Abstracts of Dissertations
June 2015 Exit Assessment Exercise

LEFT VENTRICULAR MYOCARDIAL STRAIN ANALYSIS BY SPECKLE TRACKING ECHOCARDIOGRAPHY IN PATIENTS WITH STABLE KNOWN OR SUSPECTED ISCHAEMIC HEART DISEASE/UNSTABLE ANGINA/NSTEMI PLANNING FOR INVASIVE CORONARY ANGIOGRAPHY

Dr Cheng Yuet Wong, Department of Medicine, Queen Elizabeth Hospital (June 2015 Cardiology Exit Assessment Exercise)

Background Speckle tracking echocardiography (STE) is a relatively novel technique that potentially detects early signs of impaired myocardial function. It has been shown to be a reliable option in assessing left ventricular function. The aim of this study is to assess the accuracy of Global longitudinal strain (GLS) using STE to detect resting myocardial dysfunction secondary to ischaemic insult compared with the conventional 2-dimensional echocardiography in patient undergoing invasive coronary angiography for suspected or known ischaemic heart disease and Non-ST-segment elevation acute coronary syndromes.

Methods 42 patients who underwent echocardiography and coronary angiography were recruited in Queen Elizabeth Hospital, HKSAR, from July 2014 to February 2015 and evaluated on a prospective basis.

Results No statistical significance between patients with or without CAD was identified in the baseline demographics and concurrent medication used.

Absolute GLS value, but not left ventricular ejection fraction (LVEF) and wall motion score index (WMSI), was significantly reduced in the less extensive CAD group (single or two-vessel CAD) compared with patients without obstructive CAD. In the extensive CAD group (left main or three vessels disease), LVEF and absolute GLS value were significantly lower while WMSI was significantly higher.

In addition, absolute GLS value was significantly reduced in the low SYNTAX score group but not the WMSI compared with non-significant CAD group. In intermediate SYNTAX score group, absolute GLS value was reduced and WMSI was significantly higher. Overall, there was moderate correlation of GLS with SYNTAX score ($r = +0.60$).

Receiver operating characteristic (ROC) curve analysis for GLS in prediction of obstructive CAD showed area under curve of 0.872. Optimal cut off would be -18.5% with sensitivity of 90% and specificity of 83.3%. ROC curve was larger in GLS compared with segmental longitudinal strain.

Conclusion GLS at rest was significantly reduced in patients with obstructive CAD. Additional STE analysis might be useful as an adjunct to prioritize relatively stable patients with suspected CAD. Future large scale studies were needed.

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THE ASSOCIATION OF PRASUGREL AND TICAGRELOR RELATED BLEEDING RISK AND PLATELET-FUNCTION TEST IN PATIENTS WITH ACUTE

CORONARY SYNDROME

Dr Fong Ho Fai Daniel, Department of Medicine & Geriatrics, Princess Margaret Hospital (June 2015 Cardiology Exit Assessment Exercise)

Background Prasugrel or ticagrelor are now commonly used to address the problem of clopidogrel resistance. However, both drugs were associated with an increased bleeding risk. Platelet function tests, such as VerifyNow, claimed to be able to help assess bleeding risk in these patients. However, evidence was limited. This study aimed to assess the use of VerifyNow to predict bleeding risk in patients taking prasugrel or ticagrelor. Subjects with low platelet reactivity, i.e. a low PRU value, were hypothesized to have an increased bleeding risk.

Methods This was a prospective cohort study done in Princess Margaret Hospital. 100 subjects diagnosed with acute coronary syndrome and given prasugrel or ticagrelor were recruited. VerifyNow test was performed and the subjects were divided into the low PRU group (PRU </=85) and the adequate PRU group. Bleeding events were classified according to the TIMI criteria and the BARC criteria. The primary outcome was the increased bleeding risk associated with a low PRU value at 30 days and 1 year, using the TIMI criteria. The secondary outcome was the increased bleeding risk associated with a low PRU value at 30 days and 1 year, using the BARC criteria. Multivariable logistic regression was used to obtain the odds ratio while propensity score analysis was used to control for confounding factors.

Results Bleeding events were common in both groups. 32% of subjects had a bleeding event at 30 days and 34% of subjects had a bleeding event at 1 year. The majority of these bleeding events were minimal bleeding events or type 1 bleeding events. There were more bleeding in the adequate PRU group at 30 days but no significant difference between the two groups at 1 year. After adjusting for confounders, subjects with low PRU was not associated with a statistically significant increased bleeding risk at 30 days or 1 year, regardless of which bleeding criteria was used.

Conclusion This study did not show a significant association between low PRU values and increased bleeding risk at 30 days and 1 year. This is in agreement with recent prospective studies in western literature. A lack of consensus on when to perform the platelet function test, how to properly document bleeding events might account for the discrepant results in current literature regarding the association between low PRU values and increase bleeding risk. The inability to include critically ill subjects and the small sample size also affected the outcome of this study. Further studies addressing the above issues are needed to properly evaluate the usefulness of VerifyNow in assessing bleeding risk in patients taking P2Y12 inhibitors.

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A RETROSPECTIVE STUDY OF THE PREVALANCE AND RISK FACTORS OF CARDIAC ALLOGRAFT VASCULOPATHY IN ADULT PATIENTS WHO RECEIVED HEART TRANSPLANTATION IN HONG KONG

Dr Ng Kei Yan Andrew, Department of Medicine, Grantham Hospital (June 2015 Cardiology Exit Assessment Exercise)

Background Cardiac allograft vasculopathy (CAV) is a major cause of long term mortality in heart transplant recipients. However, there is no published data regarding the prevalence and risk factors associated with CAV for the Hong Kong population.

Method In this retrospective cohort study, we analyze the disease free survival, prevalence and associated risk factors of cardiac allograft vasculopathy in all adult patients who received heart transplantation in Hong Kong. All adult heart transplant recipients who survived more than 1 year after heart transplantation were included. The patients who could not undergo coronary angiography or were lost to follow up were excluded.

Results A total of 112 patients (84.8% of all heart transplant recipients) survived more than one year after heart transplantation. 2 patients were excluded due to lack of invasive coronary angiographic studies. A total of 110 patients were included in analyses of cardiac allograft vasculopathy and associated risk factors.

The prevalence rates of any CAV were 19.2%, 20.8%, and 36.6% at 2 years, 5 years and 10 years after heart transplantation respectively. The prevalence rates of severe CAV, defined as grade 2 or above, were 1.9%, 5.5%, and 12% at 2 years, 5 years and 10 years after heart transplantation respectively.

Major risk factors associated with the development of CAV are history of donor hypertension, donor smoking history, older donor age, male gender of recipients, recipient smoking history, higher average HbA1c in recipients and more cumulative episodes of rejections requiring adjustment of immunosuppressant in the first 3 years after heart transplantation. Major risk factors associated with the development of severe CAV are diabetes mellitus in recipients at 2 years after transplantation, hyperlipidemia in recipients at transplantation, recipient smoking and drinking history, coronary artery disease as a cause of heart failure before heart transplantation, and more cumulative episodes of rejections requiring adjustment of immunosuppressant in the first 3 years after heart transplantation. Donor hypertension is an independent risk factor associated with development of CAV and is related to a shorter duration of CAV free survival.

Conclusion This is the first study to describe the demographics of adult heart transplant recipients in Hong Kong. The prevalence and risk factors of CAV in this population was analysed. The prevalence of CAV in the local population is lower than that of the international cohort, and multiple risk factors associated with development of CAV are identified. Donor hypertension is an independent risk factor and predicts a shorter duration of CAV free survival.

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IMPACT OF GLYCEMIC CONTROL ONCARDIOVASCULAR OUTCOMES IN DIABETIC PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

Dr Vincent Pong, Department of Medicine & Geriatrics, Kwong Wah Hospital (June 2015 Cardiology Exit Assessment Exercise)

Background Diabetes mellitus is associated with increased risk of restenosis and mortality after coronary stenting. Nevertheless, the predictive role of periprocedural hemoglobin A1c (HbA1c) on long term outcome after percutaneous coronary intervention (PCI) remains controversial, especially in those with long standing diabetes and multiple comorbidities.

Objectives The aim of the study is to investigate whether periprocedural HbA1c predicts major adverse cardiovascular event (MACE) after PCI in diabetic patients at our institution;

and whether cutoff exists to indicate an increased risk for adverse outcomes.

Methods In this retrospective cohort study, 250 consecutive diabetic patients undergoing PCI in Kwong Wah Hospital from January 2007 to December 2009 were followed up for MACE at 12 months, defined as a composite endpoint of all-cause mortality, nonfatal myocardial infarction (MI) and target vessel revascularization (TVR). Periprocedural HbA1c and fasting glucose were measured.

Results Patients recruited had long standing diabetes, multiple comorbidities and advanced coronary artery disease. Those with periprocedural HbA1c ≥8% had 2 times higher risk of MACE than those with HbA1c <8% (adjusted HR 2.01, 95% CI 1.10-3.36, p = 0.022). This was driven by a higher TVR rate in those with worse glycemic control (adjusted HR 2.91, 95% CI 1.32-6.37, p=0.008). Nevertheless, periprocedural fasting glucose did not predict MACE or TVR. The HbA1c level was also not associated with all-cause mortality, cardiovascular mortality or nonfatal MI.

Conclusion Periprocedural HbA1c ≥8% predicts an increased risk of TVR and MACE at 12 months after PCI in diabetic patients at our institution.

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MATERNAL AND FETAL OUTCOMES AND RISK ASSESSMENT IN PREGNANCIES ASSOCIATED WITH STRUCTURAL HEART DISEASES: A SINGLE TERTIARY CENTER EXPERIENCE

Dr Tan Guangming, Department of Medicine & Therapeutics, Prince of Wales Hospital
(June 2015 Cardiology Exit Assessment Exercise)

Background Pregnancies associated with congenital or acquired heart disease were associated with significant adverse maternal and fetal outcomes. Information of these pregnancies in an Asian population is lacking. Different risk assessment scores are available but were not validated in an Asian population.

Methods This is a retrospective single center observational study of 106 pregnancies with structural heart disease (SHD) from November 2010 to June 2014. Clinical and echocardiographic parameters were extracted from electronic medical record. Main outcome measured are maternal major adverse cardiovascular event (MACE), maternal mortality, and adverse fetal events. The CARPREG (CARdiac disease in PREGnancy) and ZAHARA I (Zwangerscharp bjj Aangeboren HARtAfwijkingen pregnancy in CHD) risk scores were calculated for each pregnancy and their predictive accuracy were evaluated.

Result Maternal MACE occurred in 8.4% of the pregnancies, with heart failure being the commonest event. Adverse fetal events were observed in 22.4% of pregnancies, with miscarriage being the commonest event. Right ventricular systolic pressure (RVSP) >40mmHg was identified as an independent risk factors for development of maternal MACE, while age at pregnancy and history of diabetes mellitus were identified as risk factors for adverse fetal events. Addition of these risk factors to the existing CARPREG and ZAHARA I risk scores significantly improved their predictive accuracy.

Conclusion In this Asian cohort of women with SHD, pregnancies were associated with significant maternal complications. High RVSP was significant risk factors for development

of these complications, and addition of high RVSP to the existing risk assessment scores significantly improved their predictive accuracy.

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2D-SPECKLE TRACKING ECHOCARDIOGRAPHY IN IDENTIFYING THE DEGREE OF RECOVERABILITY OF SUB-CLINICAL RIGHT VENTRICULAR DYSFUNCTION IN PATIENTS WITH NEWLY DIAGNOSED OSA RECEIVING CPAP THERAPY

Dr Yung Chi Yui, Integrated Medical Service, Ruttonjee Hospital (June 2015 Cardiology Exit Assessment Exercise)

Background Obstructive sleep apnea (OSA) is associated with right ventricular (RV) dysfunction and use of continuous positive airway pressure (CPAP) may improve RV function. 2D speckle tracking is a relatively new method for assessment of RV function and is believed to be more sensitive than traditional methods in detecting subclinical RV dysfunction. RV free wall strain is recently included in international guideline for RV function assessment. We compared RV function in subjects newly diagnosed with OSA at baseline, 4 weeks and 12 weeks after CPAP therapy, by using 2D speckle tracking and traditional methods.

Purpose To investigate the effect of OSA on right ventricular function and changes after initiation of CPAP therapy.

Method RV global and free wall longitudinal speckle tracking strain, TAPSE and RV fractional area change (FAC) were measured in 22 subjects (18 male, mean age 53+/-9) with newly diagnosed OSA (mean respiratory disturbance index (RDI) 29.8) after overnight polysomnography, and 1 month subsequently after initiation of CPAP therapy. The strain data was sent and analyzed blindly by experienced strain analysts.

Results At baseline, the mean RV global strain and free wall strain were -23.0+/-3% and -26.6+/-4.2% respectively, with TAPSE 2.21+/-0.2mm and FAC 34.5+/-8%. At one month after CPAP therapy, there were statistically significant improvements in both RV global (-24.8+/-3.2%, relative change 7.83%, p=0.012) and RV free wall strain (-30.8+/-4.1%, relative change 15.8%, p<0.01). There were trends in improvement in TAPSE (2.24+/-2.9mm, p=0.54) and FAC (35.1+/-9.7%, p=0.83). At 12 weeks, there were insignificant change of RV global (-22.4+/-3.2%, p=0.69), free wall strain (-27.6+/-4.6%, p=0.41), TAPSE (2.33+/-0.29cm p=0.20) and FAC (39.7+/-8.9, p=0.26) compared with baseline.

