

Poster Presentation Abstracts – Day Two

I/II – Day One/Day Two; xxx – Poster Board Number; GP: General Practice; MP – Medicine/Paediatrics; NUR – Nursing; PD – Paramedical Disciplines; SOGD – Surgery/Obstetrics & Gynaecology/Dentistry

II001/GP

Patient Satisfaction: Through the Eye of QFD

Loon-Ching TANG¹, Pierre PAOLI², Nellie YEO³, Dalwara SINGH³, Joe Soon-Chee CHAN³

¹ISE, National University of Singapore, Singapore, ²Department of Industrial and System Engineering, National University of Singapore, Singapore, ³Quality Resource Management, National Healthcare Group, Singapore

Aim: The health care industry is becoming a more and more challenging sector with hospitals constantly challenged to provide patients with high-quality and low-cost services. Specifically in Singapore this trend has been accentuated by an ageing population coupled with a change in the population health needs; rising expectations for better and more sophisticated healthcare services; and an increasing cost of providing healthcare. In this study, a new tool based on Quality Function Deployment (QFD) is attempted to address some of these issues.

Methods: The patient needs and expectations as well as all the healthcare features were first identified in correlation with inputs from staff of the National University Hospital (NUH). All these data were used to fill up the first House of Quality of the QFD process. A new multi-criteria optimisation was then applied and a set of Pareto-optimal solutions in terms of patient satisfaction and cost was generated.

Results: According to current trade-off preferences/constraints, factors contributing to the patient satisfaction were identified. It shed some light on the optimal level of quality improvement measures and their related costs for meeting a particular level of patient satisfaction. This helped in formulating guidelines and identifying opportunities for further enhancements.

Conclusion: The results only represent preliminary findings. They provide a test bed for the new QFD framework as a tool for formulating guidelines and policies for improving healthcare services. This could be a launching point for us to cope with the challenging Singaporean health environment.

II002/GP

Simplified Single-Tube Multiplex-PCR Screen for Anti-3.7 and Anti-4.2 α -Globin Gene Triplications

Wen WANG¹, Edmond SK MA², Amy YY CHAN², LC CHAN², David HK CHUT³, Samuel S CHONG⁴

¹Department of Paediatrics, National University of Singapore, Singapore, ²Department of Pathology, University Hong Kong and Queen Mary Hospital, Hong Kong, ³Department of Medicine and Pathology, Boston University School Medicine, ⁴Department of Pediatrics, Ob/Gyn, and Molecular Diagnosis Center, Pediatrics and Ob/Gyn, Children's Medical Institute, The Johns Hopkins University School of Medicine

Aim: The coexistence of α -globin gene triplication has been shown to be an important modulator of the severity of β -thalassaemia trait or β -thalassaemia intermedia, and screening to detect their presence is thus indicated for apparent β -thalassaemia carriers who have a more severe presentation than expected. Recent studies in Hong Kong and Sri Lanka suggest that the frequency of α -globin gene triplication carriers in these populations may range between 2-3.3%. Molecular screening for both the anti-3.7 and anti-4.2 α -globin gene triplications currently requires Southern blot analysis. We have developed a novel single-tube multiplex-PCR assay to screen for these gene triplications.

Methods: Anti-3.7/4.2 multiplex-PCR primers were designed to only amplify either an anti-3.7 or an anti-4.2 junction fragment from the respective triplicated allele (aaa). No amplification product would be generated from a normal allele (aa) or a deletional allele (-a or --). The amplicon sizes of the anti-3.7 and anti-4.2 junction fragments were designed to enable easy identification after agarose gel electrophoresis.

Results: The optimised assay was subjected to a double-blind validation analysis of more than 30 genomic DNA samples whose α -globin triplication status had previously been determined by Southern blot analysis. All tested samples were correctly genotyped, and the anti-3.7 and anti-4.2 alleles could be clearly distinguished. Test turnaround, including PCR and agarose gel analysis, was <6 h.

Conclusion: We have developed and validated a simple, rapid and reliable single-tube multiplex-PCR assay to detect the anti-3.7 and anti-4.2 α -globin gene triplications.

II003/MP

Antipsychotic Polypharmacy in Schizophrenia: Findings of the REAP (Research on East Asia Psychotropic Prescriptions) Study

Kang SIM¹, Mian-Yoon CHONG², Gabor UNGVARI³, Tianmei SI⁴, Eun Kee CHUNG⁵, Naotaka SHINFUKU⁶, Chay Hoon TAN⁷

¹Adult Psychiatry, Institute of Mental Health/ Woodbridge Hospital, Singapore, ²Department of Psychiatry, Kaohsiung Medical University, Taiwan, ³Department of Psychiatry, Chinese University of Hong Kong, Hong Kong, ⁴Department of Psychiatry, Peking University, China, ⁵Department of Psychiatry, Seoul National Hospital, Korea, ⁶Department of Psychiatry, Kobe University, Japan, ⁷Department of Psychological Medicine, National University Hospital, Singapore

Aim: Previous studies on the prescription patterns of psychotropic medications in patients with schizophrenia have revealed a high rate of antipsychotic polypharmacy but the data in Asia are sparse. This multi-centre, international, cross-sectional study seeks to examine (1) the prevalence of antipsychotic polypharmacy in East Asia schizophrenia patients and (2) evaluate its clinical correlates.

Methods: Across 6 East Asian countries, territories and 32 centres, 2399 patients with schizophrenia were evaluated on their antipsychotic prescriptions. Daily doses of antipsychotic medications were converted to standard chlorpromazine equivalents.

Results: Antipsychotic polypharmacy was found in 46.4% (n = 1097) of the patients. Patients in Japan were most likely (OR 7.3, 95% CI 5.9-9.1, p<0.001) and patients in Hong Kong (OR 0.16, 95% CI 0.09-0.29, p<0.001) least likely to be in receipt of more than 1 antipsychotic medication. Polypharmacy was associated with male gender (OR 1.3, 95% CI 1.1-1.5, p<0.01), advanced age (t = -8.4, df = 2363, p<0.001), longer duration of illness (z = -8.29, p<0.001), psychopathology such as the presence of delusion (especially in Japan, OR 1.50, 95%CI 1.01-2.22, p<0.05), hallucination (OR = 1.19, 95% CI 1.01-1.40, p<0.05), aggression (OR 1.56, 95%CI 1.18-2.07, p<0.01), disorganised speech (especially in Korea, OR 1.53, 95% CI 1.02-2.30, p<0.05), adverse effects of constipation (p<0.001) and dry mouth (p<0.01) as well as higher daily CPZeq dosage (p<0.001), being on depot (p<0.001) and anticholinergic (p<0.001) medications.

Conclusion: The high rate of antipsychotic polypharmacy urges clinicians to constantly re-examine the rationale of such practice in light of recent postulates of possible benefits of combination therapy but not without its adverse effects.

II004/MP

Expansion and Differentiation of Mouse Bone Marrow Stromal Cells In vitro

Kwong Joo LECK¹, King Shung KHOO¹, Ke GUO², Woon Chee YEE³, Zhi Wei FENG¹

¹Apoptosis and Stem Cell Therapy Laboratory, National Neuroscience Institute, Singapore, ²Histology, Institute of Molecular and Cell Biology, Singapore, ³Neuroscience Research Laboratories, National Neuroscience Institute, Singapore

Aim: The adult bone marrow can potentially provide an abundant and replenishable source of stem cells for cell therapy. However, the culture conditions for growth and differentiation of bone marrow stromal cells (BMSCs) into cells of various tissue types have yet to be optimised and fully defined. This study was designed to explore the effects of various chemical reagents and conditioned medium on growth and differentiation of BMSCs.

Methods: We cultured and differentiated mouse BMSCs using various chemical reagents in combination with conditioned media from a number of tumour cell lines. Preliminary identification of differentiated cell types was based on microscopic observations. We are currently using immuno-histochemical and RT-PCR techniques to confirm and further characterise some of these differentiated cell types.

Results: Some of our differentiated cells were found to demonstrate a neuron-like morphology and exhibit positive staining for a number of neuronal markers.

Conclusion: This study shows that BMSCs can be differentiated into neuron-like cells in vitro. BMSCs can potentially provide an abundant source of cells for autologous transplantation in neurological diseases.

II005/MP

Modern Digital Echocardiographic Review: An Accurate and Safe Alternative to Videotaped Examinations?

Kian Keong POH, Lieng Hsi LING, Hla-Yee DAW, Abdul Razakjr OMAR
Department of Cardiology, The Heart Institute, National University Hospital, Singapore

Aim: New digital storage of echocardiographic (Echo) data offers logistic advantages over videotaped archival. However, limited information is available on the accuracy of digitised examinations. We aimed to determine if this efficient review provides adequate diagnostic information without compromising patient (pt) management.

Methods: Transthoracic Echo images of 520 consecutive pts were prospectively acquired on videotaped and as digital cine-loops and still-frames. Two echocardiologists reported the digital followed immediately by the videotaped study. Using videotape as the gold standard, the significance of any Echo difference was graded from both imaging and clinical standpoints, and reasons for these differences identified.

Results: Irregular cardiac rhythms were present in 89 pts (17%). The complexity of Echo studies was low in 404 pts (78%), intermediate in 101 (19%) and high in 15 (3%). Echo images were of poor quality in 36 cases (7%). From an imaging perspective, differences between the images were deemed minor in 459 pts (88%), fairly significant in 55 (11%) and very significant in 6 (1%). The main reasons for the observed differences were: inadequate acquisition of views (59%), insufficient number of acquired cycles (25%) and suboptimal image quality (10%). Echo differences were considered to be of possible or definite clinical importance in 19 (4%) and 10 pts (2%), respectively. In a multivariate model incorporating rhythm, diagnostic complexity and image quality, the only independent predictor of significant difference between digitised and videotaped Echo images was study complexity ($X^2 = 17.1$, $P = 0.0016$).

Conclusion: The negative impact on clinical management decisions arising from exclusive modern digital review appears small. Greater attention towards acquisition of more complex studies should further minimise discrepancies between the 2 reporting methods.

II006/MP

All-Cause Mortality in Patients With Heart Failure and Left Ventricular Systolic Dysfunction

Swee-Chong SEOW¹, Ping CHAI¹, Bernard W-K KWOK², Tiong-Cheng YEO¹, Boon-Lock CHIA¹, Huay-Cheem TAN¹

¹Department of Cardiology, National University Hospital, Singapore, ²Department of Cardiology, National Heart Centre, Singapore

Aim: To establish the 5-year all-cause mortality of patients with left ventricular systolic dysfunction admitted for heart failure.

Methods: 225 patients with left ventricular ejection fraction of 40% or less by echocardiography were admitted for heart failure in 1998. Five years later, the outcomes of these patients were determined via telephone. The primary outcome was all-cause mortality. Risk of death in relation to discharge medications and co-morbid medical conditions were also analysed

Results: Thirty-three (14.6%) patients were lost to follow-up. Of the remainder, 126 (65.6%) were dead and 66 (34.4%) alive after 5 years. Seventy-eight percent of patients in the cohort were treated with ACE-inhibitors. Patients were more likely to survive if they were on ACE inhibitors (RR of death 0.758, 95% CI 0.624-0.920, $p = 0.018$). There was a trend towards survival for those on statins (RR of death 0.796, 95% CI 0.604-1.048, $p = 0.072$). No survival benefit was observed with anti-thrombotic agents, calcium channel blockers, nitrates, hydralazine, or digoxin. In this cohort, only a small number of patients were on beta-blockers (6.3%) and spironolactone (6.3%). Patients in NYHA functional class 1 or 2 had a better outcome (RR of death 0.796, 95% CI 0.644-0.986, $p = 0.032$) than those in class 3 or 4, as did those who were younger than 70 years of age (RR of death 0.794, 95% CI 0.648-0.973, $p = 0.027$).

Conclusion: Mortality for this cohort of patients with heart failure was high despite the high usage of ACE-inhibitors. This highlights the need for a comprehensive heart failure management programme and evidence-based pharmacological therapy

II007/MP

Parent and Teacher Behavioural Ratings of Asian Children in Singapore

Daniel Shuen Sheng FUNG¹, Bernardine WOO¹, Yiong Huat CHAN², Juliana TEO¹

¹Child and Adolescent Psychiatry, Institute of Mental Health, Singapore, ²Clinical Trials and Epidemiology Unit, Ministry of Health, Singapore

Aim: To study the relationship between parents' and teachers' ratings of emotional and behavioural problems in school-going children in Singapore.

Methods: 270 children age 4-18 years were selected from children presenting at a child mental health facility in Singapore over a 3-year period. Each child was assessed by a psychiatrist who formulated a diagnosis, assessed the severity on a 3-point scale and completed a global assessment of function. Parents and teachers also completed behaviour checklists on the children's behaviour manifested within the past 6 months. Parent, teacher and clinician ratings were completed independently and their results analysed and compared.

Results: Analyses showed that parent and teacher ratings correlated positively and significantly ($r = 0.16$ to 0.35 , $p < 0.01$). Teacher ratings concurred significantly with clinician ratings on 7 behaviours while parent ratings concurred significantly with clinician ratings on 5 behaviours suggesting that teachers are better informants for screening children.

Conclusion: It appears that Singaporean teachers are good at picking up emotional and behavioural problems in children and may be helpful to clinicians in screening children for clinical assessment. The role of the school in detecting mental health problems can be a primary point for the prevention of mental illness in children.

II008/MP

High Frequency Ultrasound of Superficial Structures with a Water Bath

Gervais Khin-Lin WANSALCHEONG, Susanna Soo See TAN, Ian Yu Yan TSOU

Department of Diagnostic Radiology, Tan Tock Seng Hospital, Singapore

Aim: High frequency linear ultrasound transducers allow detailed imaging of superficial structures. Reverberation artifacts from acoustic impedance mismatch can limit this use. We describe a technique that eliminates this artifact.

Methods: Five volunteers had an ultrasound examination of the small joints of the hands using a standard high frequency linear ultrasound transducer with a water bath. This was compared with conventional scans on the same volunteers using the same transducer and gel to ensure contact. Images of the metacarpophalangeal joints and proximal interphalangeal joints were obtained and compared using a 5 point scale.

Results: The reverberation artifact is absent from the images obtained using the water bath technique. There is better demonstration of the surface cartilage when the finger is flexed due to an improved acoustic window.

Conclusion: Use of a water bath technique is advantageous in the evaluation of superficial structures, especially when there is difficulty obtaining adequate contact with gel.

II009/MP

Association of Cyp2C9 Genetic Polymorphisms With Warfarin Requirement in a South-East Asian Population

Feng ZHAO¹, Celine LOKE², Jiayi GUO¹, Tuck Seng WU², Tiong Cheng YEO³, Boon Cher GOH¹, Soo Chin LEE¹

¹Department of Haematology-Oncology, National University Hospital, Singapore, ²Division of Pharmacy, National University Hospital, Singapore, ³Department of Cardiology, National University Hospital, Singapore

Aim: Warfarin, a common anticoagulant with narrow therapeutic window, is principally metabolised by the Cyp2C9 enzyme. Variant Cyp2C9 alleles may affect warfarin requirement.

Methods: Patients receiving maintenance warfarin with therapeutic INR underwent comprehensive Cyp2C9 sequencing.

Results: 102 patients participated, including 55 Chinese, 24 Malays and 20

Indians. Median warfarin dose was 3.5 mg, 3.5 mg, and 5.0 mg ($p = 0.001$) for Chinese, Malay and Indian respectively (range 1.0–8.0 mg, 1.5–6.0 mg, 1.5–11.0 mg). Eleven exonic, 5 intronic, and 33'UTR variants were identified. One Caucasian patient each was heterozygous and homozygous for the CYP2C9*2 allele (430C>T) that segregated with the (1582C>G) 3'UTR variant. Eight patients were heterozygous for the CYP2C9*3 allele (1075A>C), including 4 Chinese, 2 Malays and 2 Indians, that segregated with a silent variant (1425A>T, glycine>glycine). A novel nonsense mutation (485C>A, serine>termination) occurred in an Indian female. A 3'UTR frameshift mutation (1739delAT), occurred in a Chinese male. The other exonic variants were: 895A>G, 1144C>T, and 1361G>C, in 1 Chinese each, 374G>A and 1190A>C in 1 Indian each, and 208G>C in 1 Malay. Of note, the other previously described Cyp2C9 variant alleles, including exon 4 polymorphisms in Hong Kong Chinese, were not identified. The median warfarin dose for patients with Cyp2C9*3 was 1.5 mg, compared to 4.0 mg for wild-type.

Conclusion: The Cyp2C9*3 is present in Chinese, Malay and Indian, with allele frequency at 7.3%, 8.3% and 10.0%, respectively, and is associated with lower warfarin requirement. The Cyp2C9*2 allele is absent in Chinese and Malay. Multiple novel Cyp2C9 variants were found in our population that warrants further characterisation in an expanded cohort.

II010/MP

An Epidemiological Profile of Severe Head Injury Admitted to the National Neuroscience Institute (NNI)

Kah Keow LEE¹, Ivan Hua Bak NG²

¹Department of Nursing Administration, National Neuroscience Institute, Singapore, ²Department of Neurosurgery, National Neuroscience Institute, Singapore

Aim: Severe head injury (SHI) is a common injury with significant high mortality and morbidity rate. This study aims to review the demographic and mechanism of injury of SHI in the National Neuroscience Institute (NNI).

Methods: This retrospective study was conducted in the NNI between January 1999 and December 2002. Information maintained in the Severe Head Injury Database which include demographic data, source of referral, details of injury, presenting Glasgow Coma Scale (GCS) and outcome at 6 months in 494 patients were reviewed.

Results: 79% of the SHI population are male and the age ranged from 10–96 years, with the young and active group (21 to 60 years old) constituting 67%. Common mechanisms of injury were motor vehicle (43%) and fall (47%) related accidents. 12% were under the influence of alcohol. 59% have GCS <8 on presentation and pupil abnormality was present in 34%. Traumatic SAH occurred in 33%, multiple injuries in 20% and radiological-proven cervical injuries in 10%. 44% were operated and the rest were treated conservatively. Average length of hospital stay was 23 days, with the maximum of 223 days. At 6 months post injury, mortality rate was 36%, unfavourable outcome (moderate to severe disability) in 14% and favourable outcome (slight or no disability) in 50%.

Conclusion: Motor vehicle and fall related accidents were the leading causes of SHI, and the patients were predominantly males and young. Half of these patients would be expected to have a favourable outcome.

II011/MP

Childhood Headache Referrals to the Paediatric Neurology Clinics in National University Hospital

Shang Chee CHONG, Hian Tat ONG

Department of Paediatrics, Children's Medical Institute, National University Hospital, Singapore

Aim: This prospective study aimed to evaluate the profile of children with primary headaches who were referred to the paediatric neurology clinics.

Methods: Questionnaires were completed by the children themselves or with the help of their parents. The characteristics of their headaches were used for diagnosis according to the criteria by the International Headache Society (IHS) established in 1988. The proposed modified criteria, according to the Paediatric Headache Committee of the Association for Study of Headache in 1997, were used for the diagnosis of paediatric migraine.

Results: There were 117 responders from January 1999 to May 2003. Using the modified paediatric IHS classification 29.9% had migraine without aura,

and 16.2% had migraine with aura, fulfilling the IHS diagnostic codes of 1.1 and 1.2 respectively. Episodic tension headaches (IHS 2.1) made up 19.6%; chronic tension headaches (IHS 2.2) 7.7%; and benign exertional headaches (IHS 4.5) 1.7%. The remaining 24.7% who were not either migraine or tension headaches were classified as "headaches of the tension-type, but not fulfilling IHS criteria" (IHS 2.3); "migrainous disorder not fulfilling criteria" (IHS 1.7) and "headaches not classifiable" (IHS 13.0).

Conclusion: As expected, the majority of patients referred to the subspecialty clinics have either migraine or tension-type headaches. However, we had significantly lower proportion of children who had migraine without aura when compared to reports from a tertiary centre in Barcelona, using the same modified IHS criteria for paediatric migraine. An epidemiological study would be useful to determine if Singapore children indeed have a lower incidence of migraine without aura.

II012/MP

The Community Screening Instrument for Dementia: Its Development and Validation as a Cognitive Screening Instrument for Use in the Three Main Ethnic Populations in Singapore

Lisa Yen Mei CHUAH¹, ES KRISHNAMOORTHY², A CHNG², N VENKETASUBRAMANIAN³, S SAHADEVAN⁴, JJ CHIN⁴, EH KUA¹

¹Department of Psychological Medicine, National University of Singapore, Singapore, ²Epidemiology and Clinical Research Unit, National Neuroscience Institute, Singapore, ³Department of Neurology, National Neuroscience Institute, Singapore, ⁴Department of Geriatric Medicine, Tan Tock Seng Hospital, Singapore

Aim: The 10/66 Dementia Research Group recommended the CSID as a cultural and education-free cognitive screening instrument. This study aimed to develop and validate the CSID in the Chinese, Malay, and Indian elderly populations.

Methods: The CSID was translated to Mandarin, Malay, and Tamil and backtranslated, and assessed for acceptability and conceptual validity. The CSID, MMSE, AMT, and ECAQ, were administered to 84 Chinese, 85 Malay and 87 Indian elderly. All were independently diagnosed as demented or non-demented using DSM-IV criteria by a medical consultant.

Results: The CSID provides a cognitive score (CSID-cog), an informant rating of functional and cognitive decline (CSID-rel), and a combination score (CSID-df). Diagnostic accuracy of CSID-cog was high (0.97). It correlated highly with MMSE (0.90), AMT (0.88), and ECAQ (0.78). Accuracy was lower for CSID-rel (0.83) and CSID-df (0.92). For the Chinese, all 3 CSID scores had high accuracy (0.98, 0.93, and 0.96 for CSID-cog, CSID-rel, and CSID-df). For the Malays, accuracy of CSID-cog was at 0.98 and at 0.92 for CSID-df, but much lower for CSID-rel (0.74). Accuracy was at 0.95, 0.83, and 0.87 for CSID-cog, CSID-rel, and CSID-df for the Indians. Regressions analyses indicated significant contributions of race, age, and education to CSID-cog and CSID-df, and significant contributions of only race to CSID-rel.

Conclusion: The CSID appears to be a valid dementia screening instrument. Nevertheless, it remains influenced by educational and racial factors. Another interesting finding is that of racial differences in informant report of decline. Future studies to develop normal cutoff scores should take such factors into account.

II013/MP

MR Angiography of the Thoracic Great Vessels

Poh Sun GOH

Department of Diagnostic Imaging, National University Hospital, Singapore

Aim: To demonstrate the feasibility of MR angiography to provide complete evaluation of the great vessels in the thorax and allow the medical and surgical planning of subsequent treatment.

Methods: Gadolinium MR angiography of the thorax was performed for 5 patients using a 1.5Tesla clinical MRI system and intravenous bolus infusion of gadolinium.

Results: Satisfactory demonstration of arterial and venous anatomy and pathology in these patients with 1) dissection of the thoracic aorta, 2) Takayasu's arteritis with occlusion of the proximal left subclavian artery, 3) occlusion of the superior vena cava and brachiocephalic veins, 4) occlusion

of the right and severe stenosis of the left internal jugular veins and 5) aberrant origin of the right subclavian artery with vascular ring demonstrated.

Conclusion: Gadolinium MR angiography allows non-invasive demonstration of arterial and venous anatomy and pathology in the thorax and can be performed as an outpatient procedure.

II014/MP

The Digital Future – The Digital Radiology Department Supporting eConsultation, eLearning, eTeaching and Facilitating Research

Poh Sun GOH, Shih-Chang WANG

Department of Diagnostic Imaging, National University Hospital, Singapore

Aim: To unlock the potential of the digital acquisition, processing, storage and distribution of radiological information.

Methods: To use current infrastructure to improve work processes with minimal additional monetary investment. The basis is DICOM-compatible imaging equipment connected to a departmental-wide PACS network, web-based hospital-wide image distribution, and creation of a web-based eLearning platform.

Results: We will report on the efforts to create a fully networked digital radiology department since 2001, followed by the delivery of images using a web-based filmless system and radiological report access using a hospital-wide electronic information access system. We will also report work in progress to create a web-based, interactive eLearning platform to facilitate medical student, medical officer, and radiology specialist trainee education, as well as subsequent continuing professional development.

Conclusion: The integrated application of eAccess, eConsult and eLearning strategies has the potential to significantly improve clinical service delivery and teaching, as well as support research and continuing professional development.

