ABSTRACTS

NATIONAL HEART ASSOCIATION OF MALAYSIA

FP1.1
THE USE OF ACTIVE FIXATION LEADS IN THE CORONARY SINUS IN LEFT SIDEOSSO PERCUTANEOUS LEAD IMPLANTATION: A NOVEL TECHNIQUE TO IMPROVE IMPLANTATION SUCCESS IN DIFFICULT CARDIAC RESTIMATION AND BIVENTRICULAR PACING SITUATIONS

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Background: Left ventricular pacing via the coronary sinus is an increasingly common procedure with the wider use of cardiac resynchronisation therapy. Optimal placement is essential for effective left ventricular pacing and avoiding phrenic stimulations. The presence of unfavourable coronary veno anatomy may lead to obstacles during implantation with the use of conventional left ventricular leads. These include lead instability, dislodgement and phrenic stimulations.

Objective: To investigate the use of an active fixation lead mechanism in overcoming these obstacles.

Methodology: Patients who had implantation of 4F active fixation leads (SelectSecure Model 3600, Medtronic, Minneapolis, USA) due to failed conventional left ventricular leads were selected for the study. PACING parameters were tested at implantation in the event where the pacing parameters were unsatisfactory, the leads were unrecovered and fixed at a new location until satisfactory parameters were obtained. We analysed pacing parameters at implantation and follow-up as well as monitoring for lead related complications in these patients.

Results: 4F active fixation leads were implanted in a total of 36 patients. Among these, 80.0% were due to lead instability while 11.1% for phrenic stimulations. 17 patients (47.2%) had ischaemic cardiomyopathy. Mean follow-up duration was 8.1 months. Pacing threshold at implantation was 1.4 ± 0.68 V and impedance was 787 ± 381 Ohms. On follow up at one month, six months and twelve months, the pacing thresholds were 1.38 ± 0.58 V, 1.60 ± 0.55 V and 1.44 ± 0.56 V, respectively (p<0.05), and impedances were 612 ± 190 Ohms, 655 ± 220Ohms and 741 ± 321 Ohms, respectively (p<0.05). No acute, intermediate or long-term complications were seen.

Conclusion: Usage of 4F active fixation lead to overcome left ventricular lead implantation obstacles confers benefit of high success rate, stable pacing parameters and avoids of lead related complications in this group of patients.

FP1.2
PACING IN PATIENTS WITH PROSTHETIC TRICUSPID VALVE: AN UN EXPERIENCE

Authors: Aceeagasper, MD; Ahmad, N. A. F; Azman, R; Salleh, A.; Bujang, L.; and Jamil, O.

Background: Permanent pacemaker implantations in patients requiring ventricular pacing is usually accomplished by the placement of endocardial pacing lead in the right ventricle. In the presence of prosthetic tricuspid valve, this method has the potential of causing complications to the lead or the prosthetic valve and thus not recommended. Previous recommendation was to implant an epicardial lead either during surgery or in the event a pacing indication appears. With the advent of cardiac resynchronisation therapy and biventricular pacing, we explore the option of pacing this group of patients from the coronary sinus.

Objective: To analyse the use of pacing from the coronary sinus in patients with a tricuspid valve prosthesis and a pacing indication.

Methods: Between July 2008 until September 2011, we implanted 6 pacing leads in 5 patients with prosthetic tricuspid valve who required ventricular pacing. We used 2 passive fixation leads in 2 patients and 4 active fixation leads in 4 patients. Active fixation leads were used in view of lead instability as compared to conventional coronary sinus pacing leads. The performance of the leads and its related complications were then monitored.

Results: The leads were successfully implanted in all 5 patients. One patient had a previous passive lead in the coronary sinus, which was later changed to an active fixation lead as the pacing threshold of the passive lead was progressively increasing. The post-implantation pacing parameters were within acceptable limits. Follow up, pacemaker interrogations revealed stable pacing parameters. No immediate or late complications were observed.

Conclusion: Lead placement in the coronary sinus to deliver left ventricular stimulation in patients with prosthetic tricuspid valve is feasible. The pacing leads in the coronary sinus showed stable and consistent delivery of acceptable pacing performances.

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**FP1.5**

**PREVALENCE OF ASYMPTOMATIC ATRIAL FIBRILLATION IN MALAYSIAN PATIENTS WITH HYPERTENSION**

Wang Jin, Shendi; Hoo, Han Foo; Fadzil, Basri; Mamat, Aini; Fong, Yean Yew; Li, Li

**Objective:** To ascertain the prevalence of AAF in hypertensive patients in Malaysia, in a primary care setting, and in conjunction with published data from the National Health and Morbidity Survey III (NHMS III) and the Department of Statistics in Malaysia, to estimate the number of patients with AAF in Malaysia.

**Methodology:** Clinical and electrocardiography (ECG) data were retrospectively collected from consecutive patients aged 30 years and above attending a hypertension clinic where vital signs and a 12-lead ECG were routinely undertaken, and had no typical symptoms of atrial fibrillation, at 45 visiting days between 6/8/2011—10/12/2011.

**Results:** Of 3789 patients attending the hypertension clinic, 1994 patients had complete clinical and ECG data for analysis. 26.5% patients were male. The mean age was 53.8 ± 12.1 years. 15 patients had AAF confirmed on ECG, giving an overall prevalence of 0.75% in this study population, with the proportion similar in males and females (0.79% vs 0.71%, respectively). The prevalence of AAF increases with age. In the age groups of 40-49, 50-59, 60-69, 70-79, ≥80 years old were 0.5%, 1.7%, 2.4%, 2.5%, respectively. The NHMS III revealed that 42.6% of adult Malaysians 30 years old had hypertension. Estimating that 50% of the 26.8 million population in Malaysia in 2006 were ≥ 30 years old, the number of those having hypertension would be 13.4 million, and the number of people with AAF would be 105,900. Extrapolating to 28.3 million people in Malaysia in 2010, the corresponding number of people with AAF would be 105,500.

**Conclusion:** The prevalence of AAF in hypertensive patients 20 years old at the primary care setting in Malaysia is 0.75%. The estimated number of Malaysians with AAF in 2010 would be 105,500. With a large population at risk AAF-related complications, including strokes, there is justification for an even greater emphasis on diagnosis, primary and secondary prevention strategies.

**FP1.6**

**THE PREVALENCE AND PREDICTORS OF LEFT VENTRICULAR THROMBUS FORMATION IN PATIENTS WITH ISCHEMIC CARDIOMYOPATHY IN BANJIR RHYTHM**

Chen Yee Long, Aloe Yong Yean Yee, Yee Choon Cheng, Yee Aue Leong, Chee Seng Kong, Nor Hazilah Binti, Haining Yeong, Han Jin Choon, Foo Huai Hock, Chye Yuan Yean

**Background:** Patients with left ventricular (LV) syolic dysfunction are at increased risk of LV thrombus formation and thromboembolism. Previous studies using echocardiography for thrombus detection have yielded inconsistent findings regarding prevalence and predictors of thrombus formation. Contrast-enhanced cardiac magnetic resonance imaging (CMR) is superior to echocardiography in the detection of LV. The local prevalence and predictors of LV in this population, utilizing CMR as the imaging modality, has not been established.

**Study Objectives:** To determine the prevalence and predictors of LV in patients with ischemic cardiomyopathy who are in sinus rhythm.

**Methodology:** Prevalence of LV was determined in 187 consecutive patients with ischemic cardiomyopathy (defined as LV ejection fraction (LVEF) <40% and coronary artery disease diagnosed with coronary angiography) in sinus rhythm who underwent CMR at Sarawak General Hospital between 2002 and 2011. Clinical and CMR imaging parameters were assessed to determine the predictors of LV formation.

**Results:** LV was detected in 10.2% of patients. The mean LVEF was 25.1±7.9 and 29.6±9.5 in the LV and no LV groups respectively, with a trend towards poorer LV function in the LV group but this statistic did not reach significance. Parameters like age, gender, diabetes mellitus, hypertension, former or current smoking, previous stroke, previous acute coronary syndrome, estimated glomerular filtration rate, body mass index, number of diseased vessel(s), previous coronary revascularization, number of non-viable myocardium area by vascular supply, LV aneurysm and LV end systolic and diastolic volumes were not statistically different between groups. In the LV group, 47% were on antiplatelet therapy prior to CMR for suspected LV or LV aneurysm, compared to 7.7% in the no LV group. 50% of LV and 25% were on single and double antiplatelet therapy respectively in the LV group compared to 77% (p<0.05) and 21% (p=0.05) in the LV group respectively. Nonviability in myocardium supplied by left anterior descending artery (LAD) (p<0.05) and right coronary artery (RCA) (p<0.05) were associated with LV formation, while a history of former or current smoking (p=0.05) was a negative association.

**Conclusion:** In this cohort of patients with ischemic cardiomyopathy in sinus rhythm, the prevalence of LV is 10.2%. Nonviability in myocardium supplied by LAD and RCA were independent positive predictors of LV formation while a history of former or current smoking (p=0.05) was a negative association.

**FP1.7**

**NT-PROBNP LEVELS, AS PREDICTOR OF LEFT VENTRICULAR SYSTOLIC AND DIASTOLIC DYSFUNCTION IN PATIENTS WITH ATRIAL FIBRILLATION:**

Ooi Min Mah, MBBS, FRACP; Li, Li; Amin, An; Cheah, Chuan; Yeap, Lock Kim; Wu, Michael; Li, Li

**Background:** Heart failure (HF) is a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill with or ejected blood. Electrocardiography parameters shown that correlate well with left ventricular (LV) diastolic and systolic dysfunction. Chronic heart failure (CHF) is currently recognized as a clinical syndrome occurring not only as a result of mechanical dysfunction of the ventricles, but also due to complex molecular, endothelial, neuroendocrine, and inflammatory changes.

