Abstracts

Abstracts of Theses Approved for the MMed at the School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kubang Kerian, Kelantan, Malaysia

A RANDOMISED CONTROLLED TRIAL COMPARING THE EFFECTIVE DOSE OF METFORMIN IN THE TREATMENT OF ANOVULATION IN POLYCYSTIC OVARIAN SYNDROME. A COMPARISON BETWEEN METFORMIN 500 MG TDS AND METFORMIN SR 850 MG BD

Dr Adzlina Jaaffar
MMed (O & G)

Department of Obstetrics and Gynaecology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Metformin had been used in the past 14 years for the treatment of polycystic ovarian syndrome in particular for menstrual regulation and ovulation induction. A number of reports have shown that metformin improved ovarian function. However, recent randomised clinical trials showed opposite findings. Nevertheless, while the debate continues, one factor has been overlooked: the dose and type of metformin preparation.

Objectives: The objective of the study was to evaluate the effectiveness of metformin SR 850 mg thrice daily (tds) in the treatment of anovulation in patients with polycystic ovarian syndrome in a randomised controlled study. The evaluation rate and the duration taken for ovulation in each treatment regime were assessed.

Methods: 40 patients were randomised: 20 received metformin SR 500 mg tds and another 20 received metformin SR 850 mg twice daily (bd). The patients were reviewed every 4 weeks; they were assessed for the presence of menstruation and side effects. Clinical examinations, which included measurement of weight, body mass index (BMI), waist–hip ratio (WHR), and Ferriman–Gallwey score, were performed. Blood investigations (follicular stimulating hormone, FSH; luteinising hormone, LH; testosterone; oestradiol; progesterone; and fasting lipid profile) were taken. Those who remained amenorrhoeic were required to continue with the same dose of metformin. If menses have not resume after an 8-weeks interval, bleeding will be induced medroxyprogesterone acetate. Success of treatment was considered in patients who had resumed their spontaneous normal menses and showed evidence of ovulation by a subsequent mid-luteal progesterone level of ≥ 30 nmol/L. Failure to resume menses after 24 weeks of starting treatment was considered as failure of treatment.

Results: Twenty patients received metformin SR 500 mg tds, and 17 patients received metformin SR 850 mg bd (3 patients from this group withdrew from the study). There were significant reductions in weight and BMI in patients who were on metformin SR 500 mg tds (P = 0.024, and P = 0.37, respectively). There were also an improvement in features of hyperandrogenism in this group, a significant decrease in mean testosterone level (P = 0.046), and a significant improvement in the Ferriman–Gellway score (P = 0.009). Low-density lipoprotein level also showed significant reduction (P = 0.047). No significant differences were observed in the clinical and biochemical profiles of patients in the metformin SR 850 mg group. All the patients in the metformin 500 mg resumed normal menstruation compared to 14 patients (82.4%) in the metformin SR 850 mg group; this difference was not statistically significant (P = 0.139). Out of the 20 patients who menstruated in the metformin 500 mg group, 6 (30.0%) had ovulation compared with 2 patients (11.8%) in the metformin SR 850 mg group. The difference in the ovulation rate was not statistically significant (P = 0.157). There was no significant difference between the duration taken for ovulation. There were 2 conceptions during the study, all of whom belonged to the metformin 500 mg group.

Conclusion: The slow-release preparation of metformin was less superior to the immediate-release 500 mg tds regime for clinical and biochemical improvements in patients with polycystic ovarian syndrome. There were no significant differences in the ovulation rate and the restoration of normal menstruation between the 2 treatment groups.

Supervisor:
Associate Professor Dr Nik Mohamed Zaki Nik Mahmood

ATTENUATION OF HAEMODYNAMIC RESPONSE DURING INTUBATION WITH GLIDESCOPE® VIDEOLARYNGOSCOPE USING EITHER LIGNOCAINE OR MAGNESIUM: A RANDOMISED CLINICAL STUDY

Dr Ahmad Afifi Mohd Arshad
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Intubation with GlideScope videolaryngoscope (GSVL) has been associated with longer period of pressor response.

Objectives: This study aimed to look at haemodynamic parameters (systolic blood pressure, SBP; diastolic blood pressure, DBP; heart rate, HR; mean arterial pressure MAP) during laryngoscopy and intubation using GSVL with either lignocaine or magnesium used to attenuate the

pressor response.

Methods: The study involved 82 patients planned for general anaesthesia with endotracheal intubation. They were blinded and randomised into 2 groups: lignocaine (A) and magnesium (B). The agents were given at 1.5 mg/kg and 40 mg/kg to group A and B, respectively, and each drug was diluted into 20 mL syringe and given intravenously over 5 minutes before induction. Inductions were standardised with intravenous propofol 2 mg/kg, intravenous fentanyl 1 μg/kg, and intravenous rocuronium 1 mg/kg. A single intubator with experience in GSVL performed the intubations. Haemodynamic parameters were collected at baseline, post-induction, at intubation, and 1, 3, 5, and 10 minutes post-intubation. The interactions of haemodynamic parameters within and between groups were tested with repeated measure ANCOVA.

Result: There were significant interaction between time during intubation and estimated marginal mean of DBP, MAP, and HR in both groups ($P < 0.05$). The changes in estimated mean DBP and MAP were constantly less than baseline value post-induction and intubation. However, the rise in HR at 1 minute post-intubation in magnesium group was 11% above baseline and required 5 minutes to return to baseline ($P < 0.05$). The interaction in SBP was not significant ($P > 0.05$).

Conclusion: Magnesium at 40 mg/kg is less effective than lignocaine in attenuating pressor response to intubation with GSVL.

Supervisor:
Professor Dr Kamarudin Jaalam
Co-supervisor:
Associate Professor Dr Wan Aasim Wan Adnan

STUDY OF COMPUTED TOMOGRAPHY PERFUSION IN TRAUMATIC CEREBRAL CONTUSION

Dr Ahmad Helmy Abdul Karim
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Head injury is listed as the 5th principle cause of death in the Ministry of Health's hospitals, with a percentage of 6.07% of the total death. The prevalence rate of cerebral contusion was recorded as 15.0%. Non-enchanted computed tomography (NECT) of the brain is a sensitive primary diagnosis tool in the evaluation of patients with head injury.

Objective: The study aimed to determine perfusion status of pericontusional hypodensity area and correlation with clinical outcome.

Methods: Ten patients involved in motor vehicle accidents who fulfilled the inclusion and exclusion criteria were enrolled in this sturdy, which was conducted from July 2007 to November 2007. NECT scan of the brain was done on admission to confirm the presence of contusion, and followed by computed tomography perfusion (CTP). The data were analysed at the computed tomography workstation. Pericontusion areas were divided into 4 sections in relation to distance from the skull. Distance and size of contusion were measured from NECT scan. The regions of interest were drawn based on hypodensity and CTP colour map. Each parameters of perfusion were produced by the perfusion software and analysed. CTP results were categorised as normal, ischaemia, or infarct. Clinical outcome was evaluated using Glasgow Outcome Scale after 6 weeks post-trauma.

Results: Significant Spearman's correlations at the 0.5 level (2-tailed) were found between the distance of the contusion from the nearest skull vault and the perfusion status in the pericontusional hypodensity area, between the size of pericontusional hypodensity area with the perfusion status in the hypodensity area of that distance, and between the size of pericontusional hypodensity and the size of pericontusional hypodensity among each region of interest.

Conclusion: CTP is a useful and appropriate method is evaluating perfusion of pericontusional hypodensity area. However, no correlation was found between perfusion and clinical outcome in this study due to the small sample size. Ischaemia was present in all pericontusional hypodensity area. This suggests the importance of doing CTP in managing the traumatic.

Supervisor:
Dr Win Mar @ Salmah Jalaluddin
Co-supervisor:
Dr Ab Rahman Izaini Ghani

CLINICAL EVALUATION OF 1-STEP QUALITATIVE HEART-SPECIFIC FATTY ACID–BINDING PROTEIN (H-FABP) TEST (CARDIODETRECT) AND QUANTITATIVE CARDIAC TROPONIN T FOR THE DIAGNOSIS OF ACUTE MYOCARDIAL INFARCTION IN THE EMERGENCY DEPARTMENT

Dr Ahmad Suhailan Mohamed
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Coronary artery disease is a major cause of morbidity and mortality in most part of the world, including Malaysia. Patient presenting with chest pain to the emergency department (ED) poses a diagnostic challenge, especially those with atypical symptoms and non-diagnostic electrocardiogram. Cardiac biomarkers may be invaluable in establishing the diagnosis of acute myocardial infarction infarction (AMI) in the ED setting. A promising cardiac biomarker called heart-specific fatty acid binding protein (H-FABP) has been

shown to be released earlier than cardiac troponins into bloodstream and is specific for myocardial necrosis. A recent qualitative point-of-care test kit CardioDetect has been development to detect H-FABP in the circulation.

Objective: The first objective of the study was to assess the diagnostic indices of the CardioDetect assay and the quantitative cardiac troponin T test in diagnosing AMI in the ED, according to the onset time of chest pain. Secondly, to assess for improvements in the diagnostic indices of CardioDetect test if it is repeated 1 hour after an initial negative result. Thirdly, to assess for improvements in the diagnostic indices of CardioDetect assay when used in combination with cardiac troponin T test, and lastly, to assess the inter-observer variability in interpreting results of CardioDetect test in the ED.

Methods: This study was a prospective cross-sectional study involving 80 eligible patients presenting with ischaemic-type chest pain who had symptoms within the last 36 hours. All patients were tested for H-FABP and troponin T at presentation to ED. The CardioDetect cut-off level for a positive detection of H-FABP was at 7 ng/mL. Quantitative troponin T was considered positive if its blood level exceeded 0.1 ng/mL. A repeated CardioDetect test was performed 1 hour after the initial negative result, and a repeated troponin T test was also performed 8–12 hours after an initial negative result. Based on pre-defined criteria, the attending physician made a final diagnosis and the patients were classified as having an AMI or non-AMI. The diagnostic indices (sensitivity, specificity, positive predictive value, negative predictive value, receiver operating curve) were analysed for CardioDetect and troponin T (individually and in combination), and also for the repeat CardioDetect test. Patients were categorised into 4 groups according to duration of chest pain. All diagnostic indices were determined for each test under consideration in all the 4 groups, at the following interval from the onset of chest pain: group 1 at 4 hours or less, group 2 at 4–12 hours, group 3 at 12–24 hours, group 4 after 24 hours. Data entry and analysis was performed using SPSS version 12.0 and Analyse-it software.

Results: The CardioDetect test was more sensitive and had a higher negative predictive value than troponin T test during the first 12 hours of onset of chest pain. The repeat CardioDetect had better sensitivity and negative predictive value than the initial CardioDetect, especially in group 1. The sensitivity and negative predictive value of the combination test (CardioDetect and troponin T) was also superior to the each test performed individually, especially in group 1. The combination test, however, was inferior to the troponin T test in terms of diagnostic accuracy in almost all time frames except for the first 4 hours of chest pain onset. The agreement between the 2 observers in reading the CardioDetect test and the repeated CardioDetect test was reasonably good.

Conclusion: CardioDetect test is more sensitive and has a better negative predictive value than troponin T during the first 12 hours of AMI. It may be used to rule out myocardial infarction during the early phase of ischaemic chest pain. Repeating the CardioDetect test 1 hour after an initial negative result does improve the diagnostic indices, especially during the first 4 hours after the onset of chest pain. The combination test of CardioDetect and troponin T should not be performed in all patients, but it may be useful in selected patients. Those who present with intermittent chest pain and are unsure or unable to recall the exact time of onset of chest pain may benefit from the combination test. The inter-observer agreement of CardioDetect test between the 2 observers was reasonably good. However, a comprehensive and continuous training should be incorporated to ensure accurate and proper interpretation of the CardioDetect test.

Supervisor:
Dr Nik Hisamuddin Nik Abdul Rahman

THE EVALUATION OF CLINICAL APPENDICITIS BY USING THREE DIFFERENT SCORING SYSTEMS AND THEIR ASSOCIATION WITH HISTOPATHOLOGY EXAMINATION IN ADULT SURGICAL PATIENTS: A PILOT STUDY IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Ahmad Zuraimi Zulkifli
MMed (General Surgery)

Department of Surgery
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Previously published articles mentioned about the difficulty to make an accurate diagnosis of appendicitis. Because of this, in some centres, the rates of negative appendicectomy are still high. Many supporting tools have been introduced to help in the diagnosis, such as scoring system and radiological laparoscopic examination.

Methods: This study was conducted on 56 patients who have been admitted to adult surgical wards at Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan, from August 2007 to October 2007, for suspected appendicitis. All patients were assessed during the admission and 4 hours after, using 3 scoring systems: Alvarado Scoring System, Teicher–Landa Scoring System, and Christian Scoring System. The point from each individual scoring system were recorded and compared with results from the histopathology examinations. The score from this study were based on the previous study on the individual scoring systems. From the previous study on Alvarado Score by Chen et al. in Singapore, the score of 7 and above was considered as most likely appendicitis, score of 5 and 6 as probably appendicitis, and score of 4 and below as unlikely appendicitis. For the Teicher–Landa scoring system, score of -3 and above was most likely appendicitis, and the score of -4 and below was unlikely appendicitis. As for Christian scoring system, the score of 3 was the cut-off points to determine appendicitis. Since appendicitis is a progressive disease, the 4-hour score were used in the study.

Results: The results from the study showed that the scoring system is helpful as a diagnostic tool to support the clinical and histopathology findings of appendicitis. By using scoring systems, the percentage of true appendicitis cases was 91.1%. The association between each scoring system with the histopathology examination was determined. Both Alvarado and Christian systems showed significant associations, with $P = 0.025$ and $P = 0.0017$, respectively. On the other hand, the association between Teicher–Landa scoring system and histopathological findings was not significant. The sensitivity of the scores was also determined, Christian scoring system was found to be the most sensitive test among the 3 systems.

Supervisor:
Associate Professor Dr Mohamad Ziyadi Ghazali

THE EFFECTS OF RENAL DYSFUNCTION ON PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFTING IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Ahmad Zuhdi Mamat
MMed (General Surgery)

Department of Surgery
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Chronic kidney disease (CKD) has been known to be a potent risk factor for cardiovascular-related death. It has been implicated in the adverse outcomes seen in patients after their coronary artery bypass grafting (CABG).

Objectives: The aim of this study was to evaluate the relationship between renal dysfunction and morbidity as well as mortality following CABG.

Methods: Records of 215 patients who underwent CABG between 1 January 2002 and 31 December 2005 at the Hospital Universiti Sains Malaysia, Kubang Kerian, were collected. These patients were divided into 2 groups according to their estimated glomerular filtration rate (GFR) using the Cockcroft–Gault formula. Estimated GFR of less than 60 mL/minute were grouped into the renal dysfunction, while GFR of more than 60 mL/minute were grouped as non-renal dysfunction. These retrospective data were analysed for its demographic and outcomes after the procedure, including the short- and long-term mortality rates.

Results: All 215 records representing 215 patients were successfully collected and analysed. Out of these patients, 117 (54.4%) had estimated GFR of less than 60 mL/minute and labelled as renal dysfunction group. This group of patient had a significantly lower body mass index, poorer pre-operative ejection fraction, and was older. There were also more incidences of diabetes mellitus and hypertension within this group ($P = 0.005$ and $P = 0.031$). Intra-operative data showed that the renal dysfunction group had shorter cross-clamp time ($P = 0.018$) and used up less cardioplegia ($P = 0.004$) during the bypass. Post-operative data analysis showed that patients with renal dysfunction had more chance of developing acute renal failure ($P < 0.001$) and arrhythmia ($P = 0.047$). A total 10 patients died within 30 days and 15 patients died within 3 years of CABG; however, there was no significant difference noted between the 2 groups.

Conclusion: More than half of these patients were shown to have some degree of renal dysfunction before their CABG. This study supported the evidences that pre-operative renal dysfunction, even when subclinical, is associated with the adverse outcomes seen post-CABG, especially acute renal failure and arrhythmia. The relationship between renal dysfunction and post-operative mortality, however, had failed to be demonstrated in this study, as compared with many other studies before. This is most probably due to the small number of patients and total mortality seen.

Supervisor:
Associate Professor Dr Mohamad Ziyadi Ghazali
Co-supervisor:
Dr Zulkarnain Hassan

THE ROLE OF PULSE WAVE VELOCITY AS A MARKER OF SEVERITY OF CORONARY ARTERY DISEASE (CAD) IN MALE PATIENTS IN A SINGLE CENTRE STUDY

Dr Ahmed Yahya Alarhabi
MSc (Clinical Sciences)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Coronary artery disease (CAD) is one of the most common diseases in the world today, causing 6.9 million global deaths each year, and it is the leading cause of premature death in developed countries. There are many risk factors associated with increased risk of CAD, such as smoking, age, diabetes mellitus, hypercholesterolaemia, and hypertension. The benefits of early diagnosis and prevention of CAD have stimulated a search for reliable, non-invasive methods of detection. One of the non-invasive tests to diagnose CAD is the detection of arterial stiffness by measuring pulse wave velocity using the SphygmoCor machine. This technique is valid, reproducible, and widely applied.

Objectives: The aims of this study were to determine the role of pulse wave velocity as a marker of the severity of CAD, as well as to determine the association between pulse wave velocity with other cardiovascular risk factors.

Methods: A cross-sectional study involving 92 patients undergoing coronary angiography in ICL, Hospital Universiti Sains Malaysia, for the assessment of suspected coronary artery disease was carried out. Arterial stiffness was assessed through left carotid–right femoral pulse wave velocity using automated SphygmoCor® machine.

Results: The results of this study showed that pulse wave velocity was higher in patients with CAD than in those without CAD (11.13 ms^{-1}, SD 0.91, versus 8.14 ms^{-1}, SD 1.25; $P < 0.001$). When the severity of CAD was expressed as single-, two-, and multiple-vessel diseases, there was a significant association between the severity of CAD and pulse wave velocity ($P < 0.05$). The significant independent risk factors of CAD were age and total cholesterol ($P < 0.05$), whereas smoking, body mass index, systolic blood pressure, diastolic blood pressure, and diabetes mellitus were not significant ($P > 0.05$). Pulse wave velocity differed significantly with different categorical severities of CAD, even when their age and total cholesterol were controlled ($P < 0.05$).

Conclusion: Pulse wave velocity is an independent and complementary cardiovascular risk factor. Measuring aortic stiffness should serve as a marker of end organ damage regarding the arterial system, indicating an increased risk for cardiovascular complications, and helps to identify patients at high risk of CAD, who may benefit from more aggressive diagnostic and therapeutic strategies.

Supervisor:
Dr Mohd Sapawi Mohamed
Co-supervisor:
Associate Professor Dr Zurkurnai Yusof

THE USE OF EARLY, MILD HYPOTHERMIA IN THE TREATMENT OF STABLE, SPONTANEOUS, SUPRATENTORIAL, INTRACEREBRAL HAEMORRHAGE

Dr Andrean Husin
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Haemorrhagic stroke or spontaneous intracerebral haemorrhage is a devastating condition that usually carries a poor prognosis, and the treatment options are limited. The use of therapeutic hypothermia in ischaemic stroke has been published with some encouraging, but not definite, results.

Objective: The study aimed to observe the effect of mild hypothermia in early post-haemorrhagic stroke patients with a stable condition, and to assessed stroke outcome score in 7, 30, and 90 days.

Methods: A prospective non-randomised study was performed involving a sample of confirmed haemorrhagic stroke patients presented at Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. The patients were between the ages of 18 to 80 years. Patients with haemorrhagic stroke that was confirmed on CT scan and did not undergo any surgical intervention (including ventriculostomy) were offered to be recruited into the study; those who consented underwent therapeutic hypothermia using an intravascular cooling catheter for 24 hours, followed by a period of slow rewarming, all conducted in an intensive care setting. Patients who did not consent to the procedure were given standard haemorrhagic stroke treatment and taken as control. All patients were assessed in 7, 30, and 90 days using National Institute of Health Stroke Scale and Modified Rankin Scale.

Results: A total of 24 patients were recruited. In the interventional arm, 6 patients were recruited; however, 2 of the patients died in the first week of the therapy. In the control arm, 18 patients were recruited; 3 died before the 90-day follow-up. There was statistically significant improvement of the Modified Rankin Scale score in the hypothermia group compared with the control group.

Conclusion: It can be concluded that the use of mild hypothermia is feasible and may be adjunctive to other treatment in the management of haemorrhagic stroke. However, due to the study limitation, we recommend a larger, multicentred trial to be done on early mild hypothermia treatment of haemorrhagic stroke.

Supervisor:
Professor Dr Jafri Malin Abdullah

ROLE OF REPEAT HEAD COMPUTED TOMOGRAPHY IN THE MANAGEMENT OF MILD TRAUMATIC BRAIN INJURY PATIENTS WITH A POSITIVE INITIAL HEAD CT

Dr Ashraf Sharifuddin
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The advent of computed tomography (CT) has revolutionised the approach to mild traumatic brain injured (MTBI) patients. CT scan has now become standard practice in the initial management of MTBI patients. Those with a positive initial head CT not requiring surgical intervention will be warded for continuous neurological observation. As a routine, a repeat head CT is frequently ordered within 24 to 48 hours, even without any clinical neurological deterioration in the patient's condition. The logic of this practice is questionable, as convincing evidence is lacking. Indiscriminate ordering of radiological tests puts a strain on the healthcare system, especially in Malaysia where less than 30 government hospitals nationwide are equipped with CT scans.

Objective: The objective of this study was to evaluate the role of routine repeat head CT in providing useful information that leads to a neurosurgical intervention in MTBI patients.

Methods: This was a prospective observational study of MTBI patients admitted to the Neurosurgical Ward,

Hospital Sultanah Aminah, Johor Bahru, from 1 June 2008 to 30 September 2009. A total of 279 patients who met the inclusion criteria were included in the study. MTBI is defined as Glasgow Coma Scale (GCS) of 13, 14, or 15, with at least one of the followings: head trauma with loss of consciousness lasting less than 30 minutes, GCS of 13 or more, post-traumatic amnesia lasting less than 24 hours, any mental alteration at time of injury, and/or any transient or persistent neurological signs. A head CT was considered positive if there was a suspicion or clear evidence of an intracranial pathology. The result of the first head CT were obtained from the radiological report from this hospital's radiologist, or, when not available, from the attending neurosurgeon's interpretation as documented in the case notes. The patient's demographic data, initial neurological examination findings, and biochemical analyses were documented. Neurological status was also documented until discharge. The results of the repeat head CT scan were obtained from the radiological report from the hospital's radiologist or from the attending neurosurgeon's notes. These were categorised as improved, unchanged, or worsened. Any other additional neuroradiologic imaging or neurosurgical interventions were noted until discharge.

Results: Patients were divided into 2 groups: those with unchanged or improving repeat head CT (n = 217) and those with a worsened repeat head CT (n = 62). A total of 31 patients received urgent surgical intervention after the repeat head CT was done. In all cases, neurological deterioration preceded and prompted an urgent repeat head CT. When the 62 patients with the worsened repeat head CT were compared with the other 217 patients, they were found to have significant statistical correlation with older age of 65 years old or above (P < 0.001), lower GCS on admission (P = 0.003), associated symptoms of headache (P = 0.019), multiple lesion on initial head CT (P = 0.001), haemoglobin levels on admission (P = 0.009), longer hospital stay (P < 0.001), higher mortality rate (P = 0.001), higher risk to undergo surgical intervention (P < 0.001), and higher risk for neurological deterioration (P < 0.001). There was no significant difference on gender, ethnic groups, mechanism of injury, other associated symptoms on admission, types of intracranial injury on initial head CT, types of skull fracture sustained, and International Normalized Ratio levels. On applying multiple logistic regression, 3 factors were found to independently predict a worse repeat head CT: aged 65 years old or above, GCS of less than 15 (13 or 14), and multiple lesions on initial head CT.

Conclusion: The role of a repeat head CT in MTBI patients with a positive initial head CT had been evaluated in this study. Without a clinical neurological deterioration, a repeat head CT did not change the surgical outcome of patients. Patients with a GCS of 13–15 can be easily observed and assessed in the neurosurgical ward; therefore, it is unnecessary to order a repeat head CT in all MTBI patients. Due vigilance is warranted in those with risk factors for a worsening repeat head CT.

Supervisor:
Dr Johari Siregar Adnan
Co-supervisor:
Dr Abdul Rahman Izaini Ghani

EFFECT OF EURYCOMA LONGIFOLIA JACK SUPPLEMENTATION ON RECREATIONAL ATHLETES' ENDURANCE RUNNING PERFORMANCE AND PHYSIOLOGICAL RESPONSES IN THE HEAT

Ayu Suzailiana Muhamad
MSc (Sport Sciences)

Sports Science Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: This study investigated the effects of Eurycoma longifolia Jack supplementation on recreational athletes' endurance running performance and physiological responses in the heat.

Methods: Nine healthy male recreational athletes (mean age of 23.3 years, SD 4.3; mean body weight of 69.2 kg, SD 9.6; mean VO_2max of 43.1 mL.kg^{-1}.min^{-1}, SD 6.6) were recruited for this study. In this double-blinded, placebo-controlled cross-over study, subjects completed 2 endurance running trials, performed on separate days, after either *Eurycoma longifolia* Jack (75 mg per capsule) or placebo supplementation. Two capsules per day of either *Eurycoma longifolia* Jack or placebo were taken for 7 days before and 1 hour prior to the experimental trial. On the trial day, after a 5-minute warm-up at 50% VO_2max, subjects were requested to run at 60% VO_2max for 60 minutes. This was immediately followed by a 20-minute time trial for determining endurance running performance. The experimental trials were carried out in the laboratory, where the temperature and relative humidity were kept at approximately 31 °C and 70%, respectively. Blood samples were taken before and after warm-up, and every 20 minutes time trial to determine haemoglobin concentration. At every 20 minutes during the trial, 3 mL.kg^{-1} body weight of cool water was given to the subjects.

Results: Study results showed that endurance running performance was not different statistically (P = 0.139) between Eurycoma longifolia Jack and placebo trials. Similarly, oxygen uptake, heart rate of perceived exertion, body weight changes, tympanic temperature, and haemoglobin concentration were not statistically different between trials.

Conclusion: A dosage of 150 mg per day of *Eurycoma longifolia* Jack for 7 days did not elicit beneficial effects on endurance running performance and physiological responses of recreational athletes in the heat.

Supervisor:
Dr Chen Chee Keong
Co-supervisor:
Associate Professor Dr Mohamed Rusli Abdullah
Dr Ooi Foong Kiew

COMPARISON BETWEEN SERUM LACTATE LEVELS AND LEUKOCYTE COUNTS AS PREDICTORS OF MORTALITY IN EMERGENCY DEPARTMENT PATIENTS WITH SEPSIS-INDUCED HYPOTENSION AND SEPTIC SHOCK

Dr Azlan Kamalludin
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Sepsis is a common problem precipitating admission to hospital, and it is the leading cause of death in Malaysia. In order to reduce the complications, early recognition, followed by rapid and accurate therapy, needs to be initiated. Recognising early stage of sepsis is difficult and challenging. Abnormal vital signs are late signs and do not correlate well with tissue hypoperfusion. Additional markers are sought to aid the early recognition, but little is known about risk-stratification biomarker in emergency department (ED) patient with sepsis. Leukocyte counts and lactate levels are possible candidates for use in the diagnosis of early stage sepsis. These measures are easily taken and evaluated in the emergency department.

Objective: In this study, we sought to determine whether serum lactate and leukocyte levels can be useful in predicting mortality in patients with sepsis-induced hypotension and septic shock.

Methods: This prospective cohort study was carried out in the ED of Hospital Universiti Sains Malaysia, a tertiary centre that received more than 50 000 patients in 2008. A total of 51 patients met enrolment criteria during the study period and 41 of them were included in the study. Inclusion criteria were patients 18 years old or above, diagnosed with either sepsis-induced hypotension or septic shock, and had investigated sepsis marker (blood lactate and leukocytes) measured. Other physiological variables were also measured in this study. Single reading of serum lactate and leukocyte counts taken before patients included in the study. The main outcome measure was 30-day mortality. Kaplan–Meier, Log-rank, and Cox's methods were used for statistical analysis using SPSS version 12.0.1.

Results: Out of the 41 patients, 61% were diagnosed to have sepsis-induced hypotension and 39% were diagnosed with septic shock. Twenty two (54%) deaths occurred within the 30 day follow up. Patient's mean distribution of age was 58.83, and most of the patients were in their 6th and 7th decades of life. The overall mean blood lactate level and leukocyte counts were 3.52 mmol/L (SD 2.29) and 11.37 × 10^9 cells/L (SD 6.38), respectively. A Cox Proportional Hazard Analysis revealed an increase in blood lactate levels in the ED was associated with an increased risk of death (B = 0.35, HR = 1.45, 95% CI 1.22, 1.73, $P < 0.001$). Leukocyte counts, however, do not show a significant association in predicting death in patients with sepsis induced hypotension and septic shock (B = −0.44, HR = 0.957, 95% CI 0.882, 1.039, $P = 0.295$).

Conclusion: In this cohort of ED patients with sepsis-induced hypotension and septic shock, our results support blood lactate level as a promising risk stratification tool when compared with leukocytes counts. The multivariate analysis showed that for every increment of lactate value of 1 mmol, the hazards of dying are expected to increase by 1.5 times ($P < 0.001$). Multicentre validation needs to be done before widespread implementation.

Supervisor:
Dr Nik Arif Nik Mohamed
Co-supervisor:
Dr Abu Yazid Md Noh

STUDY OF THE RELATIONSHIP OF VASCULAR PEDICLE WIDTH WITH CARDIOTHORACIC RATIO AND HAEMODYNAMIC DATA IN VENTILATED ICU PATIENTS

Dr Azura Sharena Yahaya
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Intravascular volume assessment is one of the main concerns in managing critically ill ventilated patients. Invasive haemodynamic monitoring is commonly used to assess the intravascular volume status. Due to its invasiveness and other related serious complications such as bacteraemia, endocarditis, and thrombogenesis, the non-invasive diagnostic testing has gained increase importance. Chest radiograph is the readily available and most common tool used in managing critically ill ventilated patients. It is one of the invasive methods in the determination of the intravascular volume status. However, due to subjectivity on interpreting chest radiograph, on objective measurement like vascular pedicle width (VPW) is used to assess intravascular volume.

Objectives: The study aimed to determine the relationship of VPW with the haemodynamic data (weight and central venous pressure, CVP) and the cardiothoracic ratio (CTR) in ventilated patients using supine portable chest radiograph.

Methods: A cross-sectional study was done from May 2006 until December 2006, involving 140 adult ventilated patients in the intensive care unit (ICU) and the Neuroscience ICU, Hospital Universiti Sains Malaysia. The haemodynamic data (weight and CVP) was read within 1 hour after the VPW. The VPW and CTR were measured by researcher in separated occasion without clinical data related to patients available.

Results: Out of 140 subjects, 73 were males and 67 were females; 122 (87%) were Malays and 18 (13%) were Chinese.

The mean age was 46.6 years old, and the mean weight was 62.6 kg. The mean value for VPW was 64.3 mm, and the mean value for CTR and CVP was 0.5 and 13.0 mmHg, respectively. There was significant relationship between weight with VPW ($P < 0.001$), CVP with VPW ($P < 0.001$), and CTR with VPW ($P < 0.001$). However, using the multiple linear regression analysis, it is found that only CTR has a significant relationship with VPW as compare to weight and CVP. The VPW was found to be the only association seen with pulmonary oedema among the study population ($P < 0.001$, multiple logistic regression analysis); an increase of VPW measurement of 0.17 mm heightened the risk of a patient having pulmonary oedema by 1.2 times ($P < 0.001$).

Conclusion: There was statically significant correlation seen between the weight, CVP, and CTR with the VPW. The most significant correlation was seen between CTR with VPW. The patients had 1.2 time higher risk of having pulmonary oedema with every 0.17-mm increase in the VPW measurement. The mean value of VPW was noted to be smaller compared with in previous studies. This result suggests that the cut-off VPW measurement used to differentiate between high, low, or normal intravascular volume could be smaller in our population body habitus.

Supervisor:
Dr Rohaizan Yunus
Co-supervisor:
Dr Rhendra Hardy Mohamad Zaini

COMPARISON OF 0.1% LEVOBUPIVACAINE + FENTANYL AND 0.1% ROPIVACAINE + FENTANYL INFUSION FOR LABOUR EPIDURAL ANALGAESIA

Dr Baharulhakim Said Daliman
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: The purpose of this study was to compare analgaesic efficacies of 0.1 % levobupivacaine + 2 µg/mL fentanyl and 0.1% ropivacaine + 2 µg/mL fentanyl infusion for labour epidural analgaesia.

Methods: A randomised double-blinded prospective study was conducted, involving a total of 144 parturients ASA 1-2, singleton healthy pregnancy (36–42 weeks' gestation) with vertex presentation. Patients were randomly assigned to receive either 0.1% levobupivacaine + 2 µg/mL fentanyl or 0.1% ropivacaine + 2 µg/mL fentanyl. We measured pain score (using visual analogue scale, VAS), intensity of motor block (using Bromage score), haemodynamic parameters, and labour outcome between the two groups. Pre-block VAS score (0–100), VAS score after 5, 10, 15, 20, 25, and 30 minutes from time 0, and VAS at the time of request for additional analgaesia (end time) were recorded. During the first 30 minutes after the completion of epidural injection, the systolic blood pressure, the highest sensory level to cold stimuli, and the maximum degree of motor block (based on a 0 to 3 of modified Bromage scale) were collected every 5 minutes. The duration of analgaesia was defined as the duration from time 0 to end time.

Results: There was no difference in the duration of analgaesia between the 2 groups. The degree of motor block was also indistinguishable. No difference in the serial systolic blood pressures was found.

Conclusion: As a conclusion, both 0.1% levobupivacaine + 2 µg/mL fentanyl and 0.1% ropivacaine + 2 µg/mL fentanyl can be used to induce epidural labour analgaesia effectively, without a difference in the duration of pain relief.

Supervisor:
Dr Saedah Ali

ANTI-INFLAMMATORY AND ANTIOXIDANT EFFECTS OF TUALANG HONEY IN ALKALI CHEMICAL INJURY ON THE EYES OF RABBITS

Dr Bashkaran Karuppannan
MMed (Ophthalmology)

Department of Ophthalmology
School of Medical Sciences, Universiti Sains Malaysia,
Health Campus, 16150 Kelantan, Malaysia

Introduction: Alkali chemical injury is one of the most devastating injuries to the eye. It results in permanent unilateral or bilateral visual impairment. Chemical eye injury is accompanied by an increase in the oxidative stress. Anti-inflammatory and antioxidant agents play a major role in the treatment of alkali chemical injuries.

Objectives: The objective of the study was to determine the anti-inflammatory (clinical and histopathological) and antioxidant effects (total antioxidant status and lipid peroxidation products) of Tualang honey versus conventional treatment in alkali chemical injury on the eyes of rabbits.

Methods: Alkali chemical injury was induced in the right cornea of 10 New Zealand white rabbits'. The rabbits were divided into 2 groups: group A was given conventional treatment and group B was treated with both topical and oral Tualang honey. Clinical features of the right eye were recorded at 12 hours, 24 hours, 72 hours, day 5, and day 7. The histopathological findings of the right corneas of all rabbits were also evaluated on day 7. The total antioxidant status and the level of lipid peroxidation products in the aqueous humour, vitreous humour, and serum at day 7 were estimated biochemically.

Results: There was no statistically significant difference in clinical inflammatory features ($P > 0.05$) between honey-treated and conventionally treated groups at different times of examination. There was also no significant difference in the total antioxidant status as well as the level of lipid peroxidation products in the aqueous humour ($P = 0.117$ and $P = 0.382$,

respectively), the vitreous humour (P = 0.917 and P = 0.248, respectively), and the serum (P = 0.917 and P = 0.332, respectively) between honey-treated and the conventionally treated groups.

Conclusion: Tualang honey has almost the equal effects when compared with the conventional treatment in treating alkali chemical injury on rabbit's eye. Future research with more number of rabbits and control group is warranted to explore the anti-inflammatory and antioxidant effects of Tualang honey.

Supervisor:
Dr Zunaina Embong
Co-supervisors:
Associate Professor Dr Siti Amrah Sulaiman
Associate Professor Dr KNS Sirajudeen
Dr Venkatesh Naik

OUTCOME STUDY ON GLUCOSAMINE SULPHATE AS SYMPTOM-MODIFYING TREATMENT IN KNEE OSTEOARTHRITIS

Dr Bea Kia Chuang
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Glucosamine sulphate is the sulphate derivative of the natural amino monosaccharide, glucosamine, a constituent of glycosaminologlycans in the cartilage matrix and synovial fluid. It is commonly used in osteoarthritis. Unfortunately, despite multiple controlled clinical trials of the use of glucosamine in osteoarthritis (mainly of the knee), controversy of efficacy related to the symptomatic improvement continues. Differences in results originate from the differences in the products, study designs, and study populations.

Objectives: The study aimed to evaluate the symptomatic outcome of patients treated with glucosamine sulphate in the management of knee osteoarthritis at Hospital Universiti Sains Malaysia, and the possible adverse effect of glucosamine treatment in the study population.

Methods: A cohort study was carried out from 1 December 2007 to 31 March 2008, involving 69 patients with knee osteoarthritis in the Orthopaedic Clinic of Hospital Universiti Sains Malaysia and Hospital Taiping. Out of the 69 patients, 34 (from Hospital Universiti Sains Malaysia) were prescribed glucosamine sulphate (1500 mg per day), whereas 35 (from Hospital Taiping) were selected as the control group. Rescue analgaesia was prescribed only when necessary. Socio-demographic characteristics of patients were documented. The primary outcome was measured using algofunctional Knee Injury and Osteoarthritis Outcome Score (KOOS) questionnaire. The difference of the analgaesic usage was evaluated.

Result: The algofunctional KOOS and all sub scores (pain, other symptoms, quality of life, function in daily activities) except sport/recreation improved with time (P < 0.001) in the glucosamine group. In the between-group comparison, the glucosamine group showed improvement in pain, other symptoms, quality of life, and function in daily activities sub scores (P values ranged < 0.001–0.026). We found that 53% patients in glucosamine group consumed less analgaesic, but the difference was not statistically significant (P = 0.187). The adverse effects of glucosamine supplementation were minor, mostly in the form of mild gastrointestinal symptoms.

Conclusion: The results suggest that glucosamine supplementation can provide some degree of pain relief and improved function in patients with knee osteoarthritis. Usage of analgaesic may be reduced with glucosamine treatment. At a dosage of 1500 mg per day, the adverse incidence was minimal.

Supervisor:
Dr Abdul Nawfar Sadagatullah

A PROSPECTIVE OBSERVATIONAL STUDY IN THE USE OF END-TIDAL CARBON DIOXIDE MONITORING IN PATIENTS WITH SHOCK IN THE EMERGENCY DEPARTMENT

Dr Cheah Phee Kheng
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Shock is the main presentation of many diseases presented to the emergency department (ED). Mortality remains high even with the advancing treatment and management of shock.

Objective: The study aimed to determine the usefulness of end tidal carbon dioxide ($ETCO_2$) monitoring in shock patients presenting to ED.

Methods: This was a prospective observational study in a tertiary ED involving 103 adults, with mean (SD) age of 54.07 years (17.58), who presented with shock. They were grouped according to different types of shock such as hypovolaemic, cardiogenic, septic, and others. Vital signs and $ETCO_2$ was measured on presentation and at 30-minute intervals for up to 120 minutes. Blood gases and serum lactate were obtained on arrival. The patient was managed according to standard protocols and treatment regimes. Patient survival up to hospital admission and at 30 days was recorded.

Results: Mean $ETCO_2$ for all patients on arrival was 29.07 mmHg (SD 7.39). Average $ETCO_2$ for patients in hypovolaemic, cardiogenic, and septic shock was 29.64 mmHg (SD 11.49), 28.60 mmHg (SD 9.87), and 27.81 mmHg (SD 7.39), respectively. $ETCO_2$ on arrival was

correlated with systolic and diastolic blood pressures, mean arterial pressure, pulse rate, respiratory rate, haemoglobin oxygen saturation (SpO_2), partial pressure of carbon dioxide in arterial blood ($PaCO_2$), bicarbonate, base excess, and lactate when analysed against all shock patients. Correlation with $PaCO_2$, base excess, bicarbonate, and serum lactate was seen in all shock groups when analysed separately. Only minimal $ETCO_2$ difference was seen among the various types of shock. Early $ETCO_2$ measurement were found to be significantly lower in patients who did not survive to hospital admission (P = 0.005). Early measurement of diastolic blood pressure (P = 0.043), bicarbonate (P = 0.046), base excess (P = 0.038), and serum lactate (P = 0.007) also showed significantly difference. All patients who had $ETCO_2$ of 12 mmHg or less died in ED. However, normal $ETCO_2$ does not ensure patient's survival.

Conclusion: Monitoring $ETCO_2$ in the ED is a useful non-invasive way to gain additional information about the patient in shock. It is well-correlated with traditional shock markers such as systolic and diastolic blood pressure, mean arterial pressure, pulse rate, respiratory rate, SpO_2, $PaCO_2$, bicarbonate, base excess, and lactate.

Supervisor:
Associate Professor Dr Nik Hisamuddin Nik Abdul Rahman
Co-supervisor:
Dr Tuan Hairulnizam Tuan Kamauzaman

MYOFASCIAL PAIN SYNDROME AMONG CHRONIC BACK PAIN PATIENTS: PREVALENCE, RISK FACTORS, AND OUTCOME

Dr Chen Chee Kean
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Myofascial pain syndrome is often overlooked in clinical settings owing to lack of awareness among clinicians. It is treatable but has received less attention as a major cause of pain and dysfunction among back pain patients. Thus, it is often under diagnosed and under treated.

Objective: The study aimed to determine the prevalence, the risk factors, and the outcome of patients with myofascial pain syndrome among chronic back pain patients.

Methods: A retrospective records review involving 126 patients attending Pain Management Unit for chronic back pain management between 1 January and 31 December 2008 was conducted.

Results: It was found that the prevalence of myofascial pain syndrome among chronic back pain sufferers was significantly high, with female gender as a significant risk factor. Secondary myofascial pain syndrome was observed in majority of the patients. Myofascial pain syndrome was found to be the main pain generator in more than half of all secondary myofascial pain syndrome patients. The outcome of patients with this syndrome was favourable once proper diagnosis and expert management were provided.

Supervisor:
Dr Nizar Abd Jalil

PERFORMANCE OF OSTEOPOROSIS SELF-ASSESSMENT TOOL FOR ASIAN (OSTA) FOR PRIMARY OSTEOPOROSIS IN POST-MENOPAUSAL MALAY WOMEN IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Darhaysyam Al Jefri Mohamed Muslim
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Osteoporosis, a major cause of morbidity and mortality in post-menopausal women, causes increase susceptibility to fragility fractures. Effective treatment for osteoporosis is now available. There is interest in identifying high-risk individuals to target therapeutic intervention. Dual energy X-ray absorptiometry (DEXA) is the gold-standard investigation in diagnosing osteoporosis. However, it is expensive and not widely available. The Osteoporosis Self-Assessment Tool for Asians (OSTA) had been developed to identify high-risk women; it is a simple test based on age and weight. OSTA can be used as a screening tool to identify high-risk patients who would benefit from bone mineral density measurement. OSTA score is calculated by subtracting age from weight and multiplying the difference by 0.2. It was develop based on data of 860 women from 8 Asian countries, including Malaysia. However, most of the respondents were Chinese (59%).

Objective: This prospective cross-sectional study aimed to evaluate the performance of OSTA among post-menopausal Malay women and to identify risk factors associated with osteoporosis.

Methods: 152 post-menopausal Malay women were sequentially recruited during the 1-year period. Data on demography and risk factors were collected. DEXA scan were performed on all respondents.

Results: In post-menopausal Malay women, OSTA score was able to predict patients at risk of osteoporosis based on bone mineral density measurements at the proximal femur. OSTA had a sensitivity of 87.5%, specificity of 95.8%, positive predictive value of 0.538, negative predictive value of 0.993, and area under the receiver operating characteristic curve of 0.895. Osteoporosis were associated with increased age, duration since menopause, as well as lower weight, height, body mass index, and OSTA score (P < 0.001). The prevalence of osteoporosis was 5.1%.

Conclusion: The use of OSTA in post-menopausal

Malay women is effective; the assessment has a high sensitivity and specificity. OSTA would enable prudent use of limited resources by avoiding excluding bone mineral density measurements in women with low risk of osteoporosis, and concentrating diagnostic and therapeutic modalities in high-risk women.

Supervisor:
Dr Ahmad Sallehuddin Yaacob
Co-supervisor:
Dr Mohd Ezani Aziz

A RECORD REVIEW STUDY ON THE SUCCESSFULNESS OF RADIOIODINE ABLATION IN POST-OPERATIVE WELL-DIFFERENTIATED THYROID CARCINOMA PATIENTS USING 100 MCI OF ^{131}I IN HUSM

Dr Ellyda Muhammed Nordin
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Well-differentiated thyroid carcinoma is curable when discovered at an early stage. Post-operative radioiodine ablation is very useful. Its management, however, is often a challenge because there have been no prospective randomised trials and the optimal dose for successful single ablation is still a controversy. However, many published data showed a single high dose ablation had statistically significant results in the treatment of post-operative well-differentiated thyroid carcinoma.

Objectives: The objectives of this study were to determine the prevalence of success of single dose of radioiodine ablation using 100 mCi of ^{131}I, to correlate successful ablation with other factors, and to determine the prevalence of patients who developed distant metastases after ablation therapy.

Methods: This record review study involved patients' records of over a period 10 years (1 January 1997 until 31 December 2007). A total of 214 samples that fulfilled the inclusion criteria were studied. The attached formal reported result of the first whole body scan and related associated factors were reviewed, and the required data were retrieved and studied by main researcher.

Result: The prevalence of successful ablation in our population was 54.2%, which is slightly lower than that reviewed in published data from other countries. The total thyroidectomy was found to be the only significant associated factor in this study. The prevalence of patients who developed metastases after initial ablation was 23.8%, with lymph node being the most common site of metastases.

