau Best Paper Award in Cardiac Rehabilitation.

To foster better exchange of experience between different regions, we have for the first time organized joint sessions with the Chinese Society of Cardiovascular Rehabilitation and Japanese Association of Cardiac Rehabilitation respectively. To enhance heart health education in the public, we will once again hold the Jump Rope for Heart Public Conference conducted in Chinese for the local public to improve their knowledge and skills in self-management.

We are confident that our programme will be both practical and on the cutting edge for all attendees. Your continuous support is a huge vote of confidence for us to keep hosting this conference.



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Abbreviated Prescribing Information

Presentation: Tablets 15mg or 30mg of tolvaptan. **Indication:** SAMSCA is indicated for the treatment of clinically significant hypervolemic and euvolemic hyponatremia (serum sodium <125mEq/L or less marked hyponatremia that is symptomatic and has resisted correction with fluid restriction), including patients with heart failure and Syndrome of Inappropriate Antidiuretic Hormone (SIADH). **Dosage:** To be initiated in hospital due to need for evaluation of therapeutic response. The usual starting dose for SAMSCA is 15mg administered once daily without regard to meals. Increase the dose to 30mg once daily, after at least 24 hours, to a maximum of 60 mg once daily, as needed to achieve the desired level of serum sodium. Limit treatment duration to 30 days. **Contraindications:** Hypersensitivity to any component of Samsca. Urgent need to raise serum sodium acutely. Anuria. Hypovolaemic hyponatremia (worsening). Hypernatremia. Patients who cannot perceive or appropriately respond to thirst. Concomitant use of strong CYP3A inhibitors. Pregnancy. Breastfeeding. **Warnings and precautions:** Tolvaptan should be initiated and re-initiated in patients only in a hospital where serum sodium can be monitored closely. Tolvaptan has not been in a setting of urgent need to raise serum sodium acutely. For such patients, alternate treatment should be considered. Osmotic demyelination syndrome is a risk associated with too rapid correction of hyponatremia (eg., >12mEq/L/24 hours). Osmotic demyelination results in dysarthria, mutism, dysphagia, lethargy, affective changes, spastic quadriparesis, seizures, coma and death. Caution should be exercised to ensure patients have adequate access to water and not become overly dehydrated. Urinary outflow must be secured to avoid risk of developing acute urinary retention. If hepatic injury is suspected, discontinue SAMSCA. Avoid use in patients with underlying liver disease. Concomitant use of SAMSCA with other treatments for hyponatremia or other medicinal products that increase serum sodium concentration may result in a higher risk for developing rapid correction of serum sodium and is therefore not recommended. **Drug interactions:** Caution with: co-administration with CYP3A inhibitors, inducers and substrates. P-gp inhibitors, and digoxin. Concomitant use with hypertonic saline is not recommended. The effect of vasopressin analogues such as desmopressin may be attenuated in patients using such analogues to prevent or control bleeding when co-administered with SAMSCA. **Adverse reactions:** The following adverse reactions were reported (>2%) in clinical trials in hyponatremia: Dry mouth, constipation, thirst, asthenia, pyrexia, hyperglycemia, anorexia, pollakiuria or polyuria. See full package insert for further details and other undesirable effect. **Overdosage:** If overdose occurs, estimation of the severity of poisoning is an important first step. Treatment should involve symptomatic and supportive care, with respiratory, ECG and blood pressure monitoring and water/electrolyte supplements as needed. A profuse and prolonged aquaresis should be anticipated. Please refer to full package insert for further details.

Reference: 1. Samsca package insert

PROGRAMME

(A) 9th Certificate Course in Cardiac Rehabilitation

THURSDAY, 6 NOVEMBER 2014

Venue: S421, Hong Kong Convention and Exhibition Centre

0800-1600	REGISTRATION	
0900-1030	WORKSHOP I – Advance in Evidence <i>Chairperson: Dr. Chi-chung CHOY</i>	
	1. Treadmill ECG Stress Testing; Beyond ST Changes. Indications, Implementation and Exercise Prescription	Dr. Jimmy LIM
	2. Sex Differences in CHD: Lessons from WISE Study	Dr. C. Noel Bairey MERZ
	3. Worksite Wellness	Dr. Abraham S BABU
1030-1100	TEA BREAK	
1100-1230	WORKSHOP II – Exercises <i>Chairperson: Mr. Dick CHENG</i>	
	1. Common Cardiovascular Issues of Exercise, How to Get the Most Benefits and to Avoid Potential Risks	Dr. Gary MAK
	2. Exercise Prescription for Individuals with Cardiovascular Disease and Modifiable Risk Factors	Mr. Clement CHAN
1230-1400	LUNCH BREAK	
1400-1530	WORKSHOP III – Diet and Cardiovascular Health <i>Chairperson: Ms. Kam-bick LAM</i>	Ms. Charmain TAN
1530-1600	TEA BREAK	
1600-1730	WORKSHOP IV – Psychological Approach in Managing Cardiac Anxiety <i>Chairperson: Ms. Yuk-mun NG</i>	Dr. Kwok-keung LEUNG

FRIDAY, 7 NOVEMBER 2014

Venue: S421, Hong Kong Convention and Exhibition Centre

0800-1600	REGISTRATION	
0900-1030	WORKSHOP V – Advance in Evidence II <i>Chairperson: Dr. Adrian CHEONG</i>	
	1. Applications of Cardiopulmonary Exercise Test in Cardiac Rehabilitation	Prof. Ssu-yuan CHEN
	2. Exercise in Patient with Pulmonary Hypertension	Dr. Visal KANTARNATANAKUL
	3. Exercise Prescription in Cardiac Patients	Dr. Farzaneh TORKAN
1030-1100	TEA BREAK	
1100-1230	WORKSHOP VI – Work Rehabilitation <i>Chairperson: Dr. Eddie CHOW</i>	Mr. Wilson CHAN
		Mr. Tony WONG
1230-1400	LUNCH BREAK	

1400-1530	WORKSHOP VII – Quality of Life <i>Chairperson: Dr. Eddie CHOW</i> 1. Driving and Cardiac Disease 2. Special Consideration in Flight and Traveling for Cardiac Patients 3. Sexual Issues on Cardiac Patients	Dr. Angus CHU Dr. Mohammad FALLAH Rehabaid Centre, Sexual Rehabilitation Service Team
1530-1600	TEA BREAK	
1600-1730	WORKSHOP VIII – Practical Session	Cardio-Pulmonary Special Group of Hong Kong Physiotherapy Association



(B) 5th Asian Preventive Cardiology and Cardiac Rehabilitation Conference

SATURDAY, 8 NOVEMBER 2014

0730 Foyer REGISTRATION

0800-0900 S421 BREAKFAST ABSTRACT SESSION I – Exercise and Coronary Artery Disease

Chairpersons: Dr. Kathy LEE

Dr. Kin-ming TAM

- | | |
|---|-----------------------|
| 1. SOD Mimetic Tempol Enhances Exercise Training-induced Nitric Oxide Synthases in the Kidney of Spontaneously Hypertensive Rats | Prof. Pengyu CAO |
| 2. Severe Chronotropic Incompetence is Associated with Exercise Capacity in Patients with Cardiac Devices | Dr. Shunsuke USAMI |
| 3. Anaerobic Threshold during Cardiopulmonary Exercise Testing Can be Used to Detect the Mitochondrial Function in Patients with Type 2 Diabetes | Prof. Shinji SATO |
| 4. Determinant Factors of Pre Hospital Delay in Acute Coronary Syndrome (ACS) Patients: A UST Hospital Experience | Dr. Benjamin JC QUITO |
| 5. Cross Sectional Study Examining the Prevalence and Severity of Coronary Artery Disease Among Asymptomatic Patients Undergoing Coronary Computed Tomography Angiography in a Cardiac Imaging Centre | Dr. John WONG |

0900-1030 S421 JOINT SESSION WITH JAPANESE ASSOCIATION OF CARDIAC REHABILITATION: HEART FAILURE AND HYPERTENSION

Chairpersons: Dr. Ngai-yin CHAN

Dr. Kwok-keung CHAN

Dr. Yutaka KIMURA

Dr. Neiko OZASA

- | | |
|--|----------------------|
| 1. Effects of Aerobic Training on Exercise Tolerance and the Autonomic Nervous Activity in Patients with Chronic Kidney Disease | Dr. Misa MIURA |
| 2. Clinical Research about the Clinical Background of the Non-Responder to Exercise Therapy of Patients with Chronic Heart Failure | Dr. Asuka KURIBARA |
| 3. Update on Cardiac Rehabilitation for Heart Failure | Dr. Katherine FAN |
| 4. Can We Cut the Prevalence of Hypertension in Hong Kong? | Prof. Bernard CHEUNG |

S427 ABSTRACT SYMPOSIUM IN CARDIAC REHABILITATION

Chairpersons: Dr. Michael LEE

Dr. Ngai-shing MOK

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| 6. Effects of the Short Course of Thailand Cardiac Rehabilitation Model of Care on Exercise Capacity and Quality of Life Among Coronary Artery Disease Patients, Comparing with Australia Cardiac Rehabilitation Model of Care - A Preliminary Report | Dr. Tanaporn
LAPRATTANAGUL |
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| 7. | Baseline Exercise Tolerance for Adult Patients Undergoing Cardiac Rehabilitation in Singapore | Mr. Zhiyong LIN |
| 8. | Evaluate the Referral Rate of Patients with Acute Myocardial Infraction to Phase I Cardiac Rehabilitation in a Regional Hospital | Ms Winsome MAK |
| 9. | Evaluation for Correlation of Expired Volume Per Minute and Improvement of Exercise Tolerance Capacity by Cardiac Rehabilitation | Mrs. Akiko KITAKOSHI |
| 10. | Analysis of Nursing Researches about Cardiac Rehabilitation in Turkey | Ms. Nuran TOSUN |
| 11. | Cardiac Rehabilitation Participation and Health-Related Quality of Life following Primary Percutaneous Coronary Intervention for ST-elevation Myocardial Infarction: An Age Comparison | Ms. Soon Yeng SOO HOO |
| 12. | Comparison of Pulmonary Function and Exercise Capacity in Minimally Invasive Mitral Valve Surgery Patients With and Without Atrial Fibrillation | Ms. Yafei WANG |
| 13. | Cardiac Rehabilitation Referral Among Inpatients with Acute Myocardial Infraction | Dr. Shyh-fang CHEN |
| 14. | Cardiac Rehabilitation in Private Practice | Dr. John WONG |
| 1030-1100 | S423-4 TEA BREAK / EXHIBITION / POSTER VIEWING | |
| 1100-1230 | S421 JOINT SESSION WITH CHINESE SOCIETY OF CARDIOVASCULAR REHABILITATION: OPPORTUNITIES AND CHALLENGES OF CARDIAC REHABILITATION IN CHINA | |
| | <i>Chairpersons: Prof. Dayi HU</i> | |
| | <i>Dr. Wei GAO</i> | |
| | <i>Dr. Patrick KO</i> | |
| | 1. Experience of Phase I Cardiac Rehabilitation for Post-Surgery Patients in China | Prof. Lan GUO |
| | 2. Strategies of Improving Cardiac Rehabilitation Compliance in Xiangya Hospital | Dr. Suixin LIU |
| | 3. Role of Acu-TENS in Cardiac Rehabilitation of Elderly Patients | Prof. Pengyu CAO |
| | 4. 20 years' Experience of Cardiac Rehabilitation in Hong Kong | Dr. Suet-ting LAU |
| S427 | BEST ABSTRACT PRESENTATION | |
| | <i>Chairperson: Dr. Ngai-yin CHAN</i> | |
| | <i>Judges: Prof. Bernard CHEUNG</i> | |
| | <i>Prof. David HARE</i> | |
| | <i>Dr. Leonard LI</i> | |
| | <i>Dr. C. Noel Bairey MERZ</i> | |
| | <i>Prof. Hung-fat TSE</i> | |
| | 15. Protective Effect of Coffee Against Coronary Atherosclerosis in Periodontitis Rat Model | Dr. Ida SUSILAWATI |
| | 16. The Increased Visceral Fat Thickness in NAFLD Patients Enhances the Risk of Coronary Artery Stenosis | Prof. Pengyu CAO |
| | 17. Increased Advanced Glycation End-Products Accelerate the Progression of Left Ventricular Hypertrophy Under the Condition of Elevated Oxidative Stress in Non-Diabetic Patients With Hypertension | Mr. Akihiro AOYAMA |
| | 18. Effects of Cardiac Rehabilitation on the Occurrence of Complications among Patients with Myocardial Infraction | Dr. Chao-min WANG |
| | 19. Out-of-Hospital Cardiac Rehabilitation Reduces Hospital Readmission Rates for Patients with Heart Disease | Ms. Sato WATANABE |
| | 20. Muscle Weakness Induces an Inappropriate Elevation of Arterial Stiffness by Stimulating Sympathetic Activity During Exercise in Patients With Life-related Diseases | Ms. Yumi KAMADA |

1230-1400	S421	LUNCH SYMPOSIUM (Sponsored by Boehringer Ingelheim) <i>Chairpersons: Dr. Kam-tim CHAN</i> <i>Dr. Chung-seung CHIANG</i>	
		1. NOACs in Atrial Fibrillation: Past, Present, and Future	Prof. Hung-fat TSE
		2. Integrating Echo Findings in the Management of Atrial Fibrillation	Dr. Alex LEE
1400-1445	S421	OPENING CEREMONY	
1445-1530	S421	SYMPOSIUM 1 – Hong Kong Heart Foundation Symposium <i>Chairpersons: Prof. Chu-pak LAU</i> <i>Dr. Suet-ting LAU</i>	
		Women and Heart Disease – Detection, Evaluation and Management	Dr. C. Noel Bairey MERZ
1530-1600	S423-4	TEA BREAK / EXHIBITION / POSTER VIEWING	
1600-1805	S421	SYMPOSIUM 2 – Lipid and Diet <i>Chairpersons: Dr. Chun-ho CHENG</i> <i>Dr. Yuk-kong LAU</i> <i>Dr. Shu-kin LI</i> <i>Dr. Cho-yiu WONG</i>	
		1. Latest and Perhaps Controversial Lipid Guidelines	Dr. Jimmy LIM
		2. Cardiovascular Protection and Lipids – What is the New Insight	Dr. Stephen NICHOLLS
		3. Diets, Exercise, Herbs and Supplements: What Works?	Dr. C. Noel Bairey MERZ
		4. Low Calorie and Reduced Calorie Sweeteners and Health	Dr. John FOREYT
		5. Polypill in Cardiovascular Disease 2015 – Has Its Time Come?	Dr. Sandeep GUPTA

SUNDAY, 9 NOVEMBER 2014

0730	Foyer	REGISTRATION	
0800-0900	S421	BREAKFAST ABSTRACT SESSION II – Heart Failure <i>Chairpersons: Dr. Kin-lam TSUI</i> <i>Dr. Ping-tim TSUI</i>	
		21. Survival, Morbidity, and Quality of Life Improvement after Novel Noninvasive SHS Therapy in Chronic Heart Failure	Dr. Rohit SANE
		22. Hospital @Home Care for Heart Failure Patients: Virtual Ward in Princess Margaret Hospital	Ms. Dan SUEN
		23. Influence of Severity of Renal Dysfunction on Re-admission to the Hospital in Patients with Heart Failure	Mr. Yukinori KOMURA
		24. Short Term Mortality of Cardiac Resynchronization Therapy in Patients with Chronic Heart Failure	Dr. Yusuke UGATA
		25. Upper Rate Operation During Exercise of Patients with Cardiac Implatable Devices	Dr. Maki ONO
	S425	BREAKFAST ABSTRACT SESSION III – Psychology and Paediatrics	
		26. The Effect of Visitings on Vita Signs and Anxiety of the Stroke Patients	Dr. Hatice CICEK
		27. Sexuality Issues among Male Chinese Ischaemic Heart Disease Patients in Hong Kong	Ms. Mei-chung CHUNG
		28. Application of Peabody Developmental Motor Scales in Children with Acyanotic Congenital Heart Disease	Dr. Xuan ZHOU
		29. Kawasaki Disease with Bilateral Giant Coronary Aneurysms and IVIG Resistance	Prof. Ayhan KILIC
		30. What Does My Heart Look Like? Views of the Children with Cardiac Disease	Dr. Dilek YILDIZ

- 0900-1030 S421 SYMPOSIUM 3 – Hypertension Debate
Chairpersons: *Dr. Kai-fat TSE*
Dr. Sunny YUE
Panelist: *Dr. Wai-suen LEUNG*
Dr. John WONG
The Treatment Threshold and Target for Hypertension Should be More Lenient in Elderly
0900-0920 Pros Prof. David HARE
0920-0940 Cons Prof. Bernard CHEUNG
0940-1010 Discussions
1010-1030 Rebuttal
- 1030-1100 S423-4 TEA BREAK / EXHIBITION / POSTER VIEWING
- 1100-1305 S421 SYMPOSIUM 4 – Cardiac Rehabilitation - Asian Experience
Chairpersons: *Dr. Wai-kwong CHAN*
Dr. Kai-chi LEUNG
Dr. Chris WONG
Dr. Tak-fu TSE
1. How Could I Set Up Cardiac Rehabilitation in Wildland? My Personal Experience Dr. Jong-young LEE
 2. Opportunities and Challenges of Cardiac Rehabilitation in China Prof. Dayi HU
 3. Home-based Cardiac Rehabilitation: An Alternate Model in Resource Limited Settings Dr. Abraham BABU
 4. High-intensity Exercise and High-risk Clinics in Cardiac Rehabilitation Dr. Visal KANTARNATANAKUL
 5. Submaximal Exercise Testing: Advantages and Weaknesses in Performance Assessment in Cardiac Rehabilitation Dr. Mohamed Yatim SAARI
- 1305-1420 LUNCH BREAK
- 1420-1600 S421 SYMPOSIUM 5 – Cardiac Rehabilitation and Cardiovascular Risk Factors
Chairpersons: *Dr. Kau-chung HO*
Dr. Shu-keung KWONG
Dr. Wai-suen LEUNG
Dr. Chiu-on PUN
1. Cardiac Rehabilitation Program for Patients After Heart Transplantation Prof. Ssu-yuan CHEN
 2. Depression and Cardiovascular Disease Prof. David HARE
 3. Psychosocial Rehabilitation for Cardiac Patients – Expert View from a Cardiologists / Psychiatrist Prof. David HARE
 4. Sarcopenic Obesity as a Cardiometabolic Risk Factor Dr. Yukata KIMURA
- 1600-1630 S423-4 TEA BREAK / EXHIBITION / POSTER VIEWING
- 1630-1800 S421 SYMPOSIUM 6 – Acute Coronary Syndrome and Atrial Fibrillation
Chairpersons: *Dr. Michael CHAN*
Dr. Kei-pui LEUNG
Dr. Tat-chi LEUNG
1. A New Paradigm in the Management of Acute Coronary Syndrome Dr. Stephen NICHOLLS
 2. The Management of ACS with DM Dr. Gary MAK
 3. The Evolving Paradigm of Anticoagulation Dr. Chi-kin CHAN



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SUNDAY, 9 NOVEMBER 2014

0845 S426-7 REGISTRATION

0900 S426-7 開幕典禮

0900-1045 S426-7 研討會
冠心血管診斷：解構醫學攝影角色
主持：關詠山醫生

1100-1300 S426-7 營養師看中西食療

S425 由靜觀開始：從失眠、壓力、憂慮到心安

李常威醫生

陳穎思醫生
(香港大學李嘉誠醫學院
內科學系心臟科專科醫生)

區思敏小姐
黃義枝小姐
(屯門醫院營養師)

黃仰山教授
(香港中文大學
家庭醫學及基層醫療學部
主管)

陳鑑忠先生
(協康會教育心理學家)

丁家浚先生
(九龍醫院臨床心理學家)

ABSTRACTS

WORKSHOP I – ADVANCE IN EVIDENCE

1.

Treadmill ECG Stress Testing; Beyond ST Changes. Indications, Implementation and Exercise Prescription

JLIM

Novena Heart Centre, Singapore

ECG based stress testing is a commonly used investigation for assessing cardiovascular health and has been in use for almost six decades. Its advantages include ease of conducting the test and its relative low cost to implement. It is also a low risk test, with surveys suggesting that between 0 to 6 deaths per 10000 tests and 2 to 10 MIs per 10000 tests can be expected. However, the sensitivity and specificity of ECG stress testing based on a meta-analysis for detection of coronary artery disease (CAD) is approximately 68% and 77% respectively. This is based on the ECG criteria of ≥ 1 mm horizontal or downsloping ST depression at 60 to 80 ms after the J point. As a result of the poor sensitivity and specificity, various other imaging modalities are now replacing ECG stress testing for the detection of underlying CAD. Examples include stress echocardiography, stress nuclear imaging and coronary CT angiography. However, the use of ECG stress testing remains important in helping determine prognosis and has utility in the clinical management of patients. Exercise capacity remains the most powerful predictor of survival in various patient groups including those with heart failure and underlying coronary artery disease. A recent study has shown that even when single photon emission tomography (SPECT), a form of nuclear imaging is available, there is little additional prognostic insight with the information obtained with imaging in those with ≥ 10 Mets of exercise capacity. In another study when using a standard Bruce protocol, those who were able to exercise beyond 9 minutes, there was minimal value to be gained in prognosis from myocardial perfusion results. Other exercise parameters such as chronotropic responses, heart rate recovery post exercise, blood pressure changes and arrhythmias induced during exercise can also have prognostic implications. Stress testing can also be of utility in formulating an exercise prescription. It is important to tailor prescriptions based on desired objectives and taking into account underlying medical conditions. In general for risk factor modification, such as diabetes mellitus, obesity, hypertension and dyslipidemia, the exercise program should be targeted at maximizing caloric expenditure. Weight bearing exercises such as walking or elliptical trainers would be preferable. There also remain challenges in prescribing exercise amongst

individuals with underlying co-morbidities. In patients with cardiovascular disease, exercise should ideally be started under monitored conditions such as in a cardiac rehabilitation program. However, in the longer term, stable patients can continue doing moderate levels of exercise independently. In elderly patients (≥ 75 years of age), there may be additional difficulties such as underlying arthritis, pulmonary disease and peripheral arterial disease. These individuals may require to start at very low workloads and progress in small increments. Non weight bearing exercises such as the stationary cycle may be more appropriate in those of who have unstable gaits. A rising problem in ECG stress testing presently is that it is often performed incorrectly and in the wrong cohort of patients. ECG stress testing is commonly used to screen low risk asymptomatic patients resulting in many false positive results. In addition, the supervision of stress testing is often inadequate being conducted by non qualified personnel. As a result, in 2013 the American Heart Association published a scientific statement for exercise standards for testing and training.⁵ These include guidelines on indications and contraindications for stress testing, the importance of pre-testing clinical evaluation, interpretation of ECG and haemodynamics during stress, the prognostic value of stress testing and exercise prescription in both healthy individuals and in those with known coronary artery disease. The American Heart Association in 2014 also issued a scientific statement on supervision of exercise testing by non-physicians.⁶ The guidelines suggest that in persons with high risk features, a physician who meets specific competency standards should be present in the room during testing. The guidelines also strongly recommend that non-physicians regularly supervising stress testing should attain further certification/training such as the ACSM exercise specialist. An emergency medical response plan and regular emergency drills to ensure adequacy of resuscitation equipment is also encouraged. In summary, ECG stress testing remains an easy, cost effective and safe method of evaluating appropriate patients who are suspected of having coronary artery disease. It also has the ability for prognostication of patients with known cardiovascular disease and for developing an exercise prescription for individuals. However, it is important to understand the utility beyond ECG changes that the ECG stress test can provide. Finally, appropriate supervision remains an important but often neglected aspect while conducting stress testing.

ABSTRACTS

2.

Sex Differences in CHD: Lessons from WISE Study

CNB MERZ

Cedars-Sinai Medical Center, USA

It is well established that there are sex differences in the prevalence of cardiovascular risk factors, the clinical manifestation of cardiovascular disease (CVD), the incidence of cardiovascular events and the impact of several risk factors on cardiovascular outcomes. There are also physiologic factors unique to women or to men that may affect cardiovascular risk. The recognition that sex and gender affect the pathophysiology and the expression of human disease, including CVD, led to the NIH mandate to include both men and women in clinical studies and trials, and to analyze data by sex. However, the number of identified variables contributing differentially to CV outcomes in men and women is large and growing. These include not only hormonal status and pregnancy related disorders, but differential aging-related complications as well as psychological or psychosocial differences between men and women. Many of these variables are not considered during the design of clinical trials or longitudinal cohort studies, which reduces the ability to determine the strength of these variables as sex-specific contributors to health and disease. The lack of inclusion of sex-specific data collection also limits the ability to analyze sex differences. The purpose of this presentation is to review approaches and studies of the study of sex differences in CVD risk and response to treatment for clinical scientific research, including population, physiological/translational and clinical trial research in order to improve clinical CVD investigation to optimize the health of women and men.

3.

