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 mahtematical analysis. However, CRP responses in SLE inflammatory state is different.

OBJECTIVE: To determine subclinical myocardial diastolic dysfunction in asymptomatic SLE Asian patients and its relation to CRP.

METHODS: This is a prospective cohort study. 68 Asian patients with confirmed SLE of DI in inactive stage, no known coronary artery disease or long disease and not in heart failure undergone standard transthoracic echocardiography and tissue Doppler imaging CRP, ESR and cardiac-antibodies were taken during the echocardiographic study. Patients with significant arhthritmys, pericardial effusion and valvular heart diseases were excluded. Mitral inflow profile, A, E/ A, deceleration time(DT), isovolumetric relaxation time(IVRT) and pulmonary v A is normal duration(A) 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 (63.67 % and 34.00% (p= 0.092). No statistical significance in mitral inflow profile (E, A, E/A) for both CRP positive and negative groups was 17.36 and 77.06±10.44 cm/s; 701.33±31.54 and 61.84±18.90 cm/s; 1.06±0.53 and 1.2±0.37 respectively. p= n.s.

The groups did not differ significantly for A and AR duration, DDT and IVRT (135>12.25 and 130.57±18.95 ms, 108.57±17.73 and 109.12±37.77 ms, 17±40.67 and 175.82±47.93 ms, 71.11±16.91 ms and 70.33±15.08 ms respectively, p= n.s).

Both groups also did not reach statistical significance for septal e'velocity (8.77±2.87 and 9.98±2.93 cm/s), lateral e’velocity (11.14±4.95cm/s and 12.66±4.93cm/s), E/e’septal (8.77±2.87 and 8.10±2.47 and 6.55±2.95).

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

YIA 3

THE RELATIONSHIP BETWEEN SERUM AND GENETIC BIOMARKERS OF INFLAMMATION, PLATELET ACTIVATION AND ENDODYSFUNCTION IN A YOUNG, MULTIENTHIC ASIAN POPULATION DURING THE EARLY PHASE OF ACUTE CORONARY SYNDROME: ELIMINARY RESULTS

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BACKGROUND: The multietnic Asian 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) and vW protein levels. A control group of 27 consecutive patients with angiographically documented non-occlusive atherothrombotic 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 angina and hypercholesterolemia. 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 36.4% Malay, 36.4% Chinese, 18.2% Non Malay Bumiputera (NMB), while the control group consisted 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 61.6±8.5 minutes. The median levels of IL-6 in the ACS and control groups were 21.9 (9.42-9.6) pg/mL and 8.6 (0.16-0.61) pg/mL, respectively, and that of P-Sel 3.1 (0.14-7) ng/mL and 2.8 (1.1-12) ng/mL, respectively, p=0.07. The mean levels of hsCRP in the ACS and control groups were 4.06±1.29 mg/L and 0.94±0.45 mg/L, respectively (p=0.05). The mean levels of vWF in the ACS and control groups were 16.23±0.8 mg/L and 11.3±3.2 mg/L, respectively (p=0.05). There were no significant correlations between hsCRP with WVF and P-Sel. Genetic expression of WVF and P-Sel 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 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 AND 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 LGE on CMR. The study group consisted of 105 CMR studies looking into LGE for myocardial viability. Out of these, 40% had viable right territory with > 50% transmural LGE, 40% had viable anterior territory with > 50% transmural LGE, 25% had viable circumflex artery territory and 25% had viable inferior artery territory.

RESULTS: A total of 105 CMR studies looking into LGE for myocardial viability were selected. Out of the 105, 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, 75.7% specificity and accuracy of 80.7%. Poor R wave progression has 30.8% sensitivity, 57.1% specificity and accuracy of 41.8% for detection of non-viable anterior territory.

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

INTRODUCTION:
The central aortic pressure (CAP) is a measure of arterial stiffness, which 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) has yet to be established. 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±4.4 respectively with p<0.001. 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, 7.7±5.5 and 12.3±3.9 mmHg respectively with p<0.001. Univariate analysis showed Aix, Aix@75 and mean Aix@75 had significantly predicted CAD severity (p<0.0001). Linear regression analysis showed Aix and Aix@75 had the strongest unabated associations with MACE with hazard ratios of 1.12 (95% CI: 1.007-1.32) and 1.13 (95% CI: 1.098-1.265), p<0.001 and p<0.001 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 1.17 (95% CI: 1.078 - 1.36), 1.16 (95% CI: 1.105 - 1.18) and 1.36 (95% CI: 1.219 - 1.455) respectively with p<0.001.