Conclusion Use of CPAP therapy correlate with improvement in RV function in subjects with OSA. RV global and free wall longitudinal strain maybe more sensitive in detection in change in RV function than TAPSE and FAC.

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COMPARISON OF INDIRECT CALORIMETRY AND PREDICTION EQUATIONS IN ESTIMATING ENERGY EXPENDITURE OF SEPTIC, CRITICALLY ILL PATIENTS

Dr Kwok Ka Ming, Department of Medicine & Geriatrics, United Christian Hospital (May 2015 Critical Care Medicine Exit Assessment Exercise)

Background Under- and over-feeding are associated with adverse outcomes in critically ill patients. Appropriate nutrition therapy requires accurate determination of energy expenditure. Despite being the gold standard, the availability of indirect calorimetry is limited. Prediction equations are still commonly used in clinical practice.

Objective The aim of this study was to compare resting energy expenditure measured by indirect calorimetry (MREE) with energy expenditure estimated by prediction equations in septic, critically ill patients in Chinese population.

Methods Resting energy expenditure was measured by indirect calorimetry in septic, mechanically ventilated Chinese patients admitted to intensive care unit. The Harris-Benedict, Ireton-Jones, Penn State and Swinamer equations were used to estimate energy expenditure. Statistical analyses were performed by Bland-Altman plot and Pearson's correlation coefficient. Percentages of estimates within 90% and 110% of MREE were calculated as a measure of accuracy.

Results A total of 40 patients were included for comparison. Agreement between the prediction equations and indirect calorimetry was poor. The limits of agreement were wide for all evaluated equations. None of the equations showed good correlation with indirect calorimetry. Penn State equation demonstrated the best accuracy among these equations; but still only 40% of estimates were within 90% and 110% of MREE.

Conclusions None of the prediction equations evaluated demonstrated high accuracy in estimating energy expenditure in critically ill, septic patients in Chinese population. Indirect calorimetry remains to be the gold standard in the determination of energy expenditure in these patients.

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CARDIAC ABNORMALITIES IN PATIENTS WITH SEPTIC SHOCK DETECTED BY SPECKLE TRACKING ECHOCARDIOGRAPHY

Dr Yeung Pui Ning Pauline, Adult Intensive Care Unit, Queen Mary Hospital (May 2015 Critical Care Medicine Exit Assessment Exercise)

Background Sepsis-induced myocardial dysfunction is a well-recognized condition and confers worse outcomes in septic patients. However, the diagnostic criteria remain poorly described. Echocardiographic assessment by conventional parameters such as left ventricular ejection fraction (LVEF) is often affected by ongoing changes in preload and afterload conditions. Novel echocardiographic technologies such as speckle tracking echocardiography (STE) have evolved for direct assessment of the myocardial function. In this study, we investigate the measurement of myocardial strain by speckle tracking echocardiography for the diagnosis of sepsis-induced myocardial dysfunction.

Methods This is a prospective, case-control study at a university-affiliated tertiary care adult medical intensive care unit. Consecutive patients admitted with a diagnosis of septic shock were included. Patients with other causes of myocardial dysfunction were excluded. They were compared to age-, gender-, and cardiovascular risk factors-matched controls, who were admitted to hospital for sepsis but did not develop septic shock. Conventional echocardiographic parameters, as well as speckle tracking imaging of myocardial function, were obtained within 24 hours of diagnosis. A second echocardiogram was performed in the study group of patients upon recovery.

Results From January 2014 to January 2015, 33 patients with septic shock (study group) and 29 patients with sepsis but no septic shock (control group) were recruited. The baseline characteristics were similar. Conventional echocardiographic measurements, including LVEF (59.42% in the study group vs 61.28% in the control group, P=0.169) and fractional shortening (31.55% vs 32.86%, P=0.163) did not differ between the two groups. The hemodynamic profiles (cardiac index 3.48L/min/m2 vs 3.34L/min/m2, P=0.608) were not statistically different. The study group had a greater degree of myocardial dysfunction measured by left ventricular global longitudinal peak systolic strain (GLPSS) (-14.5% vs -18.3%, P=<0.001, with a less negative value implying worse myocardial contractility). The myocardial strain measured at diagnosis and recovery was significantly different in the study group of patients (-14.5% vs -16.0%, P=0.010).

Conclusion This is a first study in the adult population to show that the use of speckle tracking echocardiography can detect significant myocardial impairment in patients with septic shock as compared to patients with sepsis but no septic shock, which was not otherwise detectable by conventional echocardiography. Further studies are warranted to investigate the clinical application of this echocardiographic technique in the diagnosis and prognostication of sepsisinduced myocardial dysfunction.

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RATE AND PREDICTORS OF GENITAL *CHLAMYDIA TRACHOMATIS* REINFECTION AMONG MEN IN HONG KONG

Dr Lam Yuk Keung, Social Hygiene Service, Department of Health (June 2015 Dermatology & Venereology Exit Assessment Exercise)

Background Overseas studies revealed that 9.8%-10.2% of men attending sexually transmitted infection (STI) clinics had genital *Chlamydia trachomatis* (CT) reinfection within three to four months after treatment. As a result, the United States Centers for Disease Control and Prevention recommends retesting for CT reinfection at three months after treatment. As the issue of CT reinfection has not yet been studied in Hong Kong, local epidemiological findings for rate and predictors of CT reinfection are important for the development of public health prevention strategies.

Objective To investigate the rate and predictors of genital CT reinfection among men attending STI clinics in Hong Kong.

Methods A cohort of men with genital CT infection was enrolled at Social Hygiene Clinics from September 2013 to June 2014. Enrolled men had a follow-up visit three months after treatment and were retested for CT infection by nucleic acid amplification test using a urethral swab. Behavioral variables were assessed at baselin and follow-up visits. CT reinfection was defined as genital CT infection at follow-up visit, with the visit having to be at least 42 days after treatment of the initial infection. The rate and predictors of genital CT reinfection were evaluated.

Results There were 229 subjects recruited at the baseline visit. 192 (83.8%) subjects returned for follow-up retesting. The mean duration between initial infection and follow-up visit was 98.3 days (range, 42-143 days). Younger subjects and absence of dysuria at initial infection were associated with lower participation in retesting. There were 22 cases of CT

reinfection and the reinfection rate was 11.5% (95% confidence interval [CI], 7.5%-17.0%). The incidence density rate was 42.54per 100 person-years (95% CI, 26.66-64.41per 100 person-years). Independent predictors of CT reinfection were i) subjects with history of STIs prior to recruitment (odds ratio [OR], 4.26;95% CI,1.46-12.44; p=0.008), ii) presence of urethral discharge at follow-up visit (OR,12.44;95% CI,3.15-49.13; p<0.0005) and iii) greater number of sex partners following treatment (0 sex partner: referent; 1 sex partner: OR,5.64 [95% CI,0.62-51.7]; 2 sex partners:OR,9.56 [95% CI, 0.91-100.97]; >2sex partners: OR,26.30 [95% CI,2.44-283.93]; p=0.033).

Conclusion Since a substantial portion of men had genital CT reinfection at three months after treatment of the initial episode, a strategy of retesting at three months is recommended for CT-infected men in Hong Kong. Predictors of CT reinfection were a history of STIs prior to recruitment, presence of urethral discharge at follow-up visit and greater number of sex partners following treatment.

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PERFORMANCE AND ACCEPTABILITY OF SELF-TAKEN VAGINAL SWAB FOR THE DIAGNOSIS OF GENITAL *CHLAMYDIA TRACHOMATIS* INFECTION USING NUCLEIC ACID AMPLIFICATION TEST IN HONG KONG

Dr Yau Kit Yee, Social Hygiene Service, Department of Health (June 2015 Dermatology & Venereology Exit Assessment Exercise)

Background Performance of self-taken vaginal swab (SVS) has been demonstrated to be comparable or even superior to provider-collected endocervical swab (PES) or first catch urine (FCU) for detection of genital *Chlamydia trachomatis* infection using nucleic acid amplification test (NAAT) in overseas studies. However, there is no published data for SVS application in Hong Kong. The study objectives are i) to compare performance of SVS with PES and FCU, and ii) assess the acceptability of SVS in Hong Kong

Method A multi-center cross-sectional study on sexually active females was conducted in Social Hygiene Clinics from October 2013 to March2014. SVS, PES and FCU were collected for detection of *C. trachomatis* infection using NAAT. Agreement and test performance were analyzed. A self-administered questionnaire was used to assess the acceptability of SVS for *C. trachomatis* testing.

Results Two hundred women completed the study. Positivit rates of PES, SVS and FCU were 16% (32/200), 16% (32/200) and 14.5% (29/200) respectively. There was almost perfect agreement between SVS and the other two specimen types (Kappa coefficient: SVS*PES0.926, SVS*FCU0.942). With reference to ‘specimen standard’ using endocervical swab results, sensitivities of SVS and FCU were 93.8% (95% confidence interval [CI], 77.8%-98.9%) and 84.4% (95% CI, 66.5% -94.1%) respectively, where as specificities of SVS and FCU were both 98.8% (95% CI,95.3% -99.8%). When using ‘infected patient standard’ in which an infected case is defined as at least two positive results from the three specimen types, sensitivities of SVS, PES and FCU were 100% (95% CI, 86.7%-100%), 93.8% (95% CI, 77.8% -98.9%) and 90.6% (95% CI, 73.8% -97.5%) respectively and specificities of SVS, PES and FCU were 100% (95% CI, 97.2% -100%), 98.8% (95% CI, 95.3% -99.8%) and 100% (95% CI, 97.2%-100%) respectively. 91% (182/200) of subjects rated SVS as either ‘very easy’ or ‘easy’ to collect. For preference of sampling method, more subjects preferred SVS to PES (68% versus 12.5%). Only 6% (12/200) of subjects experienced discomfort during collection of SVS.

Conclusions SVS has an almost perfect agreement with both PES and FCU, and results have demonstrated a good performance profile and a high degree of acceptability in Hong Kong. This study supports SVS as an excellent alternative to PES or FCUf or *C. trachomatis* testing.

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THE CLINICAL, ULTRASOUND FEATURES, ULTRASOUND GUIDED FINE-NEEDLE ASPIRATION CYTOLOGY OF PATIENTS RECEIVED THYROIDECTOMY IN A ONE-STOP THYROID CLINIC: A REGIONAL AUDIT

Dr Chan Hiu Mang, Department of Medicine, Yan Chai Hospital (May 2015 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

Background Thyroid incidentalomas have become more common with the widespread use of radiological imaging nowadays. Thyroid ultrasound has emerged as a crucial tool for detection, investigation and follow-up of thyroid nodules and thyroid cancers. Several ultrasound features in relation to the clinical characteristics of the thyroid nodules are found to be important predictors of malignancy. In addition, ultrasound guided fine-needle aspiration (US-FNA) cytology provides an opportunity to examine cell morphology even on small non-palpable nodules. To provide one-stop assessment and management for patients with thyroid nodules, the one-stop thyroid nodule clinic was set up in April 2012.

Objectives To review the clinical features, the features of thyroid ultrasound associated with thyroid cancer and to compare the results of US-FNA cytology histological findings for patients attending the one-stop thyroid clinic.

Methods Data of new patients who had thyroid nodules attended the one-stop thyroid nodule clinic from 1st April, 2012 to 30th Sept, 2013 were retrieved via Clinical Management System (CMS) and electronic patient record (EPR). Demographic data, clinical characteristics, ultrasound features and US-FNA result were evaluated and compared with histological findings

Results A total of 165 nodules in 147 patients who underwent thyroidectomy were included. 40 (24.2%) thyroid nodules were malignant and 125 (75.8%) thyroid nodules were benign. There was no statistically significant difference in clinical features between patients with benign and malignant nodules. Ultrasound features of calcification, hypoechoic appearance and increased vascularity were independent risk factors to predict malignancy. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of US-FNA for predicting neoplasm was 93.2%, 29.9%, 47.4% and 86.7% respectively.

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A RETROSPECTIVE REVIEW OF THE USE OF ADRENAL VENOUS SAMPLING IN A REGIONAL HOSPITAL AND THE DEVELOPMENT OF CLINICAL PREDICTION SCORE TO DIAGNOSE UNILATERAL PRIMARY ALDOSTERONISM

Dr Chung Chi Tung, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (May 2015 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

Background Subtype classification of primary aldosteronism is important in view of the

potential curability of unilateral disease by adrenalectomy. Adrenal venous sampling is recommended to be the gold standard for this purpose. However, this procedure was invasive, poorly standardized, and not widely available.

Objectives The aims of this dissertation are to review the use of adrenal venous sampling in a regional hospital, and to identify patients' characteristics that can predict unilateral aldosterone hypersecretion, with a view to select out some patients in whom AVS can be exempted.

Methods Patients with primary aldosteronism who had undergone adrenal venous sampling for subtype classification from July 2007 to December 2014 were included. Medical records were reviewed and analysed retrospectively. The baseline clinical features, biochemical parameters and imaging result of the patients together with the success rate of adrenal venous sampling were reviewed. Clinical variables independently associated with a lateralized adrenal venous sampling in multivariate logistic regression were used to derive a clinical prediction rule.