Conclusion: In this study, we conclude that the present ablative dose of 100 mCi is effective in the treatment of well-differentiated thyroid carcinoma remnants. We also found that only the type of thyroid surgery had a significant association with the outcome of radioiodine ablation.

Supervisor:
Associate Professor Dr Meera Mohaideen Abd Kareem

GASTROINTESTINAL STROMAL TUMOUR (GIST)—A CLINICOPATHOLOGICAL ANALYSIS OF CASES IN HUSM

Dr Fadhli Mustaffa
MPath (Anatomic Pathology)

Department of Pathology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Gastrointestinal stromal tumour (GIST) is a rare but the most common mesenchymal tumour in the gastrointestinal tract, and it arises from the interstitial cell of Cajal. The most important advance in the study of GIST is the discovery that the overwhelming majority of GIST are accompanied by activating mutations of *c-kit* (a gene belonging to the tyrosine kinase receptor family), which in turn leads to its detection at the immunohistochemical level with CD117. This has provided a very useful tool for the confirmation of the diagnosis of GIST. Another important marker, CD34, also plays a role in supporting the diagnosis of GIST.

Objective: The aim of this study was to evaluate the clinicopathological features of patients with GIST diagnosed in Hospital Universiti Sains Malaysia.

Methods: This is a cross-sectional study in which information obtained from patients who have been diagnosed with GIST in Hospital Universiti Sains Malaysia from October 1993 until October 2008. During this period, 37 patients were identified. Tissue blocks and stained slides were retrieved, and the case files were studied.

Results: Out of the 37 cases, only 28 with sufficient data for analysis were included. Only paraffin blocks from 18 cases were available for recut and staining, while in the remaining 10 cases, the histopathological data were based on the previous report and stained slides. In these 28 cases, 25 were Malays and 3 were Chinese; 13 were males and 15 were females. The mean age was 54.07 years. The most common clinical presentation was abdominal pain (10 cases), followed by upper gastrointestinal bleed and abdominal mass (7 cases each), altered bowel habit (3 cases), and intestinal obstruction (1 case). The primary site of the tumour was stomach (13 cases), followed by small intestine (8 cases), large intestine (6 cases), and 1 case with undetermined primary site. The tumour size varied from more than 100 mm (9 cases) to 51–100 mm (10 cases) and 20–50 mm (9 cases). The histopathological examination displayed spindle cell pattern in 27 cases and epithelioid pattern in 1 case. Immunohistochemical stain showed 25 out of 28 cases were positive for CD117. From the

25 CD117-positive cases, 16 showed co-expression of CD34 and 9 did not. In 3 cases, CD34 immunohistochemical stain was not done as paraffin blocks were exhausted. Staining for S100 and SMA (smooth muscle actin) were also done to see their differentiation into either neuronal, muscle or none of both. Neuronal differentiation only (positivity only for S100) was seen in 5 cases. Both neuronal and muscle differentiations (positive for both S100 and SMA) were seen in 2 cases, and 20 cases were negative of both. One case was positive for S100, but SMA staining was not done due to unavailable tissue block. Eleven cases had metastasis during presentation, while 3 cases had recurrence during follow-up after complete resection. Based on US National Institute of Health's guidelines, 82.1% of the patients are classified into the high risk group, 7.2% into the intermediate risk group, and 10.7% in the low risk group. Three patients died; 2 of them who presented with peritonitis died after laparotomy and biopsy within 3 days. Another patient had advanced disease with nodules in the liver and died after laparotomy and biopsy 37 days from the date of admission. 15 patients are still alive and are under follow-up. The remaining 10 cases were lost to follow -p.

Conclusion: The Hospital Universiti Sains Malaysia's experience of 28 cases of GIST shows that patients presented with a wide range of age and symptoms. The majority of the patients fall into the high-risk group, based on US National Institute of Health's guidelines. Most of the tumours were located in the stomach, and more than half of the tumours showed CD34 expression. Five cases showed neuronal differentiation only, and 20 cases did not show either neuronal or muscle differentiation. There was an association between CD34 expression and location of tumour. There was no association between CD34, tumour location, tumour size, and number of mitosis with metastasis and recurrence of the tumour.

Supervisor:
Associate Professor Dr Mutum Samarendra Singh

A COMPARATIVE STUDY OF TUALANG HONEY HYDROGEL WITH SAFECARE HYDROGEL DRESSING IN THE TREATMENT OF SPLIT-SKIN GRAFT DONOR SITES

Dr Farrah Hani Imran
MSurg (Plastic Surgery)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: An ideal wound dressing should have several key attributes: it should be able to protect the wound from infection, to control evaporative water loss and prevent dehydration, to control permeability of oxygen and carbon dioxide, to absorb wound exudate, and to enhance wound healing. Additionally, it should be composed of materials that are non-toxic, non-immunogenic, flexible, durable, and comfortable when worn, pleasant in touch and painless in removal, with high elasticity but good mechanical strength. The healing properties of honey have recently gained recognition from the scientific community. Honey accelerates wound healing whether applied topically or administered systemically. Therapeutic effects of honey have been found in burn treatment; it promotes rapid healing of wounds with less scarring. Investigations have shown that honey is more effective than other natural and synthetic products in the management of burn wounds. In addition, honey is non-irritant, non-toxic, easily available, and inexpensive.

Objectives: The study was undertaken to compare the healing effects of 2 dressing materials on split skin graft donor sites.

Methods: This end-point blinded study was conducted from May 2008 to October 2009 in Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan, involving 70 patients who met the following criteria: aged 13–65 years, admitted for skin grafting procedure with donor sites restricted to only a single site, either the inner arm or thigh, and maximal length of the split skin graft donor wound of 25 cm (25 x 25 cm^2). Immunocompromised patients, those with major systemic illness, those with an ASA score of III or more, and those who previously had a skin graft taken from the intended donor sites and donor site depths that are either too thin or too thick were excluded from the study. The patients were randomly allocated into 2 groups and assigned to a dressing regime of either Honey Hydrogel (n = 35) or Safecare Hydrogel (n = 35). The graft was harvested with a dermatome or Humby knife either under local, regional, or general anaesthesia aiming to take a medium thickness graft (0.012–0.018 mm), as judged by the appearance of the donor bed. Haemostasis of the donor site was achieved with topical Adrenaline (1:200 000). The wound was then cleaned with normal saline prior to application of the assigned dressing. An occlusive dressing technique using Hypafix® or Micropore® adhesive tape was employed for both the dressing materials. The patients were followed-up on post-operative day 10, 15, and 20. Donor site wound assessments and photodocumentation were performed at the time of dressing change.

Results: All the donor site wounds were healed by post-operative day 20. Combining the honey with hydrogel created a wound-healing environment that appeared to meet the criteria set forth above for ideal wound dressing. First, no signs of bacterial infection were apparent during gross examination of the wounds, suggesting that the materials effectively protected the wound from bacterial infection. Second, the wounds were moist and hydrated, demonstrating that evaporative water loss and wound dehydration had been prevented. Third, the honey component provided a pleasant odour, which was noted as helpful in the overall healing process of the patient and the caregivers. Fourth, the rate of healing was faster in the Honey Hydrogel group, although all wounds eventually healed. Finally, the acceleration of re-epithelialisation by Honey Hydrogel indicated an enhancement of the overall

healing process.

Conclusion: We compared the wound healing rates and pain scale of the 2 dressings and found that wounds healed faster and with less pain in the Honey Hydrogel group. Honey, as a topical agent, does not adhere to the surface. In comparison to a plain hydrogel sheet, it promotes fast re-epithelialisation and decreases inflammatory reaction. In addition, Honey Hydrogel is cost effective because it shortens the duration of treatment. The honey may play a positive role in modulating wound healing when incorporated into the hydrogel matrix.

Supervisor:
Professor Dr Ahmad Sukari Halim

DIAGNOSTIC VALUE OF PHYSICAL EXAMINATION IN CHILDREN WITH MILD HEAD INJURY IN COMPARISON WITH COMPUTED TOMOGRAPHIC FINDINGS

Dr Farizal Fadzil
MSurg (Neurosurgery)

Department of
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Mild head injury in children results in a large number of radiological evaluation and hospital admissions each year globally. Although some guidelines and proposals have been made in this area, there is still a great deal of controversy surrounding patients with a brief loss of consciousness (LOC) and Glasgow Coma Scale (GCS) scores of 13–15. Recent studies have indicated that avoiding head computed tomography (CT) scans in patients with LOC and a GCS score of 15 may be possible.

Objectives: The objective of this study was to determine the diagnostic value of physical examination for positive CT scan findings in children with mild head injury (GCS score 13–15) and with LOC or amnesia. From the result, the sensitivity, specificity, and predictive values of a normal physical examination after mild head injury and LOC were also analysed.

Methods: A retrospective medical-record review was conducted involving patients aged 1 to 12 years old who were evaluated for mild head injury with LOC or amnesia at the emergency department of Kuala Lumpur General Hospital between January 2007 and June 2009. Subjects who met the inclusion criteria were selected for the study, and the following data were recorded in a pro forma: age, gender, mechanism of injury, GCS on arrival, presenting symptoms, physical signs, head CT results, and further management of the subjects. The estimations of prevalence, sensitivity, specificity, positive predictive value, and negative predictive value were calculated, along with 95% confidence interval limits, using the Wilson score method. The agreement between physical examination and brain CT in children with mild head injury and with LOC or amnesia was calculated using Kappa test.

Results: A total of 225 patients were included in the study; 63% of these patients were males, and 37% were females. Out of 44 patients (19.56%) with positive scan finding, 17 patients (7.56%) showed normal physical examination. Fifteen patients (6.7%) underwent neurosurgical intervention. For intracranial traumatic CT findings, sensitivity and specificity were 61.36% and 60.22%, respectively. The agreement between physical examination and CT scan was found to be $\kappa = 0.147$ ($P < 0.05$, 95% CI 0.035 to 0.259).

Conclusion: The present study showed that physical examination was significantly associated with positive CT scan finding ($P = 0.01$). However, on further assessment of CT's predictive ability of a normal physical examination as well as the finding's unacceptably low sensitivity and specificity, a conclusion was made that intracranial pathology in children with minor head injury and having LOC or amnesia cannot be excluded based on physical examination alone. The κ value calculated only showed a slight agreement between these 2 variables.

Supervisor:
Dr Mohammed Saffari Mohammed Haspani

STANDARD PRECAUTIONS: KNOWLEDGE, ATTITUDE, AND PRACTICE AMONG HEALTHCARE PERSONNEL IN EMERGENCY DEPARTMENT, HOSPITALS IN KELANTAN

Dr Fauzi Che Hussin
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: This study was done to determine the level of knowledge, attitude, and practice of standard precaution among various group of healthcare personnel in the emergency department of 4 selected hospitals in Kelantan, namely Hospital Universiti Sains Malaysia, Hospital Raja Perempuan Zainab II, Hospital Kuala Krai, and Hospital Tanah Merah. Validation of the questionnaire was done in March 2009.

Methods: A cross-sectional study was done for a period of 1 month, from 1 June 2009 until 30 June 2009, by using a self-reported questionnaire. The questionnaires were distributed to all healthcare personnel in 4 selected emergency departments/units. All healthcare personnel in emergency department at the time of data collection were included in the study, including those who were doing attachment or elective posting. The 5 groups of healthcare personnel were medical officers, assistant medical officers, staff nurses, assistant or community nurses, and health attendants.

Results: There were 199 healthcare personnel involved in this study. From this study, the level of good knowledge

was represented by 115 participants (57.8%), the level of good attitude was represented by 124 participants (62.3%), and the level of good practice was represented by 112 participants (56.3%). Comparison of mean knowledge, attitude, and practice level among various groups of healthcare personnel was done using Kruskal–Wallis test. Significant difference was observed between the groups of personnel for the mean comparison of knowledge and attitude ($P < 0.001$ each). Post-hoc analysis for comparison of mean of knowledge revealed significant difference between medical officer and assistant medical officer ($P < 0.001$), medical officer and staff nurse ($P < 0.001$), medical officer and assistant nurse/community nurse ($P < 0.001$) and medical officer and health attendant ($P < 0.001$). Post-hoc analysis for comparison of mean of attitude score revealed significant difference between medical officer and health attendant ($P < 0.001$), assistant medical officer and staff nurse ($P = 0.025$), staff nurse and assistant nurse/community nurse ($P = 0.010$), and staff nurse and health attendant ($P < 0.001$). Simple linear regression test showed no significant association between the levels of knowledge ($P = 0.225$), attitude ($P = 0.947$), and practice ($P = 0.681$) with the frequency of needlestick injury. Independent t test showed there was no significant difference in level of knowledge ($P = 0.061$), attitude ($P = 0.054$), and practice ($P = 0.731$) among the healthcare personnel in emergency departments with emergency physicians and healthcare personnel in emergency departments/units without emergency physicians.

Conclusion: The level of good knowledge was only represented by 57.8% participants; good attitude, 62.3%; and good practice, 56.3%. The mean score differences among various categories of healthcare personnel were significant for the levels of knowledge and attitude, but not for the level of practice. There was no significant association between the levels of knowledge, attitude, and practice with frequency of needlestick injury. There was no significant difference in level of knowledge, attitude, and practice between healthcare personnel in emergency departments with emergency physicians and healthcare personnel in emergency departments/units without emergency physicians.

Supervisor:
Associate Professor Dr Nik Hisamuddin Nik Abdul Rahman
Co-supervisor:
Dr Azriani Berahim @ Ab Rahman

ANTI-HEPATITIS A VIRUS SEROPREVALENCE AMONG CHRONIC VIRAL HEPATITIS B AND C LIVER DISEASE IN HUSM AND ITS ASSOCIATION WITH CPY3A4*18 POLYMORPHISM

Dr Fazlina Ahmad
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Vaccination against hepatitis A virus (HAV) is recommended in patients with chronic liver disease to prevent hepatic decompensation due to superinfection. CYP3A4 is the major cytochrome P450 in humans and its activity is reduced in chronic liver disease as well as hepatic cirrhosis. Detection of CYP3A4 polymorphism may predict detrimental effects on patients with chronic viral hepatitis with superimposed hepatitis A infection, due to reduced hepatic activity to eliminate drugs and harmful environmental toxin. Therefore, the need for vaccination is augmented.

Objectives: The aims of this study were to find out the seroprevalence of anti-HAV antibodies in patients with chronic viral hepatitis B and C liver disease and its association with CYP3A4 polymorphism as well as to justify the need for vaccination against hepatitis A in these patients.

Methods: A total of 120 patients attending the Gastroenterology Clinic, Hospital Universiti Sains Malaysia, from July until September 2009 were enrolled into this case control study. The diagnosis of chronic viral hepatitis B and C liver disease was based on presence of viral markers of more than 6 months, and the diagnosis of liver cirrhosis was based on clinical, biochemical, and radiological profiles. Patients' serum samples were tested for anti-HAV IgG using a commercially available kit, and blood samples were sent for CYP3A4 polymorphism analysis.

Results: The overall anti-HAV seroprevalence was 88.2%. The aetiology of chronic viral liver disease was hepatitis B in 96 patients (80.7%) and hepatitis C in 23 patients (19.3%). The mean age was 44.4 years (SD 14). Patients were categorised by decades of age: 24 patients (20.2%) were in the 21–30 age group, 22 patients (18.5%) were in the 31–40 age group, 31 patients (26.1%) were in the 41–50 age group, 23 patients (19.3%) were in the 51–60 age group, and 19 patients (16.0%) patients were more than 60 years of age. The seroprevalence according to age group was 66.7%, 95.5%, 93.5%, 91.3%, and 94.7%, respectively. There was marked increase of prevalence in age group after 30 years ($P = 0.008$). Seventeen patients were cirrhotics, and their anti-HAV seroprevalence was 100% compared with that of the non-cirrhotic group, which was only 86.3% ($P = 0.216$). CYP3A4*18 polymorphism was detected in 3 patients with chronic viral liver disease, with the frequency of 2.5%. All patients with the CYP3A4*18 mutations were found to be heterozygous.

Conclusion: Our study demonstrated that the overall seroprevalence was 88.2% and age was the most important factor in determining anti-HAV positivity. Most patient aged more than 30 years are likely to have natural immunity towards hepatitis A. There was no significant association between CP3A4*18 mutation and anti-HAV serology. Since the prevalence of anti-HAV IgG is high, the hepatitis A vaccination may not be routinely required in this region especially in individual who are older than 30 years of age.

Supervisor:
Dr Nor Aizat Che Hamzah
Co-supervisor:
Dr Nazri Mustaffa

A STUDY ON THE PREDICTORS OF GOOD TREATMENT RESPONSE IN METHADONE THERAPY IN HOSPITAL RAJA PEREMPUAN ZAINAB II

Dr Firdaus Abdul Ghani
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Methadone therapy is a part of a drug substitution programme, which is implemented to reduce the risk of contracting infectious disease through intravenous drug use. It is a national programme to prevent drug addicts from injecting heroine, by using oral intake of liquid methadone once a day as a substitute. However, there are participants of the programme who discontinued treatment due to various reasons. The dropout rates in foreign countries that conducted methadone programme were high, at an average of approximately 60%. There are many factors influencing patients' decision to continue the treatment, such as social factors, dosage of methadone, counselling sessions, and illness. It is important for us to identify the factors involved in order to aid patients in reviewing an effective treatment.

Objective: The aim of this study is to identify the factors predictive of a good treatment response to methadone therapy: whether socio-demographic factors (patients' background) such as older age and being married, higher dosage of methadone, and higher number of attendance in counselling session have influence in patients' response to methadone therapy. Good treatment response is defined as no positive urinalysis result of heroine within 6 months of enrolment into the methadone maintenance therapy programme, and retention in the programme for 6 month after the enrolment.

Methods: A cross-sectional study was performed to identify the factors that may predict a good treatment response in methadone therapy. Patients who were receiving anti-retroviral treatment and/or having mental illness were excluded from the study. Data on socio-demography, dosage of methadone, and counselling sessions were collected form medical records and patients' interview. The association between treatment response and the study parameters were assessed by applying chi-square and independent t test where applicable. Simple logistic regression was later performed to selected variables.

Result: Out of 150 patients, 82 (54.67%) had good treatment responses to methadone therapy, whereas 68 patients (45.33%) had poor responses, as shown by their positive urinalysis results or drop-out from treatment. It was found that there was an association between good treatment response and counselling session, but not with socio-demographic factors and methadone dosage. For every increase in counselling sessions, a patient has 1.190 times higher chance of having a good outcome (95% CI 1.049 to 1.349, $P = 0.007$)

Conclusion: Frequent attendance to counselling sessions was found to have an influence in the good treatment response to methadone therapy. Hence, counselling is an important component in patients undergoing methadone treatment. Socio-demographic factors and methadone dosage do not have any effect on the treatment response.

Supervisor:
Dr Zahiruddin Othman
Co-supervisor:
Dr Mohd Nawan Hamzah
Dr Mohd Ariff Mohd Nor

A RANDOMISED CONTROLLED TRIAL ON ADDITION OF VARIOUS DOSES OF INTRATHECAL PETHIDINE INTO HEAVY BUPIVACAINE IN THE PREVENTION OF INTRA-OPERATIVE SHIVERING IN PARTURIENTS UNDERGOING ELECTIVE CAESAREAN SECTION UNDER SPINAL ANAESTHESIA

Dr Goay Chun Kiat
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Currently up to 65% of caesarean section (CS) has been performed under either spinal anaesthesia (SA) or combined spinal-epidural anaesthesia. Considering the frequent incidence of shivering associated with neuraxial blockade and its metabolic stress, prevention of this undesirable effect seems imperative.

Objectives: The aim of this study was to compare the addition of various doses of intrathecal (IT) pethidine into 0.5% heavy bupivacaine in the prevention of intra-operative shivering during elective CS under SA, as well as its associated adverse effects. A substudy on the incidence of hypothermia following SA in parturients and its relation with shivering was also explored.

Methods: A total of 64 subjects were recruited in this single-blinded, randomised controlled trial. All subjects received standard care during SA consisting of 10 mg of 0.5% heavy bupivacaine either alone (P_0 group, $n = 21$), with 5 mg of pethidine (P_5 group, $n = 22$) or with 10 mg of pethidine (P_{10} group, $n = 21$). Core temperature (tympanic membrane temperature), shivering score, blood pressure (BP), heart rate (HR), respiratory rate (RR) and oxygen saturation (SpO_2) were documented prior to SA and at different intervals after SA. Shivering scores of 2 or more were considered as shivering, and pethidine hydrochloride (0.5 mg/kg) was given intravenously as rescue treatment. Side effects were observed and treated accordingly. Differences in shivering scores were analysed with Kruskal–Wallis test or Mann–Whitney test. Comparison of the incidence of shivering and hypothermia and the relation between them were done with chi-square test. Differences in core temperatures, haemodynamic

parameters and requirements of rescue therapy were analysed with ANOVA. Comparisons of adverse effects were done with chi-square test.

Results: Demographic data were comparable in all groups. Addition of IT pethidine was effective in the prevention of shivering without significant adverse effects. P10 group had lower incidence (2 out of 21 patients or 9.5%) and intensity of shivering compared with in the P_5 group (8 out of 22 patients or 36.4%), without any greater incidence of side effects. The incidence of hypothermia increased with time following SA, with as many as 100% of the studied subjects had shivering after 60 minutes; however, no significant differences were demonstrated among the 3 groups. Higher proportions of the hypothermic subjects experienced shivering, but this relationship only became statistically significant 20 minutes after the neuraxial block.

Conclusion: Addition of 10 mg of intrathecal pethidine is more effective in prevention of shivering without greater adverse effects in comparison with 5 mg of intrathecal pethidine. Hypothermia is common following SA. We suggest administration of 10 mg of pethidine intrathecally as an adjunct to prevent shivering, in addition to temperature monitoring and active thermal management to keep patients normothermic during CS under SA.

Supervisor:
Dr Mahamarowi Omar
Co-supervisor:
Associate Professor Dr Saedah Ali

HONEY AS A MEAN OF GRANULATION TISSUE PROMOTER IN PATIENTS WITH DIABETIC FOOT ULCERS: A RANDOMISED CONTROLLED TRIAL

Dr Han Chung Sing
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The increase of prevalence of diabetes mellitus in Malaysia and the profound complication of diabetic foot ulcers diabetic foot ulcers have been a huge burden to the patients and the health institutions. More recently, a resurgence of interest and an increasing number of case reports on the use of honey on diabetic foot ulcers reflect a growing awareness and a need for cost-effective therapies.

Objectives: Given honey's great potential as an alternative in wound dressing, this double-blinded randomised controlled study was designed to investigate the wound-healing property and the granulation tissue–promoting effect of honey, between the Malaysian tualang honey with the well-established "medical grade" manuka honey, in the management of patients with diabetic foot ulcers.

Methods: Thirty-four patients with Wagner stage II or III diabetic foot ulcers were enrolled in the study. They were randomised into 2 groups of 17 patients each and treated with either manuka honey or tualang honey on a daily basis. Wound healing was assessed by measuring the granulation surface area using tracing technique. The primary outcome measure was checked in each group after 7 days.

Results: There was no significant difference ($P = 0.687$) between manuka honey and tualang honey groups in terms of mean percentage of granulation tissue surface area after 1 week of dressing in diabetic foot ulcers (manuka group, 60.7%; tualang group, 57.0%). All variables in both groups (age, wound size, HbA_{1c}, haemoglobin level, serum albumin level, absolute lymphocyte count, and ankle-brachial systolic pressure index) were comparable, and the differences were not statistically significant in the influence towards the primary outcome.

Conclusion: Tualang honey induced granulation and exhibited beneficial action in wound healing that was comparable to manuka honey. This result suggests that tualang honey could potentially be used as an alternative therapeutic agent for diabetic foot ulcers.

Supervisor:
Dr Abdul Nawfar Sadagatullah
Co-supervisor:
Dr Mohammad Paiman

EFFECTIVENESS OF DESFURANE WITH DEXAMETHASONE COMPARED TO TCI PROPOFOL IN POST-OPERATIVE NAUSEA AND VOMITING IN PATIENTS UNDERGOING OTORHINOLARYNGOLOGY SURGERY

Dr Hasniza Ahmad Zakaria
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The study was conducted to compare the prevalence of post-operative nausea and vomiting between 2 anaesthetic techniques: desflurane with dexamethasone and target controlled infusion (TCI) propofol.

Methods: In this prospective study, 80 ASA I and II patients aged between 18 and 52 years and undergoing elective otorhinolaryngology surgery were randomised into 2 groups. Groups 1 received desflurane and dexamethasone, whereas group 2 received TCI propofol. Haemodynamic parameters (systolic blood pressure, diastolic blood pressure, mean arterial pressure, and heart rate) were recorded at baseline. Patients were subsequently induced and paralysed with intravenous atracurium (0.5 mg/kg), and the patients were then intubated. Maintenance of anaesthesia was continued with desflurane and dexamethasone for group 1 and total intravenous anaesthesia using TCI propofol for group 2. Dosage of desflurane and

propofol were adjusted to maintain clinically adequate depth of anaesthesia with electroencephalogram bispectral index of 40–60. Once patients were extubated, they were monitored in recovery room. Haemodynamic parameters were again recorded.

Results: The number of patients who had post-operative nausea were less in group 1 (14 patients, 17.5%) compared with group 2 (31 patients, 38.8%). Combination of desflurane and dexamethasone is a good alternative technique to be used in otorhinolaryngology surgery. The usage of antiemetic rescue drug was also less in group 1 compared with group 2.

Supervisor:
Dr Gnandev Phutane

NON-INVASIVE VENTILATION IN ADULT POPULATION IN INTENSIVE CARE UNIT, HOSPITAL UNIVERSITI SAINS MALAYSIA: A RETROSPECTIVE STUDY

Dr Hasan Surya Sudirgo
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: The aims of this study were to review the practice of non-invasive ventilation (NIV) application in adult patients admitted in General Intensive Care Unit (ICU), Hospital Universiti Sains Malaysia (HUSM), and to investigate factors that contributed to its success and failure.

Methods: A retrospective study was done to review the NIV practice in HUSM. We defined the characteristics of adult patients (18 years old and above) admitted in ICU from 1 January until 31 December 2008 who had been put on NIV in any course of their stay in ICU. Data were collected from each patient's medical record, including the patient's ICU chart. Parameters taken were demographic data, diagnosis, patient's co-morbidity, simple acute physiology score (SAPS II), length of ICU stay, and patient's condition when discharged from ICU (survived or did not survive). The SAPS II was generated from the first 24 hours of patient's ICU admission. At the time when the NIV were being applied, specific data such as arterial blood gas analysis (ABG) values, status of organ failure, and type of supports that patients received (such as inotropes, vasopressors, and haemodialysis) were recorded. Subsequent evaluation on the NIV setting and the ABG were conducted at the following intervals: 1, 6, 12, and 24 hours after NIV application. If there was no ABG taken during those specific hours, the previous or next ABG within 2 hours duration was taken; if there was none, it was recorded as missing data. The duration of NIV (in hours) and the outcome of each patient were documented. Any deleterious events that happened during the course of NIV and the action taken by the attending doctors were also recorded. The attending doctors' note was reviewed for the patients who had failed NIV and needed intubation or re-intubation. Descriptive analysis was used to describe the patients' characteristics. Relevant data were analysed using the appropriate non-parametric tests.

Results: We categorised 54 patients into *de novo* respiratory failure (*de novo*), acute on chronic respiratory failure (AOC), or acute cardiogenic pulmonary oedema (ACPO). The proportion of *de novo* was high (74.1%) when the other groups were low (14.8% for AOC and 11.1% for ACPO). Among the 3 groups, there were no significant differences in survival rates (77.5%, 87.5%, and 83.3% in de novo, AOC, and ACPO, respectively). ICU stay was significantly longer in *de novo* groups, at 11.5 days (SD 8.04), compared with 4.9 days (SD 1.46) in AOC and 6.8 days (SD 5.19) in ACPO ($P = 0.029$). When we looked further at patients in de novo group who were diagnosed with pneumonia, the mortality and the NIV failure rate were significantly higher than in the non-pneumonia patients (mortality rate of 50% versus 10.7%, $P = 0.004$, and NIV failure rate of 66.7% versus 39.3%, $P = 0.017$). In addition, when patients failed NIV and need intubation or re-intubation, the ICU stay would be doubled (15.1 days, SD 8.5, versus 7.5 days, SD 5.83). The overall mortality rate didn't deviate from the predicted mortality rate calculated from the SAPS II, and it was clearly shown that there was a significant difference in SAPS II between the survivors and non-survivors (35.7, SD 13.39, versus 46.1, SD 15.63; $P = 0.036$). However, there is no correlation between SAPS II and NIV failure rate.

Conclusion: In our ICU, most patients treated with *NIV* were *de novo* respiratory failure. There were no significant differences in mortality and NIV failure rates among different groups of respiratory failure, although ICU stay was clearly longer in de *novo group*. ICU stay would also be longer in those who failed NIV and needed intubation or re-intubation. SAPS II accurately predicted mortality rate but not NIV failure rate. Pneumonia patients in *de novo* group had significantly higher mortality rate as well as NIV failure rate compared with non-pneumonia patients. Indeed, among all of the analysed variables, pneumonia was the only one that had strong association with NIV failure. We concluded that our NIV practice results were not consistent with some reports in other clinical trials, except that pneumonia was a contributing factor for NIV failure and that those who failed NIV would have longer ICU stay. Nevertheless, we emphasised that differences might exist between controlled clinical trials and real clinical practice such as this retrospective study. From this retrospective study alone, it was not possible to determine whether our NIV practice had complied with the best standard practices. The NIV utilisation was low and it was expected that, had the medical officers been more confident, more patients should have been treated with NIV. The implementation of immediate NIV and alternate NIV were considered as good practices, but the high proportion of *de novo*, including pneumonia patients treated with NIV, suggested that the MOs might not be aware about the results from the previous

studies, which encouraged careful selection for that kind of patients. The presence of patients who died while on NIV would also speculate that intubation should have been taken earlier. The absence of NIV guidelines in our institution might leave improper decisions to be widely opened, and the status as a teaching hospital might become a disadvantage as new medical officers with less experience would come and those experienced ones would go. Therefore, we believed that the availability of standard protocol and proper training were essential for future improvement in NIV application in our institution.

Supervisor:
Dr Rhendra Hardy Mohamad Zaini
Co-supervisor:
Professor Dr Nik Abdullah Nik Mohamad

DRUG COMPLIANCE AMONG EPILEPSY PATIENTS ATTENDING HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN

Dr Hazlina Ishak
MMed (Family Medicine)

Department of Family Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The study was conducted to examine the percentage of drug non-compliance among epilepsy patients and its associated factors.

Methods: This cross sectional study the completion of a questionnaire by 297 epilepsy patients attending the Neurology Clinic, Hospital Universiti Sains Malaysia, from January 2008 until November 2008. The questionnaire consisted of the followings: compliance assessment, which contained 10 items, and psychological questionnaire, which contained 39 items. Patients were also given a form on demographic and clinical characteristics data to be filled out.

Result: Percentage of drug non-compliance was 52.2%, and the factors that contribute to non-compliance were the duration of epilepsy, patients' understanding of their illness, and medication barriers. Medication barriers that were significantly related with drug compliance include the complexity of the drug regime as well as the cost and physical properties of the meditation. There were no associations between drug compliance and socio-demography, patient satisfaction with health care, and other psychosocial factor: motivation, attitude, communication, and perception of disease severity.

Conclusion: Poor drug compliance was high in epilepsy patients. Factors associated with drug compliance include duration of epilepsy, patients' understanding of illness, complexity of the drug regime, and the cost and physical properties of the meditation. Assessment of drug compliance should be a routine part in managing epilepsy patients. Re-organisation of factors that contribute to non-compliance will help the health care provider in planning an intervention programme to improve drug compliance, and consequently reduce the cost of managing epilepsy patients.

Supervisor:
Dr Juwita Saaban
Co-supervisor:
Dr Adibah Hanim Ismail

FACTORS INFLUENCING LATE BOOKING AMONG ANTENATAL MOTHERS IN KOTA BHARU, KELANTAN

Dr Hazura Mat Zubir
MMed (Family Medicine)

Department of Family Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Antenatal care is a branch of preventive medicine dealing with prevention and early detection of pregnancy disorders. First antenatal visit after 12 weeks period of amenorrhoea is defined as late booking.

Objectives: The aimed of this study were to determine the factors influencing late antenatal booking and mothers' understanding of first booking, late booking, and its complications among antenatal mothers in Kota Bharu, Kelantan.

Methods: A cross sectional study was carried out from April 2008 to May 2008 involving 497 antenatal mothers who attended 11 health clinics in Kota Bharu. Systematic sampling method was applied, and consented respondents were interviewed using a revalidated questionnaire. The questionnaire consisted of socio-demographics data, obstetric and gynaecological data, health care factors, and socio-cultural factors. The study adopted the definition of late booking as the first antenatal visit after 12 weeks of amenorrhoea as used by Ministry of Health (2002).

Results: There were 250 of late booking mothers (50.3%), and 247 of early booking mothers (49.7%) involved in this study. The mean age of antenatal mothers in the late and early booking groups were 30.9 years (SD 6.6) and 28.7 years (SD 6.0) respectively. Respondents were predominantly Malays (98.0%), and all of them were married. Multivariable analysis revealed antenatal mothers with higher parity (OR = 106, 95% CI = 2.40, 5.91), those who had unplanned pregnancy (OR = 1.7, 95% CI = 1.10, 2.34), lower household income (OR = 1.7, 95% CI = 1.03, 1.18), and those who were not aware of the recommendation on early booking by the Ministry of Health (OR = 1.7, 95% CI = 1.14, 2.47) were more likely to come late for booking. Factors contributing to late antenatal booking were lack of awareness regarding Ministry of Health's recommendation on early booking, problems in arranging childcare for their children, influence from respondent's mother against early booking, longer

waiting time, and lack of knowledge regarding appropriate time for first booking as well as maternal and foetal complications of late antenatal booking.

Conclusion: Recommendation on early booking should be given more priority in the health care programmes at all levels. Mass awareness programmes, particularly among women of reproductive age group, should be planned, targeting the identified risk factors for late booking, especially for multi grada and for antenatal check-up. The health staff should also give detailed counselling regarding the adverse outcome to the mother and foetus among late-booking antenatal mothers in order to prevent them from coming late for booking in the next pregnancy.

Supervisor:
Dr Mohamed Hashim Mohd Hassan
Co-supervisor:
Dr Zaharah Sulaiman

THE EFFECTS OF TWO RELAXATION TECHNIQUES ON PSYCHOMOTOR, PSYCHOLOGICAL, AND PHYSIOLOGICAL VARIABLES FOLLOWING REPEATED SUB-MAXIMAL INTENSITY EXERCISE AMONG SCHOOL ATHLETES

Hazwani Ahmad Yusof @ Hanafi
MSc (Sport Sciences)

Sports Science Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The present study was undertaken with an objective to investigate the effects of two relaxation techniques on selected psychomotor (choice reaction time), psychological (rating of perceived exertion, RPE) and physiological (heart rate; oxygen consumption, VO_2) variables following repeated sub-maximal intensity exercise.

Methods: The study involved 24 physically active young males with the mean age of 14.1 years (SD 1.3), height 157.3 cm (SD 6.1), weight 45.6 kg (SD 7.2), VO_2max 45.7 $mL.kg^{-1}.min^{-1}$ (SD 4.2), and maximum heart rate 205.9 beats per minute (SD 1.3). They were randomly divided into 1 of the 3 groups: autogenic relaxation (AGR), progressive muscle relaxation (PMR) and control. AGR and PMR groups were tested in 2 experimental sessions, prior to and after the relaxation training. However, the control group performed all experimental procedures except the relaxation training. Each experimental session consisted of 4 trials, where the participants had to cycle at 60% VO_2max for 10 minutes followed by 90% Vo_2max for 2 minutes in each trial. Then, a 3-minute rest interval was given, where choice reaction time (CRT) was tested. RPE, heart rate, and VO_2max were recorded at the end of each trial.

Results: The results of two-way repeated measure ANOVA revealed a non-significant interactions between the groups across the experimental trials in all selected parameters ($P > 0.05$). However, results of the main effect revealed a significant difference for experimental sessions for RPE and VO_2max ($P > 0.05$). Pair wise comparison analysis revealed significant reductions, from pre- to post-intervention sessions, in RPE value for PMR group and in VO_2max value for AGR and control groups ($P < 0.05$ in each).

Conclusion: This study concludes that both relaxation techniques do not differ in terms of choice reaction time, RPE, VO_2max, and heart rate following repeated sub-maximal intensity exercise. However, when analysed separately, PMR appears to reduce RPE while AGR appears to reduce VO_2.

Supervisor:
Dr Hairul Anuar Hashim
Co-supervisor:
Associate Professor Asok Kumar Ghosh

A RANDOMISED CONTROLLED TRIAL ON THE EFFECTIVENESS OF COMBINATION TRAMADOL/ PARACETAMOL AND COMBINATION CODEINE PHOSPHATE/PARACETAMOL AS EARLY ANALGAESIA AT TRIAGE COUNTER FOR MODERATE PAIN IN EMERGENCY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Ida Zarina Zaini
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Pain is a common symptom patient presenting to the emergency department. For more than a decade, we have identified that pain is undertreated in emergency medicine. Pain score assessment and analgaesia at triage counter is new and need further research, because effective pain management at triage counter is paramount in improving service delivery.

Objectives: The objective of this study is to compare the effectiveness of tramadol/paracetamol and codeine phosphate/paracetamol as early analgaesics at triage counter for acute traumatic moderate pain.

Methods: The study was conducted from April to September 2008 in Emergency Department, Hospital Universiti Sains Malaysia. Patients who fulfilled the inclusion criteria were selected for the study. Patients were randomised into Panadeine group or Ultracet group on the randomisation plan. Paramedics in charged are the assistants and, at the same time, the observers. Patients were given an analgaesic (Panadeine or Ultracet), and pain score using numerical rating scale and vital signs were taken at 0 minute, 30 minutes, and 60 minutes. If patients were still having pain after 60 minutes, rescue analgaesic would be given. A questionnaire was before each patient left the Emergency Department.

Results: 40 patients were enrolled; 72.5% (n = 29) were males, and 27.5% (n = 11) were females. All patients were Malays. The mean age was 29.6 years old. The patients were distributed equally (20 patients in each group) to receive either Ultracet or Panadeine. Mean pain scores via numerical rating scale on arrival were 5.95 (SD 0.88) in Panadeine group and 5.65 (SD 0.93) in Ultracet. Mean pain scores after 60 minutes were 3.40 (SD 1.75) for Panadeine group and 3.25 (SD 1.58) for Ultracet group. There was statistical significance in the pain score reduction in both Panadeine and Ultracet groups (P < 0.05). However, there was no significant difference in the pain score reduction between two groups (P > 0.05). The percentage of patients who achieved pain score reduction of 1 or more after 30 minutes was 77.5% (n = 31), and 92.5% (n = 37) patients achieved pain score reduction of 1 or more after 60 minutes. There was statistical association between patient's satisfaction and pain management (P < 0.05).

Conclusion: Panadeine and Ultracet are equally effective as early analgaesia at triage counter for acute traumatic moderate pain.

Supervisor:
Dr Rashidi Ahmad

THE INFLUENCE OF TUALANG HONEY IN TENSILE STRENGTH AND MICROSCOPIC ASPECT (FIBROBLAST AND EPITHELISATION) OF LAPAROTOMY WOUND HEALING IN MALNOURISHED RABBITS

Dr Ismazizi Zaharudin
MMed (General Surgery)

Department of Surgery
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Based on published reports that honey accelerates wound healing, an investigation on its role in laparotomy wound healing, in terms of tensile strength and microscopic aspects (fibroblast and epithelialisation) on malnourished rabbits was carried out.

Methods: Forty-six female New Zealand white rabbits at the age of 6 weeks, weighing approximately 2–3 kg, were inflicted with a 4-cm infraumbilical laparotomy wound on their abdomen. They were divided into 3 groups: a malnourished group treated with topical and oral use of honey as well as malnourished and well-nourished groups treated with topical and oral used of normal saline. Wound dressing was done every day, and any changes over the wound were documented.

Results: The mechanical strength and histopathological examination were more favourable towards the malnourished group treated with topical and oral used of Tualang honey. At day 7 and day 14, the malnourished group treated with Tualang honey displayed a better tensile strength result compared with malnourished and well-nourished groups treated with normal saline did (P < 0.05). For histopathological examination, both epithelial and fibroblast counts were also favourable towards the malnourished group treated with Tualang honey. At day 7 and day 14, the epithelial and fibroblast count were better in the malnourished group treated with Tualang honey compared with malnourished and well-nourished groups treated with normal saline (P < 0.05), except for the epithelial count at day 14 in comparison with well-nourished group treated with normal saline (P > 0.05).

Conclusion: Our study suggest that oral and topical Tualang honey enhances the laparotomy wound healing in malnourished rabbits by increasing the numbers of fibroblast and epithelial cells, which lead to increased wound strength.

Supervisor:
Dr Syed Hassan Syed Abd Aziz
Co-supervisors:
Dr Zulkarnain Hassan
Associate Professor Dr Siti Amrah Sulaiman
Associate Professor Dr Mutum Samarendra Singh
Dr Rumaizi Shaari

NASALANCE SCORE ANALYSIS AMONG MALAY POPULATION WITH NON SYNDROMIC CLEFT PALATE (WITH OR WITHOUT CLEFT LIP) IN HOSPITAL KUALA LUMPUR

Dr Izety Shezlinda Noran
MSurg (Plastic Surgery)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The goal of cleft palate surgery is to establish a fully functioning velopharyngeal system with the least interference to the maxillofacial growth. An intact system will facilitate feeding, reduce the occurrence of upper respiratory tract infections, as well as improves otologic health and normal resonance balance. Post-palatoplasty speech therapy is commenced early in childhood to enhance vocabulary development and communication skills.

Objective: The study aimed to determine the speech outcome of primary palatoplasty and the association of hypernasality with cleft palate confounding factors.

Methods: This is a cross-sectional study of non-syndromic cleft palate (with or without cleft lip) patients treated at Hospital Kuala Lumpur. The speech of 40 normal Malay subjects and 40 cleft lip/palate patients were assessed for hypernasality using Nasometer II 6400.

Results: The overall normal oral phoneme produced by Malay-speaking individuals demonstrated scores of between 3% and 5% higher than English-speaking individuals. The normal oral passage nasalance score obtained for Malay Language is 12% (SD 4). The cleft oral passage nasalance score for Malay language is 29% (SD 16). The comparison is statistically significant (P < 0.05). For post-palatoplasty cleft

patients who attended speech therapy, the mean nasalance score of the oral passage was 27% (SD 16); for patient who did not receive speech therapy, the mean was 32% (SD 17). The comparison was not statistically significant ($P < 0.05$). Further analysis of nasalance difference between genders, age groups, cleft sub types, and techniques of primary palatoplasty did not show any statistical significance. However, the mean scores of bilateral cleft lip and palate is demonstrated to be 10% to 15% higher than other cleft sub types.

Conclusion: Nasalance score was found to be useful adjunct to measure speech outcome objectively.

Supervisor:
Dr Wan Azman Wan Sulaiman

NON-CORONARY LESIONS DETECTED ON MULTI-DETECTOR ROW CARDIAC COMPUTED TOMOGRAPHY IN PATIENTS WITH ATYPICAL CHEST PAIN

Dr Izzat Abdulla Ali Basahai
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The study aimed to report the prevalence of non-coronary lesions detected on cardiac multi-detector computed tomography (MDCT) angiography in patients with atypical chest pain. The prevalence of atypical symptoms for the study group and the association between the detected non coronary lesions and atypical symptoms were also reported.

Methods: A total of 123 patients underwent cardiac MDCT in Adventist Hospital, Penang, from May 2005 until November 2009. The MDCT images were reviewed by 2 radiologists, who were blinded to the clinical findings, in 4 different CT windows, and non-coronary lesions were observed and recorded. The presenting symptoms were also noted for all those patients.

Results: Non-coronary lesions were found in 91 patients (73.9%). Of these extra-coronary lesions, 5 (4.1%) were significant and required further follow-up and evaluation, while the rest were not significant and can be considered benign findings with no need for further evaluation. Lung lesions were seen in 81 patients (65.8%), cardiac abnormalities in 1 patient (0.8%), vascular abnormalities in 24 patients (19.5%), mediastinal lymph nodes in 33 patients (26.8%), esophageal abnormalities in 1 patients (0.8%), liver abnormalities in 49 patients (39.8%), splenic lesions in 11 patients (8.9%), bone abnormalities in 5 patients (4.1%), and other abnormalities in 7 patients (5.7%). In the study group, 33 patients (26.8%) were scanned due to pain in the arms, epigastrium, shoulder, or the neck, and the rest of the patients were scanned for screening. Of the 33 patients, 5 (4.1%) had lung bulla, 5 (4.1%) had interstitial lung changes, 11 (8.9%) had hepatomegaly, and 4 (3.3%) had other findings.

Conclusion: Our study supports several other studies that highlighted the importance of careful reviewing of the non-cardiac structures that was scanned with the heart and coronary arteries as part of cardiac MDCT angiography, preferably by a radiologist or trained cardiologist. Any significant non-coronary lesions must be reported and followed-up if necessary under clear and specific guidelines. Non-significant coronary lesions need no follow-up and should not require further investigations that may put more psychological and economic burdens on the patients.

Supervisor:
Dr Rohaizan Yunus
Co-supervisor:
Professor Dr Ibrahim Lutfi Shuaib

NOSOCOMIAL INFECTION IN INTENSIVE CARE UNIT: A RETROSPECTIVE ANALYSIS

Dr Jamaidah Jamorek @ Jamhuri
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Intensive care unit (ICU)–acquired infection rates are 5–10 times higher than hospital-acquired infection rates in general ward patients. Knowledge in the use of antibiotics in ICU is important to ensure an optimal clinical outcome, to control the emergence of resistance among pathogenic microorganisms, as well as to reduce cost.

Objective: The aim of this retrospective study was to determine the current status of ICU infection in Hospital Universiti Sains Malaysia.

Methods: A retrospective review of nosocomial infection (NI) in Hospital Universiti Sains Malaysia was performed in a 1-year period, from April 2008 until March 2009. NI is defined according to the Centers for Disease Control and Prevention's guideline. The overall NI rate, the incidence density rate of NI, patients' demography, length of ICU stays, duration on devices, type of NI, the Simplified Acute Physiology Score (SAPS) II score, and the patient's outcome were determined. The organisms and antimicrobial susceptibility profiles were further investigated.