Worksite Wellness

A BABU

Department of Physiotherapy, School of Allied Health Sciences, Manipal University, Manipal, Karnataka, India

Health and wellness are important components of healthy living and for the prevention of various non-communicable diseases. Prevention of these diseases has become the primary concern for most Governments across the world and there is a strong drive towards working on policy for the prevention of non-communicable diseases. Of these non-communicable diseases, cardiovascular diseases (CVD) and its risk factors have received immense attention. In this regard, there have been various strategies that have been used to help promote health and wellness among the people to prevent CVD and its risk factors. Among them, the worksite has shown to be a site of great potential for the promotion of health and wellness. This has led to the worksite serving as a center for both primary and secondary CVD prevention programs. Promoting health at the worksite through worksite wellness (WSW) programs is an important component for promoting health and preventing CVD. WSW programs are employer initiatives directed at improving the health and well-being of workers and, in some cases, their dependents. Various organisations and companies have started emphasizing the health of their employees through various WSW programs. These programs have been shown to reduce health care costs by 26% along with 30% reductions in workers' compensation and disability management claims costs. In addition, medical costs have been shown to decrease by \$3.27 for

every dollar spent on WSW thus, demonstrating a significant return on investment in addition to the health benefits. Despite these significant benefits the utilization of WSW programs has varied across various countries. Recently, there have been scientific statements from the American Heart Association to help promoting WSW for the assessment, prevention and implementation of such programs. Various other models also exist and would require to be assessed for each geographical region to ensure that these models are most effective. Unfortunately like all intervention programs, the implementation and success of WSW programs are full of barriers from the employee, employer, work environment and policy. However, successful programs have demonstrated equal participation and contribution from both the employer and employee. Therefore, efforts need to be made to ensure that there is policy to enforce the organization of WSW programs into the company's organizational framework. There is a need for more organized and well-designed research in this area from regions across the world to aid in improving evidence based recommendations for promoting WSW. There is also a strong need to develop best practice policies for WSW in the different regions of the world also a need for implementation of policy for promoting WSW programs.

ABSTRACTS

WORKSHOP II – EXERCISES

4.

Exercise Prescription for Individuals with Cardiovascular Disease and Modifiable Risk Factors

C CHAN

Hong Kong Physiotherapy Association, Hong Kong

Exercise has risks that must be considered when recommending it for individuals with cardiovascular risk factors and/or cardiovascular disease. Despite the potential hazard, which can be minimized by appropriate strategies, exercise training is effective to control the cardiovascular risk factors and symptoms, reduce the cardiac events and mortality. The magnitude of the exercise effect is influenced by the exercise prescription, individual variation, and whether exercise produces concomitant reductions in body weight as well as lifestyle changes. Individuals with cardiovascular disease should be educated about exercise as a therapeutic modality. Behavioral strategies may be necessary to increase and maintain physical activity over the lifespan.

WORKSHOP III – DIET AND CARDIOVASCULAR HEALTH

5.

Diet and Cardiovascular Health

C TAN

Seventeen Nutrition Consultants, Hong Kong

Medical Nutrition Therapy (MNT), provided by qualified registered dietitians, had proven to be therapeutic and plays an important role in the prevention and treatment of cardiovascular diseases, and for maintenance of health. Primary prevention is the most effective and affordable method to prevent chronic disease, and that dietary intervention positively impacts health outcomes across the life span. Lifestyle changes improve the lipid profile of people with diabetes and should be a priority among these individuals. Lipid profiles improve when there is a reduction of saturated fat and cholesterol intake, weight loss when appropriate, and an increase in dietary fiber and physical activity. It is the position of the Academy of Nutrition and Dietetics that dietary fat for the healthy adult population should provide 20% to 35% of energy, with an increased consumption of n-3 polyunsaturated fatty acids and limited intake of saturated and trans fats. The Academy recommends a food-based approach through a diet that includes regular consumption of fatty fish, nuts and seeds, lean meats and poultry, low-fat dairy products, vegetables, fruits, whole grains, and legumes. The guiding philosophy is to encourage food-based consumption first and supplements second. Advances in science and technology have enabled the functional food market to grow in recent years and consumer interest in the health benefits of foods and food components is at an all-time high. Impact of social media on our clients behaviour should

not be underestimated. For these reason, we as health professions must keep abreast on functional foods and social media, and their roles and impact in human health. In this session, we will apply preventative and medical nutrition therapy for cardiovascular diseases using evidence-based guidelines, and to understand the emerging issues our clients are concerned so that we will be able to provide them with helpful tools and resources; teach them how to understand and apply nutrition labels and ingredient list, with practical tips they can use in their daily life.

ABSTRACTS

WORKSHOP IV – PSYCHOLOGICAL APPROACH IN MANAGING CARDIAC ANXIETY

6.

Psychological Approach in Managing Cardiac Anxiety

KK LEUNG

Department of Clinical Psychology, Tung Wah Hospital, Hong Kong

Research suggests that about 20% of patients experience elevated level of heart-focused anxiety after cardiac intervention (Hoyer, Eifert, et al., 2008). It is not uncommon in daily cardiac rehab practice to identify patients who have excessive worries over recurrence of cardiac events after PTCA or cardiac surgery. Some of them even experience physical symptoms of panic attack, which they interpret as dangerous cardiac symptoms, and leading to the fear of dying or having recurrent cardiac attack. They become hypervigilant to and fearful of cardiac-congruent bodily sensation. They tend to avoid or restrict activities that produce heart-related sensation, even though these activities are within their physical capabilities, and hence their functioning is incapacitated. Some of them may also engage themselves in behaviors which are perceived as promoting a sense of safety, although such behavior may be seen by other people as unnecessary or redundant. In this workshop, I shall introduce the phenomenology and treatment of heart-focused anxiety in cardiac rehab patients, making reference to empirically validated conceptualization and treatment of anxiety disorders in non-cardiac population. The psychological mechanism underlying anxiety in cardiac rehab patients will be reviewed, which includes the conditioning hypothesis and the cognitive-behavioral model of anxiety disorders. Case examples shall be used to illustrate how these factors sustain or exacerbate anxiety in these patients. It is hoped that the workshop participants shall be able to appreciate the difficulties experienced by these patients, and to identify the general principles in treating cardiac rehab patients with heart-focused anxiety in a multi-disciplinary cardiac rehab setting.

WORKSHOP V – ADVANCE IN EVIDENCE II

7.

Exercise Prescription in Cardiac Patients

F TORKAN

Physical Medicine and Rehabilitation Specialist, Head of Rehabilitation Department of Shefa Neuroscience Research Center, Iran

Changing human life style has merged itself into non communicable diseases. World Health Organization in 2000 reported a 48.6% prevalence of coronary artery diseases as the cause of death, 80% of which occur in developing countries. Physical inactivity, tobacco use, un healthy diet, hypertension, lipid profile disorders, diabetes mellitus, overweight, and obesity are risk factors. By changing the life style towards a healthy one can reduce 85% of cardiovascular disease, 90% of diabetes mellitus, and 30% of cancer probabilities. Physical inactivity is an independent risk factor for coronary heart disease. 22% of cardiovascular diseases stem in physical inactivity. The optimal amount of physical activity is controversial and is an area of challenge. Physical activity also has an impact on secondary prevention. Two meta analyses on RCTs (O Connor et al, Berlin et al) showed a 20% to 25% reduction in mortality of post MI survivors with regular physical activities. And a more recent study (Jolliffe, 2001) showed a 31% reduction in mortality with regular physical activity. Also weight surveillance is very important. 1000000000 of the world population suffer from overweight and 3000000000 are obese. Those with BMI of 20-25 Kg/m² are at lower risk for coronary heart disease than those who are overweight or obese (Arch Internal Medicine 2000). The reduction in weight generally is achieved via decreasing energy intake and increasing physical activities (Douketis et al

1999). The primary goal is a 10% weight reduction. Exercise can be employed and prescribed at the first step to minimize risk factors. In Tehran, in a study on 2137 subjects (35- 65 years), the prevalence of cardiovascular risk factors is as follows: Hypertension 31.3%, Isolated systolic hypertension 8.2%, Smoking 13.3%, borderline high total cholesterol 34.3%, high total cholesterol 27.4%, borderline-high LDL 28.4%, high LDL cholesterol 21.2%, low HDL 5.8%, borderline high triglyceride 4.7%, diabetes mellitus 9.2%, overweight 39.8%, obesity 23.4%, and lack of leisure time physical activity 88.9% (Oraili et al). Also exercise can be employed for secondary prevention of coronary heart disease. The exercise prescription can be divided in two sets of programs, that is in patient and out patient programs. The exercise prescription depends on when or whether a cardiac event has occurred before and also depends on the exercise capacity of the patient and should be individualized. A sub-maximal exercise stress test may help exercise capacity out patiently. Exercise tolerance test can help classifying the individuals into categories for special needs on medical supervisions or ECG monitoring during exercise. Also, the contraindications and special precautions have to be addressed in some conditions. Some situations such as silent angina, congestive heart failure, pacemakers and implantable cardiac defibrillators, cardiac transplant are aspects of cardiac patients that need special attention. For each stage of prescription the FITT (Frequency, Intensity, Time, and Type) should be identified. These special programming will be reviewed in the presentation. Appropriate equipment, staffing and safety measures help minimize the rehabilitation programs.

ABSTRACTS

WORKSHOP VI – WORK REHABILITATION

8.

Work Rehabilitation for Cardiac Rehabilitation

W CHAN

Task Force of Occupational Therapy in Cardiac Rehabilitation, OTCOC,
HA, Hong Kong

Return to work is one of the key outcome measures of Cardiac Rehabilitation Programme. Occupational Therapist has definitely an important role in work rehabilitation for cardiac patients. The work assessment includes the work nature, working time, work environment and physical and psychological demand of the job. Usually, cardiac patients will worry about the manual handling during the job. They will avoid heavy lifting and carrying in the job duties. Traditionally, these tasks are identified as isometric activities and suggested to avoid. However, with the safety measures and gradual prescription during the training, some patients can perform manual tasks to certain extent. Patients can perform simulated work tasks under various monitoring measures such as ECG, blood pressure, heart rate, rate of perceived exertion and sign and symptom in order to achieve functional targets. In the work counseling, job modifications and work simplification strategies will be used. For those who cannot return to previous job, job within physical capability will be suggested. Thus the economical contribution to family and society can be maintained.

WORKSHOP VII – QUALITY OF LIFE

9.

Special Consideration in Flight and Traveling for Cardiac Patients

M FALLAH

Iran Air Medical Center, "Aviation Medicine" Department, Iran

Nowadays, air travel is the safest and fastest way for travelling all over the world, and also, it is considered the best way for transportation of patients to far destinations. It is evident that we have to take into account the effect of altitude on physical changes of air inside the cabin. There is an inverse relationship between altitude and air pressure; and for optimum balance of air pressure outside and inside the cabin, they have to decrease air pressure inside the cabin to nearly 6 to 8 thousand feet. This decrease of air pressure and subsequent decrease of oxygen pressure has a strong effect in hemodynamic system of cardiopulmonary patients. Also, we have to pay attention to the effect of relative decrease of air pressure on physiology of the traveler's body. Based on the international rules of air travel, the airline is responsible for safe transportation of the traveler to destination, and the medical unit of the airline is responsible for stability of the patient's status and prevention of deterioration from departure to arrival. Because of this issue and generally, all airlines have the "PMC Unit" (passenger medical clearance unit) for maintenance of medical status of the patient throughout the journey. Medical records of the PMC Unit are named "**MEDIF**" based on the International Air Transport Association (IATA), to evaluate patient's status for air travel or medical facilities during flight including doctors, nurses, medical equipments, and oxygen. The result of the evaluation is recorded in **FREMEC** card and a copy of which is kept in the PMC Unit. In this regard and for minimizing passengers' concerns, medical department of airline continuously replies patient's questions. Also they have

to declare medical limitations for travelling and potential hazards of flight through various prospectuses before selling the ticket. In this topic, physical changes of increased altitude and its effects on physiologic situation of the body with explanation of clearance process of the patient based on the **MEDIF** in the cardiac patient passenger will be discussed and evaluated.

ABSTRACTS

JOINT SESSION WITH JAPANESE ASSOCIATION OF CARDIAC REHABILITATION

1.

Effects of Aerobic Training on Exercise Tolerance and the Autonomic Nervous Activity in Patients with Chronic Kidney Disease

M MIURA,^{1,2} M KOHZUKI,¹ Y SAKATA,¹ O ITO,¹ A HIRAYAMA,² S MATSUSHITA²

¹Department of Internal Medicine and Rehabilitation Science, Tohoku University Graduate School of Medicine; ²Department of Health, Faculty of Health Sciences, Tsukuba University of Technology, Tsukuba, Japan

Objectives: Chronic kidney disease (CKD) is a worldwide public health problem. In patients with CKD, exercise endurance is lowered and this phenomenon becomes more distinct as the renal dysfunction advances. However, it has not been reported that long-term aerobic training affects exercise tolerance and autonomic nervous functions. This study was to determine whether the weekly aerobic training for one month could improve exercise tolerance and autonomous nervous activities in patients with CKD.

Methods: Five healthy adults (HA) (5 males, aged 24.6±8.5 years old) and two patients with CKD (stage 2: aged 21 years old, stage 5: aged 39 years old) were participated in this study. The subjects were examined exercise tolerance by using cardiopulmonary exercise (CPX) test and determined peak VO₂, anaerobic threshold (AT) and the autonomic nervous activities were analyzed using heart rate variability before and after the intervention. Frequency-domain analysis of short-term, stationary R-R intervals was performed to evaluate the low frequency (LF), very low frequency (VLF) and high frequency (HF) powers. The HF represents the parasympathetic activity, and the ratio of LF to HF (L/H) is considered to relate to the sympathetic modulations. After CPX test, an anaerobic training at AT level underwent one day per week for one month.

Results: The exercise tolerance were preserved in healthy adults and stage 2 patient (stage 2), but not in stage 5 patient (stage 5). Parasympathetic activity was increased in HA and stage 5 but not in stage 2. Additionally, sympathetic nervous activity and LF were decreased in patients with CKD, but not in HA. VLF was decreased all groups before and after the intervention.

Conclusions: The weekly aerobic training for one month might improve autonomic nervous activity with specific effect on parasympathetic and sympathetic activity in patients with CKD.

2.

Clinical Research about the Clinical Background of the Non-Responder to Exercise Therapy of Patients with Chronic Heart Failure

A KURIBARA,¹ C FUJIWARA,² A KAWABE,¹ T SUGIYAMA,¹ T TOI,¹ M SHIMOYAMA,¹ Y HORIE,¹ T HOSHI,¹ H SUGIMURA,¹ T NAKAMOTO,¹ T YASU¹

¹Dokkyo Medical University Nikko Medical Center, Department of Cardiology; ²Dokkyo Medical University Nikko Medical Center, Nursing Department, Japan

Objectives: Exercise capacity doesn't improve after exercise therapy in some patients with chronic heart failure (CHF). We defined such patient as non-responder to exercise. The aim is to determine a clinical and social background of the non-responder.

Methods: This study enrolled 22 patients with CHF who underwent cardiopulmonary exercise testing (CPX) twice before and after the supervised exercise program from October 2012 to January 2014 (17 men, 5 women, average age: 71±9.9 years). We divided the patients into two groups; (A) Patients whose peakVO₂ was improved after exercise therapy (Responder) (n=11) (B) Patients whose peakVO₂ was not improved after exercise therapy (Non-Responder) (n=11)

We investigated clinical and social background, compliance of exercise therapy and searched for an independent provisions factor of the Non-responder.

Results: Daily activity was significantly lower than the responder in the non-responder (p=0.03).

Conclusion: Compliance of exercise at home as well as the supervised exercise program is important to improvement of the exercise capacity, and we should make them continue the exercise therapy.

ABSTRACTS

3.

Update in Cardiac Rehabilitation for Heart Failure

K FAN

Cardiac Medicine, Grantham Hospital, Hong Kong

The goals of cardiac rehabilitation are restoration of optimal physiological, psychological and vocational status, and reduction of risk of cardiac morbidity and mortality. Coincident with the increased number of survivors of cardiovascular disease is the increase in individuals suffering from congestive heart failure (CHF). It is predicted that CHF will become the cardiovascular epidemic of the future. Recent studies have demonstrated the benefits of exercise therapy for heart failure patients. The effect of fragility and its components have been significantly correlated with quality of life scores as well as decreased survival in patients with heart failure. Furthermore, these associations prevailed in both younger (<75 years) and older patients (>75 years). A multidisciplinary holistic approach in modern cardiac rehabilitation will be beneficial to CHF patients.

JOINT SESSION WITH CHINESE SOCIETY OF CARDIOVASCULAR REHABILITATION

4.

Experience of Phase I Cardiac Rehabilitation for Post-Surgery Patients in China

L GUO

Division of Cardiac Rehabilitation, Guangdong Cardiovascular Institute, Guangdong General Hospital, China

A 19-year-old female who was diagnosed with Marfan syndrome, aortic aneurysm, aortic dissection (DeBakey type III), aortic insufficiency (severe), mitral insufficiency (moderate) and mitral prolapse, came to our hospital for medical support. After clinical assessment and heart-team consultation, she was treated surgically by Bentall and aortic valve replacement. But she kept staying in bed for 3 weeks after surgery, and suffered a cough, breath shortness, and fatigue. Then surgeons transmitted her to do cardiac rehabilitation. After assessed this patient, we concluded there were five problems, including long time bed staying, pulmonary infection, muscle atrophy, reduced cardiopulmonary function, and psychological concerns. Then we made a rehabilitation plan for her, aiming to improve her cardiopulmonary function, muscle and mental conditions. And we succeed. This patient was able to get off the bed and walking in ward after 3 days of treatment, started doing exercise in our facility on 5th day and discharged in two weeks. This is a very typical case to explain the benefit of cardiac rehabilitation after surgery and post-operative rehabilitation is more than that. Cardiac rehabilitation implemented by a team work fits for all cardiac surgery patients. It contains pre-operation evaluation, education, breathing and exercise training, post-operation evaluation, education, airway management, breathing and exercise training, and management of

complications, and the follow up of post discharge. Pre-operation education mainly introduces the importance of cardiac rehabilitation after surgery, the treatment in intensive care unit (ICU), and breathing skills. In the early phase after surgery, physical therapy interventions include breathing and limb exercises, effective coughing, pain management, and prevention of complications. When patients transmit to a ward from ICU, we will establish a progressive rehabilitation program for them, and help them return to social life as soon as possible. From our experience of post-surgery cardiac rehabilitation, we observe that cardiac rehabilitation is very useful and helpful, but most of surgeons haven't noticed the importance of post-surgery rehabilitation. We need do more work to prompt its application all over the country.

ABSTRACTS

5.

Strategies of Improving Cardiac Rehabilitation Compliance in Xiangya Hospital

SX LIU, L DONG

Xiangya Hospital of Central South University, Changsha, Hunan, China

Cardiac rehabilitation (CR) has been developed for more than 50 years. Numerous studies have proven that patients with cardiovascular diseases can benefit from CR programs in various ways, including improvement in quality of life, reduction in morbidity and mortality of cardiovascular diseases, decrease in rehospitalization rate and all-cause mortality. A recent retrospective study in the US is taken in 601,099 hospitalized elderly patients with coronary heart disease for 5 years (1997-2002) and shows that the five-year mortality of patients in CR group is 21%-34% lower than their counterparts in none-CR group. Despite the time of participation, patients can benefit from CR, while five years mortality rate is decreased by 34% in high-training-time group (more than 25 times) and 21% in low-training-time group (1-24 times). It can be concluded from this study that CR programs have a similar effect to preventive drug of cardiovascular disease; Asuch as Statin and Beta blockers, yet with significant lower cost than drugs. It is disappointed that the participation rate of CR was less than expectation, even in the United States, one of the best countries in carrying out CR program, the participation rate was only 30-85%, while in Canada the rate was 20%-30%, and Australia 11%-20%. Low participation rate had been a global obstacle in the development of CR, while improving the participation rate is a major problem we have to solve now. Thirteen years ago, when Xiangya started to set up CR program, few hospitals in China did this before. In the course of conducting CR, we had been dealing the same compliance problem. We discovered that 7 major factors affected patients in participating CR program, including: (1) lack of CR knowledge; (2) do not believe in exercise therapy, too much reliance on medication; (3) do not know how to exercise; (4) busy with work, no time to attend CR program; (5) have difficulty in persisting, e.g. interrupted by bad weather or business trip, lack of interest, limited by exercise equipment, etc. (6) traffic limitation, live far away from rehabilitation center; (7) economic limitation, lack of insurance support. Taking above factors into consideration, we have made efforts in improving the participation rate over the years. We have successfully increased the participation rate by making a series of measures. These specific measures are showed as follows:

1. *Various forms of patient education and raising the awareness of CR*

We send particular brochures to patients with different diseases, such as "Post-PCI Cardiac Rehabilitation" "Cardiac rehabilitation bring myocardial infarction patients back to colorful life" . Organizing various forms of popular science activities, such as, large-scale popular science lectures, patient-group education, individualized education; establish Xiangya Kangxin club and its website to spread CR knowledge or theory to the public.

2. *Make rehabilitation plans with flexibility*

Providing rehabilitation scheme A, B, C and D for patients to choose, which are four different options with training courses ranging from 1 to 36 times. So that patients who live far away from CR center or lack of time can get basic yet important CR guidance.

3. *Provide Affordable and Convenient Rehabilitation Approach*

We have been making efforts to develop affordable and convenient rehabilitation approach, motivating patients for home-based CR program. We have been using heart rate monitors, elastic bands and elastic tubes in patients as portable training tools. We have developed "Elastic-Band Gymnastics for heart rehabilitation" concordantly combined four kinds of essential exercises including aerobic, resistance, flexibility and balance training. Patients are able to adjust the resistance by choosing different elastic-bands according to their physical fitness. It can be used safely without limitation of weather and space. Furthermore, an "Elastic-Band Gymnastics for Older Adults" was born in consistent with characteristic of the elderly. Three levels of intensity were provided and traditional Chinese medicine elements, such as acupoint patting sketch, have been added in this gym. In addition, patients can do the exercise efficiently in sitting or standing position.

4. *Integration of Prevention & Rehabilitation*

After CR programs of structural heart disease like coronary heart disease and heart failure were well-established, we provided CR services to patients with high risk of cardiovascular disease, such as metabolic syndrome, diabetes, etc.

5. *Promoting CR programs with colleagues National-wide*

We try our best to promote CR programs in our country, including actively attending academic meetings, positively participating in drawing up "Expert Consensus", compiling CR textbooks, gathering colleagues from all over the country to get further education of CR program and holding "national advanced cardiac rehabilitation training class" for 5 consecutive years.

6.

Role of Acu-TENS in Cardiac Rehabilitation of Elderly Patients

P CAO

The First Hospital of Jilin University, Changchun, China

China is gradually entered the aging society. According to the sixth national census in 2010, Population of the age of ≥ 65 was 178 million (13.26%). It will be more than 400 million ($>30\%$) by 2050. Because the aged population is the main part of the people who suffer from cardiovascular disease, need of prevention and cardiac rehabilitation is growing. Cardiovascular disease in elderly patients with coronary heart disease, often caused decreased cardiac output, and vascular contraction caused vascular resistance and increased afterload; subsequently, dyspnea, fatigue, and do not exercise. Furthermore, Long-term bed rest made the muscle atrophy and the heart function decline further. Eventually, vicious spiral not only makes the heart failure aggravated constantly, but also affects

the Compliance and safety in cardiac rehabilitation of elderly patients. No.1 Hospital of Jilin University used the Acu-TENS (transcutaneous electrical nerve stimulation) in an acute stage of CR which elderly patients with acute coronary syndrome after PCI, and an early rehabilitation which elderly patients with heart failure and not moving:

1. Compared with exercise, the Acu-TENS can not to increase the burden of heart and lung function, and can mobilize the participation of more motor units.
2. For elderly patients with heart failure and not moving, the Acu-TENS can be an effective substitute for exercise therapy.
3. The Acu-TENS can effectively increase the parasympathetic nerve activity, improve heart failure status.
4. The Acu-TENS can effectively improve the angina pectoris.

In conclusion, The Acu-TENS as an effective alternative to exercise therapy, plays an important role in Cardiac Rehabilitation of elderly patients.

ABSTRACTS

7.

20 years' Experience of Cardiac Rehabilitation in Hong Kong

ST LAU

Princess Margaret Hospital, Hong Kong

Cardiac rehabilitation originated from need for return to work in the 1940s of the patients after acute myocardial infarction in North America after the second world war. Evidence from 1970s and 80s showed improved mortality and morbidities from structured exercise based programs and comprehensive programs and it has been recommended as treatment in guidelines since the 90s. Cardiac rehabilitation and secondary prevention with risk reduction is the treatment goal in the 21 century. With early revascularisation and discharge, the rehabilitation process for the acute myocardial infarction, elective revascularisation, post cardiac surgeries, post device implantation and heart failure had evolved over time. More out patient and community based programs assisted by new technology in monitoring and education had developed in the past 20 years. In Hong Kong, scattered activities of cardiac rehabilitation were present in both public and private hospitals since the 80s. In 1992, the White paper on rehabilitation advocated cardiac rehabilitation and structured cardiac rehabilitation programs were developed in Hospital Authority and in the community since 1994. The Community Rehabilitation Network of the Hong Kong Society for Rehabilitation was also commenced its service at the same time. Eighteen Cardiac rehabilitation teams were established in the Hospital Authority in 2002 being the 'peak' of the establishment. The development was hampered after 2003. We had a trough of 10 teams in 2005 and 13 teams at present in 2014. In 2010, PEP (Patient Empower Program) was piloted in the community but failed to recruit the relevant patients. The Hospital Authority also had set up a telephone service for discharged heart failure patients. In the past few years, new service in the private sector had started. In 2013, the Hospital Authority Strategic

Framework for Coronary Heart disease had spelt out the need for enhancement of cardiac rehabilitation by developing cluster based model of service provision, well coordinated and networked rehabilitation program embedded into the patient pathway. Private out patient program was also underway. Self help groups had been formed, Care for Your Heart in 1995, The Heart Club in 1996 and many smaller local groups mainly hospital based in the past 20 years. Leaders who are expert and champion in cardiac rehabilitation would have to gather our strength to develop appropriate service for our patients. Inadequate facilities and expertise, under referral, non compliance and low participation remained a problem globally. We should be taking into consideration all these factors and strive to enhance cardiac rehabilitation and secondary prevention service in the coming years.