Results Total 92 AVS had been performed in 91 patients from July 2007 to December 2014. 47 AVS (51.1%) were conclusive using pre-defined criteria while 45 AVS (48.9%) were inconclusive. Failure in cannulation of the adrenal veins was the most common cause of inconclusive AVS (40 out of 45, 89%). AVS had good accuracy in diagnosing unilateral form of primary aldosteronism in terms of post-surgery improvement or cure of hypertension, normalization of potassium levels and the aldosterone-renin ratio.

Based on the adrenal venous sampling result, 21 and 26 patients were diagnosed to have unilateral and bilateral forms of primary aldosteronism (PA) respectively,. A clinical prediction score (CPS) for predicting unilateral form of primary aldosteronism was built based on the regression coefficients of the following three variables: 1) potassium supplement requirement, 2) aldosterone-renin ratio and 3) presence of adrenal adenoma or thickening in CT adrenals. ROC curve analysis for the ability to diagnose unilateral primary aldosteonism showed a score of ≥6 points had 76.2% sensitivity and 92.3% specificity, score of ≥4 points had 100% sensitivity and 46.2% specificity, and a score of 8 points had 19% sensitivity and 100% specificity. The area under the ROC curve was 0.907 (95% confidence interval 0.823-0.990).

Conclusion
AVS predicts good surgical outcome accurately in patients with unilateral primary aldosteronism. The clinical prediction score developed could discriminate between unilateral and bilateral primary aldosteronism and is useful for selecting patients in whom AVS can be exempted.

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A LOCAL RETROSPECTIVE COHORT OF SUBJECTS WITH THYROTOXIC HEART DISEASE

Dr Wong Cheuk Lik, Department of Medicine & Geriatrics, Caritas Medical Centre (May 2015 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

Background Thyrotoxicosis causes significant cardiovascular morbidity and mortality. Atrial fibrillation occurs in 2 to 20% of patients with hyperthyroidism while congestive heart failure is the presenting symptom in 6% of thyrotoxic patients. Systemic studies on the

clinical aspects of the major cardiac complications of thyrotoxicosis are limited in recent literature.

Objectives The primary objective of the present study was to estimate the proportion of subjects with thyrotoxic heart disease and to investigate the clinical characteristics and outcomes associated with atrial fibrillation. The secondary objective was to find out independent predictors that were associated with persistent atrial fibrillation, presence of left ventricular systolic dysfunction at presentation and its persistence.

Method This is a retrospective cohort study performed in the Department of Medicine and Geriatrics, Caritas Medical Centre from year 2004 to year 2013. A total of 126 patients, 28 to 91 years old, presenting with thyrotoxicosis and related cardiac complications, mainly atrial fibrillation and congestive heart failure, were identified by the Clinical Data Analysis and Reporting System using International Classification of Diseases 9 coding. Information on demographic data, thyroid status, presenting cardiac condition, echocardiographic findings and treatment of the cardiac conditions were retrieved. Factors associated with persistence of thyrotoxic atrial fibrillation, left ventricular systolic dysfunction at presentation and its persistence after euthyroidism were examined.

Results Among 1755 patients who had a registered diagnosis of thyrotoxicosis, 115 (6.6%) patients presented with atrial fibrillation and 64 (3.6%) patients presented with congestive heart failure. Coexisting atrial fibrillation and congestive heart failure were present in 54 (3.1%) patients. Ventricular tachycardia occurred in 4 (0.2%) patients, while dilated cardiomyopathy and isolated right heart failure were present in 4 (0.2%) and 3 (0.2%) patients respectively. Baseline echocardiogram was performed in 102 patients. Measurement of tricuspid regurgitation was documented in 99 patients, and 47 (47.4%) patients had evidence of pulmonary hypertension. Among those 115 patients who had hyperthyroidism and atrial fibrillation, 42 (36.5%) patients had persistent atrial fibrillation. History of smoking (adjusted odds ratio 4.7, 95% CI [1.6, 14.0, p=0.005), moderate to severe tricuspid regurgitation (adjusted odd ratio 5.6, 95% CI [1.2, 25.6], p=0.027) and a larger left atrial diameter (adjusted odd ratio 2.4, 95% CI [1.1, 5.1], p=0.020) were associated with persistence of atrial fibrillation on multivariate logistic regression. However, no independent predictor of left ventricular systolic dysfunction at presentation or its persistence could be identified by multivariate analysis.

Conclusion Persistence of thyrotoxicosis related heart disease occurred in nearly 40% of patients in the present study despite restoration of euthyroidism. History of smoking, moderate to severe tricuspid regurgitation and larger left atrial diameter might suggest a higher risk of persistent atrial fibrillation. Clinical factors associated with persistent left ventricular systolic dysfunction remained to be determined. Prospective study is warranted to further evaluate the predictive factors of persistent left ventricular systolic dysfunction.

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A CROSS-SECTIONAL STUDY OF CARDIO-METABOLIC RISK IN CHINESE WOMEN WITH POLYCYSTIC OVARY SYNDROME

Dr Yau Tse Ling, Department of Medicine & Therapeutics, Prince of Wales Hospital (May 2015 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine / metabolic

disorders of women. It is now recognized that PCOS is associated with cardiovascular risk factors, including obesity, hypertension, glucose intolerance, and dyslipidaemia.

Eighty women with PCOS (as defined by the 2003 Rotterdam Consensus) were identified between 2004 to 2006 in the Prince of Wales Hospital. Forty-seven subjects with a mean age of 35.4 ± 6.4 years completed the assessment. The prevalence of cardio-metabolic risk factors was overweight / obesity (49 percent), hypertension (14.9 percent), type 2 diabetes mellitus (14.9 percent), dyslipidaemia (44.7 percent), and metabolic syndrome (23.4 percent) respectively. Among the 21 subjects with dyslipidaemia, 57.1 percent had low HDL-C, 38.1 percent had high TG, and 47.6 percent had high calculated LDL-C. There were no cardiovascular disease events noted in our subjects. The prevalence of cardio-metabolic risk factors were BMI-specific (all p-value < 0.05), but not age-specific in our study. Visceral fat level (stratified according to two categories) was shown to be an independent predictor for metabolic syndrome in our cohort (p-value = 0.00), even after adjustment for BMI (p-value = 0.03). We did not show a statistically significant association between cardio-metabolic risk and effects of clinical and/or biochemical hyperandrogenism nor menstrual irregularity.

The high prevalence of metabolic disturbances and the consequent increase in the long-term risk of type 2 diabetes and possible cardiovascular diseases indicates that PCOS should be considered a general health problem.

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RELATIONSHIP BETWEEN HEPATOCELLULAR CARCINOMA DEVELOPMENT AND SERUM VIRAL MARKERS IN PATIENTS WITH UNDETECTABLE SERUM HBV DNA LEVEL WHILE ON NUCLEOS(T)IDE ANALOGUES

Dr Cheung Ka Shing, Department of Medicine, Queen Mary Hospital (May 2015 Gastroenterology and Hepatology Exit Assessment Exercise)

Background & Aims Hepatitis B surface antigen (HBsAg) and hepatitis B core-related antigen (HBcrAg) are risk factors for hepatocellular carcinoma (HCC) development. Linearized HBsAg (HQ-HBsAg) is a novel assay allowing better quantification of HBsAg level. However, little is known whether they remain important for HCC development if there is profound suppression of viral replication by nucleos(t)ide analogues (NA).

Methods Seventy-six HBV carriers who developed HCC despite undetectable serum HBV DNA (<20 IU/mL) after at least one-year NA therapy were compared with 152 matched controls who did not have HCC. Clinical and laboratory parameters were analysed in a cross-sectional manner.

Results There was a significant difference in the median values of HBcrAg level between the HCC group and non-HCC group (10.2 and 1.7 kU/mL, respectively, p=0.005), while there were no significant differences in HBsAg or HQ-HBsAg levels. A cutoff value of HBcrAg level ≥7.8 kU/mL yielded an area under receiver operating curve (AUROC) of 0.61 (95% CI: 0.54-0.69) with a negative predictive value (NPV) of 77.0%. The odds ratio of HCC development was 3.27 (95% CI: 1.84-5.80). For the subgroup of non-cirrhotic patients, the median values of HBcrAg level of the HCC and non-HCC group were 10.2 and 1.0 kU/mL respectively (p=0.001). A cutoff value of HBcrAg level ≥7.9 kU/mL yielded an AUROC of 0.70 (95% CI: 0.58-0.81) with a NPV of 80.6%. The odds ratio of HCC development was 5.95 (95% CI: 2.35-15.07).

Conclusion A higher HBcrAg level (but not HBsAg or HQ-HBsAg) was associated with an increased risk of HCC development in patients who achieved undetectable serum HBV DNA while on NA therapy.

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CRITICAL REVIEW OF POST ERCP COMPLICATIONS OF 10 YEARS PERIOD IN A HONG KONG REGIONAL HOSPITAL

Dr Fong Ka Leuk, Department of Medicine & Geriatrics, United Christian Hospital (May 2015 Gastroenterology and Hepatology Exit Assessment Exercise)

Background Post ERCP pancreatitis, haemorrhage, perforation and cholangitis are major ERCP related complications. Many studies have identified various risk factors of post ERCP complications, however most of these studies were conducted in large academic centers and data from community hospital is lacking.

Aim Identify risk factors of major post ERCP complications and seek for possible methods to improve the safety of ERCP.

Method This is a retrospective study recruiting all patients underwent ERCP from 1stJanuary 2004 to 31stDecember 2013. Complications within 30 days of ERCP will be analysed.

Results Total 470 complications (11.7%) were identified in 4006 ERCP procedures: post ERCP pancreatitis 203 (5.1%), haemorrhage 113 (2.8%), perforation 32 (0.8%), cholangitis 39 (1%) and cardiopulmonary complications 77 (1.9%). Risk factors of post ERCP pancreatitis include: normal bilirubin (1.38, 95% CI 1.02-1.86), past history of post ERCP pancreatitis (2.34, 95% CI 1.22-4.48), precut sphincterotomy (2.07, 95% CI 1.14-3.74) and pancreatic duct injection (1.58, 95% CI 1.01-2.74).

Risk factors of post ERCP haemorrhage include coagulopathy (OR 4.38, 95% CI 2.72-7.05), thrombocytopenia (OR 2.27, 95% CI 1.17-4.42), use of anticoagulation within three days after procedure (OR 15.60, 95% CI 4.10-59.45), urgent ERCP (OR 2.08, 95% CI 1.33-3.26), biliary sphincterotomy (OR 4.60, 95% CI 2.89-7.31), observed bleeding during procedure (OR 2.98, 95% CI 1.85-4.82) and trainee performed procedure (OR 2.14, 95% CI 1.30-3.50). Risk factors of perforation include prior biliary diversion surgery (OR 40.45, 95% CI 12.30-133.0), biliary sphincterotomy (OR 2.87, 95% CI 1.36-6.07) and precut sphincterotomy (OR 7.51, 95% CI 2.78-20.26). Trainee performed procedure was the only risk factor for post ERCP cholangitis (OR 2.35 95% CI 1.16-4.74). Risk factors of cardiopulmonary complications include old age (OR 4.30, 95% CI 1.03-18.03) and urgent ERCP (OR 6.59, 95% CI 3.44-12.50).

Conclusion The rates of complications were slightly higher than the reported rates of literatures. With careful patient selection and choice of technique, the safety of ERCP will hopefully be further improved.

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NON-ALCOHOLIC FATTY LIVER DISEASE AND ADVANCED FIBROSIS BY TRANSIENT ELASTOGRAPHY IN HONG KONG CHINESE PATIENTS WITH ANGIOGRAPHICALLY PROVEN CORONARY ARTERY DISEASE

Dr Lau Yue Leung, Department of Medicine, Pamela Youde Nethersole Eastern Hospital

(May 2015 Gastroenterology and Hepatology Exit Assessment Exercise)

Background The prevalence of advanced fibrosis in non-alcoholic fatty liver disease (NAFLD) patients is low in the general Chinese population in Hong Kong; however, the prevalence is not known in NAFLD patients with coronary artery disease (CAD), who often encompass multiple metabolic risk factors and are associated with higher risk of steatohepatitis and hepatic fibrosis.

Objective The primary aim was to determine the prevalence of advanced fibrosis in NAFLD patients with angiographically proven CAD.

Methods This was a cross-sectional study conducted in a regional hospital in Hong Kong. Consecutive patients undergoing coronary angiogram indicated for evaluation of suspected CAD were recruited. Ultrasonography and transient elastography were done to assess the presence of fatty liver and hepatic fibrosis respectively. Advanced fibrosis was defined as liver stiffness measurement (LSM) ≥9.6 kPa.

Results Amongst 236 recruited patients, NAFLD was found in 137 (58.1%) patients. NAFLD was more prevalent amongst patients with significant CAD compared to those with mild CAD (64.6% vs. 36.4%, $p<0.001$). Valid LSM was obtained in 127 patients with NAFLD. Amongst them, 17 (13.4%) had advanced fibrosis by transient elastography, and the prevalence was even higher (15.9%) in NAFLD patients with significant CAD. LSM independently predicted significant CAD amongst NAFLD patients with valid LSM. NAFLD predicted significant CAD and multi-vessel CAD independent of other metabolic risk factors. The prevalence of NAFLD and advanced fibrosis in NAFLD increased with the number of components of metabolic syndrome present in the study patients.

Conclusion Advanced fibrosis is prevalent in NAFLD patients with CAD.