Results: Out of 795 patients admitted to ICU, 60 patients were identified with nosocomial infections. The overall NI rate was 7.5 per 100 patients, with incidence density rate of 91 per 1000 days. The mean length of stays was 17.13 days (SD 10.11). The percentages of patients with diabetes mellitus and hypertension were almost similar to patients with no co-morbidities (33.3%, 36.7%, and 31.7%, respectively). The mean SAPS II score was 41.82 (SD 16.5). The percentage of patients who survived was 56.7%, whereas 6.7% was re-admitted to the ICU. The main type of NI were bacteraemia

and pneumonia (38.3%), with mostly gram-negative bacteria isolated (59.6%). The main isolated organism was *Acinetobacter* sp. (24.5%) from tracheal aspirates. The initial treatment was monotherapy, mainly by meropenem (29.8%); the drugs least used were the cephalosporins. Four main organisms that developed resistance to the treatment were *Acinetobacter* sp. (28.6%), *Klebsiella* sp. (14.3%), methicillin-resistant *Staphylococcus aureus* (14.3%), and *Escherichia coli* (7.1%). There were no specific resistant to any group of antibiotics. Five cases of multidrug-resistant *Acinetobacter* sp. were isolated (35.7%). In addition, 3 cases of extended-spectrum beta-lactamase-producing *Klebsiella* sp. and *E. coli* were isolated (21.4%).

Conclusion: Gram-negative organisms remain as the main pathogens in ICU infection, especially *Acinetobacter* sp., which potentially could lead to the emergence of multidrug-resistant species. A future local prospective study would facilitate the surveillance of ICU infection.

Supervisor:
Associate Professor Dr Saedah Ali
Co-supervisor:
Associate Professor Dr Wan Aasim Wan Adnan

RADIATION DOSE REDUCTION IN ADULT ABDOMEN AND PELVIS CT SCAN

Dr Jasmaniah Abdul Majid
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Computed tomography (CT) scan is an extremely valuable tool, as it yields a lot in information regarding the internal human anatomy. With future advances in scanner technology, the number of the CT examination will likely continue to rise. CT of the abdomen and that of the pelvis have the highest effective dose. Thus, it is important to minimise the dose by adjusting scanning parameter. Major technical factors that influence radiation dose from CT scan include tube voltage, tube current, scanning time, pitch, slice thickness, and scanning volume. In this study, only the tube current (mA) was adjusted to as minimum as possible, while the other factors were kept constant.

Objective: The study was performed to determine whether a lower radiation dose could be used in adult abdomen and pelvis CT scan without affecting the diagnostic accuracy of the images.

Methods: This was a randomised cross-sectional prospective trial. Age, gender, and abdominal dimension were recorded from 82 adult patients who underwent contrasted abdomen and pelvis CT scan from April 2008 until October 2008; 41 patients underwent CT at 240 mA (control group), and 41 patients at 180 mA (trial group: 25% dose reduction). The anatomic details, images quality, and the degree of confidence in reaching in diagnosis were graded as a scale of 1 (unsatisfactory) to 4 (excellent).

Results: The difference in perceived images quality between control and trial group was not statistically significant (P = 0.14). There is no significant difference in image quality score in patients with less than 34.5 cm and those with 34.5 cm or more of transverse abdominal diameter (P = 0.20). There is also no significant difference in image quality score in patient with cross-sectional abdominal area of less than 800 cm and those with 800 cm or more (P = 0.72)

Conclusion: The study proves that 25% dose reduction can be achieved in adult abdomen and pelvis CT scan, if performed at 180 mA, without deterioration of diagnostic image quality.

Supervisor:
Dr Noreen Norfaraheen Lee Abdullah
Co-supervisor:
Associate Professor Dr Wan Ahmad Kamil Wan Abdullah

PREVALENCE OF ANAL INCONTINENCE IN PATIENTS WITH PELVIC ORGAN PROLAPSE AND ITS EFFECTS ON LIFESTYLE IMPACT OF THESE PATIENTS IN HOSPITAL IPOH

Dr Karen Jeet Kaur Kartar Singh
MMed (O & G)

Department of Obstetrics and Gynaecology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Anal incontinence is defined as the voluntary loss of the control of intestinal contents, covering from slight traces of stool in the underwear during the loss of wind to marked episodes of uncontrolled evacuation of soft or hand faeces. The causes for this humiliating symptoms can be multiple and complex. In women, the most frequent aetiological factor is injury to the pelvic floor structures due to childbirth. Medical practitioners often do not realise that anal incontinence can be prevented and treated. Quality of life of these women can be significantly improved after the appropriate diagnostic tests and subsequent individual therapy.

Objectives: This study aimed to observe the prevalence of anal incontinence in gynaecology patients with uterovaginal prolapse and how anal incontinence affects the quality of life these women. The study was conducted among women presenting for investigation of genital prolapse, to identify any variables important in the cause of anal incontinence, with particular focus on obstetric, medical, and surgical factors, and to establish whether there is an association between anal incontinence and genital prolapse.

Methods: A cross-sectional descriptive analysis was conducted on 270 women at the age of 40–60 years old

attending Gynaecology Clinic, Hospital Ipoh, Perak, from September 2006 until September 2007. Anal incontinence and lifestyle impact was measured using self-administered validated questionnaire. The questionnaire consists of demographic data, an anal incontinence scoring system, and questionnaire on lifestyle impact of incontinence in these women. The prevalence of anal incontinence was calculated, and both univariate and multivariate analyses were performed. For univariate analysis, the chi-square test and independent *t* test were used to assess the association between the various demographic factors and anal incontinence with the severity of pelvic organ prolapse. Statistical significance was set at the 95%; *P* value of less than 0.05 was considered statistically significant. In multivariable analysis, multiple logistic regression analysis was used to identify the independent factors influencing the risk perception on anal incontinence.

Results: The prevalence of anal incontinence in women with genital prolapse and urinary incontinence was 33% and 24.1%, respectively, which was consistent with the other studies. The outcomes for age, parity, body mass index (BMI), spontaneous vaginal delivery, and baby's weight were significant as expected. The mean age of patients with anal incontinence was 54.6 years ($P = 0.001$). A BMI of 28.7 ($P < 0.001$) and parity of more than 5 ($P = 0.012$) were found to be significant factors. Menopausal participant and those with history of chronic constipation showed significant results ($P = 0.008$ and $P < 0.001$, respectively). Participants who had undergone vacuum delivery or had history of an extended tear had significant association with anal incontinence ($P = 0.005$ and $P < 0.001$, respectively). Participants who had more caesarean section had reduced incidence of anal incontinence; this results was significant ($P < 0.001$). Participants with second degree pelvic organ prolapse had significant result of 2.4 ($P < 0.001$). Baby's weight of 3.4 kg had significant results ($P = 0.003$). An unexpected finding was that forceps delivery was not significantly related to genital prolapse. In types of anal incontinence, 3% participants had solid incontinence ($P = <0.001$), 22.3% had liquid incontinence ($P < 0.001$), and 28.9% had gas incontinence ($P < 0.001$); the score of sometimes and always were added. A moderate lifestyle impact was significantly associated with second degree pelvic organ prolapse and anal incontinence ($P = 0.004$)

Conclusion: In the study, prevalence of anal incontinence observed among the woman with pelvic organ prolapse was significant. Therefore, all women undergoing urogynaecologic assessment for urinary incontinence or genital prolapse at their local setting should be routinely questioned about anal incontinence and other anorectal symptoms. This vital information should be assessed during routine gynaecological examination so that these patients can be offered anal sphincter repair at same sitting as pelvic floor reconstruction. Childbirth remains the major contributory factor for the development of either anal or urinary incontinence or genital prolapse. This is associated with functional and anatomical alterations in the muscles, nerves, and connective tissue of the pelvic floor. We conclude that increasing age, obesity, menopause, second degree pelvic organ prolapse, vacuum delivery, larger baby's birth weight, history of constipation, urinary incontinence, and extended perineal tear during childbirth subjected women to a higher risk of anal incontinence. Women who had caesarean section were relatively free from this humiliating and uncomfortable problem. Anal incontinence also has a significant lifestyle impact on these patients, disabling them from carrying out daily activities, religious worships, and travelling.

Supervisor:
Associate Professor Dr Nik Hazlina Nik Hussain
Co-supervisor:
Dr Zaharah Sulaiman

KNOWLEDGE, ATTITUDE, AND PRACTICE OF MANAGEMENT IN OBESITY AND ANTHROPOMETRIC CHANGES AMONG PSYCHIATRIC PATIENTS ATTENDING A WEIGHT MANAGEMENT BEHAVIOURAL PROGRAM IN HUSM

Dr Kartini Abdullah
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Weight gain has long been recognised and commonly encountered problem in psychiatric practice. The high prevalence of overweight and obesity in schizophrenia and bipolar disorder patients becomes a main concern worldwide because of the increasing awareness of its potential health consequences. Various intervention programmes have been designed to curb the worrying epidemics. Weight management via behavioural intervention has been one of the preferred ways in managing the problems because of its encouraging outcome and zero side effect compared with pharmacological approach. To date, weight change has been the main measure of the programme. None has looked into the change in knowledge, attitude, and practice of management in obesity after attending the program.

Objectives: The aim of this study was to compare the mean score of the knowledge, attitude, and practice (KAP) of management in obesity and the anthropometric changes (weight, waist and hip circumferences) before and after attending the weight management programme.

Methods: The interventional study consisted of 3 phases. First phase was the development of a new KAP questionnaire in relation to weight management and behavioural modification of overweight individuals. Second phase was pre-intervention evaluation, and followed by the intervention program, which is the weight management behavioural modification programme. Third phase was the evaluation of the effectiveness of the program by comparing the mean differences of the KAP scores, weight, as well as

waist and hip circumference of the participants.

Results: The KAP was found to have satisfactory validity and reliability and was used as a tool in assessing the effectiveness of the program. The changes were −1.22 (SD 29.43), − 3.55 (SD 35.35), and −0.97 (SD 13.02), respectively; however, no significant change was observed in the mean scores of KAP at the end of the program. The weight reduction was not significant, but the mean waist circumference change of 2.2 cm (SD 4.57) was statistically significant. Interestingly, the change in practice score was significant in those who attended more than 50% of the educational sessions, but not the exercise sessions. Bipolar disorders patients were found to have significant change in practice domain compared with the schizophrenia patients. Patients on atypical antipsychotics were found to have lesser weight reduction compared with those on conventional antipsychotics.

Conclusion: The educational sessions play an important role in modifying patients' practice of healthy living. The participants showed improvement in practice towards healthy living and eating when they attended adequate numbers of educational sessions, and this was not influenced by the frequencies of the exercise sessions. Though there was no significant weight reduction, the mean waist circumference reduction was significant and was a worthwhile outcome, as it reduces their risk of having metabolic syndromes.

Supervisor:
Dr Asrenee Abdul Razak
Co-supervisor:
Dr Zarina Zainan Abidin

A STUDY OF CONTINUOUS MONITORING OF ENDOTRACHEAL TUBE CUFF PRESSURE USING AN ELECTRONIC DEVICE IN CRITICAL CARE SETTING

Dr Khairuddin Ismail
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The endotracheal tube (ETT) cuff pressure measurement is not a routine practice in many critical care units.

Objective: The main purpose of this study is to determine the accuracy and the relationship of electronic measurement of ETT cuff pressure by continuous method, using aneroid manometer method as the control, and the usefulness of the continuous method toward reducing endotracheal tube-related complications in intensive care setting.

Methods: A total of 56 ICU patients intubated with ETT with cuff were recruited. A preliminary study was also conducted to determine the safety and stability of this electronic device. The precision of reading of ETT cuff pressure were compared with manual aneroid manometer and the variability of cuff pressure changes were also assessed apart from ETT cuff related complications. The complications that we looked for were the prevalence of ventilator-associated pneumonia (VAP), post-extubation stridor, sore throat, and ETT dislodgement.

Results: We found that there was a significant correlation between the readings by aneroid manometer with that of electronic measurement device (mean of 44.16 mmHg versus 44.22 mmHg, $P < 0.001$). The prevalence of VAP, sore throat, and ETT dislodgement were 1.8%, 3.6%, and 3.6%, respectively. No patient was noticed to have post-extubation stridor.

Conclusion: The readings recorded by the electronic device for ETT cuff measurement was comparable with aneroid manometer, and the use of the electronic device could potentially reduce ETT cuff-related complications.

Supervisor:
Associate Professor Dr Wan Aasim Wan Adnan

DYNAMIC EVALUATION OF UPPER AIRWAY IN OBSTRUCTIVE SLEEP APNEA SYNDROME USING FLEXIBLE NASOPHARYNGOLAGARYNGOSCOPE

Dr Khairul Azhar M Rajet
MMed (ORL–Head and Neck Surgery)

Department of ORL–Head and Neck Surgery
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: This study was conducted to identify level of upper airway obstruction in patients with obstructive sleep apnea syndrome (OSAS), and to determine the relationship between the severity of upper airway obstruction and confounding factors such as gender, ethnicity, apnea–hypopnea index, body mass index (BMI), and neck circumference.

Methods: This descriptive cross-sectional study on patients attending OSAS Clinic, Department of Otorhinolaryngology–Head and Neck Surgery, Hospital Universiti Sains Malaysia, was conducted from July 2007 to June 2008. Patients with apnoea–hypopnea index of more than 5 and fulfilled all set criteria were recruited in the study. Consent to participate in the study were taken after the patients had been given thorough explanation and they understood the purposes, importance, and benefits of this study. The assessment of risk and hypersomnolence was done using Berlin's questionnaire and Epworth Sleepiness Scale, and followed by otorhinolaryngological examination. Flexible nasopharyngolaryngoscopy was performed in seated, erect, and supine position. Retropalatal and retroglossal regions were continuously recorded during quiet breathing and Muller manoeuvre in both positions. Captured images were measured

using computerised image processor, and narrowing rate was calculated. Level of each site was classified based on Fujita classification and severity of obstruction using Sher scoring system for Muller's manoeuvre.

Result: A total of 59 patients participated in this study, and most of them were categorised into the severe group (29 patients, 49.2%), followed by the moderate group (16 patients, 27.1%) and the mild group (14 patients, 23.7%). Based on Fujita classification, 29 patients (49.1%) had type 1 (retropalatal) obstruction, 23 (39.0%) had type 2 (retropalatal and retroglossal) obstruction, and 7 (11.9%) had type 3 (retroglossal) obstruction. Using Sher scoring system for Miller's manoeuvre, sub-categorised into severe obstruction (51%-100% collapse) and less severe obstruction (0%-49% collapse) for statistical analysis, we found that retropalatal region in supine position was effected the most, with 50 patients (84.7%) in the severe obstruction group. This is followed by retropalatal region in erect position, with 35 patients (59.3%) in the severe obstruction group. In the majority of patients, retroglossal region in erect position and retropalatal region in supine position fell into the less severe obstruction group. We also found that obesity, high Mallampati score, age, male gender, Malay ethnicity, and high apnoea–hypopnoea index were significant risk factors that contribute to the severity of upper airway obstruction in patients with OSAS.

Conclusion: We concluded that nasopharyngolaryngoscopy with Muller's manoeuvre is reliable, easy, and minimally invasive, and it can be done as an office procedure in evaluating multilevel obstruction of the upper airway. It can provide dynamic information regarding morphology and physiology of upper airway obstruction in patient with OSAS. Retropalatal region was more affected compared with retroglossal region in either erect or supine position. However, when we compared retroglossal region in erect and in supine position, the latter has more contributing factors towards the obstruction severity.

Supervisor:
Dr Baharudin Abdullah
Co-supervisor:
Dr Suzina Sheikh Abdul Hamid

A STUDY ON PATIENTS UNDERGOING CORONARY ANGIOGRAM IN HUSM CARDIOLOGY UNIT: RELATIONSHIP OF AN ANKLE BRACHIAL PRESSURE INDEX (ABI) WITH SEVERITY OF CORONARY ANGIOGRAPHY FINDINGS

Dr Khairul Azmi Ibrahim
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Several large population-based longitudinal studies had shown that a low ankle brachial pressure index (ABI) is an indicator of future cardiovascular events and mortality. Presently, there is only limited study done to investigate the relationship of ABI with the severity of coronary heart disease (CHD) based on coronary angiogram in our local population.

Objectives: The objective of this study was to determine the association between low ABI (defined as ABI < 0.9) with presence of angiographically documented CHD in patients who underwent coronary angiogram in Hospital Universiti Sains Malaysia, Kelantan. This study would also compare the mean difference of ABI for different severity of coronary angiographic findings and correlate the ABI values obtained in the study. We also aimed to determine the usefulness of low ABI in predicting angiographically documented CHD in local population.

Methods: In this study, 120 patients who were referred for coronary angiogram for first time were examined. Their ABI was obtained before they underwent coronary angiogram. Association of low ABI with angiographically proven CHD was examined using chi-square and Fischer exact tests. The difference in mean ABI values between different groups of CHD severity was analysed using ANOVA, and the correlation between ABI values and the severity of angiographic findings was examined. The sensitivity, specificity, and predictive value of low ABI for angiographically documented CHD were also calculated.

Results: The mean age of the subjects was 55.8 years (SD 9.7). Of the 120 subjects recruited, 43 (35.8%) had no significant coronary obstruction, 20 (16.7%) had 1-vessel disease, 27 (22.5%) had 2-vessel disease, 27 (22.5%) had 3-vessel disease, and 3 (2.5%) had left main stem disease. Low ABI was observed in 7 (16%) of the subjects with no significant coronary obstruction and 21 (27%) of the subjects with no significant coronary obstruction. There was no significant association between low ABI and the presence of angiographically documented CHD (P = 0.187). However, mean ABI value in subjects with 2-vessel disease (0.857, SD 0.193) and 3-vessel/LMS disease (0.849, SD 0.203) were significantly lower compared with subjects with no significant obstruction (1.059, SD 0.122), with P < 0.001 each, and compared with subjects with 1-vessel disease (1.021, SD 0.171), with P = 0.017 and 0.008, respectively. There was a significant but weak inverse correlation between the ABI values and the severity of coronary angiographic findings (P < 0.001, Pearson's correlation coefficient = −0.48). The low ABI was not sensitive (27%) but have high specificity (84%) for angiographically proven CHD. The positive predictive value of low ABI was 75% and the negative predictive value was 39% for angiographically proven CHD.

Conclusion: Low ABI was not associated with the presence of angiographically documented CHD in our study population. However, mean ABI values for patients with multivessel/LMS disease were significantly lower compared

with patients with no significant obstruction or single vessel disease, and were below the normal range. The ABI examination may be used as an adjunct tool to predict the severity of CHD. Low ABI was not sensitive, but specific for angiographically documented CHD.

Supervisor:
Dr Mohd Sapawi Mohamad

SINGLE-PEDICLE SUPERFICIAL INFERIOR EPIGASTRIC ARTERY FLAP VERSUS BIPEDICLE SUPERFICIAL INFERIOR EPIGASTRIC ARTERY AND SUPER EXTERNAL PUDENDAL ARTERY FLAP: THE FLAP PERFUSION AND VIABILITY STUDY IN THE RABBIT MODEL

Dr Khoo Teng Lye
MSurg (Plastic Surgery)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Among the abdominal flaps, the superficial inferior epigastric artery (SIEA) flap is recognised as the least invasive technique with minimal donor site morbidity. The SIEA flap is usually raised as hemi-abdominal flap. The perfusion and viability of the SIEA flap extending above the umbilicus require further exploration with the rabbit paramedian SIEA flap model.

Objectives: The present study was undertaken to determine the vascular anatomy of the rabbit ventral abdomen, to develop a rabbit SIEA flap model, and to compare the flap perfusion and viability between the single and bipedicle flaps. The vascular anatomy was dissected for direct observation and documentation.

Methods: Twelve bilateral 12 × 5 cm symmetrical paramedian flaps were raised on the ventral abdomen of 6 male New Zealand white rabbits. The right flaps were based on single pedicle of SIEA whereas the left flaps were based on bipedicle of SIEA and superficial external pudendal artery (SEPA). The perfusion of flaps was objectively determined with laser Doppler flowmetry (LDF), and the flap viability was assessed with two-dimensional planimetry over 14-day duration post-operatively.

Results: The SIEA was the dominant vascular supply of the rabbit ventral abdomen. It was joined by the SEPA just proximal to the inguinal fat pad. There was no significant size muscular perforating vessel from the rectus abdominis or lateral abdominal muscles for establishing a perforator flap model. The LDF of the bipedicle SIEA/SEPA flap were marginally superior to single pedicle SIEA flap in overall mean (67.8 perfusion units, SD 10.3, versus 59.2 perfusion units, SD 10.3) and over time from post-operative day 1 to day 14, but the differences were not statistically significant ($P > 0.05$). The overall mean LDF reading at the centre of flap was higher than at the distal flap (66.3 perfusion units, SD 7.4, versus 60.7 perfusion units, SD 7.4), but the difference was not statistically different ($P = 0.561$). The mean flap viability of the bipedicle SIEA or SEPA flap was better than the single pedicle SIEA flap (99.6, SD 6.6%, versus 90.6, SD 6.6%), but the finding was not statistically significant ($P = 0.361$). The LDF measurements on post-operative day 1 and 3 moderately correlated with the outcome of flap viability on day 7 and 14 ($P < 0.05$).

Conclusion: The paramedian rabbit SIEA flap model can be an analogue of the human SIEA hemi-abdominal flap that extends above the umbilicus. The single pedicle SIEA could achieve satisfactory perfusion and viability for both the ipsilateral vascular territories of the SIEA and lateral thoracic artery. There was no significant difference of flap perfusion and viability between single and bipedicle SIEA flaps.

Supervisor:
Professor Dr Ahmad Sukari Halim
Co-supervisor:
Dr Rumaizid Shaari

IN VIVO EVALUATION OF THE ANGIOGENIC AND ANTIMICROBIAL PROPERTIES OF TUALANG HONEY USING A FULL-THICKNESS BURN WOUNDS IN ANIMAL MODEL IN COMPARISON TO HYDROFIBRE

Dr Khoo Yan Teng
MSurg (Plastic Surgery)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Tangential excision and skin grafting are inevitable in managing full-thickness burns. Wound bed preparations prior to surgery are necessary in order to prevent wound infection and promote wound healing. Honey can be used to treat burn wounds. However, not all types of honey have the same properties.

Objectives: The study was conducted to evaluate the effect on the wound contraction, the antimicrobial properties, and the histopathological aspects of the Tualang honey in full-thickness burn wounds in a rat model, in comparison with Aquacel dressings.

Methods: Thirty-six female Sprague Dawley rats were randomly divided into 3 groups. Under anaesthesia, 3 full-thickness burn wounds were created on the dorsum of the rats. The full-thickness burn wounds were inoculated with a specific organism (10^4), namely *Pseudomonas aeruginosa* ($n = 12$), *Klebsiella pneumoniae* ($n = 12$), or *Acinetobacter baumannii* ($n = 12$). The 3 burn wounds were dressed with Tualang honey, plain Aquacel, or Aquacel Ag. Swab samples were obtained every 3 days (day 3, 6, 9, 12, 15, 18, and 21) for microbiological analyses. Clinical assessments were performed. At day 7, 14, and 21 days of burn, tissue samples were sectioned and histopathological examination was performed.

Results: There was a rapid 32.26% reduction in wound size by day 6 ($P = 0.008$) in the Tualang honey-treated wounds, and 49.27% by day 15 ($P = 0.005$). The wounds were smaller by day 18 ($P < 0.032$). Tualang honey-treated rats demonstrated a reduction in bacterial growth in *P. aeruginosa*-inoculated inoculated wounds ($P = 0.005$). However, Aquacel Ag–treated and plain Aquacel-treated wounds are superior to honey-treated wounds in *A. baumannii* inoculation ($P = 0.035$). Neutrophil count was reduced in honey-treated wound on day 7 in both *A. baumannii*- and *K. pneumoniae*-inoculated wounds ($P < 0.05$) and, similarly, on day 14 in *P. aeruginosa*-inoculated wounds ($P = 0.003$). Granulation thickness on day 14 of honey treated wound was 50.42 µm compared with Aquacel-treated wound, 24.87 µm, in *P. aeruginosa* group ($P = 0.045$). On day 21, in *K. pneumoniae* group, there was complete epidermis coverage of the wound ($P = 0.002$) and increased thickness of granulation tissue ($P = 0.001$) in honey-treated group. In histological analysis of new capillary formation, there was no statistical significance between all dressings.

Conclusion: This experiment shows the positive effect of Tualang honey as a topical dressing for full-thickness burn wounds in an animal model. Tualang honey has better results with regard to the eradication of *P. aeruginosa*. It also promotes burn wound healing process on wound inoculated with *P. aeruginosa* or *K. pneumoniae*.

Supervisor:
Professor Dr Ahmad Sukari Halim
Co-supervisors:
Dr Kirnpal Kaur B Singh
Dr Md Salzihan Salleh

THE COMPARISON OF EFFECTIVENESS BETWEEN THE USE OF RINGER'S LACTATE AND NORMAL SALINE FOR FLUID THERAPY IN HYPEREMESIS GRAVIDARUM IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Khursiah Daud
MMed (O & G)

Department of Obstetrics and Gynaecology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The aims of treatment of hyperemesis gravidarum are to stop vomiting and correction of dehydration, starvation, as well as electrolytes imbalance. Various kinds of fluid have been suggested as fluid therapy, but none was proven superior to the others. Being isotonic, both normal saline and Ringer's Lactate have long been used to correct dehydration state in patients with hyperemesis gravidarum. However, there was a fear that the lactate component in Ringer's lactate solution may delay the clearance of urine ketones as well as worsen the starvation state of the patients. This study was performed to evaluate the effectiveness of Ringer's lactate and normal saline as fluid therapy in hyperemesis gravidarum.

Objectives: The study aimed to compare the effectiveness of Ringer's lactate and normal saline to correct dehydration and starvation state in hyperemesis gravidarum, by comparing the amount of fluid required to correct dehydration, clear urine ketones, and correct the electrolytes imbalance, as well as the duration taken for urine ketone clearance, level of serum lactate, and duration of hospital stay.

Methods: This is a single-blinded prospective controlled trial conducted in HUSM over 6 months. Patients who fulfilled the inclusion and exclusion criteria were randomised to receive 6 pints per day of either Ringer's lactate or normal saline infusion for their treatment. Laboratory investigations such as haematocrit level, blood urea, serum electrolytes, serum lactate, urine specific gravity, and urine ketones were done on admission and repeated every 12 hours until all values become normal in order to assess their response to each treatment. The data was collected and analysed using SPSS version 12.0.

Results: In total, 100 patients were recruited; 50 patients received Ringer's lactate and 50 patients received normal saline. The mean maternal age was 25.29 years (SD 5.34). The mean gravidity was 2.02 (SD 1.39), mean gestational age was 10.64 weeks (SD 3.67), and mean body mass index was 25.75 kg/m^2 (SD 2.08). The mean duration for urine ketone clearance were 46.56 hours (SD 10.18) for normal saline group and 46.56 hours (SD 11.01) for Ringer's lactate group ($P = 1.00$). Most patients required a total of 12 pints to clear urine ketone. All patients had normal value of serum lactate on admission. Patients who received Ringer's lactate did not show any rise in lactate level ($P = 0.28$). The mean amount of fluid received to correct dehydration was 11.73 pints (SD 2.83). Most patients needed 48 hours for their haematocrit level to be corrected. Statistically, there was no difference for normal saline group and Ringer's lactate group in the correction of haematocrit level ($P = 0.21$). Most patients had their urine specific gravity normalised at 48 hours. There was no significant difference between normal saline group and Ringer's lactate group for the normalisation of urine specific gravity. The mean amount of fluid required for potassium ion correction were 8.88 pints (SD 2.63) for normal saline group and 8.34 pints (SD 2.44) for Ringer's lactate group ($P = 0.29$). The mean duration of hospital stay for normal saline group was 2.12 days (SD 0.66), and for Ringer's Lactate group, 2.20 days (SD 0.42); the difference was also not statistically significant ($P = 0.48$).

Conclusion: Ringer's lactate was noted to be as effective as normal saline in correcting dehydration and starvation state in patients with hyperemesis gravidarum. The lactate component in Ringer's lactate did not delay the urine ketone clearance or worsen the starvation state of the patients.

Supervisor:
Dr Adibah Ibrahim

THE VISUAL INSPECTION AND MICROBIOLOGICAL ASSESSMENT OF THE ENVIRONMENTAL SAMPLES FROM RESTAURANTS REGISTERED UNDER THE DISTRICT HEALTH OFFICE, KOTA BHARU

Dr Khuzaini Abd Karim
MComMed (Environmental Health)

Department of Community Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Lack of proper hygiene practice in restaurants can lead to a high prevalence of food-borne diseases. Food safety control and monitoring activities for restaurants include routine visual inspection and microbiological sampling. A simple method of assessment such as visual inspection helps in early implementation of corrective action, but its relationship with microbiological assessment has not been not widely studied.

Objective: The objective of this study was to determine the relationship between routine visual inspection results and microbiological studies of environmental samples from selected restaurants registered under the District Health Office, Kota Bharu.

Methods: This was a cross-sectional study of 285 randomly selected restaurants from the registry in District Health Office, Kota Bharu. The parameters from the Food Premise Evaluation form, KMM3P1, produced by the Ministry of Health, were selected for the restaurants' inspection, and 3M Quick Swabs were used for environmental swab samplings. The swabs were analysed at Food Safety and Quality Laboratory in Peringat, Kota Bharu, for total plate coliform and *E. coli* counts.

Results: The mean visual inspection scores of food handlers and the food storage/preparation area were significantly lower compared with the mean score of the equipment/utensils ($P < 0.001$). The mean total plate counts was significantly higher ($P = 0.03$) in swab of refrigerators compared with swab of plates. The mean coliform counts was significantly higher ($P = 0.001$) in swabs of plates compared to swab refrigerators. Wearing improper shoes (OR 2.21, 95% CI 1.06–4.63, $P = 0.035$) and violation of *E. coli* counts for food handlers' hands (OR 2.07, 95% CI 1.00–4.27, $P = 0.049$) were significantly associated with violation in total plate count for refrigerators. Wearing improper shoes (OR 4.19, 95% CI 1.43–12.28, $P = 0.009$) was significantly associated with violation in coliform count for refrigerators. Unsuitable area of food preparation (OR 3.31, 95% CI 1.29–8.44, $P = 0.012$), wearing improper shoes (OR 9.55, 95% CI 1.21–75.55, $P = 0.033$), and using water from other source than Air Kelantan Sendirian Berhad (OR 2.96, 95% CI 1.04–8.43, $P = 0.042$) were significantly associated with violation in *E. coli* counts for refrigerators. Violation of *E. coli* counts for food handlers' hands (OR 2.35, 95% CI 1.10–5.06, $P = 0.028$) was significantly associated with violation in total plate counts for eating plates. Improper food holding method (OR 3.62, 95%CI, 1.26–10.39, $P = 0.017$) and violation of *E. coli* counts for food handlers' hands (OR 3.75, 95% CI 1.36, 10.36, $P = 0.011$) were significantly associated with violation in *E. coli* counts for eating plates.

Conclusion: The violations of microbiological counts in refrigerators were associated with the following factors: food handlers, food storage and preparation areas, source of water, and violation of *E. coli* counts for food handlers' hands. The violations of microbiological counts on eating plates were associated with food holding methods and violation of *E. coli* counts for food handlers' hands.

Supervisor:
Dr Zaliha Ismail
Co-supervisor:
Dr Nor Azwany Yaacob

AUGMENTATION INDEX IN SPONTANEOUS INTRACEREBRAL HAEMORRHAGE AND ITS RELATIONSHIP WITH OUTCOME

Dr Lee Hock Keong
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Intracerebral haemorrhage was the most disabling and least treatable form of stroke. The risk factors for intracerebral haemorrhage were old age, hypertension, diabetes mellitus, hypercholesterolaemia, smoking, and high alcohol intake, which were also associated with arterial stiffness. Augmentation index was one of the surrogate markers for arterial stiffness.

Objective: The aim of the study was to determine the association between high augmentation index and 3-month outcome and mortality in intracerebral haemorrhage.

Methods: Patients with spontaneous supratentorial intracerebral haemorrhage admitted to the Hospital Universiti Sains Malaysia from May 2006 until May 2008 were recruited in the study. All patients were followed-up for 3 months. The following data were collected for all patients in a computerised database: demographic parameters (age and sex), clinical parameters (modifiable risk factors for intracerebral haemorrhage, admission Glasgow Coma Scale score, height, weigh, body mass index, systolic blood pressure, diastolic blood pressure, mean arterial pressure, heart rate, bilateral internal carotid blood flow, and augmentation index), laboratory parameters (total white cell count, haemoglobin level, platelet count, random blood sugar, serum sodium, potassium, urea, creatinine, international normalised ratio, activated partial thromboplastin time, serum total cholesterol, low density lipoprotein, high density lipoprotein, and triglyceride), radiological parameters (chest X-ray findings and brain CT scan findings), in-hospital treatment (conservative or surgical

treatment), type of surgical treatment (craniotomy or external ventricular drainage), 3-month outcome (Modified Rankin Scale score) and mortality. All data were entered into SPSS version 12 and logistic regression analysis was carried out among significant variables to identify independent predictors of 3-month poor outcome and mortality.

Result: This prospective study involved 60 patients with spontaneous intracerebral haemorrhage. Out of the total, 24 patients (40%) had 3-month good outcome (Modified Rankin Scale 0–4), and 36 patients (60%) had poor outcome (Modified Rankin Scale 5–6). Out of the 36 poor outcome patients, 12 (33.3%) had high augmentation index. At 3-month follow-up, 38 patients (63%) survived, and 22 patients (37%) passed away in 3-month post-ictus; 10 (45.5%) of these 22 patients had high augmentation index. Independent predictors of 3-month poor outcome were Glasgow Coma Scale score (OR = 0.7, 95% CI 0.450 to 0.971, P = 0.035), total white cell count (OR = 1.2, 95% CI 1.028 to 1.453, P = 0.023), and haematoma volume (OR = 1.1, 95% CI 1.024 to 1.204, P = 0.011). The significant predictors for 3-month intracerebral haemorrhage mortality were high augmentation index (OR = 8.6, 95% CI 1.794 to 40.940, P = 0.007), and midline shift (OR = 7.5, 95% CI 1.809 to 31.004, P = 0.005).

Conclusion: Glasgow Coma Scale score, total white cell count, and haematoma volume were the most important predictors for 3-month outcome. The significant predictors for 3-month intracerebral haemorrhage mortality in this study were high augmentation index and midline shift.

Supervisor:
Professor Dr Jafri Malin Abdullah '

SEVERE TRAUMATIC BRAIN INJURY: OUTCOME IN PATIENTS WITH DIFFUSE AXONAL INJURY MANAGED CONSERVATIVELY IN HOSPITAL SULTANAH AMINAH, JOHOR BAHRU—AN OBSERVATIONAL STUDY

Dr Liew Boon Seng
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Severe traumatic brain injury has been one of the major causes of death in Malaysia. There has been limited numbers of intensive care facilities to cater for the escalating numbers of severe traumatic brain injury patients. Due to certain limitations, not all patients in this group had been managed strictly according to the recommendation of the Brain Trauma Foundation, especially those who did not warrant any neurosurgical intervention such as a craniotomy.

Objective: The study aimed to compare the outcome of the severe traumatic brain injury with diffuse brain injury and without surgical lesion treated with different treatment modalities, namely ICP-CPP targeted, ventilation, and intubation groups. We also aimed to assess the usefulness of routine serial head computed tomography (CT) scan in severe traumatic brain injury without surgical lesion, and to determine the hazards risk of severe traumatic brain injury patients with diffuse brain injury without surgical lesion.

Methods: This was a prospective observational study involving severe traumatic brain injury patients admitted with diffuse brain injury without surgical lesion, as defined by Marshall Classification of Diffuse Brain Injury, to the Neurosurgical Intensive Care Unit, Hospital Sultanah Aminah, Johor Bahru. The study was conducted between 1 December 2006 and 31 May 2008, with a total of 72 patients recruited from 1 December 2006 until 30 November 2007. The follow-up was done at the 3rd and 6th month after the date of discharge of the recruited patients. All recruited patients, both sexes included, were with severe traumatic brain injury and admission Glasgow Scale of 8 or less, had sustained blunt head injury without surgical or mass lesion, and were admitted via direct admission or transferred from another hospital within 24 hours post-trauma. Surgical or mass lesion was defined as any mixed-density lesion of more than 25 cc, as defined by Marshall CT Classification. The following patients were excluded from the study: patients with polytrauma that caused unstable haemodynamic status requiring immediate non-head surgical intervention and post-operative ventilation support, those with severe underlying medical disorders (such as major organ failure and endocrinological or haematological disorders), those suspected of drug or alcohol intoxication, those who were mentally subnormal, those with history of chronic epilepsy before the event of head trauma, those who arrived with unilateral or bilateral fixed and dilated pupils believed to be due to on-going herniation, those clinically showing absence of brain stem reflexes, those with no improvement after resuscitation or failed resuscitation upon admission, those with a known history of hemiparesis, and those with any condition that lowered their functional status score. Data were analysed using SPSS version 12.0.1. Means and standard deviations were calculated for continuous variables, and frequency and percentages for categorical variables. Pearson's chi-square test was used for categorical data between 2 groups (good and poor outcomes); however, if the expected frequency of less than five were more than 20% of the cells, Fisher's exact test was applied. Chi-square was applied to assess association between binary dependent variables and 3 treatment variables. One-way ANOVA was applied for numerical variables of 3 treatment variables after normality checking when the assumptions were met. Median and interquartile rage were calculated for numerical variable if it was not normally distributed and Kruskal–Wallis Test was applied. Multiple Mann–Whitney tests were performed and interpreted if the P value was significant, set at less than 0.05. The prognostic factors of diffuse brain injury without surgical lesion among severe traumatic brain injury patients were determined using Cox Proportional Hazards Regression Model. For Multiple Cox Proportional Hazards Regression

Model, forward stepwise was applied. Log-minus-log plot, hazards function plot, and partial residuals were applied to check the model assumption.

Results: Twenty-two patients with severe traumatic brain injury without surgical lesion treated were studied. The age of patients ranged 8.0–64.8 years, with a median of 34.1 years, a mean of 34.2 years, and a standard deviation of 14.7 years. The majority of patients were males (61 patients, 84.7%), and the remaining were females (11 patients, 15.3%). From a total of 72 patients admitted for diffuse brain injuries without any surgical lesion, 41 (56.2%) were treated with intubation for airway protection and given oxygen via oxyvent device with continuous oxygen saturation monitoring. A total of 16 patients were treated with ventilation support ICP-CPP guided cerebral resuscitation. Eleven patients (15.3%) died during hospitalisation. Out of remaining 61 patients, only 49 patients (80.3%) were followed-up during the 3rd month (with 3 death), and 45 out of 58 patients (77.6%) were followed-up during the 6th month (with no death). On the 3rd month follow-up, 7 (15.2%) were still severely disabled, 4 (8.7%) were moderately disabled, and 29 (63.0%) had good recovery. On the 6th month follow-up, only 1 patient remained severe disabled, while the rest of 44 patients (97.8%) improved, with either moderate or good recovery. Outcome was worse in the ICP-CPP targeted group with median (IQR) Glasgow Outcome Scale (GOS) of 2.00 (2) compared with intubation group (P = 0.001). This difference was also seen during 3rd month follow-up but it was between intubation group and ventilation group (P = 0.012) with lower median GOS in ventilation group. On 6th month follow-up, the intubation group has a better median GOS compared with ICP-CPP targeted group and ventilation group, with statistically significant $P < 0.001$ and P = 0.004, respectively. Routine CT scans were done and our findings showed that 42 patients (80.8%) did not show any progression. None of patients whose repeat head CT showed progression without clinical deterioration was given any intervention. The analysis demonstrated that the following factors were significantly associated with outcome at 6th month follow-up: best motor response on admission (P = 0.012) and Glasgow Coma Score (GCS) on admission (P = 0.009). There was statistically significant increase in the hazards of dying in the ICP-CPP targeted management group compared with the intubation group (P = 0.008).

Conclusion: In diffuse brain injury without surgical or significant mass lesion, the severity of the brain injury may not be as bad as compared with those with associated surgical lesion such as intracerebral haemorrhage and acute subdural haemorrhage. This is concluded based on the finding of lower hospital mortality rate (15.3%) in this subgroup of patients with severe head injury compared with in most studies that included those with surgical lesion, where the mortality rate ranged 20.7%–37.8%. These findings may be influenced by a high number of patients with diffuse injury type I and II, who were not associated with increased intracranial pressure compared with in type III and IV injuries. In terms of recommendation for the management of brain injury without surgical lesion, the devastating outcome of patients treated with the best-recommended plan shown in this study may alert us if we have done more than what is required. However, the poor outcome seen in this group of patients may resulted from the primary brain injury itself, as most of the patients were with more depressed level of consciousness on admission and more severe diffuse brain injury as seen in CT imaging. Based on study, to the author proposed a more conservative management, which may be suitable for a subgroup of patients with minimal CT findings of type I and II diffuse injury, better admission GCS ranging 6–8, and normal motor response to be treated with the best available facilities as recommended by the Brain Trauma Foundation.

Supervisor:
Dr Mohammed Saffari Mohammed Haspani

DIEGO BLOOD GROUP (Di^a ANTIGEN): ITS PREVALENCE AND ROLE AS A RISK FACTOR FOR NEONATAL JAUNDICE IN BABIES BORN IN HUSM

Dr LIlian Gunawan
MMed (Paediatrics)

Department of Paediatrics
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Neonatal jaundice is a major health problem in Malaysia; however, its pathogenesis and risk factors are not completely understood.

Objectives: The objectives of this study were to evaluate the importance of some potentially important risk factors of Diego blood group (Di^a) and the frequency of incompatibility for this blood group in a Malay population in Kelantan. The results were related to the clinical picture in the baby and to other risk factors for neonatal jaundice.

Methods: This cross-sectional study was performed in the labour room, operation theatre, neonatal intensive care unit, and the nursery of Hospital Universiti Sains Malaysia from February 2008 until August 2009. Two groups of babies were included in the study. The non-jaundiced group consisted of term Malay newborns delivered at the hospital and screened for risk factors of jaundice, including Diego blood group. They were reassessed at day 7 of life to ensure they did not develop jaundice, and data about breast feeding practice, weight loss, and their bowel habits were collected. The second group was the jaundiced group consisting of term Malay newborns admitted at the hospital within 7 days of life because of jaundice. They were also screened for risk of jaundice, including Diego blood group. The recorded risk factors were subjected to statistical analysis for comparison between the groups.

Results: The prevalence of Diego blood group was 3.5% in the term Malay newborns. Diego blood group incompatibility occurred more in the jaundice group than in the non-jaundice group; however, the difference was not

statistically significant. Out of the 8 babies in the jaundiced group with Diego blood group incompatibility, 4 had severe and early onset jaundice with a high reticulocyte count, suggesting that Diego incompatibility may play a role in the pathogenesis of the neonatal jaundice in these babies. A multivariate analysis of other risk factors for neonatal jaundice showed that the followings were significantly associated with neonatal jaundice: mode of delivery, breast feeding practice, bowel output, and haemoglobin level.

Conclusion: The prevalence of Diego blood group (Di^a) in a Malay population in Hospital Universiti Sains Malaysia was low (3.5%) compared with in other Asian populations. About half of the babies in the jaundiced group with Di^a incompatibility showed signs of haemolysis.

Supervisor:
Dr Noraida Ramli

THE EFFECTS OF TUALANG HONEY ON POST-MENOPAUSAL WOMEN

Dr Lili Husniati Yaacob
MMed (Family Medicine)

Department of Family Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Results of recent trial have shown some negative effects of hormone replacement therapy on post-menopausal women. Therefore, there has been a move towards using alternative medicine as a treatment for menopausal problems, and honey is one of the alternatives.

Objectives: The study aimed to investigate the effects of Tualang honey on the safety profiles, cardiovascular risk factors, changes in hormones, and bone density in post-menopausal women.

Methods: A randomised, controlled trial comparing the effects of Tualang honey 20 g/day for a 4-month intervention period among healthy post-menopausal Malay women aged 45–60 years old was conducted. The primary outcome measures were to evaluate changes from baseline on the safety profiles, cardiovascular risk factors, hormonal profiles, and bone loss in Tualang honey treatment as compared with hormone replacement therapy (HRT). Paired *t* test was used to analyse the difference between the outcome at baseline and 4 months of intervention in both groups. Analysis of covariance (ANCOVA) was performed to evaluate the difference between groups at the study end-point with baseline scores as co-variates.

Results: The subjects were divided into 2 groups: 40 and 39 women with no statistical difference in socio-demography, anthropometry, and duration of menopause were randomly assigned to Tualang honey and HRT groups, respectively. There was no difference in the bone densitometry at the end of the 4 month in both groups. There were also no significant changes in safety parameters seen in the haematological profile, liver enzymes, and renal function in the 2 randomised groups. However, there was a significant increase in the total cholesterol, LDL-C, and FBS in the honey-treated group compared from baseline. There was improvement of FSH, LH, and oestradiol levels in the HRT group. There were 35.4% of participants who reported per vaginal bleeding; all of them were from the HRT group.

Conclusion: Daily intake of honey at 20 mg/day for 4 month was found to be safe to use and have the same effect on bone densitometry as compared to hormone replacement therapy. However, consumption of honey for 4 months was associated with an increase in the cholesterol and fasting blood sugar level.

Supervisor:
Associate Professor Dr Nik Hazlina Nik Hussain
Co-supervisor:
Associate Professor Dr Saiful Bahari Ismail

A SURVEY OF MALAYSIAN EMERGENCY PERSONNEL ON FAMILY PRESENCE DURING RESUSCITATION

Dr Lim Chee Kean
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The practice of family presence (FP) during resuscitation is gaining a foothold in Western countries but still largely not encouraged by Asian healthcare personnel (HCP).

Objective: This study aims to provide a Malaysian data on HCPs opinions of FP.