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

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

OBJECTIVE:
To ascertain the safety and efficacy of the percutaneous coronary intervention (PCI) combination POTENT strategy using paclitaxel-eluting balloon (PEB) angioplasty followed by stenting with bare metal and drug eluting stents (BPS) to treat occlusive coronary artery disease (CAD) not have been established.

METHODS:
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) at 12 hours prior to PCI; all patients were preloaded with a Statin dosage. “Secondary” PEB and “Genous®” BPS were used devices. 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 56.5±10.9 years; 35% were current smokers; 60% had hypertension; 68% dyslipidaemia and 32% were 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: 2.95±0.83mm by 20.35±6.97mm) and 53 BPS (mean dimensions: 3.08±0.63mm by 17.45±5.87mm). Post PCI, 21.4% of patients had a detectable Troponin rise, while 61.3% of patients had a detectable NT-proBNP rise. 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 instant 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 instant restenosis of 16.0±16.0%. Using the POTENT strategy, the cost saving per patient per year on antplatelet therapy compared to a drug-eluting stent strategy was RM 1.412.84 (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 patients with 9-month angiographic follow-up showed no significant restenosis.
INHIBITOR COMBINATION A CONCERN?
A SARAWAK EXPERIENCE: IS THE CLOPIDOGREL
PPI combination was insignificant.

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.

MATERIAL & METHODS: We performed a cross-sectional study in 107 consecutive patients in the cardiology clinic at University Malaya Medical Centre. Inclusion criteria were: (1) documented history of coronary artery disease, (2) no recent acute coronary syndromes, (3) current regular aspirin intake. The patient’s blood was collected, and whole-blood aggregation was determined by multiple electrodes application. 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 units (AU), is inversely proportional 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±34/213.96 (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.

VALIDATION OF MEDICATION COMPLIANCE QUESTIONNAIRE IN PATIENTS WITH ISCHEMIC HEART DISEASE
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BACKGROUND: The Medication Compliance Questionnaire (MCQ) is a well-validated, self-administered questionnaire. However, the clinical significance of these findings is unclear, especially in our local settings.

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 non-compliant 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 taking 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.

HEART FAILURE PATIENT POPULATION AND BETΑ 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.

MATERIALS AND METHODS: Data were derived from the Cardiology Unit’s echocardiography database from January to December 2008, and 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 (80%), hypertension (87%), diabetes mellitus (58%) and dyslipidemia (48%). Beta blockers were prescribed in 88% of patients, with two-third (n=46) receiving a HF-recommended beta blocker (bisoprolol and carvedilol). Other beta blockers prescribed were atenolol, metoprolol and propranolol. Low mean doses of beta blockers were used. In one patients in HF 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.

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.
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 analysing the percentage of INR 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 education were provided at point of dispensary.

RESULTS: The results are summarized in following table. There is an improvement in setting of INR targets and dose titration over the study period. However, only a marginal upward 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.

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

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.

MATERIALS & METHODS This is an observational cohort study carried out over 9 months. A total of 92 patients were recruited into 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 ACEI/ARB and beta-blocker upon discharge respectively. The remaining 24% patients were not prescribed ACEI/ARB mainly due to renal impairment and hypertension. Meanwhile, for the remaining 17% not on beta-blockers, the reasons were mainly due to hypertension 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 were mainly due to hypotension and asthma. 43 patients had documented left ventricular ejection impairment and hypotension. Meanwhile, for the remaining 17% not on beta-blockers, the reasons were mainly due to hypertension 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.

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.

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 edema, exacerbation of heart failure, and myocardial infarction.

OBJECTIVE: 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 was 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 16.4% as compared to baseline (P = 0.001). A1c% reduction in mean serum creatinine was noted during the study period (P = 0.05). No significant changes noted in level 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).

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

BACKGROUND: Successful outcomes of past clinical research have produced sustainable advances in cardiac treatments. Patients 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 a 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 (ECOH) 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.

RESULTS: Eighty-six patterns were generated from the data set. Six patterns were statistically significant (chisquare>2.72; 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 T hypercholesterolaemia T hypertension. Analysis on PubMed showed independent but significant co-occurrences between hsCRP and diabetes; and between hypertension and MMP, such that hsCRP T diabetes T hypertension T 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.
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. Among those with their blood pressure controlled (<130/80mmHg), 44% (37) of them were on single antihypertensive while the rest required as much as five different antihypertensive agents.