**Objective:** The objective was to assess the correlation between echocardiographic parameters and plasma levels of pro brain natriuretic peptide (NT-proBNP) level in patients with systolic or diastolic dysfunction.

**Method:** The study involved 109 patients with heart failure, conventional and tissue Doppler (TDI) echocardiographic parameters correlating with NT-proBNP level which taken at the same time.

**Results:** Age and echocardiographic parameters compared with plasma NT-proBNP levels, no relationship of NT-proBNP level with age (r=0.103, p=0.066), significant correlations were found between NT-proBNP level and late diastolic mitral annulus velocity Am (r=0.72, p<0.000), systolic mitral annulus velocity Em (r=0.73, p<0.000), early diastolic mitral annulus velocity (r=0.71, p<0.000), LV ejection fraction (r=0.63, p<0.000). In multiple regression model analysis NT-proBNP levels, independently related to age, LV ejection fraction, Am velocity and Em velocity (R²=0.78, p<0.000). The ejection fraction and systolic velocity were the most important predictor of NT-proBNP level.

**Conclusion:** NT-proBNP correlate strongly with echocardiographic parameters, and provide routine simple, accurate parameters of heart failure; routine NT-proBNP testing may be useful in places where echocardiography machine is not available to evaluate the LV function.

**FP1.8**

**VENTRICULAR ASSIST DEVICES, AN OPTION FOR PATIENTS WITH END STAGE HEART FAILURE: EXPERIENCE AT INSTITUT JANTUNG NIGARA**

Goh, Kian Cheow; Foo, Hong Soon; Li, Li; Ng, Terry; Li, Li; Chong, Yaw Eng

**Background:** Despite recent advancement in the management of heart failure, the quality of life and the survival rate of patients with severe heart failure remains limited. The one-year mortality rate of those with advanced heart failure excess 50% and the occurrence of sudden death is frequent. For those patients who are suitable candidates, cardiac transplantation is the gold standard treatment of proven benefit. However, worldwide shortages of donor hearts have resulted in the development of Ventricular Assist Device (VAD) to "bridge" patients to heart transplant. This paper examines the experience with left ventricular assist devices in heart failure patients at institut Jantung Negara (IJN).

**Results:** Since 2005, IJN has carried out 13 VAD implantations in patients with terminal heart failure. The mean age of these patients was 30 years old and ranging from 13 to 46 years old. Only 3 out of the 13 patients were female. Most patients suffer from ischaemic cardiomyopathy (9 patients). 3 patients had ischaemic cardiomyopathy and one patient had postpartum cardiomyopathy. 6 patients were on bioprost in prior to VAD implant (tricusps profile 2 and 3), 11 of the 13 patients were implanted as a bridge to transplantation: 2 patients were implanted as a destination therapy as heart transplant was unavailable due to raised pulmonary pressure. Since 2010, the smaller and streamlined design of an art cardiac Heim and centrifugal flow pumps (Impella) has been implanted instead of the pulsatile pumps (PiVAD and iVAD) which were much larger. Outcomes: 4 patients died following implantation. The cause of death was bowel ischaemia (1 patient), haemorrhagic stroke (2 patients) and sepsis with multiple organ failure (1 patient). 1 patient developed persistant postoperative infection and had surgical detoriation. 3 patients received heart transplant and remaining 6 patients are on ongoing support from the VAQ.

**Conclusion:** VAQ implantation is an option in end stage heart failure patients as a "bridge to heart transplant" or as "destination therapy" in suitable candidates.
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PP2.1

IMMEDIATE AND SHORT TERM OUTCOMES OF MTRACLIPT THERAPY FOR SEVERE MITRAL REGURGITATION
Ahmad Omar, Liau Cheok, Wansiti Zulkifli, Caiudee Earl, Sung Bahariz, Siti Shaquizah Hazal, Zaini Zain, Ahmad Zainuddin, et al.

Background: Percutaneous mitral valve repair using the Transcatheter MitraClip device is a novel therapy for treating severe mitral regurgitation (MR). MitraClip therapy consists of percutaneous edge-to-edge coaptation of the mitral leaflets that is analogous to the surgical Alfieri technique.

Objectives: This is a prospective single centre study to evaluate the feasibility, safety and efficacy of the MitraClip system.

Methodology: Patients were screened with transesophageal echocardiography (TEE) and if suitable, underwent transesophageal echocardiography (TEE) to assess the mitral valve in detail. Seven patients with MR > 3 and 4 mitral percutaneous mitral valve repair under general anesthesia from the 14th to the 20th December 2011. We assessed their MR with TEE during screening and TEE immediately post procedure and 1 month later. NT-proBNP, 6 minutes walk test (6MW), New York Heart Association (NYHA) status and SF 36 quality of life questionnaires were measured during screening and during their follow-up.

Results: The average age for mitral therapy was 59 ± 7 years in which three patients had degenerative MR and two patients had rheumatic and functional MR respectively. All patients had successful deployment of the mitral device (100%). Three patients had two clips deployed. There were no deaths or cerebrovascular accident in our mitral patients. One patient (14%) had a new pericardial effusion, which resolved itself and one developed transient atrial fibrillation but reverted to sinus rhythm before discharge. All patients (100%) had good immediate results with MR < 2+. All patients were evaluated within the same day with an average ICU stay of 2.5 ± 0.3 days. Six patients (85.7%) had New York Class 1 prior to discharge. At 1 month follow-up post mitral, there was generally an improvement in their NYHA and 6MWT status. However, there were no significant differences yet in their NYHA status, NT-proBNP or their left ventricular dimensions. Six patients (85.7%) remained to have MR < 2+

Conclusion: Percutaneous mitral valve repair with the MitraClip system appears to be safe with good immediate and short term results. These patients will be assessed every six months to evaluate the intermediate and long term outcome.

PP2.2

FRACTIONAL FLOW RESERVE AND ITS CLINICAL OUTCOME IN HOSPITAL SERDANG
Ari Kavasi, Guria Aman, Nabil Azmi, Siti Hafizah, Siti Afiqah, Zaini Zain, Ahmad Zainuddin, et al.

Introduction: The numbers of coronary interventions have increased tremendously and even experienced operators cannot adequately assess moderate coronary lesions based on the angiographic appearance alone. Fractional flow reserve (FFR) has emerged as a simple, reliable and reproducible physiologic assessment of lesion severity.

Methods: This study describes the usage of FFR currently in Hospital Serdang and investigates the patients who underwent this assessment and to determine its outcome. An FFR value of < 0.75 predicts significant ischemia. It is safe to defer PCI when FFR ≥ 0.90. This was used to indicate significant ischemia and to determine whether the patient requires intervention.

Results: In Hospital Serdang, 2776 patients underwent coronary angiogram in 2011, and 860 (31.1%) subsequently underwent percutaneous coronary intervention (PCI). 39 patients (4.4% of PCI) were identified with moderate coronary lesions with a fractional flow reserve (FFR) using the FFR system with a wire. Intra coronary adenosine used to achieve hemodynamic state. 223 patients (21.6% of PCI) were found to have significant coronary artery lesions (FFR < 0.92) and 7 patients (0.7%) were found to have significant coronary lesions that were not intervened for various reasons. The remaining 215 patients (56%) revealed non significant coronary lesions that were managed conservatively. 761 patients (86%) were followed up by the cardiology department. 28 patients (8.8%) died during follow-up and 23 patients remained asymptomatic. Of the remaining three patients who were symptomatic, one patient subsequently underwent intervention and two were medically treated. 761 patients (86%) were followed up by the cardiology department. 28 patients (8.8%) died during follow-up and 23 patients remained asymptomatic. Of the remaining three patients who were symptomatic, one patient subsequently underwent intervention and two were medically treated. 28 patients (8.8%) died during follow-up and 23 patients remained asymptomatic. Of the remaining three patients who were symptomatic, one patient subsequently underwent intervention and two were medically treated. 28 patients (8.8%) died during follow-up and 23 patients remained asymptomatic. Of the remaining three patients who were symptomatic, one patient subsequently underwent intervention and two were medically treated.

Conclusion: After our small study, we have found that FFR is an important adjunct tool to cardiac intervention. Firstly it averts unnecessary PCI from being performed. Secondly it reduces long term adverse cardiac events as a result of overzealous intervention. Thirdly, it can be performed safely and quickly. In the long term, FFR brings substantial cost savings to the patient and our centre.

PP2.3

LEFT MAIN CORONARY VESSEL ANGIOPLASTY IN ACUTE CORONARY SYNDROME: EXPERIENCE FROM NCVCD-PCI REGISTRY
KH Chee, Yee Choo, Ruk Aman, Noraini, Caiudee Earl, 6MW, New York Heart Association (NYHA) status and SF 36 quality of life questionnaires were measured during screening and during their follow-up.

Methodology: The Malaysian NCVCD-PCI registry is a voluntary, multi-centered, observational cohort study designed to evaluate the clinical outcome of patients, 16 years old and above with coronary artery disease who underwent PCI in major cardiac centers in Malaysia. From 2007 to 2009, a total of 10,001 patients were admitted for PCI procedure. This registry reported 11,495 PCI procedures were done within the same period. A total of 15,020 lesions were treated with PCI. We performed statistical analysis on patients whom PCI was performed on left main stem.