Methods: A non-probability survey was conducted in emergency departments (ED) of 4 hospitals. A questionnaire was designed based on previous similar surveys conducted in Singapore. It was edited by 2 emergency physicians, and a pre-test was conducted in HUSM to validate the reliability of the questionnaire. All HCP in the 4 hospitals were included in this study, which was conducted from October until December 2009.

Results: A total of 273 responses were obtained, of which one-third were from doctors, and the rest, paramedics. The mean age was 32 years, and there were equal number of male and female participants. The HCP had worked an average of 7.5 years, with 5.1 years in the ED. It was found that 27% of doctors were more agreeable to FP compared with paramedics did (P = 0.001). However, 54% of doctors and 32.4% of paramedics agreed that relatives had a right for FP, and 57.6% of doctors, compares with 67.6% of paramedics, would like to be present during their own relative's resuscitation. Among the reasons for not allowing FP were that it would be a traumatic

experience to the family or a breach of the patient's privacy, or that it may result in medico-legal issues, interference to the resuscitation process, overcrowding, increase in HCP's stress, or prolonged resuscitation efforts. The identified advantages of FP were that it assures the family everything had been done, facilitates mourning, strengthens family bond, and allows the final rites to be performed. Logistic regression of variant showed that the odds of a doctor agreeing to FP was 2.86 that of a paramedic's (P = 0.002).

Conclusion: It was found that Malaysian emergency HCP generally do not agree to FP. Surveys of the public may help to assess their opinions and whether it contradicts the HCP's opinions.

Supervisor:
Associate Professor Dr Rashidi Ahmad
Co-supervisor:
Dr Chew Keng Sheng

HEARING LOSS IN MALAYSIAN MILITARY PILOTS: A STUDY OF PREVALENCE AND RISK FACTORS

Dr Lim Kean Meng
MMed (ORL–Head Neck Surgery)

Department of ORL–Head and Neck Surgery
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Military pilots are exposed to high-level aircraft noise, which is considered to be one of the factors of noise-induced hearing loss.

Objective: The study was conducted to determine the prevalence and risk factors of hearing loss among military pilots in Malaysia.

Methods: This was a descriptive cross-sectional study. The sources of population were from Malaysian military pilots. The data was collected as a sample of convenience during the pilot's annual medical check-up at Institute of Aviation Medicine, Kuala Lumpur, from January until June 2008. All consented pilots underwent an interview involving questionnaire completion, ear examination, and hearing assessment with pure tone audiometry (PTA) and distortion product otoacoustic emission (DPOAE).

Results: A total number of 127 military pilots were included in this study. All of them were male with age range of 22–48 years old; most of them were in the age group 30 to 39 years old. The majority of the pilots (89%) were from Royal Malaysia Air Force. The means of total hours and years of flight was 1599.94 hours and 10.16 years, respectively. In this study, the prevalence of hearing loss was 23.6%, with 25 dB as the cutting point of normal hearing. All pilots with hearing impairment had mild hearing loss only. The frequencies most affected in this study were 4 kHz and 6 kHz. The prevalence of hearing impairment was higher in older age group of pilots. Helicopter pilots had worse audiogram as compared to transport and fighter pilots, especially in high-frequency sound. There was a significant association of hearing loss with age, smoking, total hours, and years of flight. There were significant associations between DPOAE and hearing status, as well as failed DPOAE and sensorineural hearing loss, at frequency of 4 kHz and 6 kHz ($P < 0.05$).

Conclusion: Results from this study showed that military pilots were exposed to the risk of acquiring noise-induced hearing loss. Additional measures and intervention from the Ministry of Defence and Royal Malaysian Air Force in the hearing conservation program is needed to minimise or prevent military pilot from developing noise-induced hearing loss.

Supervisor:
Professor Dr Dinsuhaimi Sidek
Co-supervisor:
Dr Rosdan Salim

COMPARISON OF DIGITISED AND CONVENTIONAL MAMMOGRAM IN EVALUATION OF BREAST MASS AND CALCIFICATION

Dr Lizam Zahina Mohamed
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Conventional mammography, or screen-film mammography, has been the standard method for breast cancer screening and in making a clinical diagnosis. It is proven to have a high sensitivity and specificity for the detection of breast cancer. The specificity ranged from 90% to 98%, and the sensitivities ranged from 83% to 95%. Screen-film mammography can be converted to a digital image, which is referred to as a digitised mammogram. In its digital format, the image can be manipulated in a variety of ways to improve the detection of any breast lesions. However, the primary restriction in digital images is its lower spatial resolution that might be an obstacle for the detection and characterisation of microcalcifications.

Objective: The study aimed to determine whether digitised mammogram is accurately diagnostic as the conventional mammography in detecting breast mass and calcification.

Methods: The study was carried out in Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan, for 3 years, from January 2004 until December 2006. A total of 178 samples were obtained, which included 65 samples without any breast mass or calcification, 44 samples with breast mass, 45 samples with breast calcification, and 24 samples with both breast mass and calcification. A single sample was considered as 1 breast with 2 mammography standard views. The original screen-film mammograms were digitised using Diagnostic PRO Advantage digitiser. Both conventional and digitised images were interpreted by 2 observes for the presence of any

breast mass and clarification. Two weeks elapsed between the review of 2 mammogram images to reduce the effect of learning and memory. A 5-scale Breast Imaging-Reporting and Data System category (BI-RADS 1-5) was used to categorise the finding. Agreements were analysed using Kappa analysis.

Results: Kappa agreement between conventional and digitised mammogram images in detecting breast mass was 0.869 for observer 1 and 0.855 for observer 2. However, Kappa agreement between conventional and digitised mammogram images in detecting breast calcification was 0.494 for observer 1 and 0.358 for observer 2. Kappa agreement between observers in detecting breast mass digitised mammogram was 0.673 compared with 0.706 on conventional mammogram. Agreement for BI-RADS categories in digitised mammogram was analyses using Roc curve. For observer 1, area under curve was 0.843; for observer 2, 0.697.

Conclusion: Digitised mammography images have a nearly perfect Kappa agreement in detecting breast mass. In detection of breast calcification, the Kappa agreement was low. The Kappa agreement between observers in detecting breast mass and calcification using digitised mammogram was lower compared with conventional mammogram. This was mainly due to small digitisation matrix that made visualisation of microcalcification impossible. However, this study did not reflect the accuracy of digitised mammogram in differentiating benign from malignant breast mass or calcification.

Supervisor:
Dr Mohd Ezane Aziz
Co-supervisor:
Dr Nik Munirah Nik Mahdi

EXPLORATION OF REAL-TIME PCR AS A NEW DIAGNOSTIC METHOD OF FRAGILE X SYNDROME

Marjanu Hikmah Elias
MSc (Human Genetics)

Human Genome Centre
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Fragile X syndrome (FXS) is the most common form of inherited mental retardation in males caused by *FMR1* gene abnormality that is associated with CGG repeats expansion and hypermethylation status of its promoter. Methylated alleles usually lead to transcriptional inhibition and, consequently, loss of fragile X mental retardation protein (FMRP) production. Chemical modification of cytosine to uracil by sodium bisulfite treatment has provided an additional method for the laboratory diagnosis of FXS, thus avoiding the use of the laborious Southern blot analysis, which is the gold standard test for FXS diagnosis.

Objective: The study was done to explore a rapid, easy, reliable, and inexpensive method for FXS diagnosis that can replace the laborious, time consuming, and expensive Southern blot method.

Methods: Genomic DNA was extracted from peripheral blood of 45 clinically diagnosed FXS patients. Samples were treated with sodium bisulfite followed by amplification using real-time multiplex methylation specific PCR (RT-M-MSPCR) with *XIST* gene as an internal control, followed by melting curve analysis.

Results: Our results showed that all control samples with known methylation status were correctly diagnosed using RT-M-MSPCR. For method validation purpose, the methylation status of other 45 male patients sample were also successfully diagnosed using our RT-M-MSPCR method and were in concordance with the results of the Southern blot. Thirty-nine samples had unmethylated alleles, 4 samples had fully methylated alleles, and 2 samples have both methylated and unmethylated alleles, implying a diagnosis of mosaicism. The developed method was confirmed to be specific as the melting temperature of both methylated and unmethylated *FMR1* promoter was found to be varied in only a small range of melting temperature differences of 84.91 °C (SD 0.41) and 90.57 °C (SD 0.34) for methylated and unmethylated promoters, respectively. The methylation percentage of the mosaic patients were successfully calculated, with a detection ability of as low as 5% methylation percentage. However, due to random inactivation, female methylation status cannot be identified, thus premutation and full mutation females cannot be differentiated from normal females. Having said that, male patients are more commonly diagnosed with FXS, thus this is not a major limitation for FXS screening.

Conclusion: Our results showed that RT-M-MSPCR is a reliable, inexpensive method that has 100% equal sensitivity as well as specificity compared to Southern blot. This newly developed method is also very convenient in screening large number of male FXS patients, as it is non-time consuming and easy to perform, especially when there is a low quantity of samples (final concentration of genomic DNA) that need to be sensitively and accurately determined.

Supervisor:
Dr Zilfalil Alwi
Co-supervisors:
Dr Salmi Abdul Razak
Professor Dr Ravindran Ankathil

EFFECTS OF *GARCINIA MANGOSTANA* LINN. ON WOUND HEALING IN EXPERIMENTAL WOUND MODELS IN RATS: A PRELIMINARY STUDY

Dr Marzida Abd Latib
MMed (Plastic Surgery)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Wound healing is a very complex interplay between the overlapping phases, involving many cell

types, mediators, and growth factors. The amount of knowledge and understanding concerning the wound healing process and dressing practices has expanded and changed overtime. Its management is often costly; therefore, researchers are exploring alternative solution from natural sources that are useful in wound healing. *Garcinia mangostana* Linn., or mangosteen, has never been scientifically studied for its wound healing potential. However, there are numerous *in vivo* and *in vitro* studies that pointed to the medicinal properties of *Garcinia mangostana* L.

Objectives: This study aimed to explore and relate the medicinal properties of *Garcinia mangostana* L. to wound healing in an animal wound model. The main objective of this study is to evaluate the effect of *Garcinia mangostana* L. on specific wound healing properties in rats, namely wound contraction, period of epithelisation, and breaking strength. A semi-quantitative histological examination was also performed.

Methods: The wound contraction and epithelisation were studied in an excision wound model, which comprised of 10 rats in the treatment group and 10 non-treated rats as the control group. The wound breaking strength was studied in the incision wound model, which comprised of 6 rats in each group. A semi-quantitative histological examination was then performed for both excision and incision wound models.

Results: This study demonstrated a significant increase in wound contraction at post-operative day 1 and day 5 in wounds treated with *Garcinia mangostana* L. extract ($P < 0.001$ and $P < 0.005$, respectively). It was also found that the wound breaking strength was significantly higher in the treatment group ($P < 0.04$). Unfortunately, semi-quantitative histological analysis did not show any significant difference in inflammation, angiogenesis, and fibroblast proliferation.

Conclusion: *Garcinia mangostana* L. showed evidence of wound healing promotion. However, the exact mechanism is still vague, requiring further in vitro and in vivo studies before a clinical study could be performed.

Supervisor:
Dr Wan Azman Wan Sulaiman
Co-supervisor:
Dr Shah Jumaat Mohd Yusof
Dr Venkatesh R Naik

ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN MALAYSIA MILITARY HOSPITAL

Mej (Dr) Masdiamin Mohamad Nor
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The anterior crucioate ligament (ACL) is probably the most commonly injured ligament of the knee. Sports and army physical training in the Armed Forces account for a significant number of ACL injury and lost of duty time. Therefore, they give an impact on the military readiness. ACL tear frequently occurs; however, people are expecting early return to normal daily activity, especially the military training, duties, and sports. For the Malaysian Armed Forces, ACL reconstruction is only practiced in 94 Hospital Angkatan Tentera, Terandak, Melaka, and 96 Hospital Angkatan Tentera, Lumut, Perak, because of the availability of facilities. The injury is due to military training, sports activities, or accidents. This study observed the cause of the injury and the outcome of ACL reconstruction in terms of the improvement in the military health grading (PULHEEMS).

Objectives: The study aimed to analyse demographic data of military personnel who underwent ACL reconstruction surgery in military hospitals, as well as to determine the main cause of ACL injury, among military personnel, that needs reconstruction. Another objective in our study is to observe the early outcome post-surgery in terms of the improvement in the military health grading and presence of instability symptoms.

Methods: The study is a retrospective observational study that was conducted in 2 military hospitals in Malaysia. The study period was from 1 August 2006 until 31 July 2007. We selected military personnel who underwent ACL revision surgery and those who had the injury before joining the military service. When assessing the outcome of the study, those who had associated injuries such as multiple ligamentum injuries, meniscus injuries, control injuries, or fractures around the knee were excluded. We gathered the patients' information from their medical records, as well as demographic data, such as military health grading before and after the surgery. The causes of ACL injury, the operative finding, and the type of surgical procedures performed were recorded in the assessment form. The assessment for the post-operative military health grading (PULHEEMS) was done by the respective military surgeons after the patients had completed their post-operative rehabilitation. The patients were called and interviewed to assess the symptom of instability during walking, running, and jumping, according to the severity of the instability symptoms they experienced.

Results: There were 111 cases of ACL reconstruction included in the study. The mean age is 31.71 years, with the highest number of cases from the Junior/Other Rank group. Most patients were operated within 18 months after injury. The most common graft and type of reconstruction was patella tendon autograft (54%), followed by double bundle hamstring autograft (26%), and single bundle hamstring autograft (20%). The percentage of isolated ACL injury compare with associated ACL injury is 64% to 36%, respectively. Causes of ACL injury were sports in 81%, military training in 14%, and other causes in 5% of cases. The mean follow-up until the patients were discharge from hospital was 9.21 months. Following reconstruction and rehabilitation, 97.1% of these patients were upgraded back to military grade FE. Patients with patella tendon autograft had better stability compare with those with hamstring autograft ($P = 0.01$). However, there

were no significant different (P = 0.18) in terms of symptoms of instability between patients with single bundle hamstring autograft and double bundle hamstring autograft.

Conclusion: The majority of patients who undergone ACL reconstruction were from Junior/Other Rank group. The main cause of injury was sport-related activity. The surgery and post-operative rehabilitation helped them return to their normal military health grading. The symptoms of post-operative instability were better in patients in bone patella tendon group. There was no difference between single and double bundle hamstring groups.

Supervisor:
Dr Tengku Muzaffar Tengku Shihabudin

VALUE OF SHOCK INDEX IN RISK STRATIFICATION OF ILLNESS SEVERITY AMONG PATIENTS IN EMERGENCY DEPARTMENT

Dr Mawar Ayub
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Risk stratification of patient is very important, starting at the time the patient arrive in the emergency department. Wide range of patient's presentation can sometimes appear normal; the patient's vital signs may be normal, but they actually deteriorate in time. We should not overlook this group of patients, as the mortality rate may increase.

Objectives: The study aimed to develop range of Shock Index value to risk-stratify patients into three groups: low risk, intermediate risk, and high risk.

Methods: This study was done in Hospital Universiti Sains Malaysia and Hospital Kuala Lumpur from June 2008 until November 2008. Patients older than 18 years who came to the emergency department of the 2 hospitals and met the inclusion and exclusion criteria were enrolled. The first vital signs of each patient were recorded by single reviewer, and the standard care of management was proceeded with. Afterwards, the patient's disposition was recorded by the same reviewer. Significant variables were initially identified; based on these variables, the range of Shock Index values were developed using receiver operating characteristic (ROC) curve. A minimum value was identified, while the maximum value of 0.9, which had been extensively validated, was applied.

Result: A total of 48 patients were enrolled in this study. The significant parameters were systolic blood pressure (P < 0.001), diastolic blood pressure (P = 0.006), heart rate (P < 0.001), and respiratory rate (P = 0.004). Heart rate was the variable with the most significant area under the curve in ROC curve were 0.844. From there, minimum value of Shock Index obtained was 0.74 (sensitivity 80%, specificity 74%)

Conclusion: The range of Shock Index values are less than 0.74 for low risk group, 0.75–0.9 for intermediate risk group, and more than 0.9 for high risk group.

Supervisor:
Dr Nik Hisamuddin Nik Abdul Rahman

A COMPARISON BETWEEN METOCLOPRAMIDE AND PROMETHAZINE PLUS PYRIDOXINE IN THE MANAGEMENT OF HYPEREMESIS GRAVIDARUM: A RANDOMISED CONTROLLED TRIAL

Dr Mazniza'in Mohammad
MMed (O & G)

Department of Obstetrics and Gynaecology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150, Kelantan, Malaysia

Introduction: Hyperemesis gravidarum is a debilitating condition, involving the general health and psychological aspects of the patients as well as creating financial burden to the family. An effective treatment will be beneficial in reducing these stressful conditions. The mainstay treatment for hyperemesis gravidarum is to stop the bouts of vomiting, rehydration, and correcting the starvation state of the patients. A lot of antiemetics have been widely used as the first-line treatment. However, their efficacy has never been compared, thus the aim of this study.

Objective: This study was performed to compare the efficacy of metoclopramide with the combination of promethazine and pyridoxine as antiemetics in patients with hyperemesis gravidarum. The efficacy of either regime was measured by the mean pregnancy-unique quantification of emesis and nausea (PUQE) score achieved after treatment, the duration taken to clear the ketones in the urine, the duration of hospital stay, as well as the side effects encountered.

Methods: Patients admitted to Ward 1 Utara of Hospital Universiti Sains Malaysia with hyperemesis gravidarum were randomised to receive either metoclopramide 10 mg 3 times a day or combination of promethazine 25 mg 3 times a day with pyridoxine 20mg 3 times a day. The degree of vomiting was assessed by using the PUQE score at 12, 24, 36, 48, 60, and 72 hours after administration of each regime. Ketone in the urine was quantified daily. The duration of hospital stay as well as the side effects encountered were compared.

Results: A total of 60 patients were recruited with 30 patients in each regime. There was no difference in the PUQE score of patients receiving metoclopramide with those receiving combination of promethazine and pyridoxine after 72 hours of drug administration (5.4, SD 1.4, versus 5.3, SD 1.6, respectively; P > 0.05). The duration taken for urine ketone clearance also did not significantly differ (2.03 days, SD 0.61, for metoclopramide group versus 2.26 days, SD 0.63, for the combination group; P = 0.15). Both groups of patients have mean hospital stay of approximately 3 days. More than

half of the patients in the combination group were sedated after the drug administration.

Conclusion: Both regimes have similar efficacy as antiemetics in patients with hyperemesis gravidarum and may be used as the first-line antiemetics in such cases.

Supervisor:
Associate Professor Dr Adibah Ibrahim

THE RISK FACTORS OF EXTERNAL VENTRICULAR DRAINAGE-RELATED INFECTION IN HOSPITAL KUALA LUMPUR

Dr Mohamad Azhar Omar
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: External ventricular drainage (EVD) has been widely used for the purpose of cerebrospinal fluid (CSF) diversion in the treatment of hydrocephalus caused by various aetiology in neurosurgical centres, including Hospital Kuala Lumpur. The usage of this system has widened to the extent of providing diagnostic and therapeutic tools in cases of intracranial pressure of head trauma patients or in cases of intraventricular administration of thrombolytic agent or antibiotic therapy in certain condition. However, the main limitation of this procedure is the risk of infection.

Objectives: The study aimed to determine the incidence and the risk factors associated with EVD-related infection.

Methods: This prospective observational study has been conducted in Hospital Kuala Lumpur from December 2006 until December 2008, involving patients who were subjected for EVD for various reasons. A total of 87 patients were sampled following strict inclusion and exclusion criteria. All patients were followed-up during the hospital stay and noted for presence of infection, and related data including the aetiology that required for the EVD insertion, the length of the EVD from the burr hole to the skin exit site, the duration of catheterisation, the venue of the procedure, the organism causing infection, as well as the basic biodata of the patients were recorded. EVD-related infection is defined as positive culture and Gram stain with the presence of other supportive finding including pleocytosis, a decrease in the CSF glucose level (less than 205 mmol/L), or an increase in the CSF protein level (more than 0.4 g/L). The time of infection is recorded as the time sample was obtained.

Result: EVD-related infection in Hospital Kuala Lumpur was 32.2% (95% CI 23.3–42.57). There is a slight female predominance in the cases of infected EVD, and the majority of the cases were aetiologically related, that is, hemorrhagic in nature (60.9%), but these findings were statistically not significant. This study clearly demonstrated that tunnelling of the catheter for more than 5 cm, from under the scalp to the exit site of the skin, significantly carried a lower risk of infection (6.9%) than tunnelling of 5 cm or less (OR = 0.18, 95% CI 0.08–0.46, $P < 0.001$). The majority of the cases (19 out of 28) with EVD-related infection were among the samples with more than 10 days of catheterisation (OR = 0.33, 95% CI 0.17–0.65, $P < 0.001$). Gram-negative bacteria were the predominant organisms in EVD-related infections (53.6%). The location where the procedure was conducted, surgeon's status, and the aetiological disease required for the EVD insertion were not significantly related to the duration of catheterisation.

Conclusion: The role of ventriculostomy technique and management of the EVD system in neurosurgical unit for various pathological diseases in relation to the risk of infection have been studied. As a result, both tunnelling techniques in extended fashion of more than 5 cm and exchange of the catheter after period of 10 days should be implemented as a standard protocol in order to reduce the risk of EVD-related infection.

Supervisor:
Dr Mohammed Saffari Mohammed Haspani

A PILOT RANDOMISED CLINICAL TRIAL COMPARING INTRAMUSCULAR PROCHLORPERAZINE WITH PROMETHAZINE FOR ACUTE VERTIGO IN EMERGENCY DEPARTMENT

Dr Mohd Amin Mohidin
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Dizziness is the third most common presenting complaint in emergency department (ED). Vertigo represents a subset of dizziness and is defined as an illusion of movement, usually rotational, of patients or their surrounding. Patients with vertigo have imbalance which leads to loss of function, fall, and injuries. Thus evaluation and treatment of vertigo is paramount. The objective of this study is to compare the effectiveness of prochlorperazine and promethazine for acute vertigo in the ED.

Methods: The study was conducted from April 2008 until August 2009 in the ED, Hospital Universiti Sains Malaysia. Patients who fulfilled the inclusion criteria were selected for the study and were equally randomised into prochlorperazine or promethazine group based on the randomisation plan. They were given an anti-vertigo drug, prochlorperazine or promethazine, and vertigo score (using visual analogue score) and blood pressure while lying and standing were taken at baseline (0 hour), 1 hour, and 2 hours. The researcher completed the questionnaire before patients left the ED.

Results: A total of 32 patients were enrolled in this study: 78.5% (n = 25) were females and 21.9% (n = 7) were males. The mean age was 51.5 years old. The mean vertigo score while ambulating on arrival is 8.44 (SD 1.75) in prochlorperazine group and 8.81 (SD 1.78) in promethazine group. Mean vertigo score after 2 hours was 3.12 (SD 2.09) for prochlorperazine group and 4.94 (SD 2.43) for promethazine group. There was statistical significant reduction in VAS score for both prochlorperazine and promethazine groups ($P < 0.05$); however, there was no significant reduction with respect to comparison between the 2 groups ($P > 0.05$). Although more patients in prochlorperazine group were ready to go home after 2 hours of admission (75.0%, n = 12), the difference was not significant. Patients receiving prochlorperazine had relative risk of 1.80 (95% CI 0.97 to 3.35) times more likely to develop orthostatic hypotension than among those taking promethazine. However, the relative risk was not statistically significant.

Conclusion: Prochlorperazine and promethazine are equally effective as anti-vertigo drugs in treating acute vertigo in ED.

Supervisor:
Associate Professor Dr Nik Hisamuddin Nik Abdul Rahman
Co-supervisor:
Associate Professor Dr Rosdan Salim

A SURVEY ON KNOWLEDGE, ATTITUDE, AND CONFIDENCE LEVEL OF ADULT CARDIOPULMONARY RESUSCITATION (CPR) AMONG JUNIOR DOCTORS IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM) AND HOSPITAL RAJA PEREMPUAN ZAINAB II (HRPZII)

Dr Mohd Hashairi Fauzi
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: In hospitals, junior doctors are often the first to initiate resuscitation attempts. Therefore, it is important that they have adequate knowledge, positive attitude, and good confidence level in managing cardiac arrests according to the current guidelines for resuscitation. Previous studies have shown poor levels of resuscitation training and knowledge among junior doctors. In addition, their self-reported clinical skills in managing emergency situation are low, highly variable, and do not increase during their first year after graduation. However, it remains to be proven whether these results of researches, mainly from other countries, are applicable to our local population. There is currently a lack of CPR research, especially among junior doctors in Malaysia.

Objectives: The aims of this study were to determine the level of knowledge, attitude, and confidence of junior doctors in Hospital Universiti Sains Malaysia (HUSM) and Hospital Raja Perempuan Zainab II (HRPZII) and to describe the factors that influence these levels. This study was also aimed to serve as a starting point to create a database in which additional data can be deposited by other centres in the nation.

Methods: This is cross-sectional study using convenient sample. A questionnaire was design based on AHA Guidelines 2005 and review relevant literature. It was edited by 2 emergency physicians, and pre-test was conducted in HUSM to validate and test the reliability of the questionnaire. All junior doctors in HUSM and HRPZII were included in this study, which was conducted from October until December 2008. Questionnaires were circulated with the help of representatives from each hospital; the data collection was done anonymously, with no time limit. The questionnaires were then collected and coded according to the hospital and checked to confirm that the doctors had trained for 3 years and less. Statistical analysis was used using software SPSS version 12.0.1.

Results: A total of 70 junior doctors were analysed. Average age was 26.9 years, and 68.6% had been in practice for less than 1 year. Out of the 70 doctors, 68.6% had received basic resuscitation training during internship; 33% had the training in the previous 1 year. Only 11.4% had advanced training in resuscitation, and 50% of doctors had attended cardiac arrest cases. However, 60% of the doctors never performed defibrillation. The mean knowledge score was 68%. The differences between subjects' variables and knowledge score were statistically not significant. The attitude score was 64.4%. The majority of the doctors disagree that their internship training was adequate (71.4%) and that agree all junior doctors should have advance cardiac life support (ACLS) training (94.3%). The confidence score was 28%. Most of the doctors were not confident to be a team leader (85.7%), to perform intubation (65.7%) or defibrillation (78.6%), to administer amiodarone (82.9%), and to insert central venous line (74.3%) during resuscitation. Factors that improved a doctor's confidence in resuscitation were ACLS training, work experience of more than 1 year, and completion of rotation in 6 departments.

Conclusion: The resuscitation knowledge was average, and most doctors have positive attitude on resuscitation. However, self-reported confidence was poor among junior doctors. We suggest mandatory attainment of basic life support training during undergraduate and ACLS during internship, increased exposure of real resuscitation situations to improve undergraduate training, and regular practical or skill course 6 monthly.

Supervisor:
Dr Abu Yazid Md Noh
Co-supervisor:
Dr Chew Keng Sheng

EFFECTS OF SOY PROTEIN SUPPLEMENTATION ON HIGH INTENSITY CYCLING PERFORMANCE IN HOT AND HUMID ENVIRONMENT

Mohd Rahimi Che Jusoh
MSc (Sport Sciences)

Sports Science Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The purpose of the present study was to investigate the effect of soy protein isolate supplementation during high intensity cycling exercise on subsequent time trial performance in comparison with a placebo. The subjects were 13 male trained cyclists from Kelantan, Malaysia, with mean age, weight, height, and VO_2max of 15.9 years (SD 1.4), 55.3 kg (SD 8.0), 164.6 cm (SD 7.7), and 58.2 $mL.kg^{-1}.min^{-1}$ (SD 3.7), respectively. The study was designed as randomised, double blind, placebo-controlled crossover comprising of 60-minute exercise on a cycle ergometer at 60% VO_2max, followed by a 15-minute time trial. Subjects ingested soy protein or placebo before and every 20 minutes during steady state cycling at 60% VO_2max in hot (31.1 °C, SD 0.2) and humid (69.7%, SD 2.3) environment.

Result: The work output during the 15-minute time trial for soy protein and placebo supplementations were 172.7 kJ (SD 26.1) and 169.01 kJ (SD 19.0), respectively. A paired *t* distribution test revealed that soy protein supplementation did not improve the time trial performance in the heat, evaluated based on the total work output. Two-way repeated measure ANOVA (meal × time) followed by a simple effect analysis revealed that soy protein supplementation (meal) had no effect on any of the hormonal and metabolic variables (plasma insulin, plasma glucose, plasma free fatty acid, plasma lactate, and plasma ammonia) during exercise in the heat, as compared to the placebo. Plasma insulin was significantly lower than the resting value during soy treatment at 45 and 60 minutes ($P < 0.05$), and it also decreased significantly at 60 minutes in the placebo group ($P < 0.05$). Plasma glucose was elevated in soy supplementation ($P < 0.05$) after 15-minute time trial. Plasma free fatty acid increased significantly after 15 minutes of state cycling for both soy and placebo supplementations. Plasma lactate and ammonia significantly increased after 15-minute time trial for soy and placebo treatments ($P < 0.05$) because of the high intensity exercise.

Conclusion: From the present study, it was concluded that soy protein isolate supplementation during steady state exercise at 60% VO_2max did not improve the work output in a 15-minute time trial cycling performance in the heat.

Supervisor:
Associate Professor Dr Ashok Kumar Ghosh
Co-supervisor:
Dr Amit Bandyopadhyay

A COMPARATIVE STUDY OF THE EFFECTS OF TUALANG HONEY ON HEALING OF TRAUMATIC FINGER TIP INJURY IN COMPARISON WITH PARAFFIN GAUZE DRESSING: A PILOT STUDY

Dr Mohammad Izani Ibrahim
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Fingertip injuries are commonly seen in emergency departments. Regular paraffin gauze dressing (PGD) is a common mode of treatment for this type of injury. However, it is associated with long period of healing process, pain during frequent change of dressing, and hypersensitivity of the healed fingertip.

Objective: This study was conducted to determine the potential of tualang honey dressing (THD) in producing better outcome compared with PGD in treating fingertip injuries.

Patients & Methods: Twenty-two patients with fingertip injuries were recruited and randomised into PGD and THD groups. The fingertip wounds were debrided under local anaesthesia and dressed with the respective method. Dressings were changed every other day in the first week and, subsequently, weekly until the wound healed. The severity of pain during change of dressing and the duration for the wound to heal were noted. After at least 3 months post-injury, the healed fingertip was assessed for two-point discrimination, hypersensitivity, cutaneous sensibility, and sensation to temperature.

Results: The average duration for the fingertip to heal was 3.3 weeks and 3.4 weeks for THD and PGD groups, respectively. The average severity of pain during change of dressing using the visual analogue score was 4.1 and 3.8 in THD and PGD groups, respectively. The two-point discrimination test was normal in all fingers. Cutaneous sensibility using Semmes–Weinstein monofilament test showed normal sensibility in 2 PGD patients, diminished light touch in 13 patients (10 in THD group, 3 in PGD group), and diminished protective sensation in 7 patients (2 in THD group, 5 in PGD group). Hypersensitivity was found to be absent in 6 patients (3 in THD group, 3 in PGD group), mild in 15 patients (9 in THD group, 6 in PGD group), and severe in 1 patient from PGD group. Sensation to temperature was intact in 18 patients (10 of THD group, 8 of PFD group), impaired in 3 patients (1 of THD group, 2 of PFD group), and absent in 1 patient from THD group. There was no significant difference between THD and PGD group in terms of duration of wound healing ($P = 0.546$), pain during change of dressing ($P = 0.712$), hypersensitivity ($P = 0.074$), two-point discrimination, cutaneous sensibility ($P = 0.455$), and sensation to temperature.

Conclusion: This study showed that THD is comparatively as effective as PGD in treating fingertip injuries.

Supervisor:
Associate Professor Dr Mohd Iskandar Mohd Amin
Co-supervisor:
Dr Mohammad Paiman

PROVISION OF FIRST AID REQUIREMENTS IN SECONDARY SCHOOLS, KAP, AND RISK PERCEPTION TOWARDS SAFETY AND HEALTH AMONG SCHOOL HEALTH TEACHERS IN KOTA BHARU, KELANTAN

Dr Mohammad Nazarudin Bahari
MComMed (Occupational Health)

Department of Community Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: First aid requirements in the workplace include the provision of first aid facilities, services, and personnel required for early treatment.

Objectives: The aim of this study was to determine the current first aid requirements and the level of knowledge, attitude, and practice (KAP), as well as the risk perception towards safety and health among secondary school health teachers in Kota Bharu, Kelantan.

Methods: A cross-sectional study was conducted to collect information regarding occupational safety and health (OSH) status and KAP of first aid requirements, as well as risk perception towards safety and health in schools. A community intervention study was done involving two groups: intervention and control. All 38 secondary schools and 105 school health teachers in Kota Bharu consented to participate in this study. Checklist of OSH status consists of school background, first aid box, first aid room, first aid services, and first aider. School health teachers were asked using self-administered questionnaire consisting of knowledge about first aid services, knowledge about first aider, attitude and practice pertaining to first aid requirement, as well as risk perception towards safety and health at school, outside school, and magnitude and severity of risk at school.

Results: The majority of schools were daily schools (63.2%), with mean (SD) of age of school of 33.8 (20.0). The median (interquartile range) number of school health teachers in every school were 2.5 (4.0), and 60.5% of the schools do not have first aider. The majority of the schools have safety and health organisation (92.1%). Checklist scores for first aid box in terms of location was 41.3%; identification, 92.0%; contents, 30.2%; relevant information, 11.8%; training, 11.0%; and person in-charge, 57.0%. Thirty-six secondary schools (94.7%) have first aid rooms. Approximately 18.4% of secondary schools have mechanism for the management of injury or disease, and 68.4% had documentation on injury or disease. In addition, 36.8% of schools had trained their first aiders, and 71.4% of the courses were certified. Majority of the respondents were Malays (90%), and females (70%). The mean (SD) of respondents' age was 41.7 years (7.05) and working experience was 16.24 years (7.12). Mean (SD) scores on knowledge about first aid services was 21.67 (2.87), knowledge about first aider, 31.69 (3.28), and attitude, 11.83 (3.16), which were relatively satisfactory, but poor in median (IQR) practice, 2.00 (3.00). The highest risk areas identified in risk perception at school were injury consequence of fire (58.1%), explosion (53.3%), and fall of objects (48.6%). The highest influence to the magnitude and severity of risk at schools was giving a bad consequence to future community (56.2%), followed by news published by newspapers and mass media (51.4%). After the intervention program were conducted, there were significant higher mean scores in both knowledge about first aid services ($P < 0.001$) and knowledge about first aider ($P < 0.001$).

Conclusion: The status of OSH in secondary schools Kota Bharu, Kelantan, pertaining to provision of first aid requirements was unsatisfactory. The proposed method of teaching of first aid requirements has been developed to train the teachers. Sustainability of intervention activities can be achieved if the recurrent intervention program is considered and implemented in the school health-planning programme.

Supervisor:
Associate Professor Tengku Mohammad Ariff Raja Hussin
Co-supervisor:
Dr Sarimah Abdullah

ACUTE POST-OPERATIVE ANALGAESIA AFTER CRANIOTOMY: THE ANALGAESIC AND OPIOD SPARING EFFECTS OF INTRAVENOUS PARECOXIB

Dr Mohd Azmi Mamat
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Acute post-craniotomy pain was previously reported to be between moderate to severe. Parecoxib is the only available intravenous COX II inhibitor that has great potential to treat acute post-craniotomy pain. Its prescription can avoid the side effects of opiod as well as avoid potential conventional non-steroidal anti-inflammatory drugs side effect of post-operative haematoma.

Objective: The main aim of this study was to determine analgaesic efficacy and opiod-sparing effect of Parecoxib for acute pain post-craniotomy.

Methods: This was a prospective, double-blinded, randomised controlled trial involving 60 post-elective craniotomy patients. Patients were divided into 2 groups in which 1 group received parecoxib and patient-controlled analgaesia (PCA) morphine (n = 30) and the other group received PCA morphine (n = 30). In the first group, intravenous parecoxib 40 mg was given 2 hours prior to extubation, and another dose was given after 12 hours. The other group was given intravenous normal saline at same

intervals. PCA morphine was prepared as rescue analgaesia. Their pain intensity was assessed by visual analogue scale (VAS) at specific interval post-operatively for 24 hours. Total morphine consumption over 24 hours, opiod side effects, and post-operative haematoma were also recorded.

Results: There was significant different between the parecoxib and morphine groups in VAS at 2, 4, 16, and 24 hours post-extubation. Mean VAS at 2 hours was 2.2 (SD 0.85) in the parecoxib group and 5.0 (SD 0.94) in the morphine group ($P < 0.001$). At 4 hours, mean VAS was 2.0 (SD 0.66) for the parecoxib group and 3.3 (SD 1.2) for the morphine group ($P < 0.001$). VAS at 8 and 12 hours were not significantly different ($P > 0.05$). At 16 hours, the mean VAS for the parecoxib group was 1.1 (SD 0.30) and 1.4 (SD 0.49) for the morphine group ($P < 0.05$). The mean VAS at 24 hours was 1.0 (SD 0.32) in the parecoxib group and 1.4 (SD 0.49) in the morphine group ($P < 0.001$). The total morphine consumption was significantly reduced in the parecoxib group, in which the total consumption was 4.8 mg (SD 2.68) compared with 9.0 mg (SD 2.03) in the morphine group ($P < 0.001$). The reduction in the morphine consumption was 46.6%, indicating an opiod-sparing effect of parecoxib. There was no significant different in opiod side effects and post-operative haematoma.

Conclusion: Parecoxib provided better analgaesia and delivered opiod-sparing effect in post-craniotomy patients.

Supervisor:
Dr Wan Mohd Nazaruddin Wan Hassan
Co-supervisor:
Dr Mahamarowi Omar

A STUDY ON DYSLIPIDAEMIA IN PATIENTS WITH END-STAGE RENAL DISEASE ON DIALYSIS IN TWO REFERRAL HOSPITALS IN KOTA BHARU, KELANTAN

Dr Mohd Kamil Ahmad
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The mortality due to cardiovascular disease in dialysis patients is substantially higher than in the general population. Dyslipidaemic factors obviously contribute to the high cardiovascular risk in dialysis patients but are often an underestimated problem.

Objectives: The study was conducted to determine and compare the prevalence of dyslipidaemia among end-stage renal disease (ESRD) patients on dialysis in two referral hospitals in Kota Bharu who were treated either by haemodialysis (HD) or continuous ambulatory peritoneal dialysis (CAPD), and to determine the factors associated with dyslipidaemia.

Methods: A cross-sectional study was conducted among ESRD patients from Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II who had been on dialysis, either HD or CAPD, for at least 3 months. The number of study subjects was 146: 87 patients (59.6%) were undergoing HD, and 59 patients (40.4%), CAPD. The medical records were reviewed to collect appropriate data. After an overnight fasting of 8 to 12 hours, 5 mL of blood was withdrawn, pre-dialysis from HD patients or during clinic visit from CAPD patients, to determine the lipid profile. Univariable analysis using simple logistic regression was applied to determine factors associated with dyslipidaemia. Multivariable analysis using multiple logistic regression was applied to further determine the association between dialysis modality and body mass index (BMI) status with dyslipidaemia.

Results: The age of our subjects ranged from 11 to 74 years old, with mean (SD) of 45.7 (15.4). Male predominance was observed 81 (55.5%), and Malay subjects composed the largest ethnic group. The majority of the subjects, 127 (86.9%), were non-obese, with mean (SD) BMI of 22.7 kg/m^2 (4.25). Diabetes mellitus was the most common aetiology of ESRD among our subjects, accounting for 78 cases (53.4%). With regards to the type of dialysis, the majority of the patients were receiving treatment by HD, 87 (59.6%), compared with CAPD, 59 (40.4%). The median (IQR) duration of dialysis treatment was 36 months (60.0). Seventy-one patients (48.7%) were receiving lipid-lowering therapy: 42 (71.2%) from the CAPD group and 29 (33.3%) from the HD group. The prevalence of dyslipidaemia was profoundly high, at 76.7% (112 patients): 60 (53.6%) from the HD group and 52 (46.4%) from the CAPD group. The CAPD group was found to have higher mean (SD) for low-density lipoprotein cholesterol and median (IQR) for triglyceride compared with in the HD group: 3.07 (1.03) versus 2.00 (1.10), and 2.00 (1.10) versus 1.60 (0.91), respectively. Multivariable analysis showed CAPD had 3 times odds of being dyslipidaemic compared with HD group had (OR = 3.44, 95% CI 1.38–8.61, $P = 0.008$)

Conclusion: Dyslipidaemia is highly prevalent in our dialysis patients, and it is more often observed in CAPD-treated than in HD-treated patients. There were no significant association of dyslipidaemia noted with diabetes, obesity, duration of dialysis, and smoking status.

Supervisor:
Associate Professor Dr Kamaliah Mohd Daud

KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) AND ASSOCIATED FACTORS FOR LEPTOSPIROSIS AMONG TOWN SERVICE WORKERS IN KOTA BHARU, KELANTAN

Dr Mohd Rahim Sulong
MMed (Community Medicine)

Department of Community Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Leptospirosis is presumed to be the most widespread re-emerging zoonotic disease in the world. It

occurs in tropical, subtropical, and temperate zones.

Objective: This study was designed to estimate the seroprevalence, explore the knowledge, attitude, and practice (KAP), and determine the associated factors for seropositive leptospirosis among town service workers in Kota Bharu Municipal Council, Kelantan.

Methods: A cross-sectional study was conducted in May 2008 among 296 town service workers in Kota Bharu Municipal Council. All workers who fulfilled the inclusion and exclusion criteria were recruited in the study. Workers were interviewed using a validated questionnaire that consisted of sociodemographic, occupational, and environmental history, as well as KAP questions. Venous blood was taken from subjects at their workplace for microscopic agglutination test.

Results: All respondents were Malay males with the mean age of 42.1 years (SD 8.38). The mean duration of employment was 15.6 years (SD 8.62). The overall seroprevalence of leptospirosis was 24.7% (95% CI 19.7–29.6) and the predominant pathogenic serovar identified was Bataviae (12.3%). In KAP assessment, majority of workers had poor knowledge score (87.2%) and unsatisfactory practice score (64.5%), whereas for attitude, majority of workers had satisfactory attitude score (64.9%). The significant factors associated with seropositive leptospirosis were those who lived 200 m or less from the river (OR 2.24, 95% CI 1.20–4.16, P = 0.011), presence of rat in their houses (OR 3.48, 95% CI 1.70–6.85, P = 0.001), and gardening activity (OR 2.21, 95% CI 1.22–3.98, P = 0.009). Workers who practised wearing boots while working (OR 0.36, 95% CI 0.20–0.64, P = 0.001) and washing hands with soap after work (OR 0.34, 95% CI 0.17–0.67, P = 0.005) had better protection from leptospirosis.

Conclusion: High seropositivity rate of leptospirosis indicates that the town service workers are in the occupational group with at risk for leptospiral infection. Workers' knowledge and practice were inadequate to protect them from leptospirosis infection. There were relationships between seropositive leptospirosis with occupational and environmental factors as well as recreational activities.

Supervisor:
Dr Mohd Nazri Shafei
Co-supervisor:
Dr Nor Azwany Yaacob

SURVIVAL AND PROGNOSTIC FACTORS OF ADULT HUMAN IMMUNODEFICIENCY VIRUS (HIV) PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM) FROM 2002 TO 2006

Mohd Sapuan Baharuddin
MSc (Medical Statistics)

Department of Community Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The estimated number of person living with human immunodeficiency virus (HIV) around the world in 2007 was 33.2 million. It was estimated that 80 938 people have been infected with HIV in Malaysia, and 10 334 deaths were caused by AIDS from 1986 until December 2007. Needle sharing is the dominant mode of HIV transmission in Malaysia.

Objectives: The objectives of this study were to determine median survival time HIV patients and the 5-year survival of these patients, as well as to identify prognostic factors of HIV patients in Hospital Universiti Sains Malaysia.

Methods: The study design for this study was a retrospective record review. All patients diagnosed as HIV positive in Hospital Universiti Sains Malaysia during the study period, from 1 January 2002 until 31 December 2006 (5 years), were considered as potential subjects. A total of 107 patients fulfilled the selection criteria and were included in this study. Additional follow-up for this study was conducted within 12 months, from 1 January 2007 until 31 December 2007. Data of HIV patients were collected from medical record unit using data collection sheet. Patients' survival status was obtained from their medical record or through phone call enquiry. The process of data entry for this study was done using SPSS version 12.0.1. The data were transferred into STATA version 9.0 program using STAT Transfer software version 6.0. The statistical analysis were used in this study was Kaplan–Meier and Cox proportional hazard regression analysis.

Results: The overall median survival time and 5-year survival in this study were 6.23 months (95% CI 1.77–10.63) and 17.53% (95% CI 5.57–34.98), respectively. Prognostic factors that were found to be significant during simplex Cox regression analysis were co-infections, opportunistic infections, clinical stage, and clinic visit frequency. During multiple Cox regression analysis, prognostic factors such as clinical stage and clinic visit frequency were significant in this study. Final model in this study only had clinical stage as prognostic factor (adjusted HR = 2.40, 95%CI 1.42–4.01, P = 0.001).

Conclusion: Overall, median survival time in this study and survivorship among HIV/AIDS patients in Hospital Universiti Sains Malaysia was low. The 5-year survival in this study was affected by late diagnosis as HIV positive and the unavailability of the highly active anti-retroviral therapy (HAART) in the hospital. The prognostic factor that influenced the risk of death among HIV patients was clinical stage. The prognostic factors such as CD4 count, viral load, and HAART will be including in this final model in future in order to increase the strength of the model to predict survival of HIV patients in Hospital Universiti Sains Malaysia.

Supervisor:
Dr Wan Mohd Zahiruddin Wan Mohammad
Co-supervisor:
Professor Dr Syed Hatim Noor

PREVALENCE AND SOURCES OF STRESS AMONG MEDICAL STUDENTS IN SCHOOL OF MEDICAL SCIENCES, UNIVERSITI SAINS MALAYSIA

Muhamad Saiful Bahri Yusoff
MSc (Medical Education)

Department of Medical Education
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The medical course has always been regarded as highly stressful. Excessive stress can cause physical and mental health problems. Persistent stress will impair students' academic achievement as well as personal and professional development. Early detection and prevention of this condition will help in reducing the negative impacts of stress on medical students.