II015/MP

Utility of an Infrared Thermal Imager in Hyperthermia Screening in a Hospital Setting

Gregory Jon Leng KAW¹, Jeffrey Seow Kuang GOH¹, Arul EARNEST², Tock Han LIM³

¹*Department of Diagnostic Radiology, Tan Tock Seng Hospital, Singapore*, ²*Clinical Research Unit, Tan Tock Seng Hospital, Singapore*, ³*Department of Ophthalmology, Tan Tock Seng Hospital, Singapore*

Aim: Severe acute respiratory syndrome (SARS) is a new infectious disease caused by a novel coronavirus. A high fever of greater than 38 degrees Celsius is essential in the case definition of SARS. Detection of individuals at higher risk of SARS, those with fever and a positive contact history are essential in minimising the chance of spread of disease within the hospital. Infrared thermal imagers have been proposed as an efficient and cost effective tool for screening the large number of individuals entering the hospital for hyperthermia. The authors present the results of a preliminary trial of 1 of these thermal imagers.

Methods: Tan Tock Seng Hospital (TTSH) evaluated a commercial thermal imager. The study took place at the triage station of the Emergency Department. The ear temperature of all patients was obtained using an infrared aural thermometer. The thermal imager, placed in front of the patient, obtained the maximum skin temperature reading of the upper half of the face. The 2 sets of readings were then analysed using receiver operating characteristic (ROC) curve analysis.

Results: The thermal imager threshold setting for 100% sensitivity for detection of a 37.5 degrees Celsius aural temperature, was 36.5 degrees Celsius. The readings from the thermal imager show good correlation with the ear temperature readings.

Conclusion: The thermal imager can be used as a first line tool for the screening of hyperthermia. The variation in the sensitivity of the imager can be addressed by the use of a recognised standard or calibration of the equipment.

II016/MP

MR Angiography of Pulmonary Atresia

Clint Ming Lung ONG, Julian Park Nam GOH, Gregory Jon Leng KAW, Diana Yuen Lan TAN, Ngee TEO, Ian Yu Yan TSOU, Gervais Khin-Lin WANSACHONG

Department of Diagnostic Radiology, Tan Tock Seng Hospital, Singapore

Aim: Pulmonary atresia is a rare congenital cardiac disease where the pulmonary valves do not develop. This results in an abnormal circulation where the pulmonary blood supply is achieved via major aortopulmonary collateral arteries (MAPCA). We describe the MR findings in children with pulmonary atresia.

Methods: Seven children patients had MR angiography on a 1.5 GE MR scanner for evaluation of pulmonary atresia as part of pre-operative assessment for MAPCA. A combination of pre-contrast T1, T2, single shot T2, flow sensitive gradient echo and contrast-enhanced T1 sequences in multiple planes was used. All patients were examined under general anaesthesia and cardiac or respiratory gating was used. All patients had extensive prior workup with obstetric ultrasound, neonatal cardiac ultrasound and cardiac catheterisation.

Results: There is great variation in the pulmonary artery and MAPCA. A residual pulmonary artery may be present and if so, its size is important in planning unifocalisation. The MAPCA can arise from anywhere in the thorax although usually from the descending thoracic aorta. Careful review of the source images and multiplanar reconstructions are needed to look for small MAPCA.

Conclusion: In young children with pulmonary atresia who are not suitable candidates for other investigations, contrast MRI is an alternative choice for accurate anatomical delineation prior to surgery.

II017/MP

Artifacts and Pitfalls in Chest Radiographs of Patients with SARS

Gregory Jon Leng KAW, Diana Yuen Lan TAN, Gervais Khin-Lin WANSACHONG, Jeffrey Seow Kuang GOH, Julian Park Nam GOH

Department of Diagnostic Radiology, Tan Tock Seng Hospital, Singapore

Aim: Severe acute respiratory syndrome (SARS) is a new infectious disease caused by a novel coronavirus. Chest radiographic findings of pneumonia are important in the reclassification of a suspect case to a probable case. The common initial chest radiographic findings are peripheral mid to lower zone ground-glass air-space shadows. Certain artifacts may mimic the subtle air-space shadows seen in SARS patients. The authors present the common artifacts on chest radiographs performed for SARS screening.

Methods: From mid March to late May 2003, more than 10 000 radiographs were performed for SARS patients and for SARS screening. The authors observed that several artifacts caused particular difficulty in the interpretation of these chest radiographs due to their similarity to the early findings in SARS.

Results: These artifacts were more common on the portable radiographs done for this group of patients as the procedure was technically more challenging compared to the conventional upright chest radiographic technique. The common pitfalls are patient rotation, suboptimal inspiration and prominent overlying soft tissue resulting in apparent air-space shadowing in the lower zones.

Conclusion: Familiarity with common artifacts and pitfalls in chest radiographs is important in making an accurate diagnosis of the common findings in a patient with SARS. Meticulous radiographic technique is helpful. Knowledge of pitfalls will help us avoid them.

II018/MP

High-resolution Computed Tomography Findings in Severe Acute Respiratory Syndrome in the Acute Phase and During Convalescence

Jeffrey Seow Kuang GOH, Diana Yuen Lan TAN, Gregory Jon Leng KAW

Department of Diagnostic Radiology, Tan Tock Seng Hospital, Singapore

Aim: To describe the imaging features on high-resolution computed

tomography of severe acute respiratory syndrome both during the acute infection as well as during convalescence.

Methods: The high-resolution computed tomography studies of all probable severe acute respiratory syndrome patients in our hospital were reviewed retrospectively by 3 radiologists, individually and in consensus. The pattern of findings were noted and correlated with the duration between imaging and time of exposure to the virus.

Results: In the acute phase, the findings on high-resolution computed tomography are similar to other viral-induced pneumonias, showing a predominant peripheral and lower lobe involvement and progressing to an acute respiratory distress syndrome-type picture. A number of patients show evidence of interstitial fibrosis and scarring after recovery, only some of which is attributable to oxygen toxicity secondary to ventilator therapy.

Conclusion: High-resolution computed tomography is useful for the evaluation of severe acute respiratory syndrome, both in the acute phase and during convalescence. It may have a role in assessing the degree of residual respiratory functional deficit in patients who have clinically recovered from the disease.

II019/MP

Evaluation of CMV IgG on the Abbott AxSYM

R HAWKINS, H M YEO, H Y TAN, H L TAN

Department of Pathology & Laboratory Medicine, Tan Tock Seng Hospital, Singapore

Aim: Cytomegalovirus (CMV) is a β -group herpesvirus, which causes oesophagitis, colitis, hepatitis, pneumonitis, renal tubulitis, chorioretinitis, and meningoencephalitis in neonates and in immunosuppressed persons secondary to transplant chemotherapy or AIDS. Currently all CMV IgG samples are sent off site. We evaluated CMV IgG measurement on the Abbott AxSYM, comparing the results to those from the offsite laboratory.

Methods: Imprecision was assessed using 2 levels of manufacturer supplied quality control materials over 20 days. Agreement between the Abbott AxSYM and the existing method was assessed using 45 routinely accepted patient samples.

Results: Imprecision results were: negative control: SD 0.52 AU/mL (level 0.26 AU/mL); positive control: SD 9.53 AU/mL (level 66.3 AU/mL). 45 samples were run for CMV IgG using the AxSYM system and the results compared with those from the offsite laboratory. 4 were negative by both methods while 41 were positive by both methods.

Conclusion: There is perfect correlation between the Abbott AxSYM CMV IgG assay and the existing service from the offsite laboratory. Provision of CMV IgG measurement onsite at TTSH should see both improved turn around time and cost benefits for the clinicians and patients of TTSH.

II020/MP

Emergency Physician versus Cardiologist Initiated Thrombolysis for Acute Myocardial Infarction: A Singapore Experience

Irwani IBRAHIM, Chong Meng SEET, Peter George MANNING

Department of Emergency, National University Hospital, Singapore

Aim: To compare the door-to-needle time between thrombolysis administration in the emergency department by the emergency physicians and those administered in the coronary care unit by the cardiologists.

Methods: Data were collected prospectively for all patients with ST segment elevation acute myocardial infarction (STEMI) who received thrombolysis in the emergency department over a 1-year period from January 2001 to December 2001. We recorded the time of arrival to the emergency department as well as the time thrombolytic therapy was commenced. These data were compared to the previous year, obtained retrospectively, where the patients received thrombolysis in the coronary care unit.

Results: The median door-to-needle time was significantly shorter in patients who were thrombolysed in the emergency department by the emergency physicians than in the coronary care unit by the cardiologists (29 minutes vs. 60 minutes, $p < 0.001$). There were no incidents of inappropriate thrombolysis nor were there incidents of major intracranial or gastrointestinal bleeding in patients thrombolysed in the emergency department. There was 1 case of medication dose error but there was no consequence to the patient.

Conclusion: Emergency physicians can administer thrombolytic treatment appropriately, quickly and safely in patients with acute STEMI.

II021/MP

Is World Health Organization Case Definitions for Severe Acute Respiratory Distress Syndrome Sufficient at Initial Screening?

Hsin Kai GOH, Kum Ying THAM, Eilayne SEOW

Department of Emergency Medicine, Tan Tock Seng Hospital, Singapore

Aim: On March 13, 2003, Singapore doctors were alerted about an outbreak of atypical pneumonia that became known as Severe Acute Respiratory Syndrome (SARS). We describe a series of patients that did not fit the World Health Organization (WHO) case definitions for SARS at initial assessment.

Methods: The Ministry of Health, Singapore centralised SARS cases in the study hospital and its Emergency Department (ED) became the national screening centre. A screening questionnaire and a set of admission criteria based on the WHO case definitions were applied. A retrospective review was done for patients who did not fit these definitions initially, were discharged, then re-attended and were diagnosed to have SARS.

Results: For the first 8 weeks of the outbreak, 8,103 were screened for SARS. Among 7,218 (89.1%) discharged from ED, there were 28 re-attendees diagnosed to have SARS later, giving an under-triage rate of 0.4%. There were 6 (21.4%) who did not complain of fever and 22 (78.6%) had temperature $< 38.0^{\circ}\text{C}$ during their first ED visit. The initial mean temperature was 37.6°C (Standard deviation [SD] 0.8), which increased significantly ($p = 0.04$) to 38.0°C (SD 0.8) during their subsequent visit. Chest X-rays with infective changes increased significantly ($p = 0.009$) from 16% to 52.4% over the 2 ED visits.

Conclusion: The WHO case definitions were helpful in evaluating majority of SARS patients initially. However, under-triage at ED is inevitable with a 0.4% under-triage in our study population. In this group and asymptomatic individuals who came for screening, a tracking and recall system helped to ensure their timely return to the ED.

II022/MP

Heart Failure in Primary Care: A Singaporean Perspective

Ren YONG¹, Zong Hui CHEW¹, Sue Rene SOON¹, Jeannette LEE², Carolyn LAM³

¹Faculty of Medicine, National University of Singapore, Singapore,

²Department of Community, Occupational and Family Medicine, Faculty of Medicine, National University of Singapore, Singapore, ³Department of Medicine, National University Hospital, Singapore

Aim: Chronic heart failure (CHF) is a growing epidemic in Singapore. The diagnosis and management of CHF at primary care level is difficult. Misdiagnosis of CHF recently contributed to a community outbreak of Severe Acute Respiratory Syndrome (SARS). CHF remains the commonest cause of cardiac admissions despite advances in medical therapy, namely Angiotensin-Converting-Enzyme Inhibitors (ACEI) and beta-blockers. It is uncertain to what extent these advances have been implemented in primary care. We therefore seek to assess current practice patterns of general practitioners (GPs) and identify obstacles to optimal diagnosis and management of CHF.

Methods: Telephone interviews of 100 GPs using structured questionnaires.

Results: GPs diagnosed CHF based on the presence of breathlessness (92.5%), lung crackles (52.5%), peripheral oedema (55.0%) and findings on chest radiography (76.8%). Only one fifth mentioned raised jugular venous pressure as a useful diagnostic sign. Echocardiography is not commonly obtained (5%), mainly due to inaccessibility. While many (47.5%) were aware of the importance of ACEI, few (17.3%) knew of the impact of beta-blockers on morbidity and mortality. Instead, diuretics were thought to be most important for prolonging survival in CHF (47.5%). The main obstacle to widespread ACEI usage was dry cough. Patient compliance (57.8%) and cost (82.5%) were the main obstacles to optimising care.

Conclusion: This is the first study of primary care CHF practice patterns in Singapore. Local GPs diagnosed CHF using non-specific symptoms and signs. There was lack of access to echocardiography. Obstacles to optimal CHF management were identified. This will hopefully lead to strategies to improve patient care.

II023/MP

Severe Acute Respiratory Syndrome (SARS) in Patients on Chronic Peritoneal Dialysis (PD)

Adrian LIEW, Seng Hoe TAN, Salim LIM, Meng Eng TAY, Jane C STRAATEN

Department of General Medicine, Tan Tock Seng Hospital, Singapore

Aim: The worldwide outbreak of SARS started in November 2002. SARS has not been reported in patients on chronic PD. The clinical features in renal failure patients are likely to be dissimilar to those without underlying comorbidities; and the respiratory function compromise may result in the need to terminate PD support.

Methods: We describe the clinical presentation and course of disease in 2 female PD patients with SARS as a result of contact with the index case between 2 March 2003 and 6 March 2003 at Tan Tock Seng Hospital, Singapore.

Results: The incubation periods were longer (13 and 14 days) as compared to 2 reports from Singapore (4-12 days) and Hong Kong (2-11 days). Patient A had fever that was classical of SARS. In contrast, Patient B did not mount any fever response throughout her admission. None had received immunosuppressive therapy. Patient A required ventilatory support. She did not develop Acute Respiratory Distress Syndrome (ARDS). Patient B had a self-limiting course, and required less than 50% supplemental oxygen. Patient A did not tolerate PD, which resulted in desaturation. She required intermittent haemodialysis from Day 5 to Day 15 of illness. She was recommenced on automated PD after Day 20 of illness. Patient B was able to tolerate PD throughout her entire course of illness.

Conclusion: End-stage renal failure patients are immuno-compromised. As such, the presentation of SARS in these patients may be atypical. The degree of respiratory function compromise will determine the renal replacement modality during the acute phase of the illness.

II024/MP

Some Observations on Prevalence of Primary Hyperaldosteronism in Hypertensive Patients in Singapore

Pankaj HANDA¹, Jam Chin TAY¹, Keh Chuan LOH²

¹Department of General Medicine, Tan Tock Seng Hospital, Singapore, ²Endocrinology Division, Department of General Medicine, Tan Tock Seng Hospital, Singapore

Aim: The prevalence of primary hyperaldosteronism (PHA) in hypertension has long been a contentious issue. It accounts for less than 1% of causes when only those with hypokalaemia are investigated. Majority of such patients have unilateral adrenal adenoma. Recent studies using PAC/PRA ratio suggest the prevalence of 5% to 15%. Such patients may have bilateral adrenal hyperplasia and many of them may have normal potassium. In 2000, Loh et al had conducted a study on patients attending 2 polyclinics to evaluate the prevalence of PHA in hypertensive patients in Singapore. We have attempted a similar study on patients attending a specialist centre.

Methods: 204 patients attending the outpatient clinics of General Medicine at Tan Tock Seng Hospital were selected. They were checked for random ambulatory measurement of PAC and PRA. Those with impaired renal function or on glucocorticoids or spironolactone were excluded. Screening was considered positive when PAC/PRA >20 and PAC >15 ng/dL. For the further confirmation of PHA, they were subjected to saline suppression test. In biochemically confirmed subjects, CT scans of abdomen were done to localise the tumour. In selected cases bilateral adrenal vein sampling was done to confirm abnormal aldosterone secretion.

Results: 41 (20.09%) patients were screened positive. 10 (28.7%) had biochemically confirmed PHA of which only 3 (33.3%) had hypokalaemia. CT abdomen and bilateral adrenal vein sampling revealed that half of them had evidence of unilateral adrenal adenoma.

Conclusion: The observations suggest that the prevalence of PHA in hypertensive patients at a specialist centre is around 5%, which is almost the same as that found in an earlier study conducted on patients attending the polyclinics.

II025/MP

Nephrotic Syndrome and Thrombotic Microangiopathy Associated With a Cyclooxygenase-2 Inhibitor

Seng Hoe TAN¹, Puay Hoon TAN², Salim LIM¹

¹Department of General Medicine, Tan Tock Seng Hospital, Singapore, ²Department of Pathology, Singapore General Hospital, Singapore

Aim: Selective cyclooxygenase-2 (COX-2) inhibitors are a new class of anti-inflammatory drugs that decrease risk of gastrointestinal side effects commonly associated with conventional non-steroidal anti-inflammatory drugs (NSAIDs). Information on the renal toxicity of COX-2 inhibitors is scarce. We report the first case of thrombotic microangiopathy with nephrotic syndrome associated with the highly selective COX-2 inhibitor, etoricoxib.

Methods: A 63-year-old man developed nephrotic syndrome following ingestion of etoricoxib for left elbow tendonitis. He had no previous medical history and had acute renal failure on presentation. Serologies for rheumatological diseases were negative. The renal biopsy showed acute tubular necrosis, focal segmental glomerulosclerosis and renal thrombotic microangiopathy. There was extensive foot process effacement of the podocytes. He was treated with prednisolone but died 2 months later from pneumonia.

Results: Renal related adverse events have recently been reported with the use of celecoxib and rofecoxib. To date, there have been no reports of thrombotic microangiopathy associated with the use of COX-2 inhibitors. Considering the role of prostacyclin (PGI) in vasodilatation and platelet inhibition, the inhibition of renal prostacyclin by etoricoxib may predispose the patient to develop renal thrombotic microangiopathy. The extensive effacement of foot processes in the kidney biopsy supported the possibility of a drug-induced minimal change disease on a background of focal segmental glomerulosclerosis as the cause of nephrotic syndrome.

Conclusion: The renal adverse event profile of COX-2 inhibitors may be similar to NSAIDs. The same precautions should be used for this new class of drug as for non-specific COX inhibition.

II026/MP

The Use of Anticoagulants in Hospice — Who has the Tendency to Bleed?

Nien Yue KOH¹, Richard CHYE²

¹Department of General Medicine, Tan Tock Seng Hospital, Singapore, ²Sacred Heart Hospice, Australia

Aim: To determine the frequency of thromboembolic events and anticoagulant use. Risk factors predisposing to haemorrhage were also studied.

Methods: A retrospective study was done on 291 patients admitted to the Sacred Heart Hospice from July to December 2001. Logistic regression was used to calculate the odds ratio for the various factors. Forward stepwise regression produced the reduced model of the risk factors that predispose to haemorrhage in these patients.

Results: 42 (14.4%) patients had thromboembolic event within the last 1 year. Of these, 13 (31%) were given heparin and 11 (26.2%) were given warfarin. There were 59 (16.8%) episodes of haemorrhage amongst all patients, with upper gastrointestinal bleed being the commonest (32.2%). Anticoagulants, NSAIDs and a combination of the two were not significant risk factors for bleeding. Haematological disease (OR = 5.08), liver disease (OR = 4.44), occurrence of haemorrhage in the past 1 year (OR = 4.27), urinary tract malignancy (OR = 2.76) and ischaemic heart disease (OR = 2.55) were independent risk factors for bleeding. Peptic ulcer disease (OR = 4.12), diabetes mellitus (OR = 3.59), peripheral vascular disease (OR = 7.78) and occurrence of haemorrhagic episode in the past 1 year (OR = 4.33) were independent risk factors for upper gastrointestinal bleed.

Conclusion: This study presents an interesting finding — anticoagulants and/or antiplatelets were not significant risk factors for bleeding. This may be a reflection of the judicious use of these drugs. The risk factors identified will further help us to rationalise anticoagulant therapy for this group of patients.

II027/MP**Anaemia Management in End-stage Renal Failure Population**

Salim LIM, Veerendra CHADACHAN, Jane STRAATEN, Seng Hoe TAN
Department of General Medicine, Tan Tock Seng Hospital, Singapore

Aim: Studies have shown that haemoglobin value below 11 g/dL in end-stage renal failure (ESRF) patients is associated with increased morbidity and mortality as compared to higher haemoglobin value. The target range for haemoglobin in ESRF patients according to American guidelines is between 11 g/dL and 12 g/dL.

Methods: We conducted a retrospective analysis of ESRF patients followed at Tan Tock Seng Hospital for the period between April 2002 and May 2003. Patients were included in this study if they have been on haemodialysis (HD) or peritoneal dialysis (PD) for at least 3 months. Patients were excluded if they had history of gastrointestinal bleed in the last 3 months and admission to hospital in the last 1 month. 68 HD and 30 PD patients (age, 27 to 87 years) were included in this retrospective analysis. Haemoglobin values, weekly erythropoietin dosages, transferrin saturations and serum ferritin concentrations were retrieved from the patient's medical records.

Results: 36.7% of the patients had haemoglobin equal to or greater than 11 g/dL; 32.7 % had haemoglobin between 9 g/dL and 10.9 g/dL; 29.6 % had haemoglobin below 9 g/dL; 11.2% of the patients had haemoglobin below 8 g/dL. Average weekly erythropoietin dosage is 3789 units. 80.4% of the patients had ferritin level >100 ng/mL and 87.2% of the patients had transferrin saturation >20%.

Conclusion: Despite sufficient iron stores, two-thirds of ESRF patients do not achieve the target haemoglobin, which is most likely related to inadequate erythropoietin dosage.

II028/MP**Catecholamines and Metanephrines Excess in Intracerebral Haemorrhage – A New Differential Diagnosis of Pheochromocytoma**

Melvin, Khee Shing LEOW¹, Keh Chuan LOH², Tong Kiat KWEK³, Puay Yong NG⁴

¹Department of General Medicine, Tan Tock Seng Hospital, Singapore, ²Endocrine Unit, Department of General Medicine, Tan Tock Seng Hospital, Singapore, ³Department of Anaesthesia, Tan Tock Seng Hospital, Singapore, ⁴Department of Neurosurgery, National Neuroscience Institute, Singapore

Aim: We postulate that any elevation of catecholamines (CATS) and metanephrines (METS) during the acute phase of intracerebral haemorrhage (ICH) should resolve, unlike true pheochromocytomas (PHEO). This study attempts to distinguish between ICH and PHEO by observing for temporary hypersecretions of CATS/METS in selected ICH cases.

Methods: 5 patients who satisfied pre-determined selection criteria were prospectively recruited. 24-hour urinary free catecholamines (U.CATS) and metanephrines (U.METS) were sampled on days 1 and 7 of hospitalisation, and before discharge.

Results: 4 out of 5 cases (80%) had pronounced elevations of U.CATS/METS into the ranges of PHEO (ie. > 2x upper limit of normal). The elevations of U.CATS/METS peaked towards the first week, followed by gradual taper over several weeks. Abdominal CT scans performed on the 2 patients with the highest levels of U.CATS/METS were negative for any adrenal or extra-adrenal masses. The levels of U.CATS/METS do not correlate well with the severity of hypertension. However, the magnitude of U.CATS/METS elevations was shown to be directly proportional to the size of the ICH and correlated to the site of ICH, being highest in frontal, followed by parieto-temporal and basal ganglia. U.CATS/METS was shown to be elevated much higher when ICH was complicated by intraventricular extension.

Conclusion: The transient pattern of U.CATS/METS elevations could allow ICH and PHEO to be distinguished. This may lead to lower utilisation of advanced imaging modalities and translates into substantial reduction in medical costs of investigations

II029/MP**Late Initiation of Dialysis in Chronic Renal Failure Patients**

Salim LIM, Veerendra CHADACHAN, Jane STRAATEN, Wai Choong LYE, Seng Hoe TAN
Department of General Medicine, Tan Tock Seng Hospital, Singapore

Aim: Early initiation of dialysis before the development of uremic symptoms and malnutrition have been shown to improve patient outcomes compared with when dialysis is delayed until the glomerular filtration rate (GFR) is <5 mL/min or when patients have already developed signs of malnutrition.

Methods: We performed a retrospective chart review on end-stage renal failure patients who were initiated on dialysis at Tan Tock Seng hospital between February 2001 and January 2003. 108 haemodialysis and 30 peritoneal dialysis patients (mean age 62) were included in this study. Serum albumin and creatinine, as well as patient's age, gender and weight were retrieved from their medical records. The GFR was calculated using Cockcroft-Gault formula.

Results: Prior to initiation of dialysis, 31.7% of the patients had GFR below 5 mL/min, 50.8% had GFR between 5 and 10 mL/min, and 17.5% had GFR above 10 mL/min. The average GFR was 7.1 mL/min. 91.9% of patients had serum albumin below 40 g/dL and 37.8% had serum albumin below 30 g/L prior to initiation of dialysis.

Conclusion: One-third of the patients were initiated on dialysis once their GFR fell below 5 mL/min. The majority of the patients had signs of malnutrition before starting dialysis. Only a minority of these patients was initiated on dialysis before development of uremic complications.