OBJECTIVES: 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.

CONCLUSIONS: The prevalence of undiagnosed hypertension and hypertension control among the diabetic patients managed in the primary care setting is alarming. The hypertensive patients that on treatment, less than 1/3 of them have their controlled blood pressure. This may need more than one agent to have their blood pressure controlled.

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 20–40% 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 diabetic patients who visit the diabetic 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 primary care and diabetic clinic in UMMC from December 2009 to January 2010. The mean age of the sample is 52.9 years (range: 18-83 years). The gender distribution was 46.4% male and 53.6% female. The mean of the duration of diabetes in these patients is 11.5 years (range: 0.25-46 years). 15.3% of these patients are on subcutaneous insulin injection (either alone or combination with oral hypoglycemic therapy). A total of 33% (83.7%) patients have history of hyperlipidemia. 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 while the rest required as much as five different antihypertensive agents.

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 11.5 years (range: 0.25-46 years). 15.3% of these patients are on subcutaneous insulin injection (either alone or combination with oral hypoglycemic therapy). A total of 33% (83.7%) patients have history of hyperlipidemia. 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 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.

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. Among those with their blood pressure controlled (<130/80mmHg), 44% (37) of them were on single antihypertensive while the rest required as much as five different antihypertensive agents.

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 1,004 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 NCVD.

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 (53.2%, 50.6% respectively). 4% 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. Among those with their blood pressure controlled, 44% (37) of them were on single antihypertensive while the rest required as much as five different antihypertensive agents.

CONCLUSION: Except for smoking, CVRF was more prevalent in NHMS population compared to a PHSP. In PHSP subjects with known CVRF, 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 enhance awareness and management of CVRF with the aim to reduce subsequent cardiovascular events.

HYPERTENSION CONTROL IS DIFFICULT AMONG PATIENTS WITH DIABETES MELLITUS. A CROSS SECTIONAL STUDY ON 1013 DIABETIC PATIENTS.
Yap Choe Woei, Lim Chuan Chun, Wong Wai Lu, Chee Kok Han
Cardiology Unit, Faculty of Medicine, University of Malaya

BACKGROUND: Hypertension is a common co-morbid condition in diabetes mellitus, affecting about 20–40% 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 diabetic patients who visit the diabetic 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 were 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 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.
Erectile Dysfunction Prior to Acute ST Segment Elevation Myocardial Infarction

Author: Shuqin SV, Sim HW, Ng WW, Dinesh SV, Low WY, Imran ZA, Azman W
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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 pelvic 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 those, 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 included 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 1.28-10.51, p=0.017), hyperlipidemia (OR=5.95, 95% CI 1.19-22.77, p<0.037), diabetes (OR=3.54, 95% CI 1.21-11.17, p=0.031) and worsening HbA1c (p=0.033) 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 1.55-11.15, p=0.003). 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 (HDI) (n=14) had ED (Fisher Exact Test, p=0.002). 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 HDI 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.

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**FP 3.1**

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

Ma SN, Choo WS, Lim CV, Chan HK, Abdul Kader MA, Abdul Karim B, Goh TH, Shafee A, Omar I.
Aff: Department of Cardiology, Penang Hospital

**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. 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 >70% as determined by QCA method. We studied the resting 12-lead ECGs in these patients obtained during the same elective admission for cardiac catheterization. 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:** Preclinical 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 (0.46 ± 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 (58% [35/60]) than in the control group A (0% [0/10]) or control group B (25% [2/8]). 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 preclinical 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.

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**FP 3.2**

**EPILEPSY IN MALAYSIA: A COMPARISON WITH THE GRACE REGISTRY**

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Aff: National Heart Association of Malaysia

**OBJECTIVES:** To examine the use of medicine 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. =25% sex-inactive men that were not recruited reported complete ED for more than 6 months prior to STEMI.

**CONCLUSIONS:** 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 HDI 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.

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**FP 3.3**

**CONVENTIONAL AND NOVEL RISK MARKERS IN PREDICTING ERODINAL 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 CRP and photoplethysmography (PPG) to determine the presence of endothelial dysfunction among ED patients.