Results: In the registry, a total of 287 (1.8%) lesions were of left main coronary artery in location. Left main stem interventions were performed in 313 (32.4%) patients presented with ACS. The incidence of AMI and NSTEMI was equal in this cohort. No significant difference was seen between age, gender, history of previous bypass and traditional cardiac risk factors among patients with ACS or without. More than half (35%) of the patients presented with ACS developed Killip II or higher. About 66% of the patients presented with ACS had no previous history of oral antiplatelet therapy. Most of the patients with ACS (73%) had a normal prior electrocardiogram. Indeed, about 10% of ACS patients had no flow on diagnostic angiography. Interventions were successful in more than 95% of cases and TIMI flow achieved in 98% of patients. Drug eluting stents were used less commonly among ACS patients (34.6%) than non-ACS patients (93.7%). Considerations were more common among ACS patients than non-ACS patients. vessel dissection (13.4% vs. 8.7%), no reflow (11% vs. 5.6%) and perforation (< 1% vs. 1%). Clinical significant bleeding complications was rare. About 10% of ACS patients who underwent PCI were found to have significant stenosis or stenosis in any vessel.

Conclusion: Left main coronary vessel angioplasty intervention in the setting of acute coronary event is a viable option in view of high risk profiles of these patients. Our data is comparable with published papers.

PP2.4

SERUM S-TYPE NATRIURETIC PEPTIDE (BNP) PREDICTS OBSTRUCTIVE CORONARY LESIONS IN STABLE CORONARY ARTERY DISEASE AND LEVEL INCREASES AFTER CORONARY ANGIOGRAPHY
S. Arik, Zaini Zain, Ahmad Zainuddin, et al.

Background: S-type natriuretic peptide (BNP) has been widely reported to be not only a sensitive marker for left ventricular failure and acute coronary syndrome but also carries a prognostic value in patients with coronary artery disease. However, other relationship between BNP with stable coronary artery disease is not clear and little data is available regarding the effect of coronary angiography on serum level of BNP. Hence we investigate serum BNP level in relation to predicting the extent of coronary artery lesion and how it is affected by coronary angiography in stable patients.

Objectives: 1) To evaluate the potential role of BNP in predicting the presence of obstructive coronary lesion in patients with stable coronary artery disease. 2) To examine to effect of coronary angiography on serum level of BNP.

Methodology: We prospectively examined 25 patients who were electively admitted for coronary angiography. All patients had normal left ventricular ejection fraction on echocardiography. Blood samples were taken at 01 and 24h post coronary angiography and tested for serum BNP level using Alere (Abbott). Immediate fluorescence immunoassay for the rapid, quantitative determination of [BNP]. These patients were then classified into two groups: Group 1 had with obstructive lesions (more than 70% stenosis in any vessel) and Group 2 had those with non-obstructive lesions (less than 70% stenosis in any vessel).

Results: 1) Serum BNP was significantly higher in patients with obstructive coronary lesions (Group 1) compared to those without obstrusive lesion (Group 2) (p = 0.0017). 2) Serum BNP takes significantly 24 hours post coronary angiography (z = 6.9, P = 0.016).

Conclusion: Serum BNP is a potential marker in predicting the presence of obstructive coronary lesion in stable patients with coronary artery disease. Hence it is potentially useful in predicting patients who would likely be needing coronary artery revascularization. Serum BNP measurement post angiography may be useful in assessment.

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FP2.5
CATHETER-BASED SELECTIVE RENAL ARTERY DENERVATION FOR THE TREATMENT OF RESISTANT HYPERTENSION IN ASIAN POPULATION: AN INITIAL EXPERIENCE IN MALAYSIA


Background: Hypertension is a major risk factor for stroke, heart disease and kidney failure. While current treatment options of lifestyle modification and pharmacotherapy is successful in lowering blood pressure to target goal in the majority, an estimated 16-27% of subsets population has resistant Hypertension despite multiple medications. Adding more medications bring concerns of tolerance, side effects, compliance and costs. Recently, a novel technique using Radiofrequency Energy to ablate renal sympathetic nerves has been shown to reduce blood pressure in Resistant Hypertension patients.

Objectives: To describe our initial experience of using a device based, percutaneous approach of renally denervating the renal sympathetic nerves using Radiofrequency Ablation (Symplicity® Catheter system) to treat Resistant Hypertension patients in Malaysia.

Methodology: Between September 2011 and January 2012, a total of 11 (consecutive) patients with Resistant Hypertension who consented and meet the criteria who underwent Renal Artery Denervation using the Symplicity Catheter system were included in the study. Five patients (45.4%) were Malay, three (27.3%) Chinese and three (27.3%) Indian. Patients came back for follow up at two weeks and one month post procedure. Office Blood Pressure and Ambulatory Blood Pressure monitoring (ABPM) using 5100-Model Pocket waven device were recorded, as well as blood and urine tests.

Results: 10 patients had successful denervation of both renal arteries. The mean procedure time was 61.8 ± 12.5 minutes and mean contrast used 170 ± 45 ml. An average of 4.0 ± 1.6 renal artery was treated per patient. The baseline mean Office Blood Pressure was 164/93 ± 14/10 and mean ABPM was 158/96 ± 16/10. At 2 weeks follow up, the mean office Blood Pressure reduced to 156 ± 13 (p < 0.05) and after 1 month follow up, the mean office Blood Pressure reduced significantly to 138 ± 26 (p < 0.01) and mean ABPM was 140 ± 14 (p < 0.02). The mean office Diastolic Blood Pressure reduced to 80 ± 19 (p < 0.01) and mean ABPM diastolic was 80 ± 14 (p < 0.02). The baseline mean Serum Creatinine level was 0.6 ± 14 umol/l. There was no significant difference at two-weeks and one month follow up.

Conclusion: Catheter based Renal Artery denervation with Radiofrequency Energy seems to be effective at reducing the Blood Pressure of Resistant Hypertension patients at one month follow-up with minimal adverse events.

FP2.6
ANTITHROMBOTIC USAGE AND 30-DAY OUTCOMES: THE MALAYSIAN NCDV-PCI REGISTRY EXPERIENCE


Background: Adjunctive antiplatelet therapy is an important component to reducing major acute, short- and long-term adverse clinical outcomes during and following percutaneous coronary intervention (PCI). The National Cardiovascular Disease (NCDV)-PCI Registry also assessed antithrombotic use in patients undergoing PCI in Malaysia.

Objectives: To determine antithrombotic use at the time of PCI, and their relationship with 30-day mortality and bleeding outcomes.

Methods: From the NCDV-PCI Registry encompassing 10823 patients who underwent PCI in Malaysia at 11 tertiary cardiology centres between 2007-2009, data from 10565 (98.7%) were complete and used for analysis.

Results: The mean age of patients was 67±10 years, 81.5% were male, 24.4% aged below 50 years old, 99% of patients had at least one conventional cardiovascular risk factor. Antiplatelet drugs given pre and during procedure, 82% of patients were prescribed unfractionated heparin (UFH), 4% of patients were prescribed low molecular weight heparin (LMWH). For patients on antplatelets, 97% were prescribed aspirin, while 99% were prescribed clopidogrel during the admission. 9673 patients (92%) received clopidogrel prior to PCI of these patients 8972 were on clopidogrel alone, 1039 had concurrent use of aspirin. 95.9% of patients had complete clopidogrel prior to PCI. Of these patients 9037 were on clopidogrel alone, 205 had concomitant use of aspirin. The mean UFH use was 77.7 hours prior to PCI, while 5.9% had UFH use > 72 hours prior to PCI. 87.1% had > 24 hrs ticlopidine use prior to PCI, 7.4% of patients had ticlopidine use > 72 hrs prior to PCI.

Conclusions: There was a large variation in the type of antithrombotic use, especially for clopidogrel loading patterns. PCI, we noted that the majority of patients with 30-day mortality were of the group having emergent PCI following ACS. It appeared that those patients who received earlier and higher loading dose of clopidogrel prior to PCI had better outcome. Major bleeding was rare.

FP2.7
PERCUTANEOUS TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI) IN SELECTED HIGH-RISK SYMPTOMATIC PATIENTS WITH AORTIC STENOSIS: A MALAYSIAN SINGLE CENTER EXPERIENCE


Background: Recently the transcather anticoagulation aortic valve implantation (TAVI) has been introduced to treat severe aortic stenosis in patients who are unable to undergo the aortic valve replacement (AVR). It has become a rapidly evolving procedure and National Heart Institute Malaysia has been performing this procedure since 2009.

Objectives: This paper describes a single-center experience with our first 18 TAVI procedures using the Medtronic CoreValve® to treat severe symptomatic aortic stenosis patients.

Methodology: From May 2009, 18 patients with symptomatic severe aortic stenoses and unsuitable AVR were recruited and undergone TAVI procedure. The mean age was 76 ± 4 years (minimum 68 and maximum 83). Majority of the patients (14 out of 18) are male. As per National Institute, mortality are Malay (91%), followed by Indian (9%) and Chinese (17%). 11 patients have hypertension and coronary artery disease, eight have Type 2 DM, five have chronic renal failure, three have chronic obstructive airways disease, five have chronic anaemia. One patient had Myelomelanosis and another had previous nephrectomy, and all are current smoker. The average New York Heart Association classification is 2 ± 0.8. Majority of the procedure was done via the transfemoral approach (16 cases) while one had procedure via transaxillary approach and another had to go for femoral subcutaneous approach. The procedure average time was 120 minutes and the mode of anaesthesia was used in 39%.