II030/MP**Correlation Between Treatment Response to Electroconvulsive Therapy and Cytokine Levels**

Rathi MAHENDRAN¹, Mythily SUBRAMANIAM², Ratha MAHENDRAN³
¹General Psychiatry, Institute of Mental Health/Woodbridge Hospital, Singapore, ²Research Unit, Institute of Mental Health/Woodbridge Hospital, Singapore, ³Surgery, National University of Singapore, Singapore

Aim: To show a correlation between immunological changes in Interleukin-6 (IL-6) levels and patients clinical improvement following Electroconvulsive Therapy (ECT).

Methods: Informed consent was taken from 11 patients referred for ECT (6 diagnosed with schizophrenia, 5 with schizoaffective disorder). Serial blood samples were drawn before ECT and the centrifuged plasma samples kept at -70 degree Celsius. IL-6 levels were assayed using a commercially available ELISA. Each patient's response to ECT treatment was assessed using the Clinical Global Impression Scale.

Results: The 11 Chinese patients (5 males, 6 females), with a mean age 40.4 years (SD 9.7, range 21.9 to 54.7 years), had a mean duration of illness of 10.5 years. The concentration of IL-6 before ECT showed wide variation (mean 13.8 pg/mL, range 5.3 to 25.1 pg/mL). IL-6 levels after the final ECT (mean 11.6 pg/mL, range 4.2 to 23.1 pg/mL) were lower but the results were not significant. The CGI-improvement scores were between 1 and 2 at the final ECT and were positively correlated with the final IL-6 levels (Pearson Correlation 0.774 significant at the 0.01 level).

Conclusion: There have been few studies on the effects of ECT. ECT was thought to have an inhibitory effect on IL-6. This study confirms the changes in plasma IL-6 levels following ECT treatment. Although the difference did not reach significance levels, the IL-6 levels following the last ECT was positively correlated with clinical improvement in the patients' mental state.

II031/MP**Effectiveness of Oral Nutritional Supplements for Older Women With Hip and Other Fractures**

Lydia AU¹, Ian D CAMERON², Cesar UY³, Susan E KURRLE³

¹Department of Geriatric Medicine, Alexandra Hospital, Singapore, ²Rehabilitation Studies Unit, University of Sydney, Australia, ³Hornsby Kuring-gai Hospital, Sydney, Australia

Aim: To assess the effectiveness of oral nutritional supplementation for undernourished older women with hip and other fractures, in improving

nutritional status, functional limitation, strength and morbidity.

Methods: Forty women over 70 years of age, hospitalised with hip or other fractures and whose mid upper arm circumference (MUAC) was less than 10 percentile for age and gender, or whose serum albumin was less than 35 gm/dL, were randomised to receive a daily additional oral nutritional supplement (201 kcal, 8.99 gm protein) for 40 days; or continue a normal diet. Demographic data, Barthel Index, Charlson Index, Short Portable Mental Status Questionnaire were also recorded. A research nurse, blinded to group allocation, assessed outcomes after 40 days and at 4 months after study enrollment. Primary outcome measures were mobility (as measured by the 2.44 metre walk) and nutritional status (MUAC). Complications and length of stay during the hospital admission were obtained from the subject's medical records.

Results: The groups were well matched in baseline variables. Significant improvement was seen in the intervention group at 4 month follow-up: (intervention group median, control group median) 2.44 metre walk (3.7 secs, 6.7 secs); MUAC (24.8cm, 21.5 cm); and grip strength (16 kg, 11.8kg). There is no difference in Barthel Index, or albumin (at 40 days).

Conclusion: There is a strong trend to benefit in the intervention group in nutritional and functional outcomes.

II032/MP

Predictors of Outcome after Hip Fracture

Reshma MERCHANT¹, Yih Yiow SITOH¹, Noor Hafizah ISMAIL¹, Ho Poh WONG²

¹Department of Geriatric Medicine, Tan Tock Seng Hospital, Singapore,

²Department of Orthopaedic Surgery, Tan Tock Seng Hospital, Singapore

Aim: Hip fractures cause significant morbidity and mortality in the elderly. To determine predictors of outcomes after hip fracture in a group of older persons admitted to a general hospital.

Methods: Retrospective chart review of all patients aged 60 years and older who were admitted for hip fracture from March to November 2001. Mobility status at 2-3 months post-discharge, post-operative complications, discharge destination, hospital readmission within 1 year of fracture and length of stay (LOS) in acute hospital. Chi-square statistics were used to identify factors that were significantly associated with the outcomes mentioned above (defined as $p < 0.05$). In addition, multinomial linear regression was used to ascertain predictors of LOS.

Results: 180 patients were studied. 25.6% of patients suffered a decline in their mobility status, with previous diagnosis of dementia and confusion on admission being significant associations. 28.3% of patients suffered post-operative complications. Female patients were noted to be more likely to have such complications. Additionally, residents of nursing homes and patients with dementia were also significantly more likely to have complications. 31.7% of patients were readmitted within 1 year. Significant associations included prior residence in nursing homes and pre-existent dementia. The mean LOS 16.8 $\pm$ 8.8 (3-66days). Factors predictive of LOS include the presence of complications, ischaemic heart disease, haemoglobin on admission, confusion on admission and patients requiring geriatrician review.

Conclusion: Older patients presenting with hip fractures are often complex. Patients with dementia and frail patients residing in nursing homes are more likely to have poorer outcomes.

II033/MP

Correlates of Habitual Walking and Sports/LTPA in Older Persons in Singapore: Interaction Effects between SES and Gender

Chek Hooi WONG¹, Sweet Fun WONG¹, Liang SHEN²

¹Department of Geriatric Medicine, Alexandra Hospital, Singapore, ²CTERU, Singapore

Aim: To determine demographic and psychosocial correlates on the participation of habitual walking and sports/leisure-time physical activity (LTPA) among older persons in Singapore.

Methods: In an observational study, 177 predominantly ethnic Chinese, community/urban-dwelling, ambulant, nondisabled participants age 50 years or older recruited from a health promotion programme. Main outcome measures were self-reported participation in habitual walking and sports/

LTPA. Variables examined in a multivariate linear regression analysis include socioeconomic status, demographic and health characteristics, social contact and health knowledge. In addition, interaction effects between gender and educational attainment were examined.

Results: The median age of participants was 63 years (range 50 to 81 years). Higher education attainment correlates negatively with participation in self-reported habitual walking ($p = 0.02$). Self-rated health and age influence sports/LTPA significantly ($p = 0.002$, $p = 0.012$ respectively). Those with better self-rated health and younger had higher participation in sports/LTPA than those with poorer self-rated health and older. In addition, the interaction between gender and educational attainment was important ($p = 0.019$). Men with higher education had a higher self-reported sport/LTPA; while in women, those with lower education attainment had a higher participation.

Conclusion: In contrast to prior findings from Western developed nations, previous studies done in Okinawa and Singapore (middle-aged women) found that SES and health behaviours may not be positively or directly associated. In this study, there is a negative correlation between educational attainment and participation in habitual walking and sports/LTPA especially among older Singaporean women. This suggests that older Singaporean women may have different characteristics in terms of social stratification or SES may have a different or non-direct effect on habitual walking and sport/LTPA self-efficacy.

II034/MP

Predominant Gastrointestinal Manifestations and High Symptomatic Ratio Among Adult Males in an Outbreak of Dengue Fever in Singapore

Raymond Chee Seong SEET¹, Nicholas PATON¹, Eng Eong OOI²

¹Department of Infectious Diseases, Tan Tock Seng Hospital, Singapore,

²Environmental Health Institute, National Environment Agency, Singapore

Aim: The symptomatic ratio in an adult population has not been previously studied. In March-April 2002, we identified an outbreak of dengue fever involving 55 adult males of Chinese ethnicity who were epidemiologically linked to a construction site in Singapore. Their clinical information was prospectively collected and an epidemiological surveillance of the construction site was carried out to determine the attack rate and symptomatic ratio.

Methods: The clinical features and laboratory results of these 55 patients were presented and compared with results obtained from a previous study at our centre. Thirty days after the initial case, an epidemiological surveillance of symptoms and serum sampling were carried out involving 275 of workers living at the construction site. A virology study was performed to determine and compare the molecular sequence of the culprit virus with similar dengue subtypes isolated previously.

Results: They presented at a mean of 4 days (2-7) after the onset of symptoms and their median age was 34 years (21-41). Compared to a previous study of similar design, they had significant atypical features of nausea, diarrhoea, cervical lymphadenopathy, elevated urea and hypokalaemia. Epidemiologic surveillance study determined an attack rate of at least 14.7% and 100% symptomatic ratio. A dengue type 2 was isolated, the molecular sequence was similar to previously isolated strains in Singapore.

Conclusion: A significant gastrointestinal component was reported in this outbreak. A symptomatic ratio was reported for the first time in an adult population, unlike studies in children that showed a majority subclinical infection.

II035/MP

Evaluation of Total Cholesterol, Triglycerides, HDL-cholesterol and LDL-cholesterol on the Dimension RxL Clinical Chemistry System

Aliza RAMLI, Siew Lan NG, Chiang Hong WEE, Ban Leong LIM, Bee Hong TAY

Department of Laboratory Medicine, National University Hospital, Singapore

Aim: Clinical studies have shown that LDL cholesterol level is a key factor in the development of atherosclerosis and CAD and recommended as the primary determinant in diagnosis and treatment of hypercholesterolaemia. The Friedewald equations are still in used in estimating LDL-c despite its

several limitations. We evaluated these lipid parameters on Dimension RxL Clinical Chemistry System (Dade Behring Inc. IL) and compared with Cobas Integra 700 (Roche Diagnostics).

Methods: Dimension RxL uses enzymatic colorimetry to quantitate total cholesterol, triglycerides, HDL-c and LDL-c concentration by endpoint technique.

Results: Freshly collected sera were analysed where comparison studies showed that all lipid parameters correlated very well. Regression analyses obtained were 1) Dimension = 0.892 Cobas +0.306, $r = 0.992$ for cholesterol ($n = 126$); 2) Dimension = 1.073 Cobas +0.017, $r = 0.998$ for triglycerides ($n = 113$); 3) Dimension = 0.957 Cobas +0.036, $r = 0.983$ for HDL-c ($n = 111$). We have also carried out comparison studies for measured LDL-c and calculated LDL-c on Dimension analyser and found that the 2 assays are well correlated. Regression analyses were: measured LDL-c = 0.905 calculated LDL-c + 0.2256, $r = 0.969$ ($n = 100$) Total imprecision (%CV) of the lipids assays on the Dimension were determined. Cholesterol <1.2% (4.2 - 5.3mmol/L); triglycerides <2.3% (1.3 - 2.1 mmol/L); HDL-c <4.2% (0.8 - 1.01mmol/L). The total imprecision (%CV) for calculated LDL-c and measured LDL-c were also determined on the Dimension analyser. Calculated LDL-c <2.8% (range 1.5 to 4.5 mmol/L) and measured LDL-c <2.9% (range 1.5 to 4.5 mmol/L)

Conclusion: We concluded that Automated Dimension RxL Clinical Chemistry System is suited for routine lipid testing in a busy hospital clinical laboratory.

II036/MP

Comparison of the Greiner VacuetteR Serum Plastic Tube and BD Vacutainer SST II Serum Plastic Tube to the Vacutainer Glass Plain Tube

Agassi Chiahoong WEE, Bee Hong TAY, Peter Ban Leong LIM, K Sunil SETHI

Department of Laboratory Medicine, National University Hospital, Singapore

Aim: Many clinical tests use anti-coagulant-free plain tube for specimen collection. VacuetteR (Greiner, bio-one) and Vacutainer SST II serum gel tube (Becton-Dickenson, US) contain a polymer barrier allowing immediate serum/clot separation after centrifugation. Hence simplifying work process and reducing turnaround time. Routinely measured analytes were evaluated against Vacutainer glass plain tube (Becton-Dickenson, US) for stability and any potential interference due to the barrier gel.

Methods: 35 healthy volunteers' blood was collected in 3 respective tubes. Prompt separation and analysis were done on Vacutainer glass tube, while the gel tubes were allowed to stand for 6 hours before analysis. 12 patients' sera with critical values for glucose, potassium, sodium and total calcium were collected and kept in both gel tubes for 6 hours then analysed. Results were compared to the original readings.

Results: Both gel tubes showed excellent correlation with glass plain tube for the following 31 analytes: sodium, potassium, chloride, urea, CO₂, creatinine, glucose, uric acid, total calcium, phosphorus, conjugated and unconjugated bilirubin, total protein, albumin, GGT, ALP, AST, ALT, LDH, CK, C-reactive-protein, CKMB, troponin-T, TSH, free-thyroxine, cholesterol, HDL-cholesterol, triglycerides, ferritin, transferrin and iron. 84% of the evaluated parameters have coefficient (r) values ranging from 0.90-1.00 over the reference ranges for healthy individuals. Patient samples showed $r^2 = 1.0$ (± 0.005) in both gel tubes.

Conclusion: The stability of the tested analytes in both VacuetteR and Vacutainer SST II tubes compares favourably to the Vacutainer glass tube. The stable inert gel barrier does not cause any adverse effect when immediate analysis is not possible.

II037/MP

Correlation of Anti-HCV Screening Reactive Results with Specific Recombinant Immunoblot Assay (RIBA) Results

Lise Hoej OTTOSEN, Betty SAW, Sharon SAW, Sunil SETHI

Department of Laboratory Medicine, National University Hospital, Singapore

Aim: All anti-HCV screening (Chemiluminescence Immunoassay, Ortho-Clinical Diagnostics) reactive results tested in NUH, Immunoassay Laboratory are confirmed using a more specific Recombinant Immunoblot

Assay (RIBA, Chiron Corporation, USA). This is to ensure accuracy in interpretation and eliminate false positive results. Our study aims to determine the anti-HCV screening Cut-Off Index (COI) value predicting the RIBA result.

Methods: We reviewed 630 specimens tested as reactive for anti-HCV screening and their corresponding confirmatory RIBA results, from the period of January 2000 to May 2003.

Results: We studied RIBA results of anti-HCV screening reactive samples and grouped according to their COI values. The proportion of RIBA-positive samples with COI 1.0-2.0 was 5.8%; 2.0-5.0 was 8.3%; 5.0-10.0 was 18.7% and >10.0 was 92.6%. Grayzone reactive samples ($n=20$) with COI 0.9-1.0 were tested as RIBA negative. RIBA-indeterminate samples with COI 0.9-1.0 was 15%; 1.0-2.0 was 31.1%; 2.0-5.0 was 45.3%; 5.0-10.0 was 56.3% and >10.0 was 6.1%. RIBA-negative samples with COI 0.9-1.0 was 85%; 1.0-2.0 was 63.1%; 2.0-5.0 was 46.4%; 5.0-10.0 was 25% and >10.0 was 1.3%.

Conclusion: We observed a sensitivity (100%) and specificity (24%) of anti-HCV screening results (cut-off COI at 0.99) using RIBA results as reference. The poor specificity of screening results indicates the value of RIBA confirmatory testing. By verifying the presence of anti-HCV to get the correct diagnosis of patients infected with Hepatitis C virus, we can minimise the unnecessary medical costs to patient.

II038/MP

Anti-Glomerular Basement Membrane (GBM) Antibody Associated Glomerulonephritis: 5-year Single Centre Experience

Rajat TAGORE, Munib SYED, Evan LEE

Division of Nephrology, Department of Medicine, National University Hospital, Singapore

Aim: A retrospective analysis of anti-glomerular basement membrane (GBM) antibody associated glomerulonephritis.

Methods: All renal biopsies carried out from January 1997 to May 2003 were reviewed. Patients with biopsies that showed glomerulonephritis with linear IgG deposit in basement membrane on immunofluorescence microscopy were selected for study. Patients with lupus or IgA nephropathy were excluded.

Results: The ages of the patients were 41, 71, 52 and 40 years with serum creatinine at presentation were 456, 744, 857 and 1994 $\mu\text{mol/L}$, respectively. One patient had anti-MPO (p-ANCA) antibody. The patients presented with non-specific symptoms, e.g. lethargy, body ache, hypertension, and 1 patient with bilateral uveitis and all had severely impaired renal function requiring dialysis. Two patients were treated with corticosteroids, 1 of whom with intravenous cyclophosphamide and plasma exchange as well. Patients were followed up for 4 to 42 months. One patient (on dialysis) died of gram negative septicaemia after 12 months. Three patients are stable on dialysis. One patient presented after 2 months with pulmonary haemorrhage. He was managed with plasma exchange and intravenous cyclophosphamide. He is now on monthly cyclophosphamide therapy. At his initial presentation he developed steroid related perforated duodenal ulcer. None had cyclophosphamide-associated complications.

Conclusion: Anti-GBM antibody associated glomerulonephritis is rare with an estimated incidence of 1 patient per million population per year. This study is consistent with other reports of anti-GBM disease carrying poor renal prognosis. Patients surviving the acute presentation have a reasonable longer-term outcome.

II039/MP

The Impact of Diabetic Status on the Nutritional Profile of Patients on Stable Continuous Ambulatory Peritoneal Dialysis

Ramakrishnan GOPALAKRISHNAN, Evan LEE, Su-Lin LIM

Department of Medicine, National University Hospital, Singapore

Aim: Malnutrition is associated with increased mortality in CAPD patients. It can be caused by a number of different factors. Diabetes has been reported to be a major influence on malnutrition. In long-term survivors however, other causes of malnutrition are likely to be more important influences. The aim was to determine whether the diabetic status in stable patients who survived the first year on continuous ambulatory peritoneal dialysis (CAPD) was associated with increased evidence of malnutrition

Methods: Thirty-one patients were studied over a period of 2 years. The following parameters were noted/assessed within 4 months of starting CAPD: age, sex, diabetic status, subjective global assessment (SGA), body-mass index, serum albumin, and dietary protein intake (DPI). Nineteen of 31 (61%) patients were diabetics. There were no significant differences in age, gender and ethnicity between diabetics and non-diabetics.

Results: When the whole group was analysed, 22/31 (71%) patients had SGA scores of 5 or less. The mean serum albumin was 30.7 g/L. Mean DPI was 0.9 g/kgm bodyweight/day. However, between diabetics and non-diabetics, there were no significant differences seen in the SGA scores, mean serum albumin, mean dietary protein intake or the BMI.

Conclusion: In patients who survived the first year of CAPD, although malnutrition was prevalent, diabetic status, however, did not seem to have influenced the nutritional profile. In these patients therefore it is possible that other factors may be contributing to malnutrition.

II040/MP

Vasomotor Reflexes are Dependent on Peak Flow and Volume of the Inspiratory Trigger

Linda LIURONG, Thein Ma Ma KHIN, Einar WILDER-SMITH
Department of Medicine, National University Hospital, Singapore

Aim: A vasomotor reflex (VMR) is a physiological vasoconstrictive response triggered by a rapid and deep inspiratory gasp. This study investigates the relationship of the rate of inspiration and the inspiratory volume on the magnitude of the VMR in skin and muscle supplying vessels.

Methods: 12 healthy volunteers were tested for effect of lung volume and inspiratory flow on blood flow over the 4th digit tip and the ulnar artery using Doppler. Peak Inspiratory Flow (PIF) and Forced Inspiratory Vital Capacity (FIVC) were divided into 3 levels: low (PIF<1.0 l/min; FIVC<1.0 l), medium (PIF 1.0-1.5 l/min; FIVC1.0-1.5 l) and high level (PIF>1.5 l/min; FIVC>1.5 l). Each testing level was repeated thrice and repeated at 3 occasions (1 to 14 days) to determine test variability. VMR was defined as the pre and post inspiratory gasp difference in blood flow.

Results: The results for VMR at the 3 levels of PIF and FIVC are listed as VMR/PIF/FIVC. All the values are mean values. For the 4th digit: 10.4%/0.7/0.7; 33.0%/1.4/1.3; 58.5%/3.4/2.2. For the ulnar artery: 34.9%/0.8/0.7; 61.0%/1.5/1.3; 84.2%/3.3/2.1. Variability of VMR, for high level PIF and FIVC was small (p for all <0.05). Skin and muscle VMR significantly correlated with both PIF and FIVC. PIF showed slightly better correlation than FIVC (p for both <0.01).

Conclusion: VMRs show a significant direct correlation to both PIF and FIVC. This result needs to be considered when interpreting VMR as the effort of the triggering inspiratory gasp will affect the value of the VMR.

II041/MP

Stimulated Skin Wrinkling

Einar WILDER-SMITH¹, Stephanie FOOK-CHONG², Adeline CHOW¹

¹Department of Medicine, National University Hospital, Singapore,

²Department of Clinical Research, Singapore General Hospital, Singapore

Aim: Compared to test of large nerve fibre function, there are few established tests of small nerve function. One established but technically demanding test of small nerve damage counts intraepidermal nerve fibre density (IENFD) obtained from skin biopsy. This study correlates 2 tests of small nerve function, water and EMLA® induced skin wrinkling, with IENFD.

Methods: Patients with sensory polyneuropathy had upper and lower limb neurophysiology. Water skin wrinkling involved immersion (40° C) for 30 min. EMLA® skin wrinkling necessitated covering distal 3rd, 4th and 5th digit tips with EMLA® cream for 30 min. Skin wrinkling was scored as 0 if the tip showed less than 2 wrinkling lines and as 1 if there was obvious wrinkling with 3 or more lines. Skin biopsy for IENFD was performed over the non-dominant hypothenar region. Immunohistochemical staining for nerve fibres used PGP 9.5 antibodies. IENFD was calculated from 3 sections and expressed as nerve fibers per millimeter.

Results: Skin biopsy and the 2 techniques of stimulated skin wrinkling were compared in 33 (13 male, 20 female; mean age 57 years, range 20-88) with predominant sensory neuropathy. Correlation of IENFD and wrinkling was significant for EMLA® (p = 0.046) but not for water (p = 0.546).

Conclusion: The small nerve fibre test of EMLA® induced skin wrinkling correlates with IENFD. The negative result for water immersion may be due to difficulty in interpretation of water results which are far less marked and clear than for EMLA®. EMLA® stimulated skin wrinkling may develop into a useful bedside small nerve fibre test.

II042/MP

Skin and Muscle Vasomotor Reflexes Follow by Sequential Inspirations in Healthy Adults

Linda LIU, Ma Ma Khin THEIN, Einar WILDER-SMITH

Department of Medicine, National University Hospital, Singapore

Aim: This study investigates the relationship of the rate of inspiration and the inspiratory volume on the magnitude of the vasomotor reflexes (VMRs) in skin and muscle supplying vessels.

Methods: 12 healthy volunteers (between 21-65 years) were recruited. We tested the effect of varying lung volume and inspiratory flow on changes in blood flow over the skin of the 4th digit tip using Laser Doppler and over the ulnar artery using Ultrasound Doppler. In each subject, 9 sequential inspirations were tested. Peak Inspiratory Flow (PIF) and Forced Inspiratory Vital Capacity (FIVC) were divided into 3 levels: low (PIF<1.0 l/min; FIVC<1.0 l), medium (PIF 1.0-1.5 l/min; FIVC1.0-1.5 l) and high level (PIF>1.5 l/min; FIVC>1.5 l). Each testing level was repeated 3 times, and the average result taken. There was 1 minute interval between tests. Testing was repeated at 3 separate occasions. VMR was defined as the pre and post inspiratory gasp difference in blood flow and expressed as a percentage.

Results: The results for VMR at the 3 levels of PIF and FIVC are listed as VMR/PIF/FIVC. Mean for the 4th digit: 10.4%/0.7/0.7; 33.0%/1.4/1.3; 58.5%/3.4/2.2. For the ulnar artery: 34.9%/0.8/0.7; 61.0%/1.5/1.3; 84.2%/3.3/2.1. Variability of VMR, for high level PIF and FIVC, was small (p for all <0.05). Skin and muscle VMR significantly correlated with both PIF and FIVC. PIF showed slightly better correlation than FIVC (p for both <0.01).

Conclusion: VMRs show a significant direct correlation to both PIF and FIVC. This result needs to be considered when interpreting VMR as the effort of the triggering inspiratory gasp will affect the value of the VMR.

II043/MP

Aggressive Intervention Retards Progression of Nephropathy in Individuals With Type 2 Diabetes Mellitus

Angela Fang Yung KOH¹, Su Chi LIM¹, Chee Khun HO², Ekachai DANPANICH², Trisse Siew Kheng GOH¹, Theresa EE¹, Chee Fang SUM¹

¹Department of Medicine, Alexandra Hospital, Singapore, ²Department of Medicine, National University Hospital, Singapore

Aim: To analyse the baseline and 6-month follow-up clinical data of patients with type 2 diabetes mellitus (T2DM) and diabetic nephropathy (DN).

