

## **Abstracts of Dissertations June 2012 Exit Assessment Exercise**

### **INCREMENTAL VALUE OF HYPERQ VS. CONVENTIONAL ECG STRESS TESTING IN PATIENTS WITH CHEST PAIN AND INTERMEDIATE PROBABILITY FOR CORONARY ARTERY DISEASE**

Dr Chow Hoi Fan Danny, Department of Medicine and Geriatrics, Princess Margaret Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Background** Compared to conventional Electrocardiogram (ECG)-based detection of ischemia during treadmill examination which analyses the repolarization phase of cardiac action potential, high frequency QRS (HFQRS) analyses the depolarization phase. The QRS complex during treadmill is averaged and analyzed above 100Hz to define myocardial ischemia. The aim of the study is to evaluate the incremental value of high frequency QRS signal or HyperQ signal amplitude reduction vs. conventional ECG stress testing in patients with chest pain and intermediate probability for coronary artery disease.

**Method** A 2-year prospective cohort study in Princess Margaret hospital recruited 177 patients who presented with chest pain with intermediate pretest probability of coronary artery disease (CAD). Patients underwent conventional exercise stress examination and high resolution ECG acquisition was analyzed using the HyperQ system (BSP, Israel). The diagnostic accuracy of the HyperQ system was analyzed using myocardial perfusion imaging (MPI) as gold standard of ischemia.

**Results** Of the 175 patients included in the data analysis, 20 exhibited MPI ischemia. The sensitivity of HyperQ was 45% compared with 60% of conventional treadmill. ( $p=0.371$ ) The specificity of HyperQ and treadmill was 85.8% and 68.4% respectively. ( $p=0.002$ ) The positive predictive value of HyperQ was 29% and treadmill was 19.7%. ( $p<0.05$ ) The negative predictive value of HyperQ was 92.4% and treadmill was 93%. ( $p=0.61$ ) The test accuracy of Hyper Q was 81.1% and treadmill was 67.4%. ( $p<0.05$ )

**Conclusions** HFQRS appears to be more specific with comparable sensitivity compared with conventional ECG interpretation detecting myocardial ischemia. This new technique might improve the overall accuracy in the noninvasive evaluation of coronary artery disease and appears to be a cost effective measure as a complimentary test with treadmill examination.

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### **ROLE OF E/E' RATIO TO PREDICT CLINICAL OUTCOMES IN PATIENTS WITH NON-ST ELEVATION ACUTE CORONARY SYNDROME**

Dr Ip Ling Ling Lina, Department of Medicine & Geriatrics, Tuen Mun Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Objective** The ratio of early transmitral inflow velocity to early diastolic mitral annulus velocity (E/E') has been shown to be the best accurate non-invasive predictor of elevated left ventricular (LV) filling pressure, which predicts poor outcomes after acute myocardial infarction (MI). It is unclear if the E/E' ratio can be used to predict

clinical outcomes of patients with non-ST elevation acute coronary syndrome (NSTEACS). The aim of this study is to evaluate the role of the E/E' ratio to predict clinical outcomes of patients with NSTEACS.

**Methods** This is a retrospective study. The clinical records and the echocardiograms of 61 patients admitted for NSTEACS were reviewed. The E/E' ratio of every patient was measured. The subjects were divided into 2 groups, with E/E'  $\leq 15$  and E/E'  $> 15$  respectively. The primary endpoint was the composite endpoint of cardiac death, ST-elevation MI (STEMI) and NSTEACS and hospitalization for heart failure in the following 18 months after the index admission. The secondary endpoint was individual analysis of cardiac death, STEMI, NSTEACS and hospital for heart failure among the two study groups.

**Results** The risk of composite endpoint of cardiac death, STEMI, NSTEACS and hospitalization for heart failure was significantly higher in patients with an E/E' ratio  $> 15$  ( $p=0.002$ ). The risk was also higher in patients with diabetes, chronic renal impairment and heart failure on index admission. When each component of the composite endpoint was individually analyzed, patients with an E/E' ratio  $> 15$  had significantly higher risks of cardiac death ( $p=0.014$ ), recurrent NSETACS ( $p=0.044$ ) and hospitalization for heart failure ( $p=0.003$ ), but not STEMI ( $p=0.443$ ).

**Conclusion** The E/E' ratio provided prognostic value in patients with NSTEACS. An elevated E/E' ratio was a predictor not only for cardiac death, but also for recurrent NSTEACS and hospitalization for heart failure.

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## **THE PROFILES AND OUTCOMES OF OBSTRUCTIVE CORONARY ARTERY DISEASE IN PREMENOPAUSAL WOMEN**

Dr Kwan Wing Shan Iris, Department of Medicine, Queen Elizabeth Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Introduction** Premenopausal status has long been thought to decrease the risk of coronary artery disease (CAD) in women because of the protective effect of estrogen. In fact, CAD is the major killer in premenopausal women. Studies have shown that the mortality of CAD in these women compared to their male counterpart was twice as high. If estrogen was thought to decrease the risk of CAD in premenopausal women, theoretically, it should also give rise to less severe disease in premenopausal women compared to postmenopausal women.

**Aims** Our study aims to identify the significant risk factors, clinical presentation and management modalities that premenopausal women differ from postmenopausal women and to have a more comprehensive understanding on the "beneficial" effect of estrogen in CAD by comparing the angiographic features, complications and outcome of CAD between premenopausal and postmenopausal women.

**Method** A retrospective case-control study to compare the risk factors, presentation, management modalities, complications and outcome of 85 premenopausal and 90 postmenopausal Chinese women with obstructive CAD.

**Results** The mean age of premenopausal women was  $45.56 \pm 4.9$  and  $64.17 \pm 9.78$  in postmenopausal women. Premenopausal women with CAD had higher prevalence of

systemic autoimmune disease (11.76% vs. 2.22%,  $p=0.01$ ), strong family history of CAD (11.16% vs. 2.22%,  $p=0.01$ ) and renal failure (11.16% vs. 3.33%,  $p=0.03$ ) compared to postmenopausal women. The prevalence of hypertension was higher in postmenopausal women with CAD (77.33% vs. 51.76%,  $p=0.02$ ) compared to premenopausal women. The prevalence of other conventional coronary risk factors like smoking history, hyperlipidemia, diabetes mellitus and history of cerebrovascular accident (CVA) were similar between the two groups. The presentation of CAD of stable angina and acute coronary syndrome were also similar between the two groups. Clinical complications of congestive heart failure, aborted cardiac arrest, ventricular arrhythmia, bradyarrhythmia, mechanical complications and CVA were also similar between the two groups. Premenopausal women were found to have significantly more severely obstructive CAD, namely left main disease and triple vessel disease (52.94% vs. 24.44%,  $p<0.0001$ ). Those who underwent percutaneous intervention, coronary artery bypass graft and medical treatment were similar between the two groups. No significant differences were noted in the 6-month major adverse cardiac events (MACE) and both cardiac and non-cardiac related death.

**Conclusion** Conventional risk profiles of coronary artery disease (DM, hyperlipidemia, smoking, history of CVA) were similar between premenopausal and postmenopausal women. However, systemic autoimmune diseases, impaired renal function and family history of premature CAD were significant risk factors in premenopausal women. Premenopausal women also did not fare better in the outcome of CAD. They presented with more severe CAD, namely three vessels disease or critical left main disease, and with no significant difference in complications and mortality, when compared to their postmenopausal counterpart. Thus, the protective effect of estrogen in CAD was doubtful. CAD being the major killer in premenopausal women should no longer be ignored. More studies and awareness on the prevention of CAD in this group of women are urgently needed.

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## **CLINICAL OUTCOME OF ACUTE MYOCARDIAL INFARCTION COMPLICATED WITH CARDIOGENIC SHOCK WITH CONTEMPORARY PERCUTANEOUS CORONARY INTERVENTION SERVICE THE EXPERIENCE FROM A REGIONAL HOSPITAL**

Dr Lee Kin Tong Joe, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Background** Cardiogenic shock is a lethal complication of acute myocardial infarction (AMI). Emergent revascularization was shown to improve survival in observational and randomized trials. Since year 2003, emergent percutaneous coronary intervention (PCI) program was implemented in our cardiology unit. Emergent PCI had been performed more frequently in these high risk AMI patients and improvement in survival is anticipated. Improved operator experience and increasing coronary stent utilization as contemporary PCI strategy may also contribute to better clinical outcome. The aim of this study is to review the mortality of cardiogenic shock in our centre, with comparison of outcomes under different treatment strategies (early vs late or no revascularization). The impact on mortality after introduction of emergent PCI program was evaluated. The study also tried to identify independent clinical and procedural predictors of mortality in cardiogenic shock.

**Methods and results** Data of patients admitted to our unit for cardiogenic shock complicating AMI from 1/1/1999 to 30/6/2010 was retrieved from 2 separate databases retrospectively. Two hundred and sixty six patients were included for analysis. The overall in-hospital mortality was 45.1%. One hundred and twenty patients (45.1%) received early revascularization. The in-hospital mortality rate of these patients was 24.2%, markedly better than those patients received late/no revascularization (62.3%). High PCI angiographic success rate (95.8%) and coronary stent implantation rate (95.8%) were achieved. Early revascularization had been increasingly utilized since implementation of emergent PCI program, yet no improvement in mortality was demonstrated. The findings were contradictory to the established benefit of emergent PCI demonstrated in other studies. The discrepancy of these findings was likely related to under-coding of the medically treated patients in the early study period before year 2003. Older age, chronic renal failure, higher peak creatinine, acute pulmonary edema and late/no revascularization were found to be independent predictors of mortality in the whole study population. Among the patients received early revascularization, acute pulmonary edema on presentation is identified as an independent predictor of in-hospital mortality.

**Conclusion** The overall in-hospital mortality of cardiogenic shock complicating AMI in our unit is comparable to the findings of international series. Though selection bias existed, with the clinical-guided selection process we had endorsed in all these years, an encouraging inhospital mortality rate of 24.2% was achieved among patients received early revascularization. Contemporary PCI strategy, in terms of advanced PCI technology, increasing stent utilization and high angiographic success is believed to have contributed to better clinical outcome. Since the implementation of emergent PCI program in our unit in year 2003, more cardiogenic shock patients received emergent PCI. However we cannot demonstrate an improvement in overall survival due to limitation of under-coding. Acute pulmonary edema reflects the severity of left ventricular systolic dysfunction and is identified as an independent predictor of mortality among the patients received early revascularization.

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## **MORTALITY PREDICTION IN ADULT CARDIAC SURGERY PATIENTS IN LOCAL POPULATION: THE NEW EUROSCORE II**

Dr Luk Ngai Hong Vincent, Department of Medicine, Queen Elizabeth Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Background** A large proportion of open-heart surgery in our center was done in elective setting. Risk assessment score plays an important role in planning best treatment strategy for patients undergoing open-heart surgery. It also facilitates the preoperative consultation between patients and doctors. Various scoring systems are available with its own strength. The new EuroSCORE II risk stratification model was launched in 2011. It was developed with database including centers from different population. It was shown to have good discriminating power and calibrating power in its own dataset compared group.

**Objective** The aim of our study was to verify the new EuroSCORE II system on local population undergoing elective open-heart surgery.

**Method** All patients undergoing elective coronary artery bypass graft (CABG) and valvular surgery in Queen Elizabeth hospital between 1st Jan 2011 to 31st Dec 2011

were included. Elective surgery was defined as patients with routine admission for operation. Baseline clinical characteristics, risk factors and EuroSCORE II score were analyzed. The outcome was in-patient mortality or 90 days mortality.

**Result** 229 patients were included in our study. The mean age was 62.0 +/- 10.53. One hundred and ten (48%) of patients underwent isolated CABG, 119 (52%) underwent valvular surgery. Total 6 (2.6%) mortality was observed, The mean EuroSCORE was 1.64 +/- 1.28. The value of area under ROC curve was 0.863 for all population, 0.977 for isolated CABG and 0.789 for valvular surgery.

**Conclusion** Our study showed a good discriminating power of the new EuroSCORE II for risk assessment of elective open-heart surgery in our local population. Yet it failed to show good calibrating power with under-estimation of inpatient mortality.

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## **EFFICACY AND SAFETY OF LIPID LOWERING MANAGEMENT IN A COHORT OF POST PCI/CABG PATIENTS IN A REGIONAL HOSPITAL**

Dr Man Siu Yee, Department of Medicine, Yan Chai Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Objective** To perform an audit of lipid lowering management in a cohort of Post PCI/CABG patients in a regional hospital based on the current NCEP ATP III guidelines and recommendation of American College of Cardiology.

**Study Period** 1<sup>st</sup> of Jan, 2006 to 30<sup>th</sup> of June, 2010

**Materials and Method** 193 Patients with IHD (ischaemic heart disease) with or without other risk factors undergoing PCI (percutaneous coronary intervention) or CABG (coronary artery bypass grafting) in 2006 were followed for their clinical outcomes after lipid lowering treatment till June of 2010. Fasting lipid profiles of our patients were obtained at the baseline and at the end of the study. Demographic data including age, sex, body weight, risk factors like smoking history, HT (hypertension), DM (diabetes mellitus), history of old MI (myocardial infarct), history of heart failure, history of CVA (ischaemic stroke) and history of PVD (peripheral vascular disease) were retrieved. Dose and kind of lipid-lowering agents, 2 major side-effects of treatment including liver function impairment (alanine aminotransferase level), muscle damage (creatinine kinase elevation) were documented. Clinical outcomes (cardiovascular death, new MI/need for revascularization either PCI or CABG/new onset heart failure/admission to hospital for heart failure/new occurrence of ischaemic stroke/new onset peripheral vascular disease) were documented.

**Result** The mean age of our patients was 64.31+/-9.40 (43 – 83). Majority our patients were male (male to female ratio: 139 vs. 54). After treatment, the mean total cholesterol, TG and LDL cholesterol were 3.91+/-0.74 mmol/L (decreased by 1.27 mmol/L), 1.32+/- 0.75 mmol/L (decreased by 0.3 mmol/L) and 2.24+/- 0.62 mmol/L (reduced by 1.16 mmol/L) respectively. The mean HDL cholesterol was 1.09 +/-0.30 mmol/L (increased by 0.03 mmol/L) at the end.

Majority of our patients (95.3%) received statins therapy. Treatment successful rate to meet target LDL cholesterol level of less than 2.6 mmol/L was 78.2 %. 22.8 % of

our patients attained LDL cholesterol of less than 1.8 mmol/L. 77.2 % of our patients had triglyceride level lower than 1.7 mmol/L. 58.5 % of our patients had HDL cholesterol level of 1 or higher than 1 mmol/L.

Mean dosage of statins used for treatment in our patients was 30.5 +/-24.98 mg of simvastatin equivalent.

The incidence of important side-effects including 3 fold rise of ALT (alanine aminotransferase) and CK (creatinine kinase) were low (both were 1.6%) in our group. The incidence of myopathy was 0.54%.

Presence of renal impairment (defined as creatinine clearance less than 60ml/min/1.73m<sup>2</sup>) was identified as a risk factor for the occurrence of muscle toxicity (3 fold rise of CK, p = 0.04) in patients who received statins therapy.

No patients died as a result of side-effects of treatment.

We found that presence of renal impairment (RR: 2.9, 95% CI: 1.28 to 6.54) and history of ischaemic stroke (RR: 3.73 with 95% CI 1.28 to10.94) were independent risk factors of major adverse cardiovascular events in our group of patients.

**Conclusion** Lipid treatment therapy in our group appeared effective and safe as in other large trials.

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## **ECHOCARDIOGRAPHIC ABNORMALITIES IN PATIENTS WITH CIRRHOSIS AWAITING FOR LIVER TRANSPLANTATION**

Dr Sin Wai Ching Simon, Department of Medicine, Queen Mary Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Objectives** Chronic hepatitis B infection with cirrhosis is common in our locality. Various complications including variceal bleeding and hepatic encephalopathy have been reported. However, data are limited with regards to the nature of cardiac dysfunction and the degree of cirrhosis and its complications. The aim of the present study was to investigate such cardiac dysfunction in relation to the liver status by using transthoracic echocardiography in patients with liver cirrhosis waiting for liver transplantation.