Objectives: The study aimed to explore the nature of stress among medical students by determining the prevalence, sources, pattern, and determinant factors of stress. Is it hoped that understanding the nature of stress will help medical educators find ways to reduce and minimise the stress level of medical students during their study.

Methods: All medical students in the School of Medical Sciences, Universiti Sains Malaysia, were taken as subjects in this study. Data collection was done 2 months after the start of the 2008/2009 academic session. A validated questionnaire was used. Clearance was obtained from the School of Medical Sciences and the ethical committee prior to the start of the study. Data were analysed using Statistical Package for Social Sciences (SPSS) version 12.

Results: 761 students (72%) participated in this study. The prevalence of stress among medical students in the School of Medical Sciences, Universiti Sains Malaysia, was 29.6%. The top 10 stressors were academic-related. Prevalence of stress for the first-, second-, third-, and fifth-year students were 26.3%, 36.5%, 31.4%, and 21.9%, respectively. Year of study was the only significant determinant factor of stress among medical students (LR statistics = 527.18, $P = 0.034$).

Conclusion: The prevalence of stress among medical students in Universiti Sains Malaysia is high. Academic related problems were the major stressors among medical students. Year of study was the factor most significantly associated with medical students' stress level. There was bimodal pattern of stress level throughout the year of study, peaking at the second and fourth years of study.

Supervisor:
Dr Ahmad Fuad Abdul Rahim
Co-supervisor:
Associate Professor Dr Mohd Jamil Yaacob

COMPARING SEDATIVE EFFECTS OF EPIDURAL BUPIVACAINE WITH ROPIVACAINE ON BISPECTRAL INDEX DURING AWAKE PHASE AND GENERAL ANAESTHESIA

Dr Muhammad Habibullah Zakaria
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Combined epidural/general anaesthesia technique has widely been used in major abdominal, lower limbs, and thoracic surgeries. Epidural anaesthesia has been shown to produce sedative effect and to reduce the requirements of volatile and intravenous anaesthetic agents.

Objectives: The aim of this study was to evaluate the sedative effect of epidural anaesthesia, bupivacaine and ropivacaine, on the bispectral index (BIS) during awake and general anaesthesia.

Methods: A prospective, randomised double-blinded clinical trial was conducted on 54 patients planned for elective abdominal or lower limbs surgery under combined epidural and general anaesthesia. This was done in a time frame of 12 months at the operation theatre of Hospital Universiti Sains Malaysia after the approval of the Research and Ethics Committee, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan. The patients were randomly allocated to 2 groups receiving either 10 mL of 0.5% epidural ropivacaine (group R) or the same volume of 0.5% bupivacaine (group B). The BIS measurements during awake phase were performed at 5, 10, 12, 14, 16, 20, and 25 minutes after the epidural injection. General anaesthesia was then induced with fentanyl, propofol, and rocuronium and maintained with 2.0% sevoflurane. From approximately 10 minutes after tracheal intubation, the BIS measurements were made at every 1-minute interval for 10 minutes. Amount of sevoflurane administrated was adjusted to maintain the bispectral index scale between 40 and 60.

Results: There were no significant differences in demographic data among the groups. There was statistically significant mean difference in the BIS values between epidural bupivacaine (group B) and epidural ropivacaine (group R) during awake phase. However, the BIS value during general anaesthesia was not significantly different between 2 groups. This study also demonstrated that the requirement of sevoflurane was not statistically significant different between 2 groups.

Conclusion: Mean BIS values during awake phase was significantly lower in epidural ropivacaine compared with in epidural bupivacaine. However, the mean BIS values during general anaesthesia phase between 2 groups were not significantly difference. The requirement of sevoflurane concentration between 2 groups during general anaesthesia was also not significantly different.

Supervisor:
Dr Gnandev Phutane

THE ASSOCIATION BETWEEN OBSTRUCTIVE SLEEP APNEA SYNDROME AND EPILEPSY: THE PREVALENCE AND PREDICTORS OF SLEEPINESS

Dr Muhamad Yusri Musa
MMed (ORL–HNS)

Department of ORL–Head and Neck Surgery
School Of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150, Kelantan, Malaysia

Introduction: Epilepsy and obstructive sleep apnea syndrome (OSAS) are both associated with abnormal brain activity and frequently co-exist. Epilepsy patients were found to be drowsier when compared with the general population using the Epworth Sleepiness Scale (ESS).

Objectives: The aim was to study OSAS in epilepsy patients, as well as the prevalence of obstructive sleep apnea and the predictors of sleepiness among epileptics.

Methods: This was a prospective cross-sectional study in Hospital Universiti Sains Malaysia on patients already diagnosed and treated with epilepsy. The study was conducted from November 2008 to April 2010. The consented participants who fulfilled the set criteria were interviewed using questionnaire regarding demographic data, symptoms of obstructive sleep apnea, and ESS, followed by a full ear, nose, and throat examination and an overnight polysomnography (PSG).

Results: Five of 60 participants (8.3%) were diagnosed with OSAS, and 4 of them were males. OSAS was mild in 1 patient, moderate in 2 patients, and severe in the other 2 patients. Age, neck circumference, ESS score, and BMI were significantly associated with OSAS ($P < 0.05$). Epilepsy-related risks (type of seizures, duration and type of antiepileptic drug) have no significant association with OSAS.

Conclusion: The prevalence of OSAS among epilepsy patients is 8.3%. The use of Malay version of ESS is appropriate and effective in screening patients for OSAS. Future role of PSG as part of assessment in high-risk epileptics is recommended.

Supervisor:
Associate Professor Dr Baharudin Abdullah
Co- supervisor:
Associate Professor Dr Suzina Sheikh Ab Hamid
Associate Professor Dr John Tharakan

A STUDY ON VISUAL ACUITY AND VISUAL SKILLS AMONG PRESUMED SLOW LEARNERS IN PRIMARY SCHOOL IN KOTA BHARU, KELANTAN

Dr Muzaliha Mohamed Nor
MMed (Ophthalmology)

Department of Ophthalmology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The issues of slow learner have become a matter of increasing personal and public concern. Inability to read and write is a major obstacle to learning and may have social and economic implications. Those students who experience learning difficulties may also experience a treatable visual difficulty in addition to their primary learning difficulties.

Objectives: The aims of this study were to determine the visual acuity and the level of visual skills (near point of convergence, convergence and divergence break and recovery, accommodative amplitude, accommodative facility, and saccadic tracking skills) among presumed slow learners in primary schools in Kota Bharu, Kelantan. We also studied the possible association between the level of visual acuity and the level of visual skills.

Methods: A school-based cross-sectional study was carried out from January 2009 to April 2010. Multistages sampling was performed on all primary schools in Kota Bharu. Ocular examinations were carried out in all selected students. Visual acuity and visual skills were measured in 1010 students (average age of 9.5 years) in 20 primary schools. Participating students had been identified by their school teachers as presumed slow learners.

Results: The majority of the students (96.5%) had good visual acuity in both eyes; there were only 4.5% with visual impairment. The main cause for poor visual acuity was due to refractive errors. There were 7.8%, 3.3%, and 2.0% of the students with bilateral myopia, astigmatism, and hypermetropia, respectively. Most of them were undiagnosed and untreated before. Divergence skills and saccadic tracking skills were the most affected visual skills in this study population. Near point of convergence, convergence skills, accommodative amplitude, and accommodative facility were still good. There was statistically significant association between the level of visual acuity and the level of convergence break and accommodative facility.

Conclusion: The results showed that the majority of the presumed slow learner students had poor visual skills but less numbers of students with visual impairment. There were statistically significant association between the level of visual acuity and the level of visual skills.

Supervisor:
Associate Professor Dr Shatriah Ismail
Co-supervisor:
Dr Adil Hussein

A STUDY ON THE PREVALENCE OF HEARING IMPAIRMENT AND ITS ASSOCIATED FACTORS AMONG ARMY PERSONNEL IN KELANTAN

Dr Nik Khairani Nik Mohd
MMed (ORL–Head and Neck Surgery)

Department of Otorhinolaryngology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: This study was conducted to determine the prevalence of hearing impairment and associated factors among army personnel in Kelantan.

Methods: This is cross-sectional study that had been conducted among army personnel in Kem Desa Pahlawan, Kelantan, from July until November 2007. Two major groups were involved: high-noise-exposure military occupational specialties (infantry and artillery) and low-noise-exposure military occupational service (transport unit and workshop). Each participant was subjected to otoscopic examination and hearing tests, namely Distortion Product Otoacoustic Emission (DPOAE) screening tool and pure tone audiometric (PTA)

Result: A total of 320 army personnel were recruited. The prevalence of hearing impairment among army personnel was 36.3%. There was significant difference in the percentage of hearing impairment between the high-noise-exposure and low-noise-exposure groups (42.5% and 30.0%, respectively). Statistical analysis showed significant correlations between hearing impairment with age and duration of service. Majority of the army personnel suffered from sensorineural hearing loss, specifically noise-induced hearing loss.

Conclusion: There was high prevalence rate of hearing impairment among army personnel. While loud noise is recognised as a hazard, initiatives are required to increase the use of effective preventative measures. Hearing conservation programmes are beneficial, and its implementation should be considered by the Ministry of Defence.

Supervisor:
Professor Dr Dinsuhaimi Sidek
Co-supervisor:
Dr Hazama Mohamad

FACTORS AFFECTING EXCLUSIVE BREASTFEEDING AMONG NURSES IN BACHOK KELANTAN: A QUALITATIVE STUDY

Dr Nik Normanieza Nik Man
MPH

Department of Public Health
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Breastfeeding is important to provide good nutrition to infants up to 6 months of age. Despite the benefits of exclusive breastfeeding, the prevalence of exclusive breastfeeding practice is still low in Malaysia. Many nurses, even though they have the breastfeeding knowledge, cannot practice exclusive breastfeeding successfully.

Objective: This study aimed to explore and compare the factors influencing the breastfeeding experience among nurses who practice exclusive and non-exclusive breastfeeding in Bachok, Kelantan.

Methods: Six nurses were conveniently selected: 3 from exclusive and another 3 from non-exclusive breastfeeding groups. The nurses were interviewed regarding their experiences in breastfeeding practice.

Results: Five themes that influence breastfeeding practice among nurses in Bachok, Kelantan, were derived from the interviews. First is husband's, family members', and peers' support; second, delivery experiences; third, workplace condition and employer's support; fourth, determination of breastfeeding and reproductive role of a woman; and lastly, appreciation of the benefits of breastfeeding and initiation of breastfeeding.

Conclusion: Nurses who were successful at exclusive breastfeeding experienced positive factors that support them to continue breastfeeding, unlike the non-exclusive respondents who had factors that limit their breastfeeding practice.

Supervisor:
Dr Zaharah Sulaiman
Co-supervisor:
Dr Tengku Alina Tengku Ismail

A RANDOMISED CROSS-OVER CONTROLLED TRIAL OF COMBINED SODIUM AND ULTRAFILTRATION PROFILING IN PATIENTS ON CHRONIC HAEMODIALYSIS: THE EFFECT ON INTRADIALYTIC HAEMODYNAMIC PROFILE

Dr Nik Sharuzli Nik Hasan
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Haemodialysis-induced hypotension is one of the most serious complications in renal replacement therapy. The main cause of intradialytic hypotension is hypovolaemia due to an imbalance between the amount of fluid removed and the refilling capacity of the intravascular compartment. The proposed interventions such as sodium and ultrafilration profiling can be use to make dialysis treatment more effective and comfortable for patients. However, the effectiveness of profiled haemodialysis has not been fully evaluated in local set-up.

Objectives: The study was conducted to determine the incidence of intradialytic hypotension in different haemodialysis settings, and to determine the relative blood volume changes during haemodialysis process between conventional and profiling settings.

Methods: This was a randomised control study involving end stage renal failure patients with haemodialysis treatment at haemodalysis units, Hospital Sultanah Nur Zahirah from May until June 2008. The study was based on 2 different haemodialysis settings, conventional (constant sodium and ultrafiltration haemodialysis) and profiling (combination sodium and ultrafiltration profiling haemodialysis), cross-over designed with repeated measures of haemodynamic parameters. The study protocol was reviewed and approved by the Universiti Sains Malaysia Ethics and Research Committee.

Results: Originally, 95 patients participated in the study; however, 6 patients were excluded because of the dropped in haemoglobin level (below 10 g/dL) and unwillingness to continue. Data collected from 89 patients were analysed, and 356 haemodialysis sessions were evaluated (178 conventional setting, 178 profiling setting). The incidence of intradialytic hypotension was significantly lower in profiling setting, 32%, compared with in conventional setting, 48% (P = 0.03). The pattern of relative blood volume was significantly different (P < 0.001) between conventional and profiling haemodialysis settings.

Conclusion: This study showed that the incidence of intradialytic hypotension was significantly lower in the profiled setting haemodialysis. The pattern of relative blood volume with this combination profiled setting was more stable at late dialysis time. We concluded that this combination profiled setting is suitable for patient with intradialytic hypotension occurring at late dialysis time.

Supervisor:
Associate Professor Dr Zainal Darus

INTRARENAL RESISTIVE INDEX (RI) IN TYPE 2 DIABETES MELLITUS: CORRELATION WITH CREATININE CLEARANCE AND ASSOCIATION WITH URINARY ALBUMIN EXCRETION

Dr Noor Hasnita Ismail Mokhtar
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Diabetic nephropathy is a common cause of native kidney dysfunction, and it is the most common cause of end-stage renal disease worldwide. Currently, sonographic imaging does not have an important role in the diagnosis of diabetic nephropathy or in the follow-up of possible cases. Several studies showed associations between changes in the intrarenal arterial waveform and intrinsic as well as extrinsic renal disorders. Resistive index (RI) is suggested as a useful parameter in quantifying the intrarenal blood flow. Renal Doppler sonography has been shown to be useful in detecting and predicting subsequent renal status in various renal disorders, including in diabetic patients.

Objective: The study aimed to evaluate the potential relationship between the intrarenal Doppler parameter and renal function in type 2 diabetes mellitus.

Methods: A cross-sectional study was conducted from October 2007 until October 2008. All type 2 diabetes mellitus patients from Hospital Raja Perempuan Zainab II, KKKB, and district hospital who were referred for ultrasound and fulfilled the set criteria were subjected to renal Doppler sonography. The procedure was performed at Radiology Department, Hospital Raja Perempuan Zainab II, by single operator, using 3.75 MHz curvilinear transducer (Toshiba SSA-550, Nemio 20). Patients' weight, blood pressure, urinary albumin excretion (UAE) rate, and serum creatinine level were noted. Creatinine clearance was calculated using Cockcroft–Gault formula. The subjects were then divided into 3 groups (normal, microalbuminuria, and overt albuminuria) according to their UAE rate.

Results: A total of 91 type 2 diabetic patients were included in the study; 85 were Malays and 6 were Chinese, with 49 males and 42 females. Only 2 Doppler parameters, RI and pulsatility index (PI), were shown to be associated with UAE rate. Other Doppler parameters (peak systolic velocity, end diastolic velocity, and AT) showed no significant difference among the groups. The mean values of RI according to UAE rate was 0.67 (SD 0.05) for normal, 0.72 (SD 0.08) for microalbuminuria, and 0.76 (SD 0.06) for overt albuminuria. There were significant differences between normal and overt albuminuria groups (P < 0.001), and between normal and mircoalbuminuria groups (P = 0.033). For PI, the mean values were 1.15 (SD 0.16) for normal, 1.34 (SD 0.30) for microalbuminuria, and 1.48 (SD 0.27) for overt. There were significant differences between normal and overt albuminuria groups (P < 0.001), and between normal and microalbuminuria groups (P = 0.038). This study also found significant correlation between creatinine clearance and RI (r = 0.559, P < 0.001).

Conclusion: Significant differences were observed in RI and PI values among type 2 diabetic patients according to their UAE rate: between normal and overt albuminuria groups, and between normal and microalbuminuria groups. There was significant negative correlation between calculated creatinine clearance and RI.

Supervisor:
Dr Rohaizan Yunus
Co-supervisor:
Dr Md Ariff Abas

KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) OF RISKY SEXUAL BEHAVIOUR AND ITS ASSOCIATED FACTORS AMONG ADOLESCENTS AND YOUNG ADULTS IN KOTA BHARU

Dr Noorul Amilin Harun
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Adolescents' risky sexual behaviour has become an increasingly significant social and health concern because of the risk of contracting sexually transmitted diseases, including human immunodeficiency virus, and the negative social consequences of teenage pregnancies and of transgressing the Asian religious and cultural norms.

Objectives: The study was conducted to develop a new and validated self-administered questionnaire in order to assess the knowledge, attitude, and practice (KAP) of risky sexual behaviour and its associated factors. This study was also aimed to determine the prevalence of such behaviour among adolescents and young adults in Kota Bharu.

Methods: The study was conducted in 2 phases. Phase 1 was a qualitative study where in-depth interviews with 10 respondents selected from a shelter for troubled female adolescents were carried out to explore in detail the factors associated with risky sexual behaviour. One-to-one interviews were done, and their responses were recorded and transcribed. The qualitative data were analysed manually to find the common themes and recurring meanings. In Phase 2, a cross-sectional study was done involving 210 respondents who were selected using systematic random sampling from 3 private institutions of higher learning, which were randomly selected in the district of Kota Bharu. The data was collected using a validated self-administered questionnaire, which was developed based on the data from Phase 1, literature review, and expert opinions, to assess the KAP of risky sexual behaviour and its associated factors.

Results: The new KAP questionnaire showed good internal consistency with Cronbach's alpha of 0.986, 0.982, and 0.824 for knowledge, attitude, and practice domain, respectively, and the construct validity analysis revealed that each sub domain has factor loading ranging from 0.39 to 0.93 with Eigen values of more than 1. The study population was predominantly Malay (99.0%), and all were Muslims. 14 (6.7%) out of 210 respondents had premarital sex, which qualified them to be categorised as having risky sexual behaviour; 13 (92.9%) were males. In the KAP segment, 111 (52.9%) have good knowledge (scored ≥ 75%) of risky sexual behaviour, while 137 (65.2%) showed liberal attitude (scored < 75%), and 108 (51.4%) demonstrated liberal practice (scored > 25%). The significant factors associated with good knowledge were older age (adjusted OR = 1.54, 95% CI 1.18–2.02, *P* = 0.002) and having a father who received at least secondary school education (adjusted OR = 2.74, 95% CI 1.34–5.60, *P* = 0.006). However, respondents who were renting were less likely to have good knowledge (adjusted OR = 0.23, 95% CI 0.11–0.57, *P* = 0.000). The significant factors associated with liberal practice were older age (adjusted OR = 1.34, 95% CI 1.02–1.75, P = 0.036) and male gender (adjusted OR = 7.01, 95% CI 3.76–13.10, *P* = 0.000). As for the associated factors for attitude, males were less likely to have conservative attitude. The significant associated factors for risky sexual behaviour were male gender (adjusted OR = 39.46, 95% CI 3.52–442.52, *P* = 0.003) and being easily influenced by boyfriend or girlfriend (adjusted OR = 31.44, 95% CI 6.41–154.35, *P* = 0.000). On the other hand, having a father who received at least secondary school education (adjusted OR = 0.17, 95% CI 0.26–0.53, *P* = 0.005) is a protective factor against risky sexual behaviour.

Conclusion: The new KAP questionnaire is a valid and reliable instrument to assess knowledge, attitude, and practice of risky sexual behaviour. This study revealed that the prevalence of risky sexual behaviour among adolescents and young adults aged 17–21 years old is lower compared with in the majority of previous studies in this country. More than half of the students have good knowledge about risky sexual behaviour and demonstrated liberal (more tolerant or open-minded) attitude and practice towards it. Risky sexual behaviour was significantly associated with male gender and being easily influenced by boyfriend or girlfriend, while having a better educated father is protective against it.

Supervisor:
Associate Professor Dr Mohd Jamil Yaacob
Co-supervisor:
Dr Zaharah Sulaiman

COMPARISON OF DIFFERENT DOSES OF RECTAL DICLOFENAC AS ADJUVANT TO INTRATHECAL BUPIVACAINE MORPHINE ANAESTHESIA FOR CAESAREAN SECTION

Dr Noraslawati Razak
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Spinal anaesthesia with local anaesthetic and opiod is a well-accepted technique. Pain from post-caesarean section that is related to somatic component from the wound itself is treatable with spinal anaesthesia. However, the visceral pain component from the uterus may be more difficult to treat and need further medication, for example, with non-steroidal anti-inflammatory drugs (NSAID). These drugs are effective in relieving pain related to menstrual cramping, and as a result, there has been some interest in the use of NSAID to treat the visceral component of pain after delivery. A Study (Dahl et al, 2002) has shown that

2 doses of 100 mg rectal diclofenac are opiod sparing and have good analgaesic properties.

Objectives: We studied the effectiveness of a single dose of rectal diclofenac, at different concentrations, in relieving 24 hours of post-operative visceral pain, to help improve the medication compliance and reduce staff workload.

Methods: After ethical committee approval, prospective randomised study was conducted on 72 parturients, aged 18–40 years, who had undergone elective or emergency caesarean section under intrathecal bupivacaine–morphine anaesthesia using 9.5 mg (0.5% hyperbaric) bupivacaine and 0.1 mg (0.1 mL) morphine. The subjects were divided into 2 groups: at the end of operation, group I received 1.0 mg/kg rectal diclofenac sodium and group II received 1.5 mg/kg rectal diclofenac sodium. The visual analogue scale at 4, 12, and 24 hours post-operation, the duration until first rescue analgaesia was given, and the side effects were recorded.

Results: There was no statistically significant difference in the pain score at 4, 12, and 24 hours. One parturient from group I requires rescue medication at 18 hours post-operation. There was no side effect noted.

Conclusion: Single dose of 1.0 mg/kg rectal diclofenac sodium as an adjuvant to intrathecal bupivacaine morphine anaesthesia for caesarean section is comparable to 1.5mg/kg dosage and required no rescue medication. Single dose of 1.0 mg/kg rectal diclofenac sodium can be suggested as an alternative to multiple doses administration of drug.

Supervisor:
Dr Gnandev Phutane
Co-supervisor:
Dr Aisai Abdul Rahman

A STUDY ON FACTORS AFFECTING THE CORONARY ANGIOGRAPHIC FINDINGS AMONG POSITIVE EXERCISE STRESS TEST (TREADMILL) IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Norzian Ismail
MMed (Internal Medicine)

Department of Internal Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Coronary artery disease (CAD) is the common cause of death worldwide, and treatment strategies for this disease are continually evolving. Treadmill exercise stress test (ETT) is one of the common non-invasive diagnostic methods used to detect CAD.

Objectives: The purpose of this study was to determine the prevalence and factors affecting the coronary angiographic findings among the positive ETT patients. A total of 196 patients with positive ETT from 2003 to 2009 who subsequently underwent coronary angiography were analysed retrospectively.

Methods: The socio-demographic variables, risk factors for CAD, co-morbidities, clinical and biochemical profiles, baseline electrocardiogram (ECG), echocardiography, ETT parameters, and angiographic findings were evaluated and analysed from the patients' folders. The result was analysed using SPSS 12.0 software.

Results: The results were divided into true positive and false positive based on coronary angiography. The prevalence of true positive results was 59.2%. The factors affecting the angiographic findings among positive ETT patients are male gender ($P < 0.001$), age ($P = 0.012$), hypertension ($P = 0.04$), smoking ($P < 0.001$), blood pressure baseline (particularly diastolic BP), high density lipoprotein cholesterol ($P = 0.002$), and triglyceride level ($P = 0.010$). ETT parameters that were significantly associated with the angiographic findings were failure to achieve 85% of target heart rate ($P < 0.001$), angina during ETT ($P = 0.006$), inferolateral lead involvement during exercise, MET lower than 6.5, and ST-segment depression more than 2 mm during exercise. Strongly positive ETT result also determined the true positive outcome. However, the ECG leads involved during ETT was not associated with the specific coronary artery involvement.

Conclusion: This study proves that the ETT is still an important investigation that can detect significant CAD.

Supervisor:
Associate Professor Dr Zurkurnai Yusof
Co-supervisor:
Dr Ng Seng Loong

BONE DENSITY CHANGES FOLLOWING TREATMENT WITH ALENDRONATE IN PATIENTS WITH LOW BONE DENSITY USING DUAL ENERGY X-RAY ABSORPTIOMETRY

Dr Norzila Tendot Abu Bakar
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Osteoporosis is an important disease that has increased in its occurrence. It is more common in elderly female. Risk factors of osteoporosis include increasing age, female, as well as smoking. As the incidence of osteoporosis is increasing, with more younger population affected, and since the costs of managing osteoporotic fracture has risen, it is important to get an accurate diagnosis and to identify people at risk of getting osteoporotic fracture. Alendronate is a widely used drug to treat osteoporosis worldwide. Although this drug has been in the market since 30 years ago, only recently its efficacy has been tested. Since osteoporosis varies in its environmental factors, there is need to evaluate patients' response to alendronate.

Objectives: The study aimed to determine bone density changes in patients treated with alendronate using dual-emission X-ray absorptiometry (DEXA).

Methods: This was a prospective interventional study performed in Hospital Raja Perempuan Zainab II, Kota Bharu, over the period of 18 months. Samples were selected from the orthopaedic clinic among patients who were identified to have low bone density such as osteopaenia on radiograph and/or DEXA and patients with radiographic features of osteopaenia with pathological fracture as well as patients who fulfilled osteoporosis criteria by using DEXA. A total of 56 patients who had given a written informed consent underwent baseline DEXA. These patients were started with treatment of alendronate (70 mg weekly). Second DEXA scan was performed after 1 year of treatment. Only 38 patients came for second bone densitometry measurement. Bone density was measured at 3 different sites: the hip, the neck of femur, and the lumbar spine. Effects of other non-pharmacological factors such as supplements, exercise, milk consumption, hormone replacement therapy, caffeinated drinks, carbonated drinks, smoking, and family history of osteoporosis were also assessed in this study. The graphs of changes in bone density after treatment, the pattern of its changes, and the demographic pattern were obtained. Statistical analysis (paired *t* test, Wilcoxon signed rank test) were used to analyse the data in order to assess the significance of bone density increment after treatment as well as the effect of the non-pharmacological factors that may contribute to the changes of bone density.

Results: There were increases in bone density in all patients at all measured site (hip, neck of femur, and lumbar spine). The majority of patients (65.8%) showed 1% increment of bone density from baseline in the hip region, 52.6% showed 2% increment, whereas 47.4% showed 3% increment. Almost similar results were seen in the neck of femur (55.3% at 1% increment, 42.1% at 2% increment, and 31.6% at 3% increment) and in the lumbar spine (55.3% at 1% increment, 42.1% at 2% increment, and 31.6% at 3% increment). Increment in bone density was significant in the neck of femur (P = 0.045) compared with other sites, which did not show significance.

Conclusion: The majority of patients showed 1% increment of bone density in all measured part (hip, neck of femur, and lumbar spine). Increment of bone density is significant in the neck of femur region.

Supervisor:
Associate Professor Dr Noreen Norfaraheen Lee Abdullah
Co-supervisors:
Dr Md Ariff Abas
Dr Anwar Hau Abdullah

IN VITRO EVALUATION OF BIOMEDICAL-GRADE CHITOSAN DERIVATIVES ON PRIMARY HUMAN SKIN FIBROBLASTS

Nor Asiah Muhamad Nor
MSc (Reconstructive Sciences)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Chitosan has been proposed for biomedical applications because of its biocompatibility and abundance in nature. However, many barriers still exist due to its physical and chemical limitations. Further work is needed to improve these properties, but any changes will influence its biocompatibility. Therefore, the biosafety of chitosan products, in terms of biocompatibility and cytotoxicity, requires an in vitro evaluation. The chitosan film that was tested has been locally processed as a chitosan derivative. Primary human dermal fibroblast, which plays a major role in the process of wound healing, was used for the evaluation.

Objective: The objective of this study is to evaluate the cytotoxicity of chitosan derivatives products and their ability to influence the proliferation of fibroblasts. This study also aimed to assess the effects of chitosan on interleukin 8 (IL-8) and transforming growth factor-ß secretion by primary fibroblasts in the culture system.

Methods: Comparative evaluation was done on four types of chitosan derivatives films, named as NO-CMC, O-CMC, O-C, and N-CMC.

Results: O-C and N-CMC were found to be non-cytotoxic against fibroblasts, as confirmed by 3(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. General observation using phase contrast microscopy showed no marked morphological changes on O-C and N-CMC treated cells at the initial period of incubation. Cultures incubated with NO-CMC were graded as slightly changed, whereby more than 20% of the cells were rounded and loosely attached, and occasional lysed cells were present. Minimal cell damage was observed on O-CMC treated cells. Similar results were obtained from quantitative approach assessment. Determination of cell proliferation using CellTiter 96® Aqueous Non-Radioactive Cell Proliferation Assay revealed no fibroblasts proliferation in the presence of high molecular weight chitosan derivatives after 5 days of treatment compared with untreated well. However, low molecular weight chitosan derivatives have the ability to induce the proliferation of fibroblasts. In addition, stimulation of proliferation increased with time exposure. This study also demonstrated that chitosan derivatives have an ability to influence the secretion of IL-8 by fibroblasts. In contrast, no TGF-ß secretion was detected.

Conclusion: Although in vivo experiments are anticipated, these current findings indicate the potential use of chitosan derivatives in wound management.

Supervisor:
Professor Dr Ahmad Sukari Halim
Co-supervisors:
Dr Che Maraina Che Hussin
Associate Professor Dr Shahrum Shamsuddin

TUMOUR NECROTIC VOLUME AND ITS ASSOCIATION WITH TUMOUR SIZE AND LUNG METASTASIS AMONG OSTEOSARCOMA PATIENTS USING MRI

Dr Nor Azam Mahmud
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Osteosarcoma is the most frequent skeletal malignancy in children and adolescent. Several recent studies indicate that hypoxia in solid tumours has a major prognostic effect. This has been demonstrated in head and neck cancers, gliomas, adult soft tissue sarcoma, and Ewing's sarcoma. Severe and long lasting hypoxia can result in necrosis; therefore, the presence of necrosis can be correlated with prognosis.

Objectives: This study was designed to determine the association and correlation between tumour volume and tumour necrosis with the risk of lung metastasis in osteosarcoma patients.

Methods: This was a cross-sectional study involving 33 confirmed osteosarcoma patients who were referred from tertiary centres or admitted to Hospital Universiti Sains Malaysia (HUSM) for investigation and management of osteosarcoma from October 2001 to September 2008. All patients who fit the inclusion criteria were selected and their data from patients' radiological, medical, and histopathological records were studied. Each patient had undergone magnetic resonance imaging in HUSM, using a standard imaging protocol. The measurement of tumour volume and tumour necrotic volume were done using OSIRIX software. Computed tomography of the thorax was done either in HUSM or in other hospitals. The association between tumour necrotic volume with lung metastasis and tumour volume were observed.

Results: The patients' age ranged from 6 to 28 years old, and the majority of them were males, with Malays being the major ethnic group. Femur was the most common site for osteosarcoma to occur. Out of the 33 cases, 70% presented with lung metastasis. The median tumour necrosis was 22.5cm^3, and the median tumour volume was 280.5cm^3. There was no statistically significant association between tumour necrotic volume and lung metastasis (P = 0.115). There was significant association between tumour volume and lung metastasis. Significant correlation was also noted between tumour necrotic volume and tumour volume (P < 0.001).

Conclusion: There was no association between tumour necrotic volume and incidence of lung metastasis. However, there were association between tumour volume with tumour necrotic volume and lung metastasis.

Supervisor:
Dr Nik Munirah Nik Mahdi
Co-supervisor:
Professor Dr Zulmi Wan

REMISSION AND RELAPSE OF PROLIFERATIVE LUPUS NEPHRITIS IN PATIENTS TREATED WITH INTRAVENOUS CYCLOPHOSPHAMIDE IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Norasiah Abu Bakar
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Although there are several reports on predictors of long-term outcomes of proliferative lupus nephritis, there is inadequate knowledge about predictors of remission and relapse among patients with proliferative nephritis treated with currently recommended intravenous cyclophosphamide regimen.

Objectives: We undertook a retrospective study on all eligible proliferative lupus nephritis patients treated with intravenous cyclophosphamide in Hospital Universiti Sains Malaysia from 1997 to 2007 to determine the timing and the rate of remission and relapse, and also to determine the predictors of the remission and relapse in those patients.

Results: Data from 70 patients were analysed: 38% had focal proliferative nephritis (Class III) and 62% had diffuse proliferative nephritis (Class IV). All of the patients were Malays, and the majority of patients were females. The mean age at presentation was 26 years (ranged 13–40 years). Out of 70 patients, 52 (74.3%) entered into remission; 26 (37%) of these patients had had relapse during follow-up. The overall median duration of treatment in our cohort was 24 months. The median time to remission was 3 months from the start of the intravenous cyclophosphamide regimen. The median time to relapse was 79 months from the start time of remission. In our study, central nervous system disease, proteinuria, creatinine level, systolic blood pressure, and type of renal histology at the time of the diagnosis of lupus nephritis were found to be significant independent predictive factors for relapse.

Conclusion: The majority of proliferative lupus nephritis patients had remission when treated with intravenous cyclophosphamide, and one third of them had relapse. Our study has confirmed several factors as predictors for relapse.

Supervisor:
Associate Professor Dr Zainal Darus

THE EFFECT OF MONOCHROMATIC INFRARED ENERGY THERAPY ON DIABETIC FEET WITH PERIPHERAL SENSORY NEUROPATHY—A SINGLE BLINDED RANDOMISED CONTROLLED TRIAL

Dr Norazira M Yacob
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Peripheral diabetic neuropathy has been a burden to the health and economy with the increasing number of morbidity and mortality cases following foot ulcer and amputation. With foot ulcer being an irreversible disease, foot care and glycaemic control is the mainstay of treatment. Various adjunct treatments to improve neuropathy have been introduced to the market; among them is the monochromatic infrared energy therapy (MIRE), which claimed to produce promising results. This study focused on the effect of MIRE on the diabetic foot peripheral neuropathy. The main difference in comparison with other previous studies was the use of a neurometer, which is more quantitative and sensitive, for neuropathy assessment.

Objectives: The study aimed to assess the effect of MIRE on diabetic feet associated with peripheral neuropathy.

Methods: A randomised controlled single-blinded study was conducted at Hospital Universiti Sains Malaysia from February until October 2008, involving 30 lower limbs from 25 patients. The neuropathy was screened by Michigan Neuropathy Scoring Investigation followed by the assessment of the Current Perception Threshold using a neurometer at 2000 Hz, 250 Hz, and 5 Hz. The limbs were randomised to receive either daily MIRE or placebo treatment for a total of 12 treatments. The foot was reassesed again with neurometer within a week of completion of the treatment.

Results: The data obtained was analysed with non-parametric test to compare between the treatment and place groups. The inter-relationship of each result between these 2 groups was confirmed by chi-square test. We found no significant difference ($P > 0.05$) in the neuropathic foot of diabetic patients in the MIRE and placebo groups.

Conclusion: There was no improvement of neuropathy in the diabetic foot patient following MIRE treatment.

Supervisor:
Dr Abdul Nawfar Sadagatullah

A PROSPECTIVE STUDY OF CERVICAL LENGTH MEASUREMENT IN PREDICTING PRE-TERM DELIVERY

Dr Norlidar Mohamed
MMed (O & G)

Department of Obstetrics and Gynaecology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: We aimed to study the cervical length measurement in relation to the outcome of pregnancy.

Methods: All patients who attended the antenatal clinic at Hospital Universiti Sains Malaysia and fulfilled all the set criteria were recruited in this study. The participants were subjected to transabdominal and transvaginal ultrasounds at 16, 20, 24, 28, and 32 weeks of gestation for cervical length measurement. At 28 weeks of gestation, high vaginal swab were taken, and subsequently the participants had routine antenatal follow-up as scheduled similar to other patients who are not involved in this study, until the time of delivery.

Results: A total of 183 pregnant women were recruited in this study; 61 of them had pre-term labour. The incidence of pre-term delivery was approximately 33.3%. Patients with history of pre-term delivery or miscarriage and short cervix were predisposed to pre-term delivery. In general, the average cervical length at 16, 24, 28, and 32 weeks of gestation were 2.82, 2.78, 2.73, and 2.69 cm, respectively. Both transabdominal and transvaginal methods in measuring the cervical length showed significant association in predicting pre-term delivery. At a cut off point of 2.5 cm, transvaginal cervical length showed positive predictive value of 100% in predicting pre-term delivery at all gestation periods, except at 32 weeks; this was far superior compared with the transabdominal method. Transvaginal ultrasound at 28 weeks demonstrated the highest predictive value in predicting pre-term delivery compared with other gestation periods.

Conclusion: Cervical length measurement can be used as important predictor for pre-term delivery, where the length of the cervix is inversely related with risk of pre-term labour. In predicting pre-term delivery, the measurement of cervical length by transvaginal ultrasounds is more superior to transabdominal ultrasound.

Supervisor:
Dr Mohd Pazudin Ismail
Co-supervisor:
Professor Dr Nik Mohamed Zaki Nik Mahmud

PARAOXONASE 1 GLUTAMINE/ARGININE 192 POLYMORPHISMS IN THREE ETHNIC GROUPS IN MALAYSIA

Normaizam Abdul Hana
MSc (Chemical Pathology)

Department of Pathology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Coronary heart disease (CHD) is the major cause of death globally, including in Malaysia. Despite of sharing almost similar environmental exposure, the prevalence of CHD was highest in the Indian population compared with the Malay and Chinese populations. We hypothesised that the Indians have genetic predisposition to CHD. Paraoxonase (PON) 1 / glutamine (Q) / arginine (R) 192 polymorphism has been shown to be associated with CHD.

Objective: This study was aimed to determine the distribution of lipid profile and genotype among the three ethnic groups (Malay, Chinese, and Indian), and to study the relationship of lipis profile and PON 1 genotype.

Methods: A total of 155 healthy blood samples were collected (54 Malays, 50 Chinese, and 51 Indians) for lipid profile estimation and PON 1 genotyping. The genotyping procedures involved DNA extraction, PCR amplification, Alw 1 digestion, and agarose gel electrophoresis. Statistical data were analysed by ANOVA, ANCOVA, chi-square, and Pearson's correlation tests.

Results: The mean concentrations of plasma total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), and TC to high-density lipoprotein cholesterol (HDL-C) ratio were significantly higher in Malays and Chinese than Indians (TC, P = 0.035; LDL-C, P = 0.039; TC:HDL-C, P = 0016). However, there were no significant differences in the plasma triglycerides (TG) and HDL-C concentrations (TG, P = 0.610; HDL-C, P = 0.225). The overall genotype compositions were 34% of QQ, 20% of QR, and 46% of RR. The allele frequencies for all subjects were 0.442 and 0.558 for Q and R, respectively. The frequencies of QQ, QR, and RR genotypes were 39%, 18%, and 43% for both Malay and Indian groups, and 24%, 24% and 52% for Chinese group, respectively. The allele frequencies for both Malays and Indians were 0.48 and 0.52 for Q and R allele, respectively, while they were 0.36 for Q and 0.64 for R in Chinese. PON 1 genotype (P = 0.483) and allele distributions (P = 0.134) were statistically not significant among the ethnic groups. After classification by National Cholesterol Education Program–Adult Treatment Panel *III* (NCEP-ATP III) guidelines, the frequency of lower HDL-C were 2.2 times and 3.2 times more in Indians compared with Malays and Chinese, respectively. The mean concentrations of plasma TC, LDL-C, and TC:HDL-C were significantly higher in RR compared to QR and QQ (TC, P = 0.013; LDL-C, P = 0.019; TC:HDL-C, P = 0.03). The plasma HDL-C was also significantly different, but it was higher in QR than in RR and QQ (P = 0.002). However, there was no significant difference in the plasma TG among the three genotypes (P = 0.292).

Conclusion: The highest CHD prevalence was observed in the Indian population in Malaysia; this might be because low HDL-C was more frequent among Indian subjects. The distribution of PON 1 glutamine / arginine polymorphism was independent of ethinicity. The PON 1 R allele was associated to elevation of 11.1% of TC, 16.5% of LDL-C, and 16.3% of TC:HDL-C. PON 1 Gin / Arg 192 polymorphism should be added as one of the risk factors to determination the progression of premature CHD among healthy Malaysian populations.

Supervisor:
Associate Professor Hasenan Nordin
Co-supervisor:
Dr Win Mar Kyi

PRE-OPERATIVE SONOGRAPHIC PARAMETERS AND COMPARISON OF OUTCOME IN ARTERIOVENOUS FISTULA BETWEEN PRE-OPERATIVE VASCULAR MAPPING AND PHYSICAL EXAMINATION IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Normawati Mat Said
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Haemodialysis access failure is the major cause of morbidity and multiple hospital admissions. Arteriovenous fistula (AVF) is recognised as a gold standard of haemodialysis access because of its long-term patency and lower infection and intervention rates. Recent evidence has questioned the preferred site of AVF creation in many patient groups. A pre-operative test that could reliably predict the outcome of a proposed AVF would be of great benefit. Ultrasonography is an excellent modality for haemodialysis access evaluation, as it is readily available, non-invasive, and inexpensive. Pre-operative ultrasound mapping (PUSM) has been advocated as more accurate to evaluate the vascular system in patients who required AVF creation. Because of PUSM success, it has become a common practice, and it has been suggested that this technique is used routinely for AVF creation every patient before regardless of their pre-operative physical examination (PE) findings.

Objectives: The study aimed to determine sonographic parameters of arteries and veins, to compare the success rate, and to identify the risk factors for failure of AVF in pre-operative ultrasound Doppler vascular mapping and pre-operative favourable examination findings.

Methods: This randomised controlled study was conducted at Hospital Universiti Sains Malaysia Kota Bharu, Kelantan, for 18 months, from 1 April 2008 until 30 September

2009. The eligible patients were then randomised into 2 groups: 1 group of patient had both pre-operative ultrasound Doppler vascular mapping and physical examination, whereas the other group had favourable physical examination only. The patients were followed-up for the outcome.

Results: A total of 180 patients with end-stage renal disease or chronic renal failure approaching end-stage renal failure were included in this study. The physical examination group consisted of 79 patients. In the other group, 101 patients underwent PUSM; however, only 79 patients underwent fistula creation, whereas the remaining 22 patients did not. The use of PUSM resulting in 8.91 times higher chances for thrills in AVF at day 1 post-operation, 4.60 times higher at 6 weeks, and 52 times higher at 3 months 3 than in patients who underwent PE alone. PUSM also enabled 2.60 times higher chances for suitable fistula for dialysis (functioning fistula) than PE. However, there was no significant difference in the presence of thrill immediately and 6 months post-operation; this showed that there was no difference of patency between both groups. Based on our study, when adjusted to age, sex, diabetes mellitus, hypertension, hypercholesterolemia, and ischemic heart disease, the use of PUSM had 5.70 times higher chances for functioning fistula at 6 weeks, and 3.76 times at 3 months, when compared with those only had PE, and PUSM also had 3.08 times higher chances for suitable fistula for dialysis (functioning fistula). No significant risk factors contribute to fistula failure in the study population.

Conclusion: Pre-operative sonographic vascular mapping results in a marked increase in patency of arteriovenous fistulas, as well as an improvement in the suitability/adequacy of fistulas for dialysis. This approach has resulted in a substantial increase in the proportion of patients dialysing with a fistula in our patient population. Implementation of routine pre-operative ultrasound mapping will be beneficial in management of dialysis patients in Hospital Universiti Sains Malaysia.

Supervisor:
Dr Juhara Haron
Co-supervisor:
Dr Mohamed Ashraf Mohamed Daud

THE EFFECTIVENESS OF EPIDURAL 0.5% LEVOBUPIVACAINE PLUS CLONIDINE OR FENTANYL IN LOWER LIMB SURGERY

Dr Noryani Mohd Samat
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Epidural anaesthesia is one modality which provides surgical anaesthesia. It has been proven to offer numerous advantages. Usage of levobupivacaine epidural anaesthesia was noted to have almost similar potency as bupivacaine with extradural adjuvants like fentanyl and clonidine as a bolus dose in epidural anaesthesia is still limited. Even the combination regime varies and focused mainly on post-operative analgaesia.

Objective: The study was conducted to determine the extent of clinical efficacy of combinations of levobupivacaine with clonidine or fentanyl in sensory and motor block.

Methods: In this randomised, double-blind study, 80 patients were allocated in to 3 groups: 0.5% levobupivacaine with 60 µg clonidine (LC) group, 0.5% levobupivacine with 50 µg fentanyl (LF) group, and 0.5% levobupivacine plus 1 mL of normal saline (LNS) as control group. Epidural anaesthasia performed were at the level of L3/4 or L4/5 for patients who underwent lower surgery. The drugs consisted of 3 mL of test dose plus 10 mL of study drug, which consisted of 9 mL of 0.5% levobupivacaine and 1 mL of adjuvant. Patients were assessed regarding the sensory block with Modified Bromage Scale (MBS). Another 5 mL of 0.5% levobupivacaine was added in incremental dose when sensory block is not achieved up to T10 within 30 minutes. Patients were monitored every 2.5 minutes in the first 30 minutes and, subsequently, every 30 minutes once T10 block has been achieved. Charges in haemodynamic parameters and any side effects were also observed in this study.

Results: All patients had completed the study. There were no significant among 3 groups in terms of the onset and the duration of motor block. The LF group was noted to have the fastest onset of sensory block, 4.90 minutes (SD 4.49), followed by the LC group, 6.88 minutes (SD 3.94), and the LNS group, 12.88 minutes (SD 28.39). For the duration of the sensory block, the mean time needed to regress to 2 dermatome levels were longest in the LC group, at 157.43 minutes (SD 40.23), followed by the LF group, at 148.29 minutes (SD 41.57), and the LNS group, at 138.37 minutes (SD 26.04). There was a significant difference in the onset of motor block, $P = 0.03$. The LF group had the fastest onset, 10.96 minutes (SD 10.66), followed by the LC group, 12.32 minutes (SD 8.97); the LNS group had the slowest onset, 20.67 minutes (SD 20.61). Charges in haemodynamics were noted to be significantly different ($P < 0.001$). The LC group had the most changes in systolic and diastolic blood pressure. The most common side effect was hypotension; other side effects such as nausea, vomiting, and pruritus occurred in lesser numbers or none at all.

