National Heart Association of Malaysia

YIA 1

SUBCLINICAL MYOCARDIAL DIASTOLIC DYSFUNCTION IN PATIENTS WITH HIGH C-REACTIVE PROTEIN ASYMPTOMATIC SYSTEMIC LUPUS ERYTHEMATOSUS IN ASIAN POPULATION

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BACKGROUND Systemic lupus erythematosus (SLE) causes significant vascular, myocardial and pericardial inflammation leading to significant cardiovascular morbidity and mortality. Serum C-Reactive Protein (CRP) level parallels with inflammatory state in rheumatoid arthritis. However, CRP response in SLE inflammatory state is different.

OBJECTIVE To determine subclinical myocardial diastolic dysfunction in asymptomatic SLE Asian patients and its relation to CRP.
METHOLOGY This is a prospective cohort study. 68 Asian patients with confirmed diagnosis of SLE in inactive stage, no known coronary artery disease or lung disease and not in heart failure undergone standard transthoracic echocardiography and tissue Doppler imaging. CRP, ESR and cardiac enzymes were taken during the echocardiographic study. Patients with significant arrhythmias, pericardial effusion and valvular heart disease were excluded. Mitral inflow profile(E, A, E/A), deceleration time(DDT), isovolumic relaxation time(IVRT) and pulmonary vein A reversal duration(Ar) were measured by pulsed wave Doppler. Tissue Doppler imaging was used to obtain e'velocity on the septal and lateral mitral annulus. Comparisons were made between the CRP positive and CRP negative SLE.

RESULTS 61 patients (55 female and 6 male, mean age 34.77+/-13.80) were analysed. 7 patients with valvular diseases were excluded. None had significant pericardial effusion. All had regular sinus rhythm. 50 patients were CRP negative and 11 patients were CRP positive.

LV diastolic dysfunction was not significantly higher in the CRP positive group compared to the CRP negative group (63.6%(7) and 34.0%(23), p = 0.0926).

No statistical significance in mitral inflow profile (E, A, E/A ratio) for both CRP positive and CRP negative group (83.16+/-17.36 and 77.08+/-20.44cm/s; 701.33+/-31.54 and 61.84+/-18.90cm/s; 1.06+/-0.53 and 1.26+/-0.37 respectively, p = ns).

The groups did not differ significantly for A and Ar duration, DDT and IVRT (135+/-22.25 and 130.57+/-18.93ms, 108.57+/-17.73 and 109.12+/-37.77 ms, 171+/-40.67 and 170.82+/-47.95ms and 71.11+/-16.91ms and 70.33+/-15.09ms respectively, p = ns).

Both groups also did not reach statistical significance for septal e'velocity (8.77+/-2.87 and 9.98+/-2.98cm/s), lateral e'velocity (11.14+/-4.19cm/s and 12.66+/-4.06cm/s), E/e'septal (8.77+/-2.87 and 8.30+/-3.70) and E/e'lateral (8.10+/-2.47 and 6.56+/-2.99).

CONCLUSION Despite higher incidence of diastolic dysfunction in asymptomatic SLE population, CRP is not a useful biomarker in detecting subclinical myocardial diastolic dysfunction.

YIA 2

IMPACT OF PRE-OPERATIVE ASSESSMENT OF MYOCARDIAL VIABILITY USING CMR VS ECHOCARDIOGRAPHY ALONE ON 1 YEAR SURVIVAL AND EF IN PATIENTS WITH POOR LV FUNCTION UNDERGOING CABG

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BACKGROUND: Patients with poor left ventricular (LV) function have poorer outcome after coronary artery bypass grafting (CABG). The adjunctive use of late gadolinium enhanced cardiac MRI (CMR) to assess myocardial viability may be a better strategy than using echocardiography alone.

OBJECTIVE: To compare 1 year survival and change in LV ejection fraction (LVEF) in CABG patients with and without a viability study

METHODS AND MATERIALS:: This is a retrospective study of all CABG patients in Sarawak General Hospital from 2002 to 2008 who had a LIMA graft to the LAD with a pre-operative LVEF of <40%. Subjects were divided into either Echocardiography (2DE) only group or CMR group. All subjects had transthoracic echocardiography done for LVEF assessment prior to and 6 weeks after CABG. Survival outcomes were obtained from medical records or phone calls. Statistical analysis was done using SPSS version 15.

RESULTS: Mean patient age in the CMR (n = 15) and 2DE groups (n = 51) were 55.6 + 11 years and 56.8 + 9.3 years (p = 0.68) respectively. 14 (93.4%) in the CMR and 43 (84.3%) in the 2DE group were males. 7 (46.7%) and 19 (37%) patients had Left Main Stem (LMS) involvement while 15 (100%) and 38 (74.5%) had severe 3VD disease in the CMR and 2DE groups respectively. 12 (80%) CMR patients and 35 (68.6%) 2DE patients had Off-pump CABG. Median EF prior to CABG in CMR group was 28 (IQR 10) % and post CABG 35 (IQR 9) %, p = 0.023. For 2DE group, pre CABG EF was 28 (IQR 10) % and post CABG EF 33 (IQR 14) %, p < 0.001. Median change in LVEF pre and post CABG for both groups was similar (p= 0.591). CMR group had 100% 1 year survival compared to 2DE group with 92.2% (4 deaths), Chi square = 19.64, p < 0.001.

CONCLUSION: Regardless of the mode of pre-op vaibility assessment, all patients with poor LV function had improved LVEF after CABG. The addition of CMR can potentially identify patients who may not have a favorable long term survival even after successful CABG.

YIA 3

THE RELATIONSHIP BETWEEN SERUM AND GENETIC BIOMARKERS OF INFLAMMATION, PLATELET ACTIVATION AND ENDOTHELIAL DYSFUNCTION IN A YOUNG, MULTIETHNIC ASIAN POPULATION DURING THE EARLY PHASE OF ACUTE CORONARY SYNDROME – PRELIMINARY RESULTS

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BACKGROUND: The multiethnic Malaysian population presents with acute coronary syndrome (ACS) at a younger age compared to patients in the GRACE Registry. Interleukin 6 (IL-6) and high sensitivity C-reactive protein (hsCRP) are validated biomarkers of inflammation; P-Selectin (P-Sel) of platelet activation, and von Willebrand Factor (vWF) of endothelial dysfunction.

OBJECTIVES: To establish the relationship between IL-6, hsCRP, P-Sel and vWF during the early phase of hospital presentation with ACS in a younger, multiethnic Asian population.

METHODS: 11 patients with definite ACS were enrolled from a single centre from 12/3/2009. Venous blood was extracted within 30 minutes of admission for measurement of IL-6, hs-CRP, P-Sel and VWF levels. A control group of 27 consecutive patients with angiographically documented non-occlusive atherosclerotic plaque disease in a major epicardial vessel but no previous acute cardiovascular event was used.

RESULTS: Baseline characteristics were similar for the ACS and control patient groups except for smoking and hypercholesterolaemia. The mean age of patients in the ACS and control groups was 51.2±10.8 years and 53.9±8.4 years, respectively. Ethnic distribution of patients with ACS was 45.5% Malay, 36.4% Chinese, 18.2% Non-Malay Bumiputera (NMB), while the control group composed of 29.6% Malay, 59.3% Chinese and 11.1% NMB. In the ACS group, the mean time from the onset of chest pain until hospital presentation was 61.8±63.1 minutes. The median levels of IL-6 in the ACS and control groups were 21.9 (8.9-42.6) pg/ml and 8.6 (6.2-16.1) pg/ml, (p<0.05), and that of P-Sel 3.1 (0-14.7) ng/ml and 2.8 (0-11.2) ng/ml, (p=0.87), respectively. The mean levels of hs-CRP in the ACS and control groups were 6.4±3.0 mg/L and 1.9±2.2 mg/L, (p<0.05), and that of vWF 16.2±3.6 mg/L and 11.3±3.2 mg/L, (p<0.05), respectively. There were no significant correlations between hsCRP with VWF nor IL-6 with P-Sel. Genetic expression of vWF and PSel were present in selected patients in both ACS and control groups.

CONCLUSION: IL-6, hsCRP and vWF levels, but not P-Sel, were significantly higher in patients with ACS compared with controls. Inflammation and endothelial dysfunction are prominent in the early phase of ACS occurring in a relatively younger Asian population, and precede platelet activation.

YIA 4

ACCURACY OF ECG DETECTION OF NON-VIABLE MYOCARDIUM COMPARING WITH CARDIAC MR LATE GADOLINIUM ENHANCEMENT AS GOLD STANDARD

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BACKGROUND: Transmural myocardial infarction has always been thought to produce Q-wave recordings on electrocardiogram. And chronic Q waves are often believed to reflect irreversible scar.

OBJECTIVE: The aim of this study is to determine the accuracy of Q-wave and other ECG changes as a marker of myocardial non-viability as compared with cardiac magnetic resonance (CMR) late gadolinium-enhancement (LGE) study which is the current gold standard for viability detection.

MATERIAL & METHODS: This is a retrospective study carried out in the Cardiology Department Hospital Pulau Pinang, involving coronary artery disease patients who had CMR LGE viability studies indicated either by poor left ventricular ejection fraction or chronic total occlusion while awaiting for further coronary intervention. Non-viable segment is defined as presence of > 50% transmural gadolinium enhancement and the 17-segment model is used to determine the coronary artery territories. The ECG findings were recorded on separate occasions. Pathological Q-wave is defined as first negative deflection of QRS complex with at least 0.04s width and depth of 1/4 of preceding R wave. Poor R wave progression on anterior leads is defined as peak QRS voltage occurring later than V4 with a R wave amplitude of <5mm in lead V1 to V4. Bundle-branch-block ECG patterns are excluded from the studies. All results are analysed using Microsoft Office Excel 2003 version.

RESULTS: A total of 105 CMR studies looking into LGE for myocardial viability were selected. Out of these, 40% has viable myocardium, 40% has non-viable left-anterior-descending artery (LAD) territory, 18% has non-viable right-coronary-artery (RCA) territory and 2% has non-viable circumflex artery territory. Q wave has the highest predictability of inferior territory non-viable myocardium with 70.6% sensitivity, 76.2% specificity and accuracy of 73.7%; as compared to non-viable anterior territory with 53.8% sensitivity, 72.7% specificity and accuracy of 60.7%. Poor R wave progression has 30.8% sensitivity, 57.1% specificity and accuracy of 41.8% for detection of non-viable anterior territory.

CONCLUSIONS: Pathological Q waves on electrocardiography do not necessarily imply non-viable myocardium. The presence of Q wave has the highest predictability related to non-viable inferior territory compared with anterior territory. Poor R wave progression on ECG is both non sensitive and specific for viability detection.

YIA 5

RELATIONSHIP OF CENTRAL AORTIC PULSE TO EVENT-FREE SURVIVAL ANDCORONARY ARTERY DISEASE SEVERITY IN PATIENTS PRESENTING WITH ACUTE CORONARY SYNDROME

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INTRODUCTION: The central aortic pressure (CAP), a measure of arterial stiffness, has been shown to predict clinical outcome in patients with coronary artery disease (CAD). However, the relationship of CAP to clinical outcome and CAD severity in acute coronary syndrome (ACS) per se is unknown. The objective of this study is to determine whether CAP predicts CAD severity and event-free survival after an episode of ACS.

METHODOLOGY AND RESULTS: 213 consecutive patients admitted with ACS underwent CAP analysis and were followed up for 24 months for major adverse cardiovascular events (MACE). Central aortic wave was quantified non-invasively using the commercially available Sphygmocor System. All patients underwent coronary angiography and revascularization if indicated. Mean augmentation indexes (AIx) for patients with mild, moderate and severe CAD were 8.7±6.3, 22.1±9.8 and 34.2±4.8 respectively with p<0.0001. Normalization at heart rate 75 bpm (AIx@75) showed p<0.0001. The mean augmentation pressures (AP) in patients with mild, moderate and severe CAD were 3.7±4.6 mmHg, 7.7±5.5 mmHg and 12.3±3.9 mmHg respectively with p<0.0001. Univariate analysis showed AIx, AIx@75 and AP significantly predicted CAD severity (p<0.0001). Linear regression analysis showed that the AIx was the most significant predictor of CAD severity (p <0.0001). At 24 months, 23.5% experienced MACE, including 6 deaths. Cox regression analysis showed AIx and AIx@75 had the strongest unadjusted associations with MACE with hazard ratios of 1.12 (95% CI: 1.007-1.132) and 1.13 (95% CI: 1.098 – 1.265), p = 0.001 and <0.0001 respectively. Using median values of AIx, AIx@75 and AP as cut-off points to divide the study population into 2 groups, Kaplan Meier curve analysis for cumulative MACE between the 2 groups showed significant differences in event free survival. Hazard ratios of 1.11 (95% CI: 1.076 – 1.136), 1.16 (95% CI: 1.105 – 1.186) and 1.30 (95% CI: 1.219 – 1.455) respectively with all p <0.0001.

CONCLUSIONS: The degree of arterial stiffness, assessed non-invasively with CAP, correlated well with CAD severity. CAP also has prognostic value for patients presenting with ACS. Therefore, CAP analysis may be useful for further risk stratification in acute coronary syndrome.

YIA 6

6-MONTH CLINICAL OUTCOMES, BIOMARKER PATTERN, 9-MONTH ANGIOGRAPHIC RESULT AND PHARMACO-ECONOMICS FROM A PROSPECTIVE REGISTRY OF COMBINING PACLITAXEL-ELUTING BALLOON AND PROGENITOR CELL-ATTRACTING STENT IN PERCUTANEOUS CORONARY INTERVENTION (POTENT)

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BACKGROUND: The safety and efficacy of the percutaneous coronary intervention (PCI) combination 'POTENT' strategy using paclitaxel-eluting balloon (PEB) angioplasty followed by stenting with bioengineered progenitor cell-attracting stainless steel stents (BPS) to treat occlusive coronary artery disease (CAD) have not been established.

OBJECTIVES: To ascertain the safety and efficacy of the POTENT strategy.

METHODS: Consecutive patients at a single centre requiring PCI were screened between 4/12/2008 and 4/6/2009; 50 patients were enrolled.
Procedural, in-hospital, 30-day and 6-month major adverse cardiovascular events outcomes (MACE) were measured. 49 patients were preloaded with Aspirin and Clopidogrel 'dual antiplatelet therapy' (DAPT) >6 hours prior to PCI; all patients were preloaded with a Statin-class drug. 'Sequent Please®' PEB and 'Genous®' BPS were devices used. Troponin T and NT-proBNP biomarkers were measured immediately before and 12 hours post-PCI. Following PCI, patients received mandatory 3 months DAPT, and scheduled for 9-month angiographic follow-up.

RESULTS: All patients completed 6 months clinical follow-up. 86% were male, with a mean age of 56±10years; 30% were current smokers; 60% had hypertension, 68% dyslipidaemia and 32% diabetes; 16% had elevated Troponin T pre-PCI. In total, 53 index lesions (47.1% were Type B2/C) were treated with 51 PEB (mean dimensions: 2.67±0.38mm by 20.39±5.37mm) and 53 BPS (mean dimensions: 3.08±0.33mm by 17.45±5.37mm). Post-PCI, 21.4% of patients had a detectable Troponin rise, while 61.3% of patients had a detectable NT-proBNP rise. No in-hospital and 30-day MACE was recorded. At 6 months clinical follow-up, there were 3 recorded MACE (1 unstable angina event with complete instent restenosis requiring PCI, 1 non-ST elevation MI event with late stent thrombosis requiring PCI and 1 cardiac death at home). To date, 30 of 37 qualifying patients completed 9-month angiographic follow-up, demonstrating a mean instent restenois of 16.0±16.0%. Using the POTENT strategy, the cost saving per patient per year on antiplatelet therapy compared to a drug-eluting stent strategy was RM 1,412.64 (USD 415.48).

CONCLUSION: At 6 month follow-up, the POTENT strategy for PCI is safe and effective treatment of CAD, with projected cost savings on DAPT. The subgroup of 30 patients with 9-month angiographic follow-up showed no significant restenosis

FP 1.1

THE ECONOMIC AND HUMANISTIC OUTCOMES OF POST ACUTE CORONARY SYNDROME IN CARDIAC REHABILITATION PROGRAM: A QUASI-EXPERIMENTAL DESIGN OF 12 MONTHS FOLLOW-UP

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BACKGROUND: The cost effectiveness and humanistic outcomes studies in phase I and short course phase II of cardiac rehabilitation (CRP) are lacking in our local setting. We developed a service models that based on in-patient intervention of education and counselling for patients with post acute coronary event at Sarawak General Hospital.