SYMPOSIUM 1 – HONG KONG HEART FOUNDATION SYMPOSIUM

8.

Women and Heart Disease – Detection, Evaluation and Management

CNB MERZ

Cedars-Sinai Medical Center, USA

Cardiovascular disease (CVD) remains the leading cause of death among women. More women than men have died annually from CVD since 1984 in the United States, with coronary heart disease (CHD) accounting for 401,495 deaths in women in 2009. Since 2001, there has been a continuous decline in mortality from heart disease in women but in younger women (under the age of 45 years) the mortality from heart disease has actually increased. Several noninvasive imaging modalities have demonstrated efficacy in diagnosis of women with chest pain and suspected occlusive CAD. Stress echocardiography and nuclear myocardial perfusion imaging (MPI) have been demonstrated in multiple studies to be reliable for detection of CAD. Stress echocardiography sensitivity tends to be lower in the presence of intermediate stenosis or single vessel obstructive CAD, but the high negative predictive value renders it useful for younger women. Stress-induced changes in myocardial perfusion have been extensively evaluated in women; largely employing SPECT imaging with more recent use of positron emission tomography (PET) and cardiovascular magnetic resonance (CMR) techniques. Treatment of IHD in women is based in large part on clinical trials performed in predominantly male populations. However, the existing data suggest that women with obstructive IHD benefit similarly from pharmacologic and interventional approaches used in men. However, the management of women with angiographically normal coronary arteries and

microvascular dysfunction is limited by the paucity of large clinical trials addressing this issue. Management of cardiovascular risk factors is vital to improving outcome in women at risk or with known disease. Diagnosis of IHD in women is complicated by the lower prevalence of epicardial CAD and the important role of coronary microvascular dysfunction. Treatment of obstructive CAD is generally similar for both men and women. However, additional research on the optimal management of chest pain in women with coronary microvascular dysfunction is needed.

ABSTRACTS

SYMPOSIUM 2 – LIPID AND DIET

9.

Latest and Perhaps Controversial Lipid Guidelines

JLIM

Novena Heart Centre, Singapore

The use of lipid lowering medications (in particular statins) for both primary as well as secondary prevention of cardiovascular disease has been well established in numerous clinical trials. However, the optimal dosing of such medications as well as the use of combination medications in managing high cholesterol remains controversial. The 2013 guidelines of the American College of Cardiology and the American Heart Association (ACC/AHA) for the treatment of cholesterol has resulted in a major change in recommendations since the National Cholesterol Education Panel first published the ATP III guidelines in 2002. The ATP III guidelines introduced the focus on multiple risk factors rather than just assessing the blood cholesterol level for decision making on initiation of lipid lowering medications. Certain high risk persons were termed Coronary Heart Disease (CHD) risk equivalents. These included persons with known clinical CHD, those with symptomatic carotid artery stenosis, peripheral arterial disease or those with known abdominal aortic aneurysms. Persons with diabetes mellitus was also considered CHD risk equivalents. The guidelines suggested that drug therapy should be considered for these persons when there LDL cholesterol ≥ 130 mg/dl and to target a LDL cholesterol < 100 mg/dl. In the 2004 revision of the ATP III guidelines, consideration to lower LDL cholesterol < 70 mg/dl for such high risk persons was recommended. In persons who are not considered CHD risk equivalents, major risk factors should be assessed. These risk factors include current cigarette smoking, hypertension, low HDL cholesterol (≤ 40 mg/dl), age (men ≥ 45 years of age, women ≥ 55 years of age) and a family history of premature CHD (defined as first degree male relative < 55 years of age, first degree female relative < 65 years of age). If there are 2 or more major risk factors, their 10 year risk could be assessed by the Framingham risk score. Based on this stratification, LDL levels at which to initiate primary prevention as well as goal LDL targets were set. Individual with a LDL cholesterol ≥ 190 mg/dl without any additional coronary risk factors were also recommended for drug therapy. The ATP III guidelines also made recommendations on using therapeutic lifestyle changes, treating elevated triglyceride levels, the use of non-HDL cholesterol as a goal and identifying patients who have the metabolic syndrome and its management. The 2013 AHA/ACC guidelines have introduced several significant changes to the ATP III recommendations. The "treat to target" and "lower is best" strategies are no longer advocated. Instead,

the various statins and its doses are divided into low, moderate and high intensity therapy. Generally, low intensity statin therapy is defined as doses that lower LDL-cholesterol $< 30\%$, moderate as being between 30% to $< 50\%$ and high intensity treatment as lowering LDL-cholesterol $\geq 50\%$. The intensity of statin intervention is then determined by clinical risk assessment. Another major change is the use a new risk equation, the Pooled Cohort Risk Assessment equation which replaces the Framingham risk score used in the ATP III guidelines. This new risk equation has several important differences from the older Framingham equation. The newer equation includes non-fatal myocardial infarction, coronary heart disease death or ischemic stroke while the Framingham risk score only included myocardial infarction. In addition diabetes mellitus is included in the risk assessment. Persons with a 10 year risk of $\geq 7.5\%$ is recommended as benefiting from statin therapy for primary prevention. The radical departure of these new guidelines from the previous ATP III guidelines has resulted in confusion for many practicing clinicians. Controversy remains and other guidelines on cholesterol management from the European Society of Cardiology/ European Atherosclerosis Society (ESC/EAS), the Canadian Cardiovascular Society (CCS) and the International Atherosclerosis Society (IAS) differ from the recent AHA guidelines. In addition, within the United States, the American Association of Clinical Endocrinologist (AACE) and the National Lipid Association (NLA) have not endorsed the latest AHA/ACC guidelines. Criticisms include the overuse of statins if these new guidelines were adopted. A recent study suggests that the new recommendations would result in an increase of statin use in the United States from 37.5% of the population to 48.6% (a numerical increase of 12.8 million persons). In particular, the new recommendations would translate to 87.4% of men and 53.6% of women aged 60 to 75 qualifying for statin use. This increase in statin use predominantly arises from those who qualify for primary prevention. Conversely, in secondary prevention, many clinicians continue to believe that lower is better. In addition, there is a paucity of recommendations in the new guidelines in dealing with those with mixed dyslipidemias and the use of additional non-statin medications. In summary, the new 2013 guidelines issued by the AHA/ACC have simplified identifying at risk patients and the initiation and dosing of statins for both primary as well as secondary prevention. However, much controversy exists presently on the validity of these recommendations. It is likely that these guidelines will be updated further as future drugs such as CETP inhibitors and PCSK9 inhibitors which are already in early clinical trials shows promise for further improving lipid profiles.

ABSTRACTS

10.

Diets, Exercise, Herbs and Supplements: What Works?

CNB MERZ

Cedars-Sinai Medical Center, USA

Many of the conditions and disease states that affect atherosclerotic risk can be prevented or modified by exercise and dietary interventions. These conditions and diseases include obesity and excess body weight, hypertension, lipid abnormalities, and diabetes. Even when conditions such as hypertension and hyperlipidemia are established and require pharmacologic therapy, dietary manipulations can reduce the dosage of medication required to achieve therapeutic goals. Similarly some nutritional supplements (e.g. red rice yeast, stanol/sterol-containing margarines and other food products, and the long chain polyunsaturated fatty acids eicosapentaenoic acid/DHA) contain pharmacologically active substances that may be useful therapeutically in selected patients. In contrast, some dietary and nutritional supplements may contain substances such as sympathomimetics that increase cardiac arrhythmias. Consequently, physicians practicing preventive cardiology must be required to have an understanding of nutrition and the principles of exercise and nutrition so that they are able to provide expert advice to patients and to reinforce expert advice given by exercise and nutritional professionals.

11.

Low Calorie and Reduced Calorie Sweeteners and Health

J FOREYT

Baylor College of Medicine, Houston, TX, USA

There is an interesting paradox regarding the increasing prevalence of obesity, diabetes, and related health conditions worldwide. Although there is considerable interest in healthy eating, physical activity, and other beneficial lifestyle changes, and an increased awareness of the dangers of obesity and associated risk factors, their incidence continues to rise. Work and commuting demands, high stress jobs and little time to exercise or prepare food, availability of high fat/high calorie products and other environmental factors all appear to play a role in their increase. We are eating more and exercising less. From a public health point of view, a relatively modest reduction in energy intake and increase in physical activity could slow or stop the weight gain of the population and improve overall health. Low and reduced calorie sweeteners can potentially play a significant role for individuals who want to manage their calories or carbohydrates and stay in better health without sacrificing taste. Low and reduced calorie sweeteners are safe and provide individuals with many benefits, particularly regarding weight control. Unfortunately, firmly held beliefs of many people are often difficult to change, even in the face of compelling scientific research results. Myths die hard. This presentation will focus on the science surrounding the use of low and reduced calorie sweeteners and health. Ultimately, long term randomized trials in free living populations will help clarify their role in assisting motivated individuals with weight loss, weight maintenance and overall improvement in cardiovascular and metabolic health.

12.

Polypill in Cardiovascular Disease 2015 – Has Its Time Come?

S GUPTA

Whipps Cross and BartsHealth NHS Hospitals Trust, London, UK

Wald and Law proposed the benefit of the Polypill in primary prevention of cardiovascular disease in 2003. The concept was simple and attractive. All the main component drugs (namely aspirin, statin, ACEI, B-Blocker) are available generically and therefore it would be inexpensive to treat most of the CV risk factors. Combining them in one pill could reduce heart disease and stroke by 80%. This approach unsurprisingly has enormous appeal and considerable implications for global health as CVD is the leading cause of death worldwide. There are still ongoing concerns on the Polypill. Although the idea is to reduce the number of pills to be consumed, individual regimens cannot be tailored. Polypill also risks giving too few medications, or too many, in which case exposing patients to side effects otherwise could be averted. Recent studies including TIPS, SPACE and UMPIRE showed that the Polypill – a fixed-dose combination was tolerable, increased compliance and reduced CV risk factors. It is known that around 50% of patients worldwide do not receive cardioprotective medication after an acute myocardial infarction... the proportion being as low as 13% in low-income countries. One can hence envisage how a combination pill containing a fixed-dose regimen of aspirin, ACEI, statin and B-Blocker could potentially play a major role in secondary prevention plus overall adherence improvement and risk factor control. Several FDC formulations of the Polypill have now been developed and several ongoing trials are assessing the viability of reduction in CVD outcomes (see table below). The debate continues:

Polypill name	Company	Indication	Active components (mg)
Red Heart Pill 1™	Dr. Reddy's Laboratories (Hyderabad, Andhra Pradesh, India)	Secondary prevention	Aspirin (75), atenolol (50), lisinopril (10), simvastatin (20)
Red Heart Pill 2™	Dr. Reddy's Laboratories	Primary prevention	Aspirin (75), hydrochlorothiazide (12.5), lisinopril (10), simvastatin (20)*
Polycap®	Cadila Pharmaceuticals (Ahmedabad, Gujarat, India)	Primary prevention	Aspirin (100), atenolol (50), hydrochlorothiazide (12.5), ramipril (5), simvastatin (20)
Polycap® DS	Cadila Pharmaceuticals	Primary prevention	Atenolol (100), hydrochlorothiazide (25), ramipril (10), simvastatin (40)
Zycad-4™	Zydus Cadila Healthcare (Ahmedabad, Gujarat, India)	Secondary prevention	Aspirin (75), atorvastatin (10), metoprolol (50), ramipril (5)
Ramitorva™	Zydus Cadila Healthcare	Secondary prevention	Aspirin (75), atorvastatin (10), ramipril (5)
Politorva™	USV (Govandi East, Mumbai, India)	Secondary prevention?	Aspirin (75), atorvastatin (5), ramipril (10)
Polyliran 1™	Alborz Darou Pharmaceutical Company (Tehran, Iran)	Primary or secondary prevention?	Aspirin (81), atorvastatin (20), enalapril (5), hydrochlorothiazide (25)
Polyliran 2™	Alborz Darou Pharmaceutical Company	Primary or secondary prevention?	Aspirin (81), atorvastatin (20), hydrochlorothiazide (25), valsartan (40)
Polypill†	Hypermarcas SA (São Paulo, Brazil)	Primary prevention?	Atorvastatin (10), lisinopril (50), hydrochlorothiazide (12.5)
Trinomia®	Ferrer Internacional (Barcelona, Spain)	Secondary prevention	Aspirin (100), ramipril (2.5, 5, or 10), simvastatin (40)

*In a new formulation, the dose of simvastatin has been increased to 40mg. †No trade name given.

ABSTRACTS

SYMPOSIUM 3 – HYPERTENSION DEBATE

13.

The Treatment Threshold and Target for Hypertension Should be More Lenient in Elderly: The Cons

BMY CHEUNG

Institute of Cardiovascular Science and Medicine, University of Hong Kong, Queen Mary Hospital, Hong Kong

The relationship between blood pressure and the risk of cardiovascular events, especially stroke, is linear, such that in general, the lower the blood pressure, the lower the cardiovascular risk. Common sense dictates that when the blood pressure is too low, the person can experience hypotensive symptoms, including loss of consciousness. Also, using excessive medications to reduce the blood pressure is bound to give rise to excessive adverse effects, and the risk-benefit balance may tip in favour of less treatment. Nevertheless, if a satisfactory level of blood pressure can be achieved in a safe, effective and economical manner, leniency seems to be the wrong policy. Epidemiological studies and large clinical trials show that even a few mmHg difference in blood pressure spells a significant change in cardiovascular risk. This suggests that we should take the blood pressure level seriously, and measure and control it precisely. For this reason, there has been a lot of interest in white coat and 'reverse white coat' (masked) hypertension, and the British Hypertension Society strongly advocates the use of ambulatory blood pressure monitoring, which entails a lot of extra work and inconvenience for both patients and health professionals. American and European guidelines have also taken great pains to define different levels of blood pressure with different names and treatment pathways, albeit resulting in some confusion

for the nonspecialist. The danger with a lenient approach to the treatment of hypertension is a change in attitude. Hypertension comes off the agenda as an urgent priority. Audit standards of blood pressure control would be much easier to meet. Patients whose blood pressure is 'too well-controlled' may have medications withdrawn. This would be a pity because blood pressure control, using generic drugs, is a highly cost-effective way of reducing cardiovascular deaths.

SYMPOSIUM 4 – CARDIAC REHABILITATION - ASIAN EXPERIENCE

14.

How Could I Set Up Cardiac Rehabilitation in Wildland? My Personal Experience

JY LEE

Asan Medical Center, Korea

Despite of advanced developments in medical therapy and revascularization strategy in cardiac disease, the incidence of mortality due to cardiac disease has been steadily increasing. Consequently, cardiac death was ranked as 2nd cause of death in Korea, 2012. Burgeoning research in the field of preventive cardiology over the past 20 years has fostered the evolution of cardiac rehabilitation programs, once limited to exercise training, into comprehensive secondary prevention centers. Data demonstrate that contemporary cardiac rehabilitation/secondary prevention (CR/SP) programs reduce cardiovascular risk and event rates, foster healthy behaviors, and promote active lifestyles. Accordingly, every recent major evidence-based guideline from the American Heart Association (AHA) and the American College of Cardiology Foundation regarding the management and prevention of coronary heart disease provides a class I level recommendation (i.e., procedure/treatment should be performed/administered) for referral to a CR/ SP program for those patients with recent myocardial infarction (MI) or acute coronary syndrome, chronic stable angina, or heart failure, or for those patients following coronary artery bypass surgery or percutaneous coronary intervention. CR/SP programs are also indicated for those patients following valve surgery or cardiac transplantation. Most of the cardiologists in Korea do not follow common sense rules to prevent the spread of this disease. There are deficient available facilities, personnel and programs for CR/SP program. So, we called Korea as "Wildland of Cardiac rehab". Our hospital has been performing revascularization procedures or surgeries, almost 2,000 cases annually. But, during the early dawn period, CR/SP program could be applied less than 5~10% of target patients. So, we settled full-fledged scare of CR/SP center at 2010, which was composed with medical director, program director, exercise specialist, dietitian, psychologist, coordinator and nurse. After work team construction, we tried to identify the barrier of CR enrollment and completion. First of all, an air of indifference

was identified as most important obstacle to overcome. Our team including me went around the conferences or meetings to enhance the interest and knowledge about CR in our colleague, from medical doctor to all medical personnel. Secondly, we corrected referral system from consulting system to automatic referral system using electronic medical record system. All candidates could be introduced by our team about effect, benefit, program and cost of CR program. During in-hospital period, all patients could receive education about general principles of CR/SP program. At the time of discharge, more than 70% of patients were enrolled in our program. Thirdly, owing to unique Korean medical delivery system, the distance from hospital varied. Our team also developed several types of CR program according to distance, available time, economic status and willingness, which are different by numbers of sessions of CR program. More than 80% of patients who participated in CR program completed their assigned program, successfully. Fourthly, we made network of cardiologist who have interest in CR program and hosted regular workshop or seminar program. Our goal of this meeting is to raise the wave of CR program in cardiologist society of Korea. Fifthly, we encouraged to make the society of CR patient, which was organized by autonomy of patient. They released regular newsletter and held a meeting. In that meeting, our team also supported everything which was helpful for their organization. And then, we tried to receive validation of our program by inspection by an outside authorized society. In 2011, we applied the certification of AACVPR (American Association of Cardiovascular and Pulmonary Rehabilitation) and received honorable certification, successfully. That certification was only valid in 3 years. In this year, we also applied next certification and passed the big exam, fortunately. Lastly, CR/SP program is not reimbursed or covered by government medical insurance system or private insurance company. We wanted to establish the evidences of CR and build up opinions to assert the coverage from government administration. Recently, we were able to publish several numbers of papers. Nowadays, also, we are doing several scientific study protocols to evaluate and demonstrate the benefit of CR program in Korea. In conclusion, settlement of CR program in "Wildland" didn't come easy to me. But, it deserves to pour our passion and efforts into CR program. My personal experience is not smooth and not easy to listen without tears.

ABSTRACTS

15.

Opportunities and Challenges of Cardiac Rehabilitation in China
DY HU

Intervention Center, Peking University People's Hospital, China

The history of cardiac rehabilitation has been two hundred years. Cardiac rehabilitation in United States, Europe and Japan has well established, has a practical guide, mature model and medical insurance support. The prevention of cardiovascular disease and cardiac rehabilitation in China are in the development stage. The opportunities and the challenges coexist.

Opportunities:

1. Big needs unmet population aging

The average life expectancy in Beijing is more than 80 years. However, the average healthy life expectancy is only 60 years, 10 years shorter than that of developed countries. China is gradually entered the aging society. According to the sixth national census in 2010, Population of the age of ≥ 65 was 178 million (13.26%). It will be more than 400 million (>30%) by 2050. Because the aged population is the main part of the people who suffer from cardiovascular disease, need of prevention and cardiac rehabilitation is growing.

2. The prevalence of cardiovascular disease

With China's rapid economic development, people's diet and lifestyle have been changed dramatically. High-fat, high-calorie westernized diet; stress; sedentary lifestyle; make the prevalence of cardiovascular disease continues to rise. More people start to have his first CVD event at younger age. The total number of patients with cardiovascular disease in China is about 230 million; one in every five adult is suffering from cardiovascular disease. Rapid and sustained rise in prevalence of cardiovascular disease increases the need of cardiac prevention and rehabilitation more urgent.

3. Cardiovascular disease treatment

Although the number of PCI, ICD and CRT has been increased very rapidly in China, there is no decrease in the morbidity and total mortality in patients with CVD. For example: After surgery and drug treatment in patients with coronary heart disease, the death rate of and re-hospitalization within six months was 25%, and four-year cumulative mortality rate was as high as 22.6%. Cardiac rehabilitation and secondary prevention will change fundamentally the simple biomedical model, and provide a long-term integrated medical services and care for patients from psychological, biological and social aspects.

4. New medical reform policy

The new medical reform policy is needed to accelerate the establishment of social capital to set up private medical institutions, promote the build-up of health services system, and encourage foreign investment and social capital directly to invest in rehabilitation and geriatric care.

Challenges:

1. Chinese medical system is highly centralized. Big size hospitals with thousand beds are mainly located in big capital cities. The system needs to be remodeled. The reimbursement policy is procedure based and money oriented. Big hospitals do not have interest in cardiac prevention and rehabilitation.

2. Limited medical resources are mainly used to manage acute events and diseases at end stage. No reimbursement for cardiac prevention and rehabilitation.

3. The big lack of understanding of fee importance of rehabilitation for cardiac patients.

16.

Home-based Cardiac Rehabilitation: An Alternate Model in Resource Limited Settings
AS BABU

Department of Physiotherapy, School of Allied Health Sciences, Manipal University, Manipal, Karnataka, India

Cardiac rehabilitation (CR) is an important part of holistic care for patients with cardiovascular diseases (CVD). Supervised training programs and maintenance programs have shown immense health and economic benefits. CR has been seen to be poorly implemented both across the world and in low and middle income countries with 38.8% of countries across the world and only 23% of low and middle income countries having such programs. These discrepancies in CR across the low and middle income countries could be due to the geographical barriers which would prevent participation in such programs. Thus, there is a need for an alternate model to provide CR through a home-based delivery system. Home-based CR has been used in various low resource countries and also among certain high income countries where there exist significant barriers to participation in supervised CR programs. Costs for rehabilitation through supervised programs, further limit patient participation in CR in the developing world. Hence, there is a need for promoting home-based CR in developing countries or in places where resources are limited. This mode of CR offers patients in resource limited settings an alternate method for exercising thus, making CR available to a larger group of individuals who would otherwise not benefit from such a program. Home-based CR has been utilized for patients with coronary artery disease and heart failure with immense success. Despite the success of home-based CR in these patient groups, certain patient groups such as those with peripheral vascular disease, heart failure with preserved ejection fraction

and pulmonary hypertension require more research. Concerns regarding adherence to these exercise programs and ensuring adequate training intensities while at home continue to be a challenge in the home-based delivery model of CR. Various strategies have been adopted to tackle these concerns such as the use of exercise log books, the use of pedometers, telemedicine and mobile technology. Nevertheless, there are still more challenges to be overcome and still more research is required to help identify the best methods to improve adherence to exercise programs for patients with CVD undergoing home-based CR. Despite these challenges, home-based CR does provide the patient an opportunity to participate in rehabilitation as against, no rehabilitation at all. Resource limited settings need to incorporate home based prescriptions for patients with CVD. More research from these regions are needed to help develop clinical practice guidelines and identify best practices in these regions for home-based CR. Support is required from funding agencies in these areas to help promote home-based CR as secondary prevention programs in order to further reduce the morbidity and mortality of CVD.

ABSTRACTS

17.

Submaximal Exercise Testing: Advantages and Weaknesses in Performance Assessment in Cardiac Rehabilitation

MY SAARI

Rehabilitation Department, Serdang Hospital, Malaysia

Maximal exercise testing is considered the gold standard for assessing maximal aerobic capacity. However, the role of such testing is limited in people whose performance may be limited because of pain or fatigue rather than exertion and in cases where maximal exercise testing is contraindicated. Maximal exercise tests either measure or predict maximum oxygen consumption (Vo₂max) and have been accepted as the basis for determining fitness. Maximum oxygen consumption is dependent on the ability of the oxygen transport system to deliver blood and the ability of cells to take up and utilize oxygen in energy production. Theoretically, a maximal test is defined by the plateau of Vo₂ with further increases in workload. When a maximal test is performed but the criteria for Vo₂max are not met, the maximal Vo₂ achieved is termed a Vo₂peak. There are several limitations to assessing maximal performance with a Vo₂max test. Unless an individual is able to attain a Vo₂max without fatiguing first or being limited by musculoskeletal impairments or other problems, the results of the test are invalid. In addition, higher levels of motivation are required by the individual, and maximal tests require additional monitoring equipment (e.g., electrocardiograph machine) and trained staff and are labor intensive. Compared with maximal exercise testing, submaximal exercise testing appears to have greater applicability. Submaximal tests can be classified as either predictive tests or performance tests. Predictive tests include Modified

Bruce Treadmill Test, Single-Stage Submaximal Treadmill Walking Test, Astrand and Ryhming Cycle Ergometer Test, 12-Minute Run Test, Canadian Aerobic Fitness Test (CAFT), 20-Meter Shuttle Test and 1-Mile Track Walk Test (Rockport Fitness Test). Performance submaximal tests include Self-Paced Walking Test, Modified Shuttle Walking Test, Bag and Carry Test, Timed Up & Go Test, 12- and 6-Minute Walk Tests. When testing people with a wide range of conditions, including cardiovascular and cardiopulmonary conditions that can be life threatening, even people without known health problems can exhibit unexpected responses. People without known health problems, for example, can have cardiac dysrhythmias and this incidence increases with advancing age. Safety and minimizing undue strain, in our view, are essential in planning and implementing submaximal exercise testing. The use of predicted equations and the indexes in predicting peak O₂ uptake are also can be implemented in limited resources Cardiac Rehab facilities.

ABSTRACTS

PUBLIC CONFERENCE

1.

Role of Cardiac Imaging in Diagnosing Ischemic Heart Disease

C CHAN

Division of Cardiology, Queen Mary Hospital, Hong Kong

Cardiovascular imaging is in the forefront of health care, experiencing rapid changes over the recent years, particularly with the use of advanced medical technologies, and emergency medicine is no exception in diagnosing ischemic heart disease. With the improving educational level and increasing awareness of ischemic heart disease, there is an interest from the general public on the different imaging tools being utilized by physicians or cardiologists in diagnosing ischemic heart disease. The talk would provide a comprehensive review on how CT and MR are being applied clinically together with real-life case illustrations.