Results: As according to the VARC (Valve Academic Research Consensus) 2010 criteria, our device success rate was 100%, no mortality within 30 days and 85.7% success rate of 30 days combined safety endpoints. Echocardiographic mean aortic valve area increased significantly from 0.5 ± 0.3 to 2.1 ± 0.5 (p < 0.01). Aortic valve gradient 87 ± 38 mmHg decreased to 15.7 ± 7mmHg (p < 0.01). functional class improved from 2.3 ± 0.8 to 1 ± 0.6 (p < 0.01). The SFC does not change significantly, changed from 0.01 ± 0.01 to 0.00 ± 0.00 (p < 0.01). Median length of hospital admission was 8 days (5-17 days). Patient had right sided CVA, one had acute MI five days post TAVI necessitating primary PCI, four needed permanent pacemaker implantation, one had infected groin hematoma, one had dissection abscess needing prolonged antibiotics and drainage and no death within 6 months followup.

Conclusion: It has been demonstrated that in selected high risk aortic stenosis patient transcather anticoagulation aortic valve implantation is safe with low complications and significantly improve the functional status, this procedure parameter increased mean aortic valve area and reduction of Aortic valve mean gradient) and the clinical outcomes (NYHA classifications).

FP2.8
LONGITUDINAL STENT COMPRESSION: IS IT FOR REAL?

Yew Sien Lim, Ahn San, Chen Yemen Liang, Chong Bee Cheong, Feng Yee Yap, Lim Wei Ping, Sue Tan Swee, Ong Chuan Kung.

Background: Development of stents with improved stent design has enabled more percutaneous coronary intervention (PCI) procedures to be done in complex coronary artery disease (CAD). 2011 was the year longitudinal stent compression (LSC) controversy ended. LSC could be the result of individual or class effect of stent design weakness, in particular the longitudinal stent strength.

Objectives: (To identify LSC and its incidence rate in the local real world setting; (To identify possible pathologies and predictors for the occurrence of LSC; (To identify remedial measures for LSC and any major adverse cardiac event (MACE).

Methodology: This was an observational study conducted in a cardiac center with high volume of cardiac catheterisation cases over a 12 month period, looking for the occurrence of LSC; procedural analysis and follow up of cases for MACE. We reviewed 906 consecutive PCI cases angiography and flies and conducted discussion with fellow interventional colleagues for their personal experience of LSC.

Results: There were two cases of LSC, giving an incidence rate of 0.22% per annum. Both occurred in diabetic male patients, one in elective and one in emergency setting. In the elective case, balloonrost after the deployment of Promus Element stent in left circumflex artery to release the embroade BMV, gave proximal stent implantation and compression. Unfortunately, we couldn’t salvage and correct the LSC due to technical difficulty. Subsequent functional testing with dobutamine stress ECHO was negative. The second case was an acute left main (LM) occlusion with Promus Element stent deployed from proximal left anterior descending artery (LAD) to LM. The deployed LM stent was compressed by the guiding catheter. The damaged stent segment was balloonized and the expanded visual LM was covered with another stent, Vicor X. Median follow up was 82 days with no MACE.

Conclusions: There was 0.22% incidence rate of LSC in our center, exclusively with a single type of stent, possibly its excellent radio-opacity characteristic enabled prompt detection of LSC and its common usage in CDAC PCI. We believe LSC is not a new phenomenon, maybe under reported and already existed in the local real world setting with various types of stents. We urge scrupulous PCI technique to prevent this technical PCI malady.
FP1.1
EVALUATION OF VAPARFIN MEDICATION THERAPY ADHERENCE CLINIC (MTAC): IMPROVING PATIENT CARE

Methods: This was a cross-sectional study among female patients aged 16 years or older attending the Doi Pharmaceutical Department, Hospital Tengku Ampuan Afzan, Kuantan. At least 10 patients were included in each participating hospital. The main outcome was the adherence rate to medication therapy adherence clinics (MTAC) as measured by the percentage of patients taking the prescribed medication exactly as prescribed.

Results: A total of 209 patients were included. The mean age was 60.2 ± 8.8 years, and the majority were female (94.7%). The adherence rate to the MTAC was 88.9%. Patients who attended the MTAC were more likely to take their medications as prescribed compared to those who did not attend (p < 0.05). The factors associated with better adherence included higher education level, higher income, and receiving more education from the healthcare provider.

Conclusion: MTAC can improve medication adherence among patients with chronic diseases. Further studies are needed to evaluate the long-term impact of MTAC on patient outcomes.

FP1.2
DETERMINATIONS OF VAPARFIN USE AND ANTI-OXIDATION LEVELS IN MEDICATION THERAPY ADHERENCE CLINIC (MTAC) PROGRAMME

Methods: This was a cross-sectional study among female patients aged 16 years or older attending the Doi Pharmaceutical Department, Hospital Tengku Ampuan Afzan, Kuantan. The study included patients with diabetes mellitus type 2 and hyperlipidemia. The main outcome was the determination of Vaparfin use and anti-oxidation levels in patients attending MTAC as measured by the percentage of patients taking the prescribed medication exactly as prescribed.

Results: A total of 209 patients were included. The mean age was 60.2 ± 8.8 years, and the majority were female (94.7%). The adherence rate to the MTAC was 88.9%. Patients who attended the MTAC were more likely to take their medications as prescribed compared to those who did not attend (p < 0.05). The factors associated with better adherence included higher education level, higher income, and receiving more education from the healthcare provider.

Conclusion: MTAC can improve medication adherence among patients with chronic diseases. Further studies are needed to evaluate the long-term impact of MTAC on patient outcomes.

FP1.3
IMPACT OF CYP2C9 ALLERGIC VARIANTS ON CLOPIDOGREL AND CLOPIDOGREL METABOLITE LEVELS IN PATIENTS PLANNED FOR PCI

Methods: A total of 300 patients undergoing PCI were recruited. The patients were divided into two groups: Group A (n=150) and Group B (n=150). The CYP2C9 genotype was determined using PCR-RFLP method. The primary outcome was the impact of CYP2C9 genotypes on Clopidogrel and metabolite levels.

Results: The mean age was 60.2 ± 8.8 years, and the majority were male (54%). The adherence rate to the MTAC was 88.9%. Patients who attended the MTAC were more likely to take their medications as prescribed compared to those who did not attend (p < 0.05). The factors associated with better adherence included higher education level, higher income, and receiving more education from the healthcare provider.

Conclusion: CYP2C9 alleles had no significant impact on Clopidogrel and metabolite levels in Malaysian patients planned for PCI.

FP1.4
ASSESSMENT OF ADHERENCE TO ACUTE CORONARY SYNDROME SECONDARY PREVENTION PHARMACOTHERAPY

Methods: A total of 100 patients with acute coronary syndrome were recruited. The patients were divided into two groups: Group A (n=50) and Group B (n=50). The CYP2C9 genotype was determined using PCR-RFLP method. The primary outcome was the impact of CYP2C9 genotypes on Clopidogrel and metabolite levels.

Results: The mean age was 60.2 ± 8.8 years, and the majority were male (54%). The adherence rate to the MTAC was 88.9%. Patients who attended the MTAC were more likely to take their medications as prescribed compared to those who did not attend (p < 0.05). The factors associated with better adherence included higher education level, higher income, and receiving more education from the healthcare provider.

Conclusion: CYP2C9 alleles had no significant impact on Clopidogrel and metabolite levels in Malaysian patients planned for PCI.
A b s t r a c t s

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NATIONAL HEART ASSOCIATION OF MALAYSIA

FP4.1

THE UTILITY OF POINT OF CARE GENOTYPING TECHNOLOGY IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION: FIRST EXPERIENCES IN ASIA - A CASE REPORT


Background: The utility of Polymerase chain reaction (PCR) to detect diverse myocardial infarction (STEMI) and acute coronary syndrome (ACS). We postulate that intense inflammation provokes left ventricular systolic dysfunction which leads to the development of acute pulmonary oedema (APE). Hence, we aim to examine the association of admission NLR in STEMI or ACS with APE.

Methods: A chart review was carried out on 193 patients who were admitted to Penang General Hospital for clinical diagnosis of STEMI or ACS which comprises of non ST elevation myocardial infarction (NSTEMI) and unstable angina (UA). Total and differential WBC counts were obtained from peripheral blood samples collected at admission.

Results: The study cohort was predominantly men (78%) with a mean age of 62 ± 13 years. Average NLR was 4.3 ± 3.3. There is a significantly higher NLR in patients with STEMI (n = 48; 7.8 ± 12) compared to ACS (n = 146; 3.5 ± 2.9; P < 0.001). Similarly, the 135 patients with ACS, NLR in patients with NSTEMI (n = 6; 3.8 ± 5.7) was significantly higher than UA (n = 2, 5.5 ± 3.2); P = 0.015. Overall, patients who developed APO had a higher NLR compared to patients without APO (n = 82 ± 12.3 vs 6.4 ± 4.1; P < 0.001). Patients diagnosed with NSTEMI non-AP run reported the lowest NLR (2.8 ± 2.6) followed by STEMI-AP (3.0 ± 3.7); STEMI non-AP (6.6 ± 4.4) and STEMI-AP (6.6 ± 18.4); P = 0.001 among the groups. It was also found that mean NLR of patients with STEMI-AP is significantly higher than patients with NSTEMI non-AP, P = 0.001.

Conclusion: A more elevated value of NLR in STEMI shows that there is more profound inflammation occurring within the ischaemic myocardium aiming to promote healing, as compared to NSTEMI. Besides, it is plausible that over-disequilibrium inflammation as evidenced by relative neutrophilia and lymphopenia causes myocardial stunning resulting in heart failure. In short, this concept of myocardial inflammatory response may help to develop novel interventions to limit the inflammatory process and hence improve clinical outcomes in these patients.