OBJECTIVE: To measure the quality of life (QoL) outcomes and the cost-effectiveness of CRP. Materials & Methods A quasi-experimental design was applied for recruitment process. Data was collected at baseline, 6-months and 12 months from 112 post ACS patients. SF-36 was used to calculate SF-6D index and to derive quality adjusted life year (QALY) in cost utility analysis (CUA). One-way analysis of variance was used to compare three groups; modified CRP (MCRP), conventional CRP (CCRP) and usual care (Control). Comparative data with Malaysian population norms were conducted. Estimation of QALY gain from the health care provider perspective were calculated and the incremental cost (IC) of having a rehabilitation program were compared.

RESULTS: As expected, post ACS reported poorer in mental (MCS) and physical (PCS) functioning. At 6-month follow-up, none of mean differences of all domains have scored better than population norms. By 12-months follow-up, improvements of several domains were found in MCRP. Comparison mean difference with baseline MCRP (+10.57; 95%CI: -2.09, 23.23), reported less bodily pain (BP) than CCRP (+3.72, 95%CI:-8.94, 16.39) and Control (-4.16, 95%CI: -14.92, 6.59). The general health (GH) in MCRP (+3.66, 95%CI:-9.88, 17.20), reported better than CCRP (+1.10, CI:-10.34 to 12.54) and Control group (-2.87, 95%CI:-12.96 to 7.21). Mean difference of Vitality (VT) in CCRP (+1.36, 95%CI;-941, 12.15) and Control (-1.96, 95%CI:-12.67, 8.75) were scored less than the MRCP (+6.21; 95%CI:-6.16, 18.58). The differences were more pronounced for PCS at first six months and gradually after 12 months improvement for MCS. The utility SF-6D score of MCRP (0.80 + 0.12) and MCRP (0.80 + 0.13) are higher than control (0.74 + 0.15). Thus, give a higher QALY gain in CRP. Without CRP after post ACS the IC for each patient was RM 837.68 (cost per QALY RM 8,032.40) in usual care without intervention; RM 2,227.53 (cost per QALY RM 20,956.79) for PCI; and RM 7,648.12 (cost per QALY RM 71,488.70) for CABG.

CONCLUSIONS: SF-36 is an important instrument for health economic evaluation for CRP. The domains of post ACS patients differ in PCS and MCS scores compare with the Malaysian norms. Depriving patients from CRP is costly with great impact to treatment plan and poor improvement in QoL.

FP 1.2

ASSESSMENT OF ASPIRIN RESPONSIVENESS AMONG PATIENTS WITH STABLE CORONARY ARTERY DISEASE

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BACKGROUND: Aspirin is an effective antiplatetet drug for secondary prevention of cardiovascular events. However, some patients on long-term aspirin remain at substantial risk for thrombotic events. One of the reasons may be aspirin resistance resulting in inadequate inhibition of platelets.

OBJECTIVES: The primary objective is to assess the degree of aspirin responsiveness among patients with stable coronary artery disease. The secondary objective is to determine factors associated with low aspirin responsiveness.

MATERIAL AND METHODS: We performed a cross-sectional study in 101 consecutive patients in the cardiology clinic in University Malaya Medical Centre. Inclusion criteria are: (1) documented history of coronary artery disease, (2) no recent acute coronary syndromes, (3) current regular aspirin intake. Patient's blood was collected and whole blood aggregation was determined by multiple electrodes aggregometry. The increase of electrical impedance by the adhesion and aggregation of platelets onto the electrodes following the addition of arachidonic acid was measured continuously over a period of 6 minutes. The area under the curve, expressed in aggregation unit minute (AU*min) is inversely proportionate to the degree of responsiveness to aspirin.

RESULTS: The mean AU*min was 213.53, median 145 and SD 221.10. Female gender, hypertension and prior stroke event were associated with lower responsiveness to aspirin. Conversely, concomitant clopidogrel and statin intake was associated with higher aspirin responsiveness.

CONCLUSIONS: There is much heterogeneity in the degree of aspirin responsiveness among local patients with stable coronary artery disease. Genetic factors, co-morbidities and concomitant medications may be responsible for the differences observed.

FP 1.3

ASPIRIN RESPONSIVENESS AMONG DIABETIC PATIENTS WITH CORONARY ARTERY DISEASE

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BACKGROUND: Diabetes mellitus is an important risk factor for cardiovascular disease, and it is associated with a poorer prognosis among patients with coronary artery disease. Hypercoagulability and reduced aspirin responsiveness have been implicated. But there is paucity of data to support this.

OBJECTIVE: To compare the aspirin responsiveness between diabetic and non-diabetic patients with coronary artery disease.

METHODOLOGY: We performed a cross-sectional study in 107 consecutive patients in the cardiology clinic in University Malaya Medical Centre. Inclusion criteria are: (1) documented history of coronary artery disease, (2) no recent acute coronary syndromes, (3) current regular aspirin intake. Patient's blood was collected and whole blood aggregation was determined by multiple electrodes aggregometry. The increase of electrical impedance by the adhesion and aggregation of platelets onto the electrodes following the addition of arachidonic acid was measured continuously over a period of 6 minutes. The area under the curve, expressed in aggregation unit minute (AU*min) is inversely proportionate to the degree of responsiveness. Comparison between diabetic and non-diabetic patients was performed.

RESULTS: The baseline characteristics were similar between diabetic and non-diabetic groups. The mean AU*min was 204.30±219.75 and 218.34±213.95 (p=0.741) in diabetes and non-diabetes patients respectively. The elevated Hba1c was not statistically related to the AU*min (p=0.612).

CONCLUSION: There were no significant differences in aspirin responsiveness between diabetic and non-diabetic groups.

FP 1.4

VALIDATION OF MEDICATION COMPLIANCE QUESTIONNAIRE IN PATIENTS WITH ISCHEMIC HEART DISEASE

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BACKGROUND: The Medication Compliance Questionnaire (MCQ) was originally developed and validated in Malay hypertensive patients with no concomitant disease. Validity of the MCQ in patients with ischemic heart disease (IHD) in multi-ethnic groups (Malay, Chinese and Indian) is not known.

OBJECTIVE: To validate the MCQ in Malay, Chinese and Indian patients with IHD.

MATERIALS & METHODS: This validation study was conducted at Institut Jantung Negara, Kuala Lumpur, Malaysia. Registered IHD patients aged 40 to 70 years, on treatment for at least three months and with no previous history of heart attack or stroke were selected. Pregnant, illiterate and immigrant patients were excluded. The 10-item MCQ was self-administered by patients. Results were analyzed using SPSS version 12.0.1. for windows.

RESULTS: A total of 120 patients (40 in each ethnic group) completed the questionnaire. More than half (53.3%) of IHD patients were noncompliant to medications. Factor loading values for the items in the MCQ ranged from 0.4 to 0.9. Cronbach's alpha for the MCQ were 0.5 (drug stopping behaviour) to 0.7 (drug taking behaviour) and test- retest values were 0.5 for both domains.

CONCLUSION: The MCQ displayed similar validity and slightly lower reliability compared to the original results in hypertension. This indicates that the MCQ is robust and can be used in patients with IHD.

FP 1.5

A SARAWAK EXPERIENCE: IS THE CLOPIDOGREL-PROTON PUMP INHIBITOR COMBINATION A CONCERN?

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BACKGROUND: Studies have reported that proton pump inhibitors (PPI) may decrease the platelet inhibitory effects of clopidogrel, an antiplatelet commonly prescribed in patients with Acute Coronary Syndrome (ACS). However, the clinical significance of these findings is unclear, especially in our local settings.

OBJECTIVE: To compare the percentage of ACS patients prescribed with Clopidogrel-PPI between a Cardiac Tertiary Referral Center (CTRC) and a District General Hospital (DGH), and to evaluate the Major Adverse Cardiac Events (MACE) associated with this combination.

MATERIALS & METHODS: Ward and pharmacy documentations of ACS patients admitted at the CTRC and DGH from 1/1/08 to 30/6/08 were reviewed. The results from both centers were compared and analyzed using SPSS version 16.0.

RESULTS: 60 and 25 ACS patients were admitted at the CTRC and DGH respectively, and were followed-up at the 3rd, 6th, 9th and 12th month. At baseline, patient population in both centers was similar for ACS Stratum, laboratory investigations and demographics, except for ethnicity, in which 46.7% were Malay in the CTRC while 40% were Iban in the DGH. The use of Clopidogrel-PPI combination was compared between the CTRC and DGH, for STEMI patients, 31.7% vs. 12.0% respectively; NSTEMI patients, 10.0% vs. 12.0% respectively; UA patients, 1.7% vs. 0.0% respectively; and for Unspecified ACS patients, 6.6% vs. 0.0% respectively. In the CTRC, 1 patient (1.7%, n=60) had a MACE at less than 6 months and 1 patient (1.7%, n=60) was re-hospitalized secondary to upper gastrointestinal hemorrhage (UGIH) at less than 6 months. 3 patients in the DGH had a MACE, 2 of them (8.0%, n=25) occurring at less than 3 months and 1 (4.0%, n=25) died at less than 12 months. Only one patient with MACE in the DGH was on the Clopidogrel-PPI combination. None of the above were statistically significant (p=0.13).Majority of the ACS patients in the CTRC and DGH were on a statin (96.7% vs. 100% respectively). Usage of other possible interacting drugs such as the CYP219 substrates and inhibitors were also considered, in which 25% of patients in the CTRC were on compared to 93.7% in the DGH.

CONCLUSIONS: The Clopidogrel-PPI combination was more commonly prescribed in CTRC compared to DGH. The occurrence of MACE associated with the combination in both centers was insignificant.

FP 1.6

HEART FAILURE PATIENT POPULATION AND BETA BLOCKER PRESCRIBING PATTERN: A RETROSPECTIVE REVIEW IN A MALAYSIAN TERTIARY HOSPITAL

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BACKGROUND: Heart failure (HF) is a complex syndrome with high mortality and morbidity. Survival outcome of HF patients are well documented in many studies, but limited data are available locally.

OBJECTIVE: This cross-sectional, retrospective study was conducted to evaluate the clinical characteristics, beta blocker prescribing patterns and treatment outcomes of HF patients in a Malaysian tertiary hospital. Treatment outcomes comprised cardiovascular and HF readmissions at six-month and one-year, and length of stay. Materials and methods: A total of 100 patients were identified from the Cardiology Unit's echocardiography database from January to December 2008, and their medical records were screened.

RESULTS: In the studied HF population, 76% of patients were men. Mean age at diagnosis was 59 ± 13 years old, and mean ejection fraction was 32 ± 9%. Most HF cases were due to ischemic cause (80%) with a high prevalence of co-morbidities including coronary artery disease (83%), hypertension (67%), diabetes mellitus (53%) and dyslipidemia (40%). Beta blockers were prescribed in 88% of patients, with two-third (n=46) patients receiving a HF-recommended beta blocker (bisoprolol and carvedilol). Other beta blockers prescribed were atenolol, metoprolol tartrate and propranolol. Low mean doses of beta blockers were used. One in three patients was readmitted at six-month and one-year post diagnosis due to cardiovascular and HF causes. Mean and median average length of stay was 10 days and 8 days respectively. Significant predictors for cardiovascular readmissions at one-year were prior six-month cardiovascular and HF readmissions, and an underlying chronic kidney disease. Comparison between HF-recommended and non-HF recommended beta blocker groups showed no significant differences in hospital readmission rates and length of stay.

CONCLUSION: Our data indicated that the HF population is younger, with much higher prevalence of co-morbidities. There was a high rate of beta blockers prescribing, however the rate of discontinuation was also high. In conclusion, there is still room for improvement for beta blocker prescribing practice

FP 1.7

FIRST YEAR REVIEW OF PHARMACIST-MANAGED WARFARIN CLINIC: HOW TO IMPROVE TREATMENT TARGET?

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BACKGROUND: Previous studies outside Malaysia have shown that clinical pharmacist can improve the performance of Warfarin clinics.

OBJECTIVE: To evaluate the performance of warfarin clinic by analyzing the percentage of INR results of consecutive patients attending MTAC in a tertiary cardiac centre in Malaysia.

METHODOLOGY: This is an ongoing study to evaluate the effectiveness of clinical pharmacist-managed MTAC for patients on Warfarin. Outpatients attending the weekly Warfarin clinic were included, between March-December 2009. Each case was evaluated for INR target-setting, INR result on the day of visit, and subsequent dose adjustment if any. The data were pooled in three periods, for trend analysis: Period 1 (March-May), period 2 (July-September), and period 3 (October-December). Period 1 was an audit of the MTAC program, whereas period 2 and period 3 were follow-up periods, after the implementation of remedial actions to address the shortfalls in the MTAC program, including feedback to clinicians of audit findings, implementation of clinical practice guidelines on INR target-setting, standardization of dose titration and review schedule. On top of these, patient compliance and education were provided at point of dispensary.

RESULTS: The findings are summarized in following table. There is improvement in setting of INR targets and dose titration over the study period. However, only a marginal uptrend in the percentage of INR on-target. Retrospective analysis of patient's INR trend is underway to further evaluate the percentage of days, within range under follow-up in the clinic.

Period 1 Period 2 Period 3 Setting INR target according to guidelines 75.1% 95.2% 88.5% Dose titration according to guidelines 52% 69.6% 69.6% INR within target range 44.6% 46.2% 47.6% Under target range 42.2% 24.4% 33.7% Over target range 13.2% 29.4% 16.1%

CONCLUSION: Pharmacist-managed Warfarin clinic can improve performance measures, and have positive impact on clinical outcome.

FP 2.1

A RETROSPECTIVE STUDY ON CARDIOVASCULAR EVENTS IN TYPE 2 DIABETES PATIENTS TREATED WITH PPAR? AGONIST (ROSIGLITAZONE) FROM YEAR 2006 TO 2007

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BACKGROUND:Accumulating anecdotal, clinical and epidemiologic evidence suggests that Rosiglitazone associated with an increased frequency of central and lower extremities oedema, exacerbation of heart failure, and myocardial infarction.

OBJECTIVE: 1. To investigate if Rosiglitazone will precipitate the new onset of heart failure, worsening of heart failure or causing any cardiovascular events (including death secondary to cardiac event) at local setting. 2. To investigate if the incident of cardiovascular event(s) is co-relate with concomitant use of other anti-diabetes medication.

METHOD: We conducted a retrospective study to investigate the cardiovascular events in type 2 diabetes patients treated with Rosiglitazone from year 2006 to 2007 at Queen Elizabeth Hospital, Kota Kinabalu, Sabah. 250 patients' case notes were screened and 73 met the pre-specified inclusion criteria.

RESULTS: No death (any cause) was detected throughout the study period while 2 (2.24%) patients were hospitalized during the study period secondary to cardiovascular event. Apparently, the most common reason for stopping Rosiglitazone as part of their treatment regime is due to increased body weight. Mean body weight increased by 8.47% over a period of one year when compared to baseline mean body weight (P = 0.059). A significant Hba1c reduction was noted over a one year period. Mean Hba1c reduced by 16.47% as compared to baseline (P < 0.001). A11.4% reduction in mean serum creatinine was noted during the study period (P < 0.05). No significant changes noted in term of left ventricular ejection fraction (LVEF) in one year. There was a minimal 2.63% reduction in mean LVEF when compared to baseline (P = 0.076) over a period of one year.

CONCLUSION: Our data did not show a likely association between Rosiglitazone and adverse cardiovascular event over the one year study period. Further prospective randomized clinical trials are needed. Keywords: Rosiglitazone, heart failure, myocardial infarction, left ventricular ejection fraction (LVEF), Glycated hemoglobin (Hba1C).

FP 2.2

ASSESSMENT OF ADHERENCE TO STANDARD TREATMENT GUIDELINES FOR MANAGEMENT OF HEART FAILURE PATIENTS IN PENANG HOSPITAL

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BACKGROUND Despite the availability of well-established heart failure treatment guidelines, many heart failure patients still do not receive optimal treatment as recommended in the guidelines.

OBJECTIVE To assess the adherence of management among heart failure patients to standard treatment guidelines (Malaysia Heart Failure Clinical Practice Guidelines 2007) in Penang Hospital. MATERIAL & METHODS This is an observational cohort study carried out over 9 months. A total of 92 patients recruited were admitted to the cardiology ward with a diagnosis of heart failure. Patients' baseline characteristics and medications upon discharge were recorded in a data collection form. A patient registry was created and the results analysed using the SPSS program.

RESULTS The mean age of the 92 subjects selected was 63 ± 11.2 years, (male 54% and female 46%). 76% and 83% patients were prescribed an ACEI/ARB and beta-blocker upon discharge respectively. The remaining 24% patients were not prescribed ACEI/ARB mainly due to renal impairment and hypotension. Meanwhile, for the remaining 17% not on beta-blockers, the reasons were mainly due to hypotension and asthma. 43 patients had documented left ventricular ejection fraction during this study and 74.1% of these patients with LVEF < 40% were prescribed spironolactone (p < 0.001). In addition, spironolactone was prescribed for patients according to increasing NYHA class I to IV; 25% in class I, 37.8% in class II, 41.4% in class III and 50% in class IV (p = 0.956). A total of 32.6% patients discharged with digoxin were seen with increased usage with increasing NYHA class II to IV (p = 0.064); 24.4% in class II, 41.4% in class III and 100% in class IV.