**Methods** This was a single center, open label, prospective study with a control arm. A total of 48 patients with cirrhosis referred for liver transplant were examined for cardiac dysfunction by transthoracic echocardiography, and compared to a control group of 48 patients with matched age, sex, and cardiovascular risk factors. Echocardiogram and tissue Doppler-derived indices of systolic and diastolic dysfunction were obtained in the usual manner. Liver status was assessed by the Child-Pugh score model for end-stage liver disease (MELD) scores and all hepatic complications were recorded.

**Results** Compared to the control group, patients with cirrhosis had significantly higher cardiac index (3.3±1.1 vs. 2.3±0.3 L/min/m<sup>2</sup>, p<0.01), lower systemic vascular resistance index (2041±801 vs. 3307±506 dyne.sec/cm<sup>5</sup>.m<sup>2</sup>, p<0.01), lower tissue Doppler velocity measured at the mitral annulus (7.2±1.4 vs. 7.8±1.0 cm/s, p=0.03), and higher left ventricular filling pressure as estimated by E/E' ratio (10±3 vs. 8±2,

p<0.01). Moreover, patients with cirrhosis had significantly higher tricuspid annular plane systolic excursion ( $2.2\pm 0.5$  vs.  $2.0\pm 0.2$  cm,  $p=0.01$ ), higher tissue Doppler velocity measured at tricuspid annulus ( $14.0\pm 3.4$  vs.  $12.0\pm 2.1$  cm/s,  $p<0.01$ ), and higher right ventricular systolic pressure ( $27\pm 6$  vs.  $16\pm 6.2$  mmHg,  $p<0.01$ ). Moreover, more diastolic dysfunction was noted (52% vs. 21%  $p=0.03$ ). Right ventricular myocardial performance index was higher in cirrhotic patient ( $0.42\pm 0.13$  vs.  $0.35\pm 0.12$ ,  $p=0.018$ ). In patients with ascites, significantly more diastolic dysfunction (77% vs. 33%,  $p<0.01$ ); higher tissue Doppler velocity at basal mitral annulus ( $7.7\pm 1.4$  vs.  $7.0\pm 1.4$  cm/s,  $P=0.04$ ) and at tricuspid annulus ( $15\pm 3$  vs.  $13\pm 3.2$  cm/s,  $p=0.024$ ) were noted.

**Conclusion** Diastolic dysfunction was more common in patients with cirrhosis, especially if ascites was present. The resting systolic function of both ventricles was relatively preserved except for some subtle dysfunction.

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## **INTERMEDIATE TERM OUTCOMES FOLLOWING USAGE OF DIFFERENT TYPES OF STENT IN PRIMARY PERCUTANEOUS CORONARY INTERVENTION IN PATIENTS WITH ST ELEVATION MYOCARDIAL INFARCTION – A RETROSPECTIVE ANALYSIS**

Dr Tam Chor Cheung, Department of Medicine, Queen Mary Hospital (June 2012  
Cardiology Exit Assessment Exercise)

**Objective** There has been increasing evidence supporting more favourable long term outcomes of drug-eluting stent (DES) over bare metal stent (BMS) after primary percutaneous coronary intervention (PCI) for acute ST-elevation myocardial infarction (STEMI). However, data regarding the use of endothelial progenitor cell (EPC) capture stent in such setting have been less conclusive. We would like to examine the intermediate term clinical outcomes comparing results of all these stents in this study.

**Methods** This is a single-center, open label, retrospective study analyzing the pooled data from the Primary PCI Clinical Registry at Queen Mary Hospital (Year 2006 to 2010). Patients who had died during the index hospitalization were excluded from the analysis. The primary endpoint was the occurrence of major adverse cardiac events (MACE). The cumulative incidence of MACE together with the survival was then derived.

**Results** A total of 207 patients (BMS = 82, EPC capture stent = 57, DES = 68) were qualified for study. At 1 year, the MACE rates were 11.0% with BMS, 14.0% with EPC capture stent and 5.9% with DES (BMS vs. DES,  $p = 0.03$ ; EPC capture stent vs. DES,  $p = 0.02$ ; BMS vs. EPC capture stent,  $p = 0.72$ ). Ischaemia driven target vessel revascularizations were 9.8% with BMS, 14.0% with EPC capture stent and 4.4% with DES (BMS vs. DES,  $p = 0.17$ ; EPC capture stent vs. DES,  $p = 0.01$ ; BMS vs. EPC capture stent,  $p = 0.28$ ). Recurrent myocardial infarction (MI) occurred in 3.7% of patients receiving BMS, 5.3% EPC capture stent and 2.9% DES (BMS vs. DES,  $p = 0.37$ ; EPC capture stent vs. DES,  $p = 0.20$ ; BMS vs. EPC capture stent  $p = 0.60$ ). There was 1 case of subacute stent thrombosis in the BMS group, 1 case of very late stent thrombosis in the DES group, and no stent thrombosis in the EPC capture stent group. The hazard ratios of occurrence of MACE were 3.47 for BMS vs. DES ( $P = 0.01$ ) and 3.52 for EPC capture stent vs. DES ( $P = 0.02$ ).

**Conclusions** In our patients with acute STEMI undergone primary PCI, use of DES appeared to reduce target vessel revascularization in the intermediate term follow up, as compared to BMS and EPC capture stents. The clinical efficacy of EPC capture stent and BMS were comparable. Stent thrombosis rates were not significantly different among all 3 groups.

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## **EVALUATION ON THE EFFECTS OF IMPLEMENTATION OF CLINICAL PATHWAY ON CASE FATALITY IN PATIENTS ADMITTED FOR ACUTE MYOCARDIAL INFARCTION IN A TERTIARY REFERRAL CENTRE**

Dr Wong Ka Lam, Department of Medicine, Queen Mary Hospital (June 2012 Cardiology Exit Assessment Exercise)

**Introduction** Acute myocardial infarction (AMI) is a common clinical presentation associated with high fatality. International guidelines on evidence-based treatments for AMI are well established. However, implementation of evidence-based medical practice varies and good adherence to AMI treatment guidelines is associated with improved patient outcomes. Implementation of clinical pathway has been shown to improve the adherence to AMI treatment guidelines but data on the beneficial effects of clinical pathway implementation on clinical outcomes of AMI is scarce. This study was designed to explore the impacts of clinical pathway implementation on AMI case fatality rate.

**Methodology** AMI Clinical Pathway has been implemented since February 2007 at Queen Mary Hospital. Two cohorts of patients admitted for AMI in 2 periods were compared, namely those admitted from Feb 2007 to Jan 2011 (*after* the implementation of AMI Clinical Pathway) versus those admitted from Feb 2004 to Jan 2007 (*before* the implementation as a historical control). Diagnosis, fatal episodes and clinical characteristics were reviewed.

**Results** A total of 859 (2/2004-1/2007) and 1170 (2/2007-1/2011) consecutive patients admitted for AMI to this Hospital were identified and analyzed; the in-hospital case fatality rate between the 2 groups was 14.6% (125/859) versus 10.9% (128/1170),  $p=0.015$ ; the 30-day case fatality rate was 18.4% (157/853) versus 14.9% (172/1151),  $p=0.039$ ; and the 6-month case fatality rate was 26.0% (221/849) versus 22.9% (262/1143),  $p=0.109$ , respectively. The reduction of in-hospital, 30-day and 6-month case fatality rate was statistically significant, with an odds ratio (OR) of 0.649 [CI 0.492-0.856],  $p=0.002$ ; OR 0.672 [CI 0.521-0.868],  $p=0.002$ ; OR 0.700 [CI 0.555-0.881],  $p=0.002$ , respectively, after multivariate analysis. The 30-day and 6-month survival analysis using Cox regression model revealed a significant improvement in survival after implementation of AMI clinical pathway,  $p=0.002$  and  $p=0.001$ , respectively. Length of in-hospital stay was significantly reduced from a mean of 5.81 days to 4.71 days between the 2 periods,  $p=<0.001$ .

**Conclusions** Implementation of AMI Clinical Pathway was associated with a significant reduction in AMI case fatality rate and better clinical outcomes.

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## **STUDY OF TRACHEOSTOMIZED PATIENTS IN INTENSIVE CARE UNIT**

Dr Chang Li Li, Department of Intensive Care, Pamela Youde Nethersole Eastern Hospital (May 2012 Critical Care Medicine Exit Assessment Exercise)

**Background** Tracheostomy is a common procedure performed in patients requiring prolonged mechanical ventilation in the critical care setting.

**Objective** The primary objective is to describe the short-term and long-term outcomes of tracheostomized Intensive Care Unit (ICU) patients. The secondary objective is to identify any predictors of complications during and after the tracheostomy procedure.

**Design** Retrospective and prospective, observational case series performed in a general medical-surgical adult ICU in a local tertiary centre.

**Intervention** None

**Patients** The inclusion criteria were adult patients older than 18 years old admitted to the ICU of Pamela Youde Nethersole Eastern Hospital (PYNEH) with subsequent tracheostomy done during the observational period and those immediate post-operative cases. Exclusion criterion was patients already had a tracheostomy before current ICU admission.

**Methods** Medical records from July 2008 to December 2009 were reviewed in the retrospective part. Data were collected prospectively from July 2010 to June 2011. Intra-procedural complications of tracheostomy were recorded during the prospective period. Short-term complications were recorded in both periods, while long-term complications were retrieved from retrospective period. Functional outcome of tracheostomized and survived patients in the retrospective period were assessed in the form of Barthel Index (BI) via telephone contacts. Short Form-36 (SF-36) questionnaires were sent to survived patients to study their physical and mental function.

**Results** A total of 153 patients were recruited. Among them, 99 were recruited retrospectively while 54 were recruited prospectively, which respectively represented 5.5% and 4.5% of total ICU admissions during the two study periods. The most common indication for tracheostomy was prolonged mechanical ventilation (72.6%), followed by failure of extubation (15%). The mean duration of intubation was  $9.05 \pm 6.48$  days. Surgical tracheostomy was the predominant method used (73.9%). There were no statistically significant differences between surgical and percutaneous tracheostomy on the complication rate. Duration of percutaneous tracheostomy ( $8.33 \pm 5.51$  minutes) was significantly shorter than the duration of surgical tracheostomy ( $42.36 \pm 20.33$  minutes,  $p=0.011$ ). Minor bleeding was the most common short-term complication (10.5%) and tracheal stenosis was the most common long-term complication (5.1%). Multivariate analysis using logistic regression showed that hypertension (adjusted odds ratio 5.28, 95% CI 1.05-26.51,  $p=0.044$ ) and chronic renal failure (CRF) (adjusted odds ratio 17.56, 95% CI 2.87-107.42,  $p=0.002$ ) were independent risk factors for minor bleeding; while the need to reintubate within 48 hours after extubation (adjusted odds ratio 10.5, 95% CI 1.30-84.88,  $p=0.027$ ) was an independent risk factor for tracheal stenosis. CRF was independently associated with composite complications (minor bleeding and tracheal stenosis; odds ratio 13.63, 95% CI of 2.47-75.16,  $p=0.003$ ). Mental health score at 1 year or more was generally better than physical health score in this cohort of patients.

**Conclusion** This observational case series described the short-term and long-term outcomes of tracheostomized patients from ICU. Minor bleeding occurred in 10.5% of patients and tracheal stenosis occurred in 5.1% of patients. Their long-term outcome was relatively poor, with mental health slightly better than physical health; they required various degrees of assistance in the activity of daily living, and most of them required rehabilitation upon hospital discharge. CRF was found to be associated with increased risk for composite complications compared with those without CRF. However due to the small number of patients suffering from CRF in this study, further investigations should be conducted to verify this finding.

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## **A STUDY OF NECROTIZING FASCIITIS PATIENTS ADMITTED TO THREE LOCAL INTENSIVE CARE UNITS**

Dr Chung Yat Kiu, Department of Medicine, Tseung Kwan O Hospital (May 2012 Critical Care Medicine Exit Assessment Exercise)

**Objectives** To study the clinical features, spectrum of microorganisms, treatment and outcomes of necrotizing fasciitis (NF) patients who required intensive care unit (ICU) admission.

**Methods** The medical records of 90 patients, who had been admitted to the intensive care units of Queen Elizabeth Hospital, United Christian Hospital and Tseung Kwan O Hospital due to necrotizing fasciitis from January 2005 to December 2011, were reviewed retrospectively.

**Results** The study population consisted of 63 males and 27 females. The mean age of the patients was 61.4 ( $\pm$  14.4) years. Diabetes was the most common comorbidity of NF. Majority of the cases were idiopathic in etiology (n=50; 55.6%). Extremities NF (n=67; 74.4%) occurred more frequently than central NF (n=23; 25.6%). *Vibrio* was the most prevalent microorganism isolated (n=20). The median time of diagnosis, counted from onset of symptoms, was 59 (42.8 - 82.0) hours. The median time of the first operation, counted from hospital admission, was 14 (6.1 - 26.0) hours. 76 patients had received surgical debridement. Amputation was performed in 43 cases. The median time of ICU admission was 14 (7.5 - 30.5) hours and the median APACHE II score was 19 (15 - 23). Most patients developed disseminated intravascular coagulopathy (n=78; 86.7%). The ICU mortality was 34.4% (n=31) and the hospital mortality was 46.7% (n=42). The median length of stay in ICU was 9 (4 - 15) days and the median length of stay in hospital was 23.5 (12.8 - 49.0) days. The age, serum lactate, APACHE II score were significantly higher in the non-survivors. The time of diagnosis and operation were significantly delayed in the non-survivors. Bacteraemia, debridement < 3 times, operation > 24 hours after admission and presence of organ failure were significantly associated with mortality.

**Conclusion** Marine microorganism (*Vibrio* spp. and *Aeromonas* spp.) was the most prevalent type of microorganism found in this study. Early diagnosis, early operation and adequate surgical debridement were important in the management of NF. NF patient should receive debridement  $\geq$  3 times and the operation should be performed within 24 hours after admission, as they were shown to be associated with lower mortality in this study.

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## **POST ABDOMINAL AORTIC ANEURYSM REPAIR: A RETROSPECTIVE STUDY OF INTENSIVE CARE UNIT, HOSPITAL STAY AND ONE-YEAR OUTCOME**

Dr Sin Kai Cheuk, Department of Intensive Care Unit, Queen Elizabeth Hospital (May 2012 Critical Care Medicine Exit Assessment Exercise)

**Background** Patients with open repair of abdominal aortic aneurysms (AAAs) are generally considered as high risk for significant peri-operative morbidity and mortality. With the introduction of endovascular repair (EVAR) technique, the clinical practice is changing. EVAR has been shown to have peri-operative survival benefit and reduction in complications in previous trials; while these advantages are not sustained in the long-term. Studies comparing the post-operative events and the long-term outcomes of EVAR and open repair of AAAs in local intensive care units are, however, lacking.

**Method** This is a retrospective study. Clinical outcomes in terms of peri-operative complications, mortality, 1-year survival and reoperation rates were compared among propensity-score-matched patients after elective EVAR and open repair during 2007 – 2011 period in Queen Elizabeth Hospital. Epidemiological data of patients with emergency AAA repair were also reviewed.

**Results** 74 and 40 patients received elective EVAR and open repair of AAAs, respectively. 35 patients from each group were selected to create the propensity-matched cohorts. The average age of the patients was 72.4 years, with mean aneurysm diameter of 61.7 mm. The operative mortality was lower after EVAR than open repair (0% versus 5.7%,  $P = 0.151$ ). EVAR was associated with reduction in renal complication (2.9% versus 22.9%,  $P = 0.012$ ) with OR of 0.09 (95% CI, 0.01 – 0.80); and cardiac complication (14.3% versus 31.4%,  $P = 0.088$ ) with OR of 0.29 (95% CI, 0.08 – 1.01). Early survival advantage of EVAR was lost beyond 8 months, resulting in similar 1-year survival rate among the two groups at 91.4%.