Methods: We aimed to retard the progression of DN in T2DM patients by intensive patient education, metabolic and blood pressure control in a joint nephrologist-diabetologist diabetes nephropathy clinic (DNC). We studied the baseline profile of these patients and analysed the change of relevant metabolic parameters and renal function over 6 months with aggressive intervention.

Results: 53 subjects completed 6-months of follow-up. At baseline, these patients had moderately severe DN with 24-hour urine total protein and calculated creatinine clearance (using Cockcroft Gault equation with adjustment for gender) of 2.10 ± 2.59 g/day and 41.46 ± 30.74 ml/min respectively. After 6 months, HbA1c improved by 0.6 ± 2.0 % from a baseline HbA1c of 8.1 ± 2.3 % (p = 0.042) and there was a significant shift towards dual therapy with angiotensinogen converting enzyme inhibitors and angiotensin receptor blockers (p = 0.001). There was also a significant increase in number of antihypertensive agents used by 0.51 ± 1.07 (p = 0.001). We observed a non-significant trend towards improvement of systolic (baseline vs. 6-month follow-up, 154 ± 22 vs. 151 ± 25 mm Hg) and diastolic blood pressure (baseline vs. 6-month, 82 ± 11 vs. 79 ± 12 mmHg). As a cohort, the decline in calculated creatinine clearance over 6 months was minimal (0.70 ± 6.91 ml/min, p = 0.495).

Conclusion: The usual relentless progression of DN appeared to have been retarded in our cohort despite relatively modest improvement in known risk

factors. Continued risk factor modification and a longer follow-up will be necessary for further clarification of our preliminary data.

II044/MP

The Empirical Antibiotic Treatment of Continuous Ambulatory Peritoneal Dialysis (CAPD)-Related Peritonitis—Is It Appropriate?

Lee Ying YEOH, Chee Khun HO, Ekachai DANPANICH, Evan LEE
Department of Medicine, National University Hospital, Singapore

Aim: CAPD related peritonitis is serious and can be life-threatening if treatment is delayed. Empirical antibiotic at initial presentation is therefore necessary. This is affected by the likely results of the peritoneal fluid culture. To determine the appropriateness of current empirical antibiotic treatment in relation to peritoneal effluent culture result at presentation of CAPD-related peritonitis

Methods: All patients (n = 32) with peritonitis episodes in the NUH CAPD programme from 1/1/2002 till 31/12/2002 were studied retrospectively. There were 57 episodes of peritonitis. Microorganism culture, antibiotics used and the treatment outcomes were analysed. All patients received empirical intra-peritoneal vancomycin and gentamicin at presentation. Antibiotic treatment was subsequently altered according to culture and sensitivity results.

Results: Eleven of 57 episodes (19%) had negative cultures. Forty-one of 57 episodes (72%) were associated with 1 microorganism, 4/57 was associated with 2 microorganisms and 1/57 episodes was associated with 3 microorganisms. Of the 46 episodes with positive cultures, gram-positive organisms accounted for 40% and gram-negative organisms were responsible for 37%. The remaining were either fungus or negative culture. The 3 commonest gram-positive organisms isolated were coagulase-negative *Staphylococcus* (7 isolates), *Streptococcus* sp. (6 isolates) and *Staphylococcus aureus* (3 isolates). The 3 commonest gram-negative organisms isolated were *Klebsiella pneumoniae* (4 isolates), *E. coli* (3 isolates) and *Acinetobacter* sp (2 isolates). Response rate to this antibiotic regimen was 87%.

Conclusion: The current empirical intraperitoneal antibiotic regimen that covers both gram-positive and gram-negative organisms is appropriate in treating more than three-quarter of the CAPD-related peritonitis.

II045/MP

Clinical and Biochemical Profile of SAF Servicemen Referred to the Weight Management Clinic of a Tertiary Health Care Institution

Rajmohan LEKSHMINARAYANAN¹, Beng Hea TEY¹, Myint Myint KYI², Baladas Ganesan HARIDAS³

¹Department of Medicine, Alexandra Hospital, Singapore, ²Health for Life, Alexandra Hospital, Singapore, ³Department of Surgery, Alexandra Hospital, Singapore

Aim: Obesity is increasingly being associated with many co-morbid conditions. Obesity as a public health problem has also been on the rise in Singapore. The present study is aimed at analysing the clinical and biochemical profile of 401 SAF servicemen referred for weight management in 2002.

Methods: A retrospective study was conducted on 401 consecutive SAF personnel referred for weight management. The clinical parameters analysed were age, body mass index (BMI), waist-hip ratio and BP. The biochemical parameters measured included fasting lipids and fasting glucose.

Results: The mean age of the study population was 32.16 years. All the patients were male. Lowest BMI was 26.3 and the highest was 53.1. The ethnic distribution was 74% Chinese, 17% Malays and 9% Indians. 26.1% of the study population were in the overweight category (BMI 25.0-29.9), 56% of patients had Class I obesity (BMI 30-34.9), 13.0% of patients had Class II obesity (BMI 35-39.9) and 4.9% had morbid or Class III obesity (BMI ≥ 40). Mean triglyceride levels in the increasing levels of obesity were 1.80, 1.97, 1.98 and 2.45 mmol/L, respectively. Mean fasting glucose levels were 5.04, 5.12, 5.82 and 6.23 mmol/L in the 4 categories of obesity, respectively. 14 % of the patients had elevated BP ($>140/90$), 42% had raised LDL

cholesterol levels and 15% hypercholesterolaemia.

Conclusion: Increasing degree of obesity in our local SAF servicemen is associated with increased risk of hyperglycaemia and hypertriglyceridaemia.

II046/MP

Predictive Factors of Outcome in Continuous Ambulatory Peritoneal Dialysis (CAPD)-Related Bacterial Peritonitis

Chee Khun HO, Lee Ying YEOH, Ekachai DANPANICH, Evan LEE
Department of Medicine, National University Hospital, Singapore

Aim: Bacterial peritonitis is a major determinant of patient morbidity and mortality. Awareness of factors that affect response to treatment is important in management. To study if a) age, sex, diabetic status, C-reactive protein (CRP) levels and peritoneal fluid cell counts and b) gram staining characteristic of the causative bacteria could predict the likelihood of successful resolution of the peritonitis.

Methods: Forty-four episodes (32 patients) of bacterial CAPD peritonitis episodes presented over 1 year were studied. Twenty-four occurred in male patients. The mean age was 64.8 ± 12.3 years. Sixteen of 44 episodes (36%) occurred in diabetics. Twenty-three of 44 episodes (52%) were due to gram-positive organisms. All episodes were initially treated with empirical intraperitoneal vancomycin and gentamicin. The mean serum albumin and C-reactive protein (CRP) were 27.7 ± 7.1 g/l and 19.6 ± 18.3 mg/dl, respectively. The mean peritoneal fluid cell count was 4815 ± 5969 per microlitre. Forty-one of 44 episodes (93.2%) resolved after antibiotic treatment (responder group)

Results: There was no significant difference between the mean ages, diabetic status, initial gram stain results, gender, serum albumin concentrations and peritoneal fluid cell counts between the responders and non-responders. The mean CRP of the responder subgroup was significantly lower compared to the non-responders (14.9 ± 10.4 vs 49.3 ± 31.4 mg/dl), ($p < 0.005$).

Conclusion: Only lower CRP was associated with response to antibiotic treatment. Diabetic status, age, gender, initial gram stain results, peritoneal fluid cell count and serum albumin were not associated with treatment outcome.

II047/MP

Treatment Outcome of Continuous Ambulatory Peritoneal Dialysis (CAPD)-Related Peritonitis at National University Hospital (NUH)

Ekachai DANPANICH, Lee Ying YEOH, Chee Khun HO, Evan LEE
Department of Medicine, National University Hospital, Singapore

Aim: Management of CAPD-related peritonitis involves consideration of appropriate use of antibiotics and timely removal of Tenckhoff catheter if treatment fails. To review treatment outcome of CAPD-related peritonitis in relation to culture results.

Methods: Forty-five patients, with CAPD-related peritonitis presented from 1/1/2002 till 31/12/2002, were included. Data on microorganism culture and antibiotics used were collected and analysed in relation to treatment outcome. Treatment failure defined as failure of significant clinical improvement after initiating therapy for 72 hours that required Tenckhoff catheter removal.

Results: There were 55 episodes of CAPD-related peritonitis between 1/1/2002 and 31/12/2002. Forty-four episodes were due to bacteria, while 11 episodes were culture negative. All patients received intra-peritoneal vancomycin and gentamicin at presentation. Twelve episodes required the use of either ciprofloxacin or ceftazidime. Fifty episodes (90.9%) resolved after treatment while 5 episodes (9.1%) had treatment failure. For treatment failure group, culture results revealed *Pseudomonas aeruginosa* (2), *Staphylococcus aureus* (1) and culture negative (2). Percentage of treatment failure by different culture results were 6.8 and 18.2 for bacterial and culture negative peritonitis, respectively. Interestingly, about one-fifth of culture negative peritonitis group required Tenckhoff catheter removal. There may be an increase trend of catheter removal in the culture negative group, however, this has to be further elucidated.

Conclusion: Our empirical antibiotic regimen has a very high success rate for treatment of CAPD peritonitis. However, effective treatment has to be balanced with culture and sensitivity results and prudent use of antibiotics, which needs to be tailored accordingly.

II048/MP

A Comparison of Different Clinical Prediction Rules for Neuroimaging in the Evaluation of Dementia

Kala KANAGASABAI¹, Yih Yiow SITO², Arul EARNEST³, Suresh SAHADEVAN²

¹Ang Mo Kio Hospital, Singapore, ²Department of Geriatric Medicine, Tan Tock Seng Hospital, Singapore, ³Clinical Research Unit, Tan Tock Seng Hospital, Singapore

Aim: There is ongoing controversy regarding the need for CT imaging in the evaluation of dementia. This study aims to compare different prediction rules that have been proposed in a single, common cohort of patients presenting to a memory clinic for the evaluation of possible or worsening dementia. 4 clinical prediction rules were compared.

Methods: A retrospective study was done on 210 patients attending the TTSH memory clinic. All these patients had at least 1 CT brain done and all CT scans were reported by a single radiologist. These patients were also assessed using the 4 clinical prediction rules, which includes Bradshaw et al, Dietch, Larson [high risk] and the Canadian Consensus Conference on the Assessment of Dementia [CCCAD].

Results: Out of the 210 patients, 11 [5.2%] had surgically treatable conditions. The mean age was 73.9 [SD 8.7]. 79 [37.6%] were males and 131 [62.4 %] were females. The clinical diagnosis was Alzheimers dementia in 38.6%, vascular dementia in 29% and mixed in 2.4%. Clinical predictive rule Sensitivity [95% CI] % Specificity [95% CI] % Bradshaw et al 27.3 [6.0-61.0] 75.4 [68.8-81.2] Dietch 54.5 [23.4-83.3] 54.3 [23.4-83.3] Larson et al [high risk] 70.0 [34.8-93.3] 62.2 [34.8-93.3] CCCAD 72.7 [39.0-94.0] 21.1 [39.0-94.0] *p*-value from Fisher's exact test *CI* calculated from exact binomial distribution.

Conclusion: Clinical prediction rules have limited sensitivity and specificity. Further studies are needed to evaluate the usefulness of intervention in patients with space occupying lesions and also the cost effectiveness of CT neuroimaging in the evaluation of dementia.

II049/MP

Crescentic Glomerulonephritis in Association with Anti-neutrophil Cytoplasmic Antibody (ANCA): A Report of the Clinic-Pathological Experience over 5 Years in a Single Centre

Syed MUNIB, Rajat TAGORE, Evan LEE
Division of Nephrology, Department of Medicine, National University Hospital, Singapore

Aim: To study the clinico-pathological features of patients with ANCA-associated crescentic glomerulonephritis seen in the National University Hospital from 1 September 1997 to 31 May 2003.

Methods: Four hundred twenty-seven adequate renal biopsies from 427 patients were reviewed. Ten of the 427 (2%) biopsies showed crescentic glomerulonephritis. Of these, 3 (30%) were associated with positive ANCA and the associated clinical histories were retrospectively studied. Biopsies with associated antglomerular basement membrane antibody, lupus nephropathy and IgA nephropathy were excluded.

Results: The ages of the 3 patients were 23, 64 and 67 years, respectively. Their serum creatinine levels at presentation were 66, 176 and 144 umol/litre respectively. All presented with lethargy, anorexia, weight loss and epigastric pain (and vomiting). All had microscopic haematuria and proteinuria. One was also febrile and 1 other had hemoptysis. All developed rising creatinine levels during their clinical course. All had 50% or more cellular/fibrocellular crescents in their renal biopsies. None had necrotizing vasculitis. All received corticosteroids and 2 were additionally treated with intravenous cyclophosphamide. One patient had pulmonary haemorrhage, required plasma exchange, ventilation and dialysis, and died of gram-negative sepsis after 5 months in hospital. The 2 other patients were followed up for 1 month

(subsequently defaulted follow-up) and 9 months. At this time the serum creatinine levels were 173 and 248 umol/litre respectively.

Conclusion: ANCA-associated crescentic glomerulonephritis is a rare condition in our experience. However, early diagnosis and immunosuppressive therapy can lead to stable renal function.

II050/MP

Clinical Profile and Electrophysiological Study of Patients with Traumatic Brachial Plexus Injury

Jing Xia DANG¹, Kamal K VERMA², KL LEE¹, HENG Lena¹, T UMAPATHI²

¹Neurodiagnostic Laboratory, National Neuroscience Institute, Singapore, ²Department of Neurology, National Neuroscience Institute, Singapore

Aim: To study the clinical, electrodiagnostic and magnetic resonance imaging (MRI) features of patients with traumatic Brachial Plexus Injury (BPI) seen at the electrophysiology laboratory of a tertiary urban hospital in Singapore over a 2-year period.

Methods: The case-records of 24 patients were reviewed.

Results: Ten patients sustained BPI in motorcycle accidents. In 9, the site of injury was at the trunks and/or roots and recovery was poor. Three had root avulsion and 2 cervical cord contusion evident on MRI. Four were involved in car accidents. No single mechanism of injury was discernible. Most commonly only a single trunk was injured and recovery was good. Two patients had MRI, which were unremarkable. Eight patients had BPI as result of a fall on out-stretched arm or being struck on the shoulder/head. The injury was confined to single trunk and/or nerve (most commonly axillary nerve) and at least partial recovery was observed. One patient sustained injury to the lower cervical roots and the long thoracic nerve after carrying heavy loads. One patient sustained injury to the middle and lower trunks after a coronary angiogram. Subsequent recovery was partial.

Conclusion: Motorcycle accidents appear to be the most common cause of BPI in Singapore. The patients sustain either root avulsion or axonal injury and recovery is poor. BPI from car accidents and falls are often partial and better recovery is expected.

II051/MP

Validation of a Modified WHO Protocol for Stroke Screening

VENKETASUBRAMANIAN N¹, Ching Ye HONG², Louis TAN¹, Seang Mei SAW²

¹Department of Neurology, National Neuroscience Institute, Singapore, ²Department of Community, Occupational and Family Medicine, National University of Singapore, Singapore

Aim: This sub-study was performed to validate a modified version of the WHO Protocol for Epidemiologic Studies of Neurologic Disorders as a screening tool for stroke in Singapore.

Methods: The main study is a community-based prevalence survey of neurological disorders among Singaporeans aged > 50 years. Study subjects undergo a face-to-face interview by trained interviewers using a modified version of the WHO Protocol. Phase I "failures" are reviewed in Phase II by consultant physicians to rule in or out the diagnosis of stroke. The sub-study sample size of 1300 was derived using an estimated sensitivity of 0.9, specificity 0.8 and precision 0.03. As 83% of the main study subjects passed Phase I, 83% of 1300 (=1079) subjects were randomly selected from among "Phase I passes" and invited to a clinical review by trained physicians to rule in or out a diagnosis of stroke. The stroke status of the remaining 17% (= 218) was derived from the results of their Phase II review. Data were analysed using SPSS programme.

Results: Of the 1079 "Phase I passes", 40 could not be contacted. Of the remaining 1039, 17 were diagnosed to have stroke. Of the 218 "Phase I failures", 46 were diagnosed to have stroke. This resulted in a sensitivity of 0.73 (95%CI 0.71-0.75), specificity of 0.86 (95%CI 0.84-0.88), positive predictive value (PPV) of 0.21 (95%CI 0.19-0.23), negative predictive value of 0.98 (95%CI 0.97-0.99).

Conclusion: The modified WHO protocol has a fairly sensitivity and specificity for screening for stroke, and is a suitable screening tool for stroke in Singapore. However, it has a low PPV due to low prevalence of disease.

II052/MP

Management of Status Epilepticus in Patients Who Develop Hypersensitivity to Phenytoin and Phenobarbitone

Hoe Chin CHUA, Chao Li CHANG

Department of Neurology, National Neuroscience Institute, Singapore

Aim: Patients with status epilepticus (SE) treated with phenytoin and phenobarbitone may develop anticonvulsant hypersensitivity syndrome. The purpose of our study was to evaluate the efficacy of continuous high dose intravenous lorazepam with concurrent topiramate or gabapentin in this condition.

Methods: All patients with SE who developed phenytoin and phenobarbitone hypersensitivity were identified. Continuous intravenous lorazepam infusion was commenced at a rate of 1 mg/hr and titrated upwards at increments of 1 mg/hr while monitoring for clinical and electrographic seizures. Once seizures were aborted the infusion rate was continued for 24 hours and then titrated downwards at a rate of 1 mg/hr/day. If seizures recurred the infusion rate was increased accordingly. Concurrent with lorazepam, either topiramate or gabapentin was started and titrated to therapeutic effect.

Results: Three patients were identified with a median age of 34 (range 15-61) years. Hypersensitivity syndrome occurred within 13-19 (median 14) days of commencement of medication. Intravenous lorazepam aborted seizures in all cases. The median duration of lorazepam therapy was 26 days (range 21-28) and the maximal dose of lorazepam per day ranged from 12 to 96 mg. Fluids and vasopressors were required for all patients. Topiramate was used as add-on therapy in 2 cases (daily doses of 150 mg and 400 mg) and gabapentin in 1 case (daily dose 1800 mg). Outcome was death in 1 patient and mild disability in 2 patients.

Conclusion: Continuous high dose intravenous lorazepam, together with concurrent topiramate or gabapentin, was successful in abolition of seizures in anticonvulsant hypersensitivity syndrome.

II053/MP

CT Perfusion in Brain Tumours

Soke Miang CHNG¹, Tong San KOH², Jau Tsair TAN¹, Tchoyoson Choie Cheio LIM¹

¹Department of Neuroradiology, National Neuroscience Institute, Singapore, ²Electrical Engineering, Nanyang Technological University, Singapore

Aim: Dynamic contrast-enhanced CT perfusion imaging may be useful in assessing tumour angiogenesis. We analysed the permeability surface (PS) constant values in intracranial tumours of different histologic types, to determine if there are differences in the microvascular permeability.

Methods: Fourteen patients with newly diagnosed intracranial tumours underwent CT perfusion using a helical CT scanner. The CT perfusion study was obtained on a single section at the largest tumour diameter identified on non-contrast CT scan. Images were acquired during dynamic intravenous injection of 50 ml of non-ionic iodinated contrast medium (300 mg/I) at 4ml per second. The permeability surface (PS in ml/100g/min) constant, cerebral blood volume (CBV) and flow (CBF) were analysed using Functool post-processing software.

Results: Calculations in 2 of 15 studies failed due to inability to identify an artery or vein in patients with high convexity meningiomas. In the other 12 pre-treatment studies, elevation of PS, CBV and CBF was noted compared to normal brain parenchyma. One patient with metastases who underwent repeat study after radiotherapy demonstrated a small decrease in PS constant together with marked decrease in vasogenic oedema and tumour size.

Conclusion: Despite current limitations due to single-section coverage of anatomy, CT perfusion may be useful in the non-invasive assessment of brain tumour biology and response to therapy.

II054/MP

Cerebrospinal Fluid Orexin in Aneurysmal SAH

Ivan NG, Christopher ANG, Joyce LIM, Wan Loo TAN

Department of Neurosurgery, National Neuroscience Institute, Singapore

Aim: To investigate the relationship of the orexinergic system to the clinical severity of aneurysmal SAH.

Methods: CSF levels of orexin-A from 15 patients with diffuse spontaneous SAH were measured using a commercially available EIA kit.

Results: Orexin levels in the CSF of patients with aneurysmal SAH are reduced and that undetectable levels of orexin in CSF samples obtained within the first day following the ictus correlates significantly with low GCS (Glasgow Coma Scale). The converse situation, where detectable levels of orexin in these same samples exhibit a relationship to higher GCS.

Conclusion: Hypothalamic damage in SAH may lead to injury of the hypothalamic orexinergic neurons and thus lead to lowered orexin levels. Orexin levels could be established in future study as a robust prognostic indicator for survival and outcome after aneurysmal SAH.

II055/MP

Fluorescence In-situ Hybridization (FISH) – Is It a Sensitive Tool to Detect Low-grade Mosaicism in Patients With Turner Features but a Normal Karyotype?

ANURADHA P, Xiao Li SUN, Annapoorna VENKAT, Leena GOLE

Department of Obstetrics and Gynaecology, National University of Singapore, Singapore

Aim: Turner syndrome is a sex chromosome disorder characterised by short stature, gonadal dysgenesis and somatic stigmata. The most common karyotype in an individual with Turner syndrome is 45,X. 45,X/46,XX or 45,X/46,XY mosaics account for 15% to 30% of cases. However, many mosaic patients with Turner features are reported to have a normal karyotype on routine cytogenetic analysis showing a phenotype/genotype discrepancy. The aim of this study was to use the more sensitive FISH technique to detect whether the suspected 45,X cell line can be detected in the peripheral blood.

Methods: Mitogen-stimulated short-term peripheral lymphocyte cultures were set up and cytogenetic analysis with trypsin-leishman banding using standard techniques was performed on 11 cases and compared with control samples. 100 G-banded metaphase spreads were analysed in each case. FISH analysis using X centromeric probes (DXZ1) and Xterminal probes was done and about 5000 cells (both metaphases and interphases) were observed. A statistical analysis of the samples has been done to detect whether there is a significant difference.

Results: A low percentage of the abnormal monosomic cell line was observed in all the patient samples with the more sensitive FISH technique, which could not be detected with the routine cytogenetic methods.

Conclusion: FISH proved useful and sensitive in the detection of the mosaic monosomic cell lines, which could not be detected by traditional cytogenetic G-banding techniques. A larger number of samples needs to be analysed and an appropriate cut-off level needs to be determined before this test can be offered to patients.

II056/MP

Treatment of Macular Oedema in Central Retinal Vein Occlusion Using Deep Posterior Subtenon Injection of Corticosteroids

Jong Jian LEE, Eng Yiat YAP

Department of Ophthalmology, Tan Tock Seng Hospital, Singapore

Aim: Macular oedema forms the main cause of permanent loss in vision in patients with central retinal vein occlusion (CRVO). Our study aims to evaluate the effect of deep posterior subtenon injection of corticosteroids on macular oedema in CRVO.

Methods: It is a non-randomised study. Recruitment criteria included patients with ischaemic CRVO with persistent macular oedema of more than 3 months following panretinal and macular grid pattern photocoagulation treatment. Deep posterior subtenon triamcinolone 40 mg was injected via the infero-temporal conjunctival fornix. Outcome measures included post-treatment fundal fluorescein angiogram (FFA) and visual acuity at the 6th week.

Results: A total of 6 eyes were recruited into the study. All 6 eyes underwent panretinal and macular grid pattern photocoagulation treatment. Pretreatment FFA showed gross macular oedema and leakage in all 6 eyes. Pre-treatment visual acuity was counting fingers closely in all 6 eyes. Following deep posterior subtenon triamcinolone injection, post-treatment FFA at 6th week showed significant reduction in macular oedema and leakage in all 6 eyes. Visual acuity improved to 6/24 in 2 eyes, 6/60 in 2 eyes on the Snellen acuity chart at the 6th week post-treatment whereas the remaining 2 eyes showed modest improvement from counting finger to 6/120 due to macular ischaemia. No complications nor rise in intraocular pressure was noted in all 6 eyes.

Conclusion: The results of the study suggest that deep posterior subtenon injection of steroid therapy may be used as a safe treatment modality for persistent macular oedema in CRVO, resulting in reduction of macular oedema. Improvement in visual acuity may be achieved in cases not compromised by macular ischaemia.