CONCLUSION ACEI/ARBs and beta-blockers as first line treatment in heart failure patients in Penang Hospital were well utilized. Although spironolactone and digoxin were prescribed in accordance to treatment guidelines, results obtained were insignificant due to limitations of the study. Thus, the adherence to the guidelines of these two medications remains inconclusive.

FP 2.3

NOVEL HIDDEN LINK DISCOVERY APPLICATION BY COMBINING LOCAL CARDIOVASCULAR DATA SET AND GLOBAL PUBMED LITERATURES

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BACKGROUND: Successful outcomes of past clinical research have produced sustainable advances in cardiac treatments. Patterns hidden in a large cardiac data can point to new, potentially fruitful research hypotheses but are difficult to manually identify. Recently, conceptual biology emerges as new frontier in medical knowledge discovery where new knowledge is automatically synthesized by analyzing hidden connections among medical concepts in Pubmed literatures. The usefulness of such discovery can be greatly enhanced by integrating local data patterns with literature-based analyses to uncover previously unknown connections between two hypothesized medical concepts.

OBJECTIVE: To demonstrate how co-occurrence patterns generated from local heart databases serve as hidden connections between two medical concepts in cardiology.

MATERIALS & METHODS: A data set of 543 cases involving Echocardiography (ECHO) and Multi-Slice Computer Tomography (MSCT) results was extracted and de-identified from a local cardiac centre's database consisting of gender, age, ejection fraction %, coronary arterial blockage %, smoking, hypertension, diabetes mellitus, hypercholesterolaemia, and CAD family history attributes. We standardized all data set attributes to follow formal medical concepts defined by the Unified Medical Language System (UMLS) to allow conceptual correspondence between user hypotheses, data attributes, and literature contents. Co-occurrences of these attributes in the data set were subsequently identified using established data mining algorithm to form a set of patterns. A medical investigator supplied two cardiovascular biomarkers to be tested: high-sensitivity CRP (hsCRP) and matrix metalloproteinase (MMP). A probabilistic model was applied to measure the strength of each pattern to the given pair of hypotheses by intelligently retrieving relevant information from Pubmed literatures. Strong patterns suggest valuable hidden potential connections between the two biomarkers.

RESULT: Eighty-six patterns were generated from the data set. Six patterns were statistically significant (chi square>7.82; df=3; P=0.05). The strongest pattern consisted of co-occurrence between diabetes mellitus, hypercholesterolaemia, and hypertension concepts in the data set, i.e. diabetes mellitus ? hypercholesterolaemia ? hypertension. Analysis on Pubmed showed independent but significant co-occurrences between hsCRP and diabetes; and between hypertension and MMP, such that hsCRP ? diabetes mellitus ? hypercholesterolaemia ? hypertension ? MMP. However, a recent search on Pubmed for articles containing "high-sensitivity c-reactive protein AND diabetes mellitus AND hypercholesterolaemia AND hypertension AND matrix metalloproteinase" returned no result. Consequently, this finding represents an interesting and potential area for future research.

CONCLUSIONS: Our knowledge discovery model points to highly fruitful areas for future cardiovascular investigations. Potential new medical knowledge is synthesized in automated fashion which cannot be achieved by the traditional statistical analysis approach or conventional Pubmed queries.

FP 2.4

PREVALENCE OF UNCONTROLLED HYPERTENSION AMONG DIABETIC PATIENTS IN THE PRIMARY CARE SETTING

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BACKGROUND Hypertension is a common co-morbid condition in diabetes mellitus, affecting about 20% –60% of patients with diabetes. In Malaysia, about 10.7% patients with diabetes mellitus are associated with hypertension. Hypertension substantially increases the risk of both macrovascular and microvascular complications in diabetes mellitus. However, the adequacy of blood pressure control (goal blood pressure <130/80 mm Hg) among Malaysian diabetic patients is not well described.

OBJECTIVE The main objective of this study is to determine the prevalence of hypertension and hypertensive control among the diabetic patients managed in the primary care setting. Methods This is a cross sectional study involving consecutive patients attending the primary care clinic (Klinik Rawatan Utama) in the University Malaya Medical Centre (UMMC). The demographic information, anthropometric measurement and current medications were recorded. The blood pressure was measured by calibrated automatic blood pressure machine in sitting position. The most recent investigation results (renal function, lipid profile etc) were also collected.

RESULTS A total number of 400 consecutive patients were recruited from December 2009 to January 2010. The mean age of the sample is 65 years old. The gender distribution is 62.2% female and 37.8% male. The mean of the duration of diabetes in these patients is 11.55 years (range: 0.25-40 years). 15.5% of these patients are on subcutaneous insulin injection (either alone or combination with oral hypoglycemic therapy). A total of 335 (83.7%) patients have history of hypertension. Among the 336 patients that on anti hypertensive drugs, 25.3 %(85) of them have their blood pressure controlled (<130/80mmHg). Among those with their blood pressure controlled, 44% (37) of them were on single antihypertensive agent while the rest required as much as five different antihypertensive agents.

CONCLUSIONS Hypertension is very common among diabetic patients managed in the primary care clinic. Among the hypertensive patients that on treatment, less than 1/3 of them have their controlled blood pressure. They may need more than one agent to have their blood pressure controlled.

FP 2.5

CHRONIC HEART FAILURE MANAGEMENT: PHYSICIANS' PERCEPTION AND ACTUAL TREATMENT - A MALAYSIAN PERSPECTIVE

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BACKGROUND: Heart failure (HF) is a major, continually growing problem worldwide. The prognostic benefits of HF therapy are achieved through optimization of drug therapy. European and American data show that physicians are either unaware or unconvinced of the efficacy of various HF therapies. Local data however is lacking.

OBJECTIVES: This pilot study aimed to evaluate physicians'perceptions, actual prescribing patterns and discrepancies between the two parameters in the management of chronic HF.Additional objectives were to determine the consistency of local HF management with current available recommendations and to assess if differences exist between management at a tertiary and specialized cardiac centre.

MATERIALS & METHODS: Physicians at Pusat Perubatan UKM (PPUKM) and Institut Jantung Negara (IJN) completed a questionnaire-based perception survey regarding the diagnosis and management of HF. Retrospective observational data collection of 200 patients (100 per centre) with a diagnosis of HF > 3 months was done to assess actual prescribing patterns.

RESULTS: 39 physician responses were obtained (PPUKM 22, IJN 17). Diagnosis was made primarily on signs and symptoms alone (62 ± 25.5 vs 47 ± 15%). Echocardiogram utilization was less at PPUKM (p=0.02). Percieved use of beta-blockers (BB), angiotensin converting enzyme inhibitors (ACEI) and angiotensin receptor blockers (ARB) was high (>75%) at both centres. Physicians were well aware of the indications, contraindications, mortality and morbidity benefits but not the symptomatic relief provided by BB, ACEI and ARBs. Of the 200 patients sampled, those at IJN were younger (mean 55.8 ± 15.8), predominantly male (74%), had lower ejection fraction (34 ± 13.2%), poorer functional class and higher creatinine (123.43 ± 59.3). There were more hypertensive and coronary artery disease (CAD) patients at PPUKM (p<0.05). >80% were prescribed BB (IJN > PPUKM, p<0.05) and 95% ACEI/ARB. Almost all patients not prescribed a BB (both centres) and ACEI/ARB (PPUKM only) did not have contraindications for its use. Actual doses of BB, ACEI and ARB were less than recommended. Cardioselective BB were more likely to be prescribed at IJN (p<0.05).

CONCLUSION: The perceptions, knowledge and actual management of chronic HF at both centres were better than in previous published international studies. The high volume of ACEI, ARB and BB use however did not translate into optimal dose utilization.

FP 2.6

PREVALENCE OF CARDIOVASCULAR RISK FACTORS IN A PUBLIC SCREENING PROGRAMME – COMPARISONS WITH THE NATIONAL HEALTH AND MORBIDITY SURVEY III AND THE NATIONAL CARDIOVASCULAR DISEASE REGISTRY

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BACKGROUND: Hypertension, diabetes mellitus (DM), dyslipidemia and smoking are independent risk factors (CVRF) for cardiovascular disease, which is the leading cause of mortality in Ministry of Health hospitals in Malaysia. Free public health screening programmes (PHSP) are conducted annually by the Sarawak Heart Foundation to raise awareness of these CVRF.

OBJECTIVE: To evaluate the prevalence of CVRF obtained from a PHSP in Sarawak in comparison to findings from the National Health and Morbidity Survey III (NHMS III, 2006) and the National Cardiovascular Disease Registry [NCVD, 2006; where all subjects had experienced an acute coronary syndrome (ACS)].

METHODS: Data was collected from 1,024 members of the public who attended a PHSP in Sibu from 6-12 May 2009. Relevant data was extracted and compared with the NHMS III and NVCD.

RESULTS: Prevalence of hypertension was 14.9% in the PHSP and 32.3% in the NHMS III. Male gender was more prevalent for both PHSP and NHMS III (50.3%; 50.6% respectively). 4.7% had DM in the PHSP compared to 11.6% in NHMS III. The prevalence of dyslipidemia, was 11.5% and 20.7% for PHSP and NHMS III, respectively. Mean cholesterol level was comparable at 4.50mmol/L for both PHSP and NHMS III. 11.3% in the PHSP were smokers compared to 8.7% in the NHMS III. For those with established CVD in the PHSP (1.6%), 56.2% and 61.0% had hypertension, with 55.6% and 68.0% being of male gender in PHSP and NCVD, respectively. 57.1% had DM in the PHSP compared to 44.0% in the NVCD. 30.8% and 33.0% were found to have dyslipidemia at the PHSP and NCVD, respectively. 21.4% were smokers in PHSP while 33.0% were smokers in the NCVD.

CONCLUSION: Except for smoking, CVRF was more prevalent in NMHS population compared to a PHSP. In PHSP subjects with known CVD, except for DM, prevalence of CVRF was more prevalent in patients from the NCVD. Prevalence of CVRF in a PHSP was comparable to those in the NHMS and NCVD. A PHSP could be an activity to address awareness and management of CVRF with the aim to reduce subsequent cardiovascular events.

FP 2.7

HYPERTENSION CONTROL IS DIFFICULT AMONG PATIENTS WITH DIABETES MELLITUS. A CROSS SECTIONAL STUDY ON 1013 DIABETIC PATIENTS.

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BACKGROUND Hypertension is a common co-morbid condition in diabetes mellitus, affecting about 20% –60% of patients with diabetes. In Malaysia, about 10.7% patients with diabetes mellitus are associated with hypertension. Hypertension substantially increases the risk of both macrovascular and microvascular complications in diabetes mellitus. However, the adequacy of blood pressure control (goal blood pressure <130/80 mm Hg) among Malaysian diabetic patients is not well described.

OBJECTIVE The main objective of this study is to determine the prevalence of hypertension and hypertensive control among the diabetic patients managed by diabetic specialist clinics.

METHODS This is a cross sectional study involving consecutive patients who visit the diabetic clinic and insulin clinic in the University Malaya Medical Centre (UMMC). The demographic information, anthropometric measurement and current medications were recorded. The blood pressure was measured by calibrated automatic blood pressure machine in sitting position. The most recent investigation results (renal function, lipid profile etc) were also collected.

RESULTS A total number of 1013 consecutive patients were recruited from insulin and diabetic clinic in UMMC from December 2009 to January 2010. The mean age of the sample population was 60 years old. The gender distribution was 55.4% female and 44.6% male. The mean of the duration of diabetes in these patients was 14.96 years (range: 0.08-50 years). 56.7% of these patients was on subcutaneous insulin injection (either alone or combination with oral hypoglycemic therapy). A total of 713 (70.4%) patients have history of hypertension. Among these hypertensive patients, 15 (1.45%) are not on any treatment. A total of 128 (12.41%) patients among the total sample population have undiagnosed hypertension. Among the 694 patients who were on anti hypertensive drugs, only 29.7% of them have their blood pressure controlled (<130/80mmHg). Among those with their blood pressure controlled, 55% (71) of them were on single antihypertensive agent while the rest required as much as five different antihypertensive agents.

CONCLUSIONS Hypertension is very common among diabetic patients. Among the hypertensive patients that on treatment, less than 1/3 of them have their controlled blood pressure. They may need more than one agent to have their blood pressure controlled.

FP 3.1

PREDICTORS OF LEFT MAIN CORONARY ARTERY STENOSIS IN RESTING 12-LEAD ELECTROCARDIOGRAPHY

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BACKGROUND The prediction of left main coronary artery (LMCA) stenosis in clinical practice is an important assessment in determining patients risk profile and hence subsequent treatment strategy planning. It is more so prior to an elective coronary angiography where possible fore-knowledge of the left main stem anatomy is highly desirable, as an inadvertently positioned diagnostic catheter could cause catastrophic complications in patients with significant LMCA stenosis.

OBJECTIVES This study aims to determine a possible set of differential electrocardiographic manifestations which are associated with significant left main coronary artery (LMCA) stenosis.

METHODS This is a retrospective study of 60 patients from the year 2008 to 2009 who had undergone coronary angiography and found to have LMCA stenosis of ?50% as determined by QCA method. We studied the resting 12-lead ECGs in these patients obtained during the same elective admission for coronary angiography. 10 patients who were matched for baseline characteristics and had normal coronary studies were recruited as controls (designated as control group A). Another 20 patients who had normal LMCA but with significant LAD stenosis were recruited as controls (designated as control group B).

RESULTS Precordial leads showing significant ST segment depression (>0.1 mV) occurred with a significantly higher incidence in the LMCA stenosis group (58% [35/60]) compared to control group A (0% [0/10]) and control group B (20% [4/20]). The extent of ST segment depression was significantly greater in the LMCA stenosis group (0.45 ± 0.15 mV) compared to control group B (0.20 ± 0.05 mV). Lead aVR ST segment elevation (>0.05 mV) occurred with a significantly higher incidence in the LMCA stenosis group (68% [41/60]) than in the control group A (0% [0/10]) or control group B (25% [5/20]). Lead aVR ST segment elevation was significantly greater in the LMCA stenosis group (0.15 ± 0.10 mV) than in control group B (0.05 ± 0.10 mV).

CONCLUSIONS The combination of diffuse precordial leads ST segment depression and lead aVR ST segment elevation is an important predictor of significant LMCA stenosis. The extent of ST segment shifts appears to depend on the location of the coronary stenosis, with the more proximal stenoses giving rise to a greater extent of ST segment shifts.

FP 3.2

Erectile Dysfunction Prior to Acute ST Segment Elevation Myocardial Infarction

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BACKGROUND: Erectile dysfunction (ED) and coronary artery disease (CAD) share many common risk factors and are closely related. It is thought that ED should precede CAD since the smaller penile arteries undergo atherosclerosis earlier than the coronary arteries. This study aims to identify the association between ED and CAD manifesting as acute ST segment elevation myocardial infarction (STEMI) in a teaching hospital in Malaysia.

METHODS: A total of 219 men were admitted for STEMI to the coronary care unit from April 2008 to February 2009. Of these, 192 were screened and only 111 who were sexually active within the last 6 months were recruited for the assessment of ED using the IIEF-5 questionnaire. Other indices studied include the cardiovascular (CV) risk factors, body measurements, blood results and coronary angiographic findings.

RESULTS: Prevalence of ED in the 111 men was 75.7% (41.4% mild, 31.5% moderate and 2.7% severe). On univariate logistic regression, advancing age (p=0.002), hypertension (OR=3.64, 95% CI 1.26-10.51, p=0.017), hyperlipidemia (OR=5.00, 95% CI 1.10-22.77, p=0.037), diabetes (OR=3.54, 95% CI 1.21-11.17, p=0.031) and worsening HbA1c (p=0.013) were significant predictors for the development of ED. Patients who did not exercise regularly were more likely to develop ED (OR=4.13, 95%CI 1.55-11.10, p=0.005). Smoking, alcohol, body mass index (BMI), waist circumference and severity of coronary angiogram findings were not predictors of ED. All patients with previous ischemic heart disease (IHD) (n=14) had ED (Fisher Exact Test, p=0.020). Interestingly, 24.7% of the 81 sexually inactive men that were not recruited reported complete ED for more than 6 months prior to STEMI.