46 patients underwent emergency AAA repair with average age of 77.9 years and mean aneurysm diameter of 70.0 mm. The 30-day operative mortality rate was 23.9% (32.4% after adjustment for rupture aneurysm repair). Peri-operative complications were common (cardiac: 60.9%, pulmonary: 45.7%, and renal: 56.5%). The 1-year survival rate was 52.2%.

**Conclusions** The findings confirm the peri-operative advantages of endovascular over open approach for elective AAA repair in the patients in this local centre. The survival curves convergence on subsequent follow-up was likely due to the “catch-up” of cardiovascular events among patients with EVAR. Peri-operative medical therapy optimization and post-operative close monitoring may lead to longer sustainment of the early benefits of EVAR. After all, long-term data are necessary to evaluate the relative merits of both procedures in this locality.

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## **CHARACTERISTICS OF PATIENTS READMITTED TO INTENSIVE CARE UNIT: A CASE-CONTROL STUDY**

Dr Tam Oi Yan, Department of Intensive Care, Pamela Youde Nethersole Eastern Hospital (May 2012 Critical Care Medicine Exit Assessment Exercise)

**Objective** To evaluate the pattern of readmission to intensive care unit (ICU) in a local hospital and identify patients at risk of unplanned ICU readmission.

**Design** A single-center nested case-control study in a mixed medical-surgical adult intensive care unit in a tertiary regional hospital

**Interventions** None

**Measurements and main results** Total 146 patients with unplanned readmission to the ICU of Pamela Youde Nethersole Eastern Hospital between 1 January 2008 and 30 June 2010 were studied and compared to 292 control patients who were discharged from ICU alive and never readmitted during the same hospitalization. Case and control were matched for age, gender and Acute Physiology and Chronic Health Evaluation (APACHE) IV risk of death. Patients' demographics parameters, physiological status and laboratory data were collected. Reason for readmission was determined from the medical record. During this 30-month period, the ICU readmission rate was 5.13% and the early readmission rate (defined as readmission within 72 hours of ICU discharge) was 2.32%. Mortality in readmitted patients was 30.8% compared to 6.8% in control ( $p < 0.001$ ). Mean hospital length of stay of readmitted group was 3 times of control ( $67.25 \pm 66.43$  Vs  $22.16 \pm 25.04$  days,  $p < 0.001$ ). Deterioration of respiratory condition was the commonest cause of ICU readmission. Based on tree analysis, post-operative patients with sepsis (adjusted  $p = 0.043$ ), non-post-operative septic patients with significant fluid gain 24 hours before ICU discharge (adjusted  $p = 0.013$ ) and non-septic patient presented with increased sputum quantity on ICU discharge (adjusted  $p = 0.012$ ) were significantly associated with ICU readmission. In logistic regression analysis, presence of pneumonia during index admission was associated with ICU readmission due to worsening of pre-existing condition (adjusted OR=5.638, 95% C.I. 2.260-14.069,  $p = 0.002$ ).

**Conclusion** The result highlighted the importance of good pulmonary care of critically ill patients. Incomplete resolution of respiratory conditions remained an important reason for potentially preventable ICU readmission. Attention to patient's fluid balance and sputum quantity before ICU discharge might help to prevent unplanned ICU readmission.

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## **BULLOUS PEMPHIGOID: A REVIEW OF PATIENTS MANAGED IN HOSPITAL AND ITS RISK FACTORS FOR POOR PROGNOSIS AND EARLY MORTALITY**

Dr Chang Mee, Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2012 Dermatology & Venereology Exit Assessment Exercise)

**Background** Bullous pemphigoid (BP) is the most common autoimmune blistering disease, especially in the elderly. Its severity and case-fatality has been under-estimated, and local data on treatment and prognosis are lacking.

**Objective** To evaluate the disease characteristics, comorbidities, in-patient treatment and morbidity, and to analyse the risk factors for flare-up and early mortality in Chinese patients that are hospitalised for BP.

**Methodology** A retrospective cohort of patients with newly-diagnosed BP managed in the Prince of Wales Hospital from January 1, 2002 to December 31, 2011 was analysed.

**Results** Of the 121 patients analysed, the mean age of onset was 79.9 years, with equal sex ratio. 81% had generalised BP. Most patients had poor premorbid status (78%) and multiple medical comorbidities (95%), with hypertension, cerebrovascular disease and diabetes being most common. First line treatment with systemic prednisolone 0.5mg/kg (mean 25.2mg, range 10-70, SD 8.1) was given to 91% of the patients. Adjuvant immunosuppressants were given to 13.2%. Treatment-related infective complications occurred in 66%. Flare-up occurred in 42% and was associated with delayed initial remission ( $p=0.017$ ), use of immunosuppressants ( $p=0.002$ ) and rapid tapering of steroid early in the course of disease ( $p<0.001$ ). The average duration of survival after diagnosis was 18 months (95% CI 10.8-25.2 months). First-year mortality rate was 41.5%. Using Cox regression for multivariate analysis, the risk factors associated with early mortality after hospitalisation were, bed-bound status (HR 2.35,  $p=0.015$ ), presence of malignancy (HR 5.31,  $p<0.001$ ), anaemia (HR 1.65,  $p=0.044$ ) and hypoalbuminaemia (HR 4.61,  $p=0.037$ ). However, patients with use of immunosuppressants (HR 0.2,  $p=0.037$ ) or had history of flare-up (HR 0.58,  $p=0.029$ ) seemed to fare better against early mortality.

**Conclusion** Patients with BP admitted to hospital represented those suffering on the severe spectrum of disease, with frail physical status, multiple comorbidities, generalised involvement and tendency for flare-up. There is a significant morbidity and case fatality especially in the first year. Patients with poor prognostic factors (bed-bound status, anaemic, hypoalbuminaemic, with malignancy) should be monitored closely. Considerations in the early use of immunosuppressants and less aggressive use of systemic steroid even at the expense of possible flare-up may be beneficial.

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## **EFFICACY OF 0.1% TACROLIMUS OINTMENT ON VITILIGO AMONG CHINESE PATIENTS**

Dr Chu Cheuk Yan Elsa, Social Hygiene Service, Department of Health (June 2012 Dermatology & Venereology Exit Assessment Exercise)

**Background** Vitiligo is a depigmentary skin disorder which is disfiguring and can cause significant psychological distress. Topical corticosteroid is the most commonly prescribed treatment, but it is not often effective and prolonged use may lead to skin atrophy and other side effects. Therefore, there are needs for searching other topical treatment options for vitiligo. Previous studies showed that topical tacrolimus can induce repigmentation in patients with vitiligo with no severe adverse effect reported.

**Objective** To assess the efficacy of topical tacrolimus ointment in treating patients with vitiligo who failed to respond to topical steroid.

**Methods** A prospective study was performed in 30 patients with vitiligo who do not respond to topical steroid. Two lesions were selected from each patients, one lesion was selected as target lesion and was treated with 0.1% tacrolimus ointment for 24 weeks and another lesion was selected as control area with no active treatment during the study period. Percentage of repigmentation and degree of repigmentation in term of visual analogue scale were documented.

**Result** Eight (26.7%) patients showed various degree of repigmentation at Week 24. Excellent responses were documented in two patients with up to 83-88% repigmentation. Fourteen (46.7%) patients experienced burning sensation, redness of skin and itchiness initially after application of tacrolimus ointment but soon resolved without significant sequelae.

**Conclusion** Topical tacrolimus ointment has the potential to induce repigmentation in vitiligo patients who failed to respond to topical steroid. It is well-tolerated with no significant adverse effect reported during the study period.

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## **TYPE 2 DIABETES AND DEPRESSION**

Dr Ting Zhao Wei, Department of Medicine & Therapeutics, Prince of Wales Hospital (May 2012 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

Depression and type 2 diabetes are classical examples of complex diseases with rising in prevalence worldwide. It is now recognized that depression is a common comorbidity in type 2 diabetic patients. It associates with poorer diabetes control, more complications, reduced work productivity and increased health care use. However majority of the data came from the Caucasians. In this dissertation, two studies were reported. The first study focused on the prevalence and correlates of depression and diabetes distress in type 2 diabetic patients. 189 type 2 diabetic patients were recruited from a teaching hospital; depression and diabetes distress were assessed by self-administered questionnaires. 10% of the subjects had depression and more than one third had diabetes distress. Depression was associated with obesity, emotional distress and lower quality of life. Furthermore, patients with concomitant depression and diabetes distress had poorer glycaemic control and more centrally obese. As presented in second study, which data were collected from the Hong Kong Diabetes Registry, after a mean follow up of 7 years, depression was also associated with 2-3 fold increased risk of incident cardiovascular disease especially stroke. Given the high prevalence of depression and associated poorer clinical outcomes, screening for depression was suggested as part of the standard care in type 2 diabetes.

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## **SKIN AUTOFLUORESCENCE AS A MARKER OF ADVANCED GLYCATION ENDPRODUCT ACCUMULATION IN HONG KONG CHINESE AND ITS ASSOCIATION WITH MICROVASCULAR COMPLICATIONS IN TYPE 2 DIABETES**

Dr Yuen Mae Ann Michele, Department of Medicine, Queen Mary Hospital (May 2012 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

**Introduction** Accumulation of advanced glycation endproducts (AGEs) is implicated in aging and the pathogenesis of diabetic complications, and is quantifiable by skin autofluorescence (AF) using the AGE Reader™ (DiagnOptics BV, Netherlands).

**Objectives** This cross-sectional study aimed to determine skin AF among healthy and diabetic subjects and to investigate the relationships between skin AF and microvascular complications in type 2 diabetic subjects.

**Methods** Subjects were recruited from the on-going population-based Hong Kong Cardiovascular Risk Factor Prevalence Study (CRISPS) 4 and the Diabetic Complication Assessment Program (DCAP), Queen Mary Hospital. Skin AF was measured and anthropometric and biochemical data including body height and weight, blood pressure, fasting glucose and lipids, and hemoglobin A1c were collected. Statistical analysis was performed with SPSS 19.0 using Pearson's correlation, chi-square test, one-way ANOVA, Kruskal-Wallis test, multiple linear regression, multiple logistic regressions, and receiver-operating characteristic (ROC) curves, as appropriate. The protocols were approved by the HKU/HKWC Ethics Committee and subjects were studied after informed consent.

**Results** Skin AF was measured in 457 subjects (235 male, 222 female; 57.1±10.2 years) from the CRISPS-4 cohort and in 322 type 2 diabetic subjects (192 male, 130 female, 63.9±11.0 years) from the DCAP cohort. Skin AF increased with age and was independently associated with the presence of nephropathy and neuropathy. The optimal AF cut-off value for discrimination was 2.263 AU on ROC analysis.

**Conclusion** The reference range of skin AF was determined for our population and the association between skin AF has been demonstrated. The AGE Reader<sup>TM</sup> might serve as a simple and non-invasive method to stratify microvascular risks of diabetic subjects.

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## **ASSESSMENT OF LIVER FIBROSIS WITH TRANSIENT ELASTOGRAPHY (TE) AND NON-INVASIVE CLINICAL FORMULAE IN PATIENTS TREATED WITH METHOTREXATE FOR PSORIATIC ARTHROPATHY AND RHEUMATOID ARTHRITIS**

Dr Chan Wai Chung, Department of Medicine and Geriatrics, Kwong Wah Hospital (June 2012 Gastroenterology and Hepatology Exit Assessment Exercise)

**Background** Methotrexate is often used in the treatment of psoriasis and rheumatoid arthritis. There are ongoing controversies in the prevalence and severity of its hepatotoxic side-effects. Risk factors which have been identified to be associated with methotrexate hepatotoxicity include psoriasis, type 2 diabetes, obesity, excessive alcohol use and total cumulative dose. Liver biopsy remains the 'gold standard' for liver fibrosis evaluation. However, it is invasive and many patients do not accept its inherent risks. On the other hand, there are evolving evidence on the use of non-invasive methods in assessing methotrexate hepatotoxicity.

**Methods** In this prospective study, patients with chronic viral hepatitis B and C were excluded. Transient elastography (FibroScan) and three clinical prediction formulae: AST to platelet ratio index (APRI), AST to ALT ratio (AST/ALT) and FIB4 were used to evaluate liver fibrosis in psoriasis and rheumatoid arthritis patients on methotrexate. The effect of different risk factors in causing significant liver fibrosis (defined as FibroScan  $\geq 7.9$ kPa) and determinants for liver stiffness were studied. Histological features of liver biopsy in patients with significant liver fibrosis were reported.

**Results** A total of 128 subjects were included in this study. The prevalence of significant fibrosis by FibroScan  $\geq 7.9$  kPa, APRI  $> 0.5$ , AST/ALT  $> 0.8$  and FIB4  $> 1.3$  were 4.9%, 7.8%, 85.2% and 35.2% respectively. Clinical prediction formulae did not show a positive correlation with FibroScan value. In evaluating the six patients with FibroScan  $\geq 7.9$  kPa, all patients had cumulative dose of methotrexate more than 1500mg, but on multivariate analysis, hypertension was the only independent risk factor associated with significant liver fibrosis (OR = 11.02, 95% CI: 1.130-107.503,  $p = 0.039$ ). Determinants of liver stiffness were age ( $\beta = 0.058$ ;  $p < 0.001$ ), psoriasis ( $\beta = 0.947$ ;  $p = 0.022$ ), methotrexate regime adjusted due to abnormal liver biochemistries ( $\beta = 1.188$ ,  $p = 0.003$ ) and insulin resistance ( $\beta = 0.815$ ;  $p = 0.043$ ). Liver biopsy was performed on 2 patients with FibroScan  $\geq 7.9$  kPa with findings of mild peri-portal fibrosis and mild steatosis (Roenigk grade IIIa).

**Conclusion** Significant liver fibrosis and cirrhosis are not common in methotrexate-treated patients. The cumulative dose of methotrexate is probably not associated with significant fibrosis but this requires further elucidation with a larger sample. Patients with risk factors should be monitored closely with non-invasive methods with good performance in diagnosing significant fibrosis.

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## **OVERVIEW OF CROHN'S DISEASE IN THE HONG KONG CHINESE POPULATION: A HOSPITAL-BASED STUDY**

Dr Lam Sing, Department of Medicine, Queen Elizabeth Hospital (June 2012 Gastroenterology and Hepatology Exit Assessment Exercise)

**Background** Crohn's disease (CD) is a chronic and relapsing disorder characterized by inflammation destruction of any part and any layer of the gastrointestinal tract, leading to substantial adverse impacts on health, quality of life and medical costs. Consistent clinical data and trials on the treatment of CD regarding Hong Kong Chinese population are still limited as it remains an uncommon disease in our locality.

**Objectives** The aim of the study was to evaluate the demographics, epidemiology, treatment modalities and clinical outcomes of local Chinese CD patients in two Hong Kong regional hospitals.

**Methods** All Chinese CD patients attended the gastroenterology clinics in Queen Elizabeth Hospital (QEH) and Pamela Youde Nethersole Eastern Hospital (PYNEH) between January 2001 and December 2010 were recruited for study. Their clinical characteristics and disease outcomes were retrospectively analyzed. Patients were classified according to the Montreal classification. Factors associated with steroid dependency and bowel resection were identified by multivariate analysis. The cumulative probabilities of clinical outcomes including primary bowel resection and mortality were calculated.

**Results** A total of 125 Chinese CD patients were recruited. 93 cases were diagnosed during the study period. The average incidence rate from 2000 to 2010 was 0.84/100,000 and there was no particular trend observed. The median follow-up period was 68 months. 72 patients (57.6%) were male (M:F=1.3:1) and the median age at diagnosis was 29 years (range 10-84). Most of the studied patients had ileocolonic CD (63.2%) and non-stricturing non-penetrating disease behavior (47.2%).



35 patients (28%) had upper gastrointestinal tract (L4) involvement and were associated with higher complication rates ( $p=0.000$ ). Steroid dependency was associated with stricturing (OR: 8.11, 95%CI 1.73-37.84,  $p=0.008$ ) or penetrating (OR 6.66, 95%CI 1.46-30.28,  $p=0.014$ ) disease behavior. Patients with colonic CD were less likely to have bowel resection (OR: 0.13, 95%CI 0.03-0.70,  $p=0.018$ ) while penetrating disease behavior was associated with a higher chance (OR: 4.75, 95%CI 1.86-12.15,  $p=0.001$ ). The cumulative probability of bowel resection was 39.5% and the cumulative survival rate was 95.2% at 10 years after diagnosis.