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A REVIEW OF ENDOSCOPY IN OCTOGENARIAN

Dr Li Shi Piu Carlton, Department of Medicine, Queen Elizabeth Hospital (May 2015 Gastroenterology and Hepatology Exit Assessment Exercise)

Background Endoscopies are commonly performed in octogenarians for the investigation of gastrointestinal diseases. Although it is known to carry a higher risk in general, the benefits are less clear, especially in those patients who have multiple medical comorbidities. While literatures and local data in this field are scanty, clinicians often have difficulties in decision making regarding the use of endoscopy in this population.

Objectives The aim of this study was to evaluate the risk and benefits of octogenarian endoscopy, supplemented by the data in a regional hospital in Hong Kong

Methods Esophagogastroduodenoscopy (EGD) performed in patients over 80 years old during the period 1st July 2013 to 31st December 2013 were included, and colonoscopy performed in patients greater than or equal to 65 years old at the time of endoscopy during the period 1st January 2013 to 31st December 2013 were included. Their clinical histories, endoscopy indications and findings were studied. They were also longitudinally studied from the time of endoscopy till 30 days after EGD, and both 30 days and 1 year after colonoscopy.

The data for EGD was used for review. Patients undergoing colonoscopy aged from 65 to 79 years old were compared with those aged over 80 years in terms of the quality of bowel preparation, completion of procedure, comorbidities and survival to look for any difference among the two age groups.

Results Octogenarians have poorer bowel preparation and lower completion rates ($p<0.001$) for colonoscopy. Age is an important determining factor for 1 year survival after colonoscopy in octogenarians ($P=0.001$), regardless of their medical comorbidities ($p=0.069$). In addition, the survival of a younger patient with multiple medical comorbidity is similar to that of an older patient with better health status ($p=0.657$).

Conclusion Octogenarian endoscopy is safe with high yield. Both age and medical comorbidities are important considerations in determining survival and benefits from colonoscopy.

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REVIEW ON THE USE OF PEGYLATED INTERFERON ALFA AND RIBAVIRIN FOR TREATMENT OF CHRONIC HEPATITIS C IN A REGIONAL HOSPITAL IN HONG KONG

Dr Mak Wing Yan, Department of Medicine, Queen Elizabeth Hospital (May 2015 Gastroenterology and Hepatology Exit Assessment Exercise)

Background Despite the advent of direct---acting antivirals in treating chronic hepatitis C infection, combination therapy using pegylated interferon α and ribavirin (PR) is still the current standard of care in Hong Kong. Previous studies in Hong Kong mainly reviewed its use in genotypes 1 and 6 infection and the treatment uptake rate in Hong Kong was only around 20%.

Objectives The objective of this study is to investigate the treatment uptake, efficacy, predictors of sustained virological response (SVR) and safety of combination therapy with PR in chronic hepatitis C infected patients in a local hospital.

Methods A total of 723 anti---HCV positive patients attended the specialist outpatient clinic in Queen Elizabeth Hospital from January 2002 to March 2014. Their characteristics and reasons for not receiving combination therapy were reviewed. Total 143 patients received combination therapy. Their characteristics, response to treatment and side effects of treatment were retrospectively analyzed.

Results A total of 143 patients (99 male, 44 female) with median age of 50 (range 40---56) received PR---based combination therapy. The treatment uptake rate was 19.8%. Genotypes 1 and 6 were the commonest genotypes. Intravenous drug abuse with needle sharing was the commonest mode of acquisition of HCV (54.9%). The overall sustained virological response rate was 72.7%. Patients with genotype 6 infection performed significantly better than those infected with genotype 1 (89.3% vs. 62.5%; p=0.008). Multivariate analysis identified non---genotype 1 infection, low baseline HCV RNA level, those without prior history of combination therapy and those who could complete ≥ 80% of treatment as predictors of SVR. Side effects occurred in 88.1% of the study cohort. Forty---four patients (30.8%) terminated treatment early due to side effects or failure to achieve early virological response (EVR). Seventy---one patients (49.7%) required dose reduction in pegylated interferon or ribavirin or both.

Conclusion Treatment of chronic hepatitis C infection using standard combination therapy with PR in our hospital was quite successful with a SVR rate of 72.7%. Treatment uptake rate was similar to previous study in Hong Kong. The safety profile and tolerability of combination therapy were similar to published studies. Further studies concerning the use of direct---acting antivirals and their cost effectiveness will be needed to provide an insight for the best medical care for our hepatitis C patients in Hong Kong.

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A RETROSPECTIVE STUDY FOR ASSESSMENT OF RISK FACTORS OF GASTROESOPHAGEAL VARICES IN PATIENTS WITH CHRONIC HEPATITIS B OF A LOCAL REGIONAL HOSPITAL

Dr Ngai Chi Fung, Department of Medicine, North District Hospital (May 2015 Gastroenterology and Hepatology Exit Assessment Exercise)

Background The gold standard in the diagnosis of varices is oesophagogastroduodenoscopy (OGD). However, it is invasive and its availability is limited by resources. During the past decade, many non-invasive methods have been developed to assess the degree of fibrosis. Recent sequential screening-diagnostic approach developed by Salvador et al. was found to be useful to detect varices (1).

Objective The primary aim was to study and compare the various laboratory factors in predicting the occurrence of varices in patient with chronic HBV infection. Secondly, the diagnostic performance of Salvador's stepwise approach was evaluated.

Method Patients attending the medical clinic of North District Hospital were screened with diagnostic codes "hepatitis", "OGD". Patient's data were collected and analysed.

Results Liver stiffness had the best predictive performance for detection of varices (AUROC: 0.775, $p < 0.000$). At a cutoff of 14.7 kPa, liver stiffness predicted the presence of varices with 63% sensitivty, 89.4% specificity, 48.5% PPV, 93.8% NPV and correctly classified 85.8% of patients. The Salvador's sequential screening strategy predicted the presence of varices with 57.7% sensitivity, 86.7% specificity, 40.5% PPV, 92.9% NPV and correctly classified 82.7% of patients.

Conclusions Liver stiffness is significantly correlated with the presence of varices. The systematic use of liver stiffness, platelet count and abdominal ultrasound is effective at identifying patients with varices and stratifying the risk. However, its diagnostic performance is not superior to that of using liver stiffness alone in the current study.

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SECONDARY PREVENTION OF CEREBRAL ISCHEMIC STROKE: A RETROSPECTIVE COHORT STUDY ON THE EFFECTS OF RISK FACTORS MODIFICATION ON THE RECURRENCE OF CEREBRAL ISCHEMIC STROKE IN THE ELDERLY. (TSUEN WAN DISTRICT, HONG KONG)

Dr Chow Wan Lung, Department of Medicine, Yan Chai Hospital (May 2015 Geriatric Medicine Exit Assessment Exercise)

Background In 2012, under the age category of over 65 years old, there were 17,695 numbers (rate 1805.1 per 100000 populations) of in-patient discharges and deaths due to stroke in Hong Kong's hospitals. It was the fourth leading cause of death after heart disease in 2013. Furthermore, recurrent stroke is a major public health concern affecting an approximately 20% of stroke survivors within 5 years in United States 2013. The phenomenon of aging population in developed countries and the improved survival of patients with stroke have created a large population of older adults in need of secondary prevention.

Objectives The primary objective of this study is to examine the relationship between metabolic risk factors modification and the likelihood of ischemic stroke recurrence. The secondary objectives in this study are to investigate 1) the prevalence, 2) the adequacy on the management of hypertension, hyperlipidemia and Type II diabetes mellitus among Chinese elderly affected by ischemic stroke and 3) the number of death occurred during the 4 years after ischemic stroke.

Design Retrospective study, 4 years
Setting Internal Medicine Unit of a local hospital
Participants 321 Chinese elderly age _ 65 years old with acute ischemic stroke.

Main outcome measures Demographic characteristics, prevalence of hypertension, diabetes and dyslipidemia, number of patients received lipid lowering agents, number of patients achieved the recommended metabolic target levels, rate of recurrent of ischemic stroke and mortality within 4 years.

Results Of 321 ischemic stroke patents, hypertension was presented in 286 patients (89.1%), diabetes was presented in 122 patients (38.0%) and dyslipidemia in 126 patients (39.3%). The target levels for blood pressure, LDL-C and glycemic control were defined according to American Heart Association Guidelines for the Prevention of strokes in patients with stroke and transient ischemic attack of May 2014. Only 58 patients (24.6%), 169 patients (71.6%), 48 patients (20.3%) and 16 patients (6.8 %) were able to achieve the target levels for blood pressure, glycemic, LDL-C and all three metabolic profiles throughout the 4 years respectively. Among those with dyslipidemia, 56 patients (17.4%) were not receiving lipid lowering therapy throughout 4 years of follow-up. The 4 years mortality was 85 patients (26.4 %). Survival analysis for the recurrent cerebral ischemic events shows that there are no statistically significant difference in recurrent pattern between groups, based on attainment of satisfactory metabolic profile control (with all three targets successfully attained simultaneously) during the four- year period of observation ($P > 0.05$). Fisher's Exact test result is 0.701 (Exact test significant 2-sided) and the hazard ratio is 2.62 (95 % CI, 0.295 to 15.8), $P=0.448$. It shows that there is no reduction in the likelihood of recurrent cerebral ischemic event despite attainment of the metabolic profile target for blood pressure, LDL-C and HbA1c (successfully attained all 3 targets simultaneously) during the four- year period compared with the non-attainment group in this cohort.

Conclusion In this study, despite it showed that only 16 (6.8 %) of patients were able to attain the metabolic profile *targets* throughout the four- year observational period, yet the recurrent ischemic stroke was far fewer than observed by other local and international studies. In light of our improved understanding in different ischemic stroke etiologies and its implications on treatment in recent years, the current blanket treatment for all non-atrial fibrillation related ischemic stroke as atherosclerotic in origin might be *no* longer appropriate.

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ASSOCIATION OF GLYCOSYLATED HEMOGLOBIN LEVEL AND RISK OF HYPOGLYCEMIA IN ELDERLY WITH DIABETES MELLITUS IN HONG KONG

Dr Sin Chung Wah, Department of Medicine, Yan Chai Hospital (May 2015 Geriatric Medicine Exit Assessment Exercise)

Background According to the guidelines of the American Diabetes Association (ADA), for older adults not functionally and cognitively intact, or with reduced life expectancy, the glycemic goals should be relaxed with respect to the standard of Glycosylated Hemoglobin <7.0%. The American Geriatrics Society (AGS) sets such relaxed target for frail older adults to 8%. However, data are lacking on how to individualize glycemic targets, in particular, in elderly. Hypoglycemia is the most common and serious complication of intensive glycemic control, and may cause serious morbidity and mortality.

Objectives To review the clinical factors of type 2 diabetic elderly patients who were admitted for hypoglycemia and to determine any difference in baseline HbA1c level between patients who were admitted for hypoglycemia and those who were admitted for other causes in the same period. Other potential risk factors resulting in hypoglycemia in elderly were also explored.

Study design This is a retrospective case-control study.

Methodology Type 2 diabetic patients aged 70 or older, treated with insulin and / or oral medications, who were admitted for hypoglycemia from 1 January 2013 to 30 June 2013, were included as the case group. Those admitted for causes other than hypoglycemia during the same period, were included as the control group. Data on baseline demographics, duration of diabetes, use of diabetic medications, poly-pharmacy, co-morbidities and ADL dependency were collected. The baseline HbA1c levels were categorized into 4 groups (<7%, 7-7.9%, 8-8.9%, and ≥9%). Values were compared between both groups to determine any difference among the HbA1c categories in both unadjusted and adjusted models.

Results Among the total of 93 patients in the case group and 100 patients in the control group, (mean age 80.4 ± 5.8 years vs. 79.7 ± 5.9 years), the baseline HbA1c mean was 7.5 ± 1.6 and 7.6 ± 1.5 (P=0.69) respectively. Compared with those with HbA1c of 7-7.9%, the OR of hypoglycemia was 2.48 (95%CI 1.04-5.89), 1.17 (95%CI 0.42-3.24), 1.43 (95%CI 0.45-4.50) among those with HbA1c <7, 8-8.9, ≥9, respectively, in the adjusted model.

Conclusion Risk of hypoglycemia tended to be Higher in patients with either near--- normal glycemia (baseline HbA1c <7%). This result may give some support to the guidelines of the American Diabetes Association (ADA), for older adults not functionally and cognitively intact, or with reduced life expectancy, the glycemic goals should be relaxed with respect to the standard of Glycosylated Hemoglobin <7.0%.

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A CROSS SECTIONAL STUDY OF POSSIBLE PRESCRIBING OMISSIONS AND POTENTIALLY INAPPROPRIATE PRESCRIPTIONS WITH REVIEW OF MEDICATION-RELATED PROBLEMS OF ELDERLY PATIENTS IN A CONVALESCENT HOSPITAL IN HONG KONG

Dr Yam Chin Pang, Department of Medicine & Geriatrics, Tung Wah Eastern Hospital (May 2015 Geriatric Medicine Exit Assessment Exercise)

Objective To investigate inappropriate prescriptions and other medication-related problems of elderly patients in Hong Kong.

Methods This was a cross-sectional study conducted in a convalescent hospital involving elderly patients (age ≥65 years). Data of demographic characteristics, pattern of medical attendance, medication profile was collected by reviewing information in clinical notes of index admission and past medical records in electronic system (ePR). Possible prescribing omissions (PPOs) and potentially inappropriate prescriptions (PIPs) were evaluated by applying the Screening Tool to Alert to Right Treatment (START) and the Screening Tool of Older People's Prescriptions (STOPP) respectively.