2.

Western and Chinese Dietary Therapies in Cardiovascular Disease

P WONG, S AU

Tuen Mun Hospital, Hong Kong

Diet is one of the factors in influencing and enhancing heart health. From the perspective of Western dietary therapy, a low fat low cholesterol and high dietary fiber diet normalizes lipid profile leading to preventing cardiovascular disease. Apart from a selection of foods with less cholesterol, saturated fat, trans-fat and salt, it is advisable to eat foods with high contents of poly- and mono-unsaturated fats, anti-oxidants and water-soluble dietary fiber. In order to control body weight and lipid profile, it is also advisable to decrease the intake of sugary food, sugary drink and alcohol. Smart choice of eat out foods, knowledge in application of food labelling and healthy cooking are practical tips in Western dietary therapy for preventing cardiovascular disease. From the perspective of traditional Chinese medicine (TCM), dietary therapy is based on differentiation of body constitution (辨體質施食). Body constitution is generally classified into "healthy" and "unhealthy" statuses. "Healthy" body constitution results in a balance of Yin ("Cold") and Yang ("Hot") while an imbalanced state of "Cold" and "Hot" induces an occurrence of "unhealthy" or "pathological" body constitution. Yin-deficiency ("Hot" nature) and Yang-deficiency ("Cold" nature) are common types of "pathological" body constitutions in TCM. One "pathological" body constitution type can be found in different diseases. Likewise, one single disease can have various "pathological" body constitution types. Without regulation, persons with chronic diseases and deviated body constitutions would be at other health risks. From the

perspective of TCM, food has natures and flavors. Empirical studies support that food nature and flavor have the therapeutic effects in regulating "Cold" and "Hot" natures of body constitutions. It is necessary for people with cardiovascular disease and deviated body constitution to understand respective presentations and select foods with appropriate natures and flavors for enhancing the regulation of "Cold" and "Hot" natures of body constitutions. Western dietary therapy is of nutritional approach while food natures and flavors are the components in Chinese dietary therapy. Integration of Western and Chinese dietary therapies may be suggested to be an effective way in preventing cardiovascular disease and other chronic diseases by either normalizing lipid profile or regulating the "Cold" and "Hot" natures of body constitutions.

ABSTRACTS

3.

由靜觀開始：從失眠、壓力、憂慮到心安

S WONG,¹ S CHAN,² KT TING³

¹Division of Family Medicine and Primary Healthcare, The Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong; ²Heep Hong Society; ³Kowloon Hospital, Hong Kong

In this seminar/workshop, the concept of mindfulness and its applications as an intervention in the management of common chronic conditions will be presented. Specifically, a review of current evidence on the use and effectiveness of mindfulness based interventions on common mental health and physical problems including chronic insomnia, chronic stress, anxiety, menopausal symptoms to blood pressure will be presented and local findings on its use will also be discussed. Participants will also have an opportunity to participate in brief mindfulness exercises and experience this intervention first hand in the session.

ABSTRACTS

BREAKFAST ABSTRACT SESSION I

1.

SOD Mimetic Tempol Enhances Exercise Training-induced Nitric Oxide Synthases in the Kidney of Spontaneously Hypertensive Rats

P CAO,^{1,2} M LIU,¹ O ITO,² M KOHZUKI,² D HU³

¹The First Hospital of Jilin University, China; ²Department of Internal Medicine and Rehabilitation Science, Tohoku University Graduate School of Medicine, Japan; ³Peking University People's Hospital, China

Objectives: The exercise training (Ex) and superoxide dismutase (SOD) mimetic tempol have antihypertensive effects in spontaneously hypertensive rats (SHR). To clarify the mechanism of antihypertensive and renal-protective effect of the Ex, the present study tested the effects of the Ex and tempol on the NOS expression in the kidney of SHR.

Methods: 5-week-old, male SHRs were randomly divided into four groups; a control group, an Ex group, a tempol-treated (Tmp) group and an Ex+Tmp group. The treadmill running (20 m/min, 60 min/day, 6 times/week) was performed to the Ex and the Ex+Tmp groups, and tempol in drinking water (1 mmol/l) was given to the Tmp and the Ex+Tmp groups. H₂O₂ and NO₂/NO₃ (NO_x) in plasma and urine were measured by Amplex Red and Griess reagents. The expression of endothelial and neuronal NOS (eNOS and nNOS) proteins in aorta and kidney sections was analyzed using Western blots.

Results: Ex and tempol attenuated the development of hypertension while decreasing the renal NADPH oxidase activity in SHR. Ex and tempol also upregulated the eNOS and nNOS expressions in the kidneys of SHR with the increased plasma and urinary H₂O₂ and NO_x. Furthermore, the effects of the combination therapy with Ex and tempol on these factors were cumulative in SHR.

Conclusions: These results indicate that tempol enhances the Ex-induced antihypertensive and renal-protective effects through the upregulation of NOS expression and NO production in SHR. H₂O₂ may mediate these effects of the Ex and tempol in SHR.

2.

Severe Chronotropic Incompetence is Associated with Exercise Capacity in Patients with Cardiac Devices

S USAMI, N OZASA, B BINGYUAN, K IKEGAMI, S SHIZUTA, T DOI, H SUGIYAMA, K UESHIMA, T KIMURA

Department of Cardiovascular Medicine, Kyoto University Graduate School of Medicine, Japan

Objectives: The number of patients undergoing cardiac device implantation has been increasing recently due to aging of population. However, factors associated with exercise capacity in these patients have not been fully evaluated. The present study aimed to examine clinical characteristics and cardiopulmonary exercise test (CPX) variables in patients with cardiac devices.

Methods: Using hospital electronic medical record system, we identified 54 patients with cardiac devices and underwent CPX between January 2007 and July 2014. Cardiac devices include permanent pacemakers (N=22), cardiac resynchronization therapy devices with (N=16) or without (N=2) defibrillators, and implantable cardioverter-defibrillators (N=14). Percent heart rate reserve (%HRR) was defined as observed HRR[(peak HR)-(resting HR)]/Predicted HRR[220-(age)-(resting HR)]×100, and patients with % HRR <40 was defined as having severe chronotropic incompetence (CI).

Results: Severe CI was observed in 22 patients of all (40.7%). No significant differences were observed in clinical characteristics between patients with or without severe CI. Compared with patients without severe CI, patients with severe CI had markedly lower peak VO₂ (17.1±5.3 vs 12.7±4.1, p<0.01), and VE/VCO₂ slope (31.1±8.0 vs 38.1±10.4, p<0.01).

Conclusion: Severe CI was observed in two fifth of patients with cardiac devices and it was associated with poor exercise capacity. Future study is required to investigate whether therapeutic interventions to obtain optimal HR response improve exercise capacity in these patients.

ABSTRACTS

3.

Anaerobic Threshold during Cardiopulmonary Exercise Testing Can be Used to Detect the Mitochondrial Function in Patients with Type 2 Diabetes

S SATO,¹ T KATO,² S OTSUKI,¹ S TANAKA,¹ R NOHARA³

¹Osaka Sangyo University, Department of Sport and Health Science; ²Heart Center, Tazuke Kofukai Medical Research Institute Kitano Hospital; ³Hirakata Kousai Hospital, Japan

Purpose: The anaerobic threshold (AT) during cardiopulmonary exercise testing (CPX) possibly reflects the ability of muscle cells to switch metabolism from the oxidation of fatty acids to carbohydrate oxidation. Therefore, we hypothesized that the AT can be used to estimate mitochondrial dysfunction in patients with type 2 diabetes mellitus (T2DM).

Methods: 9 patients with T2DM underwent CPX. Mitochondrial function was assessed using technetium-99m sestamibi (MIBI) imaging of both legs.

Results: MIBI imaging of the leg was positively correlated with the AT ($r=0.67$; $p<0.05$), but not peak oxygen consumption ($r=0.30$; ns).

Conclusions: In patients with T2DM, the AT may reflect the ability of the mitochondria to shift fuel selection.

4.

Determinant Factors of Pre Hospital Delay in Acute Coronary Syndrome (ACS) Patients: A UST Hospital Experience

BJC QUITO, C NUEVO, R NARANJILLA

UST Hospital, Philippine Heart Center, Philippines

Objective: The objective of the study was to determine factors that may contribute to pre hospital delay in the treatment of ACS patients of the University of Santo Tomas Hospital (USTH) in Manila, Philippines.

Methods: A prospective, *cross sectional* study of 66 acute coronary syndrome patients admitted at the USTH in a six month period was done. The study population consisted of 23 ST segment myocardial infarction, 23 non ST segment myocardial infarction, and 20 unstable angina patients. Patients included were those greater than 18 years of age, angina or angina equivalent with onset outside the hospital & those who fulfilled the criteria for acute coronary syndrome. Those who experienced acute myocardial infarction within the hospital stay were excluded. Pre hospital delay was defined as greater than 1 hour from symptom onset to first hospital presentation. Information were gathered through patient interview and review of records. Analysis of data was done with an alpha pegged at the 0.05 level of confidence. The logistic regression analysis was used to correlate the outcome of a categorical dependent variable based on one or more predictor values.

Results: The mean age was 66 years with a predominance of males (55%). The mean prehospital time was at 5.42 hours. Only 47% reached the hospital in less than 1 hour. Factors predictive for pre hospital delay were female sex, low educational attainment, and prior consult with a physician. Hypertension, diabetes, prior angina, prior MI, heart failure, stroke, being alone, consult with a family member, adequate knowledge of ACS symptoms, and the presence of traffic were not shown to be predictive of pre hospital delay.

Conclusion: Female sex, a low educational attainment, and consult with a physician prior to hospital presentation were predictive of pre hospital delay. More studies should be undertaken to obtain an accurate Filipino scenario in both urban and rural setting.

5.

Cross Sectional Study Examining the Prevalence and Severity of Coronary Artery Disease Among Asymptomatic Patients Undergoing Coronary Computed Tomography Angiography in a Cardiac Imaging Centre

CTH CHOW, AWS LEUNG, GYK MAK, JTH WONG

PRO-CARDIO Heart Disease & Stroke Prevention Centre, Hong Kong

Objectives: The purpose of this study was to describe the prevalence and severity of coronary artery disease (CAD) in relation to prognosis in asymptomatic patients without coronary artery calcification (CAC) undergoing coronary computed tomography angiography (CCTA).

Background: The frequency and clinical relevance of CAD in patients without CAC are unclear.

Methods: We identified 196 asymptomatic patients without CAD who underwent concomitant CCTA and CAC scoring. CAD was assessed as <25%, 26-50%, and \geq 51% stenosis.

Results: 144 patients were assessed with CAD. Mean age was 65 years, 69% were men, and 71.5, 73.6, 21.5, 13.8% had hypertension, hyperlipidaemia, type 2 diabetes mellitus, and smoking respectively. 78.4% had a CAC score of 0. 26.3, 27.7 and 45.8% had 1, 2, and 3 or more vessels with stenosis respectively. Among patients with a CAC score of 0, 34.5% had no CAD, 23.8% had non-obstructive stenosis, 32.7% had moderate stenosis and 8% had \geq 50% stenosis on CCTA. Association between number of vessels with stenosis, overall severity, risk factors in subjects with Calcium Score of zero were evaluated using Pearson chi-square test. Significant relationship between number of vessels with stenosis and overall

severity (chi-square: 135.935, $p<0.001$) and between number of vessels with stenosis and risk factors (chi-square: 28.675, $p<0.05$) were found.

Conclusions: In asymptomatic patients with a CAC score of 0, obstructive CAD is possible and is associated with increased cardiovascular events. CAC scoring did not add incremental prognostic information to CCTA.

ABSTRACTS

ABSTRACT SYMPOSIUM

6.

Effects of the Short Course of Thailand Cardiac Rehabilitation Model of Care on Exercise Capacity and Quality of Life Among Coronary Artery Disease Patients, Comparing with Australia Cardiac Rehabilitation Model of Care – A Preliminary Report

T LAPRATTANAGUL, P RANPRAI, K TUPIPAK, M CHANDARAGGA, S PHASUK, P PROMKWANCHIT, R NARAGATE, A JUNPOLDEE, W JUTAPAKDEEKUL, S SONGSEMPONG

Rehabilitation Department, Bumrungrad International Hospital, Thailand

Background: The effects of 4-week cardiac rehabilitation program have not been studied in Thailand. There were full of data supporting the efficacy of 12-week Australia cardiac rehabilitation model of care which should be compared with Thailand model.

Objectives: To explore effects of the 4-week of cardiac rehabilitation program on exercise capacity and quality of life in the low to moderate risk group of patients and compare with Australia cardiac rehabilitation model of care.

Methods: Retrospective review of low to moderate risk patients attending phase II program at Bumrungrad International hospital in 2013. The six minute walk test, exercise duration and SF12 quality of life were compared between the first and 4-week sessions.

Results: There were 17 patients, including three low risk and 14 moderate risk patients. The mean of six minute walk distance increased significantly (>60 meters) from 441 (250-650) meters to 525 (300-725) meters between the first and the 4-week sessions. After four weeks, all patients could exercise at least 30 minutes but SF12 quality of life score did not increased. The Australia model, including low to moderate intensity exercise and community based 12-week program, was shown to be cost effective and safe. Therefore, this exercise intensity and community based model were suggested to use in Thailand.

Conclusions: There was significant improvement of six minute walk distance and exercise duration without the change of SF12 after four weeks of cardiac rehabilitation program. Community-based and low to moderate intensity exercise were suggested following the Australia model of care.

7.

Baseline Exercise Tolerance for Adult Patients Undergoing Cardiac Rehabilitation in Singapore

Z LIN,¹ JC ALLEN,² P TING,³ MBI JION,³ TS YAW³

¹Yong Loo Lin School of Medicine, National University of Singapore; ²Office of Clinical Sciences – Centre for Quantitative Medicine, Duke-NUS Graduate Medical School; ³Department of Cardiology, National Heart Centre Singapore, Singapore

Background: Exercise tolerance is a good predictor of cardiovascular and overall health. VO2 max is the maximum amount of oxygen consumed by the body during maximal exercise and is the best predictor of exercise tolerance. The higher the VO2 max, the better the exercise tolerance.

Objective: The objective of the study was to establish a baseline distribution for exercise tolerance in Singapore cardiac patients. Maximal oxygen consumption (VO2 max) will be used as a measure of exercise tolerance and is intended to provide a VO2 max reference standard for future comparisons to other Asian or overseas institutions engaged in cardiac rehabilitation.

Methods: This was a retrospective study in which medical records were examined for 325 patients >21 years old (excluding congenital patients) who had undergone cardiopulmonary exercise testing at the National Heart Centre Singapore from 2007 to 2013. VO2 max was determined by direct measurement during treadmill exercise, compliant with a Ramp protocol of 3.3mph@2% increment/min.

Results: The baseline mean VO2 max (ml/min/kg) is 26.1 (±8.28) for adult patients undergoing cardiac rehabilitation in Singapore. Mean (SD) VO2 max was significantly different (p<0.0001) for males (27.5) and females (22.7). Min, P10, P25, P50, P75, P90 and max VO2 for males was 7, 16, 21, 28, 33, 39 and 52, respectively; the same percentiles for females were 7, 14,

19, 22, 27, 30 and 38. Age and BMI were also significantly associated with VO2 max (p<0.0001).

Conclusions: Baseline VO2 max serves as a good objective measure of exercise tolerance for patients participating in a cardiac rehabilitation program. Characterizing norms for Singapore patients will provide useful Asian reference norms for comparison with other countries.

ABSTRACTS

8.

Evaluate the Referral Rate of Patients with Acute Myocardial Infarction to Phase I Cardiac Rehabilitation in a Regional Hospital

YMW MAK,³ CSS YUE,³ CM YEUNG,¹ YM KEUNG,¹ KF CHAN,² HK LAU,² KF LEUNG³

¹Cardiac Specialty Ward; ²Coronary Care Unit; ³Division of Cardiology, Department of Medicine and Geriatrics, United Christian Hospital, Hong Kong

Objective: In United Christian Hospital (UCH), cardiac rehabilitation (CR) service was led by cardiologists. Patients who were admitted to coronary care unit or cardiac specialty ward would be screened and referred to phase I cardiac rehabilitation program (CRP). Referrals to CRP were supported by cardiac nurses. The purpose of this study was to evaluate the referral rate of patients with acute myocardial infarction (AMI) managed by cardiac team to phase I CRP in this regional hospital.

Methods: Data of patients with emergency admission to UCH with principal diagnosis of AMI from January to December 2013 were retrieved from Clinical Data Analysis and Reporting System (CDARS). All patients that were ever treated in coronary care unit or cardiac specialty ward were reviewed whether they were referred to phase I CRP. The reasons of not being referred were also studied.

Results: In 2013, there were 695 emergency admissions into UCH with principal diagnosis of AMI. Among those admissions, 396 patients (57%) were managed by cardiac team. Their average length of hospital stay was 6 days. The referral rate to phase I CRP was 74% (292 patients, 210 males, mean age 67±13 years), with 41% of referrals were made within the first two

days of admission (median Day 3). Reasons for remaining 104 patients not referred to phase I CRP were reviewed. Out of 104 patients, 46 patients (44%) were referred by cardiologists for mobilization exercise instead of CR.

Reasons for not referred to Phase I CRP (N=104)	Number of patients	Patients for mobilization exercise only
Death	32	6
Significant co-morbidities	22	20
Lack of referral	15	0
Physically unfit	13	9
Medically unfit	8	8
Discharge against medical advice	5	0
Palliative care	3	3
For emergency interventions in other hospital	3	0
Referred outpatient CR	2	0
Request transfer to other hospital for treatment	1	0
Total	104	46 (44%)

Conclusion: Fifty-seven percent of patients with principal diagnosis of acute myocardial infarction were managed by cardiac team. Under cardiac team management, most patients were screened for eligibility to be referred to cardiac rehabilitation. Among them, 74% of patients were referred to phase I cardiac rehabilitation and 44% of 104 patients not referred to phase I CRP were referred for early mobilization.

9.

Evaluation for Correlation of Expired Volume Per Minute and Improvement of Exercise Tolerance Capacity by Cardiac Rehabilitation

A KITAKOSHI,¹ S ITO,² K ISHIYAMA,³ A KIKUCHI,¹ M YAMAGISHI,¹ R SATO,¹ K KATAGIRI,¹ T TAGUCHI¹

¹Department of Rehabilitation; ²Department of Cardiology; ³Department of Clinical Laboratory, Nishitokyo Chuo General Hospital, Japan

Purpose: A purpose of this study to evaluate whether expired volume per minute (VE) is a predict factor in improvement of exercise tolerance capacity or not by using cardiopulmonary exercise (CPX). And we evaluate whether a change of respiratory condition by the data of brain natriuretic peptide (BNP) influences a VE as a predict factor in it.

Subject and Methods: We retrospectively analyzed 61 ischemic heart disease patients treated with percutaneous coronary intervention (PCI) and performed with CPX from May 2013 through April 2014. Cardiac rehabilitation (CR) was performed on 43 patients in hospital after PCI and on 18 patients from in hospital to 6 months after PCI. In two groups, we evaluated the correlation of VE and metabolic equivalents (METs), consumption of oxygen per minute (VO₂), production of carbon dioxide per minute (VCO₂) respectively to measure anaerobic threshold (AT) by using Powermets AT1100A (Anima Corp, Tokyo, Japan). We analyzed 50 of 61 patients that we obtained BNP data from (cut off point: 80 pg/ml). We evaluated the respiratory rate (RR), tidal volume (TV) and VE of high level BNP group (80 pg/ml over) and low level BNP group (80 pg/ml under) at the rest and the AT.

Results: VE was positively correlated with METs, VO₂ and VCO₂. In high level BNP group, RR and VE increased significantly by frequent breathing, however TV was decreased significantly at the AT.

Conclusions: We suggest that VE is a good predict factor in improvement of exercise tolerance capacity by CPX. However, in high level BNP group, not only VE but also TV is necessary to estimate the improvement of exercise tolerance capacity.

ABSTRACTS

10.

Analysis of Nursing Researches about Cardiac Rehabilitation in Turkey

N TOSUN

Gülhane Military Medical Academy, School of Nursing, Department of Medical Nursing, Turkey

Objectives: In this study, nursing thesis and other nursing researches conducted on cardiac rehabilitation in Turkey were examined.

Methods: The nursing thesis that performed and approved in the last 15 years were scanned in the database of Turkish Council of Higher Education Thesis Center. The other nursing researches were searched by using Turkish Medical Database. Last of all, 41 nursing thesis (12 doctoral and 29 master's thesis) and 16 published nursing researches on cardiac rehabilitation were analyzed.

Results: Nine of doctoral thesis were experimental and others were descriptive study. Thesis topics generally focused on the effect of planned patient education on quality of life, self-care agency, patient compliance and symptom control. There were two studies that used nursing care models and two studies on scale adaptation. Seventeen of 29 master's thesis were descriptive study. The most studied issues were quality of life, patient compliance, self-care agency and symptom assessment. The most of other published nursing researches on cardiac rehabilitation were descriptive study. The subjects of these researches were found to be generally related to quality of life, secondary prevention, educational needs and healthy lifestyle behaviors of the patients.

Conclusion: According to these results, it was seen that most of nursing researches on cardiac rehabilitation were descriptive study which reveal the existing problems and needs. Although they were important and quality researches, more experimental studies are needed. Additionally, further studies should be carried out in collaboration with the health care team on cardiac rehabilitation.

11.

Cardiac Rehabilitation Participation and Health-Related Quality of Life Following Primary Percutaneous Coronary Intervention for ST-Elevation myocardial infarction: An Age Comparison

SY SOO HOO, R GALLAGHER, D ELLIOTT

University of Technology and Royal North Shore Hospital, Australia

Objectives: We compared participation in a cardiac rehabilitation program and health-related quality of life (HRQOL) following primary percutaneous coronary intervention (PPCI) for ST-elevation myocardial infarction (STEMI) by age ≥ 60 years and < 60 years.

Methods: A descriptive comparative design was used to evaluate cardiac rehabilitation (CR) and HRQOL for people ≥ 60 vs < 60 years with measures taken at 1 and 6 months after PPCI (n=246). Consecutive STEMI patients from a large metropolitan hospital were interviewed by telephone using self-report CR participation and response and the Seattle Angina Questionnaire (SAQ) and the SF-12 for HRQOL.

Results: Mean age of the overall sample was 64 years \pm SD13.16, the majority were male (78.9%). CR participation was 32.5% for ≥ 60 years and 42.7% for < 60 years at 1 month (p=0.13) and at 6 months, 56.6% for ≥ 60 years vs 56.8% for < 60 years (p=1.00); most attended up to 5 sessions. People < 60 years were more likely to rate CR as helpful at each time point (13.5% vs 7.6%, p=0.18) and (22.2% vs 16.4%, p=0.29). People ≥ 60 years experienced less impact on HRQOL from angina frequency (SAQ 95.2 vs 87.4, p=0.02) but worse overall physical function (SF-12 PCS subscale 40.1 vs 43.7, p=0.05) at 1 month and at 6 months had significantly better overall HRQOL (SAQ 90.5 vs 85.5, p=0.01) and mental health (SF-12 MCS 55.7 vs 52.6, p=0.01) but worse physical function (SAQ 93.2 vs 96.2, p=0.01).

Conclusion: Older and younger people had similar participation in CR which increased over time during PPCI recovery. However, differences occurred for HRQOL aspects of angina frequency, physical function and mental health identifying areas for further research. Strategies for evaluating health status, monitoring CR participation and planning of appropriate CR programs for older PPCI patients are needed for an ageing population.

ABSTRACTS

12.

Comparison of Pulmonary Function and Exercise Capacity in Minimally Invasive Mitral Valve Surgery Patients With and Without Atrial Fibrillation

Y WANG,¹ L GUO,² X ZHANG,² G ZHANG,² Z LIU,² Q LIANG¹

¹Department of Rehabilitation Medicine, the First Affiliated Hospital, Sun Yat-sen University (SYSU); ²Cardiac Rehabilitation Section, Guangdong Cardiovascular Institute, China

Objectives: To compare rest pulmonary function and exercise capacity in post minimally invasive heart mitral surgery patients with atrial fibrillation (Af) and without Af.

Methods: Nineteen patients undergoing minimally invasive mitral valve surgery without Af (MIMVSnoAf, 9 females, 10 males, age: 49.79±11.16 years) were matched to nineteen MIMVS subjects diagnosed with Af (MIMVS/Af, 10 females, 9 males, age: 54.05±9.10 years) according to age, gender, body mass index (BMI) and smoking status. All subjects underwent pulmonary function test (PFT) and symptom-limited cardiopulmonary exercise testing (CPET) in Guangdong Cardiovascular Institute from May 21st, 2014 to August 30th, 2014. A set of variables, % predicted forced vital capacity (% FVC), % predicted forced expiration volume in one second (% FEV1), FEV1/FVC ratio, peak oxygen consumption (peak VO₂), % predicted peak VO₂ (% peak VO₂), ventilation to carbon dioxide ratio nadir (VE/VCO₂ nadir) and VE/VCO₂ slope was obtained from PFT and CPET. All data were computed with SPSS windows 17.0.

Results: Comparing MIMVSnoAf patients with MIMVS/Af patients revealed that exercise capacity, as measured by peak VO₂ (21.71±4.40 ml/kg/min vs 17.49±2.94 ml/kg/min, *p*=0.001), % peak VO₂ (71.89±13.06% vs 60.74±10.08%, *p*=0.006), was significantly lower in MIMVS/Af. Pulmonary function as measured by % FVC, % FEV1, and FEV1/FVC ratio (MIMVSnoAf: 80.63±13.72%, 79.42±5.98%, 77.49±18.99%; MIMVS/Af: 77.05±12.81%, 75.26±12.22%, 80.63±6.88% respectively) was not significantly different between two groups. In addition, there was no significant difference of ventilation efficiency, indicated by VE/VCO₂ nadir (29.78±5.23 vs 31.81±4.58) and VE/VCO₂ slope (29.24±6.75 vs 31.07±5.26), between these two groups.