**Conclusion** CD is an uncommon disease in Hong Kong Chinese population and clinical characteristics varies from the western countries. Patients with factors associated with worse outcome including stricturing or penetrating disease behavior, non-colonic disease location and presence of upper gastrointestinal tract involvement should be considered for an early aggressive treatment.

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## **SPONTANEOUS BACTERIAL PERITONITIS IN CIRRHOSIS: A RETROSPECTIVE STUDY OF PREDICTORS FOR THE 30-DAYS MORTALITY IN A LOCAL CENTRE OF HONG KONG**

Dr Mak Lai Yee, Department of Medicine, North District Hospital (June 2012 Gastroenterology and Hepatology Exit Assessment Exercise)

**Background** Spontaneous bacterial peritonitis is a common and severe infection among cirrhotic patients. Many different studies were performed throughout recent two decades trying to identify the predictors of mortality but a consensus could not be drawn yet. Besides, local data on the natural history of the disease are limited.

**Objective** This retrospective study intended to find the independent predictors of 30 days mortality among the local patients who suffered from spontaneous bacterial peritonitis in a single centre of Hong Kong.

**Methods** From January 2000 to October 2010, records of cirrhotic patients who were admitted to North District Hospital with the diagnosis of spontaneous bacterial peritonitis were reviewed retrospectively. The diagnosis was defined by polymorphonuclear cell count greater than or equal to 250/mm<sup>3</sup> in ascitic fluid with or without a positive bacterial culture, in the absence of evidence suggesting of secondary peritonitis. Predictors of mortality were identified through logistic regression analysis.

**Results** 132 cirrhotic patients with 161 episodes of confirmed spontaneous bacterial peritonitis were identified. Their mean age was 65.6 with male predominant (68.9%). All patients were categorized to be Child-Turcotte-Pugh (CTP) class B (33.3%) and C (66.7%). Mean score of Model for End-stage Liver Disease (MELD) was 20.7. The 30 days mortality rate was 51% and the causes of death were: liver failure (41.2%), spontaneous bacterial peritonitis with sepsis (38.3%), hepatocellular carcinoma (16.1%), variceal bleeding (2.9%) and pneumonia (1.5%). Independent predictors of mortality were: background hepatocellular carcinoma ( $p=0.006$ , OR 9.95 with a 95% CI 1.72-54.06), higher CTP Class with class C versus B ( $p=0.025$ , OR 5.93 with a 95% CI 1.25-28.13), MELD score higher than 20 ( $p=0.035$ , OR 5.96 with a 95% CI 1.36-31.42), and renal dysfunction ( $p=0.029$ , OR 4.93 with a 95% CI 1.15- 13.85).

**Conclusions** Cirrhotic patients suffered from spontaneous bacterial peritonitis remained to have high mortality. Patients with background hepatocellular carcinoma, CTP class C, MELD score higher than 20 and renal dysfunction were associated with short term mortality. In high risk patients, practice of preventing renal dysfunction by intravenous albumin and broadening of empirical antibiotic are potentially modifiable and may improve prognosis. After resolution of spontaneous bacterial peritonitis, the patient should be given antibiotic prophylaxis and evaluated for orthotopic liver transplantation.

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## **CHARACTERISTICS AND OUTCOME OF INCIDENTAL PANCREATIC CYSTS LESS THAN 3CM - EXPERIENCE FROM A REGIONAL HOSPITAL IN HONG KONG**

Dr Ng Sui Cheung, Department of Medicine and Geriatrics, Tuen Mun Hospital (June 2012 Gastroenterology and Hepatology Exit Assessment Exercise)

**Background** With the widespread use of cross-sectional imaging and improvement in imaging sensitivity, incidentally discovered pancreatic cysts are being identified more frequently. Some incidental pancreatic cysts would have malignant potential and will progress over time. However, the natural history of incidental pancreatic cyst is relatively unknown and the optimal imaging surveillance interval for this low risk lesion is not well defined.

**Objectives** 1) To determine the natural history of incidental pancreatic cysts with initial size less than 3cm and to determine the factors associated with cyst growth during imaging surveillance. 2) To evaluate a safe and optimal imaging surveillance interval based on observational result.

**Methodology and analysis** This is a retrospective study examining all patients with incidental pancreatic cysts detected by computed-tomography (CT) imaging from January 2000 to December 2010. A computerized search through the radiology database which contained all the radiological examinations and reports was performed. Patients with incidental, asymptomatic pancreatic cysts less than 3cm in size at presentation with follow-up interval more than 3 months were included for analysis. Patients with history of pancreatitis, pancreatic pseudocyst and systemic cystic disease were excluded. The demographic, biochemical data and radiological features of pancreatic cysts at presentation were reviewed. Study outcomes include increased in cyst size, development of new cystic features, development of symptoms related to pancreatic cyst, malignant transformation and death related to cystic neoplasm of pancreas.

**Results** Ninety-nine patients with asymptomatic, incidental pancreatic cyst less than 3cm were identified. The mean age was 66. The male to female ratio was 1:1. Over 80% of patients had one or more medical comorbidities and 50% of them had underlying non-pancreatic malignancy. The most common indication for imaging that detected incidental pancreatic cyst was staging for newly diagnosed malignancy (25.3%). Most patients (89.9%) had normal liver function test on presentation. The initial mean cyst size was 14.19mm, with 66% located over pancreatic body or tail region. Septation was present in nine patients (9.1%) while no patients had mural nodule. Over a mean follow-up duration of 22.2 months, eighty-two (82.8%) patients with pancreatic cysts did not show any significant growth, development of new cystic

features or new symptom related to pancreatic cysts. By using multivariate logistic regression analysis, presence of septation (OR 5.291, 95% CI 1.076-25.6,  $p=0.040$ ) and longer radiological follow-up duration (OR 1.054, 95% CI 1.023-1.086,  $p=0.001$ ) were independently associated with cyst progression. Among seventeen (17.2%) patients with pancreatic cysts showed significant growth, malignant intraductal papillary mucinous neoplasm (IPMN) with metastasis was diagnosed in one (1.0%) patient after 54 months follow-up evaluation. The remaining cases were either within surgically resectable stage or clinically benign lesions. The majority of cyst growth occurred after 18 months from baseline evaluation.

Thirty eight (38.4%) patients died during the study period. Only 1 (1.0%) patient died of malignant cystic neoplasm of pancreas after 54 months of follow-up evaluation. The remaining patients died of causes unrelated to pancreatic disease.

**Conclusions** Most incidental pancreatic cysts less than 3cm did not have significant growth during follow-up. Mortality rate related to pancreatic cystic neoplasm was 1% in our study population. It is safe to adopt a conservative approach with regular imaging surveillance to patients with incidental pancreatic cyst less than 3cm. The interval of follow-up imaging at 12 months after baseline evaluation is a safe and reasonable duration, especially for cystic lesions without septation.

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## **A REVIEW OF TEN YEARS EXPERIENCE OF LIVER CANCER TREATMENT WITH TRANSARTERIAL CHEMOEMBOLIZATION IN A DISTRICT HOSPITAL**

Dr Say Chun Yu, Department of Medicine and Geriatrics, Caritas Medical Centre (June 2012 Gastroenterology and Hepatology Exit Assessment Exercise)

**Background** Transarterial chemoembolization (TACE) was widely used for the treatment of unresectable hepatocellular carcinoma (HCC). Recent evidence suggested that supplementing TACE with percutaneous ethanol injection (PEI) may improve survival.

**Objective** To determine the survival of patients treated with TACE, and to identify the factors associated with survival and TACE complication.

**Methods** 153 unresectable HCC patients treated with TACE (106 patients received TACE alone, 47 patients received TACE and supplementary PEI) during a 10 years period in Caritas Medical Centre were studied retrospectively. Survival was estimated by Kaplan-Meier method and compared by the log-rank test. Significant variables identified by univariate analysis were subjected to multivariate analysis by Cox proportional hazard model. Prognostic factors were evaluated.

**Results** 802 sessions of TACE were performed for 153 patients. The median survival was 16 months. The one-, three- and five-years survival rates were 62%, 14% and 7%. In subgroup analysis, patients receiving TACE with supplementary PEI had higher one-, three- and five-years survival rate of 87%, 19% and 13% respectively ( $p = 0.002$ ). Multivariate analysis showed that HCC rupture before TACE ( $p < 0.001$ ), AFP  $> 400$  ng/ml ( $p < 0.001$ ), ALT  $> 80$  U/L ( $p = 0.006$ ) were adversely associated with survival while TACE with supplementary PEI was associated with longer survival ( $p=0.002$ ). The 30-day mortality was 7% (11 out of 153 patients). 16 patients (10.5%) developed post-TACE acute liver decompensation. Multivariate

analysis revealed baseline ALT ( $p = 0.028$ ), Child-Pugh B ( $p = 0.013$ ) and first TACE ( $p = 0.001$ ) were independent risk factors associated with post-TACE acute liver decompensation.

**Conclusion** TACE was an effective palliative treatment for patients with unresectable HCC. Patients treated with TACE and supplementary PEI had a longer survival than those treated with TACE alone. Post-TACE acute liver decompensation was the commonest complication. Baseline ALT, Child-Pugh B and first TACE were independent predictors of such complication.

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## **GASTRO-OESOPHAGEAL REFLUX DISEASE - A DECADE LATER: SIGNIFICANT DIRECT AND INDIRECT ECONOMIC COSTS IN AN ETHNIC CHINESE POPULATION**

Dr Tan Ping Yi Victoria, Department of Medicine, Queen Mary Hospital (June 2012 Gastroenterology & Hepatology Exit Assessment Exercise)

**Background** Population based data tracking the healthcare utilisation of gastro-oesophageal reflux disease in Chinese subjects is scant. The healthcare utilisation in patients with gastro-oesophageal reflux disease was studied. Risk factors associated with healthcare utilization and types of healthcare access were identified. Rates of absenteeism and presenteeism were also examined.

**Method** 3360 Hong Kong ethnic Chinese subjects were polled in a telephone survey using a validated gastro-oesophageal reflux disease questionnaire, the Hospital Anxiety and Depression Scale, and the Validated Chinese SF-12.

**Results** A total of 2130 subjects (63.1% female, mean age 48.1 +/- 18.2 years) completed the survey (response rate 62.8%). The annual, monthly and weekly prevalence rates of GERD were 36.5%, 12.2% and 4.2% respectively. This represents a statistical increase in prevalence over the last decade when compared to results from 2002. Annual rates of gastro-esophageal reflux as measured by the validated Chinese gastro-esophageal reflux questionnaire (cGERDQ) was 20.5%. Patients with gastro-esophageal reflux utilised healthcare resources more frequently with 48.7% accessing either ambulatory care consultation, the accident and emergency department, requiring inpatient admission or purchasing prescription medication (OR 1.85, 95% CI, 1.6-2.1) compared to those who had no symptoms of gastro-esophageal reflux. Severity and frequency of heartburn, acid regurgitation and a feeling of acidity in the epigastrium were independent risk factors for health care utilization in subjects with survey diagnosed gastro-esophageal reflux as were female gender, globus, hoarse voice, anxiety and social morbidity. Finally, subjects with gastro-esophageal reflux were found to have proportionally more absenteeism and presenteeism than subjects without.

**Conclusion** Gastro-esophageal reflux is associated with significant direct and indirect economic costs. The scale of the likely cost of healthcare for patients with gastro-esophageal reflux in the ethnic Chinese is significant. Moreover as the prevalence of gastro-esophageal reflux has increased over time, the costs attached to managing gastro-esophageal reflux are likely to have escalated.

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## **MENINGITIS OF ELDERLY IN HONG KONG**

Dr Kwok Shun Lai, Department of Medicine, Queen Elizabeth Hospital (June 2012 Geriatric Medicine Exit Assessment Exercise)

**Background** Meningitis is a medical emergency associated with significant morbidity and mortality. However, experience in elderly are limited

**Aim** to identify unique clinical features and to assess epidemiology and outcome of elderly suffered from meningitis of all cause

**Method** A retrospective review of 35 elderly patients of aged 60 above suffered from meningitis. Comparison with 36 younger patient were made to indentify unique feature in elderly

**Results** Meningitis in elderly were predominately bacterial or tuberculous in nature and they account for 60% of cases (37.1% and 22.9% respectively). Poor outcome was observed in 62.7% of patients and they have longer average length of stay (median 46, inter-quartile range 22 - 64) and rate of institutionalization (30.0%). Elderly are less likely to present with headache (31.4%), present with at least 2 out of 4 typical features (48.6%, and achieve good outcome (35.3%). They are more likely to present with decreased consciousness (60.0%), have delay in diagnosis (65.7%) and have inpatient mortality (42.1%). Complications were also more common among elderly.

**Conclusion** Meningitis in elderly is associated with poor outcome. Prompt diagnosis and initiation of treatment may potentially improve the outcome and reduce the burden on medical and social resources of the community.

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## **A COHORT STUDY ON THE INFECTIVE ETIOLOGY OF OLDER PATIENTS HOSPITALIZED FOR COMMUNITY ACQUIRED PNEUMONIA**

Dr Ma Hon Ming, Department of Medicine and Geriatrics, Shatin Hospital (June 2012 Geriatric Medicine Exit Assessment Exercise)

**Background** Empirical use of broad-spectrum antibiotics is advocated for older patients at high risk of multidrug-resistant (MDR) bacterial infection, in particular nursing home residents. Bacterial and viral pneumonia are treated differently so earlier identification of viral pneumonia helps clinicians on selection of appropriate antimicrobials.

**Objective** This study described etiological diagnoses of CAP in older patients and determined independent predictors of viral pneumonia. It also examined the relationship between establishing infective etiology and in-hospital mortality.

**Patients and Methods** A prospective cohort study was conducted in the medical unit of a university teaching hospital from October 2009 to September 2010. The study subjects were older patients hospitalized for CAP confirmed by chest radiographs.

**Results** A total of 488 patients were included, of whom 282 (38.6%) were male and 116 (23.8%) were living in nursing home. The mean age was  $80.0 \pm 7.9$  years. Infective causes were identified in 137 (28.1%) patients. Bacterial, viral and mixed infections were detected in 86 (17.6%), 41 (8.4%) and 10 (2.0%) patients respectively. Nursing home-acquired pneumonia (NHAP) was most commonly caused by viral infection (55.9%). Bacterial infection was the most frequent (69.9%) cause of CAP in older patients living in the community. MDR bacterial infection was found in six patients. The strongest predictor of viral pneumonia was nursing home residence (OR 7.430), followed by female gender (OR 3.475), confusion (OR 3.858) and serum albumin level (OR 1.197). No significant differences in in-hospital mortality were found in patients with and without etiological diagnosis established (14.6% v.s. 11.7%,  $P=0.381$ ) as well as in those with viral and bacterial pneumonia (17.1% v.s. 12.8%,  $P=0.518$ ).

**Conclusion** A great majority of CAP has unknown infective etiology. The empirical treatment of NHAP with broad-spectrum antibiotics should be reviewed because MDR bacterial infection is rare and most of the NHAP have unknown etiology, possibly caused by unidentified viral infection or aspiration.

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## **CEREBROSPINAL FLUID (CSF) BIOMARKERS IN ALZHEIMER'S DISEASE: A SYSTEMATIC REVIEW AND A PILOT LOCAL STUDY**

Dr Shea Yat Fung, Department of Medicine, Queen Mary Hospital, Hong Kong (June 2012 Geriatric Medicine Exit Assessment Exercise)

**Objective** To review the value of CSF biomarkers in the diagnosis of Alzheimer's disease (AD) and to evaluate the feasibility of using CSF biomarkers in the diagnosis AD patients in a local pilot study.