II057/MP

Optociliary Shunt Vessels in Diabetics— A Case Series

Jong Jian LEE, Eng Yiat YAP

Department of Ophthalmology, Tan Tock Seng Hospital, Singapore

Aim: Optociliary shunt vessel is classically described to be associated with optic nerve sheath meningioma with the triad symptoms of optociliary veins, disc pallor and visual loss. Other clinical settings include retinal vein occlusion, chronic glaucoma, meningioma and rarely as a congenital form. We report an interesting case series of 3 patients with diabetes mellitus presenting with optociliary shunts.

Methods: Patients who underwent diabetic retinopathy screening were referred to the eye clinic for abnormal findings. A total of 3 patients with optociliary shunt vessels were noted between year 2000 and 2001. The appearance of an optociliary vein was documented with fundus photography and fundal fluorescein angiography.

Results: All 3 patients had bilateral mild non-proliferative diabetic retinopathy with 1 having bilateral diabetic maculopathy in addition. Fluorescein angiography showed classical features of acquired optociliary shunts with no leakages. Systemic review did not show any secondary cause of the optociliary shunts.

Conclusion: Our series showed that optociliary veins can be associated with diabetes mellitus. The authors postulate that it may be due to venous insufficiency secondary to the process of diabetic microangiopathy and venous stasis.

II058/MP

Diabetic Retinopathy Screening: Knowledge, Confidence, Perceptions and Practices of Singaporean Optometry Students

Jong Jian LEE¹, Kah Guan AU EONG¹, Seang Mei SAW², Anna YEO³, Monica LIM³, James PAN¹

¹Department of Ophthalmology, Tan Tock Seng Hospital, Singapore,

²Department of Community, Occupational & Family Medicine, National University of Singapore, Singapore, ³School of Optometry, Singapore Polytechnic, Singapore

Aim: To determine the knowledge on diabetic retinopathy, confidence in screening, and perceptions and practices regarding diabetic retinopathy screening and patient education among Singapore optometry students.

Methods: Self-administered questionnaire survey was conducted on all final-year optometry students in Singapore.

Results: The entire class of 36 students responded to the survey. The students performed well in a test on knowledge regarding diabetic retinopathy with a mean score of 9 out of 10 questions. They scored a mean of 5.5 on a confidence level scale of 0 to 10 for diabetic retinopathy screening. Seventy percent of them would screen their patients for diabetic retinopathy and forty-four percent would refer them to the ophthalmologists. They perceived that the responsibility in screening rests with the optician (0%), optometrist (97%), physician treating the patient's diabetes (86%), ophthalmologist treating the patient for an eye condition unrelated to diabetes (92%), and non-ophthalmology medical specialists treating the patient for a diabetic complication (28%). They also perceived that the responsibility in patient education rests with the optician (28%), optometrist (100%), physician

(100%), ophthalmologist (89%), and non-ophthalmology medical specialists (50%).

Conclusion: Optometry students have a good knowledge in diabetic retinopathy. Although the confidence level in screening was not high, the majority of them felt that they were responsible in screening and educating patients on diabetic retinopathy.

II059/MP

Idiopathic Submacular Haemorrhage

Jong Jian LEE¹, Melissa TIEN², Kah Guan AU EONG^{1,3}, Eng Yiat YAP¹

¹Department of Ophthalmology, Tan Tock Seng Hospital, Singapore, ²Imperial College, University of London, United Kingdom, ³Ophthalmology and Visual Sciences, The Eye Institute at Alexandra Hospital, National Healthcare Group, Singapore

Aim: The majority of submacular haemorrhages are secondary to angiographically detectable lesions such as choroidal neovascularisation and idiopathic polypoidal choroidal vasculopathy. Idiopathic cases are rare. We report 2 cases to highlight their management and clinical outcome.

Methods: Two case reports.

Results: Two men aged 53 and 66 years presented with a sudden onset of painless loss of vision in 1 eye. Their visual acuity in the affected eye was counting fingers. Fundal examination disclosed thick submacular haemorrhage in the affected eyes. Both patients received intravitreal injections of tissue plasminogen activator (tPA) 25 ug in 0.1 ml and 0.3 ml 100% perfluoropropane (C₃F₈) in the affected eye within 24 hours of presentation. Both patients were instructed to position their heads facing downwards for 1 week. Post-treatment fluorescein and indocyanine green angiography were performed after adequate blood displacement from under the fovea in the patients, respectively. The patients' vision improved to 6/12 and 6/24 at 1 month post-treatment. Displacement of blood from the fovea was almost complete after 1 week of prone positioning in both patients. Post-treatment fluorescein and ICG angiography did not disclose any vascular lesions which could account for the submacular haemorrhage in both patients. There was no intra- or post-operative complication and the vision remained stable in both patients at 6 months post treatment.

Conclusion: The outcome of idiopathic submacular haemorrhage following intravitreal tPA and gas injections and post-operative prone positioning is good.

II060/MP

Malignant Germ Cell Tumors in a Paediatric Population in Singapore – National University Hospital Experience

LeLe AUNG¹, Eng Jun YEOH¹, Poh Lin TAN², Thuan Chong QUAH¹

¹Department of Paediatrics, National University Hospital/National University of Singapore, Singapore, ²Department of Paediatrics, National University of Singapore, Singapore

Aim: Malignant germ cell tumours (MGCT) represent 3% of childhood tumours. A higher percent may be present in Asian population. This is our single institution experience in young children with this rare tumour, its characteristics and the outcomes.

Methods: A retrospective chart review of all paediatric oncology patients seen at the centre between November 1997 and April 2003 revealed 13 patients with MGCT. Median age was 8.8 (range 1.2-15.2 years) and 69% were male (n = 9). Primary sites were gonadal (n = 6), intracranial (n = 5), and mediastinal (n = 2). Histology revealed 5 seminomatous and 8 non-seminomatous. There was 1 stage IV while the rest were stages I-II. Therapy for these patients consisted of cisplatin-based chemotherapy plus surgery for 6 patients, surgery alone in 3, and combined therapy (Surgery ± Chemo ± Radiation) in 4.

Results: Median time of survival after diagnosis of the MGCT was 1.2 (range 0.2- 3.1 years). At the time of analysis, 8 patients were alive and free of disease. One patient with intracranial primary relapsed after 6 months and was alive with disease at 39 months after primary diagnosis. One patient with pineal teratoma, treated with surgery, chemotherapy and radiation, developed leptomeningeal disease and died at 21 months after initial diagnosis.

Conclusion: The outcome of our patients, including the extra-gonadal primary, was good; although the sample size was limited. Surgery alone or

multimodal therapy is essential in these patients for improved prognosis. Further studies including large prospective trials and new treatment approaches are needed for improved survival.

II061/MP

Computer Aided Paediatric Prescribing

Richard KIRK¹, Jeya PACKIA², Huey Min KAM³, Hendry WANGSA², Gek Kee LIM³, Benjamin ONG⁴

¹The Children's Medical Institute, National University Hospital, Singapore, ²Information Technology Division, National Healthcare Group, Singapore, ³Pharmacy, National University Hospital, Singapore, ⁴Department of Medicine, National University Hospital, Singapore

Aim: To compare prescription errors by traditional and computer aided prescribing.

Methods: Computer-based (not handwritten) prescriptions are the norm in our institution. Algorithms for 2 common drug dosages (paracetamol and promethazine), based on patient weight, were developed by paediatricians and incorporated into the computer programme. Doctors could choose to prescribe their own dose (traditional) or enable the computer to suggest the dose (computer aided). This suggested dose could be overridden but an alert was given if it was outside the recommended dose range.

Results: Of 2042 paracetamol and promethazine prescriptions, 57% utilised computer aided prescribing. The percentages within each doctor group were: medical officer 88%, house officer 48%, registrar 46%, associate consultant 38% and consultant 29%. Overall error rate (under-dosing, overdosing or dose omission) of computer aided prescriptions was 11.1% compared to 26.4% for traditional prescriptions [relative risk (R) 0.42, 95% confidence intervals (CI) 0.35-0.51, χ^2 $p < 0.001$]. Most errors were underdosing – 9.9% of computer aided, 20.7% of traditional prescriptions (R = 0.48, CI = 0.39-0.60, χ^2 $p < 0.001$). Least errors were overdosing – 0.9% of computer aided, 3.0% of traditional prescriptions (R = 0.29, CI = 0.14-0.59, χ^2 $p < 0.001$). Error rates for computer aided versus traditional (brackets) prescriptions by doctor grade were: medical officer 3.4% (29.4%), registrar 8.1% (22.5%), associate consultant 19.5% (30.9%), consultant 26.7% (22.8%) and house officer 28.4% (32.3%). House officer, associate consultant and consultant changes were not significant.

Conclusion: Computer aided prescribing halved errors and was particularly effective in reducing overdoses and dose omissions. Middle grade staff took more advantage of these benefits.

II062/MP

Home Assisted Ventilation for Children in Singapore: A New Ancillary Service for the 21st Century

Cindy Ping Ping HIA, Nicola Siew Pei NGIAM, Seo Yi CHNG, Hian Tat ONG, Daniel Yam Thiam GOH
Department of Paediatrics, The Children's Medical Institute, National University Hospital, Singapore

Aim: To evaluate the outcome of children on Home Assisted Ventilation (HAV) under our care.

Methods: A total of 16 children on HAV from 1997 to April 2003 (2 severe obstructive sleep apnoea, 6 neuromuscular disease [NMD], 3 central hypoventilation [CH] and 5 chronic lung disease [CLD]) were monitored for improvement in gas exchange, complications and survival.

Results: pCO_2 improved in the latter 3 subgroups after initiation of HAV, best seen in the NMD subgroup (mean pCO_2 decreased from 57.45 to 45.25 mmHg, $p = 0.08$). Oxygenation, impaired only in the CLD group, also improved (mean paO_2 increased from 74.50 to 92.33 mmHg, $p = 0.44$). The median duration of HAV was 9.0 months (range 1 to 60 months). Apart from 3 deaths (1 each from CLD, CH and NMD subgroups), all patients are alive and well. One patient with an indeterminate form of NMD was weaned off HAV. There were minimal complications from HAV.

Conclusion: Overall, improvement in gas exchange was observed but did not reach statistical significance due to our small cohort. Developed countries that have established domiciliary ventilation programmes in place report good outcomes and quality of life (QOL). At present, our patients and their families are coping well and assessment of QOL is underway. Domiciliary ventilation as an ancillary service needs to be further evaluated and developed in Singapore

as it will help to reduce the length of hospitalisation for patients with chronic respiratory insufficiency; they can be discharged once the acute problems have been treated and the care of chronic problems continued at home.

II063/MP

Characteristics of Cancer Patients Referred to a Palliative Medicine Service in a Tertiary Acute Care Hospital in Singapore

Noreen CHAN¹, Su Pin CHOO², Cynthia GOH¹

¹Department of Palliative Medicine, National Cancer Centre, Singapore, ²Department of Medical Oncology, National Cancer Centre, Singapore

Aim: The department of Palliative Medicine at the National Cancer Centre provides a consultative service to inpatients at the nearby Singapore Hospital. Although a diagnosis of cancer is not a prerequisite, the majority of patients have advanced malignancy. A retrospective study was undertaken to determine the characteristics of cancer patients referred for palliative care, and to see if there were any differences between those patients referred by Medical Oncology compared to other specialties.

Methods: Inpatient referrals over a 1-year period were analysed to determine the demographic and clinical characteristics at the point of referral. Data on prognosis and place of death were also collected.

Results: 98 patients were referred by Medical Oncology and 245 by other specialties, mainly surgical. There were no significant differences between the 2 groups in terms of gender, performance status at referral, prognosis or place of death. However, Medical Oncology patients tended to be younger and were more likely to have received anti-cancer therapy. They also reported more symptoms and were more likely to have pain (77% vs 64%) as well as psychological and care concerns.

Conclusion: In general, patients referred to the Palliative Medicine service had poor functional status, short prognosis and multiple symptoms. Patients referred from Medical Oncology frequently had pain, and had more symptoms than patients from other specialties. There appears to be a trend towards more referrals from surgical specialties, which is seen as a positive development as it reflects increasing awareness and acceptance of Palliative Care within the acute hospital setting.

II064/MP

Clinical Utility of Urine Myoglobin Measurement

RC HAWKINS

Department of Pathology and Laboratory Medicine, Tan Tock Seng Hospital, Singapore

Aim: Urine myoglobin measurement is presently not performed onsite. Samples are instead sent to another laboratory for testing. This study was designed to assess the clinical utility of urine myoglobin measurement via a retrospective audit of urine myoglobin requests, and describe the demographic details, laboratory findings and final diagnoses of patients suspected of myoglobinuria.

Methods: A retrospective audit was performed urine myoglobin requests received from September 2000 to August 2001. Demographic details (age, sex) and laboratory results (peak CK, aldolase, creatinine) from the laboratory information system and final discharge diagnoses from the electronic discharge summary were extracted.

Results: 115 samples were received, with 85 samples (79 patients) having discharge summaries available. Mortality rate was 20% [positive predictive factors on multivariate analysis were peak creatinine ($p < 0.01$) and discharge diagnosis of sepsis ($p < 0.05$) and negative predictive factor was discharge diagnosis of fitting ($p = 0.08$)]. Commonest discharge diagnoses were: infection 39%, rhabdomyolysis 16%, fitting 13%, myositis 8% and NMS 5%. Aldolase was the best independent clinical or lab parameter which differentiated final diagnosis of rhabdomyolysis from others ($p < 0.01$). No clinical or lab parameter separated rhabdomyolysis from myositis diagnoses. 48% of urine myoglobin results were available to clinicians only after patient discharge. No urine myoglobin results were positive in the year of the audit, or in the subsequent 2.5 years.

Conclusion: Urine myoglobin measurement is not of value in assessing patients suspected of myoglobinuria and such requests should be declined.

This finding agrees with published recommendations (Ann Clin Biochem 2000; 37:581-7).

II065/MP

Changes in Haematological Parameters in Severe Acute Respiratory Syndrome

Wee Joo CHNG¹, Hock Choong LAI¹, Arul EARNEST³, Ponnudurai KUPERAN¹

¹Department of Pathology and Laboratory Medicine, Tan Tock Seng Hospital, Singapore, ²Clinical Research Unit, Tan Tock Seng Hospital, Singapore

Aim: Severe acute respiratory syndrome (SARS) is an emerging infectious disease. Mortality amongst patients requiring intensive care (ICU) management is significant. We studied changes in haematological parameters according to the day of symptom onset in 185 probable SARS patients aiming to identify early markers helpful in excluding SARS and identifying patients with poorer prognosis.

Methods: Probable SARS patients identified from 15 March to 12 May 2003 were included in the study. Patients were divided into ICU and non-ICU groups. Median values of hematological parameters were analysed according to the day of symptom onset. Univariate and multivariate analyses were carried out to identify prognostic factors for patients needing ICU admission.

Results: White cell (WCC), absolute neutrophil (ANC), absolute lymphocyte (ALC) and platelet counts followed a v-shaped trend with the nadir at day 6 or 7 after symptom onset. An exception is ALC for the ICU group which had not reached the nadir by day 12. None of our patients had a platelet count $<80 \times 10^9/L$ and WCC $<2 \times 10^9/L$ in the first 5 days of symptoms which is when most patients present. On multivariate analysis, only age is an independent predictor for ICU admission (odds ratio per decade of life, 1.68; 95% confidence interval 1.32 to 2.14; $p < 0.001$).

Conclusion: WCC and platelet thresholds may allow early clinical exclusion of patients suspected of SARS. Although patients needing ICU admission tend to have persistent lymphopenia and higher WCC and ANC, these are not independent predictors for ICU admission.

II066/MP

Questionnaire Survey on the Main Causes of Hypoglycaemia in Diabetic Patients in a Teaching Hospital

Reshma GOPWANI, Suan Tee LIM, Humphrey KO, Jyh Cheau TAN, Ah Chuan THAI

National University Hospital, Singapore

Aim: To determine the main causes of hypoglycaemia in the National University Hospital, Singapore and to formulate recommendations to prevent the occurrence of hypoglycaemia in our patients.

Methods: The study included diabetic adults who were admitted to the National University Hospital for hypoglycaemia with symptoms (neuroglycopenic and/or adrenergic) and a biochemical confirmation of a capillary glucose level of 3 mmol/L or less. The data were collected over a period of 4 months (September 2002 to January 2003) and were obtained from patients' casenotes during hospitalisation.

Results: Of the 74 patients included in this study, 64.9% were over 65 years, 71.6% were female and 87.8% were type 2 diabetics. The mean plasma glucose level was 2.02 ± 0.49 mmol/L and the mean HbA1c was found to be $7.47 \pm 1.85\%$. With regard to treatment, 31.1% of patients were being treated with insulin alone, while 21.6% were being treated with a sulphonylurea in combination with metformin. The major causes of hypoglycaemia in this study were found to be poor oral intake (55.4%), defined as either missed meals or a decreased intake of food and/or antidiabetic drug therapy (25.7%). From this study, the following recommendations were made: (1) Education of patients and caregivers on the need for regular meals, (2) Adherence to prescribed diabetic therapy, including the proper action to take when unwell and (3) Education of patients about home glucose monitoring.

Conclusion: Poor oral intake and drug therapy were the major causes of admissions for hypoglycaemia in this study. In order to prevent the occurrence of hypoglycaemia, recommendations were formulated to address these major causes.

II067/MP

A Retrospective Pilot Study of Suspected Beta-Lactam Allergy in Patients Prescribed Vancomycin in a General Hospital

Suat Kee KHOO¹, Bernard Yu Hor THONG², Lay Hong GOH¹, Hiok Hee CHNG²

¹Department of Pharmacy, Tan Tock Seng Hospital, ²Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore

Aim: To examine the prevalence of beta-lactam allergy in patients administered vancomycin.

Methods: A random sample of 294 inpatients who had vancomycin prescribed between 1 January 2001 and 31 December 2001 were analysed with regards to indication for vancomycin use, history and type of suspected penicillin or cephalosporin allergy and diagnostic probability of beta-lactam allergy (determined by an allergy trained investigator [BYHT] using retrospective chart review and recorded opinion of the allergist if there was a referral).

Results: Forty-one (13.9%) patients with suspected beta-lactam allergy were given vancomycin on 43 separate occasions. The most common reasons for vancomycin use were pre-operative prophylaxis (16 episodes, 37.2%) and treatment of methicillin resistant *Staphylococcus aureus* infections (12 episodes, 27.9%). Retrospective chart review revealed 12 cases suggestive of probable beta-lactam allergy, 8 cases not suggestive and 21 indeterminate due to incomplete documentation. Only 3 of the 12 probable cases were suggestive of immediate hypersensitivity. Among 11 patients who were referred to an allergist prior to vancomycin administration, beta-lactam allergy was confirmed in 7 cases (63.6%) of whom only 2 (28.6%) were of immediate-type hypersensitivity, thus limiting the role for skin testing and penicillin desensitisation.

Conclusion: The prevalence of true beta-lactam allergy among patients prescribed vancomycin is low. Suspected beta-lactam allergy was not the reason why the majority of patients received vancomycin. Evaluation by an allergist may be useful in accurately diagnosing true beta-lactam allergies. This may reduce unnecessary vancomycin use, adverse reactions and development of vancomycin-resistant infections.

II068/MP

Predicting Psychosis From the Initial Prodrome – Chasing the Myth, a Local Perspective

Hao-Yang TAN¹, Jing-Tao YU², Ee-Heok KUA¹, Yong-Guan ANG³

¹Department of Psychological Medicine, National University of Singapore, Singapore, ²Department of Psychological Medicine, National University Hospital, Singapore, ³Psychological Care Centre, Military Medicine Institute, Singapore Armed Forces Medical Corps, Singapore

Aim: The prodrome of a psychotic disorder like schizophrenia is an elusive period with varied symptomatology, and is a critical time in the neurodevelopmental pathophysiology of psychosis with opportunities for early diagnosis and intervention once it can be reliably identified and studied. We therefore aimed to identify prodromal symptoms predictive of psychosis from 2 independent groups of young adult first-episode psychosis patients.

Methods: Firstly, semi-structured interviews of 30 patients with first-episode psychosis and 34 with non-psychotic disorders were used to retrospectively describe prodromal psychopathology (by THY and AYG), which were further explored using principal components analysis, logistic regression and the receiver operating characteristic (ROC) curves to narrow down prodromal symptoms that were sensitive and specific. Secondly, the sensitivity of these symptoms was tested against prodromal symptoms similarly elicited (by YJT) from an independent group of 50 first-episode psychosis patients.

Results: Principal components analysis yielded 1 component loaded with cognitive symptoms, attenuated negative symptoms, functional deterioration and perceptual disturbances, and another component loaded with neurotic symptoms. Only the first principal component was predictive of subsequent psychosis (OR 20, 95%CI 5.2 to 76, $p < 0.001$). From ROC analyses, having 3 or more of 15 cognitive, functional deterioration, attenuated negative or perceptual symptoms predicted psychosis with an approximate sensitivity and specificity of 0.8. This criterion identified patients from the second group with a sensitivity of 1.0.

Conclusion: Cognitive, functional deterioration, attenuated negative and

perceptual symptoms may be sensitive indicators of prodromal phenomena in our population. Applications may exist in the prospective screening and study of high-risk patients.

II069/MP

The Enigma of Urinary Retention in Post-Traumatic Minimally Responsive State: Single Case Report

Sui Geok, Karen CHUA, Keng He KONG

Department of Rehabilitation Medicine, Tan Tock Seng Hospital, Singapore

Aim: We report an unusual case of a 43-year-old female with post-traumatic minimally responsive state and tetraplegia who developed acute urinary retention 4 months into her inpatient rehabilitation programme after traumatic brain injury. Post-void residual urine volumes were 400 mL and urodynamic studies confirmed the presence of detrusor acontractility. Subsequent management involved 4-hourly intermittent catheterisation.

Methods: Concomitant spinal cord injury, faecal impaction, diabetes mellitus and bladder paralytic drugs were absent. Possible aetiologies for her bladder paralysis included treatments instituted for severe spasticity involving all 4 limbs: oral Dantrolene Sodium 300 mg/day, intramuscular Botulinum toxin A (Dysport 500U) to bilateral upper limbs and partial alcohol neurolysis of the right sciatic nerve for severe knee flexor spasticity. Oral or intrathecal Baclofen was not used in this patient.

Results: Spontaneous voiding resumed with reduction of Dantrolene Sodium to 150 mg/day with eventual attainment of urinary catheter-free status within 1 week and urodynamic studies documented return of detrusor activity.

Conclusion: This is the first reported clinical case of urinary retention following spasticity management involving therapeutic doses of Dantrolene Sodium. Patients in minimally responsive states after traumatic brain injury may be at increased risk of urinary retention due to profound immobility, motor weakness, aphasia, unawareness and brainstem/pontine injury. Those who receive high-dose Dantrolene Sodium therapy for treatment of spasticity may benefit from routine monitoring of voiding status and post-void residual urine volumes to detect urinary retention.

II070/MP

Molecular Genetic Analysis of a Patient with Late Onset Multiple acyl-CoA-Dehydrogenase Deficiency (MADD)

Zacharias A. Dwi PRAMONO¹, Poh San LAI², It Koon TAN³, Maria SF LIM³, Ai Lien SEAH⁴, Woon Chee YEE⁴

¹Research, National Neuroscience Institute, Singapore, ²Department of Paediatrics, National University of Singapore, Singapore, ³Chemical Biochemistry Laboratory, Department of Pathology, Singapore General Hospital, Singapore, ⁴Neuromuscular Research Laboratory, National Neuroscience Institute, Singapore

Aim: This study aims to characterise the molecular genetic status of a patient with late onset multiple acyl-CoA-dehydrogenase deficiency (MADD). MADD is metabolic disorder associated with glutaric aciduria caused by deficiency of either electron transfer flavoprotein (ETF) or electron transfer flavoprotein ubiquinone oxidoreductase (ETF-QO).

Methods: We conducted genetic analysis on the patient with clinical features and biochemical data suggesting late onset MADD. Mutational analysis focusing on the 3 genes (ETF, ETFB and ETFDH) encoding ETF alpha- and beta-subunits, and ETF-QO respectively is carried out by PCR, subcloning and sequencing analysis of the patient's cDNA.

Results: The genetic analysis showed some splicing instability of the ETFDH gene. Beside the normal size of ETFDH transcript, the patient's cDNA also contains 2 shorter transcripts, 1 with skipping of exons 2 and 3 and another 1 with skipping of exon 5. There is no other gross rearrangement observed on the other 2 genes, ETFA and ETFB.

Conclusion: Further investigation is ongoing to confirm whether this splicing alteration is the sole cause or whether there is any other mutation/s contributing to the cause of the disease.

II071/MP

Are There Differences in Drug Allergy Between the Sexes?

Khai Pang LEONG, Bernard Yu Hor THONG, Yew Kuang CHENG, Chwee Ying TANG, Hiok Hee CHNG

Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore

Aim: To determine if there are differences in the clinical features of drug allergy in males and females.