Results After exclusion, 57 patients were evaluated. There were 39 (68%) patients who had at least 1 PPO, 28 (49%) patients who had at least 1 PIP. There wasn't any significant risk factors found. Warfarin, statins, angiotensin-converting-enzyme inhibitors (ACEI), calcium and vitamin D supplements were the most common PPOs. Laxatives and neuroleptic drugs (in patients prone to falls) were the 2 most common PIPs. 35 (61.4%) patients had polypharmacy. Apart from adverse drug reactions (ADRs) labelled in the ePR Drug Alert Panel, 34 patients (60%) had other ADRs identified from their past clinical records, 10 patients (29%) had recurrence of those ADRs at a later time; 8 patients (14%) suffered another ADR during index admission. The 2 most common categories causing ADRs were anti-hypertensives and oral hypoglycemic agents.

Conclusion This study showed medication-related problems were common in Hong Kong. Further research is required to study the clinical benefits of START and STOPP application in local elderly patients.

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REVIEW ON LOCAL EXPERIENCE OF TREATING PATIENTS WITH CHRONIC MYELOGENOUS LEUKAEMIA IN CHRONIC PHASE IN THE ERA OF SECOND-GENERATION TYROSINE KINASE INHIBITORS AND BEYOND

Dr Cheung Yuk Man, Department of Medicine, Queen Mary Hospital (May 2015 Haematology and Haematological Oncology Exit Assessment Exercise)

Background Chronic myelogenous leukaemia (CML) in chronic phase has become a treatable disease since introduction of tyrosine kinase inhibitors (TKI). It is proposed that newer-generation TKIs could further improve long-term outcomes by inducing faster and deeper molecular responses.

Objectives This study aimed to collect data on epidemiology, treatment and outcome of CML patients in the molecular era, and review prescription practice of TKIs and their efficacy and safety.

Methods All adult patients diagnosed with chronic-phase CML after introduction of molecular methods to assess *BCR-ABL1* transcript levels were included. Outcomes measured included molecular responses at 3, 6 and 12 months, treatment failure, disease progression and deaths. Efficacy and safety profile of TKIs were reviewed.

Results Fifty-nine patients were identified between September 2006 and December 2014, with 55 patients available for further analyses. For front-line treatment, 32 patients had imatinib, 12 nilotinib, 9 dasatinib, and 2 ponatinib. More than half had stopped first-line therapy, requiring switching to another TKI or cessation of therapy by 12 months. One quarter had *BCR-ABL1* transcript levels of ≤10% by 3 months, and cumulative MMR rate at 12 months was 23%. All cases of treatment failure and disease progression occurred in patients on imatinib. Similar cumulative MMR rate was observed outside first-line setting, but with a shorter median time to MMR.

Conclusions Newer-generation TKIs are clearly more attractive first-line options than imatinib. Further investigations are warranted to confirm their advantages on long-term outcomes. Definitions and prognostic significance of treatment milestones should be better defined especially outside front-line setting.

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RISK OF HEPATITIS B VIRUS REACTIVATION IN PATIENTS WITH NON-MALIGNANT HAEMATOLOGICAL CONDITIONS TREATED WITH CORTICOSTERIODS

Dr Hui Ka Eugenie, Department of Medicine, Queen Elizabeth Hospital (May 2015 Haematology and Haematological Oncology Exit Assessment Exercise)

Background Hepatitis B virus (HBV) reactivation has been well-documented to be associated with immunosuppression including Human Immunodeficiency Virus (HIV) infection, solid organ and haematopoietic stem cell transplantation, cancer chemotherapy and immunomodulatory biological agents, but there is less evidence available on the effect of corticosteroid therapy alone. Risk of HBV reactivation with corticosteroid use has been studied in other non-cancer non-haematological conditions such as asthma/ chronic obstructive pulmonary disease, rheumatological conditions and inflammatory bowel disease. However, there has not been any similar studies published looking at risk of HBV reactivation in haematological diseases not relating to malignancies or transplantation, especially in those taking corticosteroids over long periods of time at lower doses.

Objective To evaluate the risk of HBV reactivation in patients with chronic (HBsAg-positive) or occult (anti-HBc positive) HBV infection also diagnosed with idiopathic thrombocytopenic purpura (ITP), autoimmune haemolytic anaemia (AIHA) or paroxysmal nocturnal haemoglobinuria (PNH), after treatment with various dosages and duration of corticosteroids for their haematological conditions.

Method Data was collected retrospectively using the CDARS system. Records of patients treated in Queen Elizabeth Hospital during the 15-year period from 1 May 1999 through to 30 April 2014 were reviewed. HBV chronic or occult carriers with ITP, AIHA or PNH requiring treatment with corticosteroids would be included into our study. The primary study outcome was rate of HBV reactivation. Secondary endpoints evaluated include duration and dosage effect of corticosteroids, effects of antiviral prophylaxis and concurrent immunosuppressants and any risk factors for HBV reactivation.

Results A total of 80 patients were recruited, 22 of whom were HBsAg-positive, 58 anti-HBc positive. Overall risk of reactivation was 5% in all patients. All cases diagnosed with HBV reactivation hepatitis were HBsAg positive, none of the anti-HBc-patients

developed reactivation. Reactivation risk was 18.2% in HBsAg-positive patients; 25% in those without prophylaxis and 10% with prophylaxis (*p=0.594*). In the HbsAg-positive group after censoring, the cumulative incidence of HBV reactivation was 51% at 235 weeks after corticosteroid initiation. HBsAg positivity (*p=0.001*) and use of pulse steroid for treatment of underlying haematological conditions (*odds ratio 15.0; 95% CI 1.136 – 198.039; p=0.044*) were the only significant independent risks factors for HBV reactivation. Total duration of corticosteroids, peak daily prednisolone dose and duration of prednisolone at various dosages did not statistically affect the primary outcomes in our study. There were no deaths as a consequence of fulminant hepatitis secondary to HBV reactivation.

Conclusion HBsAg-positive chronic carriers treated with corticosteroids for non-malignant haematological diseases are at risk of HBV reactivation. Such risk is significantly higher compared with anti-HBc-positive occult carriers (*p=0.005*). Pulse steroid exposure seem to predict to higher risk of reactivation hepatitis in this context. Prophylactic antiviral therapy may be considered in the HBsAg-positive sub-population, especially in those given pulse-dose steroid therapy. Further large prospective studies are needed to confirm the findings of our study.

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EVALUATION OF HEPATITIS B VIRUS (HBV) DNA MONITORING AND PREEMPTIVE ANTIVIRAL THERAPY FOR HBV REACTIVATION IN LYMPHOMA PATIENTS RECEIVING CHEMOTHERAPY AND LITERATURE REVIEW

Dr Leung Kwan Hung, Department of Medicine & Geriatrics, United Christian Hospital (May 2015 Haematology and Haematological Oncology Exit Assessment Exercise)

Background Hepatitis B virus (HBV) reactivation is a potentially serious complication in lymphoma patients receiving chemotherapy. The risk in patients with past HBV infection (negative HBV surface antigen (HBsAg), positive antibodies to HBV core antigen (anti-HBc)) is small but non-negligible. HBV DNA monitoring and preemptive antiviral therapy is a feasible approach for this group of patients.

Objectives and methods Lymphoma patients who received chemotherapy from January 2007 to December 2013 in United Christian Hospital were retrospectively reviewed. Their pre-chemotherapy HBV serology status and outcome related to HBV reactivation were studied. Patients with past HBV infection were further analyzed. The HBV reactivation rate among patients with resolved HBV infection was determined. Their virological, clinical characteristics and risk factors were evaluated.

Results 25 (12.3%) of the 203 analyzed patients had chronic HBV infection while 105 (51.7%) had past HBV infection. Among those with past HBV infection, nine (8.7%) developed HBV reactivation. Antiviral therapy was started upon HBsAg reverse sero conversion. 4 patients had biochemical reactivation, but none had fulminant liver failure or mortality. Preceding HBsAg reverse seroconversion,a2-log rise in HBV DNA was observed in most HBV-reactivated patients. Multivariate analysis showed that male sex ($p = 0.043$) and rituximab use ($p = 0.035$) were associated with HBV reactivation.

Conclusion Lymphoma patients with past HBV infection had an8.7% chance of chemotherapy-related HBV reactivation. Male sex and rituximab use were associated with a higher risk. A2-log rise in HBVDNA could be used as the threshold for starting antiviral

therapy.

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THE PREVALENCE OF ANXIETY AND DEPRESSION IN CHINESE PERITONEAL DIALYSIS PATIENTS AND ITS ASSOCIATION WITH SUBSEQUENT PERITONITIS

Dr Chan Koon Ming, Department of Medicine, Queen Elizabeth Hospital (June 2015 Nephrology Exit Assessment Exercise)

Background Anxiety and depression are highly prevalent among patients with end-stage renal disease, especially among those requiring renal replacement therapy. Peritonitis is a leading cause of morbidity and mortality among peritoneal dialysis (PD) patients. Recent studies suggested that psychosocial factors play an important role in the subsequent development of peritonitis, hospitalization and mortality. As study on anxiety and depression among Chinese PD patients is lacking, we would like to perform a study to examine the prevalence of anxiety and depression in incident Chinese PD patients and its association with subsequent peritonitis and clinical outcome.

Methods In this single center prospective observational study, patients starting PD (Continuous ambulatory peritoneal dialysis or automated peritoneal dialysis) from 9/2012 to 12/2014 in the Renal Unit of Department of Medicine of Queen Elizabeth Hospital were recruited. Hospital Anxiety and Depression Scale (HADS), which is a 14-item scale, was used to determine the level of anxiety and depression of the patient. A cut off score of 8 was used to establish caseness of anxiety and depression for both the anxiety and depression subscale. Patients were categorized to high score group (HSG) if either the anxiety or depression score was 8 or above or low score group (LSG) if both the anxiety and depression score were below 8. Patients were followed up until 31/1/2015. The association between HADS score and patient's clinical outcome was studied.

Results Between 9/2012 -12/2014, 132 incident PD patients were recruited into the study. Seventy-five patients (55%) were categorized in HSG. During the follow-up of 1802 patients-months (median patient follow-up was 12 months), 54 episodes of total peritonitis were recorded. Patients in HSG were found to have higher peritonitis rate and developed their first episode of peritonitis earlier than those patients in LSG (for all types of peritonitis and gram-positive bacterial peritonitis). The mean overall peritonitis rate for patients in HSG and LSG were 0.05 and 0.013 per patient-months respectively. The mean peritonitis rate for gram-positive organism was also higher for patients in HSG compared to LSG (0.024 vs 0.0034 per patient-months, P=0.02). The median peritonitis-free survival was worse for patients in HSG compared to LSG (18 vs 24 months, P=0.02). Similarly, the median gram-positive bacterial peritonitis-free survival was worse for patients in HSG compared to LSG (22 months vs 26 months, P=0.016). After adjusting diabetes and other covariates, Charlson comorbidities index and HADS were the only independent risk factors for the development of PD peritonitis. In particular HADS was associated with a hazard ratio of 2.5 (95% confidence interval [CI] 1.13-5.6) to develop peritonitis.

Conclusion Patients at risk of anxiety and depression were prevalent among incident Chinese peritoneal dialysis patients. Anxious or depressed patients had higher risk to develop peritonitis and they developed peritonitis earlier. Depression and anxiety deserved early detection and attention among dialysis patients. Further studies on psychological intervention

to high risk patients to prevent peritonitis and to improve their outcome may be needed in future.

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LONGITUDINAL STUDY OF PERITONEAL DIALYSIS RELATED PERITONITIS IN A LOCAL HOSPITAL

Dr Chan Ping Kwan, Department of Medicine, Alice Ho Miu Ling Nethersole Hospital (June 2015 Nephrology Exit Assessment Exercise)

Background Peritonitis remains a major cause of morbidity and technique failure in peritoneal dialysis (PD) patients. This retrospective study reviewed peritonitis among incident PD patients and attempted to identify risk factors for peritonitis, and to examine the effect of first peritonitis on subsequent episodes and overall PD outcome.

Methods Data of all incident PD patients during the period July 2004 to June 2009 were retrieved. Patients' demographic data and all peritonitis history were reviewed.

Results Of the 347 incident PD patients, there were 497 episodes of peritonitis occurring in 203 patients. Peritonitis caused by Gram-negative organisms, compared with that by Gram-positive organisms, had a lower treatment success rate (81.8% vs 94.5%, p< 0.0005), higher catheter removal rate (10% vs 3.5%, p = 0.047) and higher mortality (10% vs 2%, p = 0.01).