CONCLUSION: Seven out of ten men were affected with ED at least in the last 6 months prior to their admission for STEMI. Patients with the history of IHD and evidence of ED are very high risk for future acute coronary syndromes and thus aggressive medical attention should be instituted. Men who are not sexually active should be closely assessed as a quarter of them have complete ED which warrant treatment and this may be a harbinger for CAD. This study should be used as a guide for further large scale studies to emphasize that ED as an independent marker for the development of STEMI.

FP 3.3

CONVENTIONAL AND NOVEL RISK MARKERS IN PREDICTING ENDOTHELIAL DYSFUNCTION IN PATIENTS PRESENTING WITH ERECTILE DYSFUNCTION

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BACKGROUND**:** There is a strong correlation between erectile dysfunction (ED) and cardiovascular disease (CVD) due to defect in endothelial function. ED patients are at high risk to develop CVD. Early screening is crucial to assess CVD risks. Some novel markers of endothelial dysfunction may be useful as a surrogate. We used Carotid Intima Media Thickness (CIMT), highly sensitive C-reactive protein (hs-CRP) and photoplethysmography (PPG) to determine the presence of endothelial dysfunction among ED patients.

METHOD**:** In this cross-sectional study, all male ED patients between the ages of 30 to 78 years old who presented between January & September 2009 were screened and enrolled. ED was determined by the standard International Index Erectile Function (IIEF) questionnaires (any value < 26). Cardiovascular risks factors were determined by history taking. All patients (n=78) underwent vital sign monitoring and BMI measurement. Subsequently all patients were subjected to ECG, CIMT and PPG procedures as well as serum sample for hsCRP.

RESULT**:** 66 ED patients were recruited, with mean age of 55.9±9.8. Malay was the highest ethnic group (63.6%). The mean systolic blood pressure (BP) was 138.7±10.4 mmHg and mean diastolic BP was 82.6±7.5 mmHg. The mean BMI was 26.8±4.3 kg/m². The proportion of conventional risk factors in ED subjects was hypertension (66.7%), diabetes mellitus (60.6%), dyslipidaemia (66.7%), smoker (45.5%) and family history of CVS (7.6%). There were 38 patients (57.6%) with co-morbid of 3 or more risk factors, 9 patients (13.6%) with 2 risks, 13 patients (19.7%) with 1 risk and 6 patients (9.1%) with no risk at all. There were 44 patients (62%) with endothelial dysfunction as indicated by positive CIMT (equal or more 0.8mm). The proportion of conventional risk factors that gave significant p value in positive CIMT was hypertension (85.4%), diabetes (75.6%),dyslipidamia (82.9%) and co morbid of 3 or more (70.7%). The binary logistic regression was significant in hypertensive group.

CONCLUSION**:** The study showed a high proportion of ED patients with conventional CVD risk factors, and a significant number of them with 3 or more CVD risk factors. Furthermore there were a high percentage of patients with ED proven to have endothelial dysfunction and therefore may be at risk of future CVD.

FP 3.4

ARE PATIENTS WITH ACUTE CORONARY SYNDROME BEING DENIED EVIDENCE-BASED MEDICINE IN MALAYSIA? A COMPARISON WITH THE GRACE REGISTRY

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INTRODUCTION: The last two decades has seen tremendous advancement in the management of acute coronary syndrome (ACS) with the introduction of new management strategies and treatment options including pharmacotherapy, surgical interventions and specialized coronary care units. This includes the use of double antiplatelet therapy, heparin (preferably low molecular weight heparin, LMWH), early initiation of beta-blockers, ACE inhibitor and statins and control of hyperglycaemia. For STEMI, thrombolysis may be followed by double antiplatelet agents and LMWH. Are these recommendations being translated into clinical practice and how do we compare with European countries?

OBJECTIVES: To examine the use of medicines for patients admitted with ST elevation myocardial infarction (STEMI), non-ST elevation MI (NSTEMI) and unstable angina (UA) between 2006 and 2008, compared to the Global registry of Acute Coronary events (GRACE).

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia. The medicines by category started during admission were tabulated as percentage for each condition. The range indicate the variation for different years. A reference was made to the GRACE registry.

RESULTS: The use of aspirin and statins are approximately 90% while double antiplatelet therapy, ACE-inhibitor or ARB, beta blockers and LMWH was used in over two-thirds of patients. There is an increased of STEMI patients being thrombolysed from 2006 to 2008 (70%, 73% and 76%). There is also increased use of ADP antagonist and LMWH while a clear reduction in unfractionated heparin.

Medicines category	*GRACE Registry 2005**	NCVD Registry 2006-2008		
		STEMI	NSTEMI	UA
Thrombolysis	27.8%	70-76%	*Not applicable*	*Not applicable*
Aspirin	96.7%	92-95%	90-91%	89-91%
ADP antagonist	78.2%	60-73%	62-63%	50-66%
GP receptor inhibitor	39.2%	3-5%	3-4%	1-2%
Unfractionated heparin	42.4%	9-13%	10-18%	8-23%
LMWH	62.9%	31-36%	68-75%	64-79%
Beta blocker	94.3%	62-66%	65-67%	69-71%
ACE inhibitor/ ARB	85.8%	57-66%	63-67%	71-73%
Statin	85.4%	88-92%	84-90%	90-91%
Other lipid lowering	3.3%	3-5%	7%	5-6%
Diuretics	-	22-28%	40-41%	28-32%
Calcium antagonist	11.1%	7%	19-22%	22-23%
Oral hypoglycaemics	-	20-26%	25-35%	28-36%
Insulin	-	22-27%	24-28%	20-25%

** given as a percentage of all STEMI, NSTEMI and UA including thrombolysis*

CONCLUSIONS: The use of medicines for ACS patients between 2006-2008 were consistent except for an increase in thrombolysis, double antiplatelet therapy and LMWH in place of unfractionated heparin. Wheras use of statin equalled utilization in the GRACE registry, other medicines use generally fell short.

FP 3.5

NT-PROBNP AS A PREDICTOR OF ADVERSE CARDIAC EVENTS IN NSTEMI AND UNSTABLE ANGINA

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BACKGROUND: Brain natriuretic peptide (BNP) is a cardiac neurohormone which has been established as an important marker for heart failure. Recently, BNP has been shown to be an important marker in acute coronary syndrome. Multiple cohort studies from western populations showed that NT-proBNP has a good prognostic value and is a strong predictor of death. However, the cut-off value in Asian populations is largely unknown.

OBJECTIVE :This study evaluates NT-proBNP as a predictor of adverse cardiac events in patients with unstable angina and NSTEMI at 30 days.

MATERIALS :and Methods Patients presented with unstable angina and NSTEMI were recruited from cardiology ward. After consent was obtained, bloods were taken within 24 hours from symptoms onset. Patients were treated with standard medical therapy and percutaneous coronary intervention if indicated. In the laboratory, Roche cobas e 411 analyzer was used to measure the NT-proBNP levels of the blood samples. The study end-points were death, urgent percutaneous coronary intervention and hospital readmission with heart failure or myocardial ischaemia.

RESULTS: A total of 100 patients were recruited between November 2008 and January 2009. Among these patients, 17 patients were excluded as a result of errors of the analyzing machine, lost to follow - up and severe renal impairment. A total of 28 (33%) patients met the study end-points; 4 (4.8%) of them died.

There is a significant difference in the level of NT-proBNP between patients with and without adverse events (p=0.028) . At cut-point of 280 ng/dL, the area under Receiver Operating Characteristic curve (AUC) is 0.634 (CI;0.507 to 0.761) with the sensitivity of 70% and specificity of 55%. There is a significant difference in the level of NT-proBNP in patients who died as compared to survivors (p<0.001). At cut-point of 1000 ng/dL, the AUC is 0.859 (CI;0.756 to 0.962) with the sensitivity and specificity of 100% and 72.2% respectively.

CONCLUSIONS: In this study, NT-proBNP was shown to be a good predictor of adverse cardiac events and mortality in patients with unstable angina and NSTEMI. However, this study is limited by the small sample size.

FP 3.6

DOUBLE CHAMBERED RIGHT VENTRICLE: NOT AN UNCOMMON CLINICAL ENTITY

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BACKGROUND: Double chambered right ventricle (DCRV) is a form of right ventricular outflow tract (RVOT) obstruction caused by anomalous muscle bundles, dividing the right ventricle into high-pressure proximal chamber and low-pressure distal chamber. It is rare and literature data is relatively limited.

OBJECTIVES: 1) To review the clinical and morphological characteristics of DCRV. 2) To evaluate and compare the roles of transthoracic echocardiography, transoesophageal echocardiography and invasive right heart catheterization in assessing DCRV. 3) To assess outcome after surgical repair

METHODS: Retrospective review of patients' clinical data.

RESULTS: Between years 2005 and 2009, 24 patients were evaluated for DCRV at our institution. Their mean age was 16.9 ± 16.1 (range 2.1 to 59.4) years. Coexist anomalies included ventricular septal defects (VSD) in 20 (83.3%), persistent left superior vena cava in 4 (16.7%), aortic valve prolapse in 3 (12.5%) and double aortic arch in 1 (4.2%). 2 patients (both were children below 3 years old) presented with pulmonary congestion secondary to large VSD shunt. 2 had overt right heart failure and 2 had reversed shunt across the VSD. The remaining patients were asymptomatic. Morphological assessment of the DCRV by transthoracic echocardiography was inadequate in 20.8% of cases due to suboptimal transthoracic acoustic window whereas transoesophageal echocardiography was diagnostic in all cases. The obstructing muscle bundles were discrete in 18 (75%) and diffuse in 6 (25%). Prolapsed right coronary cusp contributed to the obstruction in 3 cases. 18 patients underwent invasive right heart catheterization and 12 (66.7%) were found to have right ventricular systolic pressure above two third systemic. There was good correlation between RVOT gradients obtained by transthoracic echocardiography and by invasive right heart catheterization (r = 0.767, p = 0.001). 16 patients successfully underwent surgical repair of DCRV and concomitant lesions with no in-hospital death. All had none or mild residual RVOT gradient following surgery.

CONCLUSIONS: DCRV is not an uncommon lesion and seldom exists in isolation. Accurate assessment of its morphology and haemodynamic often requires more than one imaging modality. Surgical repair carries good outcome.

FP 3.7

EXERCISE STRESS TESTING AND ERECTILE DYSFUNCTION

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BACKGROUND: Erectile dysfunction (ED) and coronary artery disease (CAD) share many common risk factors and are closely related. Exercise stress testing (EST) is a widely used noninvasive modality for stratification of cardiovascular (CV) risk. This study aims to identify the usefulness of combining ED assessment together with EST when assessing CV risk in a teaching hospital in Malaysia.

METHODS: A total of 303 men subjected to EST were consecutively recruited from August 2008 to March 2009. The IIEF-5 questionnaire was used for the assessment of ED. Other indices studied include EST results (negative, inconclusive, positive) and the traditional CV risk factors.

RESULTS: EST was negative in 53.5% of subjects, inconclusive in 21.5% and positive in 25.1%. Overall 84.5% of respondents had some degree of ED (35.0% mild, 36.3% moderate and 13.2% severe). Patients with positive EST had the highest prevalence of ED (92.1%), followed by inconclusive EST (89.2%) and negative EST (79.0%) (p=0.017). Subjects aged 50 and above (as compared to below 50) are more likely to have positive EST (30.3% vs 13.7%, p=0.007) and ED (89.4% vs 73.7%, OR 3.02, p<0.001) respectively. Likewise diabetic subjects had higher prevalence of positive EST (30.3% vs 22.9%, p=0.026) and ED (92.1% vs 81.3%, OR=2.69, p=0.018) compared to non-diabetics respectively. Subjects with hypertension (89.1% vs 79.6%, OR=2.10, p=0.022) and hyperlipidemia (88.5% vs 79.1%, OR=2.04, p=0.025) are more likely to have ED respectively compared to those without.

CONCLUSION: This study highlighted significant associations between EST and ED. Those with positive EST and ED are very high risk for CV events particularly if diabetes and advancing age are present. This should prompt us to review and manage such patient aggressively. The prevalence of ED in the inconclusive group was close to the positive EST group, thus other screening modalities such as cardiac nuclear perfusion scan, stress echocardiography or multi-slice cardiac CT should be carried out. CV risk stratification may change since subjecting male patients to the IIEF-5 questionnaire is low risk, cheap and easy to implement primary and secondary prevention for future CV events. This study should be further correlated with coronary angiogram findings.

FP 4.1

THE ROLE Of NT- proBNP IN RULING OUT ACUTE HEART FAILURE IN PATIENT PRESENTING WITH ACUTE DYSPNOEA

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Management of acute decompensated heart failure patients remain as a substantial challenge in 21st century. The rapid and accurate diagnosis of heart failure from other causes of dyspnoea using current clinical methods still cause significant misdiagnosis and delay in treatment. Studies are ongoing in determining the clinical value of Brain Natriuretic Peptide (BNP) and its Amino terminal, NTproBNP in diagnosing and ruling out acute heart failure in the emergency department and researches are still in the quest of determining its optimal cut points. Malaysia has incorporated the use of natriuretic peptides in the diagnosis of heart failure, however we do not have any local data from the country or the region. We conducted a prospective study of 127 patients who presented in the emergency department with acute dyspnoea. The clinical diagnosis of acute CHF was determined by 2 independent cardiologists blinded to the NTproBNP results. The primary endpoint was a comparison of NTproBNP results with clinical diagnosis of acute heart failure made by the two cardiologists which is taken as the standard of diagnosing acute heart failure. The median NTproBNP level among 64 (50.4%) patients who had acute congestive heart failure was 2999 pg/ml versus 183 pg/ml among 63 patients (49.6%) who did not (p<0.001). The NTproBNP yield high diagnostic accuracy with an AUC of 0.98. NTproBNP at cutpoints of 1400pg/ml for patients <50 years of age and 1500pg/ml for patients >50 years of age have high sensitivity and specificity of 100% for the diagnosis of acute CHF. An NTproBNP level of 380pg/ml was optimal at ruling out acute CHF with a negative predictive value of 100. Age stratified NTproBNP ruling in cut points based on ICON study is applicable to our study population deriving high AUC and comparable sensitivity and specificity value to that of ICON study. An age independent ruling out cut points as suggested by ICON study at 300pg/ml also derived high sensitivity and specificity with 100% negative predictive value. NT-proBNP measurement is a valuable addition to standard clinical assessment for the identification and exclusion of acute CHF in the emergency department setting.

FP 4.2

CORRELATIONS OF DIFFERENT PARAMETERS OF CAROTID INTIMA MEDIAL THICKNESS WITH COMPLEXITY OF CORONARY ARTERY DISEASE

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BACKGROUND: Although widely accepted as a screening tool for coronary artery disease (CAD), carotid intima medial thickness (CIMT) has shown at best only a moderate correlation with CAD severity. Possible reasons include the variability of atherosclerosis development in different vascular beds, uncertainties about the best site to measure CIMT and no standard method of quantifying CIMT.

OBJECTIVE: To evaluate how different measurements of CIMT correlate with the Syntax score in CAD patients.

METHODS: 96 patients who underwent coronary angiography from October 2009 to January 2010 were recruited. Common carotid artery (CCA) Ultrasound B-mode scanning was performed with a L11-3 linear array transducer on the Phillips iE33 Echocardiography System. Three measurements were made on each side of the neck - (a) mid CIMT over 10 mm at mid CCA level, (b) maximum CIMT at any point along the entire length of the CCA, and (c) diameter of CCA to calculate midCIMT index and maxCIMT index. The Syntax Score was calculated based on the coronary angiogram. Statistical analysis was done with the SPSS 13 software using Spearman's 1 tailed correlation test.

RESULTS: The mean age of our study population was 56.4 + 11.1 years. The following CIMT measurements were obtained - Left midCIMT 0.62 + 0.17mm, Left midCIMT index 0.85 + 0.22 , Left maxCIMT 0.70 + 0.38mm, Left maxCIMT index 0.94 + 0.51, Right midCIMT 0.63 + 0.20mm, Right midCIMT index 0.85 + 0.24, Right maxCIMT 0.76 + 0.43mm, Right maxCIMT index 0.99 + 0.54. Mean Syntax score was 18.4 + 11.3 with mininum of 1 and maximum of 61.5. Statistical analysis showed significant correlations between the Syntax Score and maxCIMT (Left maxCIMT p=0.025, Right maxCIMT p=0.04) as well as maxCIMT index (Left maxCIMT index p=0.012, Right maxCIMT index p=0.001). The meanCIMT and meanCIMT index did not correlate with the Syntax Score.

CONCLUSIONS: The maxCIMT can predict complexity of CAD. However, due to variation in CCA diameter, it might be better to use maxCIMT index rather than maxCIMT. Larger studies are needed to validate the results of this study.

FP 4.3

CERTAIN DIFFERING ASPECTS OF INFECTIVE ENDOCARDITIS SEEN IN HOSPITAL SERDANG

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BACKGROUND:
An observational study was carried out at Hospital Serdang, to look at the patients with a diagnosis of endocarditis (IE) from the year 2006-2009.