Methods: We studied the incidence of new drug allergy reactions in patients who were admitted to Tan Tock Seng Hospital over a 57-month period from 1 December 1997 to 31 August 2002. We identified these patients with the prospective Inpatient Drug Allergy Reporting system, which is administered by us and has been demonstrated to be accurate and reliable. The patients' biodata, comorbidities, types and severity of allergic drug reactions and outcome were compared between the 2 sexes.

Results: Over the study period, 161,614 (58%) male and 117,030 (42%) female patients were admitted. Among these were 286 male (47%) and 325 female (53%) patients who developed drug allergy ($p = 0.0$ by Fisher's exact test). The mean age of the male patients was 54.61 ± 18.13 years and that for females was 57.41 ± 19.86 years ($p = 0.071$). The clinical features of drug allergy were similar. The types of drugs implicated were generally the same, but reactions to anti-convulsant tend to be more prevalent in female patients. The prevalence of polypharmacy was not different between the sexes. There were 7 deaths in males patients and 5 deaths in female patients attributed to drug allergy ($p = 0.232$).

Conclusion: Hospitalised female patients are statistically significantly more likely to develop drug allergy than males. The explanation is not apparent from this study. However, there were no differences in the clinical features of drug allergy between the sexes.

II072/MP

A Study of 73 Cases of Anaphylaxis Referred to a Clinical Immunology/Allergy Service in Singapore

Bernard THONG, Yew Kuang CHENG, Khai Pang LEONG, Chwee Ying TANG, Hiok Hee CHNG

Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore

Aim: To study the clinical features and aetiologies of consecutive outpatients with anaphylaxis.

Methods: A retrospective review of 73 consecutive patients who presented between 1 July 1998 and 28 February 2002. Anaphylaxis was defined as a severe life-threatening systemic IgE-mediated hypersensitivity reaction. Hypotension and bronchospasm were not required to make a diagnosis. The aetiology was determined from clinical history, Pharmacia® CAP allergen-specific IgE levels ≥ 0.7 kUA/L, and/or skin prick test (SPT) wheal diameter ≥ 3 mm using GREERS® allergen extracts or prick-prick test with the fresh/canned food product.

Results: Anaphylaxis comprised 8.2% of referrals to our outpatient service. The mean age was 30.9 ± 12.3 years (range 6-57). The main causes of anaphylaxis were food (36, 49.3%) and insect stings (22, 30.1%). Fifteen (20.5%) were idiopathic. None were due to drugs or latex. Crustaceans and mollusks caused 30% of food allergies. Honey bee and wasp caused 50% of insect sting allergies. An average of 1.97 ± 1.61 episodes of anaphylaxis occurred before the patients sought treatment. The most common manifestations were dyspnoea (58.9%), urticaria (57.5%) and angioedema (46.6%). Hypotension was documented in only 19 (26.0%) cases. A history of atopy was present in 32 (43.8%) patients, of whom 50% had asthma.

Conclusion: Food (crustaceans and mollusks) was the most common cause followed by insect stings. The inability to identify the causative insect in 50% with sting allergy limited the role of specific immunotherapy. Compared to other reported series there were no cases of drug or latex anaphylaxis.

II073/MP

The Spectrum of Allergic/Immunologic Diseases from a Clinical Immunology/Allergy Clinic in Singapore

Bernard THONG, Yew Kuang CHENG, Khai Pang LEONG, Chwee Ying TANG, Hiok Hee CHNG

*Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore***Aim:** To describe the spectrum of allergic/immunologic diseases seen in a Clinical Immunology/Allergy (CIA) clinic.**Methods:** This was a retrospective review of 889 consecutive cases referred to a CIA clinic in Tan Tock Seng Hospital for possible allergic or immunological disorders during the study period 1 January 1998 to 28 February 2002.**Results:** The mean age of patients referred was 38.6 ± 18.0 years (range 5-88); 54.8% were males and 45.2% females. The most common referrals were for adverse reactions to drugs (32.4%), airway allergy (28.1%) and urticaria/angioedema (26.1%). Drug allergy comprised 16.5% and idiosyncratic reactions to non-steroidal anti-inflammatory drugs 13.9% of all referrals. Allergic rhinitis and asthma (airway allergy) comprised 16.9% and 8.3% of all referrals, respectively. Atopic eczema/dermatitis syndrome (8.5%), anaphylaxis (8.2%), food allergy (5.3%), insect venom allergy (3.5%) and primary immunodeficiency (PID) (0.8%) were less common. The main causes of anaphylaxis were food (49.3%) and insect stings (30.1%) with none from drugs or latex. Crustaceans, mollusks and bird's nest accounted for the majority of cases of food allergy. Honey bee and wasp stings accounted for 50% of insect venom allergy. Antibody deficiency was the most common PID with chronic sinusitis and recurrent pneumonia being the most common presentation.**Conclusion:** Adverse reactions to drugs, urticaria/angioedema and airway allergy were the most common referrals to our service.

II074/MP

Long Term Outcome of a Structured Desensitization Programme for the Management of Cotrimoxazole Allergy in HIV-positive PatientsBernard THONG, Khai Pang LEONG, Chwee Ying TANG, Hiok Hee CHNG
*Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore***Aim:** To evaluate the long term outcome following successful desensitisation to cotrimoxazole in HIV-positive patients for the prophylaxis and treatment of *Pneumocystis carinii* pneumonia (PCP) and toxoplasmosis.**Methods:** The long term outcome of 24 HIV patients successfully desensitized to cotrimoxazole was retrospectively evaluated.**Results:** Cotrimoxazole was stopped in 17 (88.3%) patients following successful desensitization for the following reasons: recurrence of drug eruption (23.5%), absolute CD4 count $> 200/\text{ml}$ following anti-retroviral therapy (ART) and hence no further need for prophylaxis (23.5%), defaulted treatment (47.1%) and cotrimoxazole failure and need for pentamidine following recurrent PCP infection (5.9%). Among 16 patients who stopped cotrimoxazole after a known period of time, the mean duration of cotrimoxazole use was 88.9 ± 74.1 weeks (8.1 – 241.6). The duration of use in the remaining patient was unknown. Of the 4 patients in whom rash occurred, none resulted in systemic hypersensitivity reactions. None of the patients with recurrence of rash or who defaulted treatment were referred back for desensitization as they were not agreeable to the procedure. Of the remaining 7 patients who continued cotrimoxazole, 5 have died of advanced AIDS or opportunistic infections not due to PCP or toxoplasmosis.**Conclusion:** The majority of patients who were successfully desensitized eventually stopped cotrimoxazole for various reasons, with less than a quarter due to recurrence of cotrimoxazole allergy.

II075/MP

A Comparative Study of Early Rheumatoid Arthritis during 1995-1997 and 2000-2002 in a Tertiary Rheumatology Centre

Tang Ching LAU, Ee Tzun KOH, Hwee Siew HOWE, Khai Pang LEONG, Cheng Lay TEH, Tsui Yee LIAN, Hiok Hee CHNG

*Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore***Aim:** To compare the demographic, clinical and radiographic features of

patients with early rheumatoid arthritis (ERA) during 2 time periods (1995-1997 [group 1] and 2000-2002 [group 2]).

Methods: The demographic profile, functional status, initial presentation and radiographic features of patients with ERA were compared using a standard protocol. All patients fulfilled the 1987 American College of Rheumatology (ACR) criteria and had disease duration < 2 years.**Results:** The study population comprised of 169 patients in group 1 and 179 patients in group 2. The mean age at presentation (48.7 vs 49.6 years) and ethnic distribution were similar in the 2 groups. Female and Chinese patients predominated the study populations. The duration of illness before diagnosis was significantly shorter in group 2 (median of 8 months vs 4.4 months, $p < 0.001$). The prevalence of 5 of the ACR criteria were similar between the 2 groups. However, significantly more patients in group 1 had erosions or osteopaenia on hand radiographs (64.2% vs 29.1%, $p < 0.001$). Patients in group 1 also had significantly poorer ACR functional class at presentation (class 1: 8% vs 68% $p < 0.001$, class 2: 79% vs 23% $p < 0.001$).**Conclusion:** Comparing the 2 periods, patients with ERA were presenting earlier to our centre in recent years with not only a shorter duration of symptoms before diagnosis but also significantly less radiological damage and better functional class. These findings confirmed the importance of earlier diagnosis and treatment of RA.

II076/MP

Evaluating the Published Evidence for the Efficacy of Continuing Medical Education in Radiation Oncology

Thomas SHAKESPEARE

*Department of Radiation Oncology, The Cancer Institute, National University Hospital, Singapore***Aim:** The efficacy of continuing medical education (CME) is known to vary between clinical specialties, thus it cannot be assumed that all forms of CME are effective for radiation oncologists (ROs). The purpose of this study was to critically evaluate the published literature for CME efficacy in radiation oncology.**Methods:** A thorough literature search of Medline, Embase, Cinahl and the Cochrane Collaboration electronic databases were searched for English language studies of CME for ROs. References of relevant articles were also searched. Identified articles were rated according to published guidelines.**Results:** For Medline, Embase, Cinahl and Cochrane databases 33, 86, 10 and 0 studies were returned respectively. There were no studies evaluating CME interventions primarily targeted at ROs. Twelve studies were identified that included a minority of ROs, with no breakdown by subspecialty. No meta-analyses, randomised trials, or studies with control arms were found. Two studies were before-after designs, and 10 were of cross-sectional design (primarily surveys). Of the cross-sectional studies, 4 reported needs assessment alone, 3 participant satisfaction alone, 1 participation rate, 1 satisfaction and participation, 1 satisfaction and self-reported attitudinal changes. Of the before-after studies, 1 evaluated satisfaction, pre- and post-CME participant attitude and self-reported practice changes. The other reported pre- and post-CME participant behaviour changes, and patient satisfaction.**Conclusion:** There is little published evidence directly supporting the efficacy of CME for ROs, with further research strongly recommended. In particular, studies are required to investigate optimal learning needs assessment, objectives, curricula, methods of CME delivery and evaluation.

II077/MP

Can Custom-made Biomechanic Shoe Orthoses Prevent Problems in the Back and Lower Extremities? A Randomised, Controlled Intervention Trial of 146 Military ConscriptsKristen LARSEN¹, Charles BAYCROFT¹, Flemming WEIDICH², Charlotte LEBOEUF-YDE¹¹The Medical Research Unit, Ringkjøbing County, Ringkjøbing, Denmark, Ringkjøbing, Denmark, ²Jutland Dragoon Regiment, Holstebro, Denmark**Aim:** To investigate if biomechanic shoe orthoses can prevent problems of the back and lower extremities and if reducing the number of days off-duty because of back or lower extremity problems is possible.**Methods:** Health data were collected by questionnaires at initiation of study and 3 months later. Custom-made biomechanic shoe orthoses to be worn in military boots were provided to all in the study group during the 3-month

intervention period. No intervention was provided for the study group. Differences between the 2 groups were tested with the chi-square test, and statistical significance was accepted at $P < 0.05$. Risk ratio (RR), risk difference (ARR), numbers needed to prevent (NNP) and cost per successfully prevented case were calculated.

Results: Results were significantly better in actual-use analysis in the intervention group for total number of subjects with back or lower extremity problems (RR 0.7, ARR 19%, NNP 5, cost US\$98); number of subjects with shin splints (RR 0.2, ARR 19%, NNP 5, cost US\$101); number of off-duty days because of back or lower extremity problems (RR 0.6, ARR <1%, NNP 200, cost US\$3750). In an intention-to-treat analysis, a significant difference was found for only number of subjects with shin splints (RR 0.3, ARR 18%, NNP 6, cost US\$105), whereas worst-case analysis revealed no significant differences between the study groups.

Conclusion: It may be possible to prevent certain musculoskeletal problems in the back or lower extremities among military conscripts by using custom-made biomechanic shoe orthoses.

II078/MP

Implementation and Audit of a Pain Management Protocol in a Nursing Home

Boon Yeow TAN¹, S SCHERER², M BROWNING², G KELLY², S GIBSON³
¹St Luke's Hospital for the Elderly, Singapore, ²Royal Freemasons' Homes of Victoria Limited, Australia, ³National Ageing Research Institute, Victoria, Australia

Aim: To improve pain management in residential care services

Methods: A cross sectional survey of medical records pre and post-implementation of a new pain protocol in a 75 bed nursing home in Victoria. The project involved the development of a new pain policy and protocol through an abbreviated literature review. The existing pain policy, procedures and assessment tools of the nursing home were replaced with a new pain management decision support algorithm, all staff were trained and a senior nurse pain champion was enlisted. A post-implementation audit of changes in pain assessment, diagnosis and management was undertaken 4 months later.

Results: The prevalence of patients in active pain (defined as documented evidence of pain or the use of analgesia within the last 2 weeks) was similar in pre and post-implementation of protocol. Implementation of the protocol resulted in a significant: i) increase in diagnoses for the cause of active pain ($p < 0.000$), ii) reduced use of multiple analgesics ($p < 0.000$), iii) reduced prescription of prn paracetamol ($p < 0.005$), and iv) reduced use of potentially harmful analgesics.

Conclusion: Persistent pain is a very common and challenging issue for residential care providers. Individual care providers can enhance the quality of pain management by implementing an individually targeted pain guideline.

II079/MP

Secretion of Defensins From Human Conjunctival Cells Upon LPS Stimulation

Jing LI, Lei ZHOU, Andrey Ying Ting KHOO, Andrea Shaohui LIU, Siew Kwan KOH, Roger BEUERMAN, Donald TAN
Singapore Eye Research Institute, Singapore

Aim: To investigate the secretion of defensin by human conjunctival cells

Methods: Human conjunctival cells were isolated and cultured in vitro. Cells were stimulated by 20 ng/ml lipopolysaccharide (LPS). Cell culture mediums were collected at different time points after treatment and subjected to liquid chromatography-mass spectrometry (LC-MS) analysis for the detection of defensins. Expression of defensin genes were also analysed by RT-PCR. Defensin stimulation of conjunctival cell proliferation was analysed by BrdU incorporation assay.

Results: Message for human defensin beta 1 and 2 mRNA was found in quiescent cultured conjunctival cells by RT-PCR but no defensin protein was found in the culture medium. 7 hrs after LPS stimulation, defensin beta 1 was detected in the culture medium by LC-MS analysis. However, BrdU incorporation was minimal suggesting little effect of secreted defensin on conjunctival cell proliferation.

Conclusion: The secretion of defensins by human conjunctival cells upon

LPS stimulation provides the evidence of innate immune response.

II080/NUR

Reducing Hospitalisation for Acute Exacerbation of Chronic Obstructive Pulmonary Disease with a Homecare Programme

Wai Fung CHONG¹, Seow Pek TAN², Seok Chin SOH³, Kian Chung ONG⁴
¹Disease Management, National Healthcare Group, Singapore, ²National Healthcare Group Polyclinic, Singapore, ³Department of Physiotherapy, Tan Tock Seng Hospital, Singapore, ⁴Department of Respiratory Medicine, Tan Tock Seng Hospital, Singapore

Aim: To evaluate the early outcomes of a nurse-led, post-discharge home care programme for patients following hospitalisation for acute exacerbation of chronic obstructive pulmonary disease (COPD).

Methods: Patients were recruited before discharge from hospital and received home visits by trained nurses, telephonic support with rapid access to an Acute Respiratory Assessment Service (ARAS) during the early post-discharge period. Outcome measures were hospitalisation days and hospital readmissions.

Results: Preliminary findings of 42 patients (mean age 70 years, 2 female, mean FEV1 36.7 percent predicted) showed that the mean length of hospital stay was reduced from 9.7 days to 6.7 days in the 6-month period before and after the programme ($p = 0.152$). The number of readmissions (within 1 month of hospital discharge) was reduced from a mean of 2.7 to 1.4 episodes ($p = 0.001$).

Conclusion: This comprehensive, post-discharge home care programme reduced the number of hospital readmissions and hospitalisation days in patients with acute exacerbation of COPD.

II081/NUR

Prevalence of Postprandial Hypotension in the Elderly

PM KUMARI¹, Alina ISMAIL², Ser Lee ANG², Siew Hong CHUA², Soh Leh LEE², Vasanthi VARADARAJU², Yvonne Deborah Shu Ching TAN²
¹Psycho Geriatric Unit, Ward 63 A, Institute of Mental Health, Woodbridge Hospital, Singapore, ²Woodbridge Hospital/Institute of Mental Health, Singapore

Aim: Background postprandial hypotension is a common disorder of blood regulation in the elderly who are aged 65 years and above. Syncope and falls may often result from this condition. We sought to explore if there was an association between meal ingestion and a drop in systolic blood pressure among the elderly in-patients of Woodbridge Hospital.

Methods: The objective of the study was to determine whether there is a drop in the blood pressure after a meal in the elderly. 80 male and 104 female elderly inpatients ($n = 184$), aged 65 years and above, were studied. Blood pressure was monitored half hour before and 3 hourly after breakfast and half hour before and 3 hourly after lunch.

Results: Of the 184 subjects, 98 of them had reduction in their systolic blood pressure post breakfast and 72 had a drop post lunch for the 1st hour post meal. The systolic blood pressure in subjects taking full diet was likely to drop >20 mmHg than those with other meals at 1 hour after breakfast ($p = 0.010$, OR = 1.08, 95% CI 1.02 to 1.15, Fisher's exact test). There was a significant reduction in systolic blood pressure >10 mmHg among subjects aged 90-100 years at 1 hour after breakfast ($p = 0.019$). There was a statistically significant difference between those with and without anti-hypertensive medication ($p < 0.001$). The findings were consistent over the 3 hours post breakfast as well as post lunch.

Conclusion: All health care personnel caring for the elderly should be aware of the hypotensive effects of food intake in the elderly and should consider postprandial hypotension in the evaluation of syncope, falls and dizziness.

II082/PD

A Pilot Study on Developing a Group Cognitive Behavioural Therapy for Children with Anxiety in Singapore

Lue Ping ONG, Joyce Su Fern LEONG, Daniel Shuen Sheng FUNG, Juliana TEO

Child and Adolescent Psychiatry, Institute of Mental Health, Singapore

Aim: Recent treatment studies conducted overseas have demonstrated the efficacy of group cognitive behavioural therapy for anxious children. Given the cultural differences, we decided to refine a manualised group cognitive

behavioural treatment designed for North American children specifically for use with our children. The objective of this pilot study was to provide preliminary support for this treatment.

Methods: Eleven children aged 8 to 12 years from the Child Guidance Clinic with diagnosed anxiety disorders were recruited for the study. The child's anxiety scores were assessed using a self-reported measure, the Multidimensional Anxiety Scale for Children (MASC) and a parent-reported measure, Child Behavioural Checklist for Children (CBCL) on 3 time-periods: pre-treatment (T1); post-treatment (T2) and 3 months post-treatment (T3). All 11 children completed the 8 1-hour sessions of treatment.

Results: The MASC total anxiety scores were significantly reduced after treatment and these treatment gains were maintained after 3 months at $p < 0.05$. However, there was no significant reduction in the Total Internalizing Problems scores on the CBCL even though one of the subscales scores, Somatic Complaints were significantly lower after treatment at $p < 0.05$.

Conclusion: Even though the parents did not perceive their children to be less anxious after treatment, the children rated themselves as being less anxious after treatment and on 3-months follow-up. This study provides some preliminary support for the efficacy of our manualised group cognitive behavioural treatment.

II083/PD

A survey of Drug Information Service (DIS) in Singapore

Boon Peng LIM¹, Benjamin KC ONG²

¹Clinical Project Management and Planning, National Healthcare Group, Singapore, ²Department of Medicine, National University Hospital, Singapore

Aim: This survey aims to evaluate the workload, staffing and expenditure of Drug Information Centres (DICs).

Methods: A questionnaire was sent to all DICs in Singapore in October 2002. Of the targeted DICs, 83% responded.

Results: All the respondent DICs in Singapore only operate during office hours. These DICs are staffed by 1 full time Drug Information (DI) pharmacist and 1 trained covering staff. Eighty percent of the respondents felt that more than 1 DI pharmacist is required for better provision of services. The average number of enquiries received per month was 187 (61-349) from January 2001 to September 2002. The average number of drug reviews prepared per month was 2.9 (1.1-4.4) from January 2001 to September 2002. DI pharmacists prepared most of the reviews except for TTSH where pre-registration pharmacists prepared most of them with subsequent vetting by the DI pharmacist. The average number of pre-registration pharmacists and master students (MPharm) trained was 6.5 (0-14) for year 2001 and 2002. The average expenditure on DI references (including journals and databases subscriptions) was S\$27,212 (S\$8,607-S\$55,300) for year 2002.

Conclusion: The staffing level appears to only cater for a basic routine service with workload and expenditure varying with the level of activity. There are altogether 6 DICs in Singapore but no provision of a comprehensive islandwide facility. Having either a coordinated or alternatively a centralised DIS could be a way to resolve besides allowing for longer operating hours, savings on DI references and enhancing the level of such DI services.

II084/PD

Respiratory Histology and Cytology in Tan Tock Seng Hospital

Shairiann ISHAK, Kong Bing TAN, Pek Yoon CHONG

Department of Pathology and Laboratory Medicine, Tan Tock Seng Hospital, Singapore

Aim: Cytology is a rapid, cost-effective and reasonably accurate investigation modality for diagnosis of lung lesions. We seek to characterise the diagnostic profile of various cytological techniques and assess their performance with histology as the gold standard.

Methods: The results from the various cytology specimens received in our department from 2000 to 2002 were gathered and correlated with available follow-up histology.

Results: From the 2318 cytology samples received, 94 cases of transbronchial needle aspirations (TBNA) and 288 cases of percutaneous fine needle aspiration cytology (FNAC) had subsequent histology available. 25 TBNA

samples (25.8%) and 31 FNAC samples (8.2%) were found to be unsatisfactory for evaluation. Most of these cases had scant cellularity and yielded mainly blood. The diagnostic sensitivity for malignancy is 72.2% for TBNA and 91.7% for FNAC. The diagnostic specificity is 90.9% for TBNA and 91.8% for FNAC. Similar data will be calculated for the other cytological techniques and a review undertaken to determine the causes of histo-cytological non-correlation. A variety of respiratory infections were also diagnosed on cytology, among which are tuberculosis, cryptococcal, cytomegalovirus and paragonimus infections.

Conclusion: Our results show a reasonably high standard of respiratory cytology performance in our department. It also reaffirms that cytology samples from the lung are useful alternatives to more invasive surgical methods in the diagnosis of lung cancer. Cytology is helpful in the work-up of lung infections, including opportunistic infections in immunocompromised patients. Lastly, the importance of good clinical and radiological-pathological correlation is crucial for optimum patient management.

II085/PD

Fine Needle Aspiration Cytology of Breast Lesion in Tan Tock Seng Hospital, Singapore

Khar Kee Jeanne SNG, Pek Yoon CHONG, Ah Kim LEE, Shairiann ISHAK
Department of Pathology and Laboratory Medicine, Tan Tock Seng Hospital, Singapore

Aim: Carcinoma of the breast is one of the most frequent cancers reported amongst females in Singapore. Tan Tock Seng Hospital Singapore, has reported between 92 and 127 new cases of breast cancer each year over the 5-year period of 1996 to 2000. In this study, we measure the predictive value of the test, and the spectrum of diseases that this procedure is used for.

Methods: All cases of fine needle aspiration of the breast and their follow-up biopsies received from January 1996 to December 2000 were retrieved and reviewed.

Results: A total of 465 fine needle aspirations were received within the studied period. 316 cases has at least 1 follow-up biopsy; 76 of which confirmed the malignancy diagnosed by the fine needle aspiration with 100% positive predictive value. Most of carcinoma cases were diagnosed in women aged between 40 to 49 years that formed the largest group of patients.

Conclusion: With a high positive predictive value, fine needle aspiration is being increasingly accepted as pre-operative diagnostic tool for breast lesions in this institution.

II086/PD

Idiopathic Granulomatous Mastitis: Diagnosis and Management

Shih-Chang WANG¹, Jill SL WONG¹, Philip TC IAU², Thomas PUTTI³

¹Department of Diagnostic Imaging, National University Hospital, Singapore, ²Department of Surgery, National University Hospital, Singapore, ³Department of Pathology, National University Hospital, Singapore

Aim: To review the findings in 9 patients diagnosed with idiopathic granulomatous mastitis (IGM) at National University Hospital, with particular attention to imaging findings.

Methods: A retrospective review was conducted of 9 women (age range 29-53 years, mean age 35.8 years, median age 41 years) presenting to our institution between 1997 and 2001, who were diagnosed with IGM after histological analysis. Imaging findings, clinical features at presentation and subsequent outcome were reviewed.