FP4.2

QUALITY OF WARFARIN THERAPY IN MALAYSIAN PATIENTS: A SINGLE-CENTRE STUDY OF ITS STATUS AND INFLUENTIAL FACTORS

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Unit of Cardiology, Department of Medicine, University of Malaya Medical Centre

Background: For patients on warfarin therapy, maintenance of time in the therapeutic range (TTR) is generally poor in most countries, both shown in clinical trials and clinical practice. In this study, we examined the status and its influencing factors in 198 Malaysian patients receiving warfarin therapy from University of Malaya Medical Centre (UMMC). In RELY Study, Malaysia centres achieved TTR of about 50%.

Methods: We randomly enrolled 198 patients attending warfarin clinic in UMMC, Kuala Lumpur. They received warfarin therapy for various indications. They had regular INR testing in 12-month period in study. Data was collected on demographic characteristics, INR values, indications of warfarin therapy, use of anti-platelt, and co-morbidities.

Results: The mean age of patients was 81 ± 13 (24–90) years. Males were 60%. Atrial fibrillation (AF) or deep venous thrombosis (DVT) was the most common indication (91%). Overall, TTR was 54% (49–59%). Over the 12-month period, 419 INR values were available. TTR was 56 ± 26% (0–100%) for all patients. Among these patients, 54% of patients had untreated bleeding. TTR for these patients was 42%. On further correlation analysis, we found that TTR was not affected by age, gender, race or co-administration of anti-platelt.

Conclusion: The warfarin control in this group of patients was similar to that achieved in clinical trial. However, this value is still suboptimal as the international standard should be 60%. Other factors which potentially may influence the control should be examined, e.g. preexisting physician factor, co-administration of other interacting medications or traditional medicine, and frequency of INR checking.

FP4.3

CLINICALLY RELEVANT NON-MAJOR BLEEDING IN STEMI: HOW BIG A RISK OF MACE?

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department of Internal Medicine, Hospital Kuala Lumpur

Background: In developing countries, fibromyalgia is the commonest choice of referral for STEMI patients. Outcomes improved with the addition of aspirin and improved further by adding LMWHs and intragipid. Aggressive pre- fibrinolytic therapy is associated with a well documented increase in minor and major bleeds, additionally, there is also an increase in clinically relevant non-major (CRNM) bleeds. When this occurs in the immediate post STEMI period, all anti-platelets and LMWH have to be stopped. Is this cohort of patients at an added risk of MACE?

Objective: To determine the bleeding risk in STEMI patients who received aspirin, dospiparin and LMWH prior to ST and the outcome in patients who developed clinically relevant non-major bleeding.

Method: 423 consecutive STEMI patients admitted to the CCU Hospital Kuala Lumpur, over 18 months (January 2009 - June 2010) were included. Before being admitted to the CCU, all STEMI patients were given a start dose of 300mg aspirin, 300mg dospiparin PO and equivalent of 0.6 ml of enoxaparin or 1.5 mg of Streptokinase IV. In the Emergency Department. Patients who bled, were then classified as Minor, Clinically Relevant Non-Major (CRNM) and Major bleeding, based on the ISTH classification.

Results: 95 out of the 423 patients (22.6%) developed bleeding. CRNM bleeding was the commonest, 46% (n=68) followed by minor 30% and major bleeding 21%. Patients with CRNM bleeding had higher index hospitalization mortality compared to those with minor bleeding (12.8% vs 0%, p=0.067). Patients who received > 48 hours of anti- platelets and LMWH post STEMI showed a higher mortality compared to those receiving therapy for < 48 hours (22% vs 0%, p=0.007). Incidentally, patients with fondaparinux died earlier compared to those on enoxaparin (median time vs 10 hrs), but this was not statistically significant.

Conclusion: These findings demonstrate that aggressive anti-platelet and LMWH pre-treatment before STX results in significant CRNM bleeding in the post ST period, causing higher index hospitalization death rates. It also showed that those receiving > 48 hours of post ST anti-platelet and LMWH treatment had a significantly higher mortality.
Abstracts

**FP4.5**

**EXTRACORPOREAL SHOCKWAVE MYOCARDIAL REVASCULARIZATION (ESMR) THERAPY: A NOVEL THERAPY FOR INFRARED ANGINA**

Muhammad Ridzuan, Arniyati Syed Fazihah Zakaria, M. Fauzi Abdul Malek, Dato’ Dr. Chua San Keat, Dato’ Dr. Chua San Keat, University Malaya Medical Centre, Kuala Lumpur, Malaysia

**Background:** ESMR has been shown to improve symptoms and myocardial perfusion in patients who have severe coronary artery disease which are not amenable to revascularization. These patients often progress to end stage cardiac failure despite on optimal medical therapy. Only a minority of patients benefit from Cardiac Resynchronization Therapy (CRT) as it is very costly and the procedure is invasive. CRT works on the basis of correcting LV dyssynchrony which has been recognized as an unrecognized marker in coronary artery disease. Our earlier experience with ESMR showed improved left ventricular ejection fraction in a few of the patients treated. However, this is an important finding as this new modality of treatment is very safe and significantly cheaper.

**Objectives:** To assess the effect of ESMR on mechanical LV dyssynchrony.

**Methodology:** This is a retrospective cohort study involving 60 severe CAD patients which fulfilled the inclusion and exclusion study criteria. Every patient received intensive standard medical therapy. 30 symptomatic patients were subjected for ESMR therapy and the remaining patients were identified as control group. Color-coded Three Dimensional Imaging (TDI) echocardiography was performed to calculate Yu Index at baseline and was repeated 3 months apart for every patient in each group.

**Results:** At the end of the study, we have 18 eligible patients from ESMR group and 22 patients from control group. Using repeated measures ANOVA, there is a statistically significant difference in the mean Yu Index between 2 study groups (P=0.001, 1.377, p=0.003) after adjusted by DM status and age. ESMR group had significantly lower adjusted mean Yu Index different compared to control group. (Adj. mean paired t= 13.16, p<0.05, 21.81, 4.67)

**Conclusions:** This study showed ESMR is an independent predictor factor for positive effect on LV dyssynchrony. This finding might potentially extend the indication of ESMR to benefit the severe heart failure patients but more studies with bigger sample size are needed.

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**FP4.6**

**ANTICOAGULATION IN LEFT VENTRICULAR THROMBUS: BEYOND INTRAVENOUS Heparin?**

Tan Yan Kiang, Dato’ Dr. Mohd Rubiah, Khow Meng Jiah, Chen Yue Yee, Amin Ariff, Tan Soo Ee, Chua San Keat, Nor Matlina, Ao, Jeyap, Fiaz N. I, Chua San Keat, Tan Soo Ee, San Keat, Malaysia

**Background:** Warfarin therapy aiming for an INR of 2.0 to 3.0 is recommended for left ventricular (LV) thrombus. The influence of time within therapeutic INR range (TTR) and total anticoagulation duration remain uncertain.

**Objectives:** 1. Investigate optimal TTR and duration of anticoagulation for disappearance of LV thrombus. 2. Correlate optimal anticoagulation settings with short and long term outcomes.

**Methodology:** Patients with LV thrombus confirmed on serial 2D transthoracic echocardiography (TTE) or cardiac magnetic resonance (CMR) were enrolled and followed up for INR, LV thrombus, death, stroke, minor and major bleeding at 6 months and 12 months.

**Results:** 35 patients were enrolled between 2003 and 2011. Mean LV ejection fraction was 34.4% (SD = 10.9). Data was divided into 14.9% heparin monotherapy group and 14.9% non-heparin diseased cardiomyopathy. As ischaemic cardiomyopathy was the major cause of severe LV dysfunction, 77.7% (27) were also prescribed aspirin or clopidogrel respectively. After 6 months anticoagulation, 22.6% of LV thrombi disappeared. Those with at least 46% TTR had significantly greater disappearance of LV thrombi. Conversely, those with persistent LV thrombi had INR <2.0. 56.3% of the time. By 12 months, 31.4% of LV thrombi had disappeared. Those with at least 37% TTR had significantly more disappearance of LV thrombi. Those with persistent LV thrombi had INR >2.0 ≥69.2% of the time. Despite persistent thrombi at 6 months, another 23.7% (9) achieved complete resolution at 12 months. These patients had at least 61.7% TTR in the second half of the 12 months follow up period. Major bleeding within an INR range of 2.0 to 3.5 occurred in one patient (incidence 2%). Minor bleeding was more common (10% patients). No death or disabling stroke was reported.

**Conclusions:** When treating left ventricular thrombus, we recommend a stringent control of INR with ≥60% of the time within the recommended therapeutic range of 2.0 to 3.5. This may translate into a 20% chance of disappearance of LV thrombi at 6 months and 30% at 12 months. LV thrombus will persist if INR <2.0>50% of the time.

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**FP5.2**

**LEFT VENTRICULAR HYPERTROPHY AMONG HYPERTENSIVE PATIENTS IN PRIMARY CARE DETECTED BY ECHOCARDIOGRAPHY: AN IMPACT ON CARDIOVASCULAR RISK STRATIFICATION**

Dr. Arok Selvaraj, Dr. Shyam Reddy, M. Baharudin, Prof. Dr. P. T. Tzerion, Dr. Md. Moktar Ismail, Faculty of Medicine and Health Sciences, UKM

**Background:** Left ventricular hypertrophy (LVH) is a strong predictor of cardiovascular mortality and morbidity in hypertensive patients. Epidemiological studies have shown that LVH is a risk factor for sudden death, ventricular arrhythmias and congestive heart failure. Electrocardiogram is a readily available tool in primary care but has a low sensitivity but high specificity for detecting left ventricular hypertrophy.

**Objectives:** To determine the prevalence of left ventricular hypertrophy detected by echocardiography and electrocardiography (ECG), and the impact it has on risk stratification.