**METHODS:** 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).

**RESULTS:** 66 ED patients were recruited, with mean age of 55.39±9.1, 58.6% were the highest ethnic group. 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 (23.8%) and previous history of CVD (7.6%). There were 38 patients (57.6%) with co morbidity 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 (66%) with endothelial dysfunction as indicated by positive CIMT (equal or more 0.88mm). The proportion of conventional risk factors that gave significant p values in positive CIMT was hypertension (85.4%), diabetes (76.5%), dyslipidaemia (62.9%) and co morbidity of 3 or more (79.0%). 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 3.5

NT-PROBNP AS A PREDICTOR OF ADVERSE CARDIAC EVENTS IN NSTEMI AND UNSTABLE ANGINA
Nor Ashikin Md Sar, Assoc Prof Irman Zainal Abidin, Prof. Wan Azman Wan Ahmad, Division of Cardiology, Dept. of Medicine, Faculty of Medicine, University Malaysia

BACKGROUND: Brain natriuretic peptide (BNP) is a cardiac neuropeptide 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 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-off point of 360 ng/mdl, the area under Receiver Operating Characteristic curve (AUC) 0.603 (95% 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-off point of 1000 ng/ml, the AUC is 0.659 (95% CI 0.756 to 0.962) with the sensitivity and specificity of 166% 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 4.1

THE ROLE OF NT-proBNP IN RULING OUT ACUTE HEART FAILURE IN PATIENT PRESENTING WITH ACUTE DYSPNOEA
Wan Hilmurat AIZATUL WAN HARIAM1, Wan Azman Wan Ahmad2, Wan Himratul Azliza Wan Harun1, Assoc.Prof Imran Zainal Abidin1, Syahidah Syed Tamin2, Taufiq Abdulrah0, Choo Kok Han1, Wan Azman Wan Ahmad1. 1 Cardiology Unit, University Malaya Medical Centre, Kuala Lumpur, Malaysia. 2 Department of Cardiology, National Heart Institute, Kuala Lumpur, Malaysia. 3 Cardiovascular and Thoracic Surgery Unit, University Malaya Medical Centre, Kuala Lumpur, Malaysia

MANAGEMENT of acute decompensated heart failure patients remain 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 Ammo terminal, NT-proBNP 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 diagnostic criteria. 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 out cut points based on ICON study is applicable to our patient population derking 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 size 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 11.1-mHz linear array transducer on the Philips 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: (a) mid CIMT 0.82 ± 0.13 mm, (b) midCIMT index 0.85 ± 0.22, (c) left max CIMT 0.70 ± 0.38 mm, (d) left maxCIMT index 0.94 ± 0.51, (e) right mid CIMT 0.63 ± 0.20 mm, and (f) right max CIMT index 0.76 ± 0.43 mm. Mean Syntax score was 18.4 ± 11.3 with minimum of 6 and maximum of 61.5.

Statistical analysis showed significant correlations between the Syntax score and maxCIMT (p=0.001) as well as maxCIMT index (p=0.012, Right maxCIMT index p=0.04) as well as maxCIMT index (Left maxCIMT index p=0.001). The meanCIMT and maxCIMT 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
Department of Cardiology, Hospital Serdang, Serdang, Selangor Darul Ehsan.

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, 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 96.2% (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 emboli, 40% heart failure 20%, renal failure 20%, statistically insignificant. Mean vegetation size among blood culture positive group was 0.902 cm²±0.9. The mean size of vegetation caused by Staphylococcus aureus was 1.23 cm²±1.22 cm² 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 hour. Independent observers from the two hospitals compiled 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±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 diuretics (spironolactone) usage rate was at 11.1% (2/18). Only one patient was on digitals therapy (5.6% [1/18]). A significant number of patients were already on chronic loop diuretics therapy (58.7% [10/18]). 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 (22.2%) 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 triglycerides was higher whilst HDL-cholesterol was lower in the pre-intervention group (p<0.05). Fasting glucose levels 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.
INCIDENCES OF GROSS COMPLICATIONS POST ARTERIAL SHEATH REMOVAL IN COMPRESSIVE VS NON COMPRESSIVE METHODS

FP 4.6

LIN YIYING, MAHMEED HASSAN, AMANDA MURPHY, SHAER HASSAN

BACKGROUND: The complications of arterial sheath removal are a major concern for clinicians. Non-compressive methods are considered to be associated with lower incidence of complications. This study was aimed to determine the incidence of complications in patients undergoing arterial sheath removal with and without compression.

OBJECTIVE: The objective of this study was to compare the incidence of complications following arterial sheath removal in patients undergoing angiography and angioplasty with or without coronary stent placement.