Results: All patients had either discretely palpable lumps or diffuse palpable breast thickening. The lumps ranged in size from 2 to 10 cm. All patients had sonographic examinations; 7 patients had mammographic studies and 2 patients had supplementary magnetic resonance imaging (MRI). MRI findings in IGM have been previously described only once before. Mammographic features varied from asymmetric density to architectural distortion, nipple retraction, stromal thickening and partly circumscribed nodules. One patient had diffusely dense breasts with no focal lesion identified. At sonography, 8 patients had hypoechoic focal masses with variable borders in different cases. MRI was performed in 2 patients using a GE Signa 1.5T MRI unit. The appearances and enhancement pattern were atypical for carcinoma. None had

acid-fast bacilli on histology, and none were diagnosed as having breast tuberculosis on culture. All patients responded well to treatment, regardless of the method used.

Conclusion: IGM is an uncommon clinical entity which can be confused with carcinoma. Imaging features with mammography and sonography are non-specific. MRI scans were atypical for carcinoma and were consistent with inflammation.

II087/PD

In-Patients' Satisfaction and Compliance of Therapeutic Diets in National University Hospital, Singapore

Cherie TONG, Mei Lin FONG, May KANG, Catherine KOH, Beatrice CHANG, Pek Yee CHOW

Department of Dietetics, National University Hospital, Singapore

Aim: A therapeutic diet involves modification of a normal diet to meet the patients' specific needs, in order to treat various diseases and disorders. Patients' satisfaction and compliance with therapeutic diets significantly affect their nutritional status and disease control. However, therapeutic diets often present food acceptance problems due to multi-factorial reasons. In this study, factors affecting in-patients' satisfaction and reasons behind non-compliance were investigated.

Methods: 300 adult in-patients on therapeutic diets in NUH were randomly selected in a 1-month period. A questionnaire was designed to collect qualitative data of 4 areas: socio-demographic; foodservice quality; diet compliance; and dietetic intervention. Data were collected through semantic differential scale of 3-point and 5-point, 'close-ended' and 'open-ended' questions. A pilot study was carried out for verification.

Results: Overall meal satisfaction was shown to be positively and significantly affected by overall food quality ($r = 0.602$, $P < 0.05$), especially by taste, freshness, temperature and variety. Other factors affecting meal satisfaction include accuracy of meal served ($f(2,297) = 4.67$, $P < 0.05$), belief in diet control ($f(1,298) = 6.07$, $P < 0.05$) and attitude of staff taking meal orders ($r = 0.254$, $P < 0.05$) and serving meals ($r = 0.339$, $P < 0.05$). After dietetic intervention, in-patients were more likely to follow dietary instructions (Cramer's $V = 0.260$, $P < 0.05$) and comply with therapeutic diets (Cramer's $V = 0.414$, $P < 0.05$).

Conclusion: In-patients' satisfaction and compliance of therapeutic diets can be enhanced by improving food quality and staff attitude; and through providing adequate and accurate dietetic information and intervention.

II088/PD

Triple Immunolabelling Using Combined Immunoperoxidase and Immunofluorescence Techniques on Paraffin Embedded Tissue Sections

Soo Yong TAN, Elsie KOK, Magdalene KOH

Department of Pathology and Laboratory Medicine, Tan Tock Seng Hospital, Singapore

Aim: We describe a method to demonstrate expression of multiple antigens using a triple immunolabelling technique in paraffin embedded tissue sections.

Methods: 4-um thick tissue sections are cut from paraffin embedded tissues. Following de-waxing and rehydration, they are subjected to heat-induced antigen retrieval. Immunoperoxidase staining using the first antibody is performed, followed by double immunofluorescence labelling using FITC and Texas Red. Images are captured in monochrome and pasted in the blue-, red- and green-channels of an imaging programme such as Photoshop.

Results: The co-expression of up to 3 different antigens may be demonstrated in various types of tissue sections.

Conclusion: Triple immunolabelling can be reliably performed on paraffin embedded tissue sections using a combined immunoperoxidase and immunofluorescence technique.

II089/PD

Prealbumin: Nutritional Predictor of Outcome and Length of Hospitalisation in Patients Under Intensive Care

Michelle TAN¹, Ruby KHOO², Wendy LEE², Sharon SAW², Sunil SETHI²

¹Department of Laboratory Medicine, National University Hospital, Singapore, ²Department of Laboratory Medicine, National University of Singapore, Singapore

Aim: Prealbumin (PA) is a visceral protein and is decreased in patients suffering from malnutrition and systemic stress. Since malnutrition and degree of systemic stress determine rate of mortality and recovery of patients, PA can also correlate with patients' outcome and length of hospital stay.

Methods: Blood samples from 20 Intensive Care Unit patients with various clinical diagnoses, sent to our laboratory, were randomly selected and serum PA measured on Beckman Coulter IMMAGE Immunochemistry System. PA levels on admission and during hospitalisation were then correlated to their outcome and length of hospitalisation.

Results: Group1: 6 patients with initially normal PA of >18 mg/dL maintained levels above 10 mg/dL were hospitalised between 8-15 days and well on discharge. Group2: 5 patients with initial PA of 11-18 mg/dL; 2 with improved PA level survived with hospital stay of 9-31 days, 3 with 20% decline from their initial PA level, hospitalised for 26-60 days, did not survive. Group3: 8 patients with low PA of <10 mg/dL on admission; 5 with improved PA level survived with hospital stay of 26-74 days and 3 with declined PA level, hospitalised for 11-49 days, succumbed to illness. One patient with initial PA of 9.6 mg/dL with little increase in PA level, did not survive after 8 days of hospitalisation.

Conclusion: In this short study, we found that patients with initial PA levels <10 mg/dL were hospitalised longer compared to patients with PA levels >10 mg/dL. The decline of PA levels during hospital stay can also predict outcome in ICU patients. Hence, PA with its small body pool and short half-life is a useful and sensitive marker of recovery and deterioration of patients and initiation of treatment intervention.

II090/PD

BioRad D-10: A New Small Laboratory HPLC HbA1c Analyser

Siew Fong NEO, Siew Kim ONG, Sharon SAW, Sunil SETHI

Department of Laboratory Medicine, National University Hospital, Singapore

Aim: To study the measurement of glycated haemoglobin (HbA1c) on BioRad D-10 (BioRad Laboratories, USA), a new small laboratory high performance liquid chromatography (HPLC) instrument, and compare its performance to our current analyser DCA 2000 (Bayer Laboratories, USA), which measure HbA1c by inhibition agglutination.

Methods: 1) To measure HbA1c on EDTA coagulated whole blood samples from our outpatient clinics. 2) To study the imprecision of D-10 using 2 levels of BioRad quality control material and 2 levels of pooled EDTA whole blood samples.

Results: Linear regression data of HbA1c were: DCA 2000 = 0.99 (D-10) + 0.29 , $R = 0.97$, $n = 75$. The bias plot showed -0.2% (range -0.8% to 0.5%) lower %HbA1c results on D-10 when compared to DCA 2000. On D-10, within day imprecision coefficient of variation (CV) was $<1.0\%$ for HbA1c range from 5.4 to 10.5% ($n = 20$) and between days imprecision ($n = 9$) was $CV \leq 1.6\%$. On DCA 2000, between days imprecision was $CV 4.6\%$ and 5.8% ($n = 15$) for HbA1c control of 5.5% and 9.9%, respectively.

Conclusion: The D-10 showed excellent precision whereas DCA 2000 did not meet the HbA1c analytical performance criteria ($CV < 3.0\%$) for diabetic monitoring. The D-10 can run up to 10 samples per rack in 36 minutes when compared to 5 samples on the DCA 2000, thus offering a more efficient same session outpatient setting. The HPLC results are reported in a trace format where abnormal haemoglobin patterns may be viewed to determine accuracy of the results. However, operator training is required to maximally utilise this HPLC instrument that can be traceable to the National Glycohemoglobin Standardisation Program (NGSP).

II091/PD

Evaluation of an Inpatient Group Counselling Programme for Patients with Hyperlipidaemia

Yen Peng LIM

Department of Nutrition and Dietetics, Tan Tock Seng Hospital, Singapore

Aim: To evaluate patients' satisfaction of an inpatient group-counselling programme and its effectiveness in increasing their nutritional knowledge.

Methods: An inpatient group-counselling programme on "Cholesterol and Diet" was developed and conducted by the dietitians for patients and caregivers. Patients referred to the dietitians for cholesterol lowering advice were screened for suitability and scheduled to attend a 1-hour session. PowerPoint presentation and printed materials were used to support the verbal information. Evaluation of nutritional knowledge from the participants was obtained at the beginning and at the end of the session. Post-session feedback on patients' satisfaction was also conducted.

Results: 114 patients and caregivers completed the programme. 57% agreed that the programme met most of its objectives and 33% agreed that all its objectives were met. 43% rated the session useful, 44% rated it very useful. 66% found the presentation clear and easy to follow, 23% found it excellent. 25% rated the dietitian excellent in sustaining their interest, 69% rated as good. 92% found the duration just right. 49% of the patients preferred the group session whereas 32% preferred both group and individual sessions. 93 patients and caregivers completed the nutritional knowledge test. 21 were excluded due to incomplete questionnaires. Paired t test showed a significant improvement in nutrition knowledge scores after attending the programme ($P < 0.01$).

Conclusion: The group-counselling programme was effective in improving the nutrition knowledge in cholesterol lowering among the patients and caregivers. A high patient satisfaction to the programme also supported the continuation of this new service.

II092/PD

Identifying the Need for a Pharmacist Run Epilepsy Clinic in Singapore

Kevin Yi-Lwern YAP¹, Ngai Kun LOH², Chwee Ling KOH³

¹Pharmacy, Institute of Mental Health, Singapore, ²Department of Neurology, National Neuroscience Institute, Singapore, ³Pharmacy, Tan Tock Seng Hospital, Singapore

Aim: To determine the knowledge level of Asian patients with epilepsy regarding their condition, the importance of information provision, quality of life (QOL) and the feasibility of setting up an epilepsy clinic managed by pharmacists in a local hospital.

Methods: Patients with epilepsy were interviewed using a questionnaire consisting of the QOLIE-10; and questions to determine their seizure summary, knowledge level and level of importance of providing information regarding their condition, lifestyle treatments and anti-epileptic drug therapy. Student's t test and ANOVA were used for statistical analysis.

Results: Fifty-one patients (mean age $\pm$ SD, 34.6 ± 11.9 years) were studied. QOLIE-10 scores between patients who had 10 or less and more than 10 seizures per year were significantly different. Patients who had more than 10 seizures per year had a poorer expressed QOL (26.2 ± 3.51). Patients on polytherapy experienced more adverse events. Common side effects included drowsiness, gastrointestinal side effects, memory difficulties and insomnia. Most patients gave a "none" response to their level of knowledge regarding epilepsy (54.9%), lifestyles and social impact (49.0%), and anti-epileptic drug treatment (64.7%). Provision of information about drug therapy was rated as the most important, followed by lifestyles and social impact, then medical knowledge. Most were willing to pay for pharmacists' consultations. Those who were unsure or unwilling to pay felt that their seizures were already adequately controlled or had time and monetary constraints.

Conclusion: There is an information deficit in Asian patients with epilepsy. An epilepsy clinic managed by pharmacists should be set up in the hospital for a trial period.

II093/PD

The Beneficial Effects of the Joint Protection Course on the Joint Protection Knowledge of Arthritis Patients After 6 Months

Lydia TOH¹, Tang Ching LAU²

¹Physical and Occupational Therapy, Tan Tock Seng Hospital, Singapore, ²Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore

Aim: General knowledge with regard to joint protection is usually poor amongst patients suffering from arthritis. The occupational therapist conducted a 4-week course which aim to improve the knowledge of these patients with regard to joint protection. We have undertaken a study to determine the effectiveness of such a course in improving hand functions as well as helping them to protect their joints from further damage.

Methods: The subjects were interviewed using joint protection knowledge assessment questionnaire a week before the course starts and 1 month after the course. The same set of questionnaire was administered 6 months after the course. Other scores for quality of life measurement (Short Form 36), Rheumatology Attitude Index (RAI) and disability scores were also measured.

Results: A total of 50 participants completed all the questionnaires. Comparing the joint protection knowledge score at pre-course and immediately after the course showed that there was no difference (19.0 vs 24.2). There was also no difference in score when we compared pre-course and 6 months post-course (19.0 vs 22.4). More participants are being enrolled and analyses of the data will be reported in October 2003.

Conclusion: Based on the preliminary analysis of the of 50 participants, the joint protection course does not appear to have significant effect on the joint protection knowledge of arthritis patients.

II094/PD

Botulinum Toxin A in the Management of Upper Extremity Spasticity in Children with Cerebral Palsy: A Systematic Review

Serene Suen Po YAP

Department of Rehabilitation, National University Hospital, Singapore

Aim: The purpose of this paper was to obtain a review of literature regarding the use and efficacy of BTX injections to improve upper extremity function in children with cerebral palsy. It also seeks to identify occupational therapy evaluation and management options for children with cerebral palsy receiving BTX injections to their upper extremity.

Methods: The study design consists of a systematic review. A computer-aided search was conducted using the databases of Medline and Cinahl. The reports were also located through related readings and the reference lists of the articles. Any studies investigating the use of botulinum toxin A in upper extremity spasticity were included in the analysis.

Results: Principal studies concur that BTX treatment is safe and effective in reducing spasticity. Instruments used to assess for improvement following the injections include the Ashworth scale for measuring spasticity and goniometric measurements. However, there is a paucity of literature regarding the long-term functional outcome following BTX injection. There is also insufficient detail in the studies to guide therapeutic intervention for children with cerebral palsy receiving BTX injections for upper extremity spasticity.

Conclusion: The studies reviewed do not have sufficient detail to allow repetition of the therapeutic management treatment protocol by other researchers. The review also demonstrated the need to undertake further research into the efficacy of BTX in the management of upper limb spasticity in cerebral palsy, including impact of longer term use and functional outcome following botulinum toxin A injections.

II095/PD

Identification of Differentially Expressed Genes Induced in BCG Treatment of Bladder Cancer

Juwita N RAHMAT¹, Kesavan ESUVARANATHAN², Ratha MAHENDRAN¹

¹Department of Surgery, National University of Singapore, Singapore,

²Department of Surgery, National University Hospital, Singapore

Aim: Mycobacterium bovis BCG (Bacillus-Calmette Guerin) has been effectively used as an immunomodulatory agent for bladder tumour. However,

its molecular mechanisms of therapy has not yet been elucidated and we are only beginning to understand its immune mechanisms. We aim to search for differentially expressed genes correlating to bladder tumour killing.

Methods: Representational differential analysis (RDA), as described by Pastorian et al, was performed to isolate differentially expressed cDNA sequences from cultures of control and BCG treated MGH cells. The fragments were then cloned using the PGEM-T vector kit and sequenced. RNA samples from other cell lines were hybridised using some of the fragments as probes.

Results: Differentially expressed fragments were isolated in the third subtractive hybridisation round. Using some of the fragments as probes, differential expression was confirmed by hybridizing with RNA samples from other bladder cell lines. Sequence similarity searches with GenBank were performed using the BLAST algorithm. Some of the sequences were from known genes such as housekeeping genes and a few unique genes were obtained.

Conclusion: This method enables the identification of genes that are differentially expressed.

II096/SOGD

Pulmonary Infarction Secondary to Tumour Embolism From Lower Limb Osteosarcoma

Eugene Mun Wai ONG¹, Sudhakar VENKATESH¹, Shih Chang WANG¹, James HUI²

¹Department of Diagnostic Imaging, National University Hospital, Singapore, ²Department of Orthopedic Surgery, National University Hospital, Singapore

Aim: To describe radiological findings in a patient with osteogenic sarcoma presenting with pulmonary embolism.

Methods: A 14-year-old Chinese boy presented with a 1-week history of breathlessness and right knee swelling of 4 months duration. He was investigated with urgent CT pulmonary angiography. The right knee swelling was investigated with plain X-ray, Doppler, bone scan and MRI. He was followed up with CT scan.

Results: CT pulmonary angiography demonstrated emboli in the right main pulmonary artery and segmental and sub-segmental branches. Opacities in the right lung compatible with pulmonary infarcts were also noted. Doppler ultrasound performed on the same day showed thrombosis of the right superficial femoral vein. A filter was placed in the inferior vena cava to prevent further embolisation. CT scan done after the IVC filter demonstrated increase in the size of emboli with further occlusion of the pulmonary arterial tree. He was treated with urgent surgical embolectomy. Plain X-ray, bone scan and MRI of the right knee were consistent with an osteosarcoma. A biopsy of the tumour confirmed the diagnosis. The patient was treated with chemotherapy and above knee amputation of the right lower limb. Follow-up CT scans demonstrated progression of the disease with development of pulmonary metastases. The patient succumbed to the disease 8 months after initial presentation.

Conclusion: Pulmonary tumour embolism is difficult to diagnose in patients without known malignancy. CT scan is useful in detecting tumour embolus, and in follow-up and management of the case.

II097/SOGD

Delayed Treatment of 5th Carpometacarpal Joint Dislocation in Association With 4th Metacarpal Fractures

Alphonsus Khin-Sze CHONG, Winston Yoon-Chong CHEW

Department of Orthopaedic Surgery, Tan Tock Seng Hospital, Singapore

Aim: Dislocations of the ulnar carpometacarpal joints (CMCJ) are rare injuries. The fourth and fifth joints are more commonly affected. The diagnosis is often not made initially due to subtle clinical and radiological findings. Treatment, particularly of late cases, is controversial. We review our experience in 2 such cases of fourth metacarpal shaft fractures with fifth carpometacarpal joint dislocation.

Methods: A review of 2 cases of fifth CMCJ dislocation occurring in association with fourth metacarpal fracture is presented. The clinical presentation, diagnosis, management, clinical and radiological outcomes are discussed.

Results: Both cases occurred in young males with indirect injury to the hand. In both cases, the fracture was diagnosed but the dislocation was initially overlooked. As a result, the treatment of the dislocation was delayed. Open reduction and stabilisation of the dislocation together with corrective osteotomy to the malunited fourth metacarpal shaft was performed in 1 case, and fusion of the hamatometacarpal joint done for the second. Both patients had satisfactory outcomes.

Conclusion: A high index of suspicion is required to diagnose an ulnar carpometacarpal dislocation. An obvious fracture may distract attention from a second more subtle injury. An indirect injury resulting in a solitary fracture of the non-border metacarpal should raise the suspicion of an associated injury at the carpometacarpal joint. The findings on initial clinical examination and radiographs are often subtle. A CT scan may be useful for diagnosis and surgical planning. With reduction and adequate stabilisation, a good outcome is expected. Fusion should be performed in delayed cases with significant articular surface damage.

II098/SOGD

Flap Reconstruction Following High Pressure Injection Injuries

Puhaindran ME, Alphonsus Khin-Sze CHONG, Winston Yoon-Chong CHEW

Department of Orthopaedic Surgery, Tan Tock Seng Hospital, Singapore

Aim: High pressure injection injuries are well known to cause significant injury to the hand, with high amputation rates and poor functional outcome. Traditionally, surgical treatment has consisted of early aggressive debridement followed by secondary closure. In more severe cases, the skin of the digit may also be damaged and may need to be debrided, leaving a large skin defect which cannot be closed directly. Flaps are one surgical option for closure of this defect. We reviewed the results of cases treated with flap reconstruction by this department over the past year.

Methods: A retrospective review of 3 cases performed over the past 1 year.

Results: Salvage of the affected digits with proper skin coverage was achieved. Functional outcome was still impaired, and worse for the patient who was non-compliant with hand rehabilitative therapy.

Conclusion: Flap coverage offers a good option for reconstruction after high pressure injection injuries of the hand and can increase the chance of digit salvage, as well as give an acceptable functional and cosmetic result.

II099/SOGD

Technique of Intra-articular Loop Wiring for Bony Fixation in Finger Replantation

Alphonsus Khin-Sze CHONG, Winston CHEW

Department of Orthopaedic Surgery, Tan Tock Seng Hospital, Singapore

Aim: Intraosseous loop wiring is 1 technique of bone fixation in finger replantation. It is relatively simple and fast to use and provides sufficient stability for early mobilisation. It is best used for injuries at the level of the mid-shaft. For injuries near the proximal interphalangeal joint, the traditional loop wiring is not suitable because there is insufficient bone to pass a second loop. An alternative method of fixation, usually involving transfixation of the joint is often required. We have modified the wiring technique to be used in such a situation. One loop of wire passes intraarticularly within the proximal interphalangeal joint (PIPJ), while the other loop passed perpendicular to it through the base of the bone.

Methods: A clinical and radiological review of 2 clinical cases of finger replantation where the modified technique is used to achieve bony fixation is presented.

Results: One patient had good preservation of the joint motion with the intraarticular wire passed between the condyles in the anteroposterior direction. The other had a limited range of motion at the PIPJ when the intraarticular wire was passed in the coronal plane across both condyles. Both fingers remained viable and no complications were seen. The implants were removed at 2 months.

Conclusion: This technique is a useful alternative for bony fixation in amputations around the PIPJ. In such situations, the traditional method of loop wiring cannot be applied. This modification is simple to perform and does not transfix the PIPJ. The replanted finger can be mobilised immediately after surgery which improves the outcome. Early removal of the wires is necessary.

II100/SOGD

Is Out of Hours Body CT Useful?

Eugene Mun Wai ONG, Poh Sun GOH, Lenny TAN

Department of Diagnostic Imaging, National University Hospital, Singapore

Aim: To assess the clinical impact of out of hours body CT.

Methods: Retrospective study of 50 consecutive patients who had out of hours body CT. Indications were grouped into 5 categories: trauma, sepsis, suspected pulmonary embolus, acute abdomen and others. These were then divided into positive (abnormal) scans and negative studies. Incidental relevant findings were analysed.

Results: 50% (25/50) of the scans were for trauma, 16% (8/50) for sepsis, 12% (6) for query pulmonary embolism, 12% (6) for acute abdomen and 10% (5) for other indications. Positive scans which impacted management were found in 60% (15/25) of trauma, 37.5% (3/8) of sepsis, 17% (1/6) of suspected pulmonary embolism, 17% (1/6) of acute abdomen and 20% (1/4) of other cases. Relevant incidental findings were noted in 20% (5/25) of trauma cases.

Conclusion: Out of hours body CT impacts management positively but needs to be used selectively.

II101/SOGD

Phenol Burns and Toxicity

Suresh PILLAI

Department of Emergency Medicine, National University Hospital, Singapore

Aim: To discuss the severe adverse effects of phenol, a corrosive aromatic alcohol used in industries, as well as present current concepts in the management of phenol burns and toxicity

Methods: A case report is discussed of a 44-year-old male who was splashed extensively by phenolic acid under pressure when the valve of the drum in which it was stored was accidentally released

Results: The patient sustained 33% severe second-degree partial thickness burns involving his face, trunk and limbs. This was complicated by ocular and respiratory burns; "dark urine" and subsequent acute renal failure; cardiac dysrhythmias and pneumonia. The patient recovered and was discharged after 18 days of hospitalisation

Conclusion: Although phenol is extremely corrosive and toxic with the potential to cause many complications as seen in this patient, with intensive supportive therapy patients can recover.

II102/SOGD

Diverticular Disease of the Colon in Singapore – An Epidemiological Study

Pak Leng POON¹, WY SIOW², A FOO¹, KK EE¹, DMO CHEONG¹

¹Department of General Surgery, Tan Tock Seng Hospital, Singapore, ²Department of Urology, Singapore General Hospital, Singapore

Aim: Diverticular disease of the colon demonstrates significant geographic and ethnic variation with regards to its prevalence and epidemiological profile. Although the disease is clinically significant in our local setting, updated local studies are lacking.

Methods: A retrospective review of 1698 consecutive barium enemas performed from January 2001 to August 2002 was conducted. Findings were assessed on their prevalence due to age, sex and racial characteristics.

Results: The overall prevalence of diverticular disease was 45.3%. Right-sided diverticular disease was more common than left-sided disease (60% vs 30%, $p < 0.05$). The prevalence of this condition increased with age, suggesting an acquired condition; but genetic factors may influence the site of development of the diverticuli. Gender distribution was equal in this study.

Conclusion: Diverticular disease of the colon in the Singapore population has a predisposition to right-sided distribution in contrast to the Western populations. Similar findings in other epidemiological studies on other Asian type populations suggest that genetic factors may influence the site of development of colonic diverticuli. In a clinical setting, an understanding of the prevalence and distribution of the disease would impact on the management of older patients presenting with right-sided abdominal symptoms.