**Methodology** In the systematic review, Medline, PubMed, and Cochrane Library were searched for internationally published English language journals, using the terms 'biomarkers', 'CSF', 'cerebrospinal fluid', 'Alzheimer's disease', 'dementia'. We identified 298 articles for further review. 128 articles were excluded and 170 articles into our review. In the cross-sectional study, we recruited both AD patients and non-AD subjects. AD subjects were diagnosed in accordance to the NINCDS-ADRDA criteria, and non-AD control subjects did not fulfil these AD criteria. The research protocol was approved by the HKU/HA HKW IRB, and written informed consents were obtained from all subjects. CSF samples were obtained by lumbar punctures, and were stored at  $-80$  oC until assay. The three CSF biomarkers ( $A\beta$ -42, tau and p-tau 181) were assayed by ELISA, using commercial kits (INNOTEST® hTau Ag, INNOTEST® PHOSPHO-TAU (181P), INNOTEST®  $\beta$ -AMYLOID1-42; supplied by Innogenetics NV, Belgium). The levels of the CSF biomarkers were compared between the AD and non-AD, using Mann-Whitney U test. Multivariate logistic regression of each biomarker (adjusted for age and gender) was then performed.

**Results** From the systematic review, there have been evidences supporting the usefulness of CSF biomarkers i.e.  $A\beta$ -42, t-tau & p-tau 181 and their ratios in the accurate diagnosis of AD. Current researches are now focusing on the usage of CSF biomarkers in identifying the prodromal or pre-symptomatic AD subjects which will

be good candidates for future drug trial. Quality assurance and standardization in CSF biomarkers processing and measurements are of great importance in the future for comparison of results between centers. For the cross sectional study, among 34 subjects recruited, 19 had AD and 15 had non-AD (5 cognitively normal and 10 non-AD dementia). The mean age of AD and non-AD subjects were 81.3+/-8.3 and 76.3+/-7.8 years ( $p=0.088$ ), respectively. The intra-assay coefficient of variation (CV %) were 3.2%, 1.4% and 7.6% for t-tau, p-tau 181 and A $\beta$ -42, respectively. In bivariate analyses, there were no significant differences in the t-tau and p-tau levels between the two groups. For A $\beta$ -42, a non-significant trend was present ( $p = 0.06$ ), with a lower median level in the AD versus non-AD groups (354+/-197 pg/ml versus 463+/-152 pg/ml). There were significant differences in both the median CSF A $\beta$ -42/t-tau ratio (3.6+/-2.7 versus 6.4+/-4.6;  $p = 0.03$ ) and median A $\beta$ -42/p-tau ratio (8.4+/-4.1 & 13.8+/-7.1;  $p = 0.01$ ) between AD patients and non-AD patients. After adjustment for age and gender, the A $\beta$ -42/p-tau ratio was an independent predictor of AD ( $p=0.02$ )

**Conclusion** We conclude that the CSF A $\beta$ -42/p-tau ratio is a potentially useful diagnostic biomarker of AD in our Chinese population. In the future, a larger sample size of Chinese patients including more normal subjects, subjects with MCI or other forms of dementia is needed to indentify the local cut-off values of biomarkers in Chinese patients for clinical diagnosis in daily practice and in new clinical trials for new disease modifying agents these three biomarkers will also be useful as surrogate outcome measures. Standardization of the CSF processing and measurements is recommended to facilitate comparisons of these CSF biomarkers results between laboratories worldwide.

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## **OUTCOMES IN OLDER PEOPLE WITH STAGE 5 CHRONIC KIDNEY DISEASE – COMPARISON OF PERITONEAL DIALYSIS AND CONSERVATIVE MANAGEMENT**

Dr Shum Chun Keung, Department of Medicine, Queen Elizabeth Hospital (June 2012 Geriatric Medicine Exit Assessment Exercise)

**Background** Older people with stage 5 chronic kidney disease (CKD) are increasing. The benefits of dialysis for older people who are dependent and have multiple comorbidities are questioned when compared with conservative management. Previous overseas studies mainly focused on survival outcomes in older people receiving predominantly hemodialysis. Hong Kong has a peritoneal dialysis (PD)-first policy and if dialyze, most older people receive PD unless contraindicated.

**Objectives** The aims of this study are: (1) to compare the survival and non-survival outcomes in older people with stage 5 CKD receiving PD versus conservative management, and (2) to investigate the effect of age and other factors on the outcomes of PD

**Method** This was a retrospective cohort study in older people (age  $\geq 65$  years) with stage 5 CKD receiving PD (PD group) compared with conservative management (conservative group). Baseline characteristics (demographics, clinical data, functional aspects, socio-economic factors and laboratory parameters) were collected and study outcomes (patient survival, all-cause and emergency hospitalization rates and hospital days, unplanned readmission rates, institutionalization, PD complications, palliative and end-of-life care) were recorded.

**Results** 199 eligible participants (mean age standard deviation: 73.8 5.4 years) were included into the study (157 in PD group and 42 in conservative group). PD group had a longer survival [median (inter-quartile ranges): 3.75 (2.49-5.25) vs. 2.35 (1.13-3.71) years,  $p < 0.001$ ], lower emergency hospitalization rates [1.63 (0.82-2.92) vs. 3.51 (1.06-7.16) per person-year,  $p = 0.005$ ] and hospital days [16.17 (6.29-43.32) vs. 38.01 (6.75-76.56) days per person-year,  $p = 0.028$ ], and no increased risk of institutionalization when compared with conservative group. There was no significant difference in PD complications between “younger” (age 65-74 years) and “older” (age  $\geq 75$  years) participants receiving PD. Age [hazard ratio (HR) for 1 year increase 1.057, 95% confidence interval (CI) 1.015-1.100], modified Charlson’s Comorbidity Index (mCCI) (HR 1.355, 95% CI 1.179-1.557), impairment in basic activities of daily living (BADL) (HR 2.106, 95% CI 1.282-3.460) and emergency dialysis (HR 1.672, 95% CI 1.105-2.530) were independent predictors of mortality in the PD group. However, for older participants (age  $\geq 70$  years) with high comorbidity or BADL impairment, PD offered no significant survival advantage over conservative management. Moreover, conservative group was more likely to receive renal palliative care [15.4% vs. 0%,  $p < 0.001$ ] and less likely to receive bothersome interventions [47.2% vs. 85.9%,  $p < 0.001$ ] during end-of-life period.

**Conclusion** Peritoneal dialysis is a viable treatment option in a selected group of older people with stage 5 CKD. Age alone should not preclude dialysis. However, in those who are very old with high comorbidity and functional impairment, conservative management is a reasonable alternative. This study can provide some guidance to prognosticate and facilitate shared decision making to commence dialysis in older people.

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## **REVIEWING AN END OF LIFE CARE PROGRAM FROM A GERIATRIC PERSPECTIVE: DID WE ADHERE TO GUIDELINES AND PROTOCOLS?**

Dr Tang Wing Han May, Department of Medicine and Geriatrics, Shatin Hospital (June 2012 Geriatric Medicine Exit Assessment Exercise)

**Introduction** The use of antibiotics, artificial nutrition and hydration, mechanical ventilation, the appropriateness of repeated hospitalizations and ‘active’ treatment of life-threatening conditions are issues that medical staffs have to face day by day when dealing with patients. However, when treating terminally ill older patients, whether to employ the above or not usually depends on physicians’ own perception of quality of life or on the principle of ‘sanctity of life’, and whether the treatment or investigations will be beneficial or burdensome to the patients. The definition of appropriate management of older patients with end-stage diseases is still debatable; therefore, sometimes physician may choose to do less for dying older patients to avoid futile treatments.<sup>1,2</sup> In 1983, an observational study was done by Mills and his colleagues about the dying of patients in a hospital in Scotland. They described a disturbing scene of neglect and poor care of dying patients in busy acute medical wards. “Many of the medical staff tip-toeing past the closed curtains of a patient about to die in the belief that there was ‘nothing more to be done’ and that the patient was best left alone.”<sup>3</sup> Unfortunately, this scene is still present in our daily practices. Despite general satisfaction with the treatment of medical problems, there is evidence of disappointment from patients and their families about the end of life care particularly with regard to symptoms control, and a failure to meet their physical and psychosocial needs in hospital in their final stage of life.<sup>4,5</sup> Therefore, education of health-care



professionals in promoting 'dying well' and the development of integrated end-of-life (EOL) care pathways for patients with end-stage diseases should be emphasized. 3 To ensuring that frail older patients can receive good quality of care in both acute and convalescent hospitals in their terminal stage of life is what a geriatrician must achieve. It includes offering adequate pain and symptoms control, respecting the older patients' dignity with a sense of control, avoiding inappropriate prolongation of their dying phase, relieving burden and strengthening rapport with the relatives.<sup>6,7</sup>

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## **A RETROSPECTIVE REVIEW IN THROMBOTIC THROMBOCYTOPENIC PURPURA**

Dr Kwong Hoi Yi Joyce, Department of Medicine, Queen Elizabeth Hospital (May 2012 Haematology & Haematological Oncology Exit Assessment Exercise)

**Background** Thrombotic thrombocytopenic purpura (TTP), is a thrombotic microangiopathic disorder, which carries a high mortality rate if left untreated. Most cases of acquired TTP arise from inhibition of ADAMTS13, a metalloprotease responsible for cleaving the von Willebrand factor. Although plasma exchange has greatly improved the outcome, treatment for refractory TTP is difficult and a wide range of additional approaches has been used, including immunosuppressive agents and monoclonal anti-CD20 antibodies.

**Objectives** This study aimed to evaluate any possible factors that may predict mortality and risk of relapse of patients with TTP. Clinical features and treatment regimen were also described.

**Method** Case records of all patients diagnosed TTP presenting to our local hospitals from January 2000 to June 2011 were retrospectively reviewed. Their demographic characteristics, clinical features, treatment regimen and clinical outcomes were analyzed.

**Results** Fifty-five patients were included in the study. Plasma exchange therapy was performed in 53 (96.4%) patients, with 40 (72.7%) patients achieved remission. Fifteen (27.3%) patients died during the acute episode of TTP. Multivariate logistic regression model showed that neurological abnormalities at presentation was predictive of the initial hospitalisation mortality of TTP. Also the mean of the presenting creatinine of the deceased group was higher than the survivor group ( $268 \pm 185$  vs  $183 \pm 134$ ,  $p = 0.01$ ) during the acute episode. The time lapse between diagnosis and treatment appeared to be longer in the deceased group when compared with the survivor group ( $20.3 \pm 28.4$  hours vs  $11.6 \pm 19.4$  hours), but it was not statistically significant ( $p = 0.27$ ). After a median follow-up of 35 months (range: 2 - 124 months), 7 of 40 (17.5%) patients who attained remission after initial treatment suffered from relapse of TTP.

**Conclusion** Plasma exchange remains the mainstay of treatment for TTP. In patients with neurological abnormalities at presentation and markedly impaired renal function, a more intensive course of treatment might be considered. Further studies in identifying risk factors for refractory/relapsing TTP is beneficial.

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## **A RETROSPECTIVE STUDY ON DISEASE CHARACTERISTICS AND**

## **TREATMENT OUTCOME IN HUMAN IMMUNODEFICIENCY VIRUS-ASSOCIATED LYMPHOMA**

Dr. Luk Tsan Hei, Department of Medicine, Queen Elizabeth Hospital (May 2012 Haematology & Haematological Oncology Exit Assessment Exercise)

Human immunodeficiency virus (HIV) infection resulted in immune dysfunction and higher incidence of malignancies was observed. With the advancement of highly active anti-retroviral therapy (HAART), life expectancy of HIV infected individuals has been improving due to the reduction in opportunistic infection. Therefore, more attention is required in the optimal management of long-term complications of HIV infection, including HIV-associated lymphoma.

**Objective** To study the epidemiology, treatment outcome and complications of HIV-associated lymphoma.

**Method** Retrospective analysis of patients diagnosed with HIV-associated lymphoma between Jan 1995 and Oct 2011 was performed. Demographic and clinical characteristics of eligible patient were reviewed. Treatment outcome in terms of complete remission rate and overall survival were assessed. Baseline characteristics, treatment response and adverse events were compared to HIV-negative lymphoma control patients.

**Results** Fifty-seven HIV-associated lymphoma cases were identified and analyzed. A high proportion of them presented with central nervous system (CNS) involvement [15/57 (26.3%)], bone marrow involvement [40/57 (71.2%)], extra-nodal involvement [49/57(86%)] and advance stage of disease [45/57(78.4%)]. Most of the cases were diffuse large B cell lymphoma (DLBCL) (47.4%), followed by Burkitt/Burkitt-like lymphoma (BL) (17.5%) and primary central nervous system lymphoma (PCNSL) (14%). The complete response (CR) rate of HIV-associated DLBCL who received curative treatment was similar to HIV-negative control patients [33.3% (5/15) compare to 50% (26/52) (p=0.379)]. The median overall survival (OS) in HIV-associated DLBCL was inferior to HIV-negative control group [6 months in HIV-DLBCL compared to 26 months in HIV-negative control (p=0.011)]. The CR rate of HIV-associated BL who received curative chemotherapy was also similar to HIV-negative control group [75% (6/8), compared to 69.2% (27/39) (p=1.0)]. There was no difference in terms of OS between HIV-associated BL and HIV-negative control [median OS not yet reached in both groups and 5 years OS was 60% in HIV-positive group compared to 53.6% in HIV-negative control(p=0.779)].

**Conclusion** Patient with HIV-associated lymphoma tend to present with advance stage disease. More patients suffered from bone marrow and extra-nodal involvement on presentation. CR rate in HIV-associated DLBCL and BL were comparable to the HIV-negative control groups (p=0.379 and p=1.0 respectively). The 5-year survival in HIV-associated BL and HIV-negative BL control were similar (p=1.00). However, the OS in HIV-associated DLBCL was inferior to HIV-negative control group (p=0.011). Further study with larger number of patients is required to identify risk factors associated with inferior outcome and to look into strategies that can improve OS in HIV-associated DLBCL patients.

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## **A 5-YEAR RETROSPECTIVE STUDY ON CANDIDAEMIA IN A REGIONAL HOSPITAL CLUSTER**

Dr Wong Sin Yue, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (June 2012 Infectious Disease Exit Assessment Exercise)

**Objectives** To review the incidence, epidemiology, management and outcomes of candidaemia, a leading cause of bloodstream infection with high mortality

**Methods** All patients with positive *Candida* blood culture from Pamela Youde Nethersole Eastern Hospital, Ruttonjee Hospital and Tung Wah Eastern Hospital were retrospectively reviewed between January 2006 and December 2010. Data on demographics, epidemiology, risk factors and outcomes were collected. The outcome variables included crude hospital mortality, 90-day mortality, and length of hospital stays.

**Results** Ninety-four patient-episodes of candidaemia were reviewed. Fifty-one (54.3%) was *Candida albicans* bloodstream infections and *Candida glabrata* was the leading cause of non-*albicans* infections. Fifty-two (55.3%) patients were admitted to ICU during the hospital stay, with median length of ICU stay of 11 days (range: 2-50). The median length of hospital stay was 36 days (range: 1-253). The main antifungal therapy prescribed were fluconazole and amphotericin B deoxycholate. Echinocandins were used more oftenly in the later years of study period. The crude hospital mortality was 62.8% and 90-day mortality was 70.2%. Mortality was associated with presence of shock and vasopressor use prior to candidaemia, absent or delayed clearance of candidaemia and prior use of systemic steroids. By multivariate analysis, prior use of systemic steroids (OR: 6.803; 95% CI: 1.471, 31.459) and clearance of fungaemia within 7 days of blood sampling (OR: 0.239; 95% CI: 0.087, 0.657) were independently associated with increased and decreased hospital mortality respectively.

**Conclusion** Candidaemia was associated with high mortality and prolonged hospital stay. *Candida albicans* was still the predominant species despite non-*albicans* species candidaemia was increasing in incidence. Clinical awareness and recognition of importance of prompt antifungal therapy with complications screening needed to be reinforced.