Conclusion: MIMVS patients with Af have significantly impaired CPET response with lower exercise capacity, but the underlying mechanism is needed to be investigated. This finding indicates that it is necessary to consider the influence of Af when prescribes the rehabilitation exercise training for MIMVS patients to increase exercise capacity.

13.

Cardiac Rehabilitation Referral Among Inpatients with Acute Myocardial Infarction

SF CHEN, SY CHEN, JJ HWANG, C LAN, YS CHEN, CM LEE, JS LAI
Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital and National Taiwan University College of Medicine; Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, Hsin-Chu Branch, Taiwan

Objectives: Cardiac rehabilitation (CR) has been shown to be effective and beneficial in patients with acute myocardial infarction (AMI) and is recommended according to current practice guidelines. Inpatient (phase I) CR referral for patients after AMI in the acute care setting is important to increase the referral and participation rates of outpatient CR. In our hospital we incorporated a phase I CR program with a mandatory referral system inside a newly setup cardiovascular center since 2011. The aim of this study is to investigate the referral rates of phase I CR among inpatients with AMI before and after the establishment of the new cardiovascular center and referral system.

Methods: We retrospectively reviewed the medical records of patients who were discharged from National Taiwan University Hospital between January 1, 2009 and December 31, 2013 with the diagnosis of AMI. The referral rates of phase I CR were calculated as the proportions of CR referrals in patients with non-fatal AMI at discharge. Cochran-Armitage test was applied to analyze the trend for CR referral rates of the study period.

Results: A total of 2,297 patients with non-fatal AMI (age 65±14 year, male 76%) were identified and recruited in this analysis. Among them, 1,338 (58.2%) patients were ever referred for CR during the hospitalization. The CR referral rates significantly increased from 19.0% in 2009 and 43.9% in 2010, to 72.5% in 2011, 76.0% in 2012, and 78.2% in 2013 (*p*<0.001 in trend analysis).

Conclusion: The integration of phase I CR into the cardiovascular center with a mandatory referral system may significantly increase the CR referral rates for inpatients with AMI.

ABSTRACTS

14.

Cardiac Rehabilitation in Private Practice

AWS LEUNG, GYK MAK, CTH CHOW, JTH WONG, SSW LAM,
TMF LIU, DWH LUI
PRO-CARDIO Heart Disease & Stroke Prevention Centre, Hong Kong

The Cardiac Rehabilitation program in PRO-CARDIO Heart Disease & Stroke Prevention Centre is an 8-weeks service provided by nurse, dietitian and certified physical trainer. It is recommended for patients with heart attack, heart failure or after interventional procedures. The program covers the topics of drug knowledge, nutrition therapy, psycho-social counselling, smoke cessation and exercise training. Exercise capacity is assessed by treadmill test and Cardiologist prescribes the exercise therapy based on the treadmill test result. From October 2012 to August 2014, there were 58 patients (54 males and 4 females) enrolled and completed the program, age from 32 to 77. Among the patients, 48 of them were post-PCI (including 2 AMI) cases, 5 heart failure and 5 coronary arteries diseases. The progress of patients was evaluated by the 6 min walk and the Quality of Life (QoL) questionnaire. Significant decrease in body weight (Pre: 69.3±9.35; Post: 68.44±8.86; $p<0.05$, two-tailed paired t-tests), waist circumference (Pre: 92±8.06; Post: 89.83±7.27; $p<0.001$, two-tailed paired t-tests), body-mass index (Pre: 24.74±3; Post: 24.42±2.72; $p<0.05$, two-tailed paired t-tests), and body fat (Pre: 24.58±6.56; Post: 22.57±5.94; $p<0.001$, two-tailed paired t-tests) were observed in subjects after 8 weeks of Cardiac Rehabilitation Program, together with a significant improvement in 6 minute walking (Pre: 523.1±83.26; Post: 577.53±92.48; $p<0.001$, two-tailed paired t-tests) and QoL questionnaire.

BEST ABSTRACT PRESENTATION

15.

Protective Effect of Coffee Against Coronary Atherosclerosis in Periodontitis Rat Model

IDA SUSILAWATI,¹ SURYONO,² T ERMAWATI¹

¹Biomedic Department Dentistry Faculty University of Jember; ²Department of Cardiology Faculty of Medicine University of Jember, Indonesia

Objectives: The objective of this study was to conduct an *in vivo* experiment to prove the effect of coffee consumption to reduce coronary atherosclerosis in periodontitis rat model.

Methods: Twenty one rats (*Rattus norvegicus*) were divided into three groups, i. e. 1) periodontitis, 2) periodontitis + coffee, 3) control group. Periodontitis rat model was created by means of inserting wire ligature around left molar mandibular tooth followed by injecting periodontitis bacteria *Porphyromonas gingivalis* in buccal aspect of its teeth twice a week. One dose of *decocta* coffee (representing one cup) was fed once per day by stomach sondation. The experiment was conducted for 35 days. All rats were fed with normocholesterol standard diet. On the 36th day rats were sacrificed. Their hearts which contained coronary arteries were removed and prepared for cross sectional specimens for histopathologic and immunohistopathologic examination. Coronary atherosclerosis markers were diffuse intimal thickening (DIT), lipids deposit, foam cell, atheroma, and scavenger receptor (Sc-R) expression.

Results: Rats that consumed coffee demonstrated thinner intima ($p<0.05$) and exhibited more symmetric intimal thickness. Fewer lipid deposit and smaller number of foam cell, atheroma, Sc-R expression were identified in coffee group compared to periodontitis group.

Conclusions: Coffee consumption protected coronary arteries from atherosclerosis in periodontitis rat model. Further studies are needed to elucidate the protective effect of coffee against atherosclerosis.

ABSTRACTS

16.

The Increased Visceral Fat Thickness In NAFLD Patients Enhances The Risk Of Coronary Artery Stenosis

P CAO,¹ H CAI,¹ Y ZHENG,¹ D HU²

¹The First Hospital of Jilin University; ²Peking University People's Hospital, China

Objectives: Non alcoholic fatty liver disease (NAFLD) is an independent risk factor of cardiovascular disease (CVD). In this research, we want exploring the relationship between NAFLD, visceral fat thickness and the severity of coronary artery disease.

Methods: 1) The relationship between NAFLD, visceral fat thickness and severity of coronary heart disease(323 people). 2) The correlation between severe NAFLD and visceral fat thickness in the severe stenosis of coronary heart disease (197 people).

Results: 1) The proportion of NAFLD was significantly increased by 16% and 19% in different coronary artery stenosis than in the normal group. Along with the increasing degree of coronary artery stenosis, the total visceral fat thickness increase, especially the epicardial layer (the moderate stenosis increased by 23% and the severe stenosis increased by 54% than without stenosis). 2) In the severe coronary artery stenosis group, the patients were divided into NAFLD group and non NAFLD group. compared to non NAFLD group, the epicardial, liver, renal, before the perirenal fat and the coronary score significantly increased in the NAFLD group (10%, 22%, 32%, 36% and 27%, respectively). Along with the increase of coronary score, the epicardial fat thickness was increased significantly (16% and 34%, respectively) in the non NAFLD group; but the epicardial thickness of the NAFLD group was slightly increased (8% and 8%, respectively), there was no significant difference among the subgroups. Furthermore, not only in

NAFLD group but also in non NAFLD group, the visceral fat thickness of the other three sections have no significant change among the three subgroups.

Conclusion: Both the NAFLD and the epicardial adipose layer thickening can increase the risk of coronary artery stenosis. In the patients with the severe coronary artery stenosis, the NAFLD patients are more likely to increase the accumulation of the visceral fat thickness than the non NAFLD patients. Under the same thickness of the epicardium, the degree of coronary artery lesions is lighter in the NAFLD patients; it may be related to AMPK which may have the myocardial protective effects.

17.

Increased Advanced Glycation End-Products Accelerate the Progression of Left Ventricular Hypertrophy Under the Condition of Elevated Oxidative Stress in Non-Diabetic Patients With Hypertension

A AOYAMA,¹ T MASUDA,² M OGURA,² R SHIMIZU,¹ M KATO,¹ D KAMEKAWA,¹ Y KAMADA,¹ S TANAKA,¹ K KAMIYA,³ N HAMAZAKI,^{1,3} E MAEKAWA,⁴ M YAMAOKA-TOJO,² J AKO⁴

¹Kitasato University Graduate School of Medical Sciences; ²Department of Rehabilitation, Kitasato University School of Allied Health Sciences; ³Rehabilitation Room, Kitasato University Hospital; ⁴Department of Cardiovascular Medicine, Kitasato University School of Medicine, Sagamiara, Japan

Objectives: Elevated oxidative stress or hyperglycemia has been reported to promote the production of advanced glycation end-products (AGEs) in patients with hypertension (HT). Some studies have documented that AGEs enhance left ventricular hypertrophy (LVH) in patients with diabetes mellitus. However, the relationship between AGEs and LVH is not thoroughly evaluated in non-diabetic patients with HT. The aim of this study was to investigate the effect of AGEs on LVH in them.

Methods: Sixty non-diabetic patients with HT aged 65±9 years were prospectively followed up for a year, whose blood pressure was controlled below 140/90 mmHg. We assessed their glucose and lipid metabolism and neurohumoral factors as clinical characteristics. We measured serum malondialdehyde-modified LDL-cholesterol (MDA-LDL) and plasma pentosidine as parameters of oxidative stress and AGEs, respectively. Homeostasis model assessment ratio (HOMA-R) and left ventricular mass index (LVMI) were assessed as parameters of insulin resistance and LVH,

respectively. All parameters were assessed before and after one-year observation period. We examined the change from baseline to the value measured after the observation period in each parameter (Δ MDA-LDL, Δ pentosidine and Δ LVMI). We divided patients into two groups based on Δ pentosidine: increased AGEs group and decreased AGEs group. We compared baseline values between the two groups and analyzed the relationships among Δ MDA-LDL, Δ pentosidine and Δ LVMI. Stepwise multiple regression analysis was used to detect the predictors for the LVH progression after one year.

Results: There were no significant differences in clinical characteristics between the two groups. Δ LVMI were significantly higher in the increased AGEs group than in the decreased AGEs group ($P<0.05$). Δ pentosidine was positively correlated with Δ MDA-LDL and Δ LVMI ($r=0.39$, $P<0.05$ and $r=0.52$, $P<0.05$, respectively). Multiple regression analysis detected pentosidine and HOMA-R as significant independent predictors for the LVH progression ($\beta=0.407$, $P=0.005$ and $\beta=0.309$, $P=0.028$, respectively) ($R^2=0.315$).

Conclusion: Increased AGEs accelerated the LVH progression under the condition of elevated oxidative stress in non-diabetic patients with HT.

ABSTRACTS

18.

Effects of Cardiac Rehabilitation on the Occurrence of Complications among Patients with Myocardial Infarction

CM WANG, SY CHEN, CW CHIEN

Department of Physical Medicine and Rehabilitation, Keelung Hospital, Ministry of Health and Welfare, Taiwan

Objectives: Many recent studies have suggested that exercise-based cardiac rehabilitation (CR) resulted in reduced mortality and favorable but non-significant trends in nonfatal acute myocardial infarction (AMI) and revascularization procedures among patients with ischemic heart diseases (IHD). Many of the complications associated with IHD endanger patient health, not only increasing the number of hospitalization days but also increasing the consumption of medical resources and medical expenses. The aim of this study was to investigate the effect of CR on the occurrence of IHD-associated complications among patients with AMI.

Methods: This is a nationwide population-based study in Taiwan. Using the 1997-2010 National Health Insurance Research Database of the millions of people, the data of patients with a first occurrence of AMI from 2000 to 2005 were identified. We categorized IHD-associated complications as ischemic, mechanical, arrhythmic, embolic, or inflammatory. The group-based trajectory model was used to analyze the frequency of the IHD-associated complications that occurred within 1 year after onset among the study subjects. Trends over time were analyzed using generalized estimating equations based on different control variables, and the adjusted odds ratio for each variable was calculated.

Results: This study recruited 3,685 patients with first AMI. The proportion of CR participation within the first 6 months after AMI onset was 20% (n=737). The patients who ever received CR had significantly fewer occurrence of IHD-associated complications (adjusted odds ratio 0.90, range 0.87-0.93, p<0.001). In addition, the frequency of complications also increased with advanced age (p<0.05).

Conclusion: The participation of CR reduces the occurrence of IHD-associated complications among patients with AMI within one year of onset.

19.

Out-of-Hospital Cardiac Rehabilitation Reduces Hospital Readmission Rates for Patients with Heart Disease

S WATANABE,¹ M YAGI,¹ Y KAIHOKO,¹ S KOYAMA,² K ENDO,¹ N OSADA,³ O TANAKA,³ A TOKUMARU,³ K MIZUKOSHI,³ K YAMAZAKI,⁴ M KASAHARA,⁵ K MISU³

¹Department of Rehabilitation Medicine, St. Marianna University Toyoko Hospital; ²Department of Rehabilitation Medicine, St. Marianna University School of Medicine Hospital; ³Department of Cardiology, St. Marianna University Toyoko Hospital; ⁴Department of Cardiology, St. Marianna University School of Medicine; and ⁵Department of Cardiology, St. Marianna University Yokohama City Seibu Hospital, Japan

Objectives: The present study aimed to assess the long-term effect of an out-of-hospital cardiac rehabilitation (CR) program to reduce readmission rates and improve functional capacity.

Methods: We retrospectively analyzed 250 consecutive patients with angina (n=39), myocardial infarction (n=116), and heart failure (n=95). All patients participated in the CR program during their hospitalization (phase I). We then divided the patients into the intervention (n=151) or control group (n=99). The intervention group participated in an out-of-hospital CR program (phase II-III) continuously after discharge. The control group did not participate in the program. The primary outcome was readmission rate due to cardiac events. We also compared changes in the functional capacity of both groups at discharge (baseline) and 6 and 12 months after discharge.

Results: Kaplan-Meier survival analysis showed that patients in the intervention group were less likely to be readmitted due to cardiac events

during the 4.5-year observation period (log-rank test, 19 vs 44%, P=0.0006). In a Cox proportional hazard regression modes analysis, out-of-hospital CR participation (hazard ratio, 0.892; 95% confidence interval: 1.310-4.545; P=0.005) and age (0.035; 1.007-1.065; P=0.014) were independently associated with readmission due to cardiac events, and out-of-hospital CR program participation was the strongest factor for predicting readmission. In a comparison between baseline, 6, and 12 months after discharge, HDL (baseline: 43, 6 months: 55, 12 months: 55 mg/dl), BNP (181, 107, 94 pg/ml), and LVEF (55, 59, 61%) improved in the intervention group, but only HDL (46, 58, 55 mg/dl) improved in the control group.

Conclusion: This study suggests that participation in an out-of-hospital CR program may reduce readmission rates and improve the functional capacity of patients with heart disease.

ABSTRACTS

20.

Muscle Weakness Induces an Inappropriate Elevation of Arterial Stiffness by Stimulating Sympathetic Activity During Exercise in Patients With Life-related Diseases

Y KAMADA,^{1,2} T MASUDA,¹ M OGURA,¹ D KAMEKAWA,¹ S TANAKA,¹ A AOYAMA,¹ Y ITOH,² I MORIGUCHI,² N KOBAYASHI,² M OKUBO,² J AKO³

¹Kitasato University, Graduate School of Medical Sciences; ²Sobudai Nieren Clinic; ³Kitasato University School of Medicine, Department of Cardio-Angiology, Japan

Objectives: Life-related diseases such as hypertension (HT), dyslipidemia (DL) and diabetes mellitus (DM), characterized by autonomic imbalance, are known to induce an inappropriate elevation of arterial stiffness resulting in the onset of cardiovascular disease. On the other hand, decreased muscle strength stimulates muscle sympathetic activity during exercise even at low- or moderate-intensity. We hypothesized that muscle weakness induced an inappropriate elevation of arterial stiffness by autonomic imbalance even in physical activities of daily life in patients with life-related diseases. The aim of this study was to investigate the relationships among muscle strength, autonomic activity during exercise and functional arterial stiffness in these patients.

Methods: Eighty-seven patients (HT, n=50; DL, n=55; DM, n=27) aged 67±8 years, 43 males and 44 females, participated in this study. We measured knee extension muscle strength. Patients performed a treadmill exercise test to examine heart rate recovery (HRR) as a parasympathetic activity. We also measured plasma noradrenalin (NA) and brachial-ankle pulse wave velocity (PWV) before and after a cycle ergometer exercise test performed at moderate-intensity and assessed the changes from baseline NA and PWV to those after

the exercise (Δ NA and Δ PWV, respectively). Δ NA and Δ PWV were used as parameters of sympathetic activity and functional arterial stiffness, respectively. We analyzed the relationships among muscle strength, HRR, Δ NA and Δ PWV using Pearson's correlation coefficient.

Results: Muscle strength was negatively correlated with Δ NA ($r=-0.23$, $P<0.05$) and Δ PWV ($r=-0.24$, $P<0.05$), respectively. No significant relationship was observed between muscle strength and HRR.

Conclusion: Muscle weakness induced an inappropriate elevation of arterial stiffness by stimulating sympathetic activity during exercise in patients with life-related diseases.

BREAKFAST ABSTRACT SESSION II

21.

Survival, Morbidity, and Quality of Life Improvement after Novel Noninvasive SHS Therapy in Chronic Heart Failure

R SANE,¹ M HANCHATE²

¹Cardiology Department, Madhavbuag Cardiac Rehabilitation Center; ²Research Department, Madhavbuag Cardiac Rehabilitation Center, India

Introduction: Nearly 18 million people are affected by chronic heart failure (CHF) in India. Return to pre-morbid lifestyle is major goal. Digoxin found to improve morbidity but not mortality. Its need of hour to search for an alternative nonpharmacological therapy for symptomatic heart patients to improve their quality of life. Novel noninvasive 6 days "*Sampurna Hridhay Shuddhikaran (SHS)*" herbal procedure was found effective in improving effort tolerance of heart failure patients in previous studies.

Objective: To assess survival, morbidity and quality of life of CHF patients after 3 years of SHS intervention.

Methodology: 690 CHF patients of NYHA class II and III grade of symptoms during admission were contacted after 3 years. Five hundred and forty-two agreed to participate in the trial. Mortality, Morbidity and re-hospitalization rates was assessed using pretested questionnaire among patients admitted in Madhavbuag in the year 2010 and 2011. Daily for 6 days patient underwent SHS therapy during admission. SHS is a novel noninvasive, nonpharmacological 90 minutes procedure includes Snehana, Swedan, Hridhara and basti. 6 MWT and METs on stress test was measured using pre & post intervention patient's data from hospitals records.

Results: Total 542 patients (428 Males and 114 females) of mean age and BMI 57 & 23 Kg/m² were participated in the study. Symptomatic improvement from NYHA class (II/III) to class-I was observed in 72% of patients. Morbidity 12.92%, mortality 14.76%, rehospitalization 9.4% and emergency admission 66%. Among total died patients 42.5% were in the age group of 60-69 years & 83% had IHD. Another study with enalapril shows mortality of 35.2% after 40 months of follow up. Secondary data analysis also shows mean improvement after 6 days SHS therapy was 65 meters in 6 MWT ($P<0.001$) and 1.6 METs on stress test ($P<0.001$).

Conclusion: SHS therapy gives long term effect associated with reduced mortality, morbidity and improved quality of life in CHF. Further follow up study using objective parameters are needed. Effort tolerance was significantly improved in 6 days SHS treatment. SHS is effective alternative or additional therapies to modern conventional therapy.

ABSTRACTS

22.

Hospital @Home Care for Heart Failure Patients: Virtual Ward in Princess Margaret Hospital

D SUEN,¹ CB LAW,² KK SO,² NY CHAN,² MWM CHAN,¹ LW HEUNG¹
¹Community Nursing Service; ²Department of Medicine & Geriatrics, Princess Margaret Hospital, Hong Kong

Introduction: Princess Margaret Hospital Virtual Ward (VW) is an innovative hospital-at-home service. VW clinical management team, composing of professionals from community nursing, medicine, emergency medicine and allied health, provides multidisciplinary service to high risk patients.

Objectives: To reduce avoidable hospitalization, engage patients and family as active partners in care, and establish an effective hospital-level care model in community

Methodology: The service was offered to patients with Hospital Admission Risk Reduction Programme for the Elderly Score (HARRPE) ≥ 0.4 and/or with moderate to end stage chronic diseases such as NYHA Class III or IV heart failure (HF). The VW services included (1) immediately home visit after patients' discharge; (2) protocol-driven investigations and medication adjustment; (3) advanced nursing practices like subcutaneous hydration; (4) patient/carer empowerment on symptoms control; (5) cardiac fast-track clinic and/or clinical admission for specialist consultation; (6) Ad hoc nursing visit and telephone hotline; (7) referrals to NGO and allied health professionals for maintenance therapy and psycho-social support; (8) daily ward round and weekly case conference to facilitate continuous quality improvement.

Results: From October 2011 to March 2014, we served 202 patients. Therein, 102 HF patients (56 female; mean age 83 ± 7.5) were recruited with 3704 home visits. Eighty-two (80%) lived in public estates, all were cared by family through day and night, 52 (51%) were homebound and 69 (68%) received no financial assistance. The mean HARRPE score was 0.50 ± 0.09 and 73 (72%) suffered from ≥ 3 chronic diseases, including HF, hypertension and diabetes mellitus. Average hospital bed days were 74 ± 26 . There was significant reduction of hospital utilization (pre- & post- 90 days of VW admission) in terms of Accident & Emergency Department (A&E) attendance (269 vs 76; $p < 0.001$), emergency hospital admissions (245 vs 65; $p < 0.001$) and in-patient bed days (1643 vs 312; $p < 0.001$). The Relatives Stress Scale was significantly reduced (mean reduction 7.6, 95% CI 5.4-9.8; $p < 0.001$).

Conclusions: VW service has been shown in our pilot program to reduce hospital utilization and reduce the burden from carers.

23.

Influence of Severity of Renal Dysfunction on Re-admission to the Hospital in Patients with Heart Failure

Y KOMURA,¹ K HAGIWARA,¹ K OOTA,¹ W KINOSHITA,²
H FUNAHASHI,² H TERAI,³ Y HORITA,³ M NAMURA³
¹Department of Rehabilitation; ²Department of Nursing; ³Department of Cardiology, Kanazawa Cardiovascular Hospital, Japan

Objectives: With the severity classification for renal dysfunction instead of the glomerular filtration rate (GFR), it was examined how cardiac rehabilitation was effective for renal dysfunction and how renal dysfunction influenced re-admission to the hospital in patients with heart failure.

Subjects and Methods: The subjects comprised 147 patients (male/female, 74/73; average age, 77.1 ± 12.2 years) that received cardiac rehabilitation after admission to the hospital for heart failure between January 2010 and December 2011 and were followed-up for 24 months or longer after discharge from the hospital. According to the GFR at discharge from the hospital, subjects were categorized into five groups as follows: G1: GFR ≥ 90 ml/min, n=9; G2: GFR=60-89 ml/min, n=32; G3: 45-59 ml/min, n=43; G4: 30-44 ml/min, n=37; and G5: ≤ 29 ml/min, n=26. In all groups, blood data, Echocardiography, exercise capacity (the ratio of those who can continue aerobic exercise for 10 min or longer), and avoidance rates of re-admission to the hospital were examined.

Results: At discharge from the hospital, Hb levels were 12.9 ± 3.0 g/dl, 13.1 ± 1.9 g/dl, 12.3 ± 1.8 g/dl, 11.3 ± 2.2 g/dl, and 10.0 ± 1.8 g/dl in G1, G2, G3, G4, and G5, respectively, and they were significantly lower in G5 than in G1, G2, G3, and G4 ($p < 0.05-0.0001$). Moreover, there was no significant change in BNP and Echocardiography at discharge from the hospital. Exercise capacity at discharge was 44%, 78%, 67%, 65%, and 58% in G1, G2, G3, G4, and G5, respectively, and there was no significant difference. The avoidance rate of re-admission to the hospital was 89%, 54%, 44%, 42%, and 19%, respectively, and it was significantly lower in G5 ($p < 0.01$).

Conclusion: Although there was no significant difference in cardiac function and exercise capacity at discharge from the hospital according to the severity of renal dysfunction, anemia was more severely observed and the re-hospitalization rate was significantly higher in patients with severe renal dysfunction.

ABSTRACTS

24.

Short Term Mortality of Cardiac Resynchronization Therapy in Patients with Chronic Heart Failure

Y UGATA, Y SUGAWARA, N IKEDA, T MITSUHASHI, S MOMOMURA
Saitama Medical Center, Jichi Medical University, Japan

Objectives: We evaluated relationship of exercise capacity and mortality in patients received cardiac resynchronization therapy (CRT) for chronic heart failure.

Methods: We retrospectively enrolled patients who did not receive CRT but cardiopulmonary exercise test (CPX) though they fulfilled indication of cardiac resynchronization therapy (QRS width >120 msec, left ventricular ejection fraction >35%, and New York Heart Association functional class >3) from July 2005 to April 2009 because CRT was not available for prior state of approval of medical imbursement system within the duration. And we enrolled patients who received CRT for indication and CPX from May 2009 to November 2011.