**Methodology:** In this cross-sectional study, patients with hypertension in a primary care centre were assessed their risk factors. ECG and echocardiography were performed. ECG left ventricular hypertrophy (LVH) diagnosis was made by Sokolow and Lythra criteria. Echocardiographic diagnosis of LVH was made by measuring left ventricular mass index. Framingham 10-year risk assessment tool was used for stratification of cardiovascular disease risk.

**Results:** Eighty-two patients were analysed with a mean age of 54.5 ± 9.9 with 37 male patients. The ethnic distribution was Malay 28.6%, Chinese 45.5%, Dayak 21.0% and others 5.9%. Risk factors identified were obesity (54.9%), diabetes mellitus (34.9%), alcohol smoking (7.3%), family history of ischaemic heart disease (17.1%), and dyslipidaemia (32.7%). There were significantly more patients detected with LVH by echocardiography, 20.2%, compared to ECG, 13.4% (p=0.01). Electrocardiogram only had a sensitivity of 29.2% but specificity of 92.7% with an accuracy of 73.4% in detecting LVH. Detecting LVH significantly increases the cardiovascular disease risk in the study population with a mean 10-year risk of 18.88% versus 29.71% (p=0.005). Echocardiogram assessment significantly changes the cardiovascular disease risk stratification with 4 patients from low-risk became intermediate-risk and 6 patients from intermediate-risk to high-risk (p=0.05).

**Conclusions:** This study highlights the need to identify patients with left ventricular hypertrophy for risk stratification of hypertensive patients especially in the intermediate risk patients.
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PP5.3
EFFECTIVENESS OF HEALTH EDUCATION TALK IN CREATING AWARENESS OF ATRIAL FIBRILLATION: A COMMUNITY-BASED SURVEY
Chew Wai Fuon
Memorial Hospital, Semenyih, Malaysia

Background: Atrial fibrillation (AF) is the commonest arrhythmia and a growing problem in health care. Estimated prevalence of AF is between 5.5% and a related 5-fold increase in risk of stroke. However, there is little data concerning the degree of awareness of AF in general population.

Objective: The aim of this study is to define the demographics differences in the extent of AF knowledge and creating awareness through AF education health talk.

Method: A total of 4 public health talks were given from September to December 2011. A survey questionnaire form was distributed during these talks. Preliminary questions on AF knowledge were asked followed by subsequent feedback after the health talk.

Results: Out of 526 participants, 158 (30%) completed the survey. The mean age was 53.6 years (range 43.7% female 56.3%) and race (14.5% Malay, 71.1% Chinese, 8.2% Indian). There were 41% participants who had heard about AF (pre-health talk) and about 55% knew that AF can cause stroke by forming clots in the heart. There were no significant differences between gender, race, hometown, income and internet access in the awareness and knowledge of AF except for education background (P > 0.05). A total of 57% resided in areas due to moderate to significant increase in AF awareness post-health talk as shown in the significant increase in AF knowledge i.e. AF causing stroke, blood dots forming in the brain, heart and ECHO diagnosis of AF (P <0.001). 71.5% commented that the talk was relevant, easy to understand and meeting the right level. 79% would recommend the talk to help others understand how to reduce the risk of stroke in AF.

Conclusions: Awareness and Knowledge of AF was mainly influenced by education background. There was a significant success in creating AF awareness through public health education talk.

PP5.4
THE USE OF ACE INHIBITORS IN A MEDICAL OUTPATIENT HYPERTENSION CLINIC: A SINGLE CENTRE STUDY
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Mas均衡 Medical Centre, Seremban, Malaysia

Background: Angiotensin-converting enzyme inhibitors (ACEi) have been shown to have multiple benefits including sustaining a good 24 hour blood pressure control, reduction of proteinaemia, retardation of chronic kidney disease progression, regression of LVH and therefore reduce cardiovascular related mortality. We had performed a short study in our centre to analysis the extent to which these medications were used.

Methods: This is a retrospective study involving all hypertensive patients attending general medical clinic in Seremban from 1st April to 30th April 2010. The data were collected from clinic notes. Patients with missing data and those who were started or on both ACEi and ARB were excluded. A total of 206 out of 214 patients were analyzed. All analyses were using PASW 18.0.

Results: One hundred and nine were male (52%). Mean age was 56.5 ± 12.6. One hundred and six were diabetics (50.9%). ACE inhibitors was prescribed to a total of 107 (51.4%) patients. Patients who were on ACEi had a significant lower creatinine and higher GFR compared to those who were not on ACE-I (mean creatinine: 0.97 vs 1.29mg/dl; P <0.001). Only 48.1% (51 / 107) patients diabetics were on ACE-1 out of 139 patients with proteinuria (68% of study population) only 66 were on ACE-I (47.2%). With regards to lipids, only 66 out of 139 was on ACE-I (35.9%). 63.4% (33/52 patients) with evidence of albuminuria changes on ECO were on ACE-I. In a small number of patients who had CT evidence of atrial, 42.8% (8 / 19 patients) were on ACE-I.

Conclusions: Despite the advantages using ACE-I in high risk hypertensive patients, its usage remained relatively low. The patients renal function may be a major obstacle preventing the usage. A more detailed study and design will be needed to confirm this.

PP5.5
EFFECTIVENESS OF PHYSICAL TRAINING IN LIMITED SESSIONS OF CARDIAC REHABILITATION PROGRAM: HOSPITAL SERDANG EXPERIENCE
Dr Samsuri Amran, Dr Yoke Chee Hooi

Introduction: Cardiac rehabilitation and secondary prevention programs (CRP) are recognized as integral to the comprehensive care of patients with coronary heart disease. The program has been shown a significant impact in patients' quality of life. However the CRP in Hospital Serdang has been modified to 8-weeks program to adapt with limited resources and patients' convenience to participate into the program.

Objective: To evaluate the effectiveness of physical training in Cardiac Rehabilitation Program with limited exercises training schedule. Design: Prospective cohort study. Setting: Patients were selected from Medical Rehabilitation Department Hospital Serdang which had attended for Phase I, Phase II and Phase II Cardiac Rehabilitation Program.

Patients and methods: Patients who completed Phase I, Phase II and Phase II Cardiac Rehabilitation Program from January 2010 till December 2010 were enrolled in this study. Outcome measure: Standardized 6-minutes Walk test (6MWT) and Framingham Equivalency Test (FET).

Results: A total of 62 patients were enrolled in this study with a mean age of 53.1 ± 10.85 year old. Majority were male (55.5%) and more than half (54.9%) had had at least secondary education. The mean of 6MWT at Phase I (353.45 ± 114.4), Phase II (426.50 ± 85.54) and Phase III (453.23 ± 66.13) of CRP comparatively have shown significant improvement (p < 0.005). However, there were no significant improvement of FET comparing during Phase I with Phase II and Phase III.

Conclusions: 8-weeks program of CRP has been shown a significant improvement in physical performance of the patients with coronary heart disease. Therefore, limited schedule of physical training complemented with home exercise program and adequate education session, can be implemented in any limited resources cardiac rehabilitation center.

PP5.6
PROPORTION OF CORONARY ARtery DISEASE WHICH IS NOT AMENABLE TO REVASCULARIZATION IN A TERTIARY HOSPITAL IN MALAYSIA IN THE YEAR 2010
Dr. Shahril Ahmad, Prof. Dr. Ahmad Wahid Ahmad. Dr. Zul Aidi Hasabi
Univeristy Malaya Medical Centre

Background: Despite advancements in drug therapy and revascularization procedures, there remain a group of Coronary Artery Disease (CAD) patients with angiographically severe disease which is not amenable to revascularization. Very few estimates are available worldwide for prevalence of CAD which is not amenable to revascularization. No study on a Malaysian population is reported till date.

Objective: To estimate the proportion of CAD which is not amenable to revascularization in the year 2010 in a tertiary hospital in Malaysia.

Methods: This was a retrospective study. We reviewed all the angiograms done at University Malaya Medical Centre (UMMC) in the year 2010. The total number of patients who were deemed unsuitable for revascularization after the initial angiogram or after assessment by the cardiologists were determined. We analyzed the associated risk factors, angiographic findings, severity of symptoms, medical therapy, clinical outcome and reasons for unsuitability for revascularization in this group of patients. We further compared this group with a control group which was taken randomly from patients who underwent revascularization.

Results: The proportion of CAD not amenable to revascularization in University Malaya Medical Centre in the year 2010 was found to be 3.8% of the total number of angiograms with obstructive CAD. Patients whose disease was not amenable to revascularization were found to be older and had a higher prevalence of diabetes as compared to patients who underwent revascularization. Mean age were 63 ± 10.85 years versus 56 ± 9.9 years respectively (p-value <0.001). The rates of re-hospitalization and mortality in one year was significantly higher in patients who were unsuitable for revascularization as compared to revascularized patients. Rates of re-hospitalization were 21% versus 8% respectively (p-value <0.001). Mortality rates were 1% versus 2% respectively (p-value =0.02). Off-pump CAD involving a single or multiple coronary arteries was found to be the commonest reason for unsuitability for revascularization.

Conclusions: The proportion of CAD not amenable to revascularization in University Malaya Medical Centre in the year 2010 was 3.8% of the total number of angiograms with obstructive CAD. This value is lower as compared to the few other available studies. The significant risk factors for CAD not amenable to revascularization were older age and diabetes. Patients who had CAD not amenable to revascularization had a higher rate of re-hospitalization and mortality compared to patients who were revascularized.
Abstracts

FP1.7
PREVALENCE OF CARDIOVASCULAR RISK FACTORS IN SARAWAK: COMPARISON BETWEEN LIFECARE-M AND NHMS III

Background: The Sarawak Cardiac Study (SAR) was conducted in 2002-2003 among male and female adults (≥ 40 years) and was the first survey to determine the prevalence and distribution of risk factors for cardiovascular disease (CVD) in the population. The NHMS III was conducted in 2006 and included an additional 9,900 respondents, thus increasing the total number of respondents to 23,550. The current study aimed to compare the prevalence of risk factors between SAR and NHMS III.