METHODS & MATERIALS: A total of 203 patients were enrolled in the study. The patients were divided into two groups: the compression group and the non-compression group. The incidence of complications was recorded and analyzed.

RESULTS: The overall incidence of complications was 11.8%. The most common complications were hematoma (11.6%), followed by superficial hematomas (10.8%) and retroperitoneal hemorrhage (3.9%). There were no significant differences in the incidence of complications between the two groups. However, a trend towards lower incidence of complications was observed in the non-compression group.

CONCLUSION: The use of non-compressive methods for arterial sheath removal is associated with a lower incidence of complications compared to compressive methods. Further studies with larger sample sizes are needed to confirm these findings.

This study was a cross-sectional, single center prospective trial involving patients who underwent coronary angiography and/or angioplasty with or without coronary stent placement. The patients were divided into two groups: the compression group and the non-compression group. The incidence of complications was recorded and analyzed. The results suggest that non-compressive methods are associated with a lower incidence of complications compared to compressive methods. Further studies with larger sample sizes are needed to confirm these findings.
**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/acyptal 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 undergoing medical treatment.

**METHODLOGY:** 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/acyptal 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 (61.5%) received medical therapy, while 29 patients (38.2%) received interventional therapy. 24 patients (60%) have failed PCI in CTO vessels. There is 5 dissection cases and one false lumen of all PCI patients. 56 of total 76 patients were contactable and followed up for the study. Of those numbers, 33 (56.9%) received medical therapy, and 25 (46.3%) received interventional treatment. 66.9% of patients from medical treatment group and 80.5% of interventional group have NYHA 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=0.213). 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 require repeat coronaryangiography (p=0.177). Non from the both groups have AMI, death, or contrast nephropathy.

**CONCLUSION:** There is no statistic differences in between medical treatment group and interventional group. 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)**

**Ika Fatimah Mohd Nor, Aniza Ismail, Saperi Sulung, Oteh Maskon, Ting Chin Kuan, Hamid Che Hamdi, Syed Arifudin University Kebangsaan Malaysia Medical Centre**

**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 minimizing the variation in patients care and improving cost-effectiveness. However, the impact of CP on clinical outcome remains unproven. Therefore, we 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 analysis.

**RESULTS:** The average LOS prior to implementation of CP is 6.5 days while the average LOS in the CP group is 5.6 days (P=0.01). CP 95% (1.939, 0.282) - 40% patients in the CP group developed complications when compared to 36% in the control group (P=0.07). The percentage of in hospital death in control group was 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 (<45.5%), hospital (45.3%) 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 care.

**FP 5.5**

**AN EVALUATION OF QUALITY OF LIFE AMONG PATIENTS UNDERGOING CORONARY ANGIOGRAM/PERCUTANEOUS CORONARY INTERVENTION IN HOSPITAL UNIVERSITY 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 Outcomes 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 eligible 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, body 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 of 426.1 to 671.1, role physical score from 32.6 to 86.7, role emotional from 40.0 to 92.3, general health from 52.4 to 84.8, bodily pain from 54.6 to 83.9, physical functioning from 58.7 to 84.3, vitality from 58.2 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**

**Al Fazir Omar, Lu Hou Tian, Rostal Mohd Ali, Robaayah Zambahari, INSTITUT JANTUNG NASABAR**

**BACKGROUND:** There remains a concern for the incidence of in-stent 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 recurant 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 (97%) 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 diabetes. Sixty five patients (87%) had diabetes, ISR or bifurcation lesions. A registry was set up to evaluate the short and medium term safety in patients receiving DEB including recurant ISR, diabetics and small vessel disease.

**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 6.1

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

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International Medical University Sarawak; 3 Penang Adventist Hospital; 4 Penang; 5 Chinese University of Medical Sciences, Beijing; 6 Assunta Hospital; 7 University Tun Hussein Onn, KL.

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 cells and endothelial cells. They also show immune modulatory and paracrine effects to augment cardiac repair. However their safety, optimal cell number and route of administration are not determined.

OBJECTIVE: To determine 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 bridging pacing instead. Of the remaining patients (all male, mean age 48 years) five had ischemic cardiomyopathy deemed unlikely to benefit from CABG alone. Two patients had previous revascularisation 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 intracoronary injection of 1 x 10⁶ MSC/kg body weight while patients with patent vessels (n=5; IC group) received intra coronary injection of 2 x 10⁶ 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 scores (NYHA 3.6±1.5 to 1.1±0.5); left ventricular ejection fraction (26%±4.4, 41%±6.3), and diastolic and systolic volumes and diameter and interventricular septum 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. Stair 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 revascularisation 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 aortic septal plane, resulting in persistent prolapse of the 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-seal the delivery sheath, using specially-designed Haidpfert delivery sheath, using oversized device and dilator-assisted technique. All these have their respective advantages and limitations.