OBJECTIVE:
The objectives were (1) to identify the commonest causative organism for IE, (2) the commonest valve involved, (3) the relation of vegetation size to the type of organism and (4) to determine the severity of illness caused by the commonest organism.

MATERIALS & METHODS:
Both definite and possible cases of IE at our institution (twenty-one patients for the period from 2006-2009), diagnosed using the Duke criteria, were reviewed. Clinical characteristics of patients, organisms, involved valves, and complications were recorded and analyzed using SPSS version 16.0.

RESULTS:
Mean age of patients, 40±14 years. Males, 76.2% (n=16). Racial makeup, Malays 47.6%, Chinese 28.6%, Indians 14.3%, others 9.5%.
Using Duke's criteria, 76.2% (n=16) were in the "definite" and 23.8% (n=5) were "possible" IE cases. IE affected 95.2% (n=20) of native valves. Both mitral and aortic valves were equally affected (42.9%, n=9), tricuspid valve involvement was 9.5% (n=1). There was only one case of prosthetic valve endocarditis (4.8%, n=1).
Of the 21 blood cultures, 71.4% (n=15) were positive and 28.6% (n=6) negative. The most common organism cultured was Staphylococcus aureus (n=7, 33-3%).
In blood culture positive patients, the common complications were embolism 40%, heart failure 20%, renal failure 20%; statistically insignificant. Mean vegetation size among blood culture positive group was 0.9cm2 ±0.9. The mean size of vegetation caused by Staphylococcus aureus was 1.20cm2 ±1.22 when compared to vegetation caused by others was statistically insignificant (p=0.069).
Both culture positive and negative had 1 death each.
Echocardiographic findings: Vegetation was found on 85.7% (n=18), dehiscence of prosthetic valve 4.8% (n=1), new valvular regurgitation 4.8% (n=1).

CONCLUSIONS:
The study shows that variations from contemporary teachings do occur in causative organism and infected valves, involved in IE and is consistent with International Collaboration on Endocarditis.

FP 4.4

MINISTRY OF HEALTH MULTI-CENTERS HEART FAILURE STUDY

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BACKGROUND: Heart failure is a common cause of hospital admission. It can be divided into systolic and diastolic heart failure. There are many guidelines available to guide the treatment of heart failure. However, our local data on heart failure is still lacking.

OBJECTIVES: In this multi-centers cross sectional study, we aim to find out the local prevalence of heart failure and physician adherence of treatment according to Malaysian 2007 clinical practice guideline on Management of Heart Failure from two Ministry of Health's (MOH) cardiac centers in our country.

METHODS: All patients admitted to the two MOH cardiac centers with heart failure within a typical week to have echocardiography done within 24-48 hours. Independent observers from the two hospitals compile data on patient characteristics and risk profile, echocardiography systolic and diastolic data as well as adherence of chronic heart failure treatment according to the guideline.

RESULTS: There were 18 heart failure patients (mean age 55.7±10.2, 72.2% male) admitted during the study period of one week. The ACEI/ARBs and beta blockers usage rates were at 72.2% [13/18] and 66.7% [12/18] respectively for the given cohort. The potassium-sparing diuretic (spironolactone) usage rate was at 11.1% [2/18]. Only one patient was on digitalis therapy (5.6% [1/18]). A significant number of patients were already on chronic loop diuretics therapy (66.7% [12/18]). There are more patients with systolic heart failure (77.8% [14/18]) compared to diastolic heart failure (22.2% [4/18]).

CONCLUSIONS: The result showed that our systolic and diastolic heart failure rates are 77.8% and 22.2% respectively within a typical admission week. A significant percentage of patients did not receive standard heart failure medications according to the guideline. The reasons for it will be discussed during the presentation.

FP 4.5

A COMPARISON IN LIPID PROFILE AND FASTING GLUCOSE LEVELS BEFORE AND AFTER INTERVENTION IN SIBU, SARAWAK

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BACKGROUND: Cardiovascular disease is one of the major causes of death in Malaysia. As such, health interventions may help to improve the lipid profile and fasting glucose levels in the community.

OBJECTIVE & METHODS: In order to determine the changes in lipid profile and fasting glucose levels in an urban community, a community-based epidemiological survey was conducted to compare 5-year mean changes in lipid and glucose levels after non-pharmacological intervention.

RESULTS: Sample size was 181 respondents with 66 (36%) males and 115 (63.5%) females. The majority of respondents were Malays (95%) with a mean age of 48.4 years (SD±11.7). Only 19 (15.5%) had family history of cardiovascular disease and 8 (4.4%) respondents had cardiovascular disease. Of the sampled population, 96 (53%) were obese, 41 (22.7%) were hypertensive and 30 (16.6%) had diabetes. Calculation of the cardiovascular risk factors using the Framingham Score showed that 121 (66.9%) of the respondents had moderate to high risk. Mean levels for LDL-cholesterol and triglyceride was higher whilst HDL-cholesterol was lower in the pre-intervention group ($p<0.05$). Fasting glucose levels was noted to be higher in the post-intervention group ($p<0.05$). Comparison between the cardiovascular risk ratio between the pre- and post-intervention group showed a higher level in the pre-intervention group ($p<0.05$). There was no difference in total cholesterol levels between the two groups. Males were more likely to develop diabetes as compared to females (OR = 9.42, $p<0.05$).

CONCLUSION: The study indicates significant degree of improvement in lipid profile but worsening level of fasting glucose in the community, which is consistent with the increase trends of diabetes.

FP 4.6

INCIDENCES OF GROIN COMPLICATIONS POST ARTERIAL SHEATH REMOVAL IN COMPRESSIVE VS NON COMPRESSIVE METHODS

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BACKGROUND: Groin complications following removal of femoral arterial sheaths after coronary angiogram and angioplasty with or without coronary stent placement, are well recognised. Traditionally, post sheath removal is managed with 15 minutes of groin compression with strapping and sand bag for 6 hours.

OBJECTIVE: This study compared two techniques and aims to identify whether extra strapping and sand bag compression (Traditional method) currently used to achieve haemostasis at the groin puncture site, vs simple dressing alone without strapping and sand bag compression (New method), following removal of femoral arterial sheaths in patients after coronary angioplasty with or without coronary stent placement, made any difference in groin complications.

MATERIALS & METHODS: In this randomised prospective trial involving 95 patients, 9.5% (n = 9) were unable to be included as a result of the absence of data on the Coronary Angiogram Groin Management Form. Only single puncture access with either 6F or 7F sized sheaths were included in the study. 86 patients' data were analysed and were randomly assigned to New Method (n=43) and Traditional Method (n=43). The patients' groins were observed, prior to discharge for evidence of complications including immediate and late bleeding, haematoma formation, backache, urinary retention and pseudoaneurysm, following removal of the femoral arterial sheath.
6 F sized catheters were used in 80 patients (84.2%) and 7F in 6 patients (6.3%).

RESULTS: 76.7% of patients studied were above 50 yrs old. 20 (23.3%) were females and 66 (76.7%) were males. There were 2 cases (4.7%) of immediate bleeding in the New Method arm and none in the Traditional Method arm (p value 0.494). 2 cases (4.7%) of late bleeding occurred in the New Method arm vs 1 case (2.3%) in the Traditional Method arm (p value 1). Both immediate and late bleeding were statistically insignificant.
Superficial haematoma occurred in 5 cases (11.6%) of New Method arm and in 10 cases (23.3%) of Traditional Method arm (p value 0.155). Deep haematoma were noted in 2 cases in each arm respectively (p value 1). 1 case of pseudoaneurysm was reported in the traditional method arm (p value 1) requiring surgical intervention. There were no statistical significance in all the above outcomes.
1 incident of backache was reported in the New Method arm (2.3%) compared with 4 in the Traditional Method arm (9.3%) (p value 0.202). Urinary retention requiring CBD occurred only in the Traditional Method arm, 3 cases (7%) and none in the New Method arm (p value 0.241). Both outcomes again, were not significant. There were also no significance in bleeding complications between the sheath sizes used.

CONCLUSION: The results suggest that extra strapping and sand bag compression (Traditional Method) is not superior to simple non-compressive methods (New Method). Both methods have statistically non significant incidences of groin complications of bleeding in patients following removal of the femoral arterial sheath. Backache and urinary retention was only noted in traditional method arm.

FP 4.7

PREVALANCE OF OESOPHAGEAL DYSMOTILITY IN PATIENTS PRESENTING WITH NON-CARDIAC CHEST PAIN

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Key Words: Gastroesophageal Reflux Disease (GERD), Oesophageal Dysmotility, Non-Cardiac Chest Pain

INTRODUCTION: The patients presenting with chest pains will undergo a cardiac assessment. Patients will be discharge after a negative cardiac assessment. However, some these patients will still experience the symptoms. is common among patients with non-cardiac chest pain. We investigated the prevalence of oesophageal dysmotility in patients presented with non-cardiac chest pain to Universiti Kebangsaan Malaysia Medical Centre (UKMMC).

OBJECTIVES: To determine the prevalence of oesophageal dysmotility in patients presenting with non-cardiac chest pain and to evaluate the socio-demographic associations in patients with oesophageal dysmotility.

METHODS: This study was is a cross sectional, single center prospective trial involving patients who presenting with non-cardiac chest pain. These patients were evaluated with had a cardiac evaluation by clinical examination and negative stress electro cardiogram. Some underwent coronary angiogram. These patients underwent an oesophago-duodenogastroscopy to look for the presence of gastresophageal reflux disease (GERD) and ultrasound abdomen for gallstone disease. Patients with sonographic evidence of gallstone disease and erosive oesophagitis were excluded. Once they fulfilled the inclusion criteria these patients underwent an oesophageal manometry. A total of 193 patients were enrolled.

RESULTS: Most of the patients in our study have no oesophageal dysmotility (67.9%). Oesophageal dysmotility was observed in one third of our patients (32.1%). The commonest form of oesophageal dysmotility was non-specific oesophageal dysmotility disorder (38.6%) followed by hypotensive lower oesophageal sphincter (30.5%). Nutcracker oesophagus (25.8%) was uncommon in our study. The prevalence were equal among gender (p=0.393), age (p=0.570) and race (p=0.388).

CONCLUSION: Prevalence of oesophageal dysmotility in our population is common. Patients who present with atypical chest pains should be further evaluated for oesophageal dysmotility after a cardiac cause has been satisfactorily ruled out. The prevalence of oesophageal dysmotility in our study is evenly distributed among with age, gender and race.

FP 5.1

A SINGLE-CENTRE EXPERIENCE OF USED OF TENECTEPLASE IN ST-ELEVATION MYOCARDIAL INFARCTION

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BACKGROUND: Acute ST-elevation myocardial infarction (STEMI) is a medical emergency. Thrombolysis is an option used to establish reperfusion and is important to limit the extent of myocardial injury. However it can be related to serious bleeding complications. Newer fibrinolytic agents claim better reperfusion rate with fewer side effects and complications.

OBJECTIVE: This study compares the use of streptokinase and tenecteplase in STEMI patients.

MATERIAL & METHODS: This is a retrospective study using data obtained from Coronary Care Unit Hospital Pulau Pinang, between periods of 24 April 2009 to 14 January 2010. The choice between intervention and thrombolysis was determined by the type and extent of myocardial infarction as well as the discretion of the treating cardiologists. All STEMI cases admitted during this timeframe were recorded and analysis was carried out using SPSS program.

RESULTS: A total of 203 cases of STEMI were admitted; 127 cases were given streptokinase, 40 cases were given tenecteplase, 23 cases underwent primary PCI and 11 and 2 cases had missed thrombolysis and self-reperfused respectively. 39 cases of tenecteplase were analysed in comparison with the equal number of cases of streptokinase. The age, gender, type of STEMI, Killip status and mean onset of symptoms to thrombolysis were equally matched. There was a higher reperfusion rate with the use of tenecteplase comparing to streptokinase (66.7% vs 61.5%; P=0.35) and rate of rescue PCI and bleeding complications were lower in tenecteplase arm (23.1% vs 28.2%, P=0.87 and 5.1% vs 12.8%, P=0.24 respectively). A total of 5 bleeding events were reported in streptokinase arm including gum bleeding, haematuria, upper-GI bleed, intracranial bleeding and haemoglobin drop requiring transfusion, as compared to tenecteplase arm with 2 events namely gum bleeding and upper GI bleed.

CONCLUSIONS: The use of tenecteplase has a higher reperfusion rate with lower rescue PCI rate and bleeding complications. Further studies with larger samples size will be needed to determine its significance.

FP 5.2

A PILOT STUDY ON THE SHORT TERM OUTCOME OF TAXUS ELEMENT STENT: THE PLATINUM CHROMIUM STENT REGISTRY

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BACKGROUND: The Taxus Element stent made of Platinum Chromium (PtCr) is a first-in-class alloy for coronary stents recently been available for clinical use aiming to provide added strength, visibility and flexibility. The objective of this real-life study was to assess the short term (30 days) clinical outcome of the PtCr stent as a part of larger ongoing registry which will access both short and long term characteristic of the PtCr stent.

METHODS: Patient were selected from all patients undergoing coronary intervention in University of Malaya Medical Centre. Current and general indication for drug eluting stents implantation must be fulfilled before PtCr stents were deployed (e.g. long and small lesion, diabetic patients etc). As to provide real practice scenario, all patients who received Taxus Element Stent were enrolled in PtCr Stent Registry. Deployment of stents is using the standard method and the cardiologists decide on pre and post stent dilatation with balloon. The patients returned at 30 days for clinical assessment.

RESULTS: A total of 39 stent was implanted in 28 patients in initial period of 3 months at University Malaya Medical Centre (UMMC). The mean age of patients was 62.25±12.23 years (78.60% men). Risk factors included were diabetes mellitus (60.70%), dyslipidemia (75%), hypertension (60.70%), current smoking (25%) and family history of coronary artery disease (35.70%). Chronic renal failure was present in 17.90% patients. Indications for percutaneous coronary intervention (PCI) were ST elevation myocardial infarction (25%), non-ST elevation myocardial infarction (10.70%), unstable angina (25%) and stable angina (39.3%).

PCI status was elective in 75% of patients, 7.1% elective-stagged, 7.1% urgent, 7.1% primary and 3.6% rescue. PCI entry was femoral in 67.9% cases. Majority of the lesions treated were Type B2 (36.82%) and C (28.93%). Mean lesion length was 22.2 mm (SD ±6.39), mean stent length 25.8 mm (SD±6.88) and mean stent diameter 2.9 mm (SD±0.43). Majority of the lesions (94.87%) were treated by balloon pre-dilatation. Procedural success was 100%, device success 100% and lesion success 100% with no complication. At 30 days, there was no major adverse cardiac event including death, myocardial infarction and target lesion revascularization.

CONCLUSION: The Taxus Element stent has demonstrated promising safety profile in high-risk patients and complex coronary lesions. New design (thin struts, wider peaks, shorter segments and two connectors) and alloy (PtCr) of the Taxus Element may contribute to the excellent short term clinical outcome.

FP 5.3

CHRONIC TOTAL OCCLUSION IN PATIENTS WITH STABLE ANGINA- BENEFITS OF REVASCULARIZATION OVER MEDICAL THERAPY (A LOCAL EXPERIENCE)

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BACKGROUND: Chronic total occlusion commonly presents as stable angina/ atypical chest pain in cardiology outpatient department. It is a challenging experience for the interventionists to perform angioplasty to CTO.CTO angioplasty is associated with high failure rate and complications. Therefore, intervening a CTO may not be favorable over medical therapy alone in centers without complex devices.

OBJECTIVES: The aim of this study is to evaluate outcomes of patients with single vessel chronic total occlusion presenting as stable angina treated medically as compared to those patients receiving revascularization.

METHODOLOGY: This is a retrospective study of our local patients in Hospital Sultanah Aminah. We included patients who were admitted from January 2007 till Dec 2007. Subjects are patients with stable angina/ atypical chest pain, CCS class 1-2, have elective admission for coronary angiogram. Patients admitted for acute coronary syndrome, triple vessels or left main disease and patients with clear evidence of non-viable myocardium over the related artery were excluded. We divide those patients into 2 groups, one group receiving medical therapy, and other group undergoing revascularization (PCI or CABG). Patients who has failed PCI and received medical treatment will be grouped under medical treatment group. They were followed up for 24 months after commencement of treatment. Patients data were retrieved from NCVD registry, case notes, and phone contacts.