Conclusion: We onserved that the LF group had faster onset of block and that the LC group had a longer duration of block. However, these findings were not statisitically significant. The drugs' combination did not show haemodynamic instability, and the treatment was associated with lesser side effects. We concluded that the effectiveness of epidural anaesthesia with 0.5% levobupivacaine had improved with adjuvant combination.

Supervisor:
Dr Mahamarowi Omar

FIVE-YEAR SURVIVAL AND PROGNOSTIC FACTORS OF CERVICAL CANCER PATIENTS TREATED IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Nuradhiathy Abd Razak
MSc (Biostatistics)

Unit of Biostatistics and Research Methodology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: In Malaysia, cervical cancer has become the second most common cancer after breast cancer and the fourth leading cause of death in women. The research findings are expected to help in the management of cervical cancer as well as improving the survival rate.

Objectives: The study was conducted to determine the 5-year survival and to identify the prognostic factors that influence the risk of death among patients with cervical cancer treated at Hospital Universiti Sains Malaysia.

Methods: Data from 130 patients diagnosed with cervical cancer and treated at Hospital Universiti Sains Malaysia between 1 July 1995 and 30 June who fulfilled the inclusion criteria were analysed. The study design used was a retrospective record review where patients medical records were reviewed in detail, and important information on variables of interest and patients' survival status were collected and recorded using the data collection sheet prepared by the researcher. Univariable and multivariable analyses using Kaplan–Meier product limit estimates as well as simple and multiple Cox proportional hazard regression were perfomed to determine the 5-year survival and statistical significance of the prognostic factors.

Results: Overall 5-year survival was 39%, with a median survival time of 39.83 (95% CI 31.13–48.54) months. The survival according to stage was 49.6%, 43.8%, and 16.7% for stage I, II, and III-IV, respectively. The significant prognostic factors in this study were being diagnosed at stage III-IV (adjusted HR = 2.91, 95% CI 1.81–4.68, $P = 0.004$) and anaemia (adjusted HR = 2.49, 95% CI 1.35–4.61, $P < 0.001$). Prognostic factors such as ethnicity, age at diagnosis, lymph node involvement, histological type, bleeding, distant metastases, and primary treatment were not identified as prognostic factors in this study.

Conclusion: The 5-year survival of cervical cancer patients treated at Hospital Universiti Sains Malaysia was lower compared with other studies. Our findings showed that cancer stage III-IV and presence of anaemia influence cervical cancer patients's survival. Further studies with larger sample size are needed to identify more significant prognostic factors that influence the survival of cervical cancer patients.

Supervisor:
Dr Muhammad Naeem Khan
Co-supervisor:
Professor Dr Syed Hatim Noor

THE EFFICANCY OF IV PARECOXIB SODIUM AS AN ANALGAESIC ALTERNATIVE TO IV MORPHINE IN ACUTE TRAUMA PAIN: A RANDOMISED DOUBLE-BLINDED CONTROL TRIAL

Dr Nurkhairulnizam Abd Halim
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Pain is the most common presenting complaint in any emergency department, occurring in more than 60% of the department's patients. Most of the patients with acute pain expect rapid delivery of pain medication after initial arrival in emergency department. The ideal analgaesic should have certain characteristics such as prompt onset of analgaesic activity, ease in administration, good efficacy, and no significant interference with evaluation of the underlying disease process. Even though morphine possess almost all the ideal characteristic of analgaesia and is considered as a gold standard for emergency acute pain relief, its side effects, especially nausea, vomiting, dizziness, depression of conscious level, hypotension, and respiratory depression, have lessened its usage in polytrauma patients with head injury. Analgaesic agents, such as COX-2 inhibitors, might be used as alternatives in the acute trauma setting. Parecoxib sodium is the first parenteral COX-2 inhibitor that is comparable to intravenous morphine. The COX-2 inhibitors' effectiveness had been proven in multiple studies, although most of them were post-operative pain studies. To date, no study has been conducted in the emergency department to evaluate COX-2 inhibitors' effectiveness and safety, especially in trauma patients. Thus, this study was undertaken to open a new pathway of the drug's usage in acute care setting and emergency department.

Objectives: The objective of the study was to compare between intravenous parecoxib sodium and intravenous morphine as an analgaesic for acute traumatic pain (fracture or soft tissue injuries) in the emergency department.

Methods: A randomised, double-blind controlled trial was performed from 1 September 2008 until 30 September 2009 in the emergency department of Hospital Universiti Sains Malaysia. A total of 32 patients who presented with complaint of acute traumatic pain requiring analgesia within 24 hours of event, fulfilled the set inclusion and exclusion criteria, and had given their consent were enrolled in the study. They were divided into 2 groups: soft tissue injury and bone fracture (16 patients each arm). The patients were randomised to receive either 0.10 mg/kg of morphine sulphate (14 patients) or 40 mg of parecoxib sodium (18 patients) intravenously. None of the patients had any history of analgaesic usage in the previous 6 hours. Focused history and physical examination were carried out, and the initial blood pressure, pulse rate, oxygen saturation, numerical pain score, and weight were recorded. Periodic assessment of blood pressure, pulse rate,

oxygen saturation, numerical pain score, sedation score, and side effects were taken at 0, 5, 15, and 30 minutes after the drug administration. Patients were asked by the researcher to rate their pain intensity on a 10-point verbally administered numerical rating scale, ranging from 0 (no pain) to 10 (worse possible pain). If the numerical pain score was still more or equivalent to 6 after 30 minutes, a rescue drug (0.1 mg/kg of intravenous morphine sulphate) were given. The patients' satisfaction was assessed using the scale of "poor", "fair", "good", and "excellence". The statistical analyses, including mean, standard deviation, percentage, paired *t* test, and repeated measure ANOVA, were performed.

Results: All 32 patients were Malays, with mean age of 35.6 years (SD 15.61); 26 were males and 6 were females. The majority of the patients (56.3%) weighed 61–80 kg, with a total mean of 62.2 kg (SD 11.49). The mean duration between trauma and treatment was 2 hours and 20 minutes. We found that 28.2% of patients had side effects of the medication. At the end of the study, 56.2% of the patients described the drugs as good. A majority (81.2%) do not require rescue medication after 30 minutes of drug administration. There is no significant difference in the mean numerical rating score, systolic blood pressure, diastolic blood pressure, and oxygen saturation between patients treated with parecoxib sodium and those treated with morphine in either the fracture or the soft tissue injury groups. However, the difference in the mean pulse rate between patients treated with parecoxib sodium and those treated with morphine in the soft tissue injury group were significant ($P < 0.05$). Comparison of mean numerical rating score reduction within the groups of patients treated with parecoxib sodium and those treated with morphine revealed significant difference in both fracture and soft tissue injury.

Conclusion: This study revealed no significant difference in the reduction of mean numerical rating score between patients treated with parecoxib sodium and those treated with morphine in both groups of injury, even though the mean numerical rating score reduction was greater in patients treated with morphine ($P = 0.059$ in fracture group and $P = 0.672$ in soft tissue injury group). Therefore, intravenous parecoxib sodium can be considered as an alternative analgaesic for the treatment of acute trauma pain in the emergency department, with no acute side effects.

Supervisor:
Dr Kamarul Aryffin Baharuddin

MORPHOMETRIC STUDY OF PEDICLE IN THE SUBAXIAL CERVICAL SPINE (C3–C7) IN A POPULATION TREATED IN HOSPITAL UNIVERSITI SAINS MALAYSIA—COMPUTED TOMOGRAPHY STUDY

Dr Nyin Li Yuen
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Cervical pedicle diameter size differs between Asians and non-Asians. The transverse diameter of the pedicle is the determinant of the feasibility of transpedicular screw fixation (TPF). It has become a standard way to stabilise the spine in scoliosis surgery, degenerative conditions, trauma treatment, tuberculous spondylitis, and tumour reconstruction surgery. A successful pedicle screw placement in the cervical spine requires adequate three-dimensional knowledge in morphology of cervical pedicles. Thus, a thorough understanding of cervical pedicle anatomy is important to avoid injury to vertebral artery, spinal cord, or nerve root. Data extracted from studies of non-Asians should be used with caution because they might not be applicable for our population. Thus, a study of morphologic features of cervical pedicles in Malaysian population is important before pedicle screw fixation of cervical spine is initiated.

Objective: The study was performed to measure and compare the dimensions and axes of subaxial cervical pedicles (C3–C7) in a population treated in Hospital Universiti Sains Malaysia using reformatted computed tomography (CT) images.

Methodology: This was a cross-sectional study performed in the Department of Radiology, Hospital Universiti Sains Malaysia, from 1 January 2006 until 28 February 2009. The sample size calculated was 74: 37 males and 37 females. All images of the CT scan were selected based on inclusion and exclusion criteria. Outer pedicle width (OPW), outer pedicle height (OPH), pedicle transverse angle, α (PTA), and transverse angle of safety zone of transpedicular screwing, γ (TASZ) were measured using reconstructed CT images. The height of each patient was also obtained.

Results: The majority of subjects in this study were Malays (94.6%); the rest were Chinese (5.4%). No Indian, Siamese, or other races were encountered. The mean OPW from C3 to C7 ranged 4.23–5.98 mm in males and 3.50–5.41 mm in females. The mean OPH from C3 to C7 ranged 4.74–6.07mm in males and 4.34–5.50 mm in females. The mean TPA from C3 to C7 ranged 38.14°–54.90° in males and 38.76°–54.03° in females. The smallest TPA was at C7 in both males and females. The mean TASZ from C3 to C7 ranged 18.90°–29.15° in males and 16.58°–28.84° in females. The height of the patients significantly correlated to the mean OPH at all levels of the subaxial cervical spine.

Conclusion: We found that the OPH, OPW, and TASZ increased in a stepwise manner from C3 to C7. These measurements were larger in males than in females, and were larger on the left side than on the right side. The TPA showed an increase from C3 to C4 levels, after which it decreased at subsequently lower levels. Only OPH was significantly correlated with height of the patient.

Supervisor:
Dr Rohaizan Yunus
Co-supervisor:
Dr Win Mar @ Salmah Jalaluddin

BREASTFEEDING PRACTICE IN INFANTS DELIVERED IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Pazlida Pauzi
MMed (Paedriatrics)

Department of Paediatrics
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introducton: In the past, breastfeeding has been the key survival for the human species and has been a symbol of motherhood. Unfortunately, in the era of modernisation, breastfeeding was not viewed as a key factor for survival anymore, but merely part of the lifestyle and mothers' personal choice. Despite the knowledge on the benefits of breastfeeding, the incidence of breastfeeding worldwide was still low. In Malaysia, it has been 15 years from the time of the first hospital being accredited as Baby Friendly Hospital by the World Health Organization. Thus, it was an appropriate moment to re-evaluate our breastfeeding practice.

Objectives: The main objective was to determine the proportion of exclusive breastfeeding on day 1, day 5, and week 6 of life in infants delivered in Hospital Universiti Sains Malaysia. The second objective was to determine the influence of socio-demographic factors on exclusive breasfeeding at week 6 of life.

Methods: A prospective cohort study was carried out, involving 422 mothers and their infants who were delivered in Hospital Universiti Sains Malaysia from May 2007 until September 2008. This study involved mothers who had delivered to a term infant weighing 2.5 kg and above. Both mothers and infants were well and able to practice breastfeeding. Mothers were interviewed in day 1, day 5, and week 6. The interview was based on structured questionnaire built from the literature review. The day 1 interview was to get the baseline data and socio-demographic background, along with the feeding practice at that time. Subsequent day 5 and week 6 interview were conducted through telephone calls. Data were analysed using SPSS version 12 software. Statistical methods used were chi-square test or Fisher-exact test, independent *t* test, and multiple logistic regression.

Result: The proportion of exclusive breastfeeding on day 1 of life was 96.7%. However, on day 5 of life, it declined to 78.4%; it dropped further to 54.5% at week 6. The main determinant factors for exclusive breastfeeding at week 6 were practice of exclusive breastfeeding on day 5 (OR = 7.20, 95% CI 3.99–13.01), mothers who were not working outside their houses or stay-at-home mothers (OR = 2.80, 95% CI 1.78–4.38), and 13 to 24 months of breastfeeding experience involving their previous child (OR = 2.35, 95% CI 1.44–3.84). Antenatal and post-natal counseling, educational level, and socio-economic status of the mothers were not the determinant factors for exclusive breastfeeding practice at week 6.

Conclusion: The proportions of exclusive breastfeeding practice in this study, especially on day 1, have increased compared with previous studies, which dated approximately 10 years back. However, it was far from the optimum suggested by World Health Organization, particularly because of the tremendous drop in the post-hospital discharge percentage. Thus, the problem was not in the initiation of breastfeeding but due to inability to sustain it. Therefore, the community intervention is the utmost important intervention in order to ensure the continuous exclusive breastfeeding practice among the mothers.

Supervisor:
Dr Noraida Ramli

EVALUATION OF METHADONE MAINTENANCE THERAPY AMONG THE INTRAVENOUS DRUG USERS IN KOTA BHARU, KELANTAN, 2005–2008

Dr Premila Devi Jeganathan
MPH

Department of Public Health
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: In Malaysia, methadone maintenance therapy was among the harm-reduction activities launched in 2005 to combact the worsening drug addiction problems. Methadone is a synthetic opiate agonist, and the methadone maintenance therapy is indicated for those who are dependant on opiates for an extended period of time.

Objectives: The objective of this study was to evaluate the effectivess of the methadone maintenance therapy in Kota Bharu, Kelantan, and the factors that influence the outcome.

Methods: A retrospective record review was carried out to collect the data on all 117 the clients who fulfilled the set criteria at Hospital Raja Perempuan Zainab II. The opiates treatment index was used to evaluate the improvement of the program. Paired *t* test was used to compare the composite scores at intake and at 12 months after methadone maintenance therapy. A comparison of the employment status at intake and after 12 months of the methadone programme was carried out

using McNemar test. Multiple logistic regression was used to analyse the factors influencing the employment status after 12 months.

Results: The mean age of clients in this study was 31.38 years (SD 5.35) and the majority of them are males, Malays, and unmarried. The mean scores in all the opiate treatment index domains were lower after 12 months of methadone maintenance therapy. A total of 18.7% of subjects gained employment, and there was a 32.8% increase in subjects having full-time jobs. The self-perceived health problems and social functioning score at 12 months were found to be associated with the employment status.

Conclusion: This study demonstrated that the methadone maintenance program has contributed in reducing drug use, high-risk behaviour, crime, and self-perceived health problems, as well as improving social functioning. The employment status showed positive changes. Improvements of social functioning and health influence the employment status at 12 months.

Supervisor:
Dr Azriani Ab Rahman
Co-supervisor:
Dr Wan Mohd Zahiruddin Wan Mohamad

WORK-RELATED FACTORS OF CARPAL TUNNEL SYNDROME IN COMPUTER USERS AMONG CLERICAL STAFF IN GOVERNMENT HEALTH FACILITIES, KOTA BHARU, KELANTAN

Dr Raja Mohd Azim Raja Haron
MMed (Community Medicine)

Department of Community Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Carpal tunnel syndrome (CTS) is a group of signs and symptoms that manifest when the median nerve is compressed within the carpal tunnel. Uncertainty of the local prevalence and failure to eliminate contributory factors can result in the recurrence and progression of CTS, impaired use of the hand, and the need for surgical treatment.

Objectives: The aim of this study was to determine the prevalence of CTS and its and work-related associated factors in computer-using clerical staff in government health facilities, Kota Bharu, Kelantan.

Methods: A cross-sectional study was carried out at two government health facilities in Kota Bharu, Kelantan, from January until June 2008. Prevalence of CTS and its work-related factors in clerical workers were identified. Exposure to associated factors was assessed by workers' responses in a self-administered questionnaire, anthropometric measurement, and direct observation. Disease status was confirmed by history that was suggestive to the syndrome, and provocative test performed by hand surgeon or nerve conduction study. Data was analysed by using simple and multiple logistic regression analyses.

Results: A total of 300 workers (180 CTS and 192 non-CTS) participated in the study. The prevalence of CTS was 36.0% (95% CI 31.5–41.5). The final model included 1 personal factor (family history) of CTS and 1 work-related factor (keyboard time in hours/day). A person with family history of CTS has 9.41 times the odds to get CTS (95% CI 1.09–81.65, P = 0.39) as compared to those without a family of CTS, and an increase in 1 hour/day of keyboard time has a 1.11 times the odds to have CTS (95% CI 1.01–1.23, P = 0.039), when adjusted for keyboard time and family history of CTS, respectively.

Conclusion: The prevalence of CTS in computer users was high, which indicated high morbidity in this type of occupation. The relationship of keyboard time and CTS showed that CTS in computer users was work-related. Health programmes, especially health educations and promotions, should be designed based on the factors that influenced the development of CTS.

Supervisor:
Dr Zaliha Ismail
Co-supervisor:
Dr Sarimah Abdullah

A STUDY OF SYSTOLIC HEART FAILURE IN HOSPITAL UNIVERSITI SAINS MALAYSIA: A RETROSPECTIVE COHORT REVIEW

Dr Rajalingam Ramalingam
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: There have been many heart failure epidemiological studies worldwide, but local data, especially those that are exclusively echocardiographically-driven, are lacking. We studied the demographics, underlying aetiology, prevalence of co-morbidities, and factors associated with outcome in patients with systolic heart failure.

Methods: 230 adult patients with echocardiographically-diagnosed systolic heart failure (left ventricular ejection fraction, LVEF, of less than 50%) in Hospital Universiti Sains Malaysia between 1 January 2005 and 31 December 2008 were selected from the echocardiography registry. Their respective case notes were reviewed retrospectively, and all relevant data were recorded. Their present functional status was determined via telephone call.

Results: Majority of the patients (77.8%) were males. The mean age was 6.04 years (SD 13.6), and the mean LVEF was 34.2% (SD 8.08). Out of 230 patients, 53.9% were overweight (pre-obese and obese), 54.8% were former smokers, and 10.9% were still actively smoking. At the time

of the study, 52.2% of the patients were still alive, and 47.8% were dead. Ischaemic cardiomyopathy accounted for 81.3% of the total heart failure patients, with the remaining non-ischaemic or unknown etiology. In addition, 67.0% of the patients had hypertension, 60.0% had hyperlipidaemia, 44.3% had diabetes mellitus, 13.5% had chronic kidney disease, and 53.0% had anaemia. Multivariate analysis identified increasing age (OR = 1.026, 95% CI 1.000 to 1.053, *P* = 0.050), the presence of co-morbidities such as diabetes mellitus (OR = 2.068, 95% CI 1.006 to 4.252, *P* = 0.048) and/or chronic kidney disease (OR = 3.458, 95% CI 1.131 to 10.574, *P* = 0.030), increasing heart rate (OR = 1.044, 95% CI 1.018 to 1.071, *P* = 0.001), adecreasing haemoglobin level (OR = 0.853, 95% CI 0.721 to 1.008, *P* = 0.062), and the use of diuretics (OR = 3.955, 95% CI 1.711 to 9.142, *P* = 0.001) to be associated with higher chance of death. The use of angiotensin receptor blockers (OR = 0.225, 95% CI 0.067 to 0.756, *P* = 0.016) and/or beta-blockers (OR = 0.276, 95% CI 0.134 to 0.571, *P* = 0.001) was found to be independently associated with lower chance of death. Among patients with more severe left ventricular systolic dysfunction, there was no significant increase in mortality when compared with those with only mild dysfunction (*P* = 0.937).

Conclusion: A great majority of patients with systolic heart failure in Hospital Universiti Sains Malaysia were males, overweight, hypertensive, and hyperlipidaemic. Ischaemic cardiomyopathy was the predominant underlying aetiology of heart failure. Increasing age and heart rate, the presence of diabetes mellitus and chronic kidney disease, decreasing hemoglobin level, and the use of diuretics were all independently associated with a greater chance of death, while the use of angiotensin receptor blockers and beta-blockers was associated with more favourable outcome.

Supervisor:
Dr Suhairi Ibrahim
Co-supervisor:
Associate Professor Dr Zurkurnai Yusof

THE EFFECT OF PRE-INDUCTION INTRAVENOUS DEXMEDETOMIDINE ON SYMPATHOADRENAL RESPONSES DURING INTUBATION

Dr Rajesh Kumar Muniandy
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Dexmedetomidine is a highly selective alpha-2 agonist agent. The provision of anxiolysis and sedation with minimal effects on respiration has led to a wide range of clinical use of this agent, from monitored anaesthetic care and adjunct in general anaesthesia to post-operative sedation.

Objectives: The aim of this study was to evaluate the effects of a single bolus intravascular dexmedetomidine of 0.6 µg/kg, 10 minutes before induction on sympathoadrenal responses during intubation.

Methods: A prospective, randomised double-blinded clinical trial was conducted on 112 patients planned for surgery who required tracheal intubation. The study was conducted in 12 months, between August 2008 and August 2009, at the operation theatre of Hospital Universiti Sains Malaysia. The patients were randomised to receive either dexmedetomidine (*n* = 56) or normal saline (*n* = 56) 10 minutes before induction of anaesthesia. They were then induced with intravenous fentanyl 2 µg/kg, propofol at a titrating dose, and rocuronium 1.0 mg/kg. Each patient's heart rate, blood pressure, oxygen saturation, and end-tidal CO_2 were recorded from the time of induction until 2 minutes after intubation. The 2 groups were of similar age, weight, and sex. The mean baseline heart rate did not differ between the dexmedetomidine (67.91 beats per minute, SD 7.744) and the normal saline groups. Similarly, the mean baseline blood pressure in both groups was not significantly different.

Results: During the process of intubation in patients who received dexmedetomidine, the mean heart rate was not raised as compared with patients who received normal saline, at 60.06 beats per minute (95% CI 52.21 to 67.91) versus 68.89 beats per minute (95% CI 62.95 to 74.84). Dexmedetomidine group also had a significant reduction in the systolic blood pressure compared with the saline group, with a mean (95% CI) of 111.16 mmHg (98.50 to 123.82) versus 116.41 mmHg (110.30 to 122.52). This pattern of reduction was also observed in diastolic blood pressure, with a mean (95% CI) of 55.46 mmHg (46.89 to 64.04) versus 57.28 mmHg (51.70 to 62.86), and mean arterial pressure, with a mean (95% CI) of 58.54 mmHg (54.12 to 62.95) versus 58.23 mmHg (54.61 to 61.84). Furthermore, their propofol requirement was also decreased by 49.99% (SD 6.55).

Conclusion: This study showed that dexmedetomidine given intravenously as a single loading dose of 0.6 µg/kg 10 minutes before induction of anaesthesia effectively attenuated the increase in blood pressure and heart rate associated with tracheal intubation. Dexmedetomidine was also shown to reduce the propofol requirement.

Supervisor:
Associate Professor Dr Wan Aasim Wan Adnan

MORTALITY PREDICTION OF INTENSIVE CARE UNIT'S PATIENTS USING SIMPLIFIED ACUTE PHYSIOLOGY SCORE (SAPS II) IN A UNIVERSITY HOSPITAL

Dr Raziman Abdul Razak
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Outcome prediction and quantisation of the severity of illness has become an irreplaceable tool for the estimation of effectiveness and quality of intensive care unit (ICU). One of the most widely used scoring system for the general severity of illness and prognosis is the Simplified Acute Physiology Score (SAPS). The SAPS II has been shown to accurately stratify risk of death in a wide range of disease states and clinical settings. This experience has resulted in the widespread use of the SAPS II scoring system as a tool for ICU audit.

Objectives: Our objective was to assess the ability of the SAPS II system to predict patient's outcome and to determine the various factors that contribute to the prediction in our institution.

Methods: A retrospective database study was conducted in patients hospitalised in the ICU of Hospital Universiti Sains Malaysia between 1 April 2008 and 31 Mac 2009. A total of 342 patients were included in the study. The sum of the SAPS II points was used for calculating predicted mortality for each patient. The observed death rate was compared with predicted mortality calculated by SAPS II system. The ability of SAPS II prognosis system to predict probability of ICU mortality was assessed with discrimination (receiver operating characteristic [ROC] curve) and calibration (Hosmer–Lemeshow test) measures.

Results: The majority of the patients were Malay (95.3%). There were 62 deaths in the ICU (18.1%) during this 1-year study. The result showed the death mostly occurred in between March and May (83.4%) and mainly during the weekends, on Friday and Saturday (48.1%). Except for age and temperature, all the other variables in SAPS II showed significant differences between survivors and non-survivors. SAPS II showed a good ability to separate the patients predicted to live from those predicted to die, as shown by an area under the ROC curve of 0.865. The calibration curve demonstrated this system can accurately predict the mortality of the patients (Hosmer–Lemeshow goodness-of-fit test, C = 4.922, df = 8, $P = 0.766$).

Conclusion: SAPS II performed well in predicting the mortality rate in our ICU, and it is a useful tool for the assessment of ICU performance.

Supervisor:
Dr Mohd Nikman Ahmad
Co-supervisor:
Associate Professor Dr Wan Aasim Wan Adnan

EXPERIMENTAL ECONOMICS: TOWARDS THE IDENTIFICATION AND CHARACTERISATION OF NON-PROTEIN-CODING RIBONUCLEIC ACIDS IN PATHOGENIC AGENT, *SALMONELLA TYPHI*

Dr Robaiza Zakaria
MMed (Pathology)

Department of Pathology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Non-protein-coding RNA (npcRNA) is large class of riboregulators that act in complex with proteins (as ribonucleoproteins) in diverse regulatory pathways.

Objectives: This thesis focus on the experimental identification of small npsRNAs from *Salmonella enterica* serovar Typhi (*S. typhi*), the aetiological agent of typhoid fever.

Results: By an experimental RNomics approach, 82 species of uncategorised novel npsRNA candidates were identified from a library generated from different growth phases of a clinically isolated *S. typhi*. From these 82 candidates, 28 were transcribed from the intergenic regions, 29 were transcribes in the antisense orientation of the open reading frames, and 18 were identified to overlap the open reading frames. Another 7 candidates were transcribed from repetitive regions and several non-repetitive locations. Eleven known npcRNAs were also detected. Interestingly, 55 candidates exhibit homology to *Escherichia coli* and were not previously annotated for both organisms. Using Northern blot analysis, the expression of 38 novel npcRNA candidates was confirmed. A total of 28 novel npcRNA candidates were growth phase regulated, where 14 candidates were growth phase regulated in both *S. typhi* USM05 and *E. coli* K12, and 11 candidates were species-specific growth phase regulated, only in *E. coli* K12. A total of 8 npcRNA candidates were ubiquitously expressed, with 6 candidates ubiquitously expressed in both S. typhi USM05 and *E. Coli* K12. There was no species-specific ubiquitously expressed candidate observed in *E. coli* K12. Two out of 38 candidates were shown to be growth phase regulated and ubiquitously expressed. The different features of expression pattern observed in this study can be associated with different classes of npsRNA that they might be grouped in, namely the housekeeping and the regulatory npcRNAs. A number of novel npsRNA candidates were shown to be located close to important genes that were conserved in *E. coli* K12 and *Salmonella* species.

Conclusion: Significantly, this study has set the understanding on the importance of the specific growth conditions to the expression of npsRNAs. The next phase of

challenge is to further characterise and elucidate the functions of these new classes of small RNA molecules. Considering that such regulators may be highly expressed upon induction, these molecules may be greatly enriched in cDNA libraries prepared from the relevant growth or stress condition.

Supervisor:
Professor Dr M Ravichandran
Co-supervisors:
Associate Professor Dr Tang Thean Hock
Associate Professor Dr Suraparaju Sivachandra Raju

MORPHANALYSIS OF NASAL ZONE TRAITS USING FACE PHOTOGRAPH AND 3D-CT SCAN IMAGES OF PATIENTS/ SUBJECTS ATTENDING HOSPITAL UNIVERSITI SAINS MALAYSIA TO PROVIDE BASIS FOR SKULL/ FACIAL IDENTIFICATION

Dr Rohsila Muhamad
MMed (Radiology)

Department of Radiolgy
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Skull-face morphological correlations are important, and they are applied for forensic human identification and reconstructive surgery. The nasal zone of human skull shows a greater range of easily recognisable variations in multiracial population. Previous craniofacial studies employed various methods including cadaveric dissection, comparison between radiograph or cephalogram and photograph, or the use of non-real facial feature of the dead, magnification factor in radiography, and an unknown skull. With the CT scan technology, true correlations between the nasal zone traits of the skull and the nose features of an individual can be determined.

Objectives: The study aimed to determine correlation between nasal zone traits of the skull on 3D-CT image and the nose features on 2D-face photograph image of an individual.

Methods: A cross-sectional study was conducted in HUSM over 18 months. Research Ethics Committee (Human) approval was obtained in August 2007. Sample was selected from elective cases of ICT of the paranasal sinuses with normal bone findings; 15 patients were included (8 males, 7 females) who subsequently had 8 views of face photographs using stereophotogrammetric method. A 3D-CT skull image was reconstructed and 8 measurements were recorded (n_rhi, mf_mf, al_al, rhi_ac, NSW, NFA, NFcA, and NMA). The 2D measurements (NFA, NFcA, NTA, NLA, and CA) and 3D measurement (mf_mf, n_sn_prn, and al_al) of the face photograph were recorded. A trainee radiologist and a PhD student in Orthodontic record measurements according to the guidelines as single observer. The anatomical nasal index, nasal ridge, and nose index were calculated. The observational analysis of the nose was done by the trainee radiologist according to the figure illustration given. Statistical analysis was performed using descriptive analysis, Spearman's correlation test, and Mann–Whitney test.

Results: There are 5 nasal traits in the skull that are significantly correlated with the nasal traits in the face photograph. The nasal length correlated with the nasofacial angle (P = 0.007). The piriform aperture width correlated with the nasofacial angle (P = 0.009) and the nasal root width (P = 0.047). The nasofacial angle of the bone correlated with the nasolabial angle (P = 0.036) and the columella inclination angle (P = 0.005). The nasomaxillary angle correlated with the nose height (P = 0.012) and the nose length (P = 0.004). The nasal ridge index correlated with the nasolabial angle (P = 0.043). The anatomical nasal index correlated with the piriform aperture height (P < 0.001). There are many statistically significant correlations among the nasal traits in the face photograph. The nose height correlated with the nose length (P < 0.001), the nose width (P = 0.031) and the nose tip inclination angle (P = 0.011). The nose length correlated with the nose width (P = 0.025) and the nasal tip inclination angle (P = 0.017). The columella inclination angle correlated with the nasal root width (P = 0.003), the nasolabial angle (P < 0.001). However, there is no statistically significant relationship between the nasal trait measurement for each categorised nose features.

Conclusion: The nasal traits on 3D-CT skull of an individual have many significant correlations with the nasal traits of the nose in the face photograph of the same individual. These findings can be used in future to the purpose of individual identification.

Supervisor:
Associate Professor Dr Meera Mohaideen Abd Kareem
Co-supervisor:
Dr PT Jayaprakash

A STUDY OF RETINOPATHY AND VISUAL DISORDERS IN PREGNANCY

Dr Rasdi Abdul Rashid
MMed (Ophthalmology)

Department of Ophthalmology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Hypertensive disorder is the most common medical complication of pregnancy and can rapidly progress to significant ocular changes especially in the retina. Hypertension has profound effects on structure and function of eye, which results in various non-blinding and potentially blinding conditions.

Objective: This study was conducted to determine the prevalence of retinopathy, the retinopathy changes, and the visual acuity in antenatal and postnatal women with hypertensive disorders in Hospital Universiti Sains Malaysia, Kubang Kerian.

Methods: This prospective study evaluated 154 pregnant women (308 eyes) at gestational period of 35 weeks and above with all types of hypertensive disorder. During antenatal and 6 weeks' postnatal periods, the patients' blood pressure and visual acuity were determined and thorough anterior and posterior segment eye examination was conducted. Data were recorded in separate forms for both antenatal and postnatal period, and both categorical and numerical analyses were performed.

Results: The prevalence rate of retinopathy in hypertensive disorders in pregnancy was 32.5%. The retinopathy changes noted during antenatal and postnatal periods were generalised arteriolar narrowing, arteriovenous nipping, silver wiring, and focal arteriolar narrowing. In addition to these changes, retinal haemorrhages, cotton wool spots, and serous retinal detachment were observed during antenatal period, and retinal hypopigmentation was observed during postnatal period. Based on Keith–Wagner–Barker classification, 50.0% of the patients were in group 1 hypertensive retinopathy, 41.0% in-group 2, 7.0% in group 3, and 2.0% in group 4. In our study, all patients had good visual acuity during antenatal (6/6 to 6/9) and postnatal (6/6) periods.

Conclusion: *T*he prevalence rate of hypertensive retinopathy in our hospital-based study was 32.5%. The common retinal changes were generalised arteriolar narrowing, arteriovenous nipping, and focal arteriolar narrowing for both antenatal and postnatal periods. Our patients had good visual acuity during antenatal and postnatal periods.

Supervisor:
Dr Shatriah Ismail
Co-supervisor:
Dr Bakiah Shaharudin
Dr Nik Ahmad Zuky Nik Lah
Dr Zuraidah Mustari

PREVALENCE AND ASSOCIATED FACTORS OF SEXUAL DYSFUNCTION AMONG DIABETIC AND NON-DIABETIC PATIENTS IN HUSM

Dr Rawa Bau
MMed (Family Medicine)

Department of Family Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The study was conducted to determine the prevalence of female sexual dysfunction among diabetes and non-diabetes women, to compare the sexual dysfunction domain in the 2 groups, and to identify the risk factors of female sexual dysfunction in both diabetic and non-diabetic group.

Methods: Data were collected from 178 diabetic women and 175 non-diabetic women in the Outpatient Clinic and the Diabetic Centre, Hospital Universiti Sains Malaysia, using Malay-version Female Sexual Function Index. The socio-demographic characteristic, marital profile, medical illness, and husband health status of the participants were recorded. Glycaemic control was recorded based on HbA_{1c} level.

Results: The prevalence of sexual dysfunction among diabetic women was 26.4%, and among non-diabetic women, 20.0%. Arousal disorder was reported in 28.7% of diabetic women, and only 17.1% of non-diabetic women have the same problems (P = 0.040). Sexual satisfaction disorder was found in diabetic women (15.2%) and non-diabetic women (8.0%), and the difference was significant (P = 0.042). Age of more than 40 years, unhappy marriage, duration of marriage of more than 20 years, married to a husband with hypertension, and duration of diabetes of more than 10 years were the significant associated factors for sexual dysfunction among diabetic women. Among non-diabetic women, unhappy marriage, less sexual intercourse (less than 2 times per week), and presence of hypertension were the significant associated factors of sexual dysfunction.

Conclusion: The prevalence of sexual dysfunction among diabetic women was 26.4%, whereas among non-diabetic, it was 20.0%. Diabetic women significantly reported more sexual arousal and satisfaction problems compared with non-diabetic women. Associated factor for sexual dysfunction among diabetic women were age of more than 40 years, married to husband with hypertension, duration of diabetes of more than 10 years, duration of marriage of more than 20 years, and unhappy marriage. Among non-diabetic women, the associated factors for sexual dysfunction were less sexual intercourse, presence of hypertension, and unhappy marriage.

Supervisor:
Dr Adibah Hanim Ismail
Co-supervisors:
Dr Norhayati Mohd Nor
Professor Dr Hatta Sidi

A STUDY OF LUNG CANCER SURVIVAL AND ITS ASSOCIATED FACTORS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Rose Izura Abdul Hamid
MMed (Internal Medicine)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The prognosis of lung cancer remains poor, with overall 5 year survival figures varying between 5% and 10% worldwide. Smoking is the most important risk factor for lung cancer, as supported by the epidemiologic evidence since 1950s. Smoking increases the risk of all histologic subtypes of lung cancer, as well as the rate of adenocarcinoma. Prognostic factors that independently predict survival outcome have been widely studied, such as

performance status, stage at diagnosis, histologic subtype, gender, age at diagnosis, and type of treatment.

Objective: The primary objective of this study was to determine the baseline characteristics at presentation and the survival of lung cancer patients treated at Hospital Universiti Sains Malaysia. The second objective was to determine survival and its affecting factors, and to compare our baseline characteristic of lung cancer patients with that of previous studies.

Methods: A total of 238 patients, who presented to the hospital from January 1996 until May 2008, were included in this retrospective cohorts study; 12 patients were surgically resectable (stages I, IIA, IIB, and IIIA), while 226 patients were non-surgically resectable (stages IIIB and IV). The patients were predominantly males (159 patients, 66.8%), with the overall mean age of 59.2 years (SD 11.5). Malays composed the majority of the patients at 80.7%, compared with non-Malays at 19.3%. There were 176 smokers (73.9%) and 62 non-smokers (26.1%). Among the non-smokers, 38.5% had adenocarcinoma, and 68.4% were women.

Results: Adenocarcinoma was the most common cell type in both men and women, as well as in smoker and those who had never smoked. Those patients with poor Eastern Cooperative Oncology Group (ECOG) performance status (ECOG score 2–4) had lower survival rate as compared to those with good performance status (ECOG score 0–1), with $P < 0.01$ and hazard ratio of 6.1. Patients who received only chemotherapy showed better survival than those who received only palliative treatment ($P < 0.01$ and hazard ratio of 0.11) while combination therapy of chemotherapy and radiotherapy proved to be a good prognostic factor to influence survival with a median time of 32 month ($P < 0.01$)

Conclusion: Overall median survival time for lung cancer patients treated at Hospital Universiti Sains Malaysia was 25 months. The performance status at presentation and the type of treatment were significant prognostic factors that influence survival in our lung cancer patients.

Supervisor:
Dr Che Wan Aminud-din Hashim

A STUDY TO COMPARE THE CLINICAL AND HISTOPATHOLOGICAL REACTIONS TOWARDS BOVINE BONE HYDROXYAPATITE AND POROUS POLYETHYLENE ORBITAL IMPLANTS IN RABBIT

Dr Roslinah Muji
MMed (Ophthalmology)

Department of Ophthalmology
School of Medical Science, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: In anophthalmic patients, orbital implants are used to replace the volume lost and to improve their rehabilitation outcomes. As the bone-derived orbital implant has not yet been studied widely, a study on locally synthesized bovine hydroxyapatite orbital implant would benefit much in terms of patient satisfaction and cost reduction.

Objective: The aim of this study was to compare the biocompatibility of bovine bone-derived hydroxyapatite (bone dHA) orbital implant and porous polyethylene (Medpor®) orbital implant in rabbits, and to compare the difference of histopathological changes and reaction towards the implants.

Methods: The bovine hydroxyapatite implant was prepared at National Tissue Bank, Hospital Universiti Sains Malaysia, Kubang Kerian. Evisceration with primary orbital implant (with either bone dHA or Medpor®) was performed in the right eye of 14 New Zealand white rabbits. Serial clinical examinations were performed at day 1, 7, 14, 28, and 42. The implanted eyes were enucleated on day 42. Histopathology assessment of inflammatory reaction and fibrovascular ingrowth were evaluated.

Results: Serial clinical examination demonstrated normal wellbeing of all subjects towards both implants. Histopathology examination revealed a significant difference in the depth of fibrovascular ingrowths in bone dHA. There was no significant different in inflammation reaction and fibrovascular ingrowth maturity in both implants.

Conclusion: Bone dHA appeared to be well tolerated. Bone dHA implant demonstrated deeper penetration of fibrovascular ingrowths compared with Medpor® implant. The inflammatory reaction and fibrovascular maturity are similar in both implants.

Supervisor:
Associate Professor Dr Shatriah Ismail
Co-supervisors:
Associate Professor Dr Wan Hazabbah Wan Hitam
Associate Professor Dr Suzina Sheikh Abdul Hamid
Dr Md Salzihan Md Salleh

EVALUATION OF ANGIOGRAPHY-INDUCED CEREBRAL VASOSPASM USING TRANSCRANIAL DOPPLER SONOGRAPHY IN PATIENTS WITH SUBARACHNOID HAEMORRHAGE

Dr Rozaimah Jamal
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The objectives of this study were to determine the proportion of of patients with spontaneous subarachnoid haemorrhage (SAH) who developed cerebral vasospasm following cerebral intra-arterial digital subtraction angiography (IADSA) and to identify the angiography-related risk factors that caused cerebral vasospasm following cerebral

IADSA by using the transcranial Doppler (TCD) criteria.

Methods: A prospective study was conducted over 18-month period from May 2007 until October 2008 in Hospital Universiti Sains Malaysia. A total of 8 patients above 12 years of age (5 males and 3 females; mean age 54.1 years, SD 13.1) who presented with spontaneous SAH were included in this study based on the selection criteria. They underwent IADSA examinations and mean blood flow velocity (mBFV) values of bilateral middle cerebral arteries (MCA) were obtained from the non-invasive TCD examination, which were performed within 6 hours before (as 1st TCD) and after (as 2nd TCD) cerebral IADSA. Non-ionic, water-soluble, iodinated, iso-osmolar contrast medium were used during the cerebral IADSA. The mBFV of more than 120 cm/s during the 2nd TCD examination was taken as indicator of angiography-induced cerebral vasospasm development.

Results: No patient in this study had developed angiography-induced cerebral vasospasm based on the TCD criteria, giving the rate of 0% of cerebral vasospasm. When the patients were compared according to changes in mBFV before and after IADSA, these was no statistical difference in mBFV for left and right MCA (P = 0.95 and P = 0.07, respectively).

Conclusion: This study suggested that with the use of non-ionic, iso-osmolar contrast medium combined with improved catheterisation techniques as well as application of digital technology, cerebral IADSA could be performed with a zero rate of angiography-induced vasospasm in patients with SAH. The patients were not at risk of vasospasm if radiology trainees were adequately trained and supervised by experienced angiographers. Cerebral IADSA would continue to be an important diagnostic imaging modality in managing patients with SAH in the years to come.

Supervisor:
Dr Mohd Shafie Abdullah
Co-supervisor:
Professor Dr Jafri Malin Abdullah

PREVALENCE AND ASSOCIATED RISK FACTORS OF *CLOSTRIDIUM DIFFICILE* INFECTION IN TYPE 2 DIABETES MELLITUS PATIENTS TREATED WITH ANTIBIOTICS

Dr Rozanah Abd Rahman
MMed (Internal Medicine)

Department of Internal Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: *Clostridium difficile* infection (CDI) is one of the most common nosocomial infections and one of the leading causes for antibiotic-associated diarrhoea. CDI is currently on the rise, and it is associated with high morbidity and mortality, hence causing a financial impact in the healthcare system. Diabetes mellitus is associated with increased susceptibility to infection; therefore, patients frequently receive antibiotics. These patients are at a high risk of developing CDI.

Objectives: The objectives of this study were to determine the prevalence of CDI among type 2 diabetes mellitus patients and to study the risk factors of developing CDI among these patients. We were also looking at the clinical features associated with CDI in this group of patients.

Methods: This was a cross-sectional study involving adults aged more than 30 years old with documented history of diabetes mellitus and had received antibiotics. A total of 159 patients had given their consent to participate in this study. Demographic and laboratory data were collected and recorded in a standard data collection sheet. Stool samples were collected and tested for *C. difficile* toxin. Variables were analysed and logistic regression test was used to identify significant association with CDI.

Results: A total of 159 stool samples were collected; out of these, 14 (8.8%) were tested positive for toxin A/B. Other than diarrhoea, abdominal pain was significantly associated with CDI with P = 0.001. Among antibiotic usage, imipenem and cefoperazone were significantly associated with CDI, with P = 0.006 (OR = 1.8, 95% CI 2.598 to 348.762) and P = 0.036 (OR = 9.5, 95% CI 1.163 to 76.965), respectively. Proton-pump inhibitor was also significantly associated with CDI, with P = 0.041 (OR = 13.7, 95% CI 1.110 to 169.220).

Conclusion: The prevalence of CDI in type 2 diabetes mellitus patients who received antibiotics was 8.8%. The use of imipenem, cefoperazone, and proton-pump inhibitor were strongly associated with CDI.

Supervisor:
Dr Siti Asma' Hassan
Co-supervisor:
Dr Lee Yeong Yeh

A RETROSPECTIVE STUDY OF PERIOPERATIVE OUTCOME IN PATIENTS UNDERGOING LIVER TRANSPLANTATION IN SELAYANG HOSPITAL, MALAYSIA

Dr Rozita Ibrahim
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: This retrospective study was organised to evaluate the perioperative outcome in patients who underwent liver transplantation in Selayang Hospital, Malaysia.

Methods: The medical records of approximately 30 patients who underwent liver transplantation in 2002–2007 were traced and analysed for demographic details and incidences of perioperative outcome. Necessary information was charted into individual data collection sheets.

Data entry and analysis were done using SPSS version. Results were presented in the form of mean (SD). Statistical analyses were performed using descriptive and chi-square tests. Statistical significance is set at $P < 0.05$.

Results: In this study, we found that biliary atresia (53.3%) is the most common indication for liver transplantation in the paediatric population. There were no significant findings in the demographic data. About 90% of patients who underwent liver transplant survived and were successfully transfered out from intensive care unit; 20% of patients were transfered without serious complication. The incidence of graft dysfunction was only 3.3%, hypothermia, 30%, and sepsis, 43.3%. About 50% of recipients were successfully extubated within 24 hours; however, we could not conclude any factors that predict an increased risk for post-operative respiratory failure in liver transplant recipient. Sepsis appeared to be the only significant perioperative anaesthetic complication.

Conclusion: We were able to demonstrate a significant relationship between the development of post-operative sepsis and prolonged stay in the intensive care unit ($P = 0.02$).

Supervisor:
Dr Shamsul Kamaruljan Hassan

FACTORS THAT DETERMINE PATIENT'S SATISFACTION POST-CORRECTIVE OSTEOTOMY OF MALUNITED PAEDIATRIC SUPRACONDYLAR HUMERUS FRACTURES

Dr Ruban Sivanoli
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Patients suffering from cubitus varus due to malunited supracondylar humeral fracture during childhood may seek treatment, mainly for cosmetic reasons, yet there are not many studies conducted on the patient's satisfaction of the management of this fracture. A 3-dimensional correction is technically demanding and is associated with post-operative instability. There are contradicting evidences whether all cases require 3- dimensional correction.

Objectives: This retrospective review was performed to observe the factors that determine patient's satisfaction post-corrective osteotomy of malunited paediatric supracondylar humerus fractures.