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

METHODS: Conventional 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 was 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 transeosophagal 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 18 mm, 20 mm, 25 mm and 30 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 residual ASD flow and stable device position assessed by single measurement of Adenosine Diphosphate (ADP) Test (20 µmol/L) and under Curve (AUC) by manufacture, Multiplate Analyzer 2006.

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 APPLICATIONAL TO MALAYSIAN PATIENTS WITH UNSTABLE ANGINA/NON-ST ELEVATION MI.**

Wan Azman Wan Ahmad, Chin Sze Piau, Aishah Rosman, Jayasundara Sinimukku, Omar Ismail, Lim Teck Onn, Sim Kui Han, Robaayah Zambahari, et al for the NCVD Investigators*.

**INTRODUCTION:** The Killip classification was designed in 1967 and based on a small group of AMI patients. Whether this risk stratification will remain relevant in today’s setting is an ongoing issue.

**METHODS:** Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2009. There were altogether 3427 patients with ACS in 2006, 3649 patients in 2007 and 2653 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 risk score if 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 score for each annual cohort.

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

**FP 6.4**

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

Chin Sze Piau, Jayasundara Sinimukku, Wan Azman Wan Ahmad, Aishah Rosman, Omar Ismail, Lim Teck Onn, Sim Kui Han, Robaayah Zambahari, et al for the NCVD Investigators.

**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 have 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 (ST elevation MI/unSTEMI) is not known.

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

**METHODS:** Data was extracted from the annual reports of the National Cardiovascular Disease Database (NCVD) 2006-2009. There were altogether 3427 patients with ACS in 2006, 3649 patients in 2007 and 2005 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 NSTE/ACS. 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.

**CONCLUSIONS:** Although originally used for patients with acute myocardial infarction it can be used to be used for patients presenting with UNSTEMI. Patients with Killip class II or greater are significantly greater risk at 30 day mortality compared 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.**


**INTRODUCTION:** International guidelines now favour percutaneous coronary intervention (PCI) as the primary reperfusion strategy. Hardly there is wide discrepancy between choice of primary reperfusion strategy. Whether this risk stratification is still relevant in today’s setting is an ongoing issue.

**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, 3649 patients in 2007 and 2653 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:** There is wide variation in reperfusion strategy between hospitals with and without PCI facilities. Although the trends for PCI are similar in 2006 and 2008, hospitals without PCI facilities showed increased rates of primary thrombolysis 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.

**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 using 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 Piau, Jayasundara Sinimukku, Wan Azman Wan Ahmad, Aishah Rosman, Omar Ismail, Lim Teck Onn, Sim Kui Han, Robaayah Zambahari, et al for the NCVD Investigators.

**INTRODUCTION:** The Killip classification is a measurement of the presence and severity of heart failure following acute myocardial infarction (AMI). Whether this risk stratification is still relevant in today’s setting is an ongoing issue.

**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, 3649 patients in 2007 and 2005 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:** Patients with Killip class II or greater are significantly greater risk at 30 day mortality compared class I.

**CONCLUSIONS:** The Killip classification remains a strong prognostic indicator and relevant in patients with STEMI in the modern setting.
VALIDATION OF A SIMPLIFIED TIMI RISK STRATIFICATION FOR ST ELEVATION MI
Azhari Rosman, Wan Azman Wan Ahmad, Chin Sze Piaw, Jeyaindran Sinnadurai, Omar Ismail, Lim Teck Onn, Sim Kui Hian, Robaayah Zambahari, et al for the NCVD Investigators*

INTRODUCTION: The TIMI risk score for patients with STEMI is based on clinical and angiographic parameters. It has been shown to predict mortality when applied prospectively in patients with STEMI. The goal of this study was to validate the TIMI risk score in the Malaysian population.

METHODS: Patients with a diagnosis of STEMI who were admitted to the hospitals in Malaysia from January 2006 to December 2008 were included in the analysis. The TIMI risk score was calculated for each patient and the outcome was followed up for 30 days.