Patients with history of peritonitis, compared with patients with no history of peritonitis, were older (mean age 59.3 ±13.2 vs 54.3 ± 14.2, p=0.001), with a higher proportion on CAPD (93.1% vs 84%, p=0.007). Patients with multiple episodes of peritonitis, compared with patients with single episode, had a higher prevalence of cerebral vascular accident (27.6% vs 12.5%, p = 0.01) and a higher proportion on CAPD (96.7% vs. 87.5%, p= 0.01). Patients with peritonitis within first year of dialysis ('early peritonitis'), compared with patients with first peritonitis beyond first year ('late peritonitis'), had a lower baseline serum albumin level (34.8 ± 5.1 g/L vs 36.5 ± 4.8 g/L, p = 0.02), poor PD technique survival [3-year PD survival (55.9% vs 85%, p <0.0005), 5-year PD survival (34.2% vs 50.9%, p = 0.001)] and poor patient survival [3-year patient survival (65.2% vs. 91%, p <0.0005) and 5-year survival (46.1% vs. 68.5%, p< 0.0005)]. Once patients developed peritonitis, they tended to have progressive shortening of time intervals in subsequent peritonitis. The causative organisms in preceding peritonitis, however, did not predict the group of organisms in subsequent episode.

Conclusion Advanced age and modality of PD (CAPD) is found to be risk factors for PD related peritonitis. Peritonitis within first year of dialysis is associated with adverse outcomes. Further studies are warranted to confirm these findings.

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FRAILTY IN CHINESE PERITONEAL DIALYSIS PATIENTS: PREVALENCE AND PROGNOSTIC SIGNIFICANCE

Dr Ng Kit Chung, Department of Medicine and Therapeutics, Prince of Wales Hospital (June 2015 Nephrology Exit Assessment Exercise)

Background The age of dialysis population is increasing. Frailty is common, yet not

limited to, elderly. Previous studies showed that frailty was prevalent in both pre-dialysis and dialysis patients. However, the prevalence and prognostic implication of frailty in Chinese peritoneal dialysis (PD) patients remain unknown.

Methods We used a validated questionnaire to determine the Frailty Score of 193 unselected prevalent PD patients. Baseline demographics, serum biochemistry, dialysis adequacy and nutritional indices were retrieved. All patients were followed for 2 years. Primary outcomes included the number of hospital admission for all causes, number of hospital admission related to cardiovascular events, total length of hospital stay, and patient survival. Secondary outcomes included peritonitis rate and technique survival.

Results Amongst the 193 patients, 134 (69.4%) met the criteria of being frail. The degree of frailty was mild, moderate and severe in 57 (29.5%), 33 (17.1%), and 44 (22.8%) patients, respectively. Frailty Score significantly correlated with Charlson comorbidity score ($r = 0.40$, $p < 0.0001$) and Malnutrition Inflammation Score ($r = 0.59$, $p < 0.0001$), and inversely with Subjective Global Assessment score ($r = -0.44$, $p < 0.0001$). Log-linear regression model showed that Frailty Score independently predicted with number of all-cause hospitalizations and the total duration of hospital stay. However, there was no significant association between frailty and patient or technique survival.

Conclusion Frailty is prevalent among Chinese PD patients and is associated with malnutrition, comorbidities, and a high risk of hospitalization. Early identification may allow timely intervention to prevent adverse health outcomes.

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BK VIRUS INFECTION IN RENAL TRANSPLANT RECIPIENTS: SINGLE CENTRE EXPERIENCE

Dr Wong Lok Yan Ivy, Department of Medicine & Geriatrics, Princess Margaret Hospital (June 2015 Nephrology Exit Assessment Exercise)

Background BK virus nephropathy (BKVN) has emerged as an important cause of renal graft dysfunction in recent decades. However, there is limited study to-date assessing the disease in local population The primary objective of this study is to assess the local incidence and risk factors for BK virus nephropathy in renal transplant recipients in a tertiary nephrology centre in Hong Kong. Secondary objectives include review of clinical course, management strategy and outcomes of the disease.

Methods This is a case-control study of renal transplant recipients in Princess Margaret Hospital from January 2000 to January 2014. All patients with biopsy-proven BK virus nephropathy during the study period are reviewed. Demographic, clinical and laboratory data are retrieved from clinical records for analysis.

Results Total 15 patients were diagnosed to have biopsy-proven BKVN during the study period, giving an incidence of 2.22%. Risk factors being identified included diabetes mellitus (odds ratio [OR] 6, p=0.008, 95% confidence interval [CI] 1.6-22.8), use of tacrolimus-combinations (OR 6.9, p=0.16, CI 1.4-33.5) compared to cyclosporine-combinations (OR 0.15, p=0.02, CI 0.032-0.74), higher level of immunosuppression as defined by use of induction therapy and/or tacrolimus (OR 10.7, p=0.026, CI 1.3-86.7) and number of previous acute rejections (OR 3.12, p=0.04, CI

1.05-9.25). All patients were treated with reduction in immunosuppression while up to 86.7% of them also received adjunctive therapy. Three patients (20%) had relatively stable renal function (change in serum creatinine<30%) while 9 patients (60%) had significant renal impairment (change in serum creatinine>30%) by the end of study. Three patients (20%) had graft loss. Nine patients (60%) had BK viraemia clearance more than 12 months after intervention. Patients with better outcome, i.e. without doubling of serum creatinine (SCr), had significantly shorter time to diagnosis (median 5.0 months vs13.3 months, p=0.029) when compared with patients with worse outcome.

Conclusion The incidence and risk factors of BKVN in our centre are comparable to those in the literature. Reduction of immunosuppression is the mainstay of treatment of BKVN. Persistent allograft dysfunction is observed despite BK viraemia clearance suggesting permanent damage to kidney after BKVN. Graft outcome is generally poor, which is consistent with other studies. Early diagnosis and treatment of BKVN is essential since a shorter time to diagnosis is the most important factor in predicting better graft outcome.

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FACTORS ASSOCIATED WITH PRIMARY AND SECONDARY ARTERIO-VENOUS FISTULA PATENCY IN CHINESE MAINTENANCE HAEMODIALYSIS PATIENTS

Dr Wong Yick Hei, Department of Medicine, Pamela Youde Nethersole Eastern Hospital
(June 2015 Nephrology Exit Assessment Exercise)

Background Autologous arterio-venous fistula (AVF) is the gold standard of vascular access for chronic haemodialysis. Data on AVF patency in local population is lacking.

Design Clinical data on patients with incident AVF created between 1st January 2010 and 30th September 2014 in a local regional hospital were recruited from its computerized medical record and was analysed. The failure of maturation rate of AVF was compared. Primary patency (intervention-free interval) and secondary patency (interval between access creation and abandonment) were calculated using Kaplan-Meier survival analysis. Log Rank test was used to compare patency rates. Cox-regression analysis was used to identify factors associated with AVF patency.

Results A total of 105 AVFs were included in this study. Mean patient age was 56.6 ± 14.2 years and male to female ratio was 3.3 to 1. Thirty AVFs (29%) had failure of maturation. Patient's age at or older than 65 years (HR = 0.65, p=0.03) and diameter of fistula vein less than 2.5 mm (HR = 1.84, p=0.008) were independent risk factors of primary AVF patency. Hypertension and coronary artery disease were associated with shorter secondary AVF patency (Log Rank test p<0.05). Hypertension (HR = 0.193, p=0.037) was an independent risk factor of secondary AVF patency. Surgeon factors (vascular vs. general surgeon), AVF location and laterality showed no influence on AVF patency.

Conclusion There was a considerable rate in failure of maturation of AVF in the local haemodialysis population. Old age and small fistula vein were risk factors of primary AVF patency, whereas hypertension was a risk factor of secondary AVF patency. Consideration of these factors before creation of AVF for chronic haemodialysis patients would optimize the access management of this group of patients.

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DISCRIMINATIVE RADIOLOGICAL FEATURES OF MULTIPLE SCLEROSIS AND NEUROMYELITIS OPTICA IN HONG KONG

Dr Cheng Wing Ho Stephen, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (May 2015 Neurology Exit Assessment Exercise)

Introduction Multiple sclerosis (MS) and neuromyelitis optica (NMO) are both recurrent demyelinating diseases of the central nervous system. However, recent evidence showed that they are clinically distinct entities which management and treatment differ. Differentiation can be challenging, especially with a negative serum anti-aquaporin-4 antibody. Barkhof has described the typical brain locations affected by MS in the McDonald criteria. In recent years, the presence of brain lesions was also increasingly recognized in NMO. International studies have shown that certain radiological features on the MRI may be helpful in discriminating NMO from MS. Asian studies that compare the relative discriminative values of these features were scarce. This study aims to identify discriminating radiological features of MS and NMO in Hong Kong.

Methods Between October 1993 and December 2014, all patients with recurrent CNS demyelinating diseases seen by the Department of Medicine at Pamela Youde Nethersole Eastern Hospital were identified. The diagnosis of MS was by the 2010 McDonald criteria and that of NMO or NMO spectrum disorders was by the 2006 Wingerchuk criteria. Subjects who did not fulfill either diagnosis were excluded. Specific radiological features in the MRI spine and brain were collected, including longitudinally extensive transverse myelitis (LETM), multiple short segments TMs, location of the myelitis, cervical and medullary involvement, presence of cord swelling, T1 hypointensity, asymptomatic cord lesions, involvement of the brainstem in particular the area postrema, presence of lesions at the corpus callosum, periventricular, juxtacortical and subcortical areas, as well as the Dawson's fingers and tumefactive appearance of brain lesions. Univariate and multivariate analyses were performed on these features to identify those that had specific correlations with MS and NMO. A subgroup analysis between the seropositive and seronegative NMO patients was then conducted to examine any intra-group difference among NMO patients.

Results 159 subjects with CNS demyelinating disease were identified. 70 fulfilled the diagnosis of MS and 31 fulfilled that of NMO or NMOSD. 63 patients did not fulfill either diagnosis, and 3 who fulfilled MS were excluded due to absence of any retrievable MRI data. Features that were significantly correlated with NMO included LETM ($p<0.01$), T1 hypointense cord lesions ($p<0.01$), cord swelling ($p<0.01$), peripherally located cord lesions ($p<0.01$), involvement of the area postrema ($p<0.01$), and a tumefactive appearance of brain lesions ($p<0.01$). Features that favoured the diagnosis of MS included multiple short TMs ($p<0.01$), asymptomatic cord lesions ($p<0.01$), centrally located cord lesions ($p<0.01$), presence of brain lesions in the periventricular, juxtacortical and subcortical areas ($p<0.01$), and the Dawson's fingers appearance ($p<0.01$). There was no intra-group difference in terms of radiological features between seropositive and negative NMO patients.

Study Conclusion Certain MRI features in the brain and spinal cord were helpful in differentiating MS from NMO. They were also applicable in seronegative NMO patients.

Discussion & Literature Review A literature review was done to compare MS and NMO from other aspects, including the new concepts in the pathophysiology, and clinical features

that may distinguish the two. Results from our study were discussed with reference to the latest evidence in radiological features. Advances in treatment of MS and NMO were also appraised, which encompassed a comparison of their clinical outcome.

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INTRAVENOUS THROMBOLYSIS THERAPY IN ACUTE ISCHAEMIC STROKE PATIENTS NOT FULFILLING CONVENTIONAL CRITERIA

Dr Chi Man Sum, Department of Medicine & Geriatrics, Tuen Mun Hospital (May 2015 Neurology Exit Assessment Exercise)

Background Intravenous recombinant tissue plasminogen activator is the only approved thrombolysis treatment in acute ischaemic stroke. However there were many exclusion criteria mainly derived from the expert opinion in the early randomised control trials for establishing the drug safety and efficacy. Many acute ischaemic stroke patients therefore were excluded from the treatment.

Objective This study was to compare the safety and short term treatment outcome between those fulfil these conventional criteria and those not fulfilling the criteria in Tuen Mun Hospital, Hong Kong.

Methods All consecutive acute ischaemic stroke patients treated with intravenous thrombolysis in the period of 2004 to 2014 in our hospital were recruited. They were retrospectively divided into on-label group if they did not have any of the contraindication and off-label group if any of the contraindication present. Primary outcome of symptomatic haemorrhage and secondary outcome of early neurological change, 3-month mortality and functional outcome were measured. Multivariate analysis with logistic regression with adjustment of baseline characteristics which was found to have relationship in the univariate analysis was done.

Results Totally 294 patients received intravenous thrombolysis during the study period and 145 (49.3%) had at least one contraindication. All the contraindications were not associated significantly with symptomatic intracranial haemorrhage. Secondary outcomes analysis revealed minor stroke patients had better functional outcome (OR 202.71, 95%CI 16.22-2533.32, $p < 0.001$). High blood pressure at presentation was associated with fewer early neurological improvement (OR 0.25, 95% CI 0.79-0.77, $p = 0.016$) and a trend of unfavourable functional outcome (OR 0.18, 95% CI 0.03-1.03, $p = 0.054$). Severe stroke is related to increased mortality (OR 4.83, 95% CI 1.38-16.96, $p = 0.014$) and none have good functional outcome. Old age was also shown to have a non-significant trend of unfavourable functional outcome (OR 0.43, 95% CI 0.14-1.29, $p = 0.132$). Malignancy was associated with higher mortality (OR 39.07, 95% CI 3.11-490.64, $p = 0.005$) but the cause may not be due to thrombolysis itself.

Conclusions This study showed the safety of giving intravenous thrombolytic therapy for acute ischaemic stroke in off-label group with comparable symptomatic intracranial haemorrhage risk. However some subgroups have less favourable outcome; including high blood pressure, severe stoke, old age and malignancy. This may be due to the underlying comorbid condition and less rehabilitation potential rather than thrombolysis itself. The efficacy of intravenous thrombolytic treatment require the comparison with the non-treatment group which is out of this study limit, therefore further study with large sample size

randomised controlled trial is needed to further justify its off-label use.