Results: Number of patients who were received CRT and CPX was 9, and who did not received CRT was 12. Baseline characteristics except for hemoglobin were not significant between two groups. Furthermore we divided 2 groups by peak oxygen consumption over 14 ml/kg/min or not. Patients with peak oxygen consumption over 14 ml/kg/min were good prognosis regardless of experience of CRT or not. On the other hand, mortality of CRT group showed tendency to be better than no CRT group in patients with peak oxygen consumption under 14 ml/kg/min.

Conclusion: Assessment of exercise capacity is important for prediction of effectiveness of CRT in patients with heart failure.

25.

Upper Rate Operation During Exercise of Patients with Cardiac Implantable Devices

M ONO, Y SUDO, M SUZUKI, A MATSUMURA, Y HASHIMOTO
Kameda Medical Center, Japan

Background: There was a patient with complete atrio-ventricular block treated by pacemaker whose heart rate dropped suddenly during the treadmill exercise because of the two to one operation of the pacemaker. Since the maximum heart rate which pacemakers can actually follow and pace is determined by Total Atrial Refractory Period, or TARP, the heart rate may drop before reaching the programmed upper tracking rate during rehabilitation.

Objectives: To evaluate the upper rate operation and compare to the target heart rate during exercise of patients with cardiac implantable devices. Method: We evaluated all the programmed data of cardiac implantable devices (Medtronic) since 2008, and calculated the target heart rate during exercise by Karvonen Formula (K 0.5). Results: Of all the 200 patients, 166 patients had dual chamber devices and were included for the analysis. Upper tracking rate was set at 130 bpm for 142 patients and 100 to 120 bpm for 18 patients. Because of the extended TARP, 18 patients are in reality not able to reach the programmed upper tracking rate. Eight patients had low two to one point of 100 bpm and three patients had target exercise heart rate higher than the two to one point, which may cause the sudden heart rate drop during the exercise.

Discussion: Some devices enable the physician set the upper tracking rate higher than the two to one point, which can cause the sudden heart rate drop. If the TARP is set too long, the actual heart rate which the device can pace during the exercise can be lower than the prescribed exercise heart rate.

Conclusion: When the patients with cardiac implanted devices had sudden heart rate drop or cannot reach the set upper tracking rate during the exercise, we should examine and adjust TARP for the safe rehabilitation.

ABSTRACTS

BREAKFAST ABSTRACT SESSION III

26.

The Effect of Visitings on Vita Signs and Anxiety of the Stroke Patients

H CICEK,¹ N CAMBAZTEPE²

¹Gülhane Military Medical Academy School of Nursing; ²Gülhane Military Medical Academy Neurology Clinic, Turkey

Strokes due to the embolization of clot from the left atrium or left atrial appendage in patients with atrial fibrillation. Atrial fibrillation is a major risk factor for stroke, making a person five times more likely to have a stroke. This study was carried out as a descriptive study by investigating the effects of visiting periods on vital signs and anxiety on stroke patients to specify optimal nursing care service in accordance with acquired parameters. The research was conducted in Neurology Clinic of Gülhane Military Medical Academy and Cerebral Damage Unit of Turkish Armed Forces Rehabilitation Center between the August 2013 and the April 2014. The sample group was created with 122 stroke patients who accepted the study. Parameters were gathered with patients data form, vital signs assessment form deal with pre-visiting, while-visiting, post-visiting and "State and Trait Anxiety Inventory" Stroke patient's vital signs are measured 15 minutes before visiting, fifteenth minutes of visiting and 15 minutes later visiting especially first degree relatives' visiting, second degree relatives' visiting and third degree relatives' visiting. In descriptive statistics, fractional parameters which are designated by counting are shown as numbers and other parameters which are designated by percentage measurement are shown as standard average and minimum-maximum. T test, Spearman Brown Correlation Ratio, Kruskal Wallis Test and Variance Analysis are employed in Comparative Analysis. Statically,

$p < 0.05$ was accepted as meaningful. At the end of the our research, it was found out that stroke patient's state and trait anxiety levels which were measured before visiting and it was also accepted as meaningful ($p < 0.05$). In this result, it was observed that the gender of patients, having experience of staying in a hospital and visitor's visiting duration was effective. It was also observed that when evaluated stroke patients' vital signs, during the second degree relatives' visiting vital signs except diastolic blood pressure and heart rate, second degree relatives' vital signs except diastolic blood pressure as to during first degree relatives' visiting caused a rising in all vital signs ($p < 0.05$). Also, vital signs which were measured in visiting hours were found higher in first degree relatives' visiting and lower in second and third degree relatives' visiting compared to visiting off hours. As a result, it has been determined that in the survey which we investigated the effects of visiting periods on vital signs and anxiety on stroke patients, the visiting reduces the patients' levels of anxiety but causes a rising in vital signs however this rising is not in detrimental level for patients.

27.

Sexuality Issues among Male Chinese Ischaemic Heart Disease Patients in Hong Kong

ESL CHOW, MK YAU, AWY NG, MC CHUNG, BMC LAM, ACK CHU, S LEE, OKM CHAN, C LEUNG, YM NG

Hong Kong Association of Sex Educators, Researchers and Therapists and NTWC Rehabilitation Centre, Tuen Mun Hospital, Hong Kong

Objectives: To study the sexuality issues of male Chinese ischaemic heart disease (IHD) patients in Hong Kong

Methods: A total of 126 questionnaires were collected from male patients with IHD from community centres, private clinics, and public day and outpatients clinics and hospitals in Hong Kong.

Results: The mean age of respondents was 63 (range 42-82). Around 90% of respondents were married, living with family, wife or partner, and had children. Since the diagnosis of IHD, 25% of patients had no change in frequency of sexual activities while others (75%) had sexual activities less frequently. Nearly half (47%) of patients had not encountered any health information related to sexuality and IHD. Two-third of all respondents reported to have sexual activities in the preceding 4 weeks. Among them, 42% had sexual arousal most or all of the time. 21% had little or no arousal. Using the International Index of Erectile Function-5 (IIEF-5), 82% experienced erectile dysfunction of various degrees. 52% expressed different degrees of difficulties in achieving orgasm. Despite the sexual issues, 72% and 69% were moderately or very satisfied with the feelings of intimacy and the sexual relationship with one's partner, respectively. Overall, 66% were moderately or very satisfied with one's sexual life while 15% had moderate or severe dissatisfaction. Among those with sexual activities, 35% had various degrees of chest pain during or shortly after sexual activities.

Among those with chest pain, 29% (or 10% of those engaged in sexual activities) had significant pain that could not be neglected and 4% had to stop sexual activity due to the pain. On the other hand, around 13% of those with sexual activities had taken drugs to improve sexual performances but only one-third of them had consulted medical professionals about this.

Conclusions: As an important area in cardiac rehabilitation, sexual concerns and dysfunction were common among male Chinese IHD patients in Hong Kong. Cardiac symptoms associated with sexual activities were not uncommon and warranted further attention and researches.

ABSTRACTS

28.

Application of Peabody Developmental Motor Scales in Children with Acyanotic Congenital Heart Disease

X ZHOU,¹ K SUN,² Q DU,¹ XY YANG,¹ WW DENG,¹ JP LIANG³

¹Department of Rehabilitation Medicine, Xinhua Hospital Affiliated to Shanghai, Jiaotong University School of Medicine; ²Department of Pediatric Cardiovascular, Xinhua Hospital Affiliated to Shanghai, Jiaotong University School of Medicine; ³School of Kinesiology, Shanghai University of Sport, China

Objectives: Studies have shown that children with congenital heart disease (CHD) have development problems. The aim of this study was to assess motor development in children with acyanotic CHD.

Methods: Gross and fine motor development were evaluated in 135 acyanotic CHD children, 42 with atrial septal defect (ASD), 57 with ventricular septal defect (VSD), 36 with patent ductus arteriosus (PDA) utilizing PDMS-2. Subtest scores are standardized by age and combined to calculate gross, fine, and total motor quotients (GMQ, FMQ, TMQ). Quotients 131 to 165 corresponded with so-called 'very excellent', 121 to 130 with so-called 'excellent', 111 to 120 with so-called 'above average', 90 to 110 with so-called 'average', 80 to 89 with so-called 'below average', 70 to 79 with so-called 'poor', and 35 to 69 with so-called 'very poor'.

Results: The mean GMQ, FMQ, TMQ of 135 acyanotic CHD children were (90.1±8.1), (98.3±13.8), (93.2±8.1) respectively. GMQ was significantly lower than FMQ in these children. Among 135 acyanotic CHD children, the percent of 'very poor', 'poor', 'below average', 'average', 'above average' in GMQ was 0.7%, 8.1%, 39.3%, 51.1%, 0.7%, the percent of 'very poor', 'poor', 'below average', 'average', 'above average', 'excellent', 'very excellent' in FMQ

was 1.5%, 1.5%, 13.3%, 67.4%, 12.6%, 3.0%, 0.7%; the percent of 'very poor', 'poor', 'below average', 'average' in TMQ was 0.7%, 5.9%, 23.7%, 69.6%, respectively. There were no significant differences in the average age in age, gender ratio, GMQ, FMQ, and TMQ in children with ASD, VSD and PDA.

Conclusion: PDMS-2 can reflect the motor development status of acyanotic CHD children effectively. The gross motor function level is lower than fine motor function level in children with acyanotic CHD. Therefore, it is important to monitor the gross motor development in this population.

29.

Kawasaki Disease with Bilateral Giant Coronary Aneurysms and IVIG Resistance

K FIDANCI, M GULGUN, A GENC, A KILIC, F GOK

Gulhane Medical Academy, Department of Pediatrics, Turkey

Introduction: Kawasaki disease is characterized by fever, bilateral nonpurulent conjunctivitis, erythema of the mouth and lips, extremity changes, rash and cervical lymphadenopathy.

Case Report: 6-year-old male patient presented with fever lasting more than 7 days, bilateral conjunctival injection of 3 days, unilateral cervical swelling, erythema and fissuring of the lips, red spots on the trunk, edema and erythema of the hands and feet. Admission laboratory findings were normal. Echocardiography showed 2nd degree mitral insufficiency, 6-mm wide aneurysms on both coronary arteries. He was administered 2 g/kg of intravenous immunoglobulin (IVIG) and 80 mg/kg of acetyl salicylate. As the fever persisted despite IVIG, a second dose of IVIG was given 2 days after the first dose. On the eleventh day of hospitalization, fever still persisted and echocardiography revealed a 9.5 mm aneurysm on the left main coronary artery and a 7.5 mm aneurysm on the right coronary artery (RCA). A 3-day course of methyl prednisolone 30 mg/kg/day was planned, along with 1 mg/kg/day warfarin. The fever subsided on the twelfth day. Echocardiography follow-up showed a 11.8 mm wide aneurysm on the left anterior descending artery (LAD) and an 8.9 mm aneurysm on the RCA. He was discharged after 27 days in the hospital. Three months after the discharge, myocardial perfusion SPECT was normal and computed tomography-angiography showed a 10.5x11.4 mm fusiform aneurysm on the proximal 3-cm segment of the LAD and two aneurysms on the proximal 1-cm segment of the RCA, 8.6 mm and 5.7 mm in diameter.

Discussion and Conclusion: According to the guideline published by the American Heart Association in 2004, the first choice in IVIG-nonresponsive Kawasaki cases should be a repeat dose of IVIG, 2/g/kg, and in still nonresponsive cases, pulse methyl prednisolone should be considered.

30.

What Does My Heart Look Like? Views of the Children with Cardiac Disease

D YILDIZ, B FIDANCI, K FIDANCI

Gulhane Medical Academy, Department of Pediatrics, Ankara, Turkey

Objective: The aim of this study was to determine the perception of the children about their heart and their disease related to heart.

Methods: 15 school-aged children who have cardiac disease were enrolled in this qualitative study. The data were collected using both a demographic data form and a semi-structured interview form and also sentence completion test was used. The study was performed on individual patient face-to face interview. Data were analysed by content analyses.

Results: Three categories were obtained. These categories were (i) shape of the heart, (ii) perception about the disease, (iii) expectations of future. In the first category, the children were wanted to draw the shape of the heart and their illness. They almost draw similar pictures such as conventional heart picture (♥) and a hole on it. In the second category, they define their cardiac disease and they expressed their feelings as fear of death, hope of wellness, trust on doctors and nurses. In the third category, they almost believed that they would get well and they want to be a health professional to make the children better.

Conclusions: It is important to determine the children's perception about their cardiac disease to prepare the child to the process and relieve the child's mind.

ABSTRACTS

Abstracts Presentation (Poster):

1.

The 6 Minute Walk Test as a Tool in Determining Functional Capacity in Cardiac Rehabilitation Patients

JL PATAWARAN

The Medical City, Philippines

Objective: To assess the improvement in functional capacity of patients who underwent cardiac rehabilitation program (TMC CARES phase II) in The Medical City using the 6 minute walk test (6MWT).

Design: This is a prospective cross-sectional study.

Setting: The Medical City, a tertiary hospital in Pasig City.

Patients/Participants: All patients aged >18 years old from the period of July to December 2013, enrolled in The Medical City Cardiac Rehabilitation phase II program. 6MWT was done prior to, after 5 sessions and after completion of phase II cardiac rehabilitation program. Exclusion criteria are the following: not having chest pain, shortness of breath, angina, arrhythmia or hypertension, and they should not have muscle skeletal disorders.

Main Outcome Measures: The primary study outcome is improvement in functional capacity as measured by an increase in distance walked at 6 minute walk test.

Results: There is significant increase in the distance walked of all patients in the study comparing baseline values and after 5 sessions of cardiac rehabilitation (baseline 330±108, after 5 sessions 414±118, p=0.000). Those who completed phase II rehabilitation program had a significant increased in the distance walked of (baseline 338±89, final 500±93, p<0.001). The distance walked in 6MWT in patients with hypertension (485±82, p=0.038, %improvement 33±12), heart failure (365±116, p 0.007, %improvement 35±21), PCI (569±55, p=0.007, %improvement 29±9), and who underwent coronary artery and bypass graft (447±88, p=0.042, %improvement 40±10) was increased significantly.

Conclusion: Cardiac rehabilitation program in cardiac patients is effective in improving the functional capacity as shown by a significant increase in distance walked at 6MWT.

2.

Individuals with Heart Failure and Their Relatives' Opinions and Expectations About Home Care Services

B KILIC, N AKBAYRAK, G BAGCIVAN

Gulhane Military Medical Academy (GATA), School of Nursing, Internal Medicine Nursing Department, Turkey

Purpose: This descriptive study aims to determine individuals with heart failure and their relatives' opinions and expectations about home care services.

Method: The destructive study was done between January 15-June 15, 2013 in cardiology clinic and polyclinic of gulhane military medical academy with 50 patients diagnosed with heart failure and 50 relatives of patients. Sociodemographic data collection form and forms designed to determine opinions and expectations about home care services were used as data collection means.

Findings: Average age of patients who constituted the sample of the research is 65.94±12.21 and of patients' relatives is 47.62±14.49. Most of the patients say that home care service will be more effective when supported by hospital (90%), they will be more comfortable and feel more peaceful in home (90%). Most of the patients expect that patients must be helped during the activities such as bath/clothing/eating (94%). There is not a statistically meaningful difference between individuals with heart failure and their relatives' opinions and expectations about home care services (p>0.05).

Result: There was suggested that especially, expectations of society about home care service be considered, education and information meeting be done for care givers according to results of conducted research.

3.

The Effect of Multidisciplinary Cardiac Rehabilitation Phase II for Post Coronary Artery Bypass Graft (CABG) Patients in PWH

SW KAM, WK FONG, SY HO, INC WONG

Physiotherapy Department, Prince of Wales Hospital, Hong Kong

Introduction: Cardiothoracic Surgery Unit of Prince of Wales Hospital performed around 340 cardiac operations in 2013. Cardiac Rehabilitation Phase I program run by physiotherapists is implemented to facilitate recovery immediately after surgery in the in-patient setting. However, there is no follow up Cardiac Rehabilitation Phase II (CRP II) post discharge. Patients are lack of confidence and guidance in sustaining exercises. CRP II after surgery is essential to fill in this gap.

Objectives: It is to determine the effect of CRP II program on post cardiac surgical patients in the aspects of physical ability, lung function, health-related quality of life (HRQOL) and regular exercise habit.

Methodology: Patients below 70 years old with EF >50%, undergone elective CABG operations were invited to attend a trial CRP II program (10 sessions) within 1-2 weeks after discharge. Incremental shuttle walking test (ISWT), lung function test (LFT), self reported questionnaire on HRQOL was done pre-operatively, pre-discharge, pre-CRP II, post-CRP II and three months post-CRP II and questionnaire on exercise habit was done pre-operatively and post-CRP II. The study period was from 16 October 2012 to 16 July 2013.

Results: There were 7 patients (5 males and 2 females) completed the trial course of CRP II. The mean height, weight and BMI of them were 72.5 kg, 1.63 m and 27.1 respectively. There were significant increase on ISWT distance ambulated (42.89%) and Force Vital Capacity result (FVC, 19.25%)

within subjects after the completion of CRP II, p<0.001. Pairwise comparison showed significant increase when comparing FVC post-operatively and three months post CRP II, p=0.034. SF-36 physical and mental summary scores (PCS & MCS) also showed significant increase of score when comparing post-operative and post CRP II condition. There was marked increase on percentage (43%) of patients having regular exercise habit after CRP II, which helped preventing relapse of cardiac condition.

Conclusion: The result of this trial program showed that CRP II run by physiotherapist and nurse could significantly improve patients' exercise endurance, lung function, subjective health-related quality of life and regular exercise habit. Further large-scale program should be implemented to facilitate recovery and rehabilitation of patients underwent cardiac surgery.

ABSTRACTS

Abstracts Presentation (Poster):

4.

The Implementation of Incremental Shuttle Walking Test (ISWT) as an Assessment Tool in Cardiac Rehabilitation Phase II Post Coronary Artery Bypass Graft (CABG) Patients

WK FONG, SW KAM, SY HO, YK CHENG, INC WONG

Physiotherapy Department, Prince of Wales Hospital, Hong Kong

Introduction: Exercise testing is recommended before Cardiac Rehabilitation Phase II (CRP II) for high risk patients. Exercise testing with treadmill and lung function test (LFT) are common in cardiac rehabilitation as pre-screening and outcome measures respectively. Incremental shuttle walking test (ISWT) is one of the field tests used as exercise testing. The patient is required to walk up and down a 10-meter course, with the walking speed (12 level protocol) dictated by a prerecorded audio signal. From literature and overseas experience, ISWT is recommended as a measure of exercise capacity in cardiac rehabilitation, it is considered more suitable for the elderly rehabilitation population who performs poorly on a treadmill test and is a cost-effective alternative. There have been reports of a good correlation between ISWT and peak VO₂ in patients with heart failure. It is also important to objectively measure improvements in exercise tolerance prior to and at the completion of cardiac rehabilitation.

Objective: Most of the patients at Prince of Wales Hospital (PWH) undergone open heart surgery could not have CRP II within one to two weeks post discharge, since it took time to have the exercise stress test done before CRP II. This trial aims to test the feasibility in implementing ISWT as exercise testing and outcome measures in CRP II.

Methodology: With the consensus of team physician, ISWT by physiotherapists was implemented for exercise testing and outcome measure prior to and after CRP II. Seven patients below 70 years old with EF >50% undergone elective CABG were invited to attend a trial CRP II. ISWT with closely telemetry monitoring, LFT were performed pre-operatively, post-operatively, pre-CRP II, post-CRP II and three months after CRP II.

Results: Seven patients (5 males and 2 females) completed the CRP II. All of them had ISWT done without any technical difficulties and myocardial events. There were significant increase on ISWT distance ambulated and Force Vital Capacity result (FVC) within subjects after the completion of CRP II, p<0.001.

Conclusion: The result of this trial suggests that the ISWT can be used as one of the outcome measures in cardiac rehabilitation. Furthermore, study with more patients performing ISWT exercise test is needed to determine the applicability of ISWT as an alternate exercise test prior cardiac rehabilitation.

5.

A Case of Patient with Atrial Fibrillation on Triple Antithrombotic Therapy after Coronary Stenting

M MAKHINOVA, M BUBNOVA, D ARONOV

Cardiology, Federal State Institution National Research Center for Preventive Medicine, Moscow, Russia

Objectives: It is known that the anticoagulant therapy is intended for preventing the most grave complication in patients with atrial fibrillation (AF) - the stroke. A case of a patient with paroxysmal AF, ischemic stroke in anamnesis in 2013. The patient had never been taken anticoagulant therapy. Also the patient has gastric ulcer in anamnesis in 2013. The purpose is to solve the problem of antithrombotic therapy assignment and its duration.

Methods: Somatic and neurological examination, measuring of international normalized ratio (INR), ECG.

Results: In somatic examination we have observed hypertension. Neurological examination verified no specific changes. ECG showed AF with ventricular rate 94-120 beats in a minute. The patient received Aspirin 100 mg once a day. The patient had a high risk of thromboembolic events - 4 points by CHA₂DS₂-Vasc score. In April 2014 patient underwent the coronary stenting (CS) of anterior descending artery by "Promus Premier" 2,75*28 mm, "Resolute Integrity" 2,5*18 mm stents. Both stents are drug-coated (Everolimus, Zotarolimus). Before CS the patient started intake of Fraksiparin in dosage 0.8 mg twice a day. Initial level of INR was 0.95. After CS with drug-coated stents the Warfarin therapy in dosage 5 mg once a day and Clopidogrel in dosage 75 mg once a day were added to Aspirin therapy. When the level of INR got to 2.6 the usage of Fraksiparin has been ended. According to HASBLED score the patient has a high risk of

hemorrhagic complications (3 points). The patient was recommended to intake triple therapy (Aspirin+Clopidogrel+Warfarin) during 3 months after CS and to regular measuring the level of INR (the goal mean is 2.0-2.5). Our patient is taken the triple antithrombotic therapy during 2.5 months after CS without any complication. The level of INR ranges in 2.0-2.4.

Conclusion: According to the guidelines any patient with AF and a high risk of thromboembolic complications after CS have to take triple therapy (Aspirin, Warfarin, Clopidogrel). Solution of the problem duration of this therapy should be determined by type of coronary stent, risk of hemorrhagic complications and needs individual approach, as in our case.

ABSTRACTS

Abstracts Presentation (Poster):

6.

Understanding Nursing Care Direction on Coronary Heart Disease: A literature Review

SSW LAO, BLT LEONG

Kiang Wu Hospital, Macao SAR

Objectives: This review aimed to explore how the existing coronary heart disease (CHD) clinical management guidelines and clinical trials can meet the CHD patient care needs.

Methods: Studies were found using the CINAHL, Medline, EMBASE, Psychology and Behavioral Sciences Collection and PsycINFO e-databases between the year 2003 and 2013. The search terms used were coronary heart disease, ischemic heart disease, nursing care, cardiac care intervention, cardiac health care program and cardiac rehabilitation. All the searched studies were checked against the study inclusion and exclusion criteria.

Results: Of 10 studies that met the inclusion criteria for this review, five were randomized controlled trials and five were quasi-experimental studies. The review was classified into the 'nature of CHD care program', 'CHD care program components', and 'effectiveness of CHD care program'. The nature of CHD care program was viewed as a multidimensional care in hospital and in community whenever pre-discharge, post-discharge or bridging between hospital and home (transitional care program). In general, the reviewed programs were cardiac rehabilitation program, lifestyle change program and patient educational program with the contents of disease knowledge and treatment education, physical exercise performance and other supportive care. The outcomes indicated some positive contributions were made on quality of life improvement, physical performance enhancement, risk factors and psychological stress reduction, and health behavior maintenance. It was found that both clinical guidelines and patient

consideration regarded disease prevention, symptom recognition and management as the key concern. However, interventions and relative outcomes for symptom control and management were rarely reported.

Conclusion: This review raised the awareness of a comprehensive CHD transitional care strategies and highlighted insights where cardiac care providers could acknowledge the contributions which CHD care program could be making to help the CHD patient to be more capable in managing their life-long disease, and to pay more attention to reinforce patient self care on disease prevention, symptom recognition and management.

7.

The Use of Group Cognitive Behavioural Treatment for Patients Undergoing Cardiac Rehabilitation: A Pilot Study

CYI KWOK,^{1,2} J NGAN,² KC LEUNG³

¹Department of Clinical Psychology, Tung Wah Eastern Hospital; ² Department of Clinical Psychology, Pamela Youde Nethersole Eastern Hospital; ³Cardiac Rehabilitation and Resource Centre, Tung Wah Eastern Hospital, Hong Kong

Introduction: Type D personality (TypeD), the combination of negative affectivity (NA) and social inhibition (SI) personality traits, has been shown to predict recurrent heart attacks and mortality independent of heart disease severity. It is also associated with higher level of worry about cardiac symptoms, more inadequate consultation behaviours and lower adherence to medical recommendation. In view of this, a group cognitive behavioural treatment targeting cardiac rehabilitation patients with TypeD (GCBT-Cardiac) was designed to improve their emotion coping and disease management skills. It was promoted in the Cardiac Rehabilitation and Resource Centre at Tung Wah Eastern Hospital and run by a clinical psychologist. Three GCBT-Cardiacs were conducted from 2012-13, each consisted of three 2-hour weekly sessions and a booster session two months later.

Objectives: To report initial psychological outcome from a pilot study of GCBT-Cardiac.

Methods: Patients undergoing cardiac rehabilitation who exhibited mood problems and/or TypeD features were invited to join GCBT-Cardiac. They completed Depression, Anxiety and Stress Scale, Type D Personality Scale, Life Satisfaction Scale and Positive Emotion Scale at four time points (intake, 1st, 3rd and booster session) for assessment and comparison.