Methods: Review of patients' records, radiological investigation, and interview of the patients and their parents were condected to gain information on the patient's clinical outcome and also their level of satisfaction on the outcome of their treatment. The hypothesis of this study is that the patient's satisfaction correlates with the adverse scar formation and varus correction rather than the lateral prominence and internal torsion.

Results: Out of the 40 patient who underwent corrective osteotomy at both centres during the stipulated time, only 14 were eligible for the study; the rest were encluded because of incomplete data or lost during follow-up. All patients underwent lateral close wedge osteotomy. The average age at osteotomy was 7.5 years. The patient's satisfaction score had a significant association with clinical outcomes score. Compiclations from corrective osteotomies are such as scar formation, lateral prominence, internal torsion, and, varus deformaty had negative correlation with patients' satisfaction score.

Conclusion: In view that the surgery is essentially cosmetic, all the possible complications should be avoided by careful planning. As the results, the overrall patient's satisfaction score can be increased and the number of complications reduced. The patient's or parent's expectations should be addressed to make the procedure satisfactory and thus successful.

Supervisor:
Dr Amran Ahmed Shokri

ANTI-CYCLIC CITRULLINATED PEPTIDE (ANTI-CCP) AUTOANTIBODY AS A USEFUL DIAGNOSTIC TEST FOR THE DIAGNOSIS OF RHEUMATOID ARTHRITIS

Dr Rusni Dollah
MMed (Family Medicine)

Department of Family Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Rheumatoid factor (RF) is currently used in the diagnosis of rheumatoid arthritis, and it is one of the classification criteria proposed by the American College of Rheumatology (ACR). However, RF positivity shows low diagnostic specificity because it is also present in patients with other autoimmune and infectious diseases and even in a proportion of normal healthy individuals. Another recent method of interest in the diagnosis of rheumatoid arthritis is the assay for anti-cyclic citrullinated peptide (anti-CCP) antibodies.

Objectives: The study aimed to determine the sensitivity and specificity of anti-CCP antibodies in the diagnosis of rheumatoid arthritis patients attending Hospital Universiti Sains Malaysia, using the ACR criteria as a gold standard, and to compare the sensitivity and specificity of anti-CCP and RF tests.

Methods: This was a cross-sectional study conducted from January until December 2008. The study consisted of 261 patients: 96 patients with rheumatoid arthritis (cases) and 165 patients with arthritis or arthralgia but did not fulfilled ACR criteria for rheumatoid arthritis (controls). Serum from each subject was tested for anti-CCP antibodies and IgG-RF by enzyme-linked immunosorbent assay (ELISA). However, both

tests were not done in 12 blood samples from the control group due to haemolysis. Sensitivity and specificity of the test were evaluated using the clinical diagnosis as the gold standard.

Results: The sensitivity of anti-CCP test was 69.8% and the sensitivity was 94.8% respectively. For RF test, the sensitivity was 84.5% and the specificity was 74.5%. The positive predictive value for anti-CCP was 89.3%, whereas for RF, it was 67.5%. The sensitivity and specificity of anti-CCP and RF tests were significantly different ($P < 0.001$).

Conclusion: Anti-CCP test has higher diagnostic specificity and positive predictive value that of RF test; however, its sensitivity was lower that of RF test.

Supervisor:
Dr Adibah Hanim Ismail
Co-supervisor:
Dr Che Maraina Che Hussin

FACTORS INFLUENCING PERFORMANCE IN AUDITORY VERBAL LEARNING TEST (AVLT) AMONG SCHIZOPHRENIA PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Ruzita Jamaluddin
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: It is widely acknowledged that memory dysfunctions are of major prognostic importance for the course of the schizophrenia. Many studies have emphasised the significance of verbal memory for the functional outcome in schizophrenia. Further, a preserved capability to encode and recall verbal information is essential for the long-term efficacy of psychoeducational programmes and other psychological interventions, including cognitive-behavioural intervention, to ensure the successful transfer of newly acquired skills or knowledge into everyday life.

Objectives: This study aimed to determine the level of performance of schizophrenic patients in auditory verbal learning and memory test, and to determine the association between their performance in this test with their sociodemographic and clinical characteristics.

Methods: The study consisted of 2 stages. First, the validation of the Malay version of Auditory Verbal Learning Test (MVAVLT), followed by a cross-sectional study of factors influencing the test performance among schizophrenic patients in Hospital Universiti Sains Malaysia. The study involved 114 schizophrenic patients from in-patient and out-patient units. The following measures were taken: sociodemographic questionnaire, Brief Psychiatric Rating Scale (BPRS), and validated Malay-version Calgary Depression Scale for Schizophrenia (CDRS).

Results: The validation study showed that MVAVLT had a good validity and test–retest reliability and has been shown to be sensitive in discriminating between normal and schizophrenic patients. In line with the previous research, schizophrenic patients performed significantly worse than healthy control in all indices measured in MVAVLT. However, the present finding were inconsistent with the previous studies where most of the sociodemographic characteristics measured in this study were unrelated to MVAVLT scores, except for occupation status and educational level. The results showed that illness duration, number of hospitalisation, medication compliance, use of anticholinergic drug, and type of antipsychotic prescribed did not have any significant association with the level of MVAVLT performance. The study did show that there was a significant relationship between severities of the illness, as measured by BPRS with the MVAVLT scores, but failed to identify a significant relationship with the depressive symptoms as measured by CDRS.

Conclusion: The present study found that schizophrenic patients performed significantly worse than healthy individuals on measures of verbal learning. Most of the patient's sociodemographic and clinical charecteristics were unrelated to the test performance except for patient's occupation status, educational level, and severities of the illness as measured by the BPRS. The screening of deficits in verbal learning and memory among the schizophrenic patients is important for early detection and treatment, since it can be helpful for clinician and psychologist in their counseling session and subsequently help patients to reduce such cognitive difficulties and their impact by using specific rehabilitation with the usage of newer antipsychotic agents.

Supervisor:
Dr Zahiruddin Othman
Co-supervisor:
Associate Professor Dr Hasanah Che Ismail

EVALUATION OF ENERGY EXPENDITURE IN THE ACUTE CARE OF SEVERE HEAD INJURY PATIENTS: INDIRECT CALORIMETER VERSUS HARRIS–BENEDICT FORMULA

Dr Saiful Razman Mohd Noor
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Management of comatose patients, especially those with severe head injury, is very crucial because secondary insults such as brain oedema, hypo- or hypertension, anaemia, and hypoxaemia may develop during this period. Such patients are managed in intensive care units and usually need ventilatory support and further neurosurgical interventions. Apart from the medical and surgical aspects of management, nutritional support plays an important role in patient's recovery. There are few literatures on head-injured patients' energy requirement or expenditure in the acute

setting. Adequate energy supply for head-injured patients is an important part of intensive care management in order to achieve optimal care and to avoid complications of hypo- or hypercaloric feeding. It is believed that patients with different grades of head injury have different energy requirements and hence different nutritional support in both acute and chronic settings.

Objectives: This study was undertaken to evaluate the energy expenditure in patients with severe head injury patients using indirect calorimeter and to compare the results to the predictive values by Harris–Benedict Equation. Specifically, we studied the difference in energy expenditure in different grades of severity of head injury based on a radiological classification of brain imaging, to compare the 24-hour energy expenditure among patients who underwent major operation or minor operation, and those who were conservatively managed in our intensive care unit. In addition, we aimed to determine the sensitivity and specificity of the Harris–Benedict formula as compared with the indirect calorimeter and to look for any association of the blood glucose levels within 24 hours post-injury with the severity of head injury according to Marshall's grading as well as with the treatment groups.

Methods: This was a prospective observational study involving severe head injury patients admitted to the Neurology Intensive Care Unit, Hospital Universiti Sains Malaysia. A total of 31 patients were selected for this study from January 2009 to March 2010 after fulfilling the inclusion criteria; they were divided into 4 groups according to severity as determined by Marshall's computed tomography grading (Marshall's grade 1–4). These patients' energy expenditures were measured by indirect calorimetry in an acute setting. The indirect calorimeter (Deltatrac II) was connected to each patient's ventilator and the measurement of energy expenditure were conducted for 24 hours. The measured energy expenditure (MEE) of each patient was compared with the predicted energy expenditure (BEE) obtained from the Harris–Benedict equation, and statistical comparisons were also made among the groups according to severity and type of treatment (major operation, minor operation, or conservative management).

Results: The lowest energy expenditure measured in this study was 740 kcal/day, and the highest was 2060 kcal/day, with a mean energy expenditure of 1498 kcal/day (SD 297). The comparable predicted value by Harris–Benedict equation was 755 kcal/day (lowest) and 2170 kcal/day (highest), with a mean of 1543 kcal/day (SD 268). By using Pearson's correlation test, there was strong positive correlation between MEE (by indirect calorimeter) and BEE (by Harris–Benedict equation), with $r = 0.789$ and $P < 0.001$. The mean energy expenditure in each groups of Marshall's grade 1, 2, 3, and 4 were 1440 kcal/day (SD 42), 1484 kcal/day (SD 349), 1358 kcal/day (SD 308), and 1595 kcal/day (SD 277), respectively. By using Kruskal–Wallis test, there was no significant difference of energy expenditure between these groups in the acute setting ($P = 0.343$). The mean energy expenditure in the major operation group was 1535 kcal/day (SD 265); in the minor operation group, 1113 kcal/day (SD 365); and in the conservative management group, 1565 kcal/day (SD 305). By using the one-way ANOVA test, there was no significant difference of energy expenditure between these treatment groups in the acute setting ($P = 0.055$). The lowest blood glucose level was 3.6 mmol/L, and the highest was 9.2 mmol/L, with a mean blood glucose level of 6.4 mmol/L (SD 1.4). Pearson's correlation showed no association between blood glucose level and MEE ($r = 0.013$, $P = 0.943$). The Kruskal–Wallis test and one-way ANOVA test showed that there were no significant differences of blood glucose level among Marshall's gradings ($P = 0.432$) and among major operation, minor operation, and conservative management groups (P = 0.830).

Conclusion: Predictive formula (Harris–Benedict equation) can be used to determine the energy expenditure and the energy requirement of severe head injury patients who are fully sedated and ventilated, in order to achieve energy equilibrium. This preliminary study showed that there was no difference in energy expenditure among groups in the severe head injury patients regardless of their brain computed tomography findings and of whether they were operated or conservatively managed in the first 24 hours of injury.

Supervisor:
Professor Dr Jafri Malin Abdullah
Co-supervisors:
Dr Mohammed Saffari Mohammed Haspani
Dr Johari Siregar Adnan

IN VIVO EVALUATIONS OF WOUND HEALING AND ANTIMICROBIAL PROPERTIES OF TUALANG HONEY USING A FULL THICKNESS BURN WOUND IN SPRAGUE DAWLEY RATS

Dr Salmi Mohamed Sukur
MSurg (Plastic Surgery)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: A burn wound may serve as a portal of entry for colonising opportunistic microorganisms, which can affect wound healing. The effect of Tualang honey on wound healing in the bacteria-contaminated, full-thickness burn wounds was evaluated in this study.

Objectives: The study was conducted to evaluate the wound contraction, the antimicrobial properties, and the histological aspects of Tualang honey in treating full-thickness burn wounds in a rat model in comparison with chitosan gel or Aquacel Ag.

Methods: The effect of Tualang honey on wound healing in full-thickness burn wounds was evaluated in 36 male Sprague Dawley rats. The rats were randomly divided

into 3 groups (12 rats per group). The rats were anaesthetised, and 3 full-thickness burn wounds were created on each rat using a modified metal screwdriver heated using flame from blowtorch. Each group of rats was inoculated with a different organism in the burn wounds: Group A was inoculated with *Pseudomonas aeruginosa,* Group B was inoculated with *Klebsiella pneumoniae*, and Group C was inoculated with *Acinetobacter baumanii*. One wound on each rat was dressed with either Tualang honey, chitosan gel, or Aquacel Ag. The rats were subjected to the evaluation period of 3, 6, 7, 9, 12, 14, 15, 18, and 21 days, where the wound size, microbiological and histological findings were assessed.

Results: The mean wound size of the Tualang honey–treated wounds was not statistically different from wounds treated with chitosan gel or Aquacel Ag when the wounds were compared throughout the entire experiment ($P > 0.05$); however, comparing the mean wound size on day 21 alone revealed that the Tualang honey–treated wounds were smaller. The quantitative and semi-quantitative methods showed that there was a significant reduction in bacterial growth in wounds treated with Tualang honey compared with those treated with chitosan gel or Aquacel Ag in Group A and C. There was no significant difference in the granulation tissue formation and epidermal thickness between the Tualang honey–, chitosan gel–, or Aquacel Ag–treated wounds when they were compared throughout the study. Nevertheless, early granulation tissue formation and epithelialisation was seen in Tualang honey–treated wounds at day 14 in burn wounds infected with *P. aeruginosa*.

Conclusion: Overall, the clinical examination of the wounds and the histological evaluation showed that Tualang honey gave the fastest rate of healing, the least inflammatory reaction, and the most rapid neovascularisation compared with the other treatments. Tualang honey also provided good evidence of the effectiveness of the antibacterial activity of honey on burn wounds infected with *P. aeruginosa* and *A. baumanii*.

Supervisor:
Professor Dr Ahmad Sukari Halim
Co-supervisor:
Dr Kirnpal Kaur B Singh
Dr Md Salzihan Salleh

THE UTILITY OF INITIAL CHEST RADIOGRAPH IN CHILDREN PRESENTING WITH SYMPTOMS OF RESPIRATORY TRACT INFECTION AT HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Sami Mohammed Ali Al-Ashwal
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: The aim of this study was to determine the utility of the first chest radiographs in the management of paediatric patients with symptoms of respiratory tract infection at Hospital Universiti Sains Malaysia.

Methods: The institutional ethics committee approved the study, with no informed consent required. The study was conducted in 6 months. A total of 378 chest radiographs of paediatric patients presented to the Family Medicine Clinic and Accident and Emergency Department with symptoms of respiratory tract infection were reviewed using high-resolution GE Pathspeed Workstation. Radiographic changes suggestive of lung infection were recorded in a specific form. Clinical data and line of management were collected from medical records in a different setting independent of the radiographic data. Clinical data was recorded in a different form.

Results: The prevalence of abnormal radiographs was 63.5% of all radiographs, while the normal radiographs were 37.5%. The prevalence of normal radiographs in the Family Medicine Clinic was 50.8%; in the Accident and Emergency Department, 29.4%. There were significant associations between radiographic changes and of the following clinical variables: fever, shortness of breath, pleuritic pain, tachypnea, retractions, grunting, decreased breath sounds, and crackles. Cough, coryza, and wheezing did not show significant association with radiographic changes. There was significant relationship between radiographic abnormalities and patient management. The majority of patients were discharged with antibiotic therapy; 72 (52.2%) of patients with normal radiographs were discharged and given antibiotic. Only 44.9% of patients who had normal radiographs were discharged without treatment. Only 16.9% of all patients were admitted to paediatric ward for management; they showed multiple clinical findings and radiographic abnormalities.

Conclusion: There was a high rate of normal chest radiographs among the study sample. Chest radiographs were good confirmatory tool for lung infection; however, it did not influence the management in 52% of patients with normal radiographs.

Supervisor:
Dr Win Mar @ Salmah Jalaluddin

THE EVALUATION OF INTERVERTEBRAL DISC HEIGHT AND LATERAL FORAMEN SIZE IN SYMPTOMATIC DEGENERATIVE LUMBAR DISEASE IN POST-SURGICAL PATIENTS

Dr Samsuddin Mat Hassan
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Degenerative lumbar disease is major cause of chronic disability in the adult working population and a common reason for referral to a magnetic resonance imaging centre. These patients are usually presented with lower back pain and radiating pain of the leg due to compression of the nerve root by changes of the intervertebral disc height, followed by reduced lateral foramen height. These compressions could be reduced by undergoing surgical intervention.

Objective: The primary objective in this study is to determine the intervertebral disc height and lateral foramen size in symptomatic degenerative lumbar disease. We also aimed to determine the correlation of the intervetebral disc height and lateral foramen size in degenerative lumbar disease in patients who underwent surgical intervention.

Methods: This was a cross-sectional study involving patients with degenerative lumbar disease who underwent operation between January 2004 until June 2009 at Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. We studied the intervertebral disc height and lateral foramen size in symptomatic degenerative lumbar disease.

Result: The mean height of right foraminal of L3–4 was 15.6 mm (SD 3.6); L4–5, 14.0 mm (SD 2.8); and L5–SI, 12.9 mm (SD 3.2). The mean height of left foraminal of L3–4 was 15.6 mm (SD 3.4); L4–5, 14.5 mm (SD 3.9); and L5–SI, 12.9 mm (SD 2.9). There were correlation between the posterior intervertebral disc height with both lateral foramen width at the level of L3–4 (r = 0.46), but not at the level of L4–5 (r = 0.24, -00.5), and L5–SI (r = 0.16, -0.08). A correlation was found between the posterior intervertebral disc height with both the lateral foramen height at the level of L4–5 (r=0.55, 0.48), but not at the level of L5-@I (r=0.22, 0.13). There was a correlation between the posterior intervertebral disc height at the level of L3–4 with the right lateral foramen height (r = 0.40), but not with left lateral foramen of L3–4 (r = 0.24).

Conclusion: In degenerative lumbar diseases, the posterior intervertebral disc height was significantly correlated to the right and left lateral foramen.

Supervisor:
Associate Professor Dr Mohd Imran Yusof
Co-supervisor:
Dr Mohd Shafie Abdullah

CHEST RADIOGRAPH IN ASSESSING THE SEVERITY OF PULMONARY TUBERCULOSIS AMONG HIV AND NON-HIV PATIENTS

Dr Santhi Varatharaja Pillai
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Pulmonary tuberculosis (PTB) is the most common infectious disease in developing countries, and the development of complications remains a difficult diagnostic challenge. The proportion of tuberculosis in immunocompromised hosts is especially high, and PTB is one of the leading causes of morbidity and mortality.

Objectives: The study aimed to determine the association between the chest radiograph depicting the severity of PTB and human immunodeficiency virus (HIV)-infection status (non-HIV and HIV). We also evaluated the differences in various chest radiograph appearances of pulmonary tuberculosis among the two study groups.

Methods: The study focused on adult PTB patients with or without HIV co-infection, from Hospital Raja Perempuan Zainab II, Kota Bharu. Patients who had clinical symptoms and signs of PTB with positive result in either AFB sputum smear or MTB culture were recruited in this study.

Result: Mean age of the patients in both non-HIV and HIV groups were 46.5 and 32.6 years, respectively. During pre-treatment phase, 93% of non-HIV and 94% of HIV patients demonstrated abnormal chest radiograph; whereas 6 month after the recommencement of treatment, 18% of non-HIV and 31% of HIV patients demonstrated normal chest radiograph findings. There was no significant difference between the two groups in the chest radiograph severity or extent of PTB during pre-treatment (P = 0.668) and post-treatment (P = 0.135) phases. Comparison of the 2 groups showed HIV patients with PTB had higher incidences of pleural effusion (23% versus 14%, P = 0.081) and military tuberculosis (7% versus 3%, P = 0.196), although the differences were not significant. Hilar or mediastinal lymphadenopathy demonstrated significant higher incidence in the HIV group (32% versus 4%, P < 0.001), whereas in non-HIV group, there were more cases of pleural thickening (36% versus 11%, P < 0.001), bronchiectasis (16% versus 5%, P = 0.007), and lung fibrosis (41% versus 17%, P < 0.001). Lesser incidence of chest radiograph presentation with cavitations were found in the HIV group (33% versus 24%); however, there difference was not statistically significant (P = 0.177).

Conclusion: There was no statistically significant finding between the two study groups in the chest radiograph depicting the severity of PTB during pre-treatment (P = 0.668) and post-treatment (P = 0.135). This study also demonstrated significant difference between the PTB patients with and without HIV co-infection, in that there is more number of normal chest radiograph in the various chest radiograph presentations, specifically in hilar/mediastinal lymphadenopathy, in the non-HIV patients; however, pleural thickening, bronchiectasis, fibrosis, and consolidation were found more commonly in non-HIV patients.

Supervisor:
Dr Nik Munirah Nik Mahdi

VISUAL ANALOGUE SCALE FOR DYSPNEA (VAS) CORRELATION WITH PEAK FLOW METER IN ASSESSING SEVERITY OF ACUTE ASTHMA

Dr Sazwan Reezal Shamsuddin
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Asthma is a common disease presented to emergency departments; the majority of cases presented with dyspnea. Peak flow meter is a standard measurement to assess asthma severity; however, peak flow monitoring has several limitations. Peak expiratory flow is effort-dependent, therefore respitory muscle strength and patient's motivation affect the peak flow. Variation in the predicted peak expiratory flow values in the normal population is largely due to age, sex, race, height, and smoking. Researchers are trying to measure dyspnea as indicator for grading of asthma severity. Visual analogue scale for dyspnea (VAS) is a reasonable tool for measurement and monitoring of severity of asthma in individual patients, and it maybe used when more objective tests are not available. The limitation of peak flow monitoring with encouraging discovery of VAS as tool for measurement and monitoring of severity of asthma in individual patients had trigger the idea for this study.

Objective: The study aimed to quantify VAS with asthma severity and to determine whether social factors (such as age, gender, and level of education) and asthma chronicity factors (such as duration of asthma, history of admission, and regularity of asthma attack) make significant difference in VAS during acute asthma. We also aimed to determine the correlation between VAS with peak flow meter in assessing acute asthma.

Methods: This was a cross-sectional study of patients presented at Asthma Bay, Emergency Department, Hospital Kuala Lumpur. Selection of patients was made according to the inclusion and exclusion criteria. Selected patients were asked to mark a vertical line on the VAS according to their perception of dyspnea. Peak expiratory flow was also measured. The data collection forms were filled and subjected to analysis.

Results: The *P* values for comparison of VAS mean differences in dissimilar social and asthma chronicity factors were more than 0.05. The Pearson's correlation value was −0.212, which indicated negative correlation between VAS and peak expiratory flow (%); this was siginificant with a 2-tailed significance of $P < 0.05$.

Conclusion: There is no significant VAS mean difference within social or asthma chronicity factors. There is a poor correlation between VAS with peak flow meter.

Supervisor:
Dr Rashidi Ahmad

^{99m}Tc-MIBI SCINTIMAMMOGRAPHY IN DIAGNOSING BREAST CANCER: A COMPARISON WITH MAMMOGRAPHIC FINDINGS

Dr Shahlinawati Sahabudin
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Breast cancer is the most common malignancy in women, and newly diagnosed cases are increasing each year. Scintimammography has been proposed as an adjunct to mammography to assist in the evaluation of breast lesion in patients with intermediate mammogram, to reduce the number of negative biopsies. It may also be use as an alternative in patients suspected of having breast cancer, but refused to undergo mammogram.

Objectives: The study aimed to determine the diagnosis accuracy of ^{99m}Tc-MIBI Scintimamography and mammography in diagnosing breast cancer in Hospital Universiti Sains Malaysia, by means of comparing the results with histopathological or cytological findings.

Methods: This cross-sectional study was conducted within 12 months, from October 2007 until October 2008, in Hospital Universiti Sains Malaysia. A total number of 10 patients were recruited in the study. Mammogram, followed by scintimammogram, was performed after consent was obtained from each patient. The mammogram and scintimammogram was compared with the histopathological/ cytologyical report. The sensitivity specificity, positive, predictive value, negative predictive value, and accuracy were calculated.

Results: The sensitivity, specificity, and accuracy of scintimammogram were each 100%, 80%, and 90%, respectively. Scintimammogram had higher specificity than mammography, but the sensitivity was the same. No significant difference was observe in scintimammography images taken at 5 and 10 minutes ($P = 1.000$).

Conclusion: Scintimammograpy is useful in differentiating benign and malignant lesions and is useful as an adjunct to mammogram.

Supervisor:
Dr Nik Munirah Nik Mahdi
Co-supervisor:
Associate Professor Dr Hasnan Jaafar

ULTRASONOGRAPHY MEASUREMENT OF INFERIOR VENA CAVA DIAMETER OF BLOOD DONORS IN HUSM, KELANTAN

Dr Shaik Farid Abdull Wahab
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Early detection of hypovolaemic shock is a challenge in trauma patients. Adequate resuscitation of hypovolaemic shock early in the emergency department (ED) is essential to ensure improved patients' outcome. Inferior vena cava (IVC) diameter measurement is a potential tool to diagnose hypovolaemic shock. This study examined the use of ultrasound to measure the difference in IVC diameter in blood donors, as a predictor of blood loss.

Objective: The study aimed to determine the baseline diameter of IVC in relation to factors such as body mass index, age, and sex, as well as to determine the changes of IVC diameter in donors with blood loss (during blood donation) using ultrasound by measuring the IVC diameter pre- and post-blood donation.

Methods: This was a prospective observational study involving blood donors at Blood Bank, Hospital Universti Sains Malaysia. The inferior vena cava diameters during both inspiration (IVCi) and expiration (IVCe) were measured in volunteers before and after 450 mL blood donation. Donors aged 18 years and above who agreed to participate were enrolled in this study. All examinations were performed in the supine position with the ultrasound transducer placed in a subxyphoid location. Horizontal sections of the IVC 2 cm from the right atrial point were imaged, and the maximal diameter of the IVCe and the minimal diameter of the IVCi were measured. Statistical analysis included normality test, paired *t* test, Wilcoxin rank test, and multiple linear regression test.

Results: There were 42 blood donors enrolled; all of them were males, with mean age 32.3 years (range 21–54). Mean IVCe measurement before blood donation was 18.49 mm (95% CI 18.23 to 18.74), and after blood donation, 16.55 mm (95% CI 16.35 to 16.76). The mean IVCi before blood donation was 17.09 mm (95% CI 16.89 to 17.30), and after blood donation, 15.62 mm (95% CI 15.43 to 15.81). The difference of IVCe before and after blood donation was 1.94 mm (95% CI 1.75 to 2.13, $P < 0.001$). The difference of IVCi before and after blood donation was 1.51 mm (95% CI 1.34 to 1.68, $P < 0.001$. No significant correlation was observed between age and IVCe ($P = 0.553$) as well as IVCi ($P = 0.994$). Similarly, no significant correlation was found between body mass index and IVCe ($P = 0.601$) as well as IVCi ($P = 0.149$).

Conclusion: There is significant association between IVC diameter before and after blood donation, as well as between age and body mass index with inferior vena cava during expiration or inspiration.

Supervisor:
Dr Nik Hisamuddin Nik Abdul Rahman

CHARACTERISTIC, ACCURACY, AND OUTCOME OF HYSTEROSALPINGOGRAM IN HUSM

Dr Sharifah Nor Ashikin Syed Yasin
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: In Malaysia, infertility affects 1 out of 7 couples. Over the decades, infertility rates in the country have been increasing between 10% and 15%. Despite this figure, awareness of this subject and its available treatments are still lacking. Many are not aware that infertility is a disease of the reproductive system that, in the majority of cases, can be treated. Tubal factor accounts for 15%–30% of infertility in all women in developing countries with high rates of pelvic inflammatory disease. Hysterosalpingogram (HSG) is an important diagnostic test in the evaluation of intrauterine abnormalities and tubal patency in the infertility workup of female patients. Many studies had been done to assess the accuracy of hysterosalpingogram as compared to laparoscopy as the gold standard. The recent study showed good concordance rate of the findings investigated by both modalities.

Objectives: The study aimed to identify the characteristics, accuracy,and outcome of hysterosalpingography in HUSM.

Methods: This was a cross-sectional study on retrospective data over a period of 6 years starting from January 2003 until December 2008. A total of 197 patients who fulfilled the inclusion criteria were studied. List of eligible patients were obtained from PACS and the patient's medical records were reviewed; data needed were entered in the data collection sheet. Reports of HSG were taken from PACS and Radiology Information System.

Results: Out of 197 patients, 171 (86.8%) were Malays, 16 (8.1%) were Chinese, 5 (2.5%) were Siamese, 1 (0.5%) was Indian, and 4 (2%) were of other races. The mean duration of infertility was 5.21 years, and the mean age was 32.38 years. More than half of the patients in our study had primary infertility (56.3%). The most common pathology detected at HSG was tubal occlusion, either one-sided or two-sided occlusion (17.8% and 3.6%, respectively). The diagnostic accuracy of HSG was based on sensitivity, specificity, positive predictive value, and negative predictive value. In our study, HSG is shown to have a very high specificity (100%) and a moderate sensitivity (58.3%) in detecting tubal patency and has low sensitivity (15.38%) in the detecting pelvic pathology. A total of 12.7% of our patients were pregnant within 6 months following normal HSG examination, with 2.35 higher chances of conception than those with abnormal HSG.

Conclusion: In this study, we conclude that the diagnostic performance of HSG in the diagnosis of pelvic pathology is poor. HSG has a limited use for detecting tubal patency because of its low sensitivity; however, its high specificity makes it a useful test for ruling in tubal obstruction. It should be placed as first-line screening investigation of tubal patency. HSG has low prognostic value, and the findings at HSG do not contribute much in predicting the occurrence of pregnancy.

Supervisor:
Dr Juhara Haron
Co-supervisor:
Associate Professor Dr Nik Hazlina Nik Hussain

PREVALENCE OF PTSD AND ITS ASSOCIATED RISK FACTORS AMONG TRAUMA PATIENTS ATTENDING ORTHOPAEDIC CLINICS AND WARDS IN HUSM AND HRPZII

Dr Sharifah Zubaidiah Syed Jaapar
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Post-traumatic stress disorder (PTSD) is prevalent among the trauma patients in orthopaedic wards and clinics. An easy, inexpensive, and reliable screening tool is needed to screen possible PTSD symptoms in order to provide early intervention and to prevent further complication.

Objectives: This study aimed to validate the Malay version of the Treatment Summary Questionnaire (TSQ) in order to determine the prevalence of PTSD and its associated risk factors among trauma patients who attended orthopaedic wards and clinic in Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II.

Methods: This was a cross-sectional study conducted in 2 stages: the first stage was the validation of the Malay-version TSQ, and the second stage was a prevalence study. Data were collected from each of the 201 patients by using the validated Malay-version TSQ, a sociodemographic data form, and the Clinician Administered PTSD Scale (CAPS). CAPS was used as a gold standard to diagnose PTSD and for comparison with the Malay-version TSQ.

Results: Malay-version TSQ has good internal consistency (α = 0.733) and good concurrent validity with CAPS. At cut-off score of 5 or more, the sensitivity and specificity were 0.8 and 0.85, respectively. The negative predictive value was 0.96, but the positive predictive value was low, at 0.48. The prevalence of PTSD among the trauma patients was 24.9%. Fear during trauma was shown to be a significant risk factor of developing PTSD (OR = 2.41, 95% CI 1.11 to 5.20). Praying was a significantly common means used by respondents to cope with trauma. There was also significant association between support received from professionals and PTSD symptoms.

Conclusion: Malay-version TSQ is a valid, inexpensive, and reliable tool for screening PTSD. In our study, 24.9% of trauma patients in orthopaedic wards and clinics in Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II were diagnosed with PTSD.

Supervisor:
Dr Zarina Zainan Abidin

A STUDY ON *GJB2* AND *GJB6* GENE MUTATIONS AMONG MALAYS WITH NON-SYNDROMIC HEARING LOSS

Siti Aishah Zainal
MSc (Human Genetics)

Human Genome Centre
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Hearing loss is the most common congenital sensory defects in human. About 1 in 1000 neonates in the world is born with the abnormality, which may vary from mild to profound hearing loss. This condition can be caused by 2 factors: genetic and environmental factors. More than 50% of the defect is due to genetic causes. It has been proven that multiple genes are involved in non-syndromic hearing loss (NSHL), a type of hearing loss without other symptoms, which was covered in this study. Mutations in *GJB2* gene have been shown to be a major role for congenital NSHL. A related gene, *GJB6*, which is located adjacent to *GJB2*, might be related and associated with NSHL.

Objectives: The objectives of this study were to identify the mutations in the 2 genes and study their associations with NSHL.

Methods: Buccal cell samples were taken from 91 NSHL patients and 91 normal volunteers in Kelantan. Polymerase chain reaction (PCR) was used to amplify the coding region of *GJB2* gene. The PCR product of *GJB2* coding region was proceeded with screening for mutations using denaturing high performance liquid chromatography (dHPLC), and mutations detected were confirmed by DNA sequencing.

Results: Eleven sequence variations including mutations and polymorphisms were found in 32 patients and 37 control subjects; however, none of the variations showed any statistically significant association with NSHL and its severity. For *GJB6* XX gene coding region, the deletion was identified by multiplex PCR assay in which β-globin gene was used as the internal control. All 182 subjects were found to have no deletion of the *GJB6* coding region irrespective of whether they have genetic variation in *GJB2* or not.

Conclusion: It is believed that a larger sample size and screening of all regions in *GJB2* and *GJB6* as well as other related genes are necessary to verify the possible association

between the mutations and polymorphisms and the severity of hearing loss in patients.

Supervisor:
Dr Zilfalil Alwi
Co-supervisors:
Dr Mohd Khairi Md Daud
Dr Zafarina Zainuddin

A COMPARISON OF THE CORPUS CALLOSUM SIZE IN THE DEVELOPMENTALLY DELAYED AND TYPICALLY DEVELOPED CHILDREN PRESENTED IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KUBANG KERIAN, KELANTAN

Dr Siti Hajar Ahmad
MMed (Radiology)

Department of Radiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Corpus callosum is the major interhemispheric structure in the human brain crucial for unified motor, sensory, and cognitive perfomances. The thickness of the corpus callosum may reflect the abnormalities that may originate in the cerebral cortex and can act as indicator of the cerebral cortical state. When the normal development of the corpus callosum is affected, it may be reflected in the development of the motor, sensory and cognitive functions.

Objectives: The study aimed to determine and compare the size of the corpus callosum in the developmentally delayed children and typically developed children.

Methods: This was a comparative cross-sectional study of the thickness of the corpus collasum in developmentally delayed children and typically developed children. A total of 34 children with developmental delays who underwent magnetic resonance imaging of the brain were included in this study. Similar number of controls was included in this study. The thickness of the corpus callosum was measured manually. The mean and standard deviation of the corpus callosum thickness of both groups were calculated.

Results: The mean and standard deviation of the length of genu and splenium of the corpus callosum in the developmentally delayed children were significantly low than those in typically developed children ($P < 0.001$). The midbody of the corpus callosum showed no significant reduction in both groups.

Conclusion: There is significant reduction of the corpus callosum size in the developmentally delayed children.

Supervisor:
Dr Noreen Norfaraheen Lee Abdullah

BIOCOMPATIBILITY AND ANGIOGENESIS EVALUATIONS OF BIOCHEMICAL GRADE CHITRON DERIVATIVE FILM IN RABBITS

Siti Nazmin Saifuddin
MSc (Reconstructive Sciences)

Reconstructive Sciences Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Chitosan is composed of glucosamine and N-acetylglucosamine, which are constituents of mammalian tissues. Chitosan is a non-toxic, biocompatible, and biodegradable polymer, and it has been proposed for use as a topical agent in tissue repair. SIRIM Berhad has developed three new types of chitosan derivative films: N-carboxymethychitosan (N-CMC), N,O-carboxymethylchitosan (NO-CMC), and Oligo Chito.

Objectives: This study was conducted to evaluate the biocompatibility and angiogenesis of these types of chitosan derivative films on rabbits, using implantation and partial-thickness wound models.

Methods: In implant model, empty pockets served as control, and in partial-thickness wound models, Aquacel (commercial dressing) served as control.

Results: Historical examination revealed that inflammations elicited in all chitosan derivative implants were higher than that observed in control because of the presence of the implants in tissue. However, these reactions were organised and did not deviate from the course of inflammation associated with healing process, as observed in partial-thickness wound model, rendering these materials biocompatible. Macroscopic evaluation of the dressing and wounds demonstrated that all three types of chitosan derivative films, namely O-C, N-CMC and NO-CMC, process the necessary basic attributes to be employed as wound dressing comparable to the commercial dressing, Aquacel. In angiogenesis evaluation, results of the microvessel densities demonstrated that the test materials were able to promote the angiogenesis, as higher densities were observed in chitosan derivatives compared with control in implant model, and comparable to Aquacel in partial-thickness wound model. All chitosan deritative implants were also able to promote the endogenous expression of VEGF in both models. Relationship between VEGF expressions of the chitosan derivatives with their respective microvessel density and fibrous capsule thickness in the implant model showed positive correlations, except for NO-CMC, which showed no correlation in microvessel density. No correlation was observed between VEGF expression with microvessel density and granulation index in all chitosan derivatives-treated wounds, except for granulation index in Aquacel and O-C.

Conclusion: The results signify that all chitosan derivatives do promote the angiogenesis, and this process may be enhanced by VEGF or other angiogenic factors.

Supervisor:
Professor Dr Ahmad Sukari Halim
Co-supervisors:
Associate Professor Dr Hasnan Jaafar
Dr Wan Azman Wan Sulaiman

EXPRESSION OF TUMOUR MARKERS AND DETERMINATION OF MICROVESSEL DENSITY IN MNU-INDUCED BREAST TUMOUR

Siti Norasikin Mohd Nafi
MSc (Pathology)

Department of Pathology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Angiogenesis plays an important role in breast tumour development. The association of this phenomenon with the expression of breast tumour markers has not been fully elucidated.

Methods: In this study, breast tumour was induced by injecting 21-day-old rats intraperitoneally with 1-methyl-1-nitrosurea (MNU) at a dose of 70 mg/kg body weight for 3 consecutive days. The breast tumours were the subjected to intratumoural angiogenesis promotiom using basic fibroblast growth factor (bFGF), or inhibition using platelet factor 4 (PF40), at dose 10 µg/tumour. The size of the tumours was monitored. The excised tumour tissues were subjected to quantitative RT-PCR for *ER*, *PR*, *EGFR*, *c-erbB2*, *E-cadherin*, and *LR* expression. Angiogenesis was determined by micro-universal density with immunohistochemical staining for FVII-RA. Histological findings showed that most of the MNU-induced breast tumours were malignant, where the cribiform type predominated the apilary type. Benign and pre-neoplastic lesions were seen mainly in tumours of size less than 1.2 cm. Promoted angiogenesis appear to have similar histological features with the control group. We noted the suppression of ductal carcinoma of no special type.

Results: It was clearly seen that tumour growth in the control group shows dependency on peritumoural and intratumoural blood vessels compared with peritumoural blood vessel. As tumour grew, there was significant increase of *ER*, *PR*, *EGFR*, and *c-erbB2* expressions. The expressions of *EGFR* and *c-erbB2* continue to increase irrespective of whether angiogenesis is increased or suppressed. We also noted that the invasiveness of breast tumours was increased in PF4-treated group by the decrease expression between increased MVD and overexpressions of *ER*, *PR*, *EGFR*, *c-erbB2*, and *LR* mRNAs and the downregulation of E-cadherin mRNA expression in the control group. This association occurs irrespective of whether the MVD is in peritumoural or intratumoural regions. There was also significant association between the peritumoural MVD and the expression of *ER*, *PR*, and *LR* seen in the bFGF-treated group. There was a significant association between intratumoural MVD and the expressions of *ER* and *PR* seen in the PF4-treated group.

Conclusions: Our findings have shown the reduction of blood supply to breast tumours, as illustrated by the presence of more aggressive phenotypes in the PF4-treated group, with downregulations of *ER* and *PR* in the intratumoural region. Even though tumour phenotype in the angiogenis promoted group was similar to the control group, the growth rate was faster, and this was supported by significant associations with increased expressions of *ER*, *PR*, and *LR* in the peritumoural region. We also noted that expressions of *EGFR* and *c-erbB2* in promoting tumour growth and downregulation of *E-cadherin* were independent of angiogenesis.

Supervisor:
Associate Professor Dr Hasnan Jaafar
Co-supervisor:
Dr Md Tahminur Rahman

A COMPARATIVE STUDY ON STUDENT'S PERCEPTION OF EDUCATIONAL ENVIRONMENT BETWEEN A PUBLIC AND PRIVATE MEDICAL ASSISTANT COLLEGE, MALAYSIA

Som Phong Chit
MSc (Medical Education)

Department of Medical Education
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: The educational environment is an important determinant for producing quality graduates. It also plays an important role in effective teaching and learning in an institution. Besides that, evaluation is essential to ensure that a programme in a college is following the criteria or guidelines of international standard. There is no educational environment measurement study conducted for Medical Assistant programme in Malaysia so far. It is a need to study the educational environment of Medical Assistant programme to see the standard and quality of the programme. To ensure the customers' satisfaction, it is important to get information from different aspects of a programme.

Objective: The study aimed to measure and compare the students perception of educational environment between 2 colleges.

Methods: A cross-sectional study was carried out among 123 and 52 final year students from Kolej Pembantu Perubatan Seremban and Kolej Islam Sains dan Teknologi, respectively. The perception of students towards their educational environment was measured using the Malay version of Dundee Ready Educational Environment Measurement (DREEM) tool. Ethical issues were taken into consideration during the process of implementation of the study.

Results: Total DREEM mean score for Kolej Pembantu Perubatan Seremban was lower (128.91/200) compared to Kolej Islam Sains dan Teknologi (130.07/200) with standard

deviation of 16.72 and 17.70, respectively. There are 5 weak areas for Kolej Pembantu Perubatan Seremban compared with 6 weak areas for Kolej Islam Sains dan Teknologi; these need to be explored further. The total DREEM score was slightly higher in the private collage compared with the public college. However, in individual item analysis, the public college was in slightly better position than private collage.

Conclusion: The study concludes that, for both colleges, the total DREEM score ranged 101–105, which was a positive indication in the aspect of educational environment. However, there were many individual items that scored below 2.00 and need further exploration for remedial measures. In terms of educational measurement score, both the collages should learn from their weak and strong areas and take remedial measures to improve their educational environment. The small number of participants, only involving students from the final year, was identified as one of the major limitations in this study.

Supervisor:
Dr Hafiza Arzuman
Co-supervisor:
Professor Ab Rahman Esa

EFFECTS OF COMBINED JUMPING EXERCISE AND HONEY SUPPLEMENTATION ON BONE PROPERTIES AND BONE METABOLISM IN YOUNG FEMALE RATS

Somayeh Sadat Tavafzadeh Haghi
MSc (Sport Sciences)

Sports Science Unit
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Physical activities and nutritional factors play vital roles in the prevention of osteoporosis. However little is known about the combination effects of exercise and honey supplementation on bones.

Objective: This study was carried out to investigate the effects of combined jumping exercise, as a high impact exercise, and honey supplementation on bone properties and bone metabolism in young female rats.

Methods: In this study, 48 12-week-old Sprague Dawley female rats were divided into 4 groups: sedentary without supplementation control group (8C), sedentary with honey supplementation group (8H), jumping exercise without supplementation group (8J), and combined jumping exercise and honey supplementation group (8JH). Jumping exercise consisted of 40 jumps/day for 5 days/week at the height of 40 cm. Honey as a supplementation was given to the rats at the dosage of 1 g/kg body weight/rat/day, for 7 days/week via force feeding. After 8 weeks of experimental period, blood samples were collected in order to measure serum total calcium, serum phosphate, serum alkaline phosphatase (bone formation marker), and serum C-terminal telopeptide of type 1 collagen (1CTP, bone resorption marker) concentrations. Right hind leg tibiae and femurs or the rats were harvested for measurements of bone mass (wet and fat-free dry weight), bone mechanical property (maximal load), and bone physical dimensions (length, mid shaft maximal and minimal diameters).

Results: Combination of jumping exercise and honey supplementation significantly increased tibial wet weight and fat-free dry weight, tibial and femoral maximal load, tibial minimum diameter, and femoral maximum diameter. We also found significant increase in serum total calcium and reduction in serum 1CTP. However, these discernable improvements in bone could not be observed with jumping exercise or honey supplementation alone.

Conclusion: From the present study, it is concluded that combination of jumping exercise and honey supplementation elicited discernabled beneficial effects on lower extremity bone properties and bone metabolism in young female rats as compared with jumping exercise, honey supplementation, and control groups.

Supervisor:
Dr Ooi Foong Kiew
Co-supervisor:
Dr Oleksandr Krasilshchikov

COST EFFECTIVENESS IN MANAGEMENT OF OPEN FRACTURE TIBIA GRADE 3A

Dr Sudhagar Krishinan
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Economic analysis is one of the tools that is becoming popular among health care providers in assessing or evaluating the method of treatment, but it is less popular among orthopaedic surgeons. Considering the economic burden shouldered by our government, economic analysis should be given serious consideration in our day-to-day orthopaedic practice. One of the common fractures being managed by orthopaedic surgeons is open fracture tibia grade 3A. The standard practice in managing open fracture tibia grade 3A is early surgical intervention (debridement and stabilisation), which should be carried out within 6 hours after injury; however, this could not be practiced at all time because of many factors, especially in our government hospital set up. Due to this problem, delayed surgical intervention occurs, resulting in many complications.

Objectives: The study aimed to show it is always more cost effectiveness to treat open fracture tibia grade 3A within 6 hours after injury.

Methods: This study was conducted over a period of 2 years. The parameters studied were the cost (hospital admission fee, surgical fee, and antibiotic fee) and the time

taken for union to occur. This study was conducted at Hospital Universiti Sains Malaysia, Hospital Raja Perempuan Zainab II, and Hospital Sungai Petani. Ethical approval was obtained from the ethical committee of Universiti Sains Malaysia. The records of 128 patients who sustained open fracture tibia grade 3A were traced from the record office; 66 records belonged to those who were treated within 6 hours after injury, whereas another 64 records belonged to those treated more than 6 hours after injury. Data collected from the case records include the admission fee, surgical fee, antibiotic fee, and time to achieve union. Total cost was calculated and effectiveness was measured by time taken for union to occur. Data obtained was then analysed and conclusion made.

Results: There was a statistically significant difference in the total cost in both groups ($P < 0.001$). The total cost was RM73.92 (SD 29.04) in the group treated within 6 hours after injury, whereas the total cost in the group treated more than 6 hours after injury was RM 239.40 (SD 81.40). Three gross costs were analysed separately to give account for the total cost: hospital admission fee, surgical fee, and antibiotic fee. All of the three costs showed statistically significant difference from one another ($P < 0.001$). Another parameter compared, time taken for union, also showed significant difference ($P < 0.001$) in that those treated within 6 hours after injury had earlier union (19.9 weeks, SD 5.08) compared with those treated more than s6 hours after injury (35.4 weeks, SD 8.4).