II103/SOGD

Visual Outcome After Cataract Surgery in Diabetic Versus Non-Diabetic Patients and Also Visual Outcome of Phacoemulsification Versus Extracapsular Cataract Surgery in Diabetic Patients

Tze Chao WEE

Department of General Surgery, Singapore General Hospital, Singapore

Aim: To compare visual outcome after cataract surgery of non-diabetic versus diabetic eyes and phacoemulsification versus extracapsular cataract extraction in diabetic patients.

Methods: 198 eyes of 189 patients were recruited for a retrospective study over an 11-month period with a minimum of 6 weeks follow-up. Best Snellen acuity was used to measure post-operative visual acuity. Patients with other ocular pathologies except diabetic retinopathy were excluded. All required information were obtained from the case-notes. They were grouped based on diabetic status and surgical techniques (phacoemulsification or extra-capsular cataract extraction).

Results: 49.4% of diabetic eyes achieved a visual acuity of 6/9 or better compared to 75.2% of non-diabetic eyes ($p < 0.001$). 76.5% of diabetic eyes compared to 92.3% of non-diabetic eyes achieved a visual acuity of 6/12 or better ($p < 0.005$). 30 (60%) diabetic eyes with no retinopathy achieved a visual acuity of 6/9 or better compared with only 10 (32.3%) diabetic eyes with coexisting retinopathy ($p < 0.022$). 23 (54.8%) of diabetic eyes who underwent phacoemulsification had best post-operative visual acuity of 6/9 or better compared to 19 (48.7%) of eyes who underwent ECCE (extracapsular cataract extraction) ($p = 1.000$). 34 (81.0%) of diabetic eyes achieved best post-operative visual acuity of 6/12 or better after phacoemulsification compared to 33 (84.6%) after ECCE ($p = 0.793$).

Conclusion: Patients with diabetes mellitus tend to have worse post-operative visual acuity compared to normal patients. Diabetic patients with diabetic retinopathy have poorer post-operative visual acuity compared to diabetic patients without retinopathy. Phacoemulsification or ECCE did not statistically affect the post-operative visual outcome in diabetic patients.

II104/SOGD

Laparoscopic Radical Prostatectomy: Initial Experience and Perspective from an Asian Centre

James K TAN

Department of General Surgery, Tan Tock Seng Hospital, Singapore

Aim: To report the first 3 laparoscopic radical prostatectomy (LRP) done in Singapore, highlighting the hurdles and difficulties surmounted and comparing the results to reported Western and Japanese figures.

Methods: The first 3 LRP (Montsouris technique) done were reviewed critically with respect to the following: selection of cases, setting up of laparoscopic equipment, readiness of surgeons and assistants, operative approach, operative time, blood loss, hospital stay, post-operative recovery, functional recovery, final pathology and cancer control. Difficulties are noted and suggestions on improving operative time and outcome of future LRP are made.

Results: Average operative time was 9 hours. Average length of stay was 3 days. There was no intra-operative complications. Average blood loss was 400 mL. One patient had an anastomotic leak requiring catheterisation for 4 weeks. All 3 patients are continent. Results are comparable to initial American and recent Japanese series. Difficulties encountered included difficulty in identifying tissue planes, limited dexterity, intra-corporeal suturing and untrained scrub nurses and assistants. Suggestions to improving subsequent cases include training of assistants and scrub nurses with videos, training on simulators and using robot assistance.

Conclusion: Initiating a LRP programme in Asia is an uphill task. From an Asian perspective, the difficulties of performing an LRP are chiefly related to the lack of localised prostate cancer amenable to surgery. However, with the anticipated increasing number of prostate cancer and a stage migration towards early prostate cancer, more and more LRP will be done in the near future in Asia.

II105/SOGD

Strategies to Minimise Cost in Laparoscopic Appendectomy

Stephen Kin Yong CHANG, Daniel TAN

Department of General Surgery, Alexandra Hospital, Singapore

Aim: Laparoscopic appendectomy allows better exploration and lavage of the abdominal cavity, resulting in lower intra-abdominal abscess rates, better cosmesis and in some, reduction in hospital stay. However, it has not been widely practised as the use of certain instruments adds significantly to cost. In addition, laparoscopic expertise is required. In this review, the feasibility of using certain cost conserving techniques by a surgeon in advanced surgical training was assessed.

Methods: A personal review of 35 cases of laparoscopic appendectomy was conducted. The technique involves strategic placement of the 2 5-mm instrument ports; 1 at the suprapubic region well hidden by the pubic hair, the other at the right iliac fossa at the level of the umbilicus. Intracorporeal knot tying was used instead of the usual instrumentation such as stapling devices.

Results: Three minor complications were observed. One patient had subcutaneous emphysema around the right iliac fossa. The other 2 patients had umbilical port infection, which required only outpatient management. The cases with wound infection occurred in the group of patients where the appendix was delivered through the camera port without the use of an endobag. No infection was observed when a bag was used.

Conclusion: Laparoscopic appendectomy is a feasible technique for surgeons who have completed their basic surgical training. The use of certain technique allows cost to be kept at a minimum. The complications that were encountered in this experience are minor and mainly included superficial wound infection, which could have been avoided by modification in technique.

II106/SOGD

Virtual-Reality Model for Grading Surgical Dexterity in Suture Placement and Customisation of Needle Shape

Amitabha LAHIRI¹, Alphonsus KS CHONG¹, Beng Hai LIM¹, Tim POSTON², James RAPHEL²

¹Department of Hand and Reconstructive Microsurgery, National University Hospital, Singapore, ²Johns Hopkins Singapore, Singapore

Aim: To develop a virtual-reality model to compare dexterity in suture placement in individuals at various levels of surgical skill and analyse the performance with different needle shapes.

Methods: A virtual-reality model consisting of a horizontal membrane, 5 needle shapes and a needle holder was developed. Three standard needle shapes (2/8, 3/8, and 4/8 circles) were used. Two new needles were constructed incorporating a combination of curved and straight segments based on differential curvature of hand motion seen in suture placement. The exercise involved passing the needle through the membrane as in placing sutures using a robotic interface. The needle holder and needle were programmed to be weightless and the membrane was programmed without any mechanical resistance. All movements including physiological tremor from the subject could be faithfully represented. Surgically trained and untrained subjects were used to complete the exercise with normal and 5X magnification on the computer.

Results: Parameters were recorded and dexterity of the subjects in relation to each individual needle shape was analysed. The outcome is presented.

Conclusion: The precision of suture placement varies with the surgeon as well as on the shape of the needle for a given surgical task and indicates a need for needle shape customisation as opposed to usage of fixed radius needles.

II107/SOGD

Attitudes of Obstetricians and Gynaecologists in Singapore on Stem Cell Research and Cloning

KH TAN¹, C YAP², F GAO³

¹Department of Maternal Fetal Medicine, KK Women's and Children's Hospital, Singapore, ²Department of Obstetrics and Gynaecology, Singapore General Hospital, Singapore, ³Biostatistics Unit, Division of Clinical Trials and Epidemiological Sciences, National Cancer Centre, Singapore

Aim: Stem cell research is controversial and imposes complex challenges for many countries to balance the needs of science in advancing our understanding and treatment of serious diseases with moral, social and ethical concerns. This

survey studied the attitudes of obstetricians and gynaecologists in Singapore on stem cell research and cloning.

Methods: A postal survey of local practising obstetrics and gynaecology (O&G) specialists conducted in December 2001 through the Obstetrical & Gynaecological Society of Singapore.

Results: A total 62 (28.6%) of the 217 O&G specialists surveyed, responded within 3 weeks from the time of posting. The majority were in favour of animal cloning (71.0%), adult stem cell research (88.7%) and embryonic germ stem cell research (from aborted fetuses) (67.7%). Opinions were about equally divided with regards to embryonic stem (ES) cell research (early embryo <14 days) (46.8% in favour) and therapeutic cloning (50.0% in favour). Only a minority was in favour of reproductive cloning (8.1%). Conscientious objectors to participate in treatment to terminate pregnancy under Termination of Pregnancy Act were more conservative as were female O&G specialists. Senior specialists though more liberal in their views on most aspects, were conservative on reproductive cloning. Logistic regression analysis showed conscientious objector status was more influential than sex, seniority or race in determining the view on therapeutic cloning and embryonic stem cell research.

Conclusion: There was strong support for animal cloning and adult stem cell research but support for embryonic stem cell research and therapeutic cloning was equivocal. The majority were against reproductive cloning.

II108/SOGD

Successful Laparoscopic Treatment of an Abdominal Pregnancy in the Broad Ligament

Anthony SLOW¹, Bernard CHERN¹, Yvonne SOONG²

¹Minimally Invasive Surgery Unit, KK Women's & Children's Hospital, Singapore, ²General Obstetrics and Gynaecology, KK Women's & Children's Hospital, Singapore

Aim: Laparoscopic management of tubal ectopic pregnancy has been accepted as the method of choice in most centres. Approximately 1% of ectopic pregnancies are abdominal pregnancies and even rarer are pregnancies in the broad ligament. These are usually managed by laparotomy because of the presentation of acute abdomen or the risk of massive bleeding. We present a case report of laparoscopic treatment of a large 6.5-cm abdominal pregnancy in the broad ligament with focus on the surgical aspects that contributed to its success.

Methods: A 25-year-old lady in good health presented at 10 weeks amenorrhoea for routine antenatal care. An ectopic pregnancy was diagnosed on routine ultrasound. Laparoscopy was undertaken and an ectopic pregnancy in the broad ligament was removed. There were no intra-operative complications and the patient recovered well enough to be discharged on the second post-operative day.

Results and Conclusion: To our knowledge, this case is the first successful laparoscopic management of such a large (6.5-cm) abdominal pregnancy in the broad ligament. Contrary to the views held previously, we believe our case has illustrated that with appropriate patient selection, advancement in laparoscopic setup and skills, a multifaceted anticipatory approach to control bleeding, laparoscopic management of such an abdominal pregnancy is a viable alternative.

II109/SOGD

Endoscopic Assisted "Keyhole" Approach For the Clipping of Basilar Artery Aneurysms

Peter YK HWANG¹, Axel PERNECZKY², Luiz MADALOZZO²

¹Department of Neurosurgery, National Neuroscience Institute, Singapore, ²Department of Neurosurgery, Johannes-Gutenberg University, Mainz, Germany

Aim: Basilar artery aneurysms (BAA) are one of the most challenging lesions to treat in neurosurgery, due to their deep location, inaccessibility, and close proximity to many vital structures. Surgical techniques evolved require extensive skull base exposures and craniotomies for access. This paper seeks to demonstrate the feasibility of a minimally invasive approach.

Methods: All aneurysm patients who presented to the neurosurgery department since 1990 were analysed. Patients who had BAAs were selected for further study. Their case records, imaging studies, clinic records and video recordings

of their surgeries were carefully reviewed and analysed.

Results: 18 patients with BAA were successfully treated by an endoscopic assisted 'keyhole' approach via a 2-3cm supraorbital craniotomy. Their BAAs were well obliterated, and there were no procedure related complications. Because of the minimally invasive approach, their post-surgical recovery was also very rapid.

Conclusion: Endoscopic assisted 'keyhole' surgery is a valuable treatment option for BAAs, with less morbidity than conventional techniques.

II110/SOGD

A National Cytomegalovirus (CMV) Retinitis Screening Programme — Evaluation of Enrollment Criteria

Seo Wei LEO, Colin Siang Hui TAN, Vernon Khet Yau YONG, James Chuan Hsin PAN, Stephen Charn Beng TEOH, Tock Han LIM
Department of Ophthalmology, Tan Tock Seng Hospital, Singapore

Aim: To select the minimum subset of criteria for CMV retinitis screening.

Methods: HIV patients with any of the 4 criteria: visual complaints, CD4 <50 cells/microlitre, AIDS-defining illnesses, and CMV elsewhere were enrolled. Combinations of the 4 criteria were analysed.

Results: 14 of 341 screenings were positive. During this period, no CMV retinitis was reported outside this programme. With visual symptoms alone, workload reduced by 93.84%; sensitivity was 21.43%. Excluding the 4th criteria reduced workload by 5.28% but maintained 100% sensitivity.

Conclusion: 78.57% of CMV retinitis patients were asymptomatic. We propose using at least the first 3 criteria (visual complaints, CD4 <50 cells/microlitre and AIDS-defining illnesses) for screening.

II111/SOGD

Cytomegalovirus (CMV) Retinitis in Two Severely Immunocompromised Patients with Systemic Lupus Erythematosus (SLE)

Jocelyn Leng Leng CHUA¹, Stephen Charn Beng TEOH¹, Jong Jian LEE¹, Melissa C H TIEN², Tock Han LIM¹

¹Department of Ophthalmology, The Eye Institute, Tan Tock Seng Hospital, Singapore, ²Imperial College School of Medicine, University of London, UK

Aim: To describe 2 cases of CMV retinitis in SLE patients who were heavily immunosuppressed as a result of immunosuppressant therapy.

Methods: Case reports.

Results: The first patient with SLE and active lupus nephritis on mycophenolate mofetil developed right CMV retinitis which responded to weekly intravitreal ganciclovir injections and substitution with systemic prednisolone. The second patient with associated antiphospholipid syndrome (APS) treated with prolonged high-dose (60 mg/day) prednisolone developed CMV retinitis which responded to dose reduction without specific anti-CMV treatment.

Conclusion: Heavily immunosuppressed SLE patients who develop visual symptoms should be evaluated for CMV retinitis. Treatment options include immunotherapy dose reduction and/or specific anti-CMV treatment.

II112/SOGD

Telemedicine Screening for Cytomegalovirus (CMV) Retinitis using Digital Photography

Seo Wei LEO, Colin Siang Hui TAN, Vernon Khet Yau YONG, James Chuan Hsin PAN, Stephen Charn Beng TEOH, Tock Han LIM
Department of Ophthalmology, Tan Tock Seng Hospital, Singapore

Aim: To validate a telemedicine screening programme for CMV retinitis.

Methods: HIV patients with any 1 of the following 4 criteria: visual complaints, CD4 count <50 cells/microlitre, AIDS-defining illnesses and CMV elsewhere underwent digital photography using a Zeiss FF450 fundus camera with a Kodak DCS620 digital back. The 9 standard photography fields of 50° each were centred on the macula. Panoramic reconstruction was done and the images were captured in raw tiff format. They were read on a 21-inch Trinitron CRT by a qualified ophthalmologist. This was validated by indirect ophthalmoscopy done by another ophthalmologist.

Results: Of 682 eyes, 10 were unreadable. Of the remaining 672 eyes, 2.53% had CMV retinitis. Photographic screening was 100% sensitive and 99.84% specific. 1 eye with no CMV retinitis was read as suspicious due to an artefact.

Conclusion: Telemedicine screening for CMV retinitis is as sensitive and specific as indirect ophthalmoscopy.

II113/SOGD

Induced Corneal Changes Following Macular Translocation with Punctate Retinotomies and Choriocleral Infolding (Limited Macular Translocation)

James Chuan-Hsin PAN¹, Wee-Jin HENG², Kah-Guan AU EONG^{2,3}

¹Ophthalmology, Tan Tock Seng Hospital, Singapore, ²The Eye Institute, Tan Tock Seng Hospital, Singapore, ³The Eye Institute, Alexandra Hospital, Singapore

Aim: To report the sequential changes in corneal topography and astigmatism following macular translocation with punctate retinotomies and choriocleral infolding (limited macular translocation).

Methods: A 46-year-old-man who underwent limited macular translocation for idiopathic subfoveal choroidal neovascularisation in the right eye was evaluated by Orbscan (Bausch & Lomb, Rochester, New York, USA) topography and manifest refraction pre-operatively and serially for 1 year post-operatively.

Results: There was an increase in astigmatism corresponding to the area of choriocleral infolding which persisted for 1 year after surgery. Vector analysed astigmatic change showed significant surgically induced astigmatism of 2.18D @ 52.9 degrees, 2.17D @ 57.8 degrees and 2.56D @ 59.1 degrees at 2, 5 and 12 months after surgery.

Conclusion: Corneal changes are evident after limited macular translocation and may remain up to 1 year after the surgery.

II114/SOGD

Effectiveness of Cure of LED Curing Lights at Varying Cavity Depths

Mui Siang SOH, Adrian U Jin YAP

Department of Restorative Dentistry, National University of Singapore, Singapore

Aim: To compare the effectiveness of cure of 2 LED (light-emitting diodes) lights (Elipar FreeLight [FL], 3M-ESPE; GC e-Light [EL], GC) to conventional (Max [MX] (control), Dentsply-Caulk), high intensity (Elipar TriLight [TL], 3M-ESPE), and very high intensity (Astralix 10 [AS], Ivoclar Vivadent) halogen lights at varying cavity depths. Ten different light curing regimens including pulse (EL1), continuous (FL1, EL2, TL1), turbo (EL3, AS1) and soft-start (FL2, EL4, TL2) modes of various lights were also investigated.

Methods: The effectiveness of cure of the different modes was determined by measuring the top and bottom surface hardness (KHN) of 2, 3 and 4 mm thick composite (Z100, [3M-ESPE]) specimens using a digital microhardness tester (n = 5, load = 500 g; dwell time = 15 seconds). Results were analysed using ANOVA/Scheffe's post-hoc test and Independent Samples t-test (p <0.05).

Results: For all lights, effectiveness of cure was found to decrease with increase cavity depths. The mean hardness ratio for all curing lights at a depth of 2 mm was found to be greater than 0.80 (the accepted minimum standard). At 3 mm, all halogen lights produced hardness ratio greater than 0.80 but some LED light regimens did not; and at a depth of 4 mm, mean hardness ratio observed with all curing lights was found to be less than 0.80. Significant differences in top and bottom KHN values were observed between different curing regimens for the same light, and between LED and halogen lights.

Conclusion: The depth of composite cure with LED curing units was therefore light units and mode dependent.

II115/SOGD

Impact of Clinical Pathway in Subtotal Gastrectomy Cases

Jimmy Bok Yan SO¹, Lakshmi RAMANUJAM², Yoke Teen PANG³

¹Department of Surgery, National University Hospital, Singapore, ²Department of Medical Affairs, National University Hospital, Singapore, ³Department of Otolaryngology, National University Hospital, Singapore

Aim: We evaluated the effect on hospital cost and length of stay with the implementation of clinical care pathway for subtotal gastrectomy patients.

Methods: 9 patients undergoing subtotal gastrectomy were treated according to clinical pathway. The outcomes in terms of total length of stay, postoperative length of stay and cost were compared to 19 pilot patients treated before clinical pathways were implemented. All operations were performed by the same surgeon.

Results: 9 subtotal gastrectomy patients following the clinical pathway had a mean range of 3.22 days to remove the nasogastric tube, 4.22 days to return of bowel sound and 6 days to resume soft diet. Postoperative complications developed in 3 patients (pneumonia, chest atelectasis, wound infection). None were readmitted or underwent re-operation. The mean length of stay and hospital charges decreased from 14.9 days to 10.1 days and \$14,442 to \$12,164 per patient for patients on pathway vs pilot patients. The mean post-operative length of stay decreased from 12.3 days to 8.1 days ($P < 0.033$).

Conclusion: The results of the study showed that treating patients undergoing elective subtotal gastrectomy with clinical care pathway is associated with shorter hospital stay and reduced hospital cost.

II116/SOGD

The Novel Use of Autologous Fats Grafts to Improve Breast Reconstruction – Long-term Results

Maybelle Phui Shan TAN, Jane LIM, Margaret LEOW, Thiam Chye LIM
Department of Surgery, National University Hospital, Singapore

Aim: To follow-up and assess the long-term results in patients involved in a pilot study, where fat injections were used to improve breast contour, projection and symmetry after breast reconstruction.

Methods: Autologous fat is harvested via liposuction, using the tumescent technique under local anaesthetic in the outpatient clinic setting. This fat is then injected into areas of defect in the reconstructed breast to improve projection, minor contour defects and symmetry.

Results: The injected fat remained intact at the time of follow-up.

Conclusion: Fat autotransplantation can help improve aesthetic results following breast reconstruction. A permanent aesthetic result is possible in most patients.

II117/SOGD

Clinical Application of a Method of Anthropometric Measurement of the Female Breast

Maybelle Phui Shan TAN, Jane LIM, Thiam Chye LIM
Department of Surgery, National University Hospital, Singapore

Aim: The difficult physiognomy of the female breast can make preoperative and postoperative evaluation a challenge in clinical practice. A simple and easily reproducible, yet clinically applicable protocol is required to allow preoperative prediction of the desired breast shape and volume, following breast augmentation, reduction and reconstruction. Such a protocol also has a role in evaluating surgical results. Our unit presents such a protocol for the anthropometric measurement of breasts pre and postoperatively.

Methods: Anthropometric measurements are taken pre- and post-operatively of all women undergoing breast augmentation, reduction and reconstruction in our unit. Measurements of the breast itself, its landmarks and their position from fixed skeletal points are taken. Easily reproducible measurements from the midline are also taken, together with the patient's torso width at the nipple, armpit and intermammary fold.

Results: The most important clinical adaptation of this data was in accurately demonstrating asymmetry of the breasts in patients pre- and post-operatively. The results allowed objective assessment of surgical results following breast reduction and reconstruction, when the pre- and post-operative data were compared.

Conclusion: The data collected via this method allow us to accurately predict breast size post reconstruction following a mastectomy, as well as allow us to plan the appropriate surgery in breast augmentation and reduction, in achieving an aesthetically near-perfect breast.

II118/SOGD

Laparoscopic Intra-gastric Resection of Benign Stromal Tumour—Description of Technique and Review of Literature

Reyaz Moiz SINGAPOREWALLA, Haridas Ganesan BALADAS, Danial TAN

Department of Surgery, Alexandra Hospital, Singapore

Aim: Our aim was to study the feasibility of a combined laparoscopic-endoscopic minimally invasive technique for removal of a benign gastric stromal tumour located in the lesser curve close to the cardia.

Methods: A 52-year-old male presented with epigastric pain. A diagnostic gastroscopy showed a 3.8-cm smooth submucosal mass in the lesser curve close to the cardia. An EUS showed it to be well circumscribed and submucosal. A diagnostic laparoscopy was performed by creating an open pneumoperitoneum through the umbilicus. A gastroscope was then inserted and 3 ports were inserted transabdominally into the stomach after distending the lumen. The mucosa over the tumour was incised with diathermy and the tumour was enucleated by carefully peeling away the overlying mucosa and underlying muscle. An OGD snare was used to grasp the tumour and aid in retraction and final removal through the oral cavity. The gastric wall defect was closed intraluminally by laparoscopic suturing. Once haemostasis was secured, the 3 ports were removed and the stomach wall defects closed with continuous vicryl sutures. The stomach was tested for a leak intraoperatively.

Results: A gastrograffin study was done on the 3rd postoperative day and was found to be normal. The patient made an uneventful recovery and was discharged on the 5th postoperative day. The final histology was leiomyoma.

Conclusion: Our report supports existing literature on the feasibility of a minimally invasive combined technique for removal of gastric stromal tumours. Our technique is also safe for lesions located close to the cardia avoiding the need for any gastric resection.

II119/SOGD

Enhanced Potential of PCL Membrane for Tissue Engineering Periodontal Ligament

Ai Mei CHOU¹, Varawan SAE-LIM², Werner HUTMACHER DIETMAR³, Tit Meng LIM⁴

¹Department of Biological Sciences, National University of Singapore, Singapore, ²Department of Restorative Dentistry, National University of Singapore, Singapore, ³Division of Bioengineering, National University of Singapore, Singapore, ⁴Department of Orthopaedic Surgery, National University of Singapore, Singapore

Aim: One way to regenerate the periodontal ligament (PDL) involves the implantation of PDL cells in bioresorbable membranes and scaffolds into defect sites. Our previous study with membrane-scaffold double construct implanted subcutaneously into nude mice demonstrated promising results. In this study, we report 2 methods of culturing PDL *in vitro* as multi-layered cell sheets, and their characterisation on cell-permeable poly-caprolactone (PCL) membranes.

Methods: Cells derived from healthy PDL of human molars were seeded (10,000 cells/cm²) onto 2 sides of membrane, 8 to 10 μ m in thickness, perforations of 100 μ m in diameter. Membranes were then subjected to adherent and suspension culture methods.

Results: Cell attachment was visualised with phalloidin staining. Viability, metabolism and proliferation were monitored with FDA/PI, alamarBlue™ and dsDNA quantitation assays respectively. Protein expression was analysed via Western blotting. Preliminary results showed that cells expressed major ECM proteins such as collagen type I and III, fibronectin, osteonectin and osteopontin. Cell bridging across perforations was observed with the formation of integrated double-sided cell sheets.

Conclusion: This study indicated the potential application of a cell-permeable membrane in combination with cell sheet technology in the tissue-engineering of the PDL *in vitro*.