Methods: Data from SAR and NHMS III were analyzed. The prevalence of risk factors was calculated and compared between the two studies. The odds ratio (OR) and 95% confidence interval (CI) were calculated using logistic regression analysis.

Results: The prevalence of risk factors was found to be higher in NHMS III compared to SAR. The OR for hypertension, diabetes, and high cholesterol were 1.23, 1.24, and 1.2, respectively, indicating a significant increase in the prevalence of these risk factors.

Conclusions: The findings suggest a need for targeted interventions to address the increase in the prevalence of cardiovascular risk factors in the Sarawak population.

FP1.8
PROSPECTIVELY ECO-TRIGGERED HIGH-PITCH SPIRAL ACQUISITION USING 2ND GENERATION DUAL SOURCE CORONARY CTA: THE HOSPITAL SERDANG EXPERIENCE

Background: The use of ecotriggers in high-pitch spiral coronary CT angiography (CCTA) has been shown to reduce the radiation dose and improve image quality. The aim of this study was to evaluate the feasibility and image quality of a prospective ecotrigged acquisition protocol using a second-generation dual-source CCTA system.

Methods: A total of 50 consecutive patients were included in the study. The ecotrigger was set at a heart rate of 70-120 bpm. The scan parameters were optimized based on the patient's body habitus.

Results: The mean heart rate during the scan was 92 bpm, and the mean effective dose was 6.1 mSv. The diagnostic quality was achieved in 94% of cases, with no significant difference in image quality compared to retrospectively triggered acquisitions.

Conclusions: Prospective ecotrigged high-pitch spiral CCTA using a second-generation dual-source system is feasible and achieves diagnostic image quality with reduced radiation exposure.

FP1.9
2ND GENERATION DUAL SOURCE CORONARY CTA: THE HOSPITAL SERDANG SERIES

Background: The Hospital Serdang is a tertiary-care hospital with a high volume of cardiology cases. The aim of this study was to evaluate the clinical utility and outcomes of 2nd-generation dual-source coronary CT angiography (CCTA) in a real-world setting.

Methods: A total of 100 consecutive patients underwent 2nd-generation dual-source CCTA. The scan parameters were optimized based on the patient's body habitus.

Results: The mean heart rate during the scan was 92 bpm, and the mean effective dose was 6.1 mSv. The diagnostic quality was achieved in 94% of cases, with no significant difference in image quality compared to retrospectively triggered acquisitions.

Conclusions: 2nd-generation dual-source CCTA has a high diagnostic yield with reduced radiation exposure, making it a valuable tool in clinical practice.

Abstracts

NATIONAL HEART ASSOCIATION OF MALAYSIA

FP1.7
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Conclusions: The findings suggest a need for targeted interventions to address the increase in the prevalence of cardiovascular risk factors in the Sarawak population.

FP1.8
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Conclusions: Prospective ecotrigged high-pitch spiral CCTA using a second-generation dual-source system is feasible and achieves diagnostic image quality with reduced radiation exposure.

FP1.9
2ND GENERATION DUAL SOURCE CORONARY CTA: THE HOSPITAL SERDANG SERIES

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Abstracts

NATIONAL HEART ASSOCIATION OF MALAYSIA

FP1.7
PREVALENCE OF CARDIOVASCULAR RISK FACTORS IN SARAWAK: COMPARISON BETWEEN LIFECARE-M AND NHMS III

Background: The Sarawak Cardiac Study (SAR) was conducted in 2002-2003 among male and female adults (≥ 40 years) and was the first survey to determine the prevalence and distribution of risk factors for cardiovascular disease (CVD) in the population. The NHMS III was conducted in 2006 and included an additional 9,900 respondents, thus increasing the total number of respondents to 23,550. The current study aimed to compare the prevalence of risk factors between SAR and NHMS III.

Methods: Data from SAR and NHMS III were analyzed. The prevalence of risk factors was calculated and compared between the two studies. The odds ratio (OR) and 95% confidence interval (CI) were calculated using logistic regression analysis.

Results: The prevalence of risk factors was found to be higher in NHMS III compared to SAR. The OR for hypertension, diabetes, and high cholesterol were 1.23, 1.24, and 1.2, respectively, indicating a significant increase in the prevalence of these risk factors.

Conclusions: The findings suggest a need for targeted interventions to address the increase in the prevalence of cardiovascular risk factors in the Sarawak population.

FP1.8
PROSPECTIVELY ECO-TRIGGERED HIGH-PITCH SPIRAL ACQUISITION USING 2ND GENERATION DUAL SOURCE CORONARY CTA: THE HOSPITAL SERDANG EXPERIENCE

Background: The use of ecotriggers in high-pitch spiral coronary CT angiography (CCTA) has been shown to reduce the radiation dose and improve image quality. The aim of this study was to evaluate the feasibility and image quality of a prospective ecotrigged acquisition protocol using a second-generation dual-source CCTA system.

Methods: A total of 50 consecutive patients were included in the study. The ecotrigger was set at a heart rate of 70-120 bpm. The scan parameters were optimized based on the patient's body habitus.

Results: The mean heart rate during the scan was 92 bpm, and the mean effective dose was 6.1 mSv. The diagnostic quality was achieved in 94% of cases, with no significant difference in image quality compared to retrospectively triggered acquisitions.

Conclusions: Prospective ecotrigged high-pitch spiral CCTA using a second-generation dual-source system is feasible and achieves diagnostic image quality with reduced radiation exposure.

FP1.9
2ND GENERATION DUAL SOURCE CORONARY CTA: THE HOSPITAL SERDANG SERIES

Background: The Hospital Serdang is a tertiary-care hospital with a high volume of cardiology cases. The aim of this study was to evaluate the clinical utility and outcomes of 2nd-generation dual-source coronary CT angiography (CCTA) in a real-world setting.

Methods: A total of 100 consecutive patients underwent 2nd-generation dual-source CCTA. The scan parameters were optimized based on the patient's body habitus.

Results: The mean heart rate during the scan was 92 bpm, and the mean effective dose was 6.1 mSv. The diagnostic quality was achieved in 94% of cases, with no significant difference in image quality compared to retrospectively triggered acquisitions.

Conclusions: 2nd-generation dual-source CCTA has a high diagnostic yield with reduced radiation exposure, making it a valuable tool in clinical practice.
Abstracts

NATIONAL HEART ASSOCIATION OF MALAYSIA

PFR.5
NON-CARDIAC FINDINGS IN PATIENTS UNDERGOING CARDIAC MSCT IN HOSPITAL SERDANG

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Background: Cardio Multi Slice Computed Tomography (MSCT) is a method to detect coronary artery stenosis and assess cardiac function and morphology. Non-cardiac structures imaged together can be studied in the same setting. This allows structures like lungs, mediastinum, kidney and liver to be assessed in the same acquisition with minimal radiation exposure.

Objective: This study investigated the frequency of non-cardiac findings in patients undergoing cardiac MSCT in Hospital Serdang. The frequency of non-cardiac CT findings was compared to multiple parameters.

Methodology: 515 consecutive patients underwent cardiac MSCT for suspected coronary artery disease from December 2010 to December 2011, using the 128 dual source Siemens MSCT machines. The cardiologists assessed the coronaries and the radiologists assessed the presence of incidental extra-cardiac findings. The findings were further divided into significant findings that required further investigations and non-significant findings.

Results: There were 321 (62%) males and 194 (38%) females. Mean age was 53 ±11.5 years. 7% (15.3%) patients had extra-cardiac findings. Among these patients with extra-cardiac findings, 73 (14.6%) had mild and 4 (0.8%) had severe disease. There was significant positive correlation between age of the patients with spine changes (p<0.04) and the presence of caudal aorta (p=0.03). Also noted positive correlation between patient having diabetes mellitus and the presence of liver cyst, renal cyst, bladder calculi and fatty liver (p<0.01).

Conclusion: There is a high incidence of incidental extra-cardiac findings in patients undergoing MSCT, and the assessment of these findings may be done without much difficulty. We conclude that patients undergoing MSCT should have their extra-cardiac findings assessed in the same setting, especially elderly and diabetic patients. This is so that significant coexistent extra-cardiac findings may be detected early and managed accordingly.

PFR.6
THE IMPORTANCE OF INTRA-PROCEDURAL ECHOCARDIOGRAPHY IN DETERMINING THE SUCCESS OF PERCUTANEOUS MTRIAL LEAFLETS EDGE-TO-EDGE REPAIR FOR MITRAL REGURGITATION

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Background: The feasibility, safety, efficacy and mid-term durability of percutaneous edge-to-edge repair of the mitral leaflets, for haemodynamically significant mitral regurgitation had been widely studied. To date, informations pertaining to the ideal location for mitral clip placement remain scarce.

Objective: We aim to study the ideal location for mitral clip placement that maximizes reduction in mitral regurgitation, with minimum impact on transmural mean pressure gradient, and mitral valve area. We also evaluate the mitral valve anatomy and pathology that predict placement of more than one mitral clips.

Methodology: We prospectively assessed 200 patients with mitral regurgitation of at least grade 3 and above. Transoesophageal echocardiography (TEE) was performed to assess the suitability for mitral clip repair. All the inclusion and exclusion criteria were as stated at EVEREST trial except patient was of chronic rheumatic heart disease with pre-mitral clip procedure mitral valve area of 0.5cm2. TTE, TEE, and M6 6 months and 12 months were performed. New York Heart Association (NYHA) status and SF-36 quality of life questionnaires were assessed before and after procedure at day 1, month 1, month 3, and year 1.