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## **LOCAL EXPERIENCE OF PROLIFERATION SIGNAL INHIBITOR IN RENAL TRANSPLANT RECIPIENTS**

Dr Lam Chung Man, Department of Medicine & Geriatrics, Princess Margaret Hospital (June 2012 Nephrology Exit Assessment Exercise)

**Background** Proliferation Signal Inhibitor (PSI) is a novel class of immunosuppressant which inhibits mammalian target of rapamycin (mTORi). It has been suggested as an alternative immunosuppressive agent to calcineurin inhibitors (CNI) or mycophenolate mofetil (MMF)/ Mycophenolic acid (MPA) in renal-transplant recipients. It has potential role in alleviating calcineurin inhibitors (CNI) induced nephrotoxicity and chronic allograft nephropathy (CAN). Studies on the clinical application of PSI in local population are sparse.

**Methods** We performed a retrospective study to evaluate the 12 months efficacy and safety after conversion to PSI in renal transplant recipients in Princess Margaret Hospital since 2004.

**Results** Renal function determined by creatinine clearance was significantly better

in the PSI group ( $55.51 \pm 18.43$  ml/min at baseline vs  $60.03 \pm 20.24$  at one year,  $p=0.03$ ). The incidence of biopsy-proven acute rejection after conversion was not different from the other trials. Increase in proteinuria and lipid were more significant after PSI conversion.

**Conclusions** Conversion to PSI may be a useful strategy to improve renal function. The adverse effects are usually well tolerated. Early conversion may be more beneficial than late conversion. Appropriate selection of candidates for PSI conversion, and early identification and prompt management of PSI induced adverse events, reduce serious complication and improve outcome.

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## **EFFECT OF NOCTURNAL HOME HAEMODIALYSIS ON ANAEMIA CONTROL IN PATIENTS WITH END-STAGE RENAL DISEASE**

Dr Poon Ka Yan Clara, Department of Medicine & Geriatrics, Princess Margaret Hospital (June 2012 Nephrology Exit Assessment Exercise)

**Background** Nocturnal home haemodialysis (NHHD) has shown promising clinical results in various clinical surrogate parameters and patient survival. Whether NHHD has sustained benefit in anaemia management is conflicting. We performed a retrospective case-control cohort study to investigate the effect of NHHD in renal anaemia.

**Objective** This controlled study aims to investigate whether anaemia and erythropoietin requirement are improved in NHHD patients compared with conventional haemodialysis (CHD); and whether the benefit will extend beyond first year of treatment.

**Method** We retrospectively reviewed the records of patients receiving NHHD on alternate nights for over two years. Matched control was identified from in-centre CHD patients. Haemoglobin level and erythropoietin requirement during the study period were recorded and compared between the two groups. Iron indexes and dialysis adequacy were compared as secondary outcomes.

**Results** Twenty-three NHHD patients were matched with 25 CHD patients with comparable baseline parameters. Haemoglobin level increased from  $9.37 \pm 1.39$  g/dL to  $11.34 \pm 2.41$  g/dL ( $p < 0.001$ ) in NHHD group and erythropoietin requirement decreased from  $103.44 \pm 53.55$  U/kg/wk to  $47.33 \pm 50.62$  U/kg/wk ( $p < 0.001$ ) after two years. There was further reduction in erythropoietin requirement after first year of NHHD ( $p = 0.037$ ). Twenty-six per cent of patients in NHHD group stopped erythropoietin. Comparing the two groups at the end of study period, haemoglobin level was significantly higher in NHHD group ( $11.34 \pm 2.41$  g/dL in NHHD vs.  $9.34 \pm 1.65$  g/dL in CHD;  $p = 0.001$ ) and erythropoietin requirements significantly lower in NHHD group ( $47.33 \pm 50.62$  U/kg/wk in NHHD vs.  $105.92 \pm 36.91$  U/kg/wk in CHD;  $p < 0.001$ ). Ferritin level was lower in NHHD group at the end of 2 years ( $541.35 \pm 396.52$  pmol/L in NHHD vs.  $913.88 \pm 791.12$  pmol/L in CHD;  $p = 0.044$ ) yet it remained within recommended range. Iron saturation did not change and there was no difference between two groups. Weekly single-pool Kt/V was significantly higher in NHHD group ( $9.85 \pm 4.04$  in NHHD vs.  $3.74 \pm 1.91$  in CHD;  $p < 0.001$ ).

**Conclusion:** NHHD with an alternate night schedule improves anaemia control and reduces erythropoietin requirement when compared with CHD. Erythropoietin requirement is further reduced after one year of NHHD. When compared with CHD,

patients on NHHD have 2.6 times higher weekly single-pool Kt/V. NHHD patients have lower ferritin level, but there is no difference in iron saturation.

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### **AMYLOID BURDEN IN POSTSTROKE DEMENTIA – A PITTSBURGH COMPOUND B PET IMAGING STUDY**

Dr Au Wing Chi Lisa, Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2012 Neurology Exit Assessment Exercise)

**Background and purpose** Dementia poststroke is believed to be due to cerebrovascular lesions (i.e. vascular dementia), concurrent Alzheimer’s disease (AD) or mixed vascular and Alzheimer’s pathology (i.e. mixed dementia). To differentiate the various etiologies based on clinical features and standard structural imaging is difficult. We aimed to determine the prevalence of concurrent Alzheimer’s pathology (i.e. amyloid plaques) using Pittsburgh Compound B (PiB) PET imaging; and to examine any differences in the clinical, radiological and cognitive profiles between subjects with and without amyloid plaques.

**Methods** Consecutive patients admitted to our acute stroke unit with first-ever or recurrent stroke or transient ischemic attack (TIA) over a 24 months period were invited for a brief neuropsychological assessment 3 – 6 months poststroke. Subjects who completed this first assessment were reassessed 1 year later (i.e. 15-18 months poststroke). Patients were recruited if a diagnosis of dementia was made according to Diagnostic and Statistical Manual (4th edition), or when there is a drop of  $\geq 3$  points in the mini-mental state examination (MMSE) between the first and second assessment. We performed detailed clinical, radiological and neuropsychological assessments including the Alzheimer’s Disease Assessment Scale Cognitive Subscale (ADAS-cog). PiB and FDG PET imaging were arranged after informed consent from the subjects and their caregivers.

**Results** Out of the 63 recruited subjects, 14 (22.2%) demonstrated AD-like PiB retention. In terms of cognitive profile, patients in the PiB-positive group seemed to score worse than the PiB-negative group in terms of delayed word recall (10.0 versus 10.0,  $p=0.083$ ) and ideational praxis (1.0 versus 2.0,  $p=0.080$ ). In terms of medial temporal lobe atrophy, there was no significant difference in the severity of MTLA between the two groups (right side 1.0 versus 2.0,  $p=0.621$ ; left side 1.0 versus 2.0,  $p=0.286$ ).

**Conclusion** It is feasible to use PiB PET imaging to differentiate the underlying aetiology of poststroke dementia with greater accuracy than can be accomplished based on the clinical phenotype. We found that PiB retention typical to that of AD was found in about one fifth of patients with either early PSD or delayed poststroke cognitive decline.

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### **PREDICTORS AND CAUSES OF HOSPITAL READMISSIONS AFTER ACUTE ISCHAEMIC STROKE: A LOCAL COHORT STUDY**

Dr Chan Chee Yun Amanda, Department of Medicine & Geriatrics, Tuen Mun Hospital (June 2012 Neurology Exit Assessment Exercise)

**Background** Patients who are admitted for acute ischaemic stroke often have residual neurological deficits and other comorbidities, which may lead to an increased risk of hospital readmission. This study looked for the predictors and the causes of hospital readmission within the first year of discharge for index ischaemic stroke.

**Methods** One-thousand seven hundred and ninety-seven patients were admitted to Tuen Mun Hospital from January 1, 2009 to December 31, 2009 for acute ischaemic stroke. Four hundred of these patients were sampled by simple randomization for retrospective cohort analysis. Their hospital records were studied in detail. The time to their next hospitalizations within the first year after hospital discharge was determined. These patients were then dichotomized into those with hospital readmission and those without. Their clinical data were collected and analyzed for the predictors and the causes of next hospital readmission.

**Results** A total of 400 patients were studied in detail, but after exclusion, 334 patients were recruited for this study. One-hundred and sixty-eight patients (50.3%) were found to have hospital readmission in the first year of discharge for index acute ischaemic stroke. The predictors of hospital readmission included old age >72 years (odds ratio [OR], 1.7; 95% confidence interval [CI], 1.037 to 2.733;  $p=0.001$ ), cardioembolic stroke (OR, 5.0; 95% CI, 1.558 to 16.082;  $p = 0.007$ ), diabetes mellitus (OR, 2.1; 95% CI, 1.169 to 3.817;  $p = 0.035$ ), complications occurring during index admission (OR, 1.9; 95% CI, 1.218 to 3.117;  $p = 0.013$ ), and NIHSS > 5 (OR, 2.7; 95% CI, 1.654 to 4.321;  $p < 0.001$ ). Among these patients, 50 (14.9%) of them were readmitted early within the first month, and 118 (35.5%) were admitted late. Predictors of early readmission included those who were not discharged home, but to an institution (OR, 3.0; 95% CI, 1.255 to 7.34;  $p = 0.013$ ), NIHSS > 5 (OR, 3.4; 95% CI, 1.599 to 7.322;  $p = 0.001$ ), and diabetes mellitus (OR, 2.2; 95% CI, 1.113 to 4.545;  $p = 0.023$ ). Predictors of late readmission include those with ischaemic heart disease (OR, 2.0; 95% CI, 1.002 to 4.038;  $p = 0.048$ ), cardioembolic stroke (OR, 6.4; 95% CI 1.969 to 20.943;  $p = 0.001$ ), any complications that arose during index admission (OR, 2.1; 95% CI, 1.135 to 4.056;  $p = 0.018$ ), age > 72 years (OR, 1.9; 95% CI 1.15 to 3.26;  $p = 0.013$ ), and NIHSS > 5 (OR, 2.2; 95% CI, 1.328 to 3.807;  $p = 0.002$ ). The commonest causes of hospital readmission were infection and recurrent stroke.

**Conclusion** Patients who were admitted to hospital for acute ischaemic stroke are at increased risk of readmission after the index event. There were different risk factor profiles of early hospital readmission (within the first month) and late hospital readmission (2 months to 1 year). These findings may help us to identify high risk patients so that we may enhance their postdischarge care plan in order to improve their physical conditions and prevent rehospitalization.

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## **ANGIOGRAPHIC DISTINCTIONS AND COLLATERALIZATION IN SYMPTOMATIC CRANIO-CERVICAL OCCLUSIVE RADIATION VASCULOPATHY: A CASE-REFERENT STUDY**

Dr Ip Hing Lung, Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2012 Neurology Exit Assessment Exercise)

**Background** Occlusive radiation vasculopathy (ORV) predisposes survivors of head-and-neck cancers to refractory ischemic strokes. Understanding the angiographic attributes and collateral circulations of ORV may help to elucidate the

stroke mechanism.

**Methods** From September 2005 to February 2012, we recruited 92 patients who developed first-ever ischemic stroke attributed to ORV for digital subtraction angiogram (DSA). Another 112 patients who had symptomatic carotid stenosis (>70%) without prior radiotherapy were enrolled within the same period as referent subjects. DSA was performed within 2 months from the stroke onset and delineated carotid and vertebro-basilar circulations from aortic arch up to intracranial branches. A stroke neurologist and a neuro-radiologist blinded to group assignment categorized all vascular lesions, graded the collateral status, and recorded the anatomic variants that might forbid or mimic collateral development.

**Results** ORV patients were younger and had significantly less atherosclerotic risks in terms of hypertension, diabetes mellitus and hyperlipidemia. The mean interval between RT and stroke was 15 years (IQR 9.8 years). In contrast to referent subjects who mostly had focal high-grade (>70%) steno-occlusion at proximal internal carotid artery (123/143, 86%), stenoses in ORV patients tended to diffusely involve common carotid artery (70/176, 40%) and internal carotid artery (63/176, 36%), and were more frequently bilateral (53% vs 23%), tandem (23% vs 10%) and with concurrent vertebral artery steno-occlusions (27% vs 14%) (All  $p<0.05$ ). ORV patients also showed more dissecting and ulcerative lesions. With comparable rates of vascular anomaly, ORV patients had more established collateral circulations through leptomeningeal arteries and retrograde flow of ophthalmic artery.

**Conclusion** Compared with spontaneous atheromatous carotid disease, ORV patients had more steno-occlusions over carotid and vertebral arteries amid mature collateral circulations at stroke onset. Decompensation of collateral flows may precipitate stroke in ORV.

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## **SEROPREVALENCE OF AQUAPORIN-4 ANTIBODY IN OPTIC NEURITIS PATIENTS AND ITS CLINICAL CORRELATION - ANALYSIS OF A PROSPECTIVE COHORT IN A TERTIARY REFERRAL CENTRE IN HONG KONG**

Dr Lau Pui Kei Patrick, Department of Medicine & Geriatrics, Caritas Medical Centre (June 2012 Neurology Exit Assessment Exercise)

**Background** Epidemiologic studies have suggested different prevalence of aquaporin-4 antibody in optic neuritis patients in different ethnic groups. However, data on the prevalence of aquaporin-4 antibody in Hong Kong is scarce. The clinical significance of aquaporin-4 antibody in optic neuritis patients is also unknown.

**Objective** To obtain the prevalence of aquaporin-4 antibody in patients with optic neuritis in Hong Kong Chinese and to evaluate the clinical significance of aquaporin-4 antibody in optic neuritis patients.

**Methods** This is a single centre prospective cohort study. We prospectively recruited and followed up a total of 22 optic neuritis patients from November 2010 to December 2011 in the Kowloon West Cluster of Hong Kong Special Administrative Region (HKSAR), China. The detection of aquaporin-4 antibodies was by indirect immunofluorescence method using monkey cerebellar transfected HEK293 cells

which express human aquaporin-4 on their cell membranes. The relation between the clinical diagnosis and the aquaporin-4 antibody serologic status was analysed.

**Results** Among the 22 optic neuritis patients which constituted 27 episodes of acute neuritis, 4 (18.2%) were tested to be aquaporin-4 antibody positive. Three out of the 22 optic neuritis patients fully met the 2006 Wingerchuk Criteria and were diagnosed to have neuromyelitis optica (13.6%), in which 2 of them were tested positive for aquaporin-4 antibody. Among the 4 seropositive patients, 75% of them developed recurrent optic neuritis ( $p < 0.02$ ). All 4 seropositive patients developed thinning of retinal nerve fibre layer thickness ( $55.4 \pm 15.85$ ) compared to the seronegative group ( $89 \pm 7.5$ ). All of the seropositive patients developed severe visual impairment (20/200) ( $p = 0.002$ ), with visual acuity of  $0.36 \pm 0.3$ , in contrast to  $0.59 \pm 0.14$  in the seronegative group at 3-month follow up ( $p = 0.446$ ). Five out of the 22 patients had recurrent optic neuritis, in which 3 of them were tested positive for aquaporin-4 antibody. Bilateral eye involvement was found in 3 out of the 4 (75%) seropositive patients and in 2 out of the 18 (11.1%) seronegative patients respectively ( $p = 0.023$ ). Diagnosis of multiple sclerosis was made in 13.6% of all optic neuritis patients. Among the seropositive patients, 25% of the seropositive group had the presence of cerebrospinal fluid pleocytosis ( $p = 0.4$ ) while none of them showed oligoclonal band ( $p = 0.66$ ).

**Conclusion** The prevalence of aquaporin-4 antibody in Hong Kong Chinese optic neuritis patients is halfway in between the data from Caucasian and Asian population. The seropositivity of the test was associated with bilateral optic nerve involvement, higher chance of recurrent optic neuritis and more severe reduction of optic nerve fibre layer thickness.

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## **SYMPTOM BURDEN, DEPRESSION AND SUICIDALITY IN CHINESE ELDERLY PATIENTS SUFFERING FROM ADVANCED CANCER**

Dr Cheng Hon Wai Benjamin, Palliative Medical Unit, Grantham Hospital (June 2012 Palliative Medicine Exit Assessment Exercise)

**Background** Despite serious concern over the suicidality of cancer patients in palliative care practice, few studies have addressed this issue. With the expected growth of geriatric population in our locality, more elderly advanced cancer patients were expected to be under palliative care. This study aimed to measure the symptom burden, prevalence of depression and suicidal ideation of Hong Kong Chinese elderly suffering from advanced cancer, and to identify the correlation of symptom burden and depressed mood with suicidality.