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CLINICAL CORRELATES AND PROGNOSTIC IMPLICATIONS OF CEREBRAL MICROBLEEDS DETECTED BY SUSCEPTIBILITY WEIGHTED IMAGING IN CHINESE WITH ISCHEMIC STROKE

Dr Lau Kui Kai Gary, Department of Medicine, Queen Mary Hospital (May 2015 Neurology Exit Assessment Exercise)

Background Compared with gradient-recalled echo imaging, susceptibility weighted imaging (SWI) has been shown to have superior sensitivity in detection of cerebral microbleeds (CMB). However, the prognostic implications of CMBs detected using SWI amongst ischemic stroke (ISS) patients remains uncertain.

Methods We studied 726 Chinese patients who were diagnosed with an ischemic stroke (ISS) and received a cerebral MRI at The University of Hong Kong during 2008 to 2012. CMBs were detected using SWI and were graded anatomically and according to severity. Clinical characteristics, cardiovascular risk factors as well as subsequent clinical outcome of study subjects were reviewed.

Results Amongst 726 Chinese ISS patients (mean age 68years, 61% males), 44% had CMBs detected (34% with CMBs of mild severity and 10% of moderate-severe burden). Burden of CMBs were strongly associated with increasing age, underlying hypertension, history of TIA/stroke and glomerular filtration rate ($p<0.05$). Burden of CMBs were also significantly associated with white matter disease ($p<0.01$). After a mean follow-up of 35±15 months, 75 patients (10%) developed a recurrent stroke (63 ISS, 12 intracerebral hemorrhage) and 71 patients (10%) died. Compared with patients without CMBs, those who had CMBs of moderate-severe burden had a significant risk of developing intracerebral hemorrhage (adjusted HR 20.78 95% CI 2.97-145.41, $p=0.002$). The risk was greatest amongst patients who had CMBs of mixed location ($p<0.001$). CMB burden was not predictive of recurrent ISS or mortality.

Conclusions Amongst Chinese with ISS, CMBs are significantly associated with a subsequent risk of hemorrhagic stroke but not recurrent ISS or mortality.

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CEREBRAL VENOUS THROMBOSIS: RETROSPECTIVE ANALYSIS OF CASES FROM TERTIARY HOSPITALS IN HONG KONG

Dr Li Tsz Ching, Department of Medicine, Queen Elizabeth Hospital (May 2015 Neurology Exit Assessment Exercise)

Background and purpose Cerebral venous thrombosis (CVT) is an important cause of stroke. Patients frequently present with headache, seizure and focal neurological signs, and this disease is associated with various prothrombotic conditions. The majority of case series are from Caucasian countries, while data from Asia is comparatively scarce. It is essential to obtain distinctive local data on CVT reflecting the clinical presentation, treatment strategies and functional outcome in Hong Kong, with the aim to identify prognostic indicators for the functional outcome.

Methods Subjects were recruited from Queen Elizabeth Hospital, United Christian Hospital and Tseung Kwan O Hospital in the period from 2003 to 2014. CVT was diagnosed and confirmed mainly via computed tomography or magnetic resonance imaging. Clinical manifestations, investigation results and functional outcomes at 1, 6 and 12 months were recorded. Unfavourable outcome was defined as mRS > 2 (i.e. functional dependence and death). Primary outcome was defined as unfavourable outcome at one month. A literature review on various aspects of CVT was conducted based on the local data obtained in this study cohort.

Results Ninety-eight patients were included in this study cohort, 57 of them (58.2%) were female. Their common presentations were headache (64.3%), seizure (38.8%), nausea and vomiting (35.7%) and hemiparesis (27.6%). Common predisposing conditions included the use of oral contraceptive pills (14.3%), malignancy (14.3%), infections (10.2%) and congenital thrombophilia (9.2%). Fifty patients (51%) of the cohort displayed no known causes. At one month, 35 (35.7%) patients had unfavourable outcomes, while 21 (21.4%) and 16 (16.3%) patients had unfavourable outcomes at 6 and 12 months respectively. Using a logistic regression model, predictors of death and dependence at one month were found to be age > 65 (odds ratio [OR] = 8.27), hemiparesis (OR = 4.06), non-central nervous system tumour (OR = 44.52), intracerebral haemorrhage (OR = 11.48) and mass effect on imaging (OR = 19.68). Over a median follow-up duration of 51 months, 16 patients died, while another 11 patients had a recurrence of cerebral venous thrombosis and venous thromboembolism from other sites. Five (5%) patients had seizure recurrence in our study cohort. Kaplan-Meier survival analyses were performed.

Conclusion Prognosis of CVT patients in Hong Kong was comparable to those reported in literature covering other geographical areas. Older patients, having hemiparesis on presentation, intracerebral haemorrhage or mass on imaging, or those with an underlying non-central nervous system tumour were at risk of unfavourable outcomes. Future research is necessary to clarify whether more intensive treatment and rehabilitation may benefit these patients.

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CLINICAL CHARACTERISTICS AND PREDICTORS OF DEATH AND POOR OUTCOME OF STATUS EPILEPTICUS: AN 11 YEAR RETROSPECTIVE STUDY IN 2 LOCAL HOSPITALS IN HONG KONG

Dr Lui Hoi Ki, Department of Medicine, Tseung Kwan O Hospital (May 2015 Neurology Exit Assessment Exercise)

Objectives To review the clinical characteristics and to evaluate the predictors of mortality and poor outcome in patients with status epilepticus (SE) treated in the intensive care units.

Background Status epilepticus (SE) was a common medical emergency that was associated with high mortality and morbidity. Older age, duration of SE and SE due to cerebrovascular accident were reported as predictors of poor outcomes in previous studies.

Methods A retrospective review was done in patients with SE managed in the intensive care units of 2 acute hospitals in Hong Kong from June 2003 to June 2013.

Results A total of 87 SE episodes in 82 patients were analyzed. The mean age was 49.3 (SD

14.9). Breakthrough seizure (21 %); and encephalitis/ meningitis (18 %) were the main etiologies. Convulsive status epilepticus was the commonest seizure type (87.4 %), followed by non-convulsive status epilepticus (NCSE) (10.3 %). Focal spike/ slow + spatial evolution were the commonest electroencephalogram finding (33.7 %). Phenytoin was the commonest anti-convulsant used (86.2%). General anesthetic treatment was given in 55.2% of cases. The 30 days mortality rate was 18.4 %. 46 % of patients had worsened functional outcome upon discharge. Older age was the statistically significant independent predictor associated with poor outcome upon discharge P=0.001, OR: 1.083 (1.031 to 1.131). There were significantly more patients without history of epilepsy developing non-convulsive status epilepticus (15.5 % Vs. 0 %, p=0.026). Besides, those without history of epilepsy were more likely to have poor outcome upon discharge (56.9% Vs. 24.1 %, p=0.004).

Conclusion This study suggested that older age was the statistically significant independent predictor associated with poor outcome upon discharge and there were significantly more patients without history of epilepsy developing non-convulsive status epilepticus, and those without history of epilepsy were more likely to have poor outcome upon discharge. High index of suspicion was necessary to make a correct diagnosis of NCSE especially in those without history of epilepsy.

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EFFECTS OF DAY REHABILITATION SERVICE AFTER STROKE

Dr Yeung Pui Yu, Department of Rehabilitation, Kowloon Hospital (June 2015 Rehabilitation Exit Assessment Exercise)

Background Stroke is the fourth leading cause of death in Hong Kong. The burden of stroke lies with long-term activity limitations and functional dependence as opposed to death. The rate of recovery following stroke varies for different impairments and disabilities. Improving the functional status of individual with stroke was a lengthy and difficult rehabilitation process.

Objectives This study aimed to determine the functional gain of stroke patients who attended rehabilitation program of the Day Rehabilitation Centre (DRC) of a local rehabilitation hospital.

Methods This was a retrospective observational study of stroke patients referred for rehabilitation in DRC in an eighteen months period. 92 eligible stroke patients had functional gain examined in term of Functional Independence Measure (FIM) score, Modified Barthel index (BI) score and gait speed.

Results The study showed that stroke patients of various age and gender improve in their functional independence after DRC rehabilitation program. Stroke patients with lower FIM score and higher screening score of CMMSE at baseline showed greater improvement. The improvement was reported as increase 8.28 (SD 6.52) points in FIM scores, 10.57 (SD 9.2) points in BI scores and 0.09m/s gait speed improvement.

Conclusion DRC provides an early, effective and economical out-patient rehabilitation program to stroke patients of various age and gender. It adopts coordinated multidisciplinary approach and tailor-made training to meet patients' rehabilitation goals with respect to their deficits in cognition, motor function and functional independence. Consequently, patients get

optimal recovery and learn compensation skills and to facilitate integration back into community.

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CLAMPING OF CHEST TUBES BEFORE REMOVAL IN SPONTANEOUS PNEUMOTHORAX: HOW COMMON IS OCCULT AIR LEAK?

Dr Chan Yu Hong, Department of Medicine & Geriatrics, Princess Margaret Hospital (June 2015 Respiratory Medicine Exit Assessment Exercise)

Objectives In cases of spontaneous pneumothorax that are symptomatic, bilateral or large in size, chest tubes are inserted for relief of air inside pleural cavity, and are removed when air leak subsides. Many doctors would clamp the chest tube to test for any occult air leak before removal of chest tubes to lessen the need to insert second chest tubes. Existing guidelines and some researchers are against this clamping practice as there are worries about complications from clamping such as tension pneumothorax and doubts about prevalence of occult air leak. This study aimed to determine the prevalence of occult air leak and the factors associated with its development. Secondary objectives were estimating the rate of such air leak, and reviewing the clamping practice inside our department.

Methods Three hundred and twenty cases with discharge diagnosis of pneumothorax were retrieved. After fulfilling inclusion and exclusion criteria, 126 cases with spontaneous pneumothorax and chest tubes removed during the hospital stay were analyzed. Baseline demographics, chest tube related data, any immediate recurrence and whether clamping performed were recorded.

Results The prevalence of occult air leak leading to immediate recurrence of pneumothorax was 15.9% (95% CI: 9.49%-22.25%). 40% of the cases were detected by clamping. Secondary pneumothorax, after adjusting for medical pleurodesis performed, was not related to increased risks of occult air leak ($p=0.264$). Other clinical features did not reach statistical significance related to immediate recurrence. The median leak rate was 11.13% (95% CI: 7.05%-15.21%) hemithorax volume per hour with significant individual variations. 57.9% of cases received clamping during their hospital stay. Recurred cases ($p<0.001$), primary spontaneous pneumothorax ($p=0.001$), and younger subjects ($p=0.024$) were more likely to have their chest tubes clamped. No clamping related complications were detected over the review period.

Conclusions Significant portion of pneumothorax patients had occult air leak. Clamping for four to twelve hours under careful observation may be helpful. Further studies are needed to determine the safest and most effective way to practice clamping.

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A RETROSPECTIVE STUDY OF LUNG ABSCESS IN KOWLOON WEST CLUSTER, HOSPITAL AUTHORITY, HONG KONG

Dr Ho Man Ying, Department of Medicine, Yan Chai Hospital (June 2015 Respiratory Medicine Exit Assessment Exercise)

Background Lung abscess is regarded as a predominately anaerobic infection in the West. More recent studies in Taiwan and Japan have found the bacteriology to be different. Other factors can also affect treatment outcome and mortality. Our objective is to examine the local

bacteriology of lung abscess in Hong Kong, to observe different treatment modalities used, and the factors associated with mortality. We hope this can help to guide treatment including empirical antibiotic regimen for lung abscess in Hong Kong.

Methods One-hundred-and-eleven patients admitted to the six regional hospitals in Kowloon West Cluster for lung abscess from 1.1.2007 to 31.3.2013 were included in the study. Their medical records and imaging (chest radiograph and computer-tomography of thorax) were reviewed retrospectively.

Results The leading etiological pathogens of community-acquired lung abscess were anaerobes (33.8%), followed by Streptococcus species (22.1%). *Streptococcus milleri* group was the most prevalent strain isolated, accounting for 16.7% of all bacterial yield. A wide variety of antibiotic regimen was recorded, with the commonest empirical regimen being amoxicillin/clavulanate (24.3%), followed by concomitant amoxicillin/clavulanate and metronidazole (12.6%). Tube drainage was performed in 21.6% and operation in 6.3% of patients. The 90-days all-cause mortality rate was 11.7%. Increasing age (OR, 1.078; 95% 95% CI, 1.028 – 1.130; p=0.002), higher Charlson co-morbidity index (OR, 2.293; 95% CI, 1.412 – 3.724; p=0.001), lower albumin level on admission (OR, 0.906; 95% CI, 0.822 – 1.0; p=0.050) and shorter total duration of antibiotic therapy (OR, 0.959; 95% CI, 0.920 – 0.999; p=0.047) were associated with a higher mortality.

Conclusion Anaerobes and streptococci are the most commonly isolated micro-organisms in our study, although the former has a decreasing role in the etiology compared with early studies. Given the activity of amoxicillin/clavulanate alone against both anaerobes and streptococci, and the easy availability of the drug, it is a good choice of initial empirical therapy for lung abscess. Its use may also allow early institution of oral antibiotic therapy, in turn reducing the duration of hospitalization.