RESULTS: We studied a total of 76 patients. The mean age was 54.1 +/-10.3 years old. 47 patients (61.8%) received medical therapy, while 29 patients(38.2%) received interventional therapy. 24 patients (60%) have failed PCI to CTO vessels. There are 5 dissection cases and one false lumen entry of all PCI patients. 58 of total 76 patients were contactable and followed up for the study. Of those numbers, 33 (56.9%) received medical therapy, and 25(43.1%) received interventional treatment. 60.6% of patients from medical treatment group and 80% of interventional group have symptomatic (CCS) improvement (p=0.097). 57.6% of medical treatment group and 80% of interventional group have NYHA improvement (p=0.063). 2 patients from medical treatment group have heart failure symptoms (p=0.313). 3 patients from medical treatment group have NSTEMI (p=0.171). 5 patients from medical treatment group and 1 patient from intervention group have unstable angina (p=0.167). 3 patients from medical treatment group requires repeat coronary angiography (p=0.171). Non from the both groups have AMI, death, or contrast nephropathy.

CONCLUSION: There is no significant differences in between medical treatment group and interventional group in patients with single vessels CTO presenting with stable angina. From the local study, medical treatment group has less CCS and NYHA functional improvement, and more incidence of acute coronary syndrome, but a larger group of patients need to be studied for further evaluation.

FP 5.4

IMPACT OF CLINICAL PATHWAY ON THE OUTCOME OF ST ELEVATION MYOCARDIAL INFARCTION (STEMI) IN UNIVERSITI KEBANGSAAN MALAYSIA MEDICAL CENTRE (UKMMC)

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BACKGROUND: The increasing trend in Acute Coronary Syndrome is causing a financial burden to our healthcare system. Doctors are constantly pressured to improve the quality of patients care with limited resources. Clinical pathway (CP) has long been use as a helping tool for doctors to provide high quality care by minimising the variation in patients care and improving cost-effectiveness. However, the impact of CP on clinical outcome remains unproven. Therefore, we have formulated a CP as a tool to help in the management of STEMI.

OBJECTIVE: To develop, implement and evaluate the impact of UKMMC's CP on STEMI. Clinical outcome will be evaluated based on length of stay (LOS), readmissions, complications and variances.

MATERIALS & METHODS This non randomised controlled trial is a collaborative effort among cardiology unit, community health and emergency department at UKMMC. CPs were used on all new admissions of STEMI. Patients admitted from January 2007 to December 2008 will be selected as a control group. 100 patients were recruited, 50 in each arm. The results were analysed using descriptive and advanced analyses.

RESULTS: The average LOS prior to implementation of CP is 6.51 days while the average LOS in the CP group is 5.66 days (P<0.001 CI 95% -1.992, 0.292) . 40% patients in the CP group developed complications when compared to 36% in the control group (P: 0.07). The percentages of in hospital death in control group were 13.3% when compared to 3.3% in CP group. There were 16.6% cases of readmission within a year in both groups. We have organised the data on variances to patients (49.5%), hospital (43.5%) and health care providers (7%).

CONCLUSIONS: This trial proved that CP significantly reduced LOS with no significant differences between complications and readmission rates. CP also highlighted a few variances that are important to further improve our quality of patients care.

FP 5.5

AN EVALUATION OF QUALITY OF LIFE AMONG PATIENTS UNDERGOING CORONARY ANGIOGRAM/PERCUTANEOUS CORONARY INTERVENTION IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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BACKGROUND: Percutaneous coronary intervention (PCI) has emerged as an important mode of treatment in coronary artery disease (CAD) nowadays. Despite extensive and complexity of PCI, there is no local data to support the benefit of PCI including improvement of quality of life (QOL).

OBJECTIVE: The goal of this study is to evaluate the impact of angiogram/PCI on self-perceived QOL among patients after PCI by using Medical Outcome Survey (MOS) Short Form-36 (SF-36) questionnaires.

METHODS: This is a single center cross-sectional study in Universiti Sains Malaysia Hospital (HUSM) conducted among patients electively planned for PCI. We administered the MOS SF-36 questionnaires which has 8 domains of QOL such as physical function, role physical, vitality, general health, mental health, social function, bodily pain and role emotional and total scores of improvement are calculated at day 0 (pre PCI) and day 30 (post PCI).

RESULTS: Of 75 patients participated in this study; the results significantly showed improvement of QOL with increment of total score from 426.1 to 671.1, role physical from 32.3 to 86.7, role emotional from 40.0 to 92.9, general health from 52.4 to 84.8, bodily pain from 54.6 to 83.9, physical functioning from 56.7 to 84.3, vitality from 56.2 to 77.0, social functioning from 69.5 to 84.0 and mental health from 64.4 to 77.6. All those data were statistically significant with p value < 0.001.

CONCLUSION: Post PCI/angiogram showed significant improvement of QOL assessed by MOS SF-36 questionnaires at day 30 post procedure. SF-36 questionnaires provide a simple, reliable, better predictors in overall QOL assessment by summarizing all 8 domains of QOL. Early time return to normal activity with minimum hospital stay along with significant improvement of QOL perceived at day 30 post intervention; are favorable factors to be considered favoring PCI as mode of treatments in CAD.

FP 5.6

CLINICAL OUTCOME OF PATIENTS TREATED WITH PACLITAXEL-COATED DRUG ELUTING BALLOON (DEB) ANGIOPLASTY

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BACKGROUND: There remains a concern for the incidence of instent-restenosis (ISR), stent thrombosis, bifurcation stenting, stenting in small vessels and stenting in diabetic patients despite advancement with drug-eluting stents. Drug eluting balloon (DEB) has provided an attractive and viable option especially in this group of patients. A registry was set up to evaluate the short and medium term safety in patients receiving DEB including recurrent ISR, diabetics and small vessel disease.

METHODS : A total of seventy five patients receiving DEB (Sequent Please, BBraun) from May 2007 to March 2009 were enrolled into the registry. Most patients (87%) had at least 3 months follow-up with median follow-up was 191 days. Factors that could affect the MACE such as diabetes, ISR, vessel size, bifurcation and numbers of balloon per lesion were evaluated.

RESULTS : The majority of patients were hypertensive and had dyslipidemia. Forty four patients (59%) were diabetics. Forty one patients (55%) who underwent DEB angioplasty had denovo lesions and the remaining had ISR. Of total ISR, nine patients (27%) involved bifurcation lesions. The median size and length of DEB used were 2.9 + 0.5 mm and 25.8 + 5.0 mm, respectively. The median deployment pressure was 10 atmospheres. Nineteen patients (25%) received DEB size 2.5 mm and below. No procedural complications except non-flow limiting dissections noted in three patients (4%). All patients were discharged safely with no in-hospital MACE. During follow up, MACE occurred in five patients (7%) including death (5%) and target lesion revascularization (1%). Angina symptoms improved in 85% patients. Twelve patients (16%) had repeat coronary angiograms and only one needed repeat target lesion revascularization. Diabetes, ISR, vessel size, bifurcation and numbers of balloon per lesion were not statistically significant in contributing to MACE.

CONCLUSION: The usage of DEB in our small cohort of patients appears to be safe and effective in reduction of angina regardless of vessel size, presence of diabetes, ISR or bifurcation lesions.

FP 5.7

A STUDY OF ASPIRIN AND CLOPIDOGREL NON-RESPONDERS IN PATIENT UNDERGOING PERCUTANEOUS CORONARY INTERVENTION (PCI) AND ASSOCIATED PREDICTORS

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BACKGROUND: Anti-platelet therapy remains as a key factor in managing patients with acute coronary syndromes. Loading of 300 mg clopidogrel and 300 mg of aspirin is the standard therapy and confers an inhibition in platelet aggregation. Maximal inhibition is expected after 24 hours of loading dose and after 3 to 5 days on stable dose. The prevalence of aspirin and clopidogrel non responders or resistance was reported as high as 20 to 30 % in the prevalence studies by measurement with platelet aggregometry. Non responders group have an increased risk of developing stent thrombosis. Few associated predictors were reported before such as age, sex, co-morbidities and the concurrent use of certain drugs.

OBJECTIVE : To determine the proportion of anti-platelet non-responders in patient going for PCI receiving loading dose of 300 mg clopidogrel and 300 mg aspirin and in stable disease and the associated predictors.

MATERIALS & METHODS : A cross-sectional study involving acute coronary syndrome patients loaded with 300 mg of both anti-platelet and elective cases on stable dose of 75 mg of clopidogrel (more than 3 days) and consented for Percutaneous Coronary Intervention (PCI). Response to clopidogrel was assessed by single measurement of Adenosine Diphosphate (ADP) Test (20 µmol/L) by whole blood aggregometry 24 hours after loading dose or after 3 days for patients on stable dose. Response to Aspirin was assessed by Aspirin Test (Acetyl Acid)(ASP) 20 µmol/L. Platelet inhibition of less than 30 % was defined as non responders by adjusted given pre-treatment range value in Area Under Curve (AUC) by manufacture, Multiplate Analyzer 2006.

RESULTS: A total of 64 patients were recruited (52 male, 12 female, mean age 58.56 + 11.84 years) . 57 diagnosed with Acute Coronary Syndrome and 7 were elective cases. The proportion of aspirin non-responders was 4.69% and clopidogrel was 21.9 %. Total white blood cells and potassium level showed weak positive correlation with the AUC ASP value (r: 0.05, 0.10, p <0.05). Serum calcium and triglyceride level has weak positive correlation with AUC ADP (r: 0.08, 0.12, p 0.049, 0.005). Hyperlipidaemia patients has higher AUC ADP value (p: 0.046). Using ANOVA, Chinese and Indian race were more responsive after the loading dose . Elective PCI and on stable dose clopidogrel exhibited lower AUC ADP value as compared to NSTEMI cases.

CONCLUSION: By single measurement, the proportion of non-responders to aspirin was 4.69% and 21.9% for clopidogrel non-responders. Hyperlipidemia, high serum triglyceride and serum calcium predicts higher value of AUC ADP. Hyperkalemia may predict lower AUC ASP . Chinese and Indian have better response while patients who were admitted with NSTEMI were less responding compared to the elective cases.

FP 5.8

FEASIBILITY OF TRANSCATHETER PATENT DUCTUS ARTERIOSUS CLOSURE IN PATIENTS WEIGHING 6 KG OR LESS WITH SYMPTOMATIC HEART FAILURE

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BACKGROUND: Transcatheter closure of patent ductus arteriosus (PDA) in young patients weighing 6 kg or less is challenging because of high failure and complication rates. Surgical ligation remains the preferred treatment modality in many centers especially if they are very symptomatic of heart failure and cannot afford for PDA closure to be deferred to later age.

OBJECTIVES: We aimed to study the feasibility, efficacy and safety of transcatheter PDA closure in this group of patients.

METHODOLOGY: Review of clinical and angiographic data all the patients undergoing transcatheter PDA closure in our institution between June 2005 and January 2010.

RESULTS: Out of 185 patients, 24 were weighing 6 kg or less. Mean body weight was 5.1 ± 0.6 kg (range 3.5 to 6.0 kg) and mean age was 9.86 ± 3.32 months. All were symptomatic of heart failure, including 3 who were on ventilatory support before the procedure. Mean PDA diameter was 4.8 ± 1.9 mm (range 2.0 to 10.0 mm).Transcatheter PDA closure were successful in 17 patients (70.8%); 9 with Amplatzer Duct Occluder 8/6, 7 with Amplatzer Duct Occluder 10/8 and 1 with Gianturco coils. Mean fluoroscopic time was 4.7 ± 2.7 minutes. The pulmonary artery systolic pressure dropped instantly from 60.4 ± 20.8 mmHg to 42.8 ± 8.4 mmHg (p = 0.001) following PDA occlusion. The device caused partial obstruction to the left pulmonary artery in 1 case. Otherwise, there was no procedural-related complication. At mean follow up of 1.6 years, all had complete closure of PDA and relief of symptoms. In comparison, those who failed transcatheter PDA closure had significant larger PDA (6.8 ± 1.7 mm versus 4.0 ± 1.2 mm, p < 0.001) and more type C morphology. Corresponding size device could not be implanted without obstructing the adjacent aortic arch.

CONCLUSIONS: More than two third of PDA in patients weighing 6 kg or less could be closed with transcatheter method. Larger and type C morphology were predictors for failure.

FP 6.1

SAFETY AND EFFICACY OF AUTOLOGOUS BONE MARROW MESENCHYMAL STEM CELL IMPLANTATION FOR THE TREATMENT OF SEVERE DILATED CARDIOMYOPATHY

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BACKGROUND: Bone marrow stem cells may improve cardiac function following heart attack. Mesenchymal stem cells (MSC) from bone marrow can differentiate into cardiomyocytes, vascular smooth muscle and endothelial cells. They also exhibit immune-modulatory and paracrine effects to augment cardiac repair. However their safety, optimal cell number and route of administration are not determined for patients with severe dilated cardiomyopathy.

OBJECTIVE: To demonstrate the safety and efficacy of autologous MSC treatment for patients with ischemic or non-ischemic dilated cardiomyopathy via direct intramyocardial and intracoronary injection.

METHODS: Twenty patients were screened. Eight patients were excluded due to presence of significant viable myocardium amenable to revascularisation while two patients were referred for biventricular pacing instead. Of the remaining patients (all male, mean age 58 years) five had ischemic cardiomyopathy deemed unlikely to benefit from CABG alone. Two patients had previous revascularization that remained patent, and three had non-ischemic dilated cardiomyopathy. MSC expansion using animal-free culture media achieved required numbers within three weeks. Patients who had not been revascularised (n=5; IM group) received CABG with concurrent intramyocardial injection of 1.0 x 10^6 MSC /kg body weight while patients with patent vessels (n=5, IC group) received intracoronary injection of 2.0 x 10^6 MSC /kg b.w. via coronary catheterization.

RESULTS: All patients tolerated either procedure well (mean follow up 1 year). There were no ventricular arrhythmias, pericardial bleeding or coronary occlusion post-treatment. There were significant improvements from baseline to six and twelve months in functional score (NYHA 3.8;1.5,1.0), left ventricular ejection fraction (26.5%, 44.1%, 63.5%), end diastolic and end systolic volumes and diameter and interventricular septal wall thickness. IM group showed greater improvement than IC group. The magnitude of improvement in each group is larger than that reported historically for conventional therapy alone. Scar reduction was noted in both groups by 12 months.

CONCLUSION: Autologous bone marrow mesenchymal stem cells are safe for severe dilated cardiomyopathy and appear to be beneficial, whether as adjunctive treatment to revascularization in ischemic cardiomyopathy or for non-ischemic dilated cardiomyopathy. The cell number required were appropriate for respective route of administration. Larger randomized multicentre studies are now warranted.

FP 6.2

DILATOR-ASSISTED TECHNIQUE FOR PERCUTANEOUS DEVICE CLOSURE OF ATRIAL SEPTAL DEFECTS WITH DEFICIENT ANTEROSUPERIOR RIM

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BACKGROUND: Percutaneous closure of atrial septal defects (ASD) with deficient anterosuperior rim using Amplatzer Septal Occluders may be technically challenging because of the perpendicular orientation of the devices' left disc in relation to the atrial septal plane, resulting in persistent prolapse of left disc into the right atrium. Several techniques have been described to overcome this problem including deploying the left disc within the pulmonary veins, heat-bend the delivery sheath, using specially-designed Hausdorf delivery sheath, using oversized device and dilator-assisted technique. All these have their respective advantages and limitations.

OBJECTIVES: To evaluate the effectiveness of dilator-assisted technique in percutaneous closure of ASD following unsuccessful attempts by conventional technique.

METHODS: Contralateral femoral venous access was obtained and the dilator of the Amplatzer Septal Occluder delivery system was positioned across the ASD to support the anterosuperior aspect of the defect. During the deployment of the device, the dilator held against the left disc to prevent it from prolapsing into the right atrium. Following satisfactory positioning of the device on the atrial septum confirmed by transoesophageal echocardiography, the dilator was slowly withdrawn back into the right atrium before final release of the device.

RESULTS: Between January 2009 and January 2010, 4 out of 17 patients who underwent percutaneous ASD closure at our institution had unsuccessful device placement by conventional technique because of the persistent prolapse of the left disc into the right atrium. Their un-stretched ASD diameters were 17 mm, 20 mm, 25 mm and 30 mm respectively. All had deficient anterosuperior rims. The corresponding devices sizes chosen were 20 mm, 24 mm, 30 mm and 36 mm respectively. Using dilator-assisted technique all had successful implantation of the devices. There was no procedural-related complication and at 24 hours, all had no residual ASD flow and stable device position assessed by transthoracic echocardiography.

CONCLUSIONS: Dilator-assisted technique is effective in closing ASD with anterosuperior rim when conventional technique fails. It carries the advantage of no added cost on instrumentation.

FP 6.3

TIMI RISK CLASSIFICATION IS NOT CONSISTENTLY APPLICABLE TO MALAYSIAN PATIENTS WITH UNSTABLE ANGINA/NON-ST ELEVATION MI.