Results: 17 patients participated in GCBT-Cardiac. Despite the small sample size, depressive symptoms ($t(11) = 3.9, p < 0.01$), anxiety ($t(11) = 3.2, p < 0.01$), stress ($t(11) = 4.7, p < 0.01$), NA ($t(11) = 3.4, p < 0.01$), and SI ($t(11) = 2.3, p < 0.05$) were significantly decreased, and life satisfaction ($t(11) = -2.2, p = 0.05$) and positive attitude ($t(11) = -4.1, p < 0.01$) were significantly increased between 1st and 3rd session with small to moderate effect sizes. All improvements but stress, NA and SI were maintained at booster session. All participants were satisfied with the group.

Conclusion: GCBT-Cardiac showed statistically significant effect in improving patients' emotions, TypeD features and life satisfaction from pre- to post- intervention. Incorporating such psychological intervention as part of cardiac rehabilitation programmes may help patients reduce the risk of relapse and mortality. Future study may look into the maintenance of changes in TypeD features after the group.

ABSTRACTS

Abstracts Presentation (Poster):

8.

Evaluate the Effect of Long-term Comprehensive Cardiac Rehabilitation in Coronary Artery Disease: A Cohort Study

SK JONG,¹ S ONG,² DTC LAI,³ CL CHONG⁴

¹Occupational Therapy Unit, Raja Isteri Pengiran Anak Saleha Hospital, Brunei Darussalam; ²Ministry of Health Brunei Darussalam; ³Faculty of Science, Universiti Brunei Darussalam; ⁴Raja Isteri Pengiran Anak Saleha Hospital, Brunei Darussalam

Objective: To assess changes in cardiac risk factors and self-reported quality of life among cardiac patients who participated in a rehabilitation programme.

Method: This was a prospective study of cardiac patients enrolled from 2009-2011, who completed an eight weeks (Phase II [P1 to P2] programme) and followed for 18 months (Phase III [P2 to P3] maintenance programme). At each review, patients performed structured supervised exercise and were reminded of the importance of continuing their healthy lifestyle. Exercise test time (ETT), The Short Form (36) Health Survey (SF36), Resting Blood Pressure (SBP/DBP), Resting Heart Rate (HR), Weight (WT), Waist Circumference (WC), Fasting Blood Sugar (FBS), Total Cholesterol (TC), High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL), Triglyceride (TG) and smoking status were recorded at enrolment (P1), end of Phase II and Phase III.

Results: There were 129 low risk cardiac patients, male (n=92, mean age 56.2±9.6 years) and female (n=37, 54.8±7.9 years) included in the study. Between P1 and P2, significant improvement were shown in SF 36 scores (68.03 to 74.28), ETT (7.76 to 9.22 min), SBP (125 to 120 mmHg), DBP (78.2 to 75.4 mmHg), TC (4.05 to 3.75 mmol/l), LDL (2.33 to 2.03 mmol/l) and WC (35.8 to 35.5 inches) (all p values <0.01). No significant improvement were found in others. The improvement were not maintained between P2 and P3 for all the parameters measured. The dropout rates were

high between P2 and P3 for measures that were significant in P1 and P2; 64% in SF 36 scores, 40% in ETT, 25% in SBP and DBP, 20% in TC, 21% in LDL and 28% in WC. The trend between P1 and P3 shown significant improvement in SF 36 scores (65.83 to 75.34), ETT (7.93 to 8.59) and HDL (1.11 to 1.21) (all p values <0.05). Among smokers, 44% (n=4/9) quit smoking.

Conclusion: Significant improvements were found in SF36, ETT, HDL after 8 weeks Phase II programme that were sustained at the end of 18 months. Our study showed positive effects of a rehabilitation programme that empowers patients to manage their own cardiac risk factors.

9.

Gender Difference in the Severity of Depression in Premature Coronary Artery Patients

SHABBASI,^{1,2} SE KASSAIAN,¹ S SADEGHIAN,¹ N SHAHMANSOURI,¹ S SAADAT,¹ A JALALI¹

¹Tehran Heart Center, Tehran University of Medical Sciences; ²Family Health Research Center, Iranian Petroleum Industry Health Research Institute, Tehran, Iran

Objective: Psychosocial factors have been considered as important risk factors for developing coronary artery disease (CAD) and its progression. Recent research suggests that depression is a robust predictor in this regard. The aim of this study was to compare the severity of depression among patients with premature CAD.

Methods: 770 patients who had already been proved to have premature CAD angiographically (men <45, and women <55-year-old), were included at this study. Patients' clinical and angiographic data were recorded and they were asked to fill Beck Depression Inventory. Then the severity of depression was assessed between both genders.

Results: Among 770 patients (367 [47.7%] men and 403 [52.3%] women; age: 50.34±5.57 years) enrolled at this study, 470 (61.0%) were normal while 100 (13.0%), 134 (17.4%), and 66 (8.6%) were mildly, moderately, and severely depressed, respectively. In male patients, 256 (69.8%) were normal and 42 (11.4%), 55 (15.0%), and 14 (3.8%) were mildly, moderately, and severely depressed, respectively; while in female patients these were 214 (53.1%), 58 (14.4%), 79 (19.6%), and 52 (12.9%), respectively. Chi square test showed that the severity of depression between males and females were significantly different and women were more depressed than men (p<0.001).

Conclusion: Our study showed that depression seems to play a greater role in female patients with premature CAD. Since the role of depression in development and in progression of CAD is well-documented and it increases the physiological and behavioral risks, women probably need a meticulous treatment strategy to overcome this problem.

ABSTRACTS

Abstracts Presentation (Poster):

10.

Sex Difference in the Severity of Anxiety in Patients with Premature Coronary Artery Disease

SH ABBASI,^{1,2} SE KASSAIAN,¹ S SADEGHIAN,¹ N SHAHMANSOURI,¹ S SAADAT,¹ A JALALI¹

¹Tehran Heart Center, Tehran University of Medical Sciences; ²Family Health Research Center, Iranian Petroleum Industry Health Research Institute, Tehran, Iran

Objective: Anxiety is proved to be related with cardiovascular mortality, myocardial infarction, sudden death, poorer compliance with medication, and poor quality of life. Also evidence shows that anxiety increases difficulties in obtaining favorable lifestyle modification. The aim of this study was to compare the severity of anxiety among patients with premature coronary artery disease (CAD).

Methods: In this study, 708 patients who had already been angiographically proved to have premature CAD (men <45, and women <55-year-old), were enrolled. Patients' clinical and angiographic data were recorded and they were asked to fill Beck Anxiety Inventory. Then the severity of anxiety was assessed between both sexes.

Results: Of 708 patients (341 [48.2%] men and 367 [51.8%] women; age: 50.32±5.77 years) who were enrolled at this study, 333 (47.0%) were normal while 203 (28.7%), 112 (15.8%), and 60 (8.5%) had mild, moderate, and severe anxiety, respectively. In male patients, 208 (61.1%) were normal and 85 (24.9%), 40 (11.7%), and 8 (2.3%) had mild, moderate, and severe anxiety, respectively; while in female patients the frequencies were as 125 (34.0%), 118 (32.2%), 72 (19.6%), and 52 (14.2%), respectively. Chi square test showed that between males and females, the severity of anxiety were significantly different and anxiety was more severe in women than men (p<0.001).

Conclusion: This study showed that our women with premature CAD suffer more anxiety than men. Since lifestyle modification and compliance with medication are very important factors in CAD patients and these issues are greatly affected in anxious people, it seems that women with premature CAD need more particular treatment approach in this regard.

11.

Initiation of Comprehensive Cardiac Rehabilitation Program in Sarawak: Our Early Experience

BK LEONG,¹ KL YEWE,² N AZHARI,¹ K TANG,¹ P ISMAIL,¹ CC HU,² N DAYANG²

¹Department of Rehabilitation Medicine; ²Department of Cardiology, Sarawak General Hospital, Malaysia

Objective: Our cardiac centre has began a full-fledged comprehensive Cardiac Rehabilitation Program (CRP) to complement the existing cardiac services. Therefore, we want to study the profile of the patients enrolled into CRP as they come from diverse racial and geographical background.

Methods: This is a cross sectional descriptive study involving the first 50 patients enrolled into comprehensive CRP from March to July 2014. Patients who had percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG) and willing to participate in CRP, were selected. We sought to analyse the demographic, clinical, angiographic and cardiovascular risk factor profile beside functional exercise capacity and resumption of common daily activities such as work, driving and sexual activity.

Result: 68% of the patients were younger than 55 years old with majority of the participants being male (86%). The Chinese formed the majority (56%), followed by the Malay (20%) and the indigenous group (24%). The prominent cardiovascular risk factors were hypertension, dyslipidaemia, obesity and sedentary lifestyle. Most of them initially presented with acute coronary syndrome with STEMI subtype (44%) being the commoner entity. For those who underwent coronary angiogram, 32% had 1 vessel disease (VD), 50%

2 VD and 18% with 3 VD. Thereon, 78% underwent PCI and 18% ended up with CABG. When they came to the CRP clinic, they were subjected to 6 minute walk test (6MWT) and exercise stress test (EST). For the 6MWT, we found that 26% can only walk <400 m, 52% between 400-499 m and only 2% able to walk more than 600 m. From EST, 12% of them could not achieve 5 METS and 48% attained more than 7 METS. When interviewed, 90% claimed to have resumed driving, 40% restarted sexual activity and 86% returned to work.

Conclusion: From our study, cardiovascular disease afflicts a comparatively younger age group with male preponderance. The larger Chinese representation correlates with the city population demography. From the 6MWT and EST, most of the patients had low exercise capacity which could be attributed to their sedentary lifestyle and underlying coronary heart disease. Although they readily started working and driving, they seemed to be more cautious with sexual endeavours.

ABSTRACTS

Abstracts Presentation (Poster):

12.

Characteristics of Coronary Artery Disease Patients who Perform Six Minute Walk Test During Phase I Cardiac Rehabilitation in Hasan Sadikin Hospital

D ROSTIATI, M TANAKA, BB TIKSNADI, A PURNOMOWATI, TM APRAMI

Cardiology and Vascular Medicine, Medical Faculty Universitas Padjadjaran-Hasan Sadikin Hospital Bandung, Indonesia

Objectives: To investigate the characteristics of coronary artery disease (CAD) patients who perform six minute walk test (6MWT) and its influencing factors.

Methods: This analytic descriptive study was conducted in Cardiology and Vascular Medicine Department Hasan Sadikin Hospital, Bandung, Indonesia by studying medical reports of CAD patients who performed 6MWT from January 1st until June 30th 2014, with total 61 patients. Patients' characteristics included age, sex, body mass index, diagnosis, risk factor, ejection fraction, coronary angiography, and treatment. Relationship between 6MWT result and patients' characteristics was analyzed with ANOVA and Spearman Rank correlation.

Results: Median for age is 58 (36-61) years old, 85.2% are male. Median for body mass index is 24.5 (16.6-38.2) kg/m². Risk factors are hypertension (72.1%), dyslipidemia (42.6%), diabetes mellitus (37.7%), and smoker (37.7%). 47.5% patients are diagnosed with stable angina pectoris, 32.78% with ST elevation myocardial infarction. Percutaneous coronary intervention are performed in 42.62% patients, coronary artery bypass graft in 22.95%. Median for 6MWT result is 288 (112-475) meter. Result for 6MWT is greater in stable angina pectoris patients, in patients whom given revascularization therapy, and in patients with three vessels disease, but this results are not significantly different. 6MWT results are not related with age, body mass index, and ejection fraction.

Conclusion: Majority of CAD patients who perform 6MWT in phase I cardiac rehabilitation are overweight male with age between 55-60 years old. Median for 6MWT result is 288 (112-475) meter. There is no characteristic factor related with 6MWT result.

13.

Benefit of Lipid lowering agent in Acute Myocardial Infarction and Renal Insufficiency

DH KIM, JY HAN, MG LEE, SH KIM, JH CHO

Saint Carollo Hospital, Sun-cheon, Republic of Korea

Background: Even though lipid lowering agent (statin therapy) was proved to improve clinical outcomes and reduce the incidence of major adverse cardiac events (MACE) in acute coronary syndrome (ACS), statin effect of patients in acute myocardial infarction (AMI) accompany with renal insufficiency was still controversial, because several study was reported that statin may have slow loss of kidney function in patients with coronary artery.

Methods: We analyzed 3,025 patients in AMI with renal insufficiency (73.59±11.1 years old) who survived at discharge from Korean Acute MI Registry (KAMIR). Renal insufficiency defined as GFR<60 mL/min/1.73 m² to calculated by the Modification of Diet in Renal Disease (MDRD) study equation. They were divided to two groups according to the prescription of statin at discharge (Statin group; n=1,959, Non-statin group; n=1,066). The primary end point was the composite of 1-year major adverse cardiac events including death, recurrent myocardial infarction (MI), target vessel revascularization and coronary artery bypass grafting.

Results: Patients prescribed statin for discharge medication were likely to have higher GFR, left ventricular ejection fraction, stent diameter, stent number, hyperlipidemia, Pre-TIMI flow 0 and lesser diabetes mellitus, previous PCI and Killip class II-IV in clinical and angiographic characteristics of both groups. Statin group also had more diagnosis of ST segment elevation MI. In the laboratory finding, statin group had higher serum level of total cholesterol, triglyceride, lower density lipoprotein cholesterol, and lower creatine, creatine-kinase and N-terminal pro B-type natriuretic peptide (NT pro-BNP). Statin

therapy significantly reduced the risk of the composite the primary end point (23.0% vs. 27.9%, p=0.021), and reduced the risk of cardiac death (6.4% vs. 10.0%, p=0.006) and cardiac artery bypass graft (CABG) (4.0% vs. 6.9%, p=0.007). However, there were no differences in the risk of recurrent MI, repeated PCI, and target vessel revascularization (TVR).

Conclusions: In patients in AMI with renal insufficiency, statin therapy could not reduce repeated PCI rate or TVR in AMI, however it had beneficial effects in the risk reduction of 1 year MACE, mainly due to the risk reduction of cardiac death and CABG.

ABSTRACTS

Abstracts Presentation (Poster):

14.

Tacking Sudden Cardiac Death in Athletes with ECG Screening

MW LUONG, B MORRISON, D LITHWICK, S ISSEROW

University of British Columbia, Canada

Objectives: Sudden cardiac death (SCD) in young and seemingly healthy athletes is a rare but devastating event. This research examines the prevalence of conditions causing SCD in young, competitive athletes in British Columbia (BC). To detect cardiac disorders in SCD, we will employ a screening program that uses patient histories, physical exams, and 12-lead electrocardiograms (ECGs). Current screening procedures for competitive athletes exclude ECGs as this remains controversial; several international studies using ECGs have been conducted, though none in Canada. We strive to determine the prevalence of cardiovascular disease in BC athletes and whether ECGs are a sensitive screening tool. In Canada, there is no mandate for pre-participation screening of athletes.

Methods: We aim to evaluate 500-2000 competitive athletes (aged 12-35) in Metro Vancouver. Researchers will interpret the histories, physicals, and ECGs conducted by trained personnel. Abnormal ECGs as per European Society of Cardiology criteria, abnormal physical examinations or history may receive in-person consultations and further investigation.

Results: We initially screened 222 athletes from various sports with 45 patients having cardiac symptoms on history - chest pains, murmurs, and palpitations being most prevalent. 2 patients had abnormal murmurs on physical exam. ECG screening also found 2 with right ventricular hypertrophy and 2 with abnormal T-waves. We deemed 15 patients necessary for in-person consultations with a cardiologist. Subsequent tests included 8 echocardiograms, 9 exercise stress tests, and 1 event monitor. In addition, 12 portable hand-held echocardiograms were done during consultation to exclude clear abnormalities. Our results have not led to any restrictions on athletic participation.

Conclusions: In the initial 222 athletes screened, 15 additional consultations and 18 further investigations were generated. Consistent with similar screening studies and due to the relative infrequency of SCD in young athletes, we have not yet made any concerning cardiac diagnoses. We endeavour to continue this screening process and to accumulate a more complete analysis by next year.

15.

Cardiovascular Effects of Pulmonary Rehabilitation in Patients with Chronic Lung Disease

B LAU,¹ C SIMA,² P CAMP,² C TAYLOR¹

¹Centre for Heart Lung Innovation UBC and Providence Health Care, Institute for Heart & Lung Health, St. Paul's Hospital; ²Department of Physical Therapy and Department of Cardiology, University of British Columbia, Vancouver, Canada

Objectives: Cardiovascular disease (CVD) is the leading cause of death in patients with chronic obstructive pulmonary disease (COPD) and there is emerging evidence showing a close association between the two diseases independent of their common risk factors. Pulmonary rehabilitation is considered a core component in the management of COPD patients however it is not known whether this intervention has any impact on their cardiovascular status. The objective of our study is to examine the effects of pulmonary rehabilitation on the cardiopulmonary stress testing parameters in patients with chronic lung disease.

Methods: Retrospective analysis was performed on patients enrolled in the pulmonary rehabilitation program at St. Paul's Hospital in Vancouver, Canada between 2009 and 2013 who had undergone cardiopulmonary stress testing before and after their rehabilitation program. Patient records were reviewed for documented traditional cardiovascular risk factors. Parameters analyzed from the pre and post-rehabilitation cardiopulmonary stress tests included maximum oxygen consumption and workload, exercise time, resting and peak heart rate, resting and peak blood pressure, heart rate recovery, electrocardiographic changes of ischemia and forced expiratory volume in one second (FEV1).

Results: The cohort consisted of 22 patients. Baseline characteristics of the population included: median age of 63 years, 55% males, 18% with known coronary artery disease, 27% hypertension, 14% diabetes mellitus, 14% dyslipidemia and 87% with a history of smoking. Following rehabilitation, there was a trend towards lower systolic (-12.5 mmHg) and diastolic blood pressure (-3.5 mmHg) as well as greater reduction in heart rate during recovery (+3 bpm).

Conclusion: Pulmonary rehabilitation may have an impact on the cardiovascular status of COPD patients in addition to its pulmonary benefits. Further research is necessary to confirm the findings of this study and to determine the clinical significance of these changes.

ABSTRACTS

Abstracts Presentation (Poster):

16.

Early Return to Work Program for Patients after Myocardial Infarction: An Initial Experience

WY CHU,¹ WC CHENG,¹ TY LEE,¹ PK YU,¹ NY CHAN²

¹Occupational Therapy Department; ²Medical & Geriatric Department, Princess Margaret Hospital, Hong Kong

Objective: To implement a pilot program on work rehabilitation for post-MI patients in Princess Margaret Hospital.

Method: Post-MI patients who were gainfully employed in moderate to high physically demanding jobs were recruited. All patients underwent complete revascularization by percutaneous coronary intervention (PCI) or coronary bypass surgery. Echocardiogram and submaximal treadmill exercise test were performed for risk stratification. Occupational and psychosocial barriers hindering return to work were identified by pre-work assessment. Initial work capacity evaluation (WCE) and subsequent work training were performed by occupational therapists (OT) at 2 to 4 weeks post-PCI.

Results: 4 patients were recruited for the pilot program from June to August 2014. 3 patients had completed program and returned to work. The first patient (50-year-old male) had inferior myocardial infarction. Job analysis revealed heavy physical demand characteristics as a warehouse keeper with frequent carrying, lifting, pushing and pulling of moderate to heavy weights. After simulated work assessment, a course of work hardening program was provided to build up tolerance and reinforce safe work habits. Reassessment showed improvement in overall work capacity. He received 6 sessions of training in total and resumed previous job with minor modifications.

Conclusion: A pilot program on work rehabilitation for post-MI patients in Princess Margaret Hospital has been implemented successfully. Safe and early return to work for post-MI patients could be achieved by comprehensive work rehabilitation program including the components of improvement in medical factors, risk identification and reduction, and enhancement of work capacity.

17.

Different Rehabilitation Program In and Out of Hospital

S MITSUOKA,¹ Y YOSHIDA,¹ Y ASAKURA,² A OHNO,² T TSUCHIYAMA,² S YOSHIDA,² Y OTAKI,² M FUJITA,² I YOSHIDA³

¹Department of Rehabilitation; ²Cardiovascular Medicine; ³Gastroenterological Medicine, Kasai Shoikai Hospital, Japan

Objectives: To attempt different rehabilitation during hospitalization and after discharge.

Methods: The heart rehabilitation was done in whom two hospitalized patients suffered from heart failure. Two kinds of rehabilitation were done in the hospital. The former training consisted of fundamentals for muscular power reinforcement and muscular endurance improvement in order to reduce after load. Gait training was applied for 1 hour every day. The latter was application operation gait training as aerobics. It consisted going up and down stairs, and walking on the irregular ground. It was also done for 1 hour every day. On the other hand, rehabilitation after discharge was different from that during hospitalization. Visit rehabilitation was applied for 40 minutes 1 or 2 times per week. Basic muscle training was not done. Mainly it consisted of life-related movements, such as cleaning with a vacuum cleaner, hanging out laundry, and bathing, etc. We evaluated symptoms and vital sign during life-related movement.

Results: One's living environment is different among individuals. Life rehabilitation after discharge should be varied. However, this kind of rehabilitation is insufficient during hospitalization. Therefore, we tried to make different rehabilitation program in and out of hospital. Muscle training is programmed during hospitalization, and life training was done as visit rehabilitation after discharge. Actually, we can see patient's life environment in the visit rehabilitation. We can know patient's hobby. Life range has been extended according to desire of patients and their families, safely.

Conclusion: Different rehabilitation program in and out of hospital is safe and efficient. Life range could be extended after leaving hospital. Visit and life rehabilitation would be important.

18.

Analysis on the Clinical Application of Psychological Nursing in Patients with Chronic Heart Failure

Y HONG

Department of Cardiac Rehabilitation, Shanghai No.1 Rehabilitation Hospital, China

Objective: To improve the clinical service level, the clinical application effect of psychological nursing in patients with chronic heart failure was analyzed.

Methods: A total of 140 patients were randomly divided two groups, the experimental group and the control group (70 cases for each group). Both groups were treated with conventional treatment and nursing, and the experimental group was treated with psychological nursing in addition. Then the left ventricular ejection fraction (LEVF), the 6 minute walking distance score (6-MWT), the medication compliance and evaluation on improvement of life quality in two groups were tested.

Results: For the experimental group, the values of the LEVF and 6-MWT were 56.2±4.7% and 436.5±38.3 separately, significantly higher than that of the control group, with values of 45.5±3.2% and 245.9±29 separately; the medication compliance of experimental group was 92.9%, significantly higher than that of the control group 71.4%; social function, physical function, psychological function of the experimental group patients were also significantly improved (P<0.05).

Conclusion: The psychological nursing can significantly improve the treatment effect and the life quality of patients with chronic heart failure.

ABSTRACTS

Abstracts Presentation (Poster):

19.

Maintaining Physical Exercise during Phase II and III Cardiac Rehabilitation: Knowledge and Information from Germany

A TSUBAKI,¹ B BJARNASON-WEHRENS,² S MAKITA,³ H ONISHI¹

¹Department of Physical Therapy, Niigata University of Health and Welfare;

²Institute for Cardiology and Sports Medicine, German Sport University Cologne;

³International Medical Center, Saitama Medical University, Germany

Objectives: To improve long-term prognosis and prevent recurrence in patients with cardiac disease, phase II and III cardiac rehabilitation (CR), including lifestyle change, is considered effective. However, opportunities to exercise or engage in physical activities should be maintained. We had an opportunity to attend phase II and III CR in Germany. The aim of this presentation is to report the current status of phase II and III CR provided in a region in Germany and to consider the importance of continuous exercise during these phases of CR.

Methods: The Institute for Cardiology and Sports Medicine, German Sport University Cologne, permitted observing and attending their phase III CR program. We observed and attended phase II CR in the ambulatory rehabilitation center. We had the opportunity to undergo a 5-week on-the-job training in Germany.

Results: The exercise program was conducted by a single exercise trainer for a group of about 10 cardiac patients, with a medical physician available to attend to any cardiac event. The exercise program consisted of resistance training that involved the use of various tools such as balls, poles, ropes, elastic bands, and other exercise devices and outdoor aerobic training. Some groups were allowed time to relax using an effective music and respiration technique. The participants seemed highly motivated to self-manage their disease.

Conclusion: Some guidelines suggest that self-management is the key component of successful treatment. Maintaining exercise opportunities is also important. To improve adherence to the exercise therapy, providers have to pay attention to exercise variation and the environment. The importance of greater exercise variation in CR has been recognized.

Acknowledgment: This study was partly supported by a Grant-in-Aid from the Study Abroad Program for faculty members in Niigata University of Health and Welfare.

20.

Psychological Benefits of Cardiac Rehabilitation

KK LEUNG,¹ LSW LI²

¹Department of Clinical Psychology, Tung Wah Hospital; ²Department of Medicine, Tung Wah Hospital, Hong Kong

Objectives: To assess the impact of comprehensive cardiac rehab programme on psychological distress of patients.

Methods: Hospital Anxiety and Depression Scale (HADS-A & HADS-D), the Stress Subscale of Depression, Anxiety and Stress Scale (Stress) were administered on 482 patients during Phases I, II, III and IV of cardiac rehab in Tung Wah Hospital. Those who scored above clinical cutoff at Phase I was followed longitudinally by Repeated Measures ANOVA. The differences among the scores were examined by post-hoc paired-sample t-tests with significance threshold at $p=0.008$ according to Bonferroni correction for multiple comparisons.