Conclusion: Treating open fracture tibia grade 3A within 6 hours after injury was more cost effective than treating it more than 6 hours after injury.

Supervisor:
Dr Nor Azman Mat Zin

EXPRESSSIONS OF BCL-2 AND BAX IN BREAST CANCER CELLS AND ITS BLOOD VESSELS AND THEIR ASSOCIATION WITH TUMOUR ANGIOGENESIS

Dr Suhaila Abdullah
MPath (Anatomic Pathology)

Department of Pathology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: Breast cancer development and progression have been largely related to anti-apoptotic activity and angiogenesis. In relation to that, this study was designed to compare the expression of anti-apoptotic Bcl-2 and pro-apoptotic Bax proteins on the endothelial cells of blood vessel supplying the tumour and the tumour cells of invasive ductal carcinoma. In relation to that, we also compared the microvessel density intratumourally and peritumourally. The relationship between apoptotic and angiogenic activity in invasive ductal carcinoma of the breast was also studied.

Methods: A cross-sectional study was conducted from December 2007 to October 2008 with 96 cases of invasive ductal carcinoma of breast included in the study. Tissue sections that were retrieved from archived tissue blocks were stained with immunohistochemistry stain for Bcl-2 and Bax expressions, and CD34 for microvessel density.

Results: Higher expression of Bax in tumour cells (93%) was observed compared with expression of Bcl-2 (66%), though the difference was statistically not significant. There was significant association ($P < 0.001$) between the expression of Bax of the endothelial cells with the expression of Bax of tumour cells, whereas the expression of Bcl-2 of the endothelial cells was inversely associated with the expression of Bcl-2 of tumour cells ($P < 0.001$). Our study also demonstrated that the expression of Bcl-2 of tumour cells was strongly associated with hormonal receptor status (oestrogen and progesterone receptors) of tumour cells ($P = 0.003$ and $P = 0.004$, respectively). Intratumoural microvessel density was significantly higher than of the peritumoural region ($P < 0.001$). However, the microvessel density was not associated with the expression of pro-apoptonic Bax and anti-apoptotic Bcl-2, tumour size, tumour grade, hormonal receptor status, and overexpression of c-erbB2.

Conclusion: This study suggests that anti-apoptotic activity plays important role in breast cancer development and is associated with the hormonal receptors, oestrogen, and progesterone. The large portion of cancer cells undergoing apoptosis was directly associated with the number of endothelial cells undergoing apoptosis. Tumour angiogenesis was promoted especially at the intratumoural region. However, the angiogenic activity was independent from anti-apoptotic activities.

Supervisor:
Associate Professor Dr Hasnan Jaafar

ANXIETY AND DEPRESSION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

Dr Suhaila Mohamad Zahir
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Chronic obstructive pulmonary disease (COPD) is recognised by the World Health Organization as one of the major public health problems. Psychological disturbances, such as anxiety and depression, are recognised as the major factors that worsened the quality of life (QOL) of COPD patients.

Objectives: The aims of the study were to assess the prevalence of anxiety and depression in COPD patients and in subgroups, according to severity of COPD, and to study the associations between anxiety and depression with the psychosocial and relevant clinical factors, severity of COPD, and QOL of the patients.

Patient and Method: This is a cross-sectional study conducted at the respiratory clinic, Hospital Universiti Sains Malaysia, involving 110 COPD patients. Data were collected using self-administered general questionnaire, the Malay versions of Hospital Anxiety and Depression Scale and St George's Respiratory Questionnaire. Lung function test using spirometer was done to determine the severity of COPD. The main outcome measures were anxiety, depression, and health-related QOL of the COPD patients.

Result: Prevalence of anxiety, depression, and mixed psychological disturbance (both anxiety and depression) were 6.4%, 28.2%, and 29.1%, respectively. A higher prevalence of anxiety and depression were reported in those with more severe COPD. Among the psychosocial variables, being no longer in marriage showed a significant association with anxiety and depression in COPD. The presence of frequent exacerbations was significantly associated with depression and mixed anxiety and depression. QOL-impact and QOL-total were strongly related to depression, whereas all dimensions of St George Respiratory Questionnaire were strongly related to mixed anxiety and depression. Furthermore, deterioration in QOL pertaining to health was strongly related to anxiety and depression rather than to the severity of COPD.

Conclusion: Anxiety and depression are common in COPD patients, especially when the disease was severe. Being no longer in marriage was a single psychosocial factor significantly associated with anxiety and depression in COPD. The presence of frequent exacerbations was the only clinical factor associated with both depression and mixed anxiety and depression. Patients with more severe COPD were more likely to have anxiety and depression as compared to those with mild and moderate severity. Health-related QOL of the patients was much affected by the presence of anxiety and depression rather than the severity of COPD.

Supervisor:
Associate Professor Dr Hasanah Che Ismail
Co-supervisor:
Dr Che Wan Aminuddin Hashim

A RANDOMISED CONTROL TRIAL ON EPIDURAL INFUSION WITH INITIAL BOLUS AND CONTINUOUS EPIDURAL INFUSION WITHOUT INITIAL BOLUS IN COMBINED SPINAL EPIDURAL ANAESTHESIA IN CAESAREAN SECTION

Dr Suneta Sulaiman
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The aim of this study was to compare whether continuous epidural infusion without an initial dose can decrease post-operative pain as well as continuous epidural infusion with an initial dose. The haemodynamic changes and occurrence of side effects of both groups were explored.

Methods: A total of 118 patients were recruited. Standard anaesthetic management was provided during the pre-operative and intra-operative period. Combine spinal epidural (CSE) were performed on all patients prior to initiation of the caesarean section. The patients were divided into 2 groups. The initial dose group consisted of 59 patients who were given 4 mL of 0.2% plain ropivacaine as an initial dose through the epidural catheter 45 minutes after the spinal dose; this was immediately followed by epidural continuous infusion of 4 mL/hour of 0.2% plain ripivacaine. The remaining 59 patients were placed in the continuous dose group where 4 mL/hour of 0.2% plain ropivacaine was started for epidural continuous infusion without the prior initial dose. Haemodynamic changes consisting of heart rate and systolic, diastolic, and mean arterial pressures were charted on arrival to the operation theatre (baseline) and at 1, 3, 10, and 45 minutes after the spinal dose. All patients received the continuous epidural infusion for at least 24 hours. Post-operative pain was treated with intravenous sodium diclofenac 50 mg and 50 mL of intravenous normal saline as a first choice upon patient's request. If this was not effective, intravenous tramadol 50 mg and 50 mL of intravenous normal saline were added 30 minutes later. The usage of these medications and patients' pain scores at first skin incision, last skin stitch, and 12 and 24 hours post-operation were documented. Incidences of complications were also noted. Haemodynamic variables, pain scores, and usage of sodium diclofenac and tramadol were analysed by independent *t* test, whereas complication data were analysed by chi-square test.

Results: Demographic data were comparable in all groups. There was no difference in the baseline haemodynamic parameters. Both groups demonstrated a significant decrease in haemodynamic parameters at 1 minute, immediately after performing combine spinal epidural. However, all changes were transient and subsequently recovered to baseline. This study showed no significant differences of pain scores in both groups. Also, patients maintained a good pain score throughout the caesarean section. There were no significant difference in the frequency of usage of sodium diclofenac and tramadol in both groups. The mean usage of sodium diclofenac was 1.4 (SD 1.1) in the initial dose group compared with 1.42 (SD 1.2) in the continuous dose group. The mean usage of tramadol was 0.15 (SD 0.45) to 0.22 (SD 0.53) respectively. No major complications were noted.

Conclusion: Epidural initial dose was unnecessary for providing pain relief in CSE for caesarean section. CSE without initial dose was able to provide adequate anaesthesia for caesarean section and for post-operative analgaesia. However, it is still unclear whether the haemodynamic fluctuations and side effects are similar for CSE with initial epidural dose and without epidural initial dose.

Supervisor:
Associate Professor Dr Kamarudin Jaalam

A STUDY ON THE RELATIONSHIPS BETWEEN CENTRAL CORNEAL THICKNESS AND RETINAL NERVE FIBRE LAYER THICKNESS, MEAN CUP DEPTH, AND VISUAL FIELD PROGRESSION IN PRIMARY ANGLE CLOSURE AND PRIMARY ANGLE CLOSURE GLAUCOMA

Dr Tan Hui Ken
MMed (Ophthalmology)

Department of Ophthalmology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objectives: The study aimed to determine the mean central corneal thickness (CCT), the mean retinal nerve fibre layer (RNFL) thickness, and the mean cup depth (MCD), as well as the correlations between CCT with RNFL thickness and MCD, and the relationship between CCT and visual field (VF) progression in primary angle closure (PAC) and primary angle closure glaucoma (PACG).

Methods: A cross-sectional and cohort studies were conducted among PAC and PACG patients. The CCT was measured by non-contact specular microscopy. The patients were divided into thin and thick CCT groups and followed-up for 12 to 18 months to monitor VF progression by mean advanced glaucoma intervention study (AGIS) score. Heidelberg laser tomography II was used to measure the RNFL thickness and the MCD.

Results: A total of 35 eyes were studied in each group. The CCT in Asian eyes in the PAC (516.8 μm, SD 26.0) and the PACG (509.7 μm, SD 27.4) groups were significantly lower ($P < 0.001$) than in the control group (540.3 μm, SD 27.8). PACG was associated with thinner RNFL and higher MCD, but these characteristics were not seen in PAC. The CCT was not correlated with RNFL and MCD in both PAC and PACG. There was a statistically significant increase of the mean AGIS score after 12.9 months (SD 1.7) of follow-up in PACG patients with lower CCT ($P = 0.002$). There was no significant increase of the mean AGIS score after similar follow-ups in the PACG patients with higher CCT and in all PAC patients. However, the CCT was not a significant factor in VF progression in PACG patients when other associated factors were considered together.

Conclusion: The PACG group has significantly lower mean CCT, thinner mean RNFL, and higher MCD compared with PAC group. The CCT is not correlated with RNFL and MCD in both PAC and PACG groups. Lower CCT is associated with VF progression based on mean AGIS score in PACG, but not in PAC.

Supervisor:
Associate Professor Dr Wan Hazabbah Wan Hitam
Co-supervisor:
Dr Shatriah Ismail

A STUDY ON CORNEAL ENDOTHELIAL CELL MORPHOLOGY OF CORNEAL ARCUS PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr Tan Soo Ken
MMed (Ophthalmology)

Department of Ophthalmology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: Objective: The study aimed to determine the central corneal endothelial morphology among patients with corneal arcus in Hospital Universiti Sains Malaysia.

Methods: A total of 152 walk-in and warded patients who had given their consent were recruited in the study; these patients were without any previous history of intraocular surgery, intraocular trauma, glaucoma, corneal diseases, and contact lens usage. The clear-cornea group showed absence of arcus, whereas the corneal arcus group showed presence of arcus that was graded into mild, moderate, and severe under slit-lamp biomicrosciope, according to a previous unpublished manuscript. The patients' medical status of diabetes mellitus and dyslipidaemia were ascertained. A non-contact specular microscope Topcon SP 2000P was used to measure the corneal endothelial morphometric assessment of the endothelial cell would be analysed by the machine-based algorithm.

Results: The mean central corneal endothelial cell density (ECD) among the corneal arcus group was 2390 cells/ mm^2 (ranged 2336–2444 cells/mm^2 with 95% CI), which was statistically lower than in clear-cornea group, 2507 cells/mm^2 (ranged 2413–2600 cells/mm^2 with 95% CI), after adjustment to the demographic factors. However, when the corneal arcus was graded into 3 grades, the adjusted mean central ECD among the different grades of corneal arcus was statistically insignificant ($P = 0.054$). The adjusted mean cell size among the corneal arcus patients (422 μm^2, 95% CI 412 to 431) was also significantly larger than among the clear-cornea patients (403 μm^2, 95% CI 387 to 420). When the adjusted mean cell size among the corneal arcus was graded, only the mild–severe grade of corneal arcus showed significant results, with a mean difference of −25.3 μm^2 (95% CI −49.89 to −7.74). Furthermore, both means of minimum and maximum endothelial cell size were statistically significant between the clear-cornea group and the corneal arcus group prior to adjustment. These findings were, however, statistically insignificant after demographic factors were adjusted. The coefficient variation of endothelial cell size was statistically insignificant between the clear-cornea group and the corneal arcus group, and also among the different grades of cornea arcus, when demographic factors were adjusted.

Conclusion: This study showed that the corneal arcus patients had lower endothelial cell density and higher mean endothelial cell size than the clear-cornea patients. The mild and severe grades of cornea arcus also had statistically

different mean endothelial call size.

Supervisor:
Associate Professor Dr Mohtar Ibrahim

TREATMENT OUTCOME OF SUPERFICIAL CEREBBRAL ABSCESS: AN ANALYSIS OF TWO SURGICAL METHODS (BURR HOLE ASPIRATION AND CRANIOTOMY EXCISION)

Dr Tan Wei Ming
MSurg (Neurosurgery)

Department of Neurosciences
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: With the advance development of new and more potent antibiotics and earlier diagnosis, we are seeing less intracebral abscess in our country. However, treatment of this disease remains a challenge, as it may result in significant morbility and mortality.

Objectives: The objective of this study was to determine the association between 2 surgical methods, burr hole and craniotomy, in the treatment of superficial cerebral abscess (SCA) with survival of the patients, improvement of neurological status, radiological clearance of abscess, re-surgery, and morbidity.

Methods: This was a retrospective case review of all the patients who had undergone surgery for brain abscess in 2 hospitals, HKL and HAS, in 4 years (2004–2007); we identified 78 cases, but only 51 cases were included in the study. These patients were broadly categorised into 2 groups based on their first surgical method performed. The case notes and brain computed tomography films of these patients were analysed with respect to their clinical, radiological, surgical treatment, and outcome data. Statistical analysis was determined using chi-square tests to study these associations.

Results: Brain abscess was one of the most common type of intracranial suppurations operated in HKL and HAS from 2004 to 2007, accounting for 31.7% of surgery for intracranial infection. There was a male predominance, with male-to-female ratio of 1.8:1. The mean age was 36.6 years old. Twenty-five patients (49.0%) presented with good functional level (Modified Rankin Scale of grade 1 or 2). The source of infection was established in 80.4% of the cases, most commonly from the heart (31.4%). Only 38 out of 51 patients (74.5%) had their culture and sensitivity results available. Out of these, the pus obtained during the surgery was sterile in 22 patients (57.9%), and only 16 (42.1%) had organism isolated. Patients who underwent craniotomy showed better results initially, with 20 patients (71.4%) having significant early neurological improvement and 25 (89.3%) had satisfactory radiological clearance of the abscess following the first operation. The need for a repeat surgery was more commonly seen in the burr-hole group (47.8%). However, 5 patients died in this series, making the mortality rate 9.8% among the surgically-treated superficial cerebral abscess. Among the 46 survivors, 40 (87.0%) were able to perform their activities of daily living and had Modified Rankin Scale of 2 or below. Chi-square test revealed a significant association between the initial surgical method used for abscess and computed tomography ($P < 0.001$). Hence, craniotomy excision was found to be the better surgical methods for superficial cerebral abscess compared with burr-hole aspiration, as it gave a higher rate of early neurological improvement ($P = 0.004$), a better clearance of the abscess ($P < 0.001$), and a lower rate of repeat surgery ($P < 0.001$). Nevertheless, there was no significant difference in the survivors in both groups.

Conclusion: The initial surgical method used was found to be associated with the treatment outcome of superficial cerebral abscess in terms of improvement in the neurological status, clearance of the abscess, and re-surgery. From this study, we conlcuded that craniotomy and excision is probably a better surgical method in the treatment of superficial cerebral abscess compared with burr hole aspiration, as it has been shown to improve neurological status in a shorter duration, has better abscess clearance, as well as reduce rate of re-surgery.

Supervisor:
Dr Johari Siregar Adnan

A RANDOMISED CONTROLLED TRIAL OF PATIENT-CONTROLLED ANALGAESIA COMPARED WITH BOLUSES OF ANALGAESIA FOR THE TREATMENT OF ACUTE PAIN IN THE EMERGENCY DEPARTMENT

Dr Terence Leslie De Silva
MMed (Emergency Medicine)

Department of Emergency Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Pain is the physiologic response to a noxious stimulus, whereas suffering reflects the perception of pain. In the emergency department, pain appears to be one of the most frequent complaints, but pain control is often suboptimal, as seen by many recent audits. The usage of patient-controlled analgaesia (PCA) has been reported to provide effective pain relief, often results in lesser opioid consumption, but gives greater patient satisfaction when compared with other techniques of analgaesia delivery. However, while there are many data regarding its usage in post-operative pain, cancer pain, burns pain, and so forth, there is very little research done regarding its usage in the emergency department.

Objectives: This study was done to compare the effectiveness of pain relief and patient satisfaction between

PCA and conventional boluses of analgaesia for acute pain of traumatic origin in the emergency department.

Methods: This study was conducted by in the emergency departments of Hospital Universiti Sains Malaysia and Hospital Kuala Lumpur over a period of 1 year. All patients suffering from acute traumatic pain (moderate to severe in intensity) were approached for consent, after fulfilling the inclusion and exclusion criteria. The patients were then randomised into 2 groups after given a bolus of analgaesia. The study group was then given analgaesia via the PCA system, whereas the control group was given the conventional method of boluses of analgaesia via titration. Pain levels were measured using the visual analogue scale, together with their vitals signs and Glasgow Coma Scale at intervals of 0, 15, 30, 45, 60, 90, and 120 minutes. Any adverse events were also noted. Finally, within 24 hours, these patients were given questionnaires regarding their experience of pain relief.

Results: A total of 37 patients were enrolled. The study showed significant difference in terms of pain relief between groups; the PCA group experiencing faster and better pain relief. No life-threatening event was encountered. The satisfaction questionnaire also revealed that the PCA group has higher level of satisfaction with the method used.

Conclusion: PCA provides a more effective pain relief and better patient satisfaction when compared with the conventional method of titrated bolus intravenous injection for the relief of traumatic pain in the emergency department setting.

Supervisor:
Dr Nik Hisamuddin Nik Abdul Rahman

THE OUTCOMES OF ISOLATED THORACOLUMBAR BURST FRACTURES WITHOUT NEUROLOGICAL DEFICIT: COMPARING BETWEEN OPERATIVE AND NON-OPERATIVE TREATMENTS

Dr Tharumaraja Thiruselvam
MMed (Orthopaedic)

Department of Orthopaedic
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Thoracolumbar fractures make up 40% of all spine fractures, usually arising from high-energy trauma. This is includes the region from thoracic 11 to lumbar 2 vertebrae. The thoracolumbar junction is situated between the rigid thoracic spines, predisposing it to injury. The treatment for burst thoracolumbar fractures with no neurological deficit has always been a controversy.

Objectives: The study aimed to evaluate the functional outcomes in operative versus non-operative treatment in thoracolumbar burst fractures at a single level, with no neurological deficit.

Methods: The study was conducted over the period of 1 year; the parameters studied were pain, time taken to return to previous job, and progression of Kyphotic deformity. This study was conducted at Hospital Tengku Ampuan Afzan, Kuantan, Pahang, and Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. Discharged records were traced from both hospitals. All cases fulfilling the set criteria were analysed after obtaining informed written consent. A total of 15 cases, 10 treated non-operationally and 5 treated operatively, were included in the study. Data including kyphotic index were collected from radiographs at 3 intervals: before treatment and 6 and 12 months after treatment. Pain score at 12 to 16 months post-treatment was measured using the visual analogue score. Time, in months, to return to job was also noted. Data obtained were analysed and conclusion made.

Results: No significant difference of pain at 12 to 16 months was observed in patients treated non-operatively versus operatively (P = 0.263). In terms of kyphotic deformity reduction, the operated cases fared better than the non-operated cases (P = 0.020). However, the time taken to return to work was less in the non-operatively treated cases (P = 0.031).

Conclusion: Isolated burst thoracolumbar fracture with no neurological deficit had better short-term functional outcome when treated non-operatively.

Supervisor:
Dr Abdul Halim Yusof

COMPARISON OF INTRACEREBRAL AND SYSTEMIC HAEMODYNAMICS IN SEVERE TRAUMATIC BRAIN INJURED PATIENTS RECEIVING DEXMEDETOMIDINE OR PROPOFOL AS SEDATIVE AGENT

Dr Wan Daud Wan Kadir
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Sedation in neurosurgical intensive care unit is crucial, as the practice does not merely overcome patient's anxiety and facilitate ventilation, but it may prevent deleterious changes in intracranial pressure and cerebral perfusion pressure.

Objective: The aim of this study was to test the efficacy of dexmedetomidine, compared with propofol, for sedation in severe traumatic brain injured patients. This study focused on the effects of dexmedetomidine, compared with propofol, on the cardiovascular haemodynamics, cerebral haemodynamics, and sedation on severe traumatic brain injured patients.

Methods: A prospective and randomised trial was conducted on post-craniectomy patients with severe traumatic

brain injury who were ventilated in neurosurgical intensive care unit. A total of 30 patients were randomised to receive either dexmedetomidine (n = 15) or propofol (n = 15). The infusion rate was titrated to achieve bispectral index (BIS) of 60 to 70. Cardiovascular and cerebral haemodynamics, analgaesic requirement, and extubation time were measured and compared.

Results: Demographic data were comparable in both groups. Titration of sedation in both groups was able to achieve the same mean Sedation–Agitation Scale and mean BIS. There were no significant differences in mean blood pressure, mean arterial blood pressure, intracranial pressure, and cerebral perfusion pressure between dexmedetomidine and propofol groups. Heart rates were found to be significantly lower in the dexmedetomidine group (58.08 beats per minute, 95% CI 51.54 to 64.62) compared with the propofol group (77.06 beats per minute, 95% CI 70.52 to 83.60), with $P < 0.01$. The analgaesic requirement were marginally lower in the dexmedetomidine group compared with in the propofol group (P = 0.06). There were no differences in terms of extubation time between the 2 groups.

Conclusion: This study showed that dexmedetomidine was comparable to propofol in the provision of sedation in post-craniectomy in severe traumatic brain injured patients. Dexmedetomidine was comparable in terms of cardiovascular and intracerebral haemodynamics, except that patient treated with dexmedetomidine has lower heart rates. There was also reduction in the needs for additional analgaesia with dexmedetomidine, although this observation was not statistically significant.

Supervisor:
Dr Ahmad Nizam Alias
Co-supervisor:
Dr Wan Mohd Nazaruddin Wan Hassan

ASSOCIATION BETWEEN COMMON ALLERGENS AND SYMPTOMS AMONG ALLERGIC RHINITIS PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN

Dr Wan Majdiah Wan Mohamad
MPath (Immunology)

Department of Immunology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Allergic rhinitis is one of the most common manifestations of clinical diseases following exposure to allergens. It is also the most common form of atopic disease in primary care practice, affecting 10% to 25% of the general population. In Allergic Rhinitis and Its Impact on Asthma (ARIA) criteria, allergic rhinitis is clinically defined as a symptomatic disorder of the nose induced by immunoglobin E (IgE)-mediated inflammation after allergen exposure to the membrane of the nose. IgE-mediated inflammation is also the mechanism of underlying atopic allergies (e.g., asthma and atopic dermatitis), systemic anaphylactic reaction, allergic urticaria (hives), as well as helminthic infection.

Objectives: The study aimed to evaluate the prevalence of common allergens and the symptoms among allergic rhinitis patients. Specific IgE level was measured to evaluate its association with the severity of allergic rhinitis symptoms.

Methods: This cross-sectional study was conducted from January to December 2007 involving 128 patients from the Otorhinolaryngology–Head and Neck Surgery Clinic, Hospital Universiti Sains Malaysia. All patients who fulfilled the inclusion and exclusion criteria and had given their written consents were recruited. Interviewer-guided questionnaire was administered to gather information from each patient. Blood samples were taken and analysed for IgE specific to 28 allergens: soybean, cow milk, egg white, egg yolk, shrimp, crab, tuna, chicken, beef, citrus, wheat, peanut, cat, dog, cockroach, house dust mites (*Dermatophagoides faraine* and *Dermatophagoides pteronyssinus*), house dust, latex, *Candida*, *Mucor*, *Aspergillus*, *Penicillium*, *Cladosporium*, *Alternaria*, Bermuda grass and Johnson grass. The blood was analysed by using chemiluminescence assay. Low positive class was defined as 1 or less, and high positive class was defined as 2–4.

Results: In univariate analysis, house dust mites, *D. farinae* (75.8%, 95% CI 68.0–83.0), was the most common allergen in the aeroallergen group, followed by *D. pteronyssinus* (64.8%, 95% CI 56.0–73.0), and house dust (33.6%, 95% CI 25.0–42.0). Among the food allergen group, shrimp (28.9%, 95% CI 21.0–37.0) was found to be the most common allergen, followed by soybean (26.6%, 95% CI 19.0–34.0), crab (23.4%, 95% CI 16.0–31.0), clam (22.7%, 95% CI 15.0–30.0), wheat (21.9%, 95% CI, 15.0–29.0),peanut (20.3%, 95%CI 13.0–27.0), egg yolk (18.1%, 95% CI 12.0–26.0), cow's milk (18.0%, 95% CI 11.0–25.0), citrus mix (18.0%, 95% CI 11.0–25.0), beef (14.1%, 95% CI 8.0–20.0), egg white (12.5%, 95% CI 7.0–18.0), tuna (11.7%, 95% CI 6.0–17.0), and chicken (11.7%, 95% CI 6.0–17.0). Among the fungal allergen group, *Aspergillus* (23.4%, 95% CI 16.0–31.0) was the most common allergen, followed by *Candida* (20.3%, 95% CI 13.0–27.0), *Alternaria* (16.4%, 95% CI 10.0–23.0), *Mucor* (14.8%, 95% CI 9.0–21.0), *Penicillium* (12.5%, 95% CI 7.0–18.0), and *Cladosporium* (10.9%, 95% CI 5.0–16.0). Meanwhile, for animal allergen group, cockroach (49.2%, 95% CI 40.0–58.0) was found to be the most common allergen, followed by cat (44.5%, 95% CI 35.0–53.0), and dog (43.0%, 95% CI 34.0–52.0). The prevalence of latex allergy was 42.2% (95% CI 33.0–50.0). Allergy to Barmuda grass (28.9%, 95% CI 21.0–37.0) was found to be more common than allergy to Johnson grass (21.9%, 95% CI 15.0–29.0). Regarding the symptoms, sneezing (99.2%, 95% CI 98.0–100.0) was found to be the most common clinical symtomps among allergic rhinitis patients, followed by rhinorrhoea (94.5%, 95% CI 91.0–99.0), nasal or eye itchiness (94.5%, 95% CI 91.0–99.0), and nasal

obstruction (86.7%, 95% CI 81.0–93.0). Most patients had moderate–severe allergic rhinitis (53.9%), while the remainder (46.1%) had mild reactions. Chi-square analysis showed that there were significant associations between the specific IgE class and the severity of symptoms for house dust mites, *D. farinae* (P = 0.038), *D. pteronyssinus* (P = 0.039), cockroach (P = 0.038), cat (P = 0.042), and latex (P = 0.044). However, there was no significant association between the specific IgE class and the severity of symptoms for other allergens.

Conclusion: This study showed that the most common allergen in allergic rhinitis patients was from aeroallergen group (*D. farinae*). Sneezing was found to be the most common clinical symptoms, and majority of the patients had moderate to severe allergic rhinitis symptoms. There were significant association between the specific IgE class and the severity of allergic rhinitis symptoms for house dust mites, cockroach, cat, and latex. However, there was no significant association between the specific IgE class and the severity of symptoms for other allergens.

Supervisor:
Dr Nurul Khaiza Yahya

THE VALIDATION OF THE TRANSLATED, MALAY-VERSION ATTENTION DEFICIT HYPERACTIVITY DISORDER RATING SCALE-IV (ADHD RS-IV) AS A SCREENING TOOL FOR DETECTION OF ADHD AMONG PRIMARY SCHOOL CHILDREN AGED 7 TO 12 YEARS IN KOTA BHARU

Dr Wan Norhaida Wan Abdullah
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Attention-deficit hyperactivity disorder (ADHD) is the most commonly diagnosed childhood disorder. It is charecterised by behaviour disturbances and poor attention. They may present with either hyperactive-impulse or inattention. ADHD affects children in their mental and physical development. Thus, early diagnosis of ADHD helps the patients and their family significantly. ADHD Rating Scale-IV (ADHD RS-IV), originally developed by Dr George J Du Paul, is a set of 18-item scale to be completed by the parents and teachers of 4- to 20-year-old respondents. To date, there is no validated Malay version of the rating scale to screen ADHD. Currently, the condition is diagnosed based on the Diagnosis and Statistical Manual of Mental Disorder, 4th edition (DSM IV-TR)'s criteria. This study will help to screen ADHD among schoolchildren before being seen by child psychiatrists. The availability of the validated Malay version of ADHD RS-IV can help in further researches on ADHD to be conducted in Malaysia.

Objectives: The study aimed to validate the Malay version of ADHD RS-IV as a screening tool for detection of ADHD, and to determine the rate of possible ADHD cases among primary school children aged 7 to 12 years old in Kota Bharu.

Methods: Phase 1 was essentially a cross-sectional study conducted from August 2007 until September 2008 at the Child Psychiatry Clinic, Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. In this phase, the ADHD RS-IV questionnaire underwent forward and backward translation. The reliability and validity of the translated, Malay version of the questionnaire were determined. A total 30 patients were used for test–retest reliability within the interval of 1 week. Result from 68 children with ADHD and 136 children without ADHD was analysed for internal consistency, factor analysis, sensitivity, and specificity; ADHD samples were taken from the clinic, whereas non-ADHD samples were taken from a primary school in Kota Bharu. The instruments used were the DSM IV-TR criteria and the ADHD RS-IV. Phase 2 was a descriptive study to determine the rate of possible ADHD cases, and the samples were taken from 1259 pupils and 566 teachers from 10 primary schools in Kota Bharu. The subjects were randomised using systematic random sampling. The rate of possible ADHD cases was determined using the validated Malay version of ADHD RS-IV. Data were analysed using SPSS version 12.

Result: The translated, Malay version of ADHD RS-IV showed consistent indication with the original version. The realibility study showed that the intraclass correlation coefficient of 0.67 (95% CI 0.535 to 0.799) for the home version. Internal consistency showed a good result, with Cronbach's alpha of 0.939 for the home version and 0.944 for the school version. Factors analysis revealed 2 domains, which was indentified as inattention and hyperactivity–impulsivity subtype. The cut-off score for the home version of the translated Malay version of ADHD RS-IV was 23.5, with 83% sensitivity and 84% specificity. The effect size of translated, Malay version of ADHD RS-IV was 0.56. The rate of possible ADHD cases among primary school children in Kota Bharu was 6.9%.

Conclusion: The translated, Malay version of ADHD Rating Scale-IV was a valid and reliable tool for screening of ADHD children.

Supervisor:
Associate Professor Dr Mohd Jamil Yaacob

EFFECTS OF ADJUVANT HONEY THERAPY ON DISEASE ACTIVITY, LYMPHOCYTE FUNCTION, AND LYMPHOCYTE SUBSETS IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

Dr Wathik M Mohamad
MSc (Clinical Science)

Department of Medicine
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Systemic lupus erythematosus (SLE) is a prototype autoimmune disease that can affect many tissues and organs of the body. Current treatments with anti-inflammatory and immunosuppressive drugs are able to suppress disease activity, but they are also associated with significant short-term and long-term side effects. Honey has been shown to have anti-bacterial and anti-inflammatory properties. However, the role of honey in autoimmune diseases has not been elucidated. We studied the effects of honey, as an adjuvant to conventional treatment, in disease activity, and its immunological effects on lymphocyte subsets and function.

Objectives: The study aimed to compare the effects of adjuvant honey therapy versus conventional therapy alone on disease activity, to determine the effects of adjuvant honey therapy versus conventional therapy alone on lymphocyte subsets and function in SLE patients.

Methods: This was a prospective randomised study. Sixty SLE patients were randomised into two groups: group 1 receiving conventional treatment with low dose of steroid and cyclophosphamide or azathioprim, and group 2 receiving the same treatment with the addition of honey (20 g) twice a day. Disease activity was measured in all patients every 3 months by means of SLE Disease Activity Index (SLEDAI) score and the levels of C3, C4, antinuclear antibody (ANA), dsDNA antibody, and C-reactive protein (CRP). The function of T lymphocyte was determined at baseline and after 6 months by measuring the expression of 3 lymphocyte-activation markers (HLADR, CD45RO, and CD25) using flow cytometer. Enumeration of lymphocyte subsets (CD3, CD4, CD8, CD19, and CD16/56) was done by immunofluorescence staining method using flow cytometer at baseline and after 6 months.

Results: SLEDAI score was significantly decreased in the group 2 compared with group 1 after 3 and 6 months of follow-up ($P < 0.0001$, $P = 0.023$, respectively). C3 and C4 showed significant increases within group 2 ($P = 0.002$, $P = 0.017$, respectively). The level of dsDNA antibody decreased significantly within group 2 ($P < 0.05$). CRP level was significantly decreased within group 2 compared with group 1 after 6 months follow up ($P = 0.016$). For ANA titre, the mean differences between the groups after 3 and 6 months follow-ups were statistically not significant. For the expression of lymphocyte activation markers, there were significant decreases in the expression of CD8CD45RO and CD8CD25 within group 2 compared with group 1 after 6 months follow-up ($P = 0.04$, $P = 0.021$, respectively). Regarding lymphocyte subsets, there were significant increases in CD3 and CD16/56 percentages in group 2 after 6 months follow-up compared group 1 ($P = 0.021$, $P = 0.038$, respectively). Patterns of increment for CD4 and of decrement for CD8 and CD19 were observed in group 2, but the changes were not statistically significant.

Conclusion: The use of honey therapy as adjuvant to conventional treatment in patients SLE was found to be useful in suppressing disease activity and enhancing lymphocyte subsets and functions.

Supervisor:
Associate Professor Dr Kamaliah Daud
Co-supervisors:
Dr Che Maraina Che Hussin
Dr Azreen Syazril Adnan

A STUDY ON THE EFFECTIVENESS OF NEW FOOD BASKET BY MINISTRY OF HEALTH, MALAYSIA, IN THE REHABILITATION OF MALNOURISHED CHILDREN PROGRAMME IN KELANTAN

Zaiton Daud
MSc (Family Medicine)

Department of
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Objective: The study was conductede to compare the effectiveness of new food basket programme with the previous food basket programme by the Ministry of Health, Malaysia, for malnourished children in Kelantan by observing the progress of nutritional status of these children aged 1–5 years old.

Methods: Anthropometic measurements, nutritional intake details, and food basket information were taken from 97 children who were the recipients of the new food basket, whereas the control group district allocated the previous food basket to 101 children. Knowledge, attitude, and dietary practices of the parents or caregivers were also assessed.

Results: Anthropometric measurements demonstrated that the mean *z* score of weight-for-height had improved after intervention in both groups. Mean *z* scores in the intervention group had improved from −2.79 to −2.60 ($P < 0.001$); likewise, the control group had also shown improvement from −1.90 to −1.67 ($P < 0.001$). *Z* score for weight-for-age and weight-for-height also improved in the intervention and control groups, with mean *z* score of −2.69 to −2.50 ($P < 0.001$) and −1.73 to −1.54 ($P < 0.001$), respectively. However, there were no significant improvements in height-for-age in both groups. Comparison of anthropometric outcomes between both groups showed no significant difference in weight-for-age (0.04; −0.9, 0.17; at 95% confidence interval). Dietary intake of calories, protein, fat, vitamins, and minerals exceeded the levels of Recommended Nutrient Intake for Malaysia. However, intake of calcium and vitamin A were below the

recommended levels. According to food preferences in the new food basket, it was revealed that respondents prefered sweet biscuits to family cereals. Generally, level of knowledge of all respondents assessed was good. However, there are significant difference between intervening district (Tumpat) and control district (Pasir Mas) by taking into consideration of its education factor. Most of the respondents had a positive perception on nutrition. However, only 25% of respondents had positive view in monitoring their children weight.

Conclusion: Overall, this study revealed that there was no significant difference in the measured indicators between recipients of new food basket and the old ones. Food type was not found to be a major factor in the improvement of nutritional status of malnourished children. Malnourishment is caused by various socioeconomic factors, such as caregivers' nutrition knowledge, household income, and household size. Co-operation with other ministries and non-governmental bodies is believed to improve nutritional status among malnourished children.

Supervisor:
Dr Wan Nudri Wan Daud
Co-supervisor:
Professor Dr Zulkifli Ahmad

INFLUENCE OF CYPD2D6 POLYMORPHISM ON THE CLINICAL OUTCOME OF PATIENTS WITH SCHIZOPHRENIA

Zalina Zahari
MSc (Pharmacology)

Department of Pharmacology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: CYPD2D6 enzyme is involved in the metabolism of many centrally acting as well as cardiovascular drugs, and polymorphism of *CYPD2D6* gene has been reported in the literature. Dopamine D2 receptor gene (*DRD2*) is another candidate gene implicated in the efficacy of antipsychotic drugs.

Objective: The study aimed to develop PCR methods for detection of *DRD2* polymorphisms and to investigate the association of the *CYPD2D6* and *DRD2* polymorphisms with the treatment outcome in patients with schizophrenia.

Methods: The protocol for the study was approved by the Research and Ethical Committee, Universiti Sains Malaysia, Kelantan, Malaysia. The subjects were patients with schizophrenia (DSM-IV) on antipsychotic treatment or had been treated with antipsychotic drugs in the past. Written informed consent was obtained from the subjects after full explanation of the study procedure. The selected patient was then called for interview and further assessment. The psychopathological severity was evaluated using the Positive and Negative Symptoms Scale (PANSS). The extrapyramidal side effects and akathisia were assessed with the Simpson–Angus Scale (SAS) and the Barnes Akathisia Rating Scale (BARS), respectively. DNA was extracted from blood taken from the patients, using salting out procedure, and subjected to PCR-genotyping. Specific primers were designed to develop PCR methods for detection of polymorphisms. The PCR methods were specific and sensitive to detect *CYPD2D6* and *DRD2* genotypes. These methods were used for genotyping analysis of 156 subjects enrolled in this study of *CYPD2D6* and *DRD2* polymorphisms.

Results: The frequencies for *CYPD2D6*1*, **4*, **5*, **10*, and *DRD2* duplication were 39.1%, 1.3%, 3.8%, 46.8%, and 3.2%, respectively: while *CYPD2D6*3*, **6*, **14*, and **17* were absent. The frequencies for *DRD2* variants *Ser310*, *Cys311*, *Taq A1*, *-141C Del* and *-241G* were 0.3%, 3.2%, 42.3%, 14.7%, and 17.6%, respectively. There was no patient tested positived for *Ala96*, *Leu141(T),* and *Ile154* variants. We founds that *CYPD2D6* polymorphism was significantly associated with subtotal negative PANSS scores than those without the *Cys311* allele. We also found that *CYPD2D6* and *DRD2* polymorphisms were not related to the side-effects of antipsychotic therapy as well as the SAS and BARS score.

Conclusion: The results suggested that *CYPD2D6* and *DRD2* polymorphisms may have implications in the treatment and the occurance of neuroleptic-included side-effects. Therefore, CYPD2D6 and DRD2 polymorphisms may be a predictor for the treatment outcomes of patients with schizophrenia.

Supervisor:
Professor Dr Mohd Razali Salleh
Co-supervisor:
Dr Teh Lay Kek

COMPARISON BETWEEN VISCOUS LIGNOCAINE AND RECTAL DICLOFENAC FOR IMMEDIATE POST-OPERATIVE ANALGAESIA IN PAEDIATRIC TONSILLECTOMY

Dr Zayuah Mat Sulaiman
MMed (Anaesthesiology)

Department of Anaesthesiology
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Tonsillectomy is a common surgical procedure in children. Pain after tonsillectomy is inevitable and causes not only distress, but also dehydration, difficulty in eating, and delayed post-operative recovery. Previous studies in the paediatric population have demonstrated a significant decrease in post-operative pain and morbidity by using local analgaesic, but the effectiveness in relieving pain has not been formally assessed, and there is no study done using viscous lignocaine for the pain reduction following tonsillectomy. It is very important to determine if topical drug can replace

other form of medication in the management of immediate post-operative pain.

Objective: The goal of this study was to find out the effectiveness of viscous lignocaine for immediate paediatric post-tonsillectomy pain in comparison to rectal diclofenac. Specific objectives of the study include determining peri-operative viscous lignocaine effectiveness in reducing immediate incisional pain in tonsillectomy patients, using visual analogue score (VAS), and observing the reduction in post-operative analgaesic requirement as a rescue analgaesic in paediatric tonsillectomy patients. The study was also performed to assess the ability of the patients to start oral feeding following tonsillectomy.

Methods: In this study, 130 patients aged between 5 to 12 years old were randomly allocated into 2 groups to receive either viscous lignocaine or rectal diclofenac as post-operative analgaesic, using computer generated simple random sampling. 65 patients were assigned into group A (viscous lignocaine), and the remaining 65 were assigned into group B (rectal diclofenac). Group A was given 3 mL of viscous lignocaine 2% or maximum of 4 mg/kg body weight whereas group B was given rectal diclofenac 1 mg/kg. All patients will be pre-oxygenated with oxygen and induced with intravenous fentanyl 1.5 µg/kg, propofol 2 mg/kg, and rocuronium 0.5 mg/kg as muscle relaxant. In the recovery room, vital signs were charted and pain assessment was done using VAS at 0.5-hour and before discharge to ward. In the ward, patients were then followed-up for 24 hours by Acute Pain Service team, and the time of oral feeding resumption and the total rescue medication is recorded at 1-hour, 2-hour, 4-hour, 12-hour, and 24-hour. If the patients complained of intolerable pain, rescue medication, intravenous pethidine 0.5 mg/kg, will be given, and the time, the frequency, and the total doses will be recorded at the same time interval.

Results: All 130 patients completed the study. The result showed that, although not statistically significant (P = 0.479), the VAS score was lower in viscous lignocaine group at the first 4 hours post-operation. Haemodynamically, the mean arterial pressure was significantly reduce in viscous lignocaine group after 4-hour (P = 0.043), at 12-hour (P = 0.040), and at 24-hour (P = 0.044). The dose of rescue medication was significantly reduced at 2-hour post-operation (P = 0.023), and the dose was also reduced at 4-hour post-tonsillectomy. The time for resumption oral feeding were also significantly reduced for oral fluid and oral soft diet in viscous lignocaine group (P = 0.016 and P = 0.007, respectively).

Conclusion: From our study, we conclude that viscous lignocaine is comparable to rectal diclofenac for post-tonsillectomy analgaesia in paediatric patients. Viscous lignocaine significantly reduced immediate post-operative pain and resulted in early return of oral feeding. Thus, it is concluded that viscous lignocaine is safe and can reduce the unnecessary complication of systemic analgaesia.

Supervisor:
Associate Professor Dr Wan Aasim Wan Adnan

ANXIETY, DEPRESSION, FEMALE SEXUAL DYSFUNCTION IN WOMEN SEEKING INFERTILITY TREATMENT IN TWO MALAYSIAN HOSPITALS

Dr Zuraida Ahmad
MMed (Psychiatry)

Department of Psychiatry
School of Medical Sciences, Universiti Sains Malaysia
Health Campus, 16150 Kelantan, Malaysia

Introduction: Infertility is defined as inability to conceive after 1 year of unprotected sex. It is associated with substantial level of stress. Previous literature has reported that infertile women reported higher level of depressive and anxiety symptoms than women in the fertile population did. Another consequence that has been reported in the infertile women is increased level of sexual dysfunction; studies have reported that infertile women have an increased risk of developing sexual dysfunction compared with in controls.

Objectives: The aim of the study was to determine the prevalence of anxiety, depression, and sexual dysfunction in women seeking infertility treatment. This study also aimed to determine the association between anxiety, depression, and reproductive characteristics in women seeking infertility treatment and to determine the correlation between sexual dysfunction and anxiety as well as depression in these women. In addition, this study compared the level of anxiety, depression, and sexual dysfunction between different groups of sociodemographic factors in infertile female patients.

Methods: This was a cross-sectional study involving 159 women seeking infertility treatment in infertility clinics in Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II. They were selected through non-probable sampling method. Anxiety and depression were assessed using the Malay version of Hospital Anxiety and Depression Scale (HADS) and sexual dysfunction was assessed using the Malay version of Female Sexual Function Index (MVFSFI). Subjects that scored above the cut off points for depression and anxiety in HADS questionnaire underwent the Mini International Neuropsychiatric Interview (MINI) to diagnose anxiety and/or depression according to Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The outcome measures were the percentages of patient who had anxiety, depression, and female sexual dysfunction, the association between anxiety and depression with the type of infertility, as well as the cause and duration of infertility. The correlations between anxiety and depression with female sexual dysfunction were determined. Descriptive analysis, Fisher's exact test, Cramer's V test, Pearson's correlation test, and Mann–Whitney U test were appropriately used in data analysis.

Results: From the HADS questionnaire, 4.4% of the subjects was found to have anxiety, and 0.6% (1 subject) had depression. None of the subjects who had reached the HADS cut-off point for anxiety and depression and had undergone MINI was diagnosed to have any anxiety or

depressive disorder according to DSM IV criteria. Only 3.1% had sexual dysfunction as detected by MVFSFI. There were no association between anxiety and depression with the type, cause, and duration of infertility. However, there were significant correlations between anxiety and depression with female sexual dysfunction. There was no significant difference in anxiety level between different groups of sociodemographic factors, but there were significant difference in depression between different groups of race, education level, and income, as well as in sexual dysfunction between different durations of marriage.

Conclusion: The level of anxiety, depression, and female sexual dysfunction were low in women seeking infertility treatment. It appeared that the level of anxiety and depression have not led to clinical impairment. However, there were significant correlations between anxiety and depression with female sexual dysfunction. There was no significant difference in anxiety level between different groups of sociodemographic factors, but there were significant difference in depression between different groups of race, education level, and income, as well as in sexual dysfunction between different durations of marriage.

Supervisor:
Dr Zarina Zainan Abidin
Co-supervisor:
Associate Professor Dr Nik Hazlina Nik Hussain