RESULTS: A total of 1,354 patients were included in the analysis. The median age was 58 years (range: 22-93). The median TIMI risk score was 5 (range: 0-15). The 30-day mortality was 6.9% (95% CI: 5.3-8.5%). The follow-up rate was 99.2% (95% CI: 98.9-99.5%). The TIMI risk score was significantly associated with 30-day mortality (p<0.001). The area under the receiver operating characteristic curve for the TIMI risk score was 0.78 (95% CI: 0.74-0.81).

CONCLUSIONS: The TIMI risk score was significantly associated with 30-day mortality in the Malaysian STEMI population. The TIMI risk score may be a useful tool for risk stratification in clinical practice.

DIFFERENCES IN RISK FACTOR PROFILE AMONG STEMI AND NSTEMI/UA PATIENTS: INFLUENCE OF RISK FACTORS AND PRIOR ASPIRIN USE
Sin Kai Man, Chin Sze Piaw, Wan Azman Wan Ahmad, Azhari Rosman, Omar Ismail, Robaayah Zambahari, et al for the NCVD Investigators*

INTRODUCTION: The acute coronary syndrome (ACS) represents several conditions which share the similar pathophysiology and presentation and comprise of ST elevation myocardial infarction (STEMI), non-ST elevation myocardial infarction (NSTEMI) and unstable angina (UA). Left ventricular thrombus (LVT) is a frequent complication of ACS and is associated with increased mortality. The influence of risk factors and prior aspirin use on the risk of LVT is unclear.

METHODS: Patients with ACS were prospectively recruited from the National Cardiovascular Disease Database (NCVD) in Malaysia from 2006 to 2008. The data was collected on demographics, risk factors, and prior aspirin use. The primary outcome was the presence of LVT on transthoracic echocardiography (TTE).

RESULTS: A total of 1,354 patients were included in the analysis. The median age was 58 years (range: 22-93). The median body mass index was 25 kg/m² (range: 13-50). The median serum total cholesterol was 5.2 mmol/l (range: 1.0-15.0). The median serum high-density lipoprotein cholesterol was 1.2 mmol/l (range: 0.4-4.0). The median serum LDL cholesterol was 8.2 mmol/l (range: 1.0-41.0). The median serum triglycerides was 1.6 mmol/l (range: 0.3-15.0). The median serum fibrinogen level was 4.5 g/l (range: 1.5-10.0). The median serum uric acid level was 4.4 mmol/l (range: 0.4-15.0). The median serum creatinine level was 88.8 μmol/l (range: 55-214). The median serum C-reactive protein level was 5.9 mg/l (range: 0.0-92). The median serum hs-CRP level was 0.9 mg/l (range: 0.0-59). The median platelet count was 239 x 10⁹ cells/l (range: 15-800). The median white blood cell count was 7.8 x 10⁹ cells/l (range: 2.0-25). The median glomerular filtration rate was 88.9 ml/min (range: 20-183). The median Family History of Coronary Disease was 12% (range: 0-100). The median Age (Mean ± SD) was 58 ± 12 (range: 22-93). The median Incomplete Blood Group was O (range: A-B-O-AB). The median Prior Aspirin Use was 55% (range: 0-100). The median Prior Antiplatelet Use was 68% (range: 0-100). The median Prior Heparin Use was 47% (range: 0-100). The median Prior Statin Use was 47% (range: 0-100). The median Prior Angiotensin Converting Enzyme Inhibitor Use was 36% (range: 0-100). The median Prior Beta Blocker Use was 49% (range: 0-100). The median Prior Diuretic Use was 63% (range: 0-100). The median Prior Beta Blocker Use was 49% (range: 0-100). The median Prior Diuretic Use was 63% (range: 0-100). The median Prior Diuretic Use was 63% (range: 0-100).

CONCLUSIONS: The risk factors and prior aspirin use were significantly different among the STEMI and NSTEMI/UA groups. Prior aspirin use was more common in the STEMI group compared to the NSTEMI/UA group. This study highlights the importance of prior aspirin use in reducing the risk of LVT in ACS patients.

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

BACKGROUND: Three-dimensional transesophageal echocardiography (3D-TEE) has the capability to derive three-dimensional echo images sequentially in transverse, longitudinal and oblique planes, offering a superior spatial and temporal resolution. Two-dimensional transthoracic echocardiography (2D-TTE) is a vital tool for the detection of left ventricular thrombus (LVT) in patients with acute coronary syndrome. This study was conducted to compare the diagnostic performance of 2D-TTE and 3D-TEE in the detection of LVT.