**Study Design** The study adopted a cross-sectional design and recruited consecutive series of Chinese elderly aged 65 or above with advanced cancer who had been admitted to the Palliative Medical Unit of the Grantham Hospital during the study period from 1<sup>st</sup> March 2011 to 31<sup>st</sup> December 2011. Patients recruited were in their palliative phase of disease. Recruited patients were asked to complete a battery of questionnaires. The Edmonton Symptom Assessment Scale (ESAS) has been adopted to measure the symptom prevalence among the subjects. The Geriatric Depression Scale-short form (GDS-SF) was used to assess the depressive symptoms, while Item 3 of Hamilton Rating Scale for Depression (HRSD) was used to measure the extent of suicidality.



**Results** A total of 52 elderly patients with advanced cancer were interviewed, with 11 patients being excluded because of poor physical condition, language barrier and cognitive impairment. Forty-one eligible patients were recruited and all of them had completed the questionnaires. The mean score of Edmonton Symptom Assessment Scale-Symptom Distress Score (ESAS-SDS) was 36.9 (SD=15.3). Among the individual items, fatigue was the most prevalent symptom and was present in 92.7% of subjects, with a mean score of 5.6 (SD=2.8). The frequency of most symptoms and overall symptom distress score were similar to previous studies using ESAS as symptom measurement in palliative cancer patients. However, our study targeting at elderly patients reported a lower pain score (mean=2.6, SD=2.6) when compared with previous studies. Using the GDS-SF score  $\geq 8$  as a screening cut-off point, significant depressive symptoms were common (43.9%) in this group of patients, and was remarkably higher than previous local studies targeting at general geriatric population. Besides, up to 46.3% (n=19) of patients reported presence of suicidality, with 14.6% (n=6) having had active suicidal idea or attempted suicide. There was a statistically significant positive correlation found between fatigue ( $r=0.38$ ,  $p<0.05$ ), depression ( $r=0.61$ ,  $P<0.01$ ), anxiety ( $r=0.47$ ,  $p<0.01$ ), wellbeing ( $r=0.65$ ,  $p<0.01$ ) and symptom distress score ( $r=0.71$ ,  $p<0.01$ ) in Edmonton Symptom Assessment Scale with suicidality. GDS-SF score also demonstrated strong positive correlation with suicidality ( $r=0.79$ ,  $P<0.01$ ). After multiple regression analysis on the suicidality measurement on Item 3 of HRSD, GDS-SF score remained statistically significant and accounted for 61.7% of the total variance of suicidality.

**Conclusion** Elderly patients with advanced cancer had significant symptom burden comparable to western studies. Fatigue was the most prevalent symptom. When compared with previous local studies targeting at general geriatric population, a much higher rate of depression and suicidal ideation was found in our study group. Depressive symptom was the most important independent factor for suicidality in this group of patients.

**Implications** The results of this study draw the attention of palliative care workers to the importance of mood and suicidality assessment in our daily care of advanced cancer elderly patients. The results help physicians to identify the group of patients that is particularly vulnerable to suicidal ideation. By using GDS-SF and HRSD-Item III as screening tools, it helps to identify depressed patients possessing suicidal idea who need specialist care. As more attention are drawn towards end-of-life care for our ageing population, medical workers should receive appropriate training in this area and team collaboration with psychiatric unit is warranted.

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## **THE CLINICAL SEVERITY, CO-MORBIDITIES AND MANAGEMENT PATTERN OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS IN AN ACUTE REGIONAL HOSPITAL**

Dr Au Lik Hang, Department of Medicine and Geriatrics, Tai Po Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** Chronic Obstructive Pulmonary Disease (COPD) is one of the most common respiratory diseases worldwide. Previous studies had shown the under-prescription of long acting bronchodilators in Hong Kong. Limited local studies had focused on in-patient characteristics, treatment pattern and admission frequency.

**Objective** To assess the disease spectrum, severity, admission numbers, co-morbidities and management pattern of in-hospital COPD patients in an acute regional hospital.

**Method** COPD patients admitted to the Alice Ho Miu Ling Nethersole Hospital (AHNH) during January 2010 to December 2010 were recruited. Demographic data, exacerbations frequency and spirometry data were assessed. The usage of acute or long term non-invasive ventilation (NIV), long term oxygen therapy (LTOT), and prescription of medications based on spirometry values available were also recorded.

**Result** 253 patients were included in the study with mean age 78.4. The mean number of admissions due to COPD exacerbation was 1.96 and 54.2% had one admission in 2010. Two-third (64%, n=162) had at least one spirometry done in or before 2010. Mean forced expiratory volume in one second was 1.02 liters (SD +/- 0.425 liters) and the FEV1 (% predicted) was 54.9%. 10.5% (n=17) belonged to Global Initiative for Chronic Obstructive Lung Disease stage 1, 42% (n=68) belonged to stage 2, 37% (n=60) belonged to stage 3 and 10.5% (n=17) belonged to stage 4. Short acting bronchodilators and oral theophylline were commonly use. Long acting bronchodilators like long-acting beta-agonist (LABA) and long-acting muscarinic antagonist (LAMA) were being prescribed in 16.6% (n=42) and 6.7% (n=17), respectively.

**Conclusion** Most of our patients were old with majority belonging to moderate and severe COPD groups. Significant proportion had at least 2 or more admissions in 2010. The adherence to latest treatment guidelines seemed inadequate with low prescription rate of long acting bronchodilators.

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## **IMPACT OF A COPD SELF-MANAGEMENT PROGRAM ON HEALTHCARE UTILIZATION**

Dr Chu Wing Yan, Department of Medicine, North District Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** Acute chronic obstructive pulmonary disease (COPD) exacerbations often leave considerable effects on patients' lung function and health status. An educational approach that encourages patients to detect changes in symptoms and empowers patients to self-manage exacerbations early has the potential to improve exacerbation outcomes and reduce healthcare utilisation. At North District Hospital, a Respiratory Collaborative Care Team (RCCT) was established in 2009 to support patients in self-management that includes education on the use of stand-by courses (crisis management packs) of antibiotics and corticosteroids.

### **Objectives**

1. To study the effect of a COPD self-management programme on healthcare utilisation
2. To study the safety issues of self-administered corticosteroids and antibiotics

**Methods** Clinical records of RCCT patients prescribed crisis packs from January 2009 to December 2010 were reviewed. Demographics and characteristics of patients, number of hospital admissions and emergency department visits, causes of admissions one year before and after the start of crisis pack prescription were analysed. Incidence

of pneumonia and adrenal insufficiency and emergence of drug-resistant respiratory pathogens after the practice of crisis pack prescription were reviewed.

**Results** A total of 316 patients had been prescribed crisis packs during the study period and 167 patients were eligible for analysis. Health care utilisation rate, including both hospitalisations and Accident and Emergency Department (AED) visits related to COPD, was significantly reduced by 29.2% ( $p < 0.001$ ) after crisis pack introduction. COPD-related hospitalisation was also significantly reduced by 34.5% ( $p < 0.001$ ). Mean incidence of pneumonia was similar before and after crisis pack practice (0.14 vs 0.13,  $p = 0.752$ ). Three patients (1.4%) had antimicrobial resistance that developed in the same species of respiratory pathogens and 30 patients (9.5%) had acquired a new resistant pathogen. Three patients developed adrenal insufficiency requiring oral hydrocortisone supplement.

**Conclusion** An educational programme that empowers patients to self-manage COPD exacerbation with crisis pack successfully reduced the health care utilization. However, risks associated with the development of resistant respiratory pathogens and adrenal insufficiency remain. Further trials and ongoing monitoring of such risks are needed.

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## **A RANDOMISED CONTROLLED TRIAL COMPARING STEPWISE *VERSUS* IMMEDIATE WITHDRAWAL FROM NON-INVASIVE VENTILATION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS RECOVERING FROM ACUTE RESPIRATORY FAILURE**

Dr Lun Chung Tat, Department of Medicine & Geriatrics, United Christian Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** COPD patients who suffer from exacerbation with acute hypercapnic respiratory failure (AHcRF) benefit from non-invasive ventilation (NIV). The best withdrawal method of NIV is however not known. We designed a study comparing stepwise withdrawal versus immediate withdrawal of NIV to assess the success rate of withdrawal of NIV after recovery of AHcRF.

**Method** This was a prospective, single-centre, open-labelled randomised study comparing stepwise withdrawal of NIV and immediate withdrawal of NIV in patients with COPD exacerbation recovering from AHcRF. The primary end-point was the success rate of NIV withdrawal.

**Results** Sixty patients were randomised: 35 patients to the stepwise withdrawal group and 25 patients to the immediate withdrawal group. Six patients in the stepwise withdrawal group were withdrawn after randomisation (5 withdrew consent and 1 patient had concurrent metabolic acidosis). The two study arms were well balanced demographically. There was no statistically significant difference in the success rate of withdrawal of NIV and length of stay after randomisation, with the success rate of 74.3% and 56% in stepwise and immediate withdrawal group respectively ( $p = 0.139$ ). There was statistically significant difference in the duration of NIV with median duration of 5 days and 3 days in stepwise and immediate withdrawal group respectively ( $p = 0.001$ ).

**Conclusion** Our study showed no statistically significant difference in the success rate and length of stay between stepwise withdrawal and immediate withdrawal of

NIV. Duration of NIV was statistically significant shorter in the immediate withdrawal group.

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## **CLINICAL CHARACTERISTICS OF PATIENTS NEWLY DIAGNOSED WITH TUBERCULOSIS IN AN ACUTE GENERAL HOSPITAL IN HONG KONG**

Dr Man Yu Hon, Department of Medicine & Geriatrics, Tai Po Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** Studies on initial presentation of newly diagnosed patients in hospital were scarce and not most up-to-date. The ageing population and the emergence of new diagnostic tools may have changed the clinical picture.

**Objectives** 1) To describe the clinical characteristics of patients newly diagnosed with pulmonary tuberculosis (including TB effusion) in a regional acute hospital in Hong Kong; 2) to present differences in clinical presentation of patients who were or were not diagnosed in the same admission

**Method** Newly diagnosed TB patients from January 2007 to December 2009 in the Department of Medicine, Alice Ho Miu Ling Nethersole Hospital were retrospectively reviewed. Clinical characteristics of patients diagnosed and not diagnosed in the same admission were compared.

**Results** 172 and 41 patients were diagnosed with pulmonary tuberculosis and tuberculous effusion respectively. For pulmonary tuberculosis, 59% were diagnosed in the same admission. Sputum acid fast bacilli (AFB) smear was the commonest method of diagnosis. Nucleic acid amplification test accounted for 9.3% of the cases. For tuberculous effusion, pleural biopsy histology was the most common diagnostic method. The sensitivity of pleural fluid adenosine deaminase was 78%. Patients not diagnosed with pulmonary tuberculosis in the same admission were older ( $P=0.001$ ), more likely to be AFB smear negative ( $P<0.001$ ), had single lung involvement ( $P=0.007$ ), had no cavities on X-ray ( $P=0.018$ ), stayed longer in hospital ( $P=0.001$ ) and died ( $P=0.037$ ).

**Conclusion** Almost half of the patients admitted were not diagnosed in the same hospital admission, which was associated with high inpatient mortality.

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## **FACTORS AFFECTING OUTCOMES IN PATIENTS WITH PNEUMOTHORAX UNDERWENT MEDICAL CHEMICAL PLEURODESIS**

Dr Ng Yiu Ping, Department of Medicine and Geriatrics, Tuen Mun Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** Patients with spontaneous pneumothorax are at risk of recurrence. Pleurodesis is recommended for patients with recurrent primary spontaneous pneumothorax or secondary spontaneous pneumothorax. However, surgical pleurodesis carries high mortality and morbidity in patients with poor lung reserve or multiple underlying medical illnesses. Non-surgical chemical pleurodesis is a safer procedure for these patients. Many factors such as concomitant use of steroid may decrease the success rate of chemical pleurodesis.

Recent studies have compared the methods of pleurodesis or the agents used in patients with pleurodesis. However, there is no study investigating for the factors which would affect the outcomes of chemical pleurodesis in patients with pneumothorax. This study investigated the factors that associated with the failure of bedside medical pleurodesis in patients with spontaneous pneumothorax.

**Objectives** To identify the predictors of failure of medical chemical pleurodesis in patients with spontaneous pneumothorax.

**Methods** This is a retrospective case series study. 156 patients who were admitted for spontaneous pneumothorax (both primary and secondary) to Tuen Mun Hospital from August 2005 to July 2010 (5 years) are retrieved and retrospectively studied. After exclusion, around 141 patients are suitable for this study. Failure of pleurodesis was defined as recurrence of pneumothorax or requirement of repeated pleurodesis within 30 days of admission. The clinical data of patients were collected and analyzed for the predictors of failure of chemical pleurodesis.

**Results** Among the one hundred and forty-two patients recruited, 101 patients had successful chemical pleurodesis. The only statistically significant predictors of failure of chemical pleurodesis are persistent leaking before pleurodesis (OR 10.650; 95% CI 4.246-26.712,  $p < 0.001$ ), no pain experienced after the procedure (OR 3.403; 95% CI 1.205-9.607,  $p = 0.021$ ) and primary pneumothorax (OR 3.151; 95% CI 1.063-9.341,  $p = 0.038$ )

While the size (large-bore vs. small-bore) of chest tube (OR 0.6460; 95% CI 0.171-2.447,  $p = 0.381$ ), use of rotation maneuver (OR 2.045; 95% CI 0.873-4.789,  $p = 0.096$ ), concomitant use of steroid (OR 1.139; 95% CI 0.469-2.765,  $p = 0.773$ ), concomitant use of NSAID (OR 1.993; 95% CI 0.645-6.154,  $p = 0.181$ ) and agents (Oxytetracycline and talc) used for pleurodesis (OR 1.920; 95% CI 0.921-4.000,  $p = 0.08$ ) did not affect the outcomes of chemical pleurodesis.

**Conclusion** The overall success rate of medical chemical pleurodesis was 71% in this study. Medical chemical pleurodesis is an acceptable procedure for spontaneous pneumothorax in patients who are at risk of surgery or refuse surgery. However, this procedure may not be useful in patients with persistent air leak. Choice of intervention for pneumothorax prevention should be individualized according to patients' condition. The choice of agents (between oxytetracycline and talcum powder), the use of steroid during pleurodesis, the size of the chest tube and rotation maneuver may not affect the efficacy of chemical pleurodesis.

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## **TREATMENT OUTCOMES IN ELDERLY WITH ADVANCED-STAGE NON-SMALL CELL LUNG CANCER**

Dr Tam Chi Chun Terence, Department of Medicine, Queen Mary Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Introduction** In Hong Kong, over 4000 new cases of lung cancer are diagnosed every year. The median age at diagnosis is 71 for men and 73 for women. Existing therapeutic clinical trials, however, seldom focused on elderly lung cancer subjects. Although the identification of epidermal growth factor receptor (*EGFR*) gene

mutations could predict clinical efficacy of tyrosine kinase inhibitor (TKI), these molecular testing for predictive biomarkers are not always possible or available due to tissue availability or financial constraints. Moreover, no reliable treatment outcome predictors could be identified for *EGFR*wild-type patients. The overall therapeutic decision remains a clinical one for a significant proportion of elderly patients with advanced stage non-small cell lung cancer (NSCLC). The predictive performance of individual parameters of age, performance status (PS) and comorbidities is not clearly defined in this subgroup.

**Objectives** The aims of this study were to compare the outcome of different drug treatment modalities in terms of progression-free survival (PFS), overall survival (OS) and adverse effect profile for elderly with advanced-stage NSCLC, and to identify any clinical parameter that could predict treatment outcomes.