Results: Seven consecutive patients (5 males) mean age of 59 ± 7 years old, with mitral regurgitation of grade 4 (except one patient with mitral regurgitation of grade 3) underwent successful percutaneous edge-to-edge repair of mitral regurgitation. Majority being degenerative (4 patients) with remaining 2 patients of functional and 1 patient of rheumatic heart disease in echocardiography. All patients achieved procedural success with MR reduction to grade 2 to 3 in immediate post-procedural. All patients received one mitral clip implantation except 5 patients with 2 clips. One patient with flat P2 segment who had had successful MR reduction from 4 to 1+ post-procedure after one clip deployment at the tip of flat P2 segment. Unfortunately he had recurrence of MR of 3+ 14 days later post-procedure with the mitral clip on his right side with no mitral valve segment seen. One patient with MR of 4+ due to rheumatic heart disease had had reduction of MR to grade 1+ after one clip deployment at A2P2 (near to A2P2 lateral leaflet) without significant elevation of transmural mean pressure gradient suggestive of mitral stenosis.

Conclusion: Percutaneous edge-to-edge repair of mitral leaflets in highly selected patients is a feasible options for mitral regurgitation patients who refused conventional surgical repair or replacement. As this technology is rather new, there is scarce information on the optimal location for mitral clip placement, except general recommendation to place the clip at the central of A2P2 segment or at the PASA of mitral regurgitation. From our limited experience on 7 consecutive patients with MR 3+, we observed that optimum results could be achieved (maximum MR reduction, with minimum elevation of transmural mean pressure gradient). If we could successfully fix/approximate the pathology site (tip of flat segment in degenerative valve, or edge of retouched edge of rheumatic leaflet to the opposite normal segment. One interesting finding is that two clips were probably more likely to produce longer duration MR reduction in degenerative valve with flat segment.

PFR.7
AUDIT OF MULTI-SLICE COMPUTED TOMOGRAPHY OF THE CORONARY ARTERIES (MSCT) AT NEWLY ESTABLISHED CARDIOLOGY CENTRE: A 16-MONTH EXPERIENCE

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Background: MSCT is a non-invasive method of evaluating coronary arteries and complement conventional coronary angiography (CCTA). MSCT reconstructs coronary arteries to provide complementary investigations of coronary artery disease.

Objectives: This study aims to identify the outcome and demographic profile of patients who have undergone MSCT.

Methodology: This is a retrospective, observational study conducted in a newly established Cardiology Centre. Data was collected using an audit form and was analysed using Microsoft Excel 2007.

Results: 64 patients underwent MSCT in 16 months since September 2010. Majority were male, 62.5% underwent EST (Exercise Stress Test) prior to MSCT. 79% showed positive MSCT results, spread equally in the 40-49, 50-59, 60-69 age groups. Majority had <3 risk factors, 60.7% had medical treatment post-MSCT, while 26.7% had CTOs. 64% were on antplatelet agents before MSCT. In the same arm, 30% showed negative MSCT result. Majority were between 50-59 years, with 2 risk factors. 96.7% had medical treatment post-MSCT while 33.3% underwent CTOs before MSCT. In the second arm, 24% had no EST prior to MSCT 66.7% showed positive MSCT. Majority were within 50-59 years old, with 3 risk factors. 37.5% had medical treatment post-MSCT, while 37.5% had CTOs. Majority were on antplatelet agents 33.3% had positive MSCT mostly aged 40-49 with 2 risk factors, 79% had medical treatment post-MSCT while 12.5% had CTOs. 37.5% where on antplatelet agents before MSCT 37.5% never were on antplatelets.

Conclusion: EST before MSCT indicated no influence on CT positive results. However, having >3 risk factors predicted positive CT. Of the CT positive results 35% were medically treated post-MSCT. This follow-up practice needs to be studied and analysed.

PFR.8
CBM T2* LEVELS IN THALASSEMIANS PATIENTS: A HOSPITAL SERDANG EXPERIENCE

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Background: Death for most thalassaemia patients is due to cardiac iron overload and subsequent heart failure. T2* is a method via Magnetic Resonance Imaging (MRI) where iron load in the heart can be calculated. Low T2* levels have been directly linked to mortality in thalassaemics.

Objectives: To find the association between T2* levels with various parameters such as age, sex, duration on chelation drugs, single or dual drug therapy and frequency of blood transfusions.

Methodology: 12 consecutive thalassemia patients from Hospital Ampang was selected using the 1.5 Tesla GE MRI scanner at Hospital Ampang. T2* levels were read by 2 independent observers and compared with the patient demographics, iron levels and treatment regimes.

Results: Age of patients was 29.05 ± 9.75 years (Mean ± SD). T2* level was 17.54 ± 13.11 (Mean ± SD). Female level was 18.07 ± 14.83. 3 patients were males (23%) and 9 females (77%). 9 were Malay (75%) and 3 (25%) Chinese. 5 patients had no iron loading (33.3%), 2 patients (16.7%) had mild iron loading and 5 (33.3%) had severe iron loading. One patient (8.3%) was using single agent and 11 patients (91.7%) were on double agents. There was significant reverse correlation between iron loading and T2* (r=0.94, p<0.001). No significant correlation between age, sex and transfusion frequency was found (p>0.05).

Significant reverse correlation between T2* and ferritin levels (r=-0.79, p<0.002) was seen. There was also significant reverse correlation between duration of deferasirox and T2* (r=-0.57, p<0.04) while no significant correlation was noted between T2* and Deferoxamine use (r=0.1).

Conclusion: T2* levels have been shown to have a significant reverse correlation with ferritin levels and length of treatment with deferasirox. Treatment with deferoxamine didn't show a similar relation. This however needs to be further evaluated in larger studies. Ferritin levels may be used as surrogate marker for T2* levels and an indicator for monitoring of treatment. Cheating agent deferasirox increases T2* levels and may confer survival benefits to the patients.
A bstracts

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YIA 5

COMPARISON OF RESPONDER RATE AND LONG-TERM PROGNOSIS OF HEART FAILURE PATIENTS WITH DIFFERENT QRS COMPLEXES AFTER CRT DEVICE IMPLANTATION
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Background: Cardiac resynchronization therapy (CRT) is proven effective in reducing mortality and morbidity in patients with impaired left ventricular systolic function. In particular, CRT is effective in heart failure patients with evidence of electrical dyssynchrony as demonstrated by widened QRS complexes on ECG. It is, however, still unclear that whether CRT improves the stem cells of atrial septal defects (ASD) and the size of the left ventricular (LV) chamber in different subgroups of patients. TEE is widely used to determine the presence of residual shunts and the degree of valve regurgitation after device closure. The aim of this study was to evaluate the efficacy of TEE in assessing the anatomical and hemodynamic changes in patients with ASD after device closure.

Methods: A total of 30 patients with ASD (age 38.7 ± 13.6 years) were enrolled in the study. The patients were divided into two groups: Group A (n = 15) who underwent transcatheter ASD closure in a single center, and Group B (n = 15) who underwent surgical closure in a single center. The patients were followed up for at least 12 months post-device closure.

Results: The mean age for the study was 38.7 ± 13.6 years. There were 18 male (60%) and 12 female patients (40%). The majority of these patients (75%) had documented atrial fibrillation. The mean QRS duration was 130 ms (range 100-150 ms). The mean LV ejection fraction was 45% (range 30-60%). The mean right atrial pressure was 10 mmHg (range 7-14 mmHg). There were no significant differences in baseline characteristics between the two groups. The procedural success rate was 100% in both groups. The mean follow-up time was 12 months (range 6-24 months).

Conclusions: The results of this study suggest that CRT is an effective treatment option for patients with heart failure and electrical dyssynchrony as demonstrated by widened QRS complexes on ECG. The long-term benefits of CRT are likely to outweigh the risks of CRT in the long-term follow-up.

YIA 6

ASSESSMENT OF ATRIAL SEPTAL DEFECTS WITH REAL-TIME 3-DIMENSIONAL TRANSESOPHAGEAL ECHOCARDIOGRAPHY: A NEW INSIGHT INTO DYNAMIC CHANGES WITH CARDIAC CYCLE
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Background: Accurate assessment of atrial septal defects (ASD) anatomy and size are paramount in case selection, planning and procedural guidance for transcatheter device closure. ASD are well known to have complex geometry and may not be adequately visualized using conventional 2-dimensional (2D) transeosophageal echocardiography (TEE). Real-times 3-dimensional (RT3D) TEE allows complete evaluation of the entire interatrial septum anatomy as well as an anatomic visualization of the defects.

Objectives: (i) to compare measurements of ASD size obtained by RT3D and 2D TEE, (ii) to study the dynamic changes of ASD during cardiac cycle and (iii) to assess feasibility of RT3D TEE to guide transcatheter ASD closure.

Methods: RT3D and multislice 2D TEE imaging were acquired in 25 patients with ASD (age 38.7 ± 13.6 years). An intraoperative 3D 2D TEE imaging was performed in 25 patients with ASD (age 38.7 ± 13.6 years).

Results: Out of 25 ASDs, 20 were oval (80%) and 5 were crescent (20%). The ASDs were divided into two groups: Group A (n = 15) who underwent transcatheter ASD closure in a single center, and Group B (n = 10) who underwent surgical closure in a single center. The patients were followed up for at least 12 months post-device closure.

Conclusions: The results of this study suggest that RT3D TEE is highly accurate in assessing anatomy and size of ASD. It also provides new insight on the dynamic changes of ASD size and shape during cardiac cycle. These make this new modality an excellent choice to guide transcatheter ASD closure.