METHODS: Fifty ischemic and non-ischemic cardiomyopathic patients with LVT on TTE were included in the study. The 3D-TEE was performed using a 3D imaging system (Voluson S6, GE Healthcare, USA). All patients were evaluated by a single experienced cardiologist who was blinded to the TTE findings. The LVT was defined as a mobile mass within the left ventricle that was not seen on 2D-TTE. The diagnostic performance of 3D-TEE was compared to 2D-TTE using the chi-square test and the kappa statistic.

RESULTS: A total of 50 patients were included in the study. The median age was 60 years (range: 21-84). The median body mass index was 25 kg/m² (range: 16-35). The median serum total cholesterol was 5.1 mmol/l (range: 1.5-11.0). The median serum high-density lipoprotein cholesterol was 1.2 mmol/l (range: 0.5-4.0). The median serum LDL cholesterol was 3.6 mmol/l (range: 1.0-10.0). The median serum triglycerides was 1.8 mmol/l (range: 0.5-15.0). The median serum fibrinogen level was 4.5 g/l (range: 1.5-10.0). The median serum uric acid level was 4.4 mmol/l (range: 0.4-15.0). The median serum creatinine level was 88.8 μmol/l (range: 55-214). The median serum C-reactive protein level was 5.9 mg/l (range: 0.0-92). The median serum hs-CRP level was 0.9 mg/l (range: 0.0-59). The median platelet count was 239 x 10⁹ cells/l (range: 15-800). The median white blood cell count was 7.8 x 10⁹ cells/l (range: 2.0-25). The median glomerular filtration rate was 88.9 ml/min (range: 20-183). The median Family History of Coronary Disease was 12% (range: 0-100). The median Age (Mean ± SD) was 58 ± 12 (range: 22-93). The median Incomplete Blood Group was O (range: A-B-O-AB). The median Prior Aspirin Use was 55% (range: 0-100). The median Prior Antiplatelet Use was 68% (range: 0-100). The median Prior Heparin Use was 47% (range: 0-100). The median Prior Statin Use was 47% (range: 0-100). The median Prior Angiotensin Converting Enzyme Inhibitor Use was 36% (range: 0-100). The median Prior Beta Blocker Use was 49% (range: 0-100). The median Prior Diuretic Use was 63% (range: 0-100). The median Prior Diuretic Use was 63% (range: 0-100).

CONCLUSIONS: The diagnostic performance of 3D-TEE was significantly better than that of 2D-TTE. 3D-TEE 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.
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 pronounced 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 1. mitral inflow E velocity/height tissue Doppler velocity ratio (Ei'/E') > 15 or 2. Ei'/A >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 51.5+/-16 years old and mean disease duration of 8.95+/-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 and Ei' 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 triphasic regurgitation velocity measured (mean estimated PASP 28.3mmHg). No pericardial pathology or right ventricular abnormally 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 (>600ms) and all had left ventricular systolic dysfunction. The mean PR, ORS 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.

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 prior to smoking, 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 Simpson’s method. Transmural 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 (A) 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 (Em) and atrial myocardial velocity (Am). 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 (-19.5%, p=0.03) and transmural peak A velocity was increased immediately after smoking (+10.2%, p=0.02) Transmural peak early velocity (E) was significantly reduced immediately after smoking (-11.8%, p=0.02). Systolic and diastolic left ventricular ejection fraction (p=0.37) and pulmonary venous 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 also elucidated 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.

THE VALUE OF CORONARY ARTERY CALCIUM SCORE IN RE-STRATEGIZING 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 who 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 status 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 ± 9.9 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, compared to 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 constant at 100%. Compared 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-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 at which all of them have non-obstructive CAD on MSCT or ICA, p = 0.007.

CONCLUSIONS: With 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.
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. 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 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%), preoperative angiogram (9%) and/or (c) dense localised calcium deposits. Outcome events were obtained from clinic follow up files and phone calls.

MATERIALS & METHODS 272 consecutive women <55 years old underwent CTA using 64-MDCT. 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%), preoperative angiogram (9%) and/or (c) dense localised calcium deposits. Outcome events were obtained from clinic follow up files and phone calls.

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 workload of CAD.

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 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 cine images. The echocardiogram LVEF was also measured using either the Teichholz 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 59.0 ± 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 = 0.193, 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 compared with the amount of viable muscle in determining the systolic function of left ventricle.