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THORACIC ULTRASOUND PERFORMED BY RESPIRATORY PHYSICIANS IN THE MANAGEMENT OF PLEURAL AND RESPIRATORY DISEASES

Dr Sum Chun Yue, Department of Medicine, Queen Elizabeth Hospital (June 2015 Respiratory Medicine Exit Assessment Exercise)

Background Thoracic ultrasound (US) is increasingly used in the management of pleural and respiratory diseases, especially in guiding invasive diagnostic and therapeutic procedures to improve diagnostic yield and safety. While there have been a lot of medical literatures and reviews on US performed by radiologists, there are limited data about thoracic US performed by respiratory physicians, particularly in Hong Kong.

Objectives To evaluate the indications and diagnostic performance of thoracic US, and to study the diagnostic yield and complication rates of US-guided procedures done by respiratory physicians. Diagnostic accuracy of thoracic US in detecting pleural effusion was analyzed. The predictive value of different sonographic patterns of pleural effusions with the underlying etiologies of pleural effusion was examined. The impact of US on management of pleural and respiratory diseases was also studied.

Methods Data from consecutive cases of thoracic US performed by respiratory physicians were prospectively collected over the one year period in the Department of Medicine, Queen

Elizabeth Hospital (QEH). Descriptive analysis was performed for the indications and findings of US, as well as the diagnostic yield and complications of US and US-guided procedures. Any possible association of different sonographic patterns of pleural effusion and the underlying aetiology was evaluated by logistic regression.

Results A total of 179 thoracic US examinations were evaluated and most were performed for the diagnosis and management of pleural effusions (94.4%) and in guiding invasive procedures (95.5%). The majority of US guided procedures were thoracocentesis (66.0%) and intercostal drain insertion (49.0%). The overall diagnostic yield and complication rates were 60.0% and 7.5% respectively. A "non-anechoic" sonographic appearance was associated with exudative effusions (Odds ratio (OR) 15.15, 95% confidence interval (CI) 4.62 to 49.64, p <0.001). A "complex septated" sonographic appearance was significantly associated with pleural infection (OR 20.46, 95% CI 6.62 to 63.28, p <0.001) and negatively associated with malignant pleural effusions (OR 0.19, 95% CI 0.05 to 0.70, p = 0.01). Apart from guiding invasive procedures, thoracic US was found to have significant impact on patient management in 144 (80.4%) cases.

Conclusion Thoracic US performed by respiratory physicians was an accurate, effective and safe tool in investigating and managing pleural and other respiratory diseases. It also exerted significant impact on patients' management. The findings from this study supported the recommendation by international guidelines of using thoracic US in performing invasive pleural procedures.

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A RETROSPECTIVE STUDY OF TUBERCULOUS PLEURAL EFFUSION DIAGNOSIS IN A LOCAL HOSPITAL IN HONG KONG: FACTORS AFFECTING PLEURAL FLUID ADA

Dr Sze Cheung Wai Eric, Department of Medicine & Geriatrics, Tuen Mun Hospital (June 2015 Respiratory Medicine Exit Assessment Exercise)

Introduction Pleural effusion due to tuberculosis is not an uncommon disease. The optimal cut-off values in different studies varied greatly from each other. This study aimed to investigate the relationship between ADA and patient factors and to find out the optimal cut-off value in this study population.

Methods Adult patients admitted to Tuen Mun Hospital with pleural fluid ADA tests from January 2009 to June 2014 were studied. Patient demographics, co-morbidities and ADA values of different groups were studied. Correlation between ADA and patient variables were analyzed. Optimal ADA cut-offs were determined by ROC curves.

Results 533 patients were included. There was a significant correlation between age and ADA, with higher age associated with lower ADA (rho = -0.331, P < 0.001). For all-age group, AUC was 0.918, the optimal cut-off was > 19 U/L, with sensitivity 92.3%, specificity 86.1%. For age < 65, AUC was 0.906, the optimal cut-off was > 26 U/L, with sensitivity 92.6%, specificity 87%. For age ≥ 65, AUC was 0.921, the optimal cut-off was > 13.7 U/L, with sensitivity 95.8%, specificity 82.8%. Presence of cirrhosis was significantly associated with lower ADA. No difference in ADA was observed in patients with immunocompromised conditions.

Conclusions There was significant correlation between age and ADA. A lower cut-off

should be considered in older patients. A low ADA value in cirrhotic patients might not exclude the diagnosis of tuberculous pleural effusion. No difference in ADA was found in immunocompromised patients.

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CAUSES OF HEMOPTYSIS IN PATIENTS WITH NORMAL (/NON-LOCALISING) CXR, HOW FAR SHALL WE GO? -- A LOCAL REGIONAL HOSPITAL'S EXPERIENCE

Dr Wong Nga Yin, Department of Medicine & Geriatrics, Tuen Mun Hospital (June 2015 Respiratory Medicine Exit Assessment Exercise)

Background Hemoptysis is a worrisome symptom. A myriad of etiologies can be the culprit. Differing opinion exists as to how one should approach patients presenting with hemoptysis and a normal (/non-localising) CXR.

Objectives

i) To investigate the underlying causes of hemoptysis in patients with normal CXR in TMH.
ii) To study the role of CT thorax/ bronchoscopy as investigation tools in such settings.
iii) To delineate predictive factors of lung malignancy that may help guide the extent of investigation.

Design Retrospective review of clinical records of consecutive patients presenting with hemoptysis and a normal CXR who met any one of the following criteria: i) being admitted, ii) had bronchoscopy done, iii) had CT done from June 2008 to May 2011.

Results Among 112 patients (mean age: 56 years; 43.7% were smokers), 7 (6.3%) (aged 31-83 years) were found to have lung malignancy. CT located the lesions in all, while bronchoscopy detected the corresponding lesions in 3 (42.9%). No statistically significant predictors were identified for lung malignancies. In addition, CT found 2 PAVM and 16 bronchiectasis cases, some of which were amenable to interventional radiology. No significant lesions found by bronchoscopy were missed by CT. 1 PTB case was found, BAE was needed to abort the massive hemoptysis.

Conclusion With a view to the non-negligible risk of lung malignancy, further investigations (CT, in particular) are warranted, especially for high risk patients. Further larger-scale studies are called for to help delineate the risks factors to guide judgement.

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PSORIATIC NAIL INVOLVEMENT AND ITS RELATIONSHIP WITH DISTAL INTERPHALANGEAL JOINT DISEASE

Dr Lai Tin Lok, Department of Medicine and Geriatrics, Kwong Wah Hospital (May 2015 Rheumatology Exit Assessment Exercise)

Background Psoriatic nail disease and distal interphalangeal (DIP) arthritis both are common manifestations of psoriatic arthritis (PsA). Several clinical characteristics are reported to be associated with DIP joint damage, particularly psoriasis nail. However, there is little information to substantiate this phenomenon.

Objective The primary objective is to determine the frequency of psoriatic nail disease and DIP arthritis in PsA patients. The secondary objective is to investigate the relationship between DIP involvement and different clinical variables of PsA, particularly psoriasis nail.

Methods This study is a cross-sectional observation study. A total of 45 patients recruited from Rheumatology clinic of Kwong Wah Hospital. Basic demographic data and clinical characteristics were collected. Psoriatic fingernail was scored, and the radiograph of all fingers was taken to detect evidence of PsA changes. By comparing the clinical variables between patients with and without DIP arthritis, the relationships between different clinical features of PsA were investigated. Individual digit was further analysed to determine which nail characteristic was more associated with DIP damage.

Results 64.4% of PsA patients had nail psoriasis and 35.6% had DIP arthritis. Univariate analysis identified that (1) swollen joint-count, (2) digits with chronic dactylitis, (3) HLA-B27 status and (4) psoriatic nail disease, were associated with DIP arthritis. The regression model supported that positive nail disease was the most significant associated factor, with an odd ratio of 9.7; p=0.05.

Nail psoriasis was identified in 40.2% of 450 digits. Pitting (29.6%), onycholysis (15.1%), crumbling (8.2%), nail-bed hyperkeratosis (2.0%) were noted with the mean modified Nail Psoriasis Severity Index (mNAPSI) of 0.95 +/- 1.68. Among all digits, 57 had DIP arthritis and 393 did not. Within the digits with DIP arthritis, 59.6% (34/57) had nail disease. Chi-square test with Bonferroni correction further confirmed an association between nail psoriasis and individual DIP involvement, with an odd ratio of 10.9; p=0.001. Two specific nail subtypes - crumbling and onycholysis, were found to be significantly associated with DIP disease.

Conclusion A significant proportion of PsA patients were found to have nail involvement and DIP arthritis. This study suggests that there is an association between these two manifestations. Early identification of psoriatic nail disease among patients with PsA might be warranted to prevent future joint damage.

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COMPARISON BETWEEN CLINICAL COURSE OF SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS IN EARLY VERSUS LATE ONSET GROUPS IN A CHINESE COHORT POPULATION

Dr Teng Kar Yee Sophia, Department of Medicine and Geriatrics, Princess Margaret Hospital
(May 2015 Rheumatology Exit Assessment Exercise)

Objectives To compare the clinical course of Systemic lupus erythematosus (SLE) in early-onset and late-onset patients by measuring SLE disease activity index (SLEDAI) at presentation, disease intervals and to study the clinical features, comorbidities, treatment and complications in both groups.

Method Late-onset SLE patients with follow up from 2009 to 2014 at Princess Margaret Hospital were recruited. A 1:2 control of early-onset patients were randomly selected for comparison.

Results A total of 53 late-onset and 108 early-onset SLE patients were studied. Late-onset

group had a lower female: male ratio. SLEDAI score was significantly lower in late-onset group at SLE diagnosis compared with early-onset group (p= 0.019), at 24 months (p=0.005), 36 months (p=0.003) and last follow up (p=0.013). The late-onset group presented with more frequent interstitial lung disease (p=0.039) but less frequently with acute cutaneous lupus (p=0.001) or protein losing enteropathy (p=0.013). Damage Index (SDI) was lower in early-onset group at onset of disease (p<0.001) but not at last follow up. Mortality was comparable in both groups. More patients in late-onset group had diabetes mellitus (DM), hypertension and renal insufficiency at diagnosis but only DM remained more at last follow-up as compared with early-onset group.

Conclusions Our results suggested a more benign SLE disease course in late-onset SLE patients requiring less intensive immunosuppressive therapy. Renal involvement is common in Chinese SLE patients irrespective of age with interstitial lung disease more commonly seen in late-onset group. Late-onset group had higher damage score at onset but became comparable at last follow up.

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INCIDENCE AND ASSOCIATED RISK FACTORS OF SYMPTOMATIC AVASCULAR BONE NECROSIS IN SYSTEMIC LUPUS ERYTHEMATOSUS: A CASE-CONTROL STUDY

Dr Tse Sau Mei, Department of Medicine and Geriatrics, Tuen Mun Hospital (May 2015 Rheumatology Exit Assessment Exercise)

Objectives To study the standardized incidence ratio, time trend and risk factors of symptomatic AVN in patients with SLE.

Methods The records of all patients with SLE and followed in Tuen Mun Hospital between 1999 and 2014 were reviewed. Patients who developed AVN ever since the diagnosis of SLE were identified. A group of SLE controls without evidence of AVN were randomly selected from our cohort database in a 4:1 (control/case) ratio, matched for age, sex and SLE duration. The SIR of AVN in SLE and its time trend was calculated by data retrieved from our hospital clinical information registry and the Hong Kong Census data. Risk factors for AVN in SLE were studied by logistic regression. Factors considered to be covariates in the regression model were hypertension, diabetes mellitus, LDL-cholesterol, triglycerides level, preceding septic arthritis of the involved site of AVN, maximum daily dose of prednisolone ever used, cumulative dose of prednisolone in the first 6 months of treatment of the first SLE flare, total cumulative and monthly prednisolone dose, Cushingoid body habitus, cutaneous vasculitis, Raynaud's phenomenon, antiphospholipid antibodies, and a propensity score derived from a separate logistic regression model for the probability of use of high-dose prednisolone (>0.8mg/kg/day) therapy according to the prevalence of different SLE manifestations.

Results Fifty-five patients with symptomatic AVN were matched with 220 control SLE patients without AVN. The point prevalence of AVN was 7.4%. The SIRs of AVN were 131 in the period 1995-2004 and 56 in the period 2005-2014. In both decades, the age-stratified SIR was highest in the youngest age group of below 20 (1161 and 778 respectively).

Patients with AVN were more likely to be treated with GCs (100% vs 87%)and had received a significantly higher cumulative dose of prednisolone (16.5 vs 10.7 grams). One hundred

and four sites of AVN were diagnosed in 55 patients with the hip being the most commonly affected region (82%). Surgical treatment was performed for 39% of the AVN lesions.

Logistic regression analysis revealed the following factors that were independently associated with the occurrence of AVN, adjusted by the propensity score for ever use of high-dose prednisolone: preceding septic arthritis of the involved joint (odds ratio [OR] 17.7; p=0.02), Cushingoid body habitus (OR 2.4; p=0.04), LDL-cholesterol level (OR 1.4; p=0.04), maximum daily dose of prednisolone (mg/kg) (OR 6.4; p=0.03) and cumulative dose of prednisolone in the first 6 months of treatment of the first SLE flare (OR 1.3; p=0.05).

Conclusions AVN is prevalent in SLE patients, particularly in younger patients. The use of GCs remains the strongest independent factor associated with AVN. There is a trend of reduction in the SIR of AVN in our SLE patients over the past 2 decades, which is probably attributed to the more judicious use of GCs and the early administration of GC-sparing agents.

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