Results:

1. On HADS-A, 70 (14.5%) patients scored 8 or above at Phase 1. Mean anxiety scores of these patients differed significantly among phases [$F(3, 207)=48.28, p<0.001$]. They reduced significantly ($p's<0.001$) from Phase 1 (9.8 ± 2.1) to Phase 2 (6.1 ± 3.8), Phase 3 (5.7 ± 3.8), and Phase 4 (5.6 ± 3.9). The differences between Phase 2 and Phase 3 ($p=0.386$), Phase 3 and Phase 4 ($p=0.717$), and Phase 2 and Phase 4 ($p=0.239$) were insignificant.

2. Regarding HADS-D, 27(5.6%) patients scored 11 or above at Phase 1. Mean depression scores of these patients differed significant among phases [$F(3, 78)=19.93, p<0.001$]. They reduced significantly ($p's<0.001$) from Phase 1 (12.3 ± 1.1) to Phase 2 (8.4 ± 4.2), Phase 3 (7.2 ± 3.9), and Phase 4 (7.6 ± 4.6). The differences between Phase 2 and Phase 3 ($p=0.110$), Phase 3 and Phase 4 ($p=0.539$), and Phase 2 and Phase 4 ($p=0.318$) were insignificant.

3. On Stress, 127 (26.3%) patients scored at 14 or above at Phase 1. Mean stress scores of these patients differed significant among phases [$F(3, 378)=60.098, p<0.001$]. They reduced significantly ($p's<0.001$) from Phase 1 (20.2 ± 5.9) to Phase 2 (12.5 ± 8.4), Phase 3 (12.0 ± 7.9), and Phase 4 (11.9 ± 8.1). The differences between Phase 2 and Phase 3 ($p=0.569$), Phase 3 and Phase 4 ($p=0.797$), and Phase 2 and Phase 4 ($p=0.387$) were insignificant.

Conclusion: Cardiac rehab patients who were initially depressed, anxious or stressful at Phase 1 showed significant reduction in depression, anxiety and stress after Phase 2, and the improvement was maintained towards the end of Phase 4.

ABSTRACTS

Abstracts Presentation (Poster):

- 21.**
Strategies for Smoking Cessation among Cardiac Patients
SY YAU
Open University of Hong Kong, Hong Kong
- Objectives:** Smoking is one of the leading causes of cardiovascular diseases. Smokers are especially prevalent to restenosis, myocardial infarction and increased cardiac morbidity and mortality. Smoking cessation benefits cardiac patients on reducing the recurrence of cardiac diseases, diminishing the mortality rate and enhancing quality of life. Therefore, there is call for implementing strategies for promoting smoking cessation among cardiac patients. The objective of the current study is to conduct systematic review in order to explore the strategies for smoking cessation among cardiac patients.
- Methods:** A systematic review was conducted from the current literature between year 2009-2014 with multiple databases. The strategies applied in smoking cessation among cardiac patients were reviewed and categorized.
- Results:** Research showed that the strategies applied in smoking cessation among cardiac patients were mainly categorized into behavioral therapy and pharmacologic therapy. Behavioral therapy including behavioral counseling and motivation interviewing by doctors and nurses on individual or group sessions. Pharmacologic therapy consists of nicotine replacement (nicotine patch and nicotine gum) and non-nicotine medications such as bupropion. Nevertheless, telephone support such as Quitlines, web-based cessation resources, and self-help interventions were also adopted. Smoking cessation was much effective and successful with improved abstinence rate when applying multiple strategies with follow-up contacts by healthcare providers.
- Conclusion:** In conclusion, this study explored the smoking cessation strategies among cardiac patients in the current literature. Behavioral therapy and pharmacologic therapy were commonly adopted as smoking cessation strategies that showed positive outcomes.
-
- 22.**
Characteristics of Patients with Renal Function Exacerbated by Cardiac Rehabilitation
M INOKUMA,¹ J TOMONO,¹ M TAYA,² E SHIMODA,¹ R MATSUMURA,¹ T KUWAHARA,¹ H KUMAGAI,¹ H NAKANO,¹ T SHITARA,¹ H KAZAMA,¹ K TORIGOE,¹ J MURAKAMI,¹ H ADACHI,¹ S OSHIMA¹
¹Gunma Prefectural Cardiovascular Center; ²The University of Tokyo Hospital, Japan
- Objective:** Although Cardiac Rehabilitation (CR) is known to have favorable effect on patient's renal function, some patients worsen it. The purpose of this study is to investigate the renal exacerbating factors after CR.
- Methods:** Consecutive 110 (65±9 years of age) cardiac disease patients participated in CR for 5 months, more than twice a week were enrolled. They underwent blood examination, echocardiogram and cardiopulmonary exercise testing before and after CR. They were divided into two groups according to progression of their renal function after CR (A: improving group, B: worsening group). And the differences of results in those tests between group A and B were evaluated.
- Results:** Exercise capacity, EF, E/E', blood pressure, and blood chemical values data showed no significant difference between the 2 groups, but eGFR (A group 50.9±14.6 vs. B group 59.8±17.2), Hb (A group 12.1±1.8 vs. B group 13.2±1.9), E/E' (A group 10.9±13.8 vs. B group 13.6±4.9) before CR, were significantly higher in B group than A group (p<0.01).
- Conclusion:** After CR, renal function was revealed to exacerbate in patient with high eGFR, high Hb, and high E/E' before CR participation.
-
- 23.**
Effect of Long-term Exercise Therapy in Skeletal Muscle Mass for Heart Disease Patients with Diabetes
T SHITARA,¹ J TOMONO,^{1,2} E SHIMODA,¹ T KUWAHARA,¹ R MATSUMURA,¹ H KUMAGAI,¹ M INOKUMA,¹ H NAKANO,¹ H KAZAMA,¹ M TAYA,³ K TORIGOE,¹ Y NAMASU,¹ H ADACHI,^{1,2} S OSHIMA^{1,2}
¹Gunma Prefectural Cardiovascular Center Cardiac Rehabilitation Unit; ²Gunma Prefectural Cardiovascular Center Cardiovascular Internal Medicine; ³Tokyo University Hospital Department of Rehabilitation, Cardiovascular Internal Medicine, Japan
- Objective:** Decreased skeletal muscle is known to be both a feature and also a precipitating factor of heart disease patients, and furthermore it is also important for diabetic patients. The purpose of this study is to evaluate the effect of long term exercise therapy on sarcopenia for heart disease patients with diabetes.
- Methods:** We enrolled 43 consecutive patients (65±10 years old) who completed a comprehensive cardiac rehabilitation (CR) for 4 months at Gunma Prefectural Cardiovascular Center from January to December 2013, and divided them into 2 groups according to the participation frequency of outpatient exercise therapy (Group A: more than twice a week, n=22, Group B: less than twice a week, n=21). We measured skeletal muscle mass by using bioelectrical impedance analysis at the beginning and end of CR and evaluated the increasing rates of skeletal muscle mass (IRSM). In addition, we also consider the contents of exercise therapy; repetition and variety of the resistance training (RT).
- Results:** There were significant differences between Group A and B in IRSM (102.3±5.3% vs. 99.2±2.7%, p<0.05), repetition count (2781±1485 vs. 547±708, p<0.001) and variety (7±2 vs. 3±3, p<0.01) of RT.
- Conclusion:** More frequent exercise therapy especially in terms of repetition and variety of RT, revealed to be beneficial for sarcopenia even in cardiac heart disease patients with diabetes.

ABSTRACTS

Abstracts Presentation (Poster):

24.

Associations between Exercise Habit and Body Fat Distribution: A Cross-sectional Study using Medical Visceral Fat Monitor DUALSCAN

S KUROSE,¹ I MASUDA,¹ S YASUNO,² M IMAI,¹ Y YAMAMOTO,¹ S HAMAMICHI,¹ K UENISHI,¹ Y SUZUKI,¹ Y HAMADA,¹ K KAJIKAWA,¹ K UESHIMA²

¹Takeda Hospital Group; ²Department of EBM Research, Institute of Advancement of Clinical and Translational Science, Kyoto University Hospital, Japan

Objectives: Exercise habits (Ex) prevent the accumulation of visceral fat and loss of lean body mass, such as skeletal muscle. Recently, DUALSCAN, the world's first device for measurement of visceral fat area (VFA) based on dual bioelectrical impedance analysis without X-ray exposure has been available in Japan. The aim of study was to investigate associations between Ex and body fat distribution.

Methods: Subjects were 832 Japanese (male, 563 case; mean age, 51 years) who took annual health checkup with measurements of VFA and subcutaneous fat area (SFA) using DUALSCAN, had any one of metabolic syndrome components (blood pressure <130/85 mmHg, triglyceride (TG) <150 g/dl, high density lipoprotein (HDL) -cholesterol \geq 40 g/dl, fasting glucose <110 g/dl), and did not receive drug therapy. We divided them into two groups (Ex, n=415, non-Ex, n=417).

Results: Ex group showed significantly lower TG levels and higher HDL-cholesterol levels than non-Ex group (Ex vs. non-Ex: TG 140.6 vs. 154.3 mg/dl, HDL 60.8 vs. 57.9 mg/dl). There were no significant differences in body weight (BW) and body mass index (BMI) between the two groups. VFA, SFA, VFA+SFA, VFA/BW, SFA/BW, (VFA+SFA)/BW in Ex group were

significantly lower than those in non-Ex group (Ex vs. non-Ex group: BW 66.7 vs. 67.1 kg, BMI 23.9 vs. 24.0 kg/m², VFA 73.7 vs. 78.3 cm², VFA+SFA 236 vs. 253 cm², VFA/BW 1.08 vs. 1.14, VFA+SFA/BW 3.5 vs. 3.7).

Conclusion: There was a significant difference in abdominal fat between the two groups despite similar BW. The index considering both abdominal fat and BW would be expected as a new index for evaluating the effect of Ex, since it is assumed that it could assess not only visceral fat accumulation but also loss of lean body mass.

25.

Actual Results and Behavior Modification Effects in Five Years of the Heart Disease Classes at Our Hospital

T NAKASHIMA, K USUDA, Y NAGATA, T UEDA, M TAKEDA, M HIRASE, M MINAMIZUKA

Toyama Prefectural Central Hospital, Japan

Introduction: The cardiac rehabilitation team has been composed of a variety of professionals in our hospital. It has the heart disease class as one of the team workings, this class for outpatients and their families, the lectures of comprehensive contents about cardiovascular disease and short exercise, followed by conversation session where they are split into groups. This is a report on the actual results and efficacy of this heart disease class in five years.

Methods: Questionnaires were given to the heart disease class and comparative tests were performed on satisfaction ratings and behavior modification effects. Behavior modification was examined using the Transtheoretical Model (TTM) behavior modification stages for management of medication, diet, and exercise.

Results: Regarding the efficacy of the class, in terms of satisfaction ratings, about 75% responded "very good" concerning their impression of the class and understanding and usefulness of the lecture. The same trend was not seen in satisfaction towards the conversation session, which was around 50%. For behavior modification, it tended to be easy to form a habit of taking medicine and difficult to form a habit of diet and exercise. Gradual behavior modification towards the maintenance phase was observed for taking medicine and diet with participation in an increasing number of classes, but this change was not observed for exercise.

Discussion: A certain degree of satisfaction was achieved with didactic transmission of information. As the conversation session was conducted by group work, session management is problematic such as discussion moderation and time management. Routine formation is essential in behavior modification, and as exercise is influenced by weather, physical condition, and living environment, making habits is more difficult than taking medicine and diet.

26.

Factors that Influence Improvement of Functional Capacity in Phase II Cardiac Rehabilitation Patients in Hasan Sadikin Hospital

M TANAKA, D ROSTIATI, BB TIKSNADI, A PURNOMOWATI, TM APRAMI
Cardiology and Vascular Medicine Department, Medical Faculty Universitas Padjadjaran-Hasan Sadikin Hospital Bandung, Indonesia

Objectives: To study factors that influenced improvement of functional capacity (FC) in patients who have completed phase II cardiac rehabilitation.

Methods: This analytic descriptive study was conducted in Cardiac Installation, Hasan Sadikin Hospital, Bandung, Indonesia by studying medical reports of patients who had completed phase II cardiac rehabilitation from April 2013 until August 2014. Functional capacity before phase II was assessed by submaximal exercise test (six minute walk test) and FC after phase II was assessed by symptom-limited exercise test (treadmill test). Patient characteristics included age, sex, body mass index, procedure performed before rehabilitation, risk factor, ejection fraction, and coronary angiography. Relationship between improvement of FC and patients' characteristics was analyzed with ANOVA, Pearson, and Spearman Rank correlation.

Results: A hundred and seventy eight patients participated in phase II cardiac rehabilitation and only 12 (6.7%) completed it. From those who completed, mean for age was 52 \pm 13 years old, 75% were male. Percutaneous Coronary Intervention (PCI) was performed in 41.7% patients, Coronary Artery Bypass Graft surgery in 33.3%, and valve replacement surgery in 25%. All twelve patients had improvement of FC after phase II cardiac rehabilitation (from mean FC 3.16 \pm 0.77 METs to 8.26 \pm 2.07 METs after). The average of improvement of FC was 5.10 \pm 2.03 METs. Improvement of FC was significantly higher in male patients (p=0.031) and in PCI patients (p=0.035). There was a negative correlation between improvement of FC with LVEF (r=-0.517, p=0.043).

Conclusion: Improvement of FC in patients after phase II cardiac rehabilitation seems to be influenced by LVEF and procedure performed before rehabilitation.

ABSTRACTS

Abstracts Presentation (Poster):

27.

Cardiopulmonary Exercise Test is Useful for the Optimization of CRT Parameters

MIMAI, H SHIRAIISHI, T HAMAOKA, A KUROYANAGI, T YMAMANO, T NAKAMURA, A MATUMURO, T SHIRAYAMA
Kyoto Prefectural University of Medicine, Japan

Objectives: It is important to maintain high percentage of biventricular pacing (Biv) for the effective CRT. Especially during exercise, CRT is often programmed based on the data at rest by echocardiography. There are limited data on optimal pacing during exercise. The patients with chronic heart failure often have chronotropic incompetence (CI). This is a prognostic predictor. Some study reported that the patients with severe CI can improve exercise tolerance after CRT implantation along with rate response capability. We evaluate the factors for the failure of Biv, to use cardiopulmonary exercise test (CPX).

Methods: 39 patients with CRT-P, CRT-D implanted from April 2007 to December 2012 were examined: 69 times CPX, age 66.4±10, BNP 411±300 pg/ml, underlying diseases (DCM 23, OMI 13, valvular replacement 13, sarcoidosis 11, AV block 2, LV non-compaction 1, myocarditis 1), NYHA class (I 4, II m 24, II s 29, III 12). sinus rhythm (including atrial pacing) 55times/28person, Af 14times/11person. We analyzed 12-lead electrocardiogram during CPX and evaluate CRT pacing after program optimization using UCG at rest.

Results: The failure of Biv was observed in 23 CPX (33%). The reasons for the failure of Biv were 1) own heart rate > Upper tracking rate (11 times), 2) af rapid response (8 times), 3) own PQ interval < AV delay (4 times). And severe CI (we define peak heart rate < (220-age x 0.7) was observed 39 times (56%). Customizations of device were performed such as increase of upper tracking rate for group 1, ablation of AV node or pharmacological rate control for af patients (group 2), and optimization of adaptive AV delay for group 3.

Conclusions: The failure of Biv was common during exercise, even after program optimization at rest. Device setting adjustment is necessary using CPX to improve exercise tolerance in CRT patients. The patients who had severe CI need to use rate response capability. Its can improve exercise tolerance.

28.

The Effect of Exercise Training in Patients with Chronic Heart Failure

L MEI, G LAN

The Fifth Affiliated Hospital of Guangzhou Medical University, Guangzhou, China

Objectives: To evaluate the effects of exercise training on heart function and functional capacity in patients with chronic heart failure, and whether the exercise training way in our study is safe and usable for CHF patients.

Subjects and Methods: We studied 40 CHF out-patients with NYHA II-III and left ventricular ejection fraction (LVEF) <45%, whose cardiac status remained stable after receiving regular drug treatment according to guidelines of CHF for at least 4 weeks. After initial measurements of LVEF, 6-minute walk test (6WMT) and bicycle exercise test, patients were divided into two groups, trained group (n=20) and control group (n=20). Two groups both received health education and counseling about CHF and psychological counseling. The trained group all participated in a cardiac rehabilitation program with exercise training (cycling once or twice a week and walking twice a week for 12 weeks), while the control group had no training program. After the training program was completed, all measurements above were repeated in both groups. At the same time we compare the differences of improvement of all measurements before and after training between two groups and observe the incidence rate of adverse events (arrhythmia, angina, aggravate heart failure, sudden death and so on) during exercise training.

Results: No significant differences were found between groups at baseline. After 12 weeks, LVEF, 6WMT and the bicycle exercise testing time in two groups were all improved significantly ($P<0.01$), but these were improved much more significantly in the trained group than the control group (LVEF by 3.48±4.47% vs 1.15±1.15%, 6WMT by 74.55±27.72 m vs 15.80±6.48 m, the bicycle exercise testing time by 1.35±0.78 min vs 0.44±0.20 min, $P<0.01$). The training group had significantly improved Work load on the bicycle exercise test by 23.75±15.12 watt (92.50±34.50watt to 116.25±37.41 watt, $P<0.01$), while the work load in the control group was unchanged. No training related adverse events occurred.

Conclusion: Exercise training way in this study is safe and usable for patients with CHF who had received regular pharmacotherapy. Exercise training can significantly improve heart function and functional capacity

ABSTRACTS

Abstracts Presentation (Poster):

29.

Recovery of Exercise Capacity and Level of Physical Activity in Patients after Transcatheter Aortic Valve Implantation

HY TSAI, HY HUANG, LY KUO, CL HSU, BY CHEN, YS LIN

Cardiac Rehabilitation Center, Cheng Hsin General Hospital, Taipei, Taiwan

Objectives: Transcatheter aortic valve implantation (TAVI) plays an important role in management of symptomatic severe aortic valve stenosis (AS). Because of commonly deconditioned and fragile status before TAVI, the recovery of functional ability is essential to assess the outcome in the cohort. The aim of this study was to evaluate exercise capacity and level of physical activity in patients after TAVI.

Method: 9 consecutive patients (5 male, age: 81.52±5.82 years old) after successful TAVI and complete 3-month evaluation were included for analysis. The exercise capacity was evaluated by 6 minutes walking test (6 MWT) and cardiopulmonary exercise testing. The results of International Physical Activity Questionnaires (IPAQ) represented the level of physical activity. Assessments were performed at discharge and 3 months after discharge. Wilcoxon test was used to compare the recovery of functional ability after discharge.

Results: The exercise capacity didn't significantly improve after 3 months discharge from hospital. The mean 6 MWT distance were from 232.24±101.65 to 247.87±94.70 (m) (p=0.29). The peak oxygen consumption was decreased from 20.32±27.97 to 10.3±4.27(ml/Kg/min) (p=0.87). And the calculated metabolic equivalent from IPAQ which reflects physical activity level didn't significantly increase either (331.65±218.41 to 437.25±479.43) (p=1.0).

Conclusion: Both exercise capacity and level of physical activity were still low even after successful TAVI, which may lessen the outcome. More constructive interventions to improve functional capacity, such as compact cardiac rehabilitation, are needed in the cohort.

30.

Collaboration with Cardiac Rehabilitation for the Prevention of Diabetic Nephropathy Dialysis

M KUBOTA, H HIGASHINO, S OKASHITA, J IWASAKA, Z IHARADA, S SATO, Y KIMURA

Kansai Medical University Health Science Center, Japan

Intervention for the prevention of diabetic nephropathy dialysis was covered by health insurance from 2012 in Japan. However the intervention for diabetic patients with CKD (Chronic Kidney Disease) is quite tough for the patient's various conditions. On the other hand, cardiac rehabilitation is a long-term comprehensive program of heart disease and enough experience for such as comprehensive situation and when performing patient education, questions or problems about the lifestyle-related diseases are often from the patient and some may not fully functional. Therefore we started diabetes health care clinic (DM health clinic) with cardiac rehabilitation team.

Result: There were some improvement in each stage of diabetic nephropathy, such as the second phase, the 3a, the 3b, fourth period. The intervention of a registered dietitian or nurse were performed as well as cardiac rehabilitation.

Conclusions: IPW (Inter Professional Work) such as drug therapy and nutrition specialist on diabetes is well established with the collaboration to cardiac rehabilitation. In the future, we will exercise leadership, including to the DM healthcare professionals as well as cardiac rehabilitation. Share information with DM department and cardiac rehabilitation exercise department would be excellent for diabetic nephropathy.

31.

Return to Work after Cardiac Rehabilitation Program and Post 6-Month Review

WWS CHAN,¹ MCY MUI,¹ CSF YAU,¹ LSW LI²

¹Occupational Therapy Unit; ²Cardiac Rehabilitation and Prevention Centre, Tung Wah Hospital, Hong Kong

Background: Return to work is one of the important outcome measures after the Cardiac rehabilitation Program (CRP). Occupational therapist provides work evaluation, work training and work counseling for the patients. The job analysis is done to identify the physical demand of the work task. Focusing on high physical demand, work simulated training is done under safety monitoring measures. The work counseling includes the matching of the work task with the physical capacity of the patients and performance during the training. Finally, advices are given in job modification and work precautions in order to resume work in safe and timely manner.

Method: It was a retrospective study in recording the rate of return to work of cardiac patients after Cardiac Rehabilitation program of 16 sessions in 2 months. Post 6-month review was reviewed. From 2012 to 2013, in these two years, cardiac patients who were working were finished the two months standard program (Phase 2) and Post 6-month review (Phase 3). The work nature and work status were collected for this working patients in Return to Work (RTW) group and Non-Return to Work (non-RTW) group.

Result: After Phase 2, 114 out of 135 patients returned to work. Rate of return to work was 84.4%. 92.2% of RTW group resumed to previous job. After Phase 3, 2 more cases were added in RTW group from non-RTW group.

Conclusion: RTW group had higher physical capacities in terms of mean MET and EF than the non-RTW group. Mean age of RTW group was younger than the non-RTW group. Numbers of RTW group were more or less the same with Phase 3, thus Phase 2 was a crucial stage that affecting return to work. Apart from simulated work training, job modification in nature and working time were effective strategies in maintaining economical and psycho-social benefits from work resumption.

* *Non-manual labour: teacher, clerk, manager involve less manual handling in the job*

Manual labour: construction site worker, fireman and delivery worker involve more manual handling in the job

Driver: commercial driver such as taxi-driver and truck driver

ABSTRACTS

Abstracts Presentation (Poster):

32.

Do We Need Extra Training Resource for Male Cardiac Rehabilitation Patients Without Pre-program Regular Exercise Habit?

FHF CHUNG,¹ YY LAU,¹ MSL MA,¹ EFM SO,¹ LSW LI,² KB LAM²

¹Physiotherapy Department; ²Department of Medicine, Tung Wah Hospital, Hong Kong

Objectives: Regular exercise habit is essential in maintaining cardiorespiratory fitness (CRF). Not all patients recruited in the cardiac rehabilitation program (CRP) have regular exercise before entering the program. Helping cardiac patients to develop a regular exercise habit is a priority goal of CRP. Through successful CRP training, most participants had a regular exercise habit and a gain in CRF at the end of program. Concern is raised about if more training is needed for patients without pre-program regular exercise habit, so that their CRF improvement after training would not be less than their peers with pre-program regular exercise habit. This study is to investigate if the above-mentioned extra training is necessary.

Methodology: It is a retrospective study. Male subjects were recruited from September 2007 to April 2012 in a cardiac rehabilitation center of a local hospital in Hong Kong. The cardiac rehabilitation program was a conventional one and consisted of 4 phases. Their exercise habits were investigated before and at the end of program. Only male patients with regular exercise habit at the end of program were recruited and their pre-program exercise habits were traced back for categorization: "Regular exercise group" (R) if they had pre-program regular exercise habit; and "non-regular exercise group" (NR) if they did not. Six-minute-walk-test (SMWT) and treadmill stress tests (METS) were used to measure the CRF of patients. Primary outcome measures were the changes in CRF (Δ SMWT and Δ METS) before and after CRP. Independent t-test was used to compare the Δ SMWT and Δ METS between the 2 groups. Alpha level was at 0.05.

Result: A total of 276 male patients were recruited in the study. There were 192 patients (age=62.6±10.2) in group R and 84 patients (age=56.5±10.6) in group NR. There was no significant difference between the groups in pre-program SMWT and METS.

Group	N	Pre-program (baseline)		End of program	
		METS (kcal/kg/hour)	SMWT (m)	METS (kcal/kg/hour)	SMWT (m)
R	192	7.3±3.11	435.5±87.0	9.31±3.17	474.1±94.1
NR	84	7.23±3.35	454.4±86.4	9.76±3.17	505.6±95.4

After CRP training, both groups had improvement in CRF. NR group did not gain less than group R in Δ SMWT and Δ METS.

Improvement in CRF	Group	N	Mean	Mean difference	
Δ SMWT	R	192	38.5±54.3	12.7	t = -1.66, df = 274, α <0.05, sig = 0.098
	NR	84	51.2±66.5		
Δ METS	R	192	2.0±2.2	0.5	t = -1.75, df = 274, α <0.05, sig = 0.082
	NR	84	2.5±2.4		

Conclusion: Among all male patients who had successfully developed regular exercise habit at the end of program, their pre-program CRF (baseline) did not show any significant difference between group R and NR. In addition, both R and NR groups showed similar improvement in CRF after training. It is worth to note that this retrospective study revealed that group NR did not have less gain in CRF than group R. Thus extra training for the patients with no pre-program regular exercise habit is deemed not necessary. However, further investigation of contents (mode, intensity, duration and frequency) of patients' regular exercise habit may be needed to account for the results.

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