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INTRODUCTION: The TIMI risk score is a simple prognostification scheme for patients with unstable angina/non ST elevation Myocardial infarction (UA/NSTEMI) and is based on two studies (TIMI-11b and ESSENCE) conducted in the 1990s. The 7 TIMI risk score predictor variables were age ≥ 65 years, at least 3 risk factors for coronary artery disease, prior coronary stenosis of ≥ 50%, ST-segment deviation on electrocardiogram, preceding 2 anginal events, prior aspirin use, and elevated serum cardiac markers. Event rates increased significantly as the TIMI risk score increased in the test cohort. Whether this risk stratification is still relevant in today's setting given all the modern facilities and treatment, or even applicable to the Malaysian population, is not known.

OBJECTIVES: To evaluate the TIMI classification as a prognostic indicator for mortality in UA/NSTEMI.

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia. The 30-day mortality was noted.

RESULTS: Using multiple logistic regression and assigning the TIMI score 0-2 as the reference group, the odds ratio (OR) for survival, 95% confidence interval (CI) and p value were calculated as given below. There was no difference of any consistency between lower and higher TIMI scores for each annual cohort.

		In-Patient Survival			30-Day Survival		
	TIMI	OR	95% CI	P value	OR	95% CI	P value
2006	0-2	1.00	-	-	1.00	-	-
	3-4	1.33	(0.80, 2.20)	0.268	1.35	(0.87, 2.10)	0.179
	5-7	0.48	(0.22, 1.04)	0.063	0.69	(0.35, 1.36)	0.284
2007	0-2	1.00	-	-	1.00	-	-
	3-4	0.95	(0.57, 1.57)	0.830	1.02	(0.63, 1.63)	0.949
	5-7	0.37	(0.17, 0.83)	0.015	0.38	(0.18, 0.77)	0.007
2008	0-2	1.00	-	-	1.00	-	-
	3-4	0.95	(0.51, 1.79)	0.885	1.05	(0.58, 1.90)	0.874
	5-7	1.84	(0.50, 6.79)	0.362	1.66	(0.54, 5.12)	0.379

CONCLUSIONS: The TIMI classification failed to consistently predict risk of in-patient or 30-day mortality alone among Malaysian patients with UA/NSTEMI.

FP 6.4

KILLIP CLASSIFICATION MAY BE USED FOR PATIENTS WITH UNSTABLE ANGINA/NON-ST ELEVATION MI.

Chin Sze Piaw, Jeyaindran Sinnadurai, Wan Azman Wan Ahmad, Azhari Rosman, Omar Ismail, Lim Teck, Onn, Sim Kui Hian, Robaayah Zambahari, et al for the NCVD Investigators
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INTRODUCTION: The Killip classification is a measurement of the presence and severity of heart failure following acute myocardial infarction (AMI) in order to risk stratify them. Individuals in Killip class I has no clinical signs of heart failure, class II has some signs such as gallop rhythm, class III has frank pulmonary oedema and class IV patients have cardiogenic shock. The Killip classification was designed in 1967 and based on a small group of AMI patients. Whether this risk stratification will apply just as well to patients with unstable angina/non-ST elevation MI (UA/NSTEMI) is not known.

OBJECTIVES: To evaluate the Killip classification as a prognostic indicator in UA/NSTEMI .

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia. The 30-day mortality was noted.

RESULTS: There were 5214 patients with NSTEMI/UA. Using multiple logistic regression and assigning the Killip class I as the reference group, the odds ratio (OR) for survival, 95% confidence interval (CI) and p value were calculated as given below.

		In Patient Survival			30-Day Survival		
	Killip	OR	95% CI	P value	OR	95% CI	P value
2006	I	1.00	-	-	1.00	-	-
	II	0.29	(0.15, 0.58)	<0.001	0.37	(0.21, 0.65)	0.001
	III	0.16	(0.07, 0.35)	<0.001	0.22	(0.11, 0.47)	<0.001
	IV	0.05	(0.02, 0.13)	<0.001	0.08	(0.03, 0.21)	<0.001
2007	I	1.00	-	-	1.00	-	-
	II	0.38	(0.20, 0.72)	0.003	0.44	(0.25, 0.76)	0.003
	III	0.18	(0.08, 0.40)	<0.001	0.23	(0.11, 0.49)	<0.001
	IV	0.03	(0.01, 0.08)	<0.001	0.04	(0.02, 0.12)	<0.001
2008	I	1.00	-	-	1.00	-	-
	II	0.45	(0.19, 1.06)	0.068	0.86	(0.41, 1.78)	0.679
	III	0.07	(0.03, 0.17)	<0.001	0.12	(0.05, 0.29)	<0.001
	IV	0.06	(0.02, 0.20)	<0.001	0.08	(0.03, 0.25)	<0.001

CONCLUSIONS: Although originally used for patients with acute myocardial infarction, it can also be used for patients presenting with UA/NSTEMI. Patients with Killip class II or greater are at significantly greater risk of 30-day mortality compared to class I.

FP 6.5

A COMPARISON OF ACUTE ST ELEVATION MYOCARDIAL INFARCTION MANAGEMENT BETWEEN HOSPITALS WITH AND WITHOUT INTERVENTION CAPABILITIES: TIME FOR A CHANGE.

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INTRODUCTION: International guidelines now favour percutaneous coronary intervention (PCI) as the primary mode of revascularization or reperfusion over fibrinolysis for patients with acute ST elevation myocardial infarction (STEMI). In the Global registry of Acute Coronary events (GRACE) Primary PCI rates increased from 15% in 1999 to 44% in 2005, which had led to a corresponding reduction in mortality, reinfarction and rehospitalisation by half.

OBJECTIVES: To examine the trend of primary mode of reperfusion strategy in hospitals with and without PCI facilities between 2006 and 2008.

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia. General hospitals with PCI facilities are Hospital Pulau Pinang, Hospital Sultan Aminah Johor and Hospital Umum Sarawak.

RESULTS: There is wide variation in reperfusion strategy between hospitals with and without PCI facilities. Although the trends for primary PCI is similar between 2006 and 2008, hospitals without PCI facilities showed increased rates of primary thombolysis with corresponding reduced number of patients missed or refused. One-third of patients in PCI hospitals underwent PCI before discharge. However these patients were mainly the high risk groups.

	2006		2007		2008	
PCI Facilities	Yes	No	Yes	No	Yes	No
Primary Fibrinolytic therapy	69%	73%	66%	80%	67%	84%
Fbrinolytic therapy missed	12%	16%	15%	11%	15%	8%
Fibrinolytic therapy refused or contraindicated	7%	10%	7%	8%	16%	7%
Proceed to Primary PCI	12%	1%	13%	< 1%	13%	<1%
All PCI (Primary, rescue and elective)	34%	0%	34%	< 1%	36%	1%
CABG (emergency and elective)	1%	0%	1%	< 1%	1%	1%

CONCLUSIONS: There is wide discrepancy between choice of primary reperfusion strategy. Hardly any patients were referred from hospitals without PCI facilities for primary PCI or following thrombolysis. Hospitals with PCI facilities are also not doing as much primary PCI compared to global registries.

FP 6.6

KILLIP CLASSIFICATION REMAINS A STRONG PREDICTOR OF IN-PATIENT MORTALITY AMONG MALAYSIAN PATIENTS WITH ACUTE ST ELEVATION MYOCARDIAL INFARCTION

Chin Sze Piaw, Jeyaindran Sinnadurai, Wan Azman Wan Ahmad, Azhari Rosman, Omar Ismail, Lim Teck Onn, Sim Kui Hian, Robaayah Zambahari, et al for the NCVD Investigators*
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INTRODUCTION: The Killip classification is a measurement of the presence and severity of heart failure following acute myocardial infarction (AMI). Individuals in Killip class I has no clinical signs of heart failure, class II has some signs such as gallop rhythm, class III has frank pulmonary oedema and class IV patients have cardiogenic shock. The Killip classification was designed in 1967 and based on a small group of AMI patients. Whether this risk stratification is still relevant in today's setting, given all the modern facilities and treatment, is not known.

OBJECTIVES: To evaluate the Killip classification as a prognostic indicator in STEMI.

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia. The in-patient mortality and 30-day mortality was noted.

RESULTS: There were 4616 patients with STEMI. Using multiple logistic regression and assigning the Killip class I as the reference group, the odds ratio (OR) for survival, 95% confidence interval (CI) and p value were calculated as given below. Patients with Killip class III or IV are at significantly greater risk of in-patient mortality compared to class I.

		In patient survival			30-day survival		
	Killip	OR	95% CI	P value	OR	95% CI	P value
2006	I	1.00	-	-	1.00	-	-
	II	0.49	(0.28, 0.88)	0.017	0.29	(0.15, 0.58)	<0.001
	III	0.29	(0.13, 0.64)	0.002	0.16	(0.07, 0.35)	<0.001
	IV	0.11	(0.05, 0.22)	<0.001	0.05	(0.02, 0.13)	<0.001
2007	I	1.00	-	-	1.00	-	-
	II	0.99	(0.56, 1.74)	0.964	0.38	(0.20, 0.72)	0.003
	III	0.21	(0.10, 0.43)	<0.001	0.18	(0.08, 0.40)	<0.001
	IV	0.11	(0.06, 0.21)	<0.001	0.03	(0.01, 0.08)	<0.001
2008	I	1.00	-	-	1.00	-	-
	II	1.35	(0.73, 2.49)	0.343	0.45	(0.19, 1.06)	0.068
	III	0.65	(0.27, 1.57)	0.337	0.07	(0.03, 0.17)	<0.001
	IV	0.13	(0.07, 0.26)	<0.001	0.06	(0.02, 0.20)	<0.001

CONCLUSIONS: The Killip classification remains a strong prognostic indicator and relevant in patients with STEMI in the modern setting.

FP 6.7

VALIDATION OF A SIMPLIFIED TIMI RISK STRATIFICATION FOR ST ELEVATION MI

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INTRODUCTION: The TIMI risk score for patients with ST elevation Myocardial infarction (STEMI) is a comprehensive bedside clinical risk score that predicts 30-day mortality. The 8 TIMI risk score predictor variables were age ≥ 65 years, systolic blood pressure < 100mmHg, heart rate > 100/min, Killip II-IV, Anterior ST elevation, presence of diabetes, hypertension or angina, weight < 67kg and time to revascularization/reperfusion > 4 hours. There are a possible 14 TIMI points whereby 5 points or more carry a mortality risk > 10%, and more than 8 points associated with 35% mortality.

OBJECTIVES: To simplify the risk scoring system and determine a single TIMI score as the cut-off point for increased risk of mortality which would benefit from aggressive and early intervention.

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia. The 30-day mortality was noted.

RESULTS: Using multiple logistic regression and assigning the TIMI points 0-2 as the reference group, the odds ratio (OR) for survival, 95% confidence interval (CI) and p value were calculated as given below.

		In-Patient Survival			30-Day Survival		
	TIMI	OR	95% CI	P value	OR	95% CI	P value
2006	0-2	1.00	-	-	1.00	-	-
	3-4	0.81	(0.41, 1.62)	0.555	0.52	(0.29, 0.92)	0.024
	5-7	0.37	(0.20, 0.68)	0.001	0.34	(0.19, 0.61)	<0.001
	≥ 8	0.10	(0.05, 0.21)	<0.001	0.09	(0.04, 0.19)	<0.001
2007	0-2	1.00	-	-	1.00	-	-
	3-4	0.78	(0.37, 1.66)	0.526	0.66	(0.31, 1.40)	0.279
	5-7	0.24	(0.12, 0.50)	<0.001	0.19	(0.09, 0.41)	<0.001
	≥ 8	0.18	(0.08, 0.43)	<0.001	0.15	(0.06, 0.38)	<0.001
2008	0-2	1.00	-	-	1.00	-	-
	3-4	0.50	(0.20, 1.26)	0.144	0.45	(0.20, 1.04)	0.063
	5-7	0.16	(0.07, 0.38)	<0.001	0.14	(0.06, 0.32)	<0.001
	≥ 8	0.07	(0.03, 0.21)	<0.001	0.07	(0.02, 0.18)	<0.001

CONCLUSIONS: The risk of mortality of STEMI patients with TIMI score of 5 or more is more than double that of patients with 2 or less TIMI points. This is a reasonably simple cut-off point for determination of patients requiring more aggressive intervention

FP 6.8

DIFFERENCES IN RISK FACTOR PROFILE AMONG STEMI AND NSTEMI/UA PATIENTS: INFLUENCE OF RISK FACTORS AND PRIOR ASPIRIN USE

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INTRODUCTION: The acute coronary syndrome (ACS) represents several conditions which share the similar pathophysiology and presentation and comprised of ST elevation myocardial infarction (STEMI), non-ST elevation myocardial infarction (NSTEMI) and unstable angina (UA). Despite being regarded as a spectrum of the same disease, there may be fundamental differences between STEMI and NSTEMI/UA.

OBJECTIVES: To examine the differences between STEMI and NSTEMI/UA.

METHODS: Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2008. There were altogether 3427 patients with ACS in 2006, 3648 patients in 2007 and 2655 patients in 2008 admitted with ACS to the University Malaya Medical Centre, Institut Jantung Negara and eleven general hospitals with coronary care facilities in Malaysia.

RESULTS: STEMI patients were younger and predominantly male. There were fewer pre-morbid risk factors such as dyslipidaemia, hypertension, diabetes and history of coronary disease except smoking which was more than double. Fasting blood glucose and LDL-cholesterol was also higher. Finally prior aspirin use was much lower compared to the NSTEMI/UA group.

	STEMI (N=4616)	**NSTEMI/UA (N=5214)**
Age (Mean + SD)	56 + 12 years	61 + 11 years
Male:Female ratio	85:15	67:33
Malay:Chinese:Indian ratio	54:21:20	45:25:26
Currently smoking	50%	21%
Family History	12%	10%
Hyperlipidaemia	20%	45%
Hypertension	48%	72%
Diabetes Mellitus	36%	49%
Known Coronary artery disease	55%	72%
Heart Failure	3%	10%
Prior Aspirin Use	19%	47%
Body Mass Index	4.3%	4.4%
Waist Circumference	88.8 + 14.1 cm	90.6 + 14.5 cm
Serum LDL cholesterol	3.45 + 1.22 mmol/l	3.12 + 1.20 mmol/l
Fasting blood glucose	8.2 + 3.8 mmol/l	7.8 + 4.0 mmol/l
In patient Mortality	9.5%	8% (NSTEMI); 3% (UA)

CONCLUSIONS: There are significant differences in epidemiology and risk factors between STEMI and NSTEMI/UA that may have influenced the ACS presentation. Current smoking appears to be most important for STEMI wheras it is possible that prior aspirin use could have prevented ACS patients from total coronary occlusion.

FP 7.1

THREE-DIMENSIONAL ECHOCARDIOGRAPHY VERSUS TWO-DIMENSIONAL ECHOCARDIOGRAPHY IN THE DIAGNOSIS OF LEFT VENTRICULAR THROMBUS

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BACKGROUND: Three-dimensional transthoracic echocardiography (3D-TTE) with the capability to crop the three-dimensional echo images sequentially in transverse, longitudinal and oblique planes may offer better spatial demarcation of left ventricular thrombus (LVT) compared to that attainable by two-dimensional transthoracic echocardiography (2D-TTE). In addition, using live 3D, the LVT could be viewed end on or from the sides. In this study, we hypothesized that 3D-TTE would therefore improve identification of LVT.

METHODOLOGY: Thirty two ischemic and non ischemic cardiomyopathic patients with suspicious or definite LVT on the basic of 2D-TTE over 24 months period underwent 3D-TTE on the same day. All these patients were subjected to cardiac magnetic resonance imaging (CMRI) to confirm the diagnosis within six weeks period. 2D-TTE findings were considered positive or definite if LVT was visualized in all apical orthogonal planes and apical short axis view and color flow does not traverse the border of thrombus, non diagnostic or suspicious for LVT if it was not visualized in all planes.

RESULTS: Thirty two patients (mean age of 53±9 year-old, 29 male) were analysed. 3D-TTE only missed 1 out of 21 LVT confirmed cases. 2D-TTE missed 8 out of 21 confirmed cases and over-diagnosed 11 out of 19 suspicious cases.

CMRI confirmation of LVT 2D-TTE suspicious of LVT 2D-TTE definite of LVT 3D-TTE positive of LVT 3D-TTE negative of LVT 21 patients 19 patients 13 patients 20 patients 12 patients

Sensitivity (%) Specificity (%) 3D-TTE 95.2 100 2D-TTE 61.9 63.3

CONCLUSIONS: 3D-TTE is more sensitive than 2D-TTE in identifying LVT. In essence, 2D-TTE merely suggestive of LVT whereas 3D-TTE is able to provide a definite diagnosis of LVT or non-LVT. Hence, 3D-TTE is a feasible alternative to 2D-TTE and has a greater potential to provide accurate diagnosis and affect the follow-up and care of patients with suspected LVT.