**Methods** Clinical records of patients aged 70 years or above with Stage III or IV NSCLC (ICD 9 code –162.x), who have received either chemotherapy or tyrosine kinase inhibitor (*EGFR*-TKI) in the Department of Medicine, Queen Mary Hospital from 2003 to 2009, were reviewed. Cox proportional hazard model was used to examine factors associated with PFS and OS. The frequencies of treatment-related complications were also reviewed. A group of gender- and histology-matched subjects aged below 70 were identified as controls.

**Results** 56 elderly patients (age  $\geq 70$ ) were included. The median age at diagnosis was 73 years (age range: 70-83 years). The proportion of NSCLC, adenocarcinoma (AD) and squamous cell carcinoma (SCC) were 21.4%, 48.2% and 16.1% respectively. 60.7% of patients received only one line of treatment (i.e. either chemotherapy or *EGFR*-TKI). Median PFS was 10 months (IQR 5 to 15 months) and the OS was 19 months (IQR 11 to 31 months). Among different clinical parameters tested, baseline performance status (PS) was the only predictor of improved PFS ( $p = 0.042$ ) and OS ( $p = 0.002$ ). Age was not a significant prognostic factor, and there was no difference in survival (in both PFS and OS) between the upfront chemotherapy group and the TKI group. Tolerability (i.e. no complications) was similar among chemotherapy and TKI usage. Sub-analysis showed that there was no significant difference ( $p = 0.667$ ) in OS between the elderly cohort and their younger counterparts.

**Conclusion** In elderly subjects with advanced stage NSCLC without known *EGFR* mutation status, use of *EGFR*-TKI and chemotherapy resulted in comparable survival benefits and rates of treatment-related adverse effects. Advanced age ( $>70$  years) was not predictive of worse treatment outcome in advanced stage NSCLC patients. The baseline performance status of the patient should be taken into consideration in the therapeutic decision in elderly subjects with NSCLC.

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## **PNEUMOCOCCAL VACCINE AND INFLUENZA VACCINE IN COPD PATIENTS**

Dr Tong Chun Wai, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** COPD is a common disease in the world and causing significant mortalities and morbidities. As recommended by various international authorities,

vaccination to both seasonal influenza and pneumococcal should be integral part of COPD management. The literature and international guidelines on the use of seasonal influenza and pneumococcal vaccines were reviewed in this dissertation. In Hong Kong, Centre of Health Protection is recommending that patients with chronic medical illness, such as COPD, should receive seasonal influenza and pneumococcal vaccines. However local data on the efficacies of the vaccines and the effectiveness of the vaccinations program are lacking.

### **Aims**

1. To investigate the effectiveness of the vaccination program in a local center and provide data on the efficacy of seasonal influenza vaccine and pneumococcal vaccine in reducing exacerbation-related hospitalization rate in patients with COPD (the COPD-Vaccination Study).
2. Subsequent to analyzing the results of the COPD-Vaccination Study, to survey the views and practice of medical staff in the Department of Medicine, PYNEH with regard to seasonal influenza vaccine and pneumococcal vaccine.

### **Methodology**

1. COPD-Vaccination Study: Design: Retrospective, single centre cohort study. List of COPD patients, who attended either outpatients clinics of Hong Kong East Cluster or admission to PYNEH during the period of 1 April 2009 to 31 March 2010, were retrieved with Clinical Data Analysis and Reporting System (CDARS) with the following ICD-CM9 codes: 491.20, 491.21, 492.0, 492.8, 493.20, 493.21 and 496. Patients who received pneumococcal vaccines, seasonal influenza vaccines or both during the same period were followed-up for 1 year post-vaccination to record clinical events which were then compared with a cohort of age and sex matched COPD patients who did not receive any vaccines in the same period.
2. The Survey: A survey on the views and practice with regard to seasonal influenza vaccine and pneumococcal vaccine of medical staff in the Department of Medicine, PYNEH was conducted in April 2012 using a questionnaire attached in the Appendix (the Survey). A convenience sample of medical staff of the Department of Medicine, PYNEH was surveyed over a 3-day period in April 2012. The questionnaires were filled by the staff themselves and collected within the same day.

### **Outcomes measurements**

1. The COPD-Vaccination study: Primary outcomes: Number of COPD exacerbation-related admissions. Secondary outcomes: 1) COPD-related outcomes: Number of COPD exacerbations in 1 year; number of severe COPD exacerbations as defined by requirement of ICU admission or institution of invasive/noninvasive ventilatory support; time from day of vaccination to first COPD exacerbation; 2) Infection-related and other medical illness-related outcomes: number of admission from any cause; number of documented febrile illness episodes; documented influenza infection; time to death.
2. The Survey: An 11-question questionnaire was distributed among medical staff which included questions regarding questions concerning the compositions of the seasonal influenza and pneumococcal vaccines used in our department. Their view and practice in advising eligible patients to receive the vaccines were also assessed.

### **Results**

1. The COPD-Vaccination study: 141 of 1122 eligible COPD patients (12.6%) received both seasonal influenza vaccine and pneumococcal, while 34 received seasonal influenza vaccine alone and 36 received pneumococcal vaccine alone in the study period. Compared with the control group, dual vaccination was associated with

non-significant reduction in number of COPD exacerbation-related hospitalization (-0.06 admission/year, p=0.76). There were also similar reduction in the numbers of exacerbation (-0.13 exacerbation/year, p=0.55), admission due to medical illness (-0.12 admission/year, p=0.64), and hospital length-of-stay (-2.92 day/years, p=0.4) in the year following vaccination in the dual vaccine group. In those who died or developed COPD exacerbation during the study period, Kaplan-Meier analysis demonstrated non-significant delay in time-to-patients' death, but not in the time-to-first exacerbation.

2. The Survey: A total of 39 out of 45 questionnaires distributed amongst medical staff of the department were returned for analysis. The majority (87.2%) of responders did not receive seasonal influenza vaccine in the current year (2011/12 vaccination period). A significant portion of the medical staff surveyed was not aware of the composition of the seasonal influenza vaccine (51.3%) and pneumococcal vaccine (76.9%) currently in use. Although most of them believed that seasonal influenza vaccine (69.2%) and pneumococcal vaccine (79.5%) are "Very effective" or "Quite effective" in preventing morbidities and mortality associated with influenza and pneumococcal infection, they did not regularly recommended vaccinations to eligible patients.

**Conclusion** In the cohort of COPD patients studied, no statistical significant benefits of seasonal influenza vaccine, pneumococcal vaccine and dual vaccines on reducing COPD exacerbation-related hospitalization were found. The vaccination program was also found to be not effective and with overall very low vaccination rates in the eligible patients. This could have been related to the finding that medical staff had knowledge gaps with regard to seasonal influenza and pneumococcal vaccines, and most of them did not actively recommend vaccinations to eligible patients.

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## **IMPACT OF MEDICAL THORACOSCOPY ON THE MANAGEMENT OF PERSISTENT PLEURAL EFFUSION – EXPERIENCE IN A DISTRICT HOSPITAL**

Dr Wong Tsz Lun, Department of Medicine, North District Hospital (June 2012 Respiratory Medicine Exit Assessment Exercise)

**Background** Persistent or undiagnosed exudative pleural effusion has posed a management problem to physicians. Thus, medical thoracoscopy, also known as pleuroscopy, aids the diagnosis in this group of patients.

**Objective** To review the added value of medical thoracoscopy in diagnosis of undiagnosed exudative pleural effusion

**Method** A retrospective case-control study to compare pleuroscopy and repeated closed needle pleural biopsy on undiagnosed exudative pleural effusion.

**Results** Fifty pleuroscopy sessions were carried out from 1st February 2009 to 17th May 2011. Thirty-eight pleuroscopies were done on cases of exudative pleural effusion and were preceded by at least one closed-needle pleural biopsy. Twenty-two biopsies of repeated closed-needle biopsy were identified from the pre-pleuroscopy period (1st January 2007 to 31st January 2009) for comparison. More patients in the pleuroscopy group were male (78.9% vs 54.5%; p=0.047) and had a history of



smoking (60.5% vs 18.2%;  $p=0.001$ ). The diagnostic yield for the category of tuberculous pleuritis, malignant pleural effusion and pleural space infection/empyema was 52.6% in pleuroscopy subgroup compared with 22.7% in repeated closed-needle pleural biopsy ( $p=0.024$ ). Due to the limited number of patients in the pleuroscopy subgroup without prior closed-needle biopsy ( $n=7$ ), the diagnostic yield could not be compared with first-time closed-needle pleural biopsy cases ( $n=127$ ) in the same period.

**Conclusion** Pleuroscopy has a higher diagnostic yield for pursuing diagnosis in exudative pleural effusion when previous pleural biopsy revealed inconclusive results. Whether it is worthwhile to employ pleuroscopy as the initial choice of investigation requires further research.

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## **HEALTH RELATED QUALITY OF LIFE IN CHINESE PATIENTS WITH SYSTEMIC SCLEROSIS (SSC): RELATIONSHIP WITH THE EXTENT OF SKIN INVOLVEMENT AND SEVERITY INDEX**

Dr Chan Pak To, Department of Medicine & Geriatrics, Tuen Mun Hospital (May 2012 Rheumatology Exit Assessment Exercise)

**Background** Systemic sclerosis (SSc) is a multisystemic connective tissue disease with unknown etiology. It is characterized by a triad of immune dysfunction, vasculopathy and fibrosis. It causes skin hardening and tightening, digital ulceration, arthritis, joint contractures and dysfunction of essential internal organs, leading to morbidity and mortality. It also causes significant disability and impairment in the health related quality of life (HRQoL).

Hypothesis: Patients with more severe skin involvement and organ manifestations have poorer HRQoL and greater disability.

**Objectives** To evaluate the HRQoL and disability scores of a group of Chinese SSc patients and compare these parameters with age-matched healthy controls. The relationship between HRQoL and disability and the extent of skin disease and severity of organ manifestations were also studied.

**Methods** Systemic sclerosis (SSc) patients who fulfilled the 1980 American College of Rheumatology (ACR) preliminary criteria for the classification of systemic sclerosis or the LeRoy and Medsger classification criteria, who were hospitalized or attended the outpatient rheumatology clinics of Tuen Mun and Pok Oi Hospitals were recruited for a cross sectional study of the HRQoL and disability. The clinical records of these patients were reviewed and a full physical examination was performed for each participant to assess for the extent of skin and organ involvement. The severity of skin involvement was assessed by the Modified Rodnan skin score (mRSS). Disease severity was assessed by the Medsger severity scale. Two sets of questionnaires, the Medical Outcomes Study Short Form 36 (SF-36) and the Health Assessment Questionnaire Disability Index (HAQ-DI) were used to assess the HRQoL and disability of patients, respectively. An equal number of age and gender matched healthy controls were also recruited for the completion of these two questionnaires. The SF36 scores and HAQ-DI score of SSc patients and healthy controls were compared by the Students' t-test. Linear regression analyses were used to find out the factors associated with poorer HRQoL and greater disability in SSc patients.

**Results** Seventy-eight Chinese SSc patients were recruited. The mean age was  $50 \pm 12$  years and the mean disease duration was  $7.8 \pm 6.5$  years. Sixty-eight (87%) of them were women. Sixty-three (81%) patient had limited cutaneous systemic sclerosis (lcSSc) while the remaining had diffuse cutaneous systemic sclerosis (dcSSc). The median mRSS of the patients was 8 (IQR 4-14). Raynaud's phenomenon was the most common clinical features (97%) followed by sclerodactyly (82%), arthritis (68%) and joint contracture (47%). Patients with SSc had a significantly higher HAQ-DI score than the healthy controls ( $0.69 \pm 0.69$  vs  $0.04 \pm 0.18$ ;  $p < 0.001$ ) and lower SF36 score in all domains ( $p < 0.05$  in all). Linear regression analyses revealed that the mRSS was inversely correlated to the physical component score (PCS) and mental component score (MCS) of the SF36 (Beta = -0.39;  $p = 0.001$ ) and (Beta = 0.27;  $p = 0.031$ ) and positively correlated to the HAQ-DI score (Beta = 0.51;  $p < 0.001$ ), after adjustment for the age, sex and duration of the disease. The SF36 and HAQ-DI scores also significantly correlated with the Medsger severity scale in the general, peripheral vascular, skin and tendon/joint domains of the Medsger severity scale.

**Conclusions** Chinese SSc patients had poorer HRQoL and greater disability than matched healthy subjects. Patients with higher skin scores, more peripheral vascular system damage and tendon / joint contracture were associated with greater disability and poorer health related quality of life.

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## **PULMONARY ARTERIAL HYPERTENSION & SYSTEMIC LUPUS ERYTHEMATOSUS: CLINICAL PROFILE IN A REGIONAL HOSPITAL IN HONG KONG**

Dr. Ciang Chu Oi, Department of Medicine, Queen Elizabeth Hospital (May 2012 Rheumatology Exit Assessment Exercise)

**Introduction** Pulmonary arterial hypertension (PAH) can lead to significant morbidity and death in systemic lupus erythematosus (SLE). It is probably under-recognized and the estimated prevalence is around 4-14%. Local data in this regard is scanty.

**Objective** To estimate prevalence of PAH in SLE and to perform a cross sectional and retrospective case-control study on clinical profiles, variables associated with PAH and outcomes of patients with and without PAH.

**Methods** Clinical records of SLE patients followed up in Rheumatology clinic were retrieved. Cases were defined as PAH diagnosed by echocardiogram (systolic pulmonary artery pressure of  $\geq 40$  mmHg) or cardiac catheterization (mean pulmonary artery pressure  $\geq 25$  mmHg at rest) in previous five years. Controls were randomly selected from the rest of SLE patients with echocardiogram showing no PAH. Case: control ratio is 39:69 patients. The respective groups were matched for age and gender. Patients' demographics, clinical features, serologic profiles, management and outcome were analyzed. Prevalence of PAH in SLE patients was estimated.

**Results** We identified 39 PAH patients among SLE cohort, the prevalence was 10.1%. The mean onset of PAH was  $7.5 \pm 8.3$  (mean  $\pm$  standard deviation) years after SLE diagnosis. 3-year survival rate was 87.2% after diagnosis of PAH. Compared

with control group, significantly more patients in PAH group had pericardial effusion (43.6% vs 15.9%), pleural effusion (43.6% vs 13%), psychosis (12.8% vs 1.4%), interstitial lung disease (25.6% vs 8.7%), hemolytic anemia (38.5% vs 14.5%), lower hemoglobin level at presentation of SLE ( $10.5 \pm 2.5$  g/dL vs  $11.8 \pm 2.0$  g/dL), higher anti- ds DNA level at presentation ( $242.8 \pm 204.1$  IU/ml vs  $166.0 \pm 121.6$  IU/ml), proteinuria (76.9% vs 53.6%), higher proteinuria level at end of study ( $0.61 \pm 1.02$  g/d vs  $0.34 \pm 0.73$  g/d), worse creatinine at end of study ( $180.7 \pm 236.6$  umol/L vs  $105.2 \pm 98.8$  umol/L), higher worst creatinine level ( $256.4 \pm 288.2$  umol/L vs  $172.4 \pm 172.9$  umol/L), more anti RNP positivity (57.9% vs 27.5%), higher SLEDAI (median of 4.0 vs 2.0) and higher SLICC (median of 2.0 vs 1.0). On the contrary, significantly fewer PAH patients had malar rash (46.2% vs 79.7%) and photosensitivity (7.7% vs 39.1%). For investigations, more PAH patients had at least moderate right heart valvular lesions (56.4% vs 4.3%) or right heart failure evidence (23.1% vs 1.4%) in echocardiogram, cardiomegaly on chest radiographs (44.4% vs 17.2%) and right heart strain (21.9% vs 1.9%) on electrocardiogram. The clinical pattern of anti RNP positivity combined with negative malar rash gave an odds ratio of 5.60 for PAH. And these were the two variables that remained significant after multiple logistic regression.

**Conclusion** Clinical association of PAH with anti RNP positivity and absence of malar rash was noted in SLE patients. These findings would help to increase vigilance of rheumatologists to PAH. Awareness of factors associated with PAH in SLE would aid early recognition and prompt treatment which were of paramount importance.

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Note: For obtaining the full dissertation, please contact the author directly.