FP 7.2

CORRELATION BETWEEN IMPEDANCE CARDIOGRAPHY AND ECHOCARDIOGRAPHY IN DETECTION OF LEFT VENTRICULAR DYSFUNCTION IN PATIENTS WITH ACUTE CORONARY SYNDROME

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BACKGROUND: Cardiovascular disease is the number one cause of mortality and morbidity in Malaysia. Various studies have showed measurement of ejection fraction (EF) can prognosticate survivors of an event. With economic pressure and rising cost it has become more difficult to monitor echocardiography serially in these patients. Impedance cardiography is a relatively new technology for measuring a patient's haemodynamics non-invasively. It requires little user training and is reproducible at a fraction of the cost of an average echocardiography machine.

OBJECTIVES: This study was aimed at determining correlation between impedance cardiography (ICG) and echocardiography to detect left ventricular dysfunction.

MATERIALS AND METHOD: In this cross-sectional study, patients who were admitted for acute coronary syndrome were enrolled. Clinical history and clinical parameters were gathered by interview and from medical notes. All patients underwent echocardiography and impedance cardiography examination within a window period of 72 hours. Left ventricular dysfunction (LVD) was defined as EF<45%.

RESULTS: A total of 71 patients were enrolled with a mean age of 58.0±12.4. The gender distributions were male 83.1% and female 16.9%. The frequency of left ventricular dysfunction by echocardiography was 23.9% (n=17). Impedance cardiography measured EF gives a significant positive correlation with echocardiography measured EF with an r-value of 0.347 (p=0.003). The sensitivity in detecting left ventricular dysfunction was 88.24% with a specificity of 68.52%. The positive predictive value for detecting left ventricular dysfunction was 46.88% and the negative predictive value for detecting the absence of left ventricular dysfunction was 94.87%. Other parameters that had significant correlation with echocardiography measured EF were stroke volume index, which gave a positive correlation r-value of 0.313 (p=0.050) and left ventricular ejection time with a positive correlation r-value of 0.298 (p=0.012).

CONCLUSION: This study revealed significant but weak correlation of ICG measured EF and echocardiography measured EF. The ICG was sensitive but only moderately specific in detecting left ventricular dysfunction. It has a high negative predictive value and therefore has a potential in ruling out left ventricular dysfunction in patients diagnosed with acute coronary syndrome.

FP: 7.3

EVALUATION OF CARDIAC ABNORMALITIES USING ECHOCARDIOGRAPHY AND ELECTROCARDIOGRAPHY IN A SINGLE CENTRE COHORT OF SYSTEMIC SCLEROSIS PATIENTS

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BACKGROUND: Systemic sclerosis (SSc) is an autoimmune disease characterized by diffuse vascular lesions and fibrosis of the skin and major organs including lungs, gastrointestinal tract, kidneys and heart. Cardiac involvement was reported to result in both diastolic and systolic dysfunction, arrhythmias, conduction disorders and pericardial effusion. Pulmonary fibrosis can cause pulmonary hypertension and right heart failure.

METHOD
The primary objective is to evaluate left ventricular diastolic function in SSc patients using echocardiography and its correlation with disease characteristics. LV diastolic dysfunction is defined as either I. mitral inflow E velocity/septal tissue Doppler velocity ratio (E/e') > 15 or II. E/e' 8-15 with left atrial enlargement
During echocardiography, we also examine 1. left and right ventricular size and systolic function, 2. pulmonary artery systolic pressure using tricuspid regurgitation flow (if present) 3. pericardial pathology Electrocardiography (ECG) was also performed in all patients.

RESULT
We examined 17 scleroderma patients (all females) with mean age of 51.5+/-16 years old and mean disease duration of 6.95+/-4.3 years. We identified 2 (11.7%) patients with significant diastolic dysfunction. However, there was no significant correlation between the presence of diastolic dysfunction or E/e' values with disease duration and major organ involvement.
Pulmonary hypertension was not detected among the 11 patients (3 of whom had documented pulmonary fibrosis) who had tricuspid regurgitation velocity measured (mean estimated PASP 28.3mmHg). No pericardial pathology or right ventricular abnormality was detected in our cohort. One patient (age 76) was noted to have left bundle branch block and atrial fibrillation as well as mild left ventricular systolic dysfunction (EF 48%). 3 patients (17.6%) were noted to have prolonged QTc (>450ms) in the absence of bundle branch block. None of the patients had atrio-ventricular nodal dysfunction. The mean PR, QRS and QTc interval were 157ms, 90.6ms and 425ms respectively.

CONCLUSION
In our local cohort of systemic sclerosis patients, the prevalence of both left ventricular systolic and diastolic dysfunction and pericardial disease was not as common as those reported in Western world literature. Conduction disorders were also uncommon and pulmonary hypertension was not detected.

FP 7.4

PREVALENCE OF SYSTOLIC AND DIASTOLIC DYSFUNCTION IN HEMODIALYSIS PATIENTS IN A TEACHING HOSPITAL IN MALAYSIA

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BACKGROUND: Cardiovascular disease is the most common cause of death in dialysis patients while heart failure is a common presentation in the dialysis population. Data on the prevalence of left ventricular dysfunction in hemodialysis patients in Malaysia is lacking.

OBJECTIVE: This study aims to identify the prevalence and determinants of left ventricular dysfunction in hemodialysis patients.

METHODS: A total of 248 patients receiving regular and long term hemodialysis of at least 6 months duration were consecutively recruited from six hemodialyis centres in Selangor. Patients were enrolled from March 2009 to August 2009. These patients were interviewed for a detailed medical history and detailed clinical assessment done. The functional status of the patients was determined using the New York Heart Association (NYHA) criteria. All patients had echocardiography done within the last two years and the left ventricular systolic and diastolic functions were determined. Left ventricular systolic dysfunction was defined as a value less or equal to 40%. Diastolic dysfunction was graded according to the guidelines from the American Society of Echocardiography.

RESULTS: Among the 248 patients aged 18-85 years enrolled in this study, 78.6% (n=195) were in NYHA functional class I, 20.2% (n=50) were in class II and 1.2% (n=3) were in class III. None of the patients were in functional class IV. Results showed that 24.2% had left ventricular systolic dysfunction and 63.7% had diastolic dysfunction. Majority had grade I diastolic dysfunction (72.2%, n=114), followed by 19.6% (n=31) with grade II and 8.2% (n=13) with grade III diastolic dysfunction. The only independent risk factor for left ventricular systolic dysfunction was smoking (p=0.008). Diabetes mellitus was the sole independent risk factor for diastolic dysfunction (p=0.048). The presence of hypertension, anemia, hypoalbuminemia, alcohol consumption, advancing age and increasing duration of hemodialysis were not risk factors for left ventricular systolic or diastolic dysfunction in this study.

CONCLUSION: This study shows that the prevalence of systolic and diastolic dysfunctions are higher in hemodialysis patients as compared to that of the general population of the United States which is approximately 10% in both the categories. However, this comparison data is still lacking in our general population in Malaysia. Diastolic dysfunction was more prevalent compared to systolic dysfunction in this study. We suggest that larger and longer duration studies be conducted in these group of patients with regard to the progression of these two types of dysfunction and its respective management.

FP 7.5

THE IMMEDIATE EFFECT OF SMOKING ON LEFT VENTRICULAR SYSTOLIC AND DIASTOLIC FUNCTION AMONG HEALTHY VOLUNTEERS

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BACKGROUND:
There were considerable amount of research done to look at the short term and long term effect of smoking on heart function. However, little is known about the immediate effect of smoking on the left ventricular function.

OBJECTIVES:
In this study, we aimed to assess the immediate effect of cigarette smoking on left ventricular systolic and diastolic function on healthy volunteers.

METHODS:
14 healthy volunteers (mean age 32 ± 5.3, 14 male) were enrolled. Serial echocardiography study was performed at baseline, immediately after smoking and thirty minutes after smoking. Average three measurements of all parameters were sampled using Philips IE33 echocardiography system for all subjects. Left ventricular ejection fraction was measured by Teichholz and Modified Simpson's methods. Transmitral peak early velocity (E), peak A velocity (A), deceleration time (DT) and mitral E/A ratio were obtained by conventional pulse wave Doppler imaging. Pulmonary venous flow profile includes systolic forward flow velocity (S), diastolic forward flow (D) and atrial flow reversal (Ar) was sampled at right upper pulmonary vein. Colour Tissue Doppler Imaging by Pulse Wave was used to measure mitral annulus velocity include systolic myocardial velocity (Sm), late diastolic myocardial velocity (Am), early diastolic myocardial velocity (Em) and E/Em ratio. Heart rate and blood pressure were measured before smoking, immediately after smoking and 30 minutes later.

RESULTS:
A transient rise in heart rate (+5.0%, p= 0.01) was noted immediately after smoking and normalized 30 minutes later (-5.9%, p=0.04). Mitral E/A ratio was reduced immediately after smoking (-10.9%, p=0.03) and transmitral peak A velocity was increased immediately after smoking (+10.2%, p=0.02).Transmitral peak early E velocity (P=0.99), and deceleration time (p=0.52) was not affected by smoking. Early myocardial velocity (Em) was significantly reduced immediately after smoking (-11.8%, p=0.02). Systolic and diastolic blood pressure (p=0.13), left ventricular ejection fraction (p=0.37) and pulmonary venous flow profile S (p=0.96), D (p=0.65) Ar (p=0.25) changes were not statistically significant.

CONCLUSIONS:
In young healthy volunteers, smoking one cigarette had immediate effect on left ventricular diastolic function but not on systolic function. These changes can be accurately detected by Tissue Doppler imaging. We postulated that besides loading alteration of smoking effect, other explainable mechanism behind this effect was due to the inability of the heart to relax completely and hence fills up with less blood than usual.

FP 7.6

THE VALUE OF CORONARY ARTERY CALCIUM SCORE IN RE-STRATIFYING THE RISK OF HAVING OBSTRUCTIVE CORONARY ARTERY DISEASE AMONG PATIENTS WHO UNDERWENT EXERCISE TREADMILL TEST

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BACKGROUND: Coronary artery disease (CAD) is a major health problem with increasing prevalence. Risk stratification method includes conventional exercise treadmill test (ETT) and newer coronary artery calcium score (CACS) via CT scan. Objective: To evaluate the use of CACS in predicting the presence of obstructive CAD among patients suspected of CAD who underwent traditional ETT.

MATERIALS & METHODS: A single-center cross-sectional study was conducted in UKMMC between July 2008 and February 2009, consecutive symptomatic patients between 30 to 60 years old that performed the ETT recruited for Agatston CACS via multi-sliced computed tomography (MSCT). Patients unsuitable to follow the MSCT protocols were excluded. Subsequently all the patients underwent a full MSCT coronary angiography to determine the state of CAD whether obstructive (defined by 50% or more stenosis) or non-obstructive (less than 50% stenosis), reported by a single-blinded radiologist. All patients with obstructive CAD were subjected to invasive coronary angiogram (ICA) for confirmation and further intervention as needed.

RESULTS: Fifty patients with mean age of 48.4 + 6.0 years, male 64.0%, and diabetics 28.0% completed the study. We generated the receiver operating curve and extracted the probability value. The CACS has 100% sensitivity and 97.5% specificity in detecting obstructive CAD at the cut-off value equal or more than 106.5. The positive predictive value (PPV) at CACS equal or more than 106 was 71.4% [95% CI: 47.7% to 95.1%] and the specificity was 90% [95% CI: 80.7% to 99.3%]. However, the negative predictive value was consistent at 100%. Compare to ETT, the CACS diagnostic performance was superior (PPV 71.4% vs 33.3%). There was a significant difference between CACS value and three ETT subgroup (positive, non-diagnostic and negative) results ($p < 0.006$). In 16 (32%) out of 50 patients with non-diagnostic ETT, 12(75%) have CACS less than 106 in which all of them have non-obstructive CAD on MSCT or ICA, $p = 0.007$.

CONCLUSIONS: Within the limitation of this study, CACS has potential as a good diagnostic screening tool in patients suspected of CAD when combined with traditional ETT, as it is both highly sensitive and specific. It can further stratify patients with non-diagnostic ETT.

FP 7.7

UTILITY OF MDCT IN DETECTING CORONARY ARTERY DISEASE IN WOMEN

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BACKGROUND Cardiovascular disease (CVD) is the leading cause of death worldwide including Malaysia. However, the prevalence of CAD is generally low in pre-menopausal women. Hence, little evidence exists to justify the increasing use of MDCT to screen for subclinical CAD in this group of individuals.

OBJECTIVE A)To determine the prevalence of significant CAD using 64-MDCT in women <55 years old, B)To assess the role of MDCT as a routine non-invasive screening tool for CAD, C)To evaluate the outcome of women who had undergone MDCT screening.

MATERIALS & METHODS 272 consecutive women <55 years old underwent CTA using 64-MDCT from 2005-2007 according to clinical indications. Framingham Risk Scores (FRS) were also calculated. Significant CAD was defined as the presence of either (a) coronary artery stenosis >50% and/or (b) total calcium score >400 Agatston and/or (c) dense localised calcium deposits. Outcome events were obtained from clinic follow up files and phone calls.

RESULTS The mean age was 46.7 years (range 31-55 years). The indications were atypical chest pain 34%, high cardiovascular (CV) risk 26%, low CV risk 25%, positive exercise stress test (EST) 9%, pre-operation angiogram 3% and others 3%. Technical problems which interrupted MDCT were calcium score >400 Agatston 2% (n=5) and breathing/motion artefacts 25% (n=69). 92% (n=180/196) with FRS <20% had stenosis <50%. 74% (n=180/244) of patients with stenosis <50% had FRS <20%. Overall, 34 patients were detected to have stenosis >50% with a further 12 patients having stenosis >75%. Only 26 patients went on to have conventional coronary angiography (CCA) which confirmed lesions identified by MDCT in 5 patients. 1 patient with minor stenosis died from arrhythmia and 1 patient with severe CAD had emergency CABG and survived (0.7% cardiac event).

CONCLUSION There is increasing concern about radiation risk with MDCT. However, 64-MDCT has proven high sensitivity and specificity in detecting CAD and conversely to rule out CAD. With a detection rate of 13% (n=34) only in this cohort with generally low FRS, the prevalence of CAD in women (<55 years old) in East Malaysia is relatively low and consequently extremely low cardiac event rate. Hence, more stringent criteria are needed to select appropriate female candidates for MDCT screening, especially in the workout of CAD.

FP 7.8

PREDICTION OF LEFT VENTRICULAR EJECTION FRACTION BEYOND MYOCARDIUM SCARRING

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BACKGROUND: Heart muscle is a complex helical structure which consists of anticlockwise and clockwise rotation, with radial and circumferential motion. Myocardial scarring with decrease muscle fibre contraction may reduce ejection fraction but the complex heart motion may also contribute significantly to overall left ventricular systolic function.

OBJECTIVE: This study looks into the correlation between of amount of myocardial scars and the left ventricular ejection fraction (LVEF). The hypothesis predicts that the LVEF does not only depend on the muscle bulk but also on the complex heart motion.

MATERIAL & METHODS: This is a retrospective study carried out in the Cardiology Department Hospital Pulau Pinang, involving coronary artery disease and dilated cardiomyopathy patients who had cardiac magnetic resonance late-gadolinium-enhancement (CMR LGE) viability studies indicated either by poor left ventricular ejection fraction or chronic total occlusion. The 17-segment model is used to determine the coronary artery territories and myocardial wall thickness scarring is recorded as score 0 = no scar, score 1 = 0-25% scar, score 2 = 25-50% scar, score 3 = 50-75% scar and score 4 = 75-100% scar. CMR LVEF was measured either using short-axis stack or area-length single plane tracing of gradient-echo cines. The echocardiogram LVEF was also measured using either the Teicholz M-mode method or Modified Simpson's rule. The results were analysed using SPSS program.

RESULTS: A total of 185 patients who underwent CMR LGE study were analysed. The mean total myocardial wall scarring score was 14.6 ± 10.4 with CMR LVEF of 39.0 ± 15.4 and ECHO LVEF = 37.5 ± 12.5. There is a poor correlation between the total scoring and LVEF (r = 0.305). When the LVEF was compared with specific territorial involvement, namely the left-anterior-descending artery, left circumflex artery and right-coronary artery territory, there is no significant correlation as well (r = 0.199, r= 0.273, r = 0.151 respectively).

CONCLUSION: There is a poor correlation between the amount of myocardial scars and the left ventricular ejection fraction. The heart muscle complex motion plays a significant role compare with the amount of viable muscle in determining the systolic function